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About the Contributors FREE
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(p. ix) About the Contributors

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Peter Bakker is Associate Professor at Aarhus University (PhD Amsterdam, 1992). He has worked on language contact, pidgins, creoles, and mixed languages. He has done fieldwork a.o. in Canada on Algonquian languages and Michif, and in Europe on Romani. He has edited and written books on mixed languages (1994, 1997), contact languages (2013) and creoles (2014). He is also interested in the connection between linguistic structure and societies.

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Joe Blythe is an interactional linguist with field experience in Australian Aboriginal languages. In 2009, he completed his PhD at the University of Sydney on person reference in the Australian polysynthetic language Murrinh-Patha. He joined the University of Melbourne as an ARC DECRA fellow where he researches Murrinh-Patha language use in face-to-face conversational interaction and the acquisition of kinship categories. His interests include referential processes, preference

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organization, requests, repair, prosody, kinship and kin-based morphosyntax, and the evolution of language.

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Una Canger studied under Louis Hjelmslev in Copenhagen and holds a PhD in linguistics from UC Berkeley. Her thesis was on the Mayan language, Mam. Since 1970 she has directed the 'American Indian Languages and Cultures' programme at the University of Copenhagen. Due to the wealth of written Aztec documents from the 16th century students wanted to study Nawatl rather than Mayan languages. This led to a shift in her research to Urban Nawatl and Nawatl dialects which has gone on since 1973.

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Östen Dahl is Professor Emeritus of General Linguistics at Stockholm University. His research interests include the study of grammatical categories, in particular TAME (tense-aspect-mood-evidentiality), definiteness and negation, in a typological and diachronic perspective. He is the author of the monographs *Tense and Aspect Systems* (1985) and *The growth and maintenance of linguistic complexity* (2004), co-author of the textbook *Logic in Linguistics* (1977) and editor of the volume *Tense and Aspect in the Languages of Europe* (2000).

Lucinda Davidson is a PhD student with the Research Unit for Indigenous Language at the University of Melbourne. Her dissertation draws on longitudinal data to investigate the development of social identity through language in a group of young Murrinhpatha-acquiring children. Her main research interests centre on the role that language and culture play in children's development, child discourse and interactional linguistics, especially with respect to Australian languages.

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William A. Foley (AB, Brown University, MA, PhD, University of California, Berkeley) is University Professor of Linguistics at the University of Sydney. He is a specialist on the Papuan languages of New Guinea and also the Austronesian languages of island Southeast Asia and Oceania and has done very extensive fieldwork on these languages and published several books and many articles on them. He is particularly

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interested in the dialog between the insightful description of the often quite exotic grammatical patterns of these languages and the development and revision of grammatical theory.

William Forshaw is currently undertaking his PhD research at the University of Melbourne as a student of the Research Unit for Indigenous Language. He is also an affiliate of the ARC Centre of Excellence for the Dynamics of Language. His PhD research is a longitudinal study examining the acquisition of bipartite stem morphology in Murrinhpatha as a first language. His research interests include the acquisition of complex morphology, the impact of morphological theory on models of language acquisition and the documentation of Australian languages.

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Japanese and English. She is also the author of *Linguistic Ethnography of the Koryak* (2009) written in Japanese.

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(Pomoan); Barbareño Chumash (Chumashan); Central Alaskan Yup'ik (Eskimo-Aleut); Navajo (Athabaskan); and Kapampangan, Hiligaynon, and Selayarese (Austronesian).

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research alliances. She has had a long association with CILLDI, a summer school for indigenous language speakers, for which she developed an accredited community linguist certificate. (p. xv)

Jerrold Sadock is the Glen A. Lloyd Distinguished Service Professor Emeritus in the Department of Linguistics at the University of Chicago, where he has been on the faculty since 1969. He has done work on linguistic pragmatics, modular grammar, and a variety of languages. Much of his grammatical work has dealt with Kalaallisut, the highly synthetic Inuit language of West Greenland. He is presently working on a Kalaallisut–English dictionary with colleagues at the University of Chicago and Oqaasileriffik, the Greenland Language Secretariat.

Sabine Stoll is Research Professor at the Department of Comparative Linguistics at the University of Zurich, Switzerland and director or the Psycholinguistics Laboratory. Her research revolves around the question of what factors influence the acquisition processes in first language learners. The main focus of her research is on the influence of structural features of the input on learning processes in typologically diverse languages. These issues are mainly approached from an information-theoretic perspective. She has build up several longitudinal acquisition corpora with a special focus on endangered languages and currently she is leading a large research program on acquisition processes in maximally diverse languages (ACQDIV).

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typology, theory of grammar, the syntax of the Russian language, and the languages of all the three genetic families of the Caucasus: East Caucasian (Nakh-Dagestanian), West Caucasian (Abkhaz-Adyghe), and Kartvelian (South Caucasian).

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Introduction

Michael Fortescue, Marianne Mithun, and Nicholas Evans

The Oxford Handbook of Polysynthesis
Edited by Michael Fortescue, Marianne Mithun, and Nicholas Evans

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Abstract and Keywords

The first chapter of The Oxford Handbook of Polysynthesis introduces the notion of polysynthesis and the related issues that the volume addresses, such as complexity, the definition of the word, the nature of the lexicon, idiomaticity, and typological features such as argument structure and head marking. It also outlines the part structure of the volume: Part I addresses polysynthesis from different perspectives; Part II contains areal studies of those geographical regions of the world where polysynthesis is particularly common, such as the Arctic and Sub-Arctic and northern Australia; Part III examines diachronic topics such as language contact and language obsolescence; Part IV looks at acquisition issues in different polysynthetic languages.

Keywords: polysynthesis, complexity, language contact, diachronic, obsolescence, acquisition

THE term *polysynthesis* is generally understood in linguistics as extreme morphological complexity in the verb. But morphological structures can be complex in a variety of ways. Most would agree that polysynthetic languages are characterized by words consisting of many meaningful parts, in keeping with the etymology of the term (‘many-combining’). Duponceau, who first coined the term in 1816, defined a polysynthetic construction as one “in which the greatest number of ideas are comprised in the least number of words” (1819).

Soon afterward a similar category was integrated into the growing framework of morphological typology by Humboldt in a work first published between 1827 and 1829 (1988), but under the term *einverleibend*, ‘incorporating’. Presumably, Humboldt was referring to the incorporation into words of various elements whose meanings would be expressed in separate words in more analytic languages. In modern times, Humboldt’s term has sometimes been interpreted to mean that such languages must also display canonical noun incorporation, though many highly synthetic languages lack it.

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Introduction

The term *polysynthesis* is now generally established: it is commonly encountered in typological characterizations of languages, and occupies a prominent place in certain theoretical models. But the essence of polysynthesis, both the fundamental features which might most usefully define the type, and other features that are often associated with it, have remained a topic of ongoing discussion. A major purpose of this volume is to explore the extent to which polysynthesis constitutes a clear type with specific necessary and sufficient characteristics, and whether it might have predictive value in accounting for clusterings of typological features.

Perhaps the most commonly cited feature of polysynthesis, beyond general morphological complexity, is the identification within the verb of core arguments. Evans and Sasse summarize this as follows: “Essentially, then, a prototypical polysynthetic language is one in which it is possible, in a single word, to use processes of morphological composition to encode information about both the predicate and all its arguments … allowing this word to serve alone as a free-standing utterance without reliance on context” (2002: 3f.). Such morphological structures might have important implications for syntactic structure. If in a language, arguments are fully specified within the verb, then syntactic relations may be defined within the verb word as well, and relations between the verb and external (p. 2) lexical arguments may not be of the familiar hierarchical type. It has accordingly been proposed that polysynthetic morphology tends to be associated with ‘shallow’ or ‘non-configurational’ syntax. The status of the verb as a complete, grammatical clause in itself raises further questions. Are the syntactic bonds between verbs and lexical arguments in such languages necessarily looser than in other kinds of languages? In many languages, first and second persons are overtly represented within the verb, but third persons are not. Is this difference significant, given that the referents most often identified by lexical arguments are third persons? And where third persons are obligatorily represented and the normal way of achieving reference, does this result in bound pronominal affixes having a significantly different function from their free-pronoun counterparts in other languages, since they no longer form part of an anaphorically sensitive contrast set (Evans 2002)? Is polysynthesis strictly a matter of the verb? What of languages with complex nominal structures that may also encode whole propositions? These are the sort of questions that the present volume addresses.

A number of additional features have been observed in various languages characterized as polysynthetic (Fortescue 1994). Complexity may come about through numerous ‘slots’ in the verbal structure, slots filled by markers that alter argument structure, add adverbial information, and more. Or it may come from large inventories of productive affixes, to the extent that some polysynthetic languages have even been observed to have restricted inventories of lexical roots.

Where affixation is highly productive, particularly in the case of affixes that usually correspond to separate words in other languages, it can be asked what kinds of units are learned, stored, and used as chunks by speakers, and what is processed online during speech. Highly polysynthetic languages obviously contain many more ‘words’ than analytic languages, in the sense of distinct inflected or derived word-forms, with the

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number of inflected, derived, and incorporation-extended forms of a given root potentially running to the tens of thousands. How many of these formations are lexicalized? Is there less idiomaticity than in the words of only mildly synthetic languages, or more idiomaticity than in their phrases? Elaborate morphology can set the stage for complex morphophonemics, raising further questions about memory and processing. If extensive phonological processes render the internal structures of words more opaque, are these words more likely to be processed as single units? Such questions have a direct bearing on the growing interest in complexity within linguistics today (see, for example, Dahl 2004).

Another set of questions concerns the kinds of circumstances which might foster the development and maintenance of polysynthesis. It has been observed that many polysynthetic languages are spoken by hunter-gatherer peoples or other small-scale societies, or those with recent histories as such. Do these languages or structures ever spread to neighboring peoples? Is it likely that the proportion of the world's languages which were polysynthetic was greater in the past? What determines the rapidly increasing replacement of polysynthetic languages by majority languages today? Is it the case that they make poor lingua francas, and if so why? (We note that Nahuatl at empire scale, and Bininj Gunwok at regional scale, are two counter-examples of polysynthetic languages that function as lingua francas.) How do children learn them? Do such languages become less polysynthetic as they are learned by new generations in post-contact settings (insofar as they are being learned at all)? One thing is clear: they are nearly all disappearing at an alarming rate, and accurate documentation—especially of their acquisition—is a pressing matter.

(p. 3) On closer examination, it turns out that there is far more variety among these languages than lumping them together as 'polysynthetic' might suggest. Consider one sample of such variation in a single area, the Arctic and adjacent Sub-Arctic. (See the papers in Mahieu and Tersis 2009 for more detail than we can give here.) Some show multiple types of extensive incorporation (Chukchi and Koryak). Some show extensive 'lexical affixing,' with structures similar in many ways to prototypical noun incorporation, but with verbalizing affixes, often with relatively concrete meanings, in place of verb roots (the Wakashan languages). Some show strong 'templatic' structures (the Athabaskan languages and Siberian Ket). Some show hierarchical structures with 'recursive suffixing' (the Eskimo-Aleut languages).

For the most part, languages with such constructions also offer speakers analytic alternatives: where speakers can use a verb with an incorporated noun, they can also use a verb plus a separate lexical noun, for example. The motivations behind choices between polysynthetic and analytic constructions within a language can be discovered only through examination of extended spontaneous speech, since they are usually correlated with the management of information flow through time.

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A closer look at possible combinations of features associated with polysynthetic languages might tell us much about the limits of what constitutes a stable configuration for a human language. In some cases these combinations seem to defy typological expectations derived from more familiar language types. Some typologies have posited an inverse relationship between affix order and word order, for example, citing correlations between predicate-final order and suffixes on the one hand, and predicate-initial order and prefixes on the other. But languages of the structurally homogenous Athabaskan family show clear SOV constituent order along with almost purely prefixing morphology, both of which have apparently remained stable over millennia. Similar stability can be seen in the suffixing structure of the Eskimo-Aleut languages, and the prefixing, suffixing, and incorporating structures of the Iroquoian and Gunwinyguan languages.

Apart from the general features relevant to polysynthesis we have listed, some more specific distinctions can be investigated:

- Bound core pronominals

  Are they clitics or affixes?

  How many core arguments are marked, and which are they?

  What alignment patterns do they show?

  (accusative, ergative, agent/patient; inverse or other hierarchical patterns)

- Noun incorporation

  Do both intransitive and transitive bases incorporate nouns?

  Does incorporation yield both intransitive and transitive stems?

  Are there limitations on the nouns that are incorporated, such as only body-part terms?

  What semantic relations may exist between the incorporated noun and incorporating verb stem?

  Do incorporated nouns match their freestanding source exactly, somewhat, or not at all?

  Are multiple or phrasal incorporates possible?

- ‘Heavy,’ semantically concrete verbalizing affixes

  Are there ‘dummy’ noun stems to which they attach? (p. 4)

- Verb compounding

  If verb stems are compounded, what semantic relationships can they bear?

- Means/manner/instrumental affixes
- Locative/directional affixes

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- Applicatives
- Derivation and inflection

  Is there a clear distinction between the two?

  Do they occupy distinct areas of the morphology?

- Templatic ordering of derivational morphology

  How many slots are there in the maximal template?

  How many morphemes are there in each slot?

  Are there discontinuous morphemes?

- Hierarchical structure among derivational morphemes

  Does morpheme order reflect semantic scope?

  Are alternative orders possible?

  Is there recursion of individual affixes?

  Can multiple instances of a given morpheme be adjacent?

Linguistic types become more interesting when they reveal clusters of associated features. Features may cluster for a variety of reasons. There may be structural interdependencies, such as specification of grammatical relations within the verb and primarily pragmatically based constituent order. One may set the stage for the development of another: predicate-final clause structure (SOV) can give rise to postpositions, where the postpositions are descended from verbs. Circumstances that foster the development of some features might also foster the development of others, such as small communities with dense social networks. But correlations posited on the basis of a few languages have not always been borne out once more languages were considered. Some additional variables that have been discussed in conjunction with polysynthesis have included:

- complex morphophonological processes, yielding structures that are more fusional than agglutinating
- predominantly prefixing structures, suffixing structures, or a combination;
- general head marking beyond the verb, such as possessive affixes on possessed nouns,[1] or absence of nominal case marking;[2]
- relative elaboration of nominal morphology, such as noun–noun compounding or multiple lexical classes, including gender;
- absence of noun case;
- relative elaboration within the verb morphology of relations indicated periphrastically in other languages, such as causatives and desideratives;
- absence of a separate class of adpositions; (p. 5)

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- constituent order that is based primarily on pragmatic factors rather than grammatical relations (SOV, VSO, etc);
- internally or externally headed relative clause constructions;
- clause combining accomplished primarily via verb inflection, auxiliaries, or conjunctions.

This handbook draws together different perspectives on intriguing languages which until now have been scattered through a rather disparate and specialized literature. It covers the majority of language families that would be termed 'polysynthetic' by the majority of linguists today, as well as relevant isolates. In addition, some important borderline cases are also discussed, because the border between polysynthetic and merely synthetic is fuzzy. This is despite at least one influential claim to the contrary, namely Baker's (1996) Principles and Parameters approach to polysynthesis, which restricts the term to a specific subset of incorporating languages: those with complex head-marking morphologies that share certain specific syntactic and morphological features, such as those displayed by Mohawk. At issue here is the opposition between a binary, essentializing typological contrast, conceptualized by Baker in the form of a single macroparameter (Baker's *Morphological Visibility Condition*) that predicts a large number of linked characteristics, and a more functionalist approach that sees prototypical polysynthetic languages as a kind of local minimum in the adaptive landscape, in which 'functional relationships' (Heath 1975) (or perhaps better 'functional interdependencies') tend to co-select, but with the linkage being stochastic rather than necessary.

Polysynthetic languages are not scattered evenly over the globe. Certain areas show a higher propensity for such languages: North and Central America, parts of the Amazon and the southern cone of South America, areas of Siberia from the Bering Strait across to Ket to the west and Ainu to the south, the north-central part of Australia, the Sepik River area of New Guinea, the Northwest Caucasus, and parts of India and Nepal (some Munda and Kiranti languages). They are not entirely absent elsewhere, however. Gumuz, a Koman language of Africa, shows reference to core arguments, noun incorporation, and other complexity within the verb (Ahland 2012). Sketches of languages typifying almost all of these regions are included in this volume, highlighting the principal grammatical features they share. The historical emergence, fading, and acquisition by children of those polysynthetic languages that remain today are discussed, insofar as this is still possible, drawing upon what is known of their relevant socio-cultural and demographic backgrounds. Suggestions, some of them controversial, are adduced as to how the complexity displayed by these languages might have arisen and not been reduced again in the course of time.

In Part I, the search for core features of polysynthesis is addressed from various perspectives. The phenomenon is first considered against the broader issue of complexity by Östen Dahl. Polysynthetic languages, which bear the marks of multiple

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grammaticalization processes, are quintessential examples of what Dahl terms ‘mature phenomena,’ displaying not only complex but also non-linear morphology.

Marianne Mithun examines whether the essence of polysynthesis is holophrasis in a specialized sense: the expression of essential elements of the clause, both predicate and arguments, within the verb. The identification of core arguments by pronominal affixes might accomplish this, but such marking is not categorical. Languages vary in which arguments are marked, with differences dependent on such features as person, animacy, grammatical role, and definiteness. Argument specification within the verb often co-occurs with certain other (p. 6) structures, such as noun incorporation, applicatives, rich inventories of adverbial affixes, and pragmatically motivated word order, but ultimately none is predictive of any of the others.

Johanna Nichols discusses the principal features characterizing polysynthetic languages in the Greater Pacific Rim area. She concludes that while there is no particular limit on the diversity of these languages, a tighter definition can be approximated in terms of what she calls ‘open head marking’. Polysynthesis is seen as a natural consequence of head marking, and its emergence presupposes a broader area in which head marking already predominates.

Johanna Mattissen proposes a typology of polysynthetic languages. Her affixal type allows only one lexical root per verb complex, and has ‘non-root bound affixes’ for all other morphemes within the word. This type contrasts with her compositional type, which combines more than one lexical root (noun+verb or verb+verb) in complex verb forms in a productive manner. These two types are cross-cut by another distinction: templatic organization, characterized by a fixed number of morpheme slots within the word in a fixed order, and scopal (hierarchical) ordering, whereby successive affixes are chained freely, as conditioned by their semantics, scope relations, and compatibility restrictions. Different areas of the verbal complex, such as prefixes versus suffixes, or inflection versus derivation, may belong to different subtypes.

Jerrold Sadock challenges the Greenbergian measure of word length as criterial for defining a distinct class of languages. He compares Hebrew, which no one would call polysynthetic, with Greenlandic Eskimo, which almost everyone would include in that type. He pinpoints the relevance of morphological processes that are ‘expressively active’, that is, those with functions typically conveyed syntactically in other languages. He also urges a closer consideration of the role of clitics in individual languages as a counterbalance to the raw quantification of word length.

Michael Fortescue proposes a two-part rule of thumb definition of polysynthesis that combines an inflectional and a derivational component, requiring the combination of bound pronominals and the possibility of at least some semantically ‘heavy’ morphemes (roots or affixes) besides the main verb root. This produces a view of polysynthesis in terms of a core vs. periphery rather than a discrete category, some highly synthetic languages falling short of fully meeting both criteria (often for transparent reasons). If the nub of polysynthesis is the packing of much material into single verb forms that would

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be expressed as independent words in less synthetic languages, the question is then: What exactly is the nature of and limitations on this ‘material’? His chapter investigates the limits of what the term is generally understood to cover. Cognitive constraints on the maximal extent of polysynthesis are discussed.

Louis-Jacques Dorais examines the problematic nature of the polysynthetic lexicon (both written and mental): how many words does the lexicon actually contain, given the relatively open-ended nature of polysynthetic morphology? Do native speakers regard all of their complex words as holistic units? He focuses on the derivational morphology of Inuktitut in addressing these questions, but draws in comparisons with Algonquian and Iroquoian languages. He concludes that it is impossible to define precisely which elements of a speaker’s mental lexicon function as fully lexicalized lexemes, and which are circumstantial derivatives utilizing compositionality.

Fundamental to discussions of polysynthesis is the notion of the word. Balthasar Bickel and Fernando Zúñiga investigate phonological and syntactic challenges for a precise definition of the word across languages. Their approach includes multiple domains within (p. 7) each: between syllables and phrases for the first, and between morphemes and phrases for the second. They provide a set of analytical tools and parameters for determining phonological and syntactic wordhood, then illustrate the wide diversity of possible polysynthetic words these can define across languages, comparing Mapudungun, an unclassified language of Chile and Argentina, and Chintang, a Sino-Tibetan language of Nepal. They conclude that polysynthetic ‘words’ are never unified entities defined by a single domain in which all criteria would converge.

Peter Trudgill delves into the possible role of the anthropological setting of cultures in the rise and maintenance of polysynthesis. It has been observed that many polysynthetic languages are spoken in hunter-gatherer societies. Trudgill refines this observation, pointing out that these languages are often associated with relatively small, isolated, stable communities, with dense social-network structures; they are less characteristic of large, high-contact situations, in urban, colonial, and standard language varieties. He discusses the factors that might allow complex morphologies to persist unreduced or become still more complex through time.

Moving from the speech community to the individual speaker, Sally Rice argues from a usage- and construction-based cognitive perspective that polysynthetic languages such as Dene Sųłiné (Athabaskan) are not learned as complex systems of rules, but rather by exemplars experienced in specific contexts. Speakers can expand the language by analogy, but such extension is arguably secondary. She proposes that the correct level at which such highly compressed, ‘esoteric’ languages should be investigated is the little-explored one of phraseology. This approach has potential practical consequences for the production of pedagogical materials aimed at maintaining these languages.

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Contributions in Part II focus on those geographical areas where polysynthetic languages are most concentrated. Some represent genuine linguistic areas where long-standing interaction has occurred, others a looser, more contingent piling up of highly synthetic languages with relatively little contact between them. In each of the areas treated, the major polysynthetic features and their distribution across the languages concerned is sketched.

The Arctic/Sub-Arctic, as described in Michael Fortescue's chapter, combines three widespread polysynthetic language families of very different types. Between Eskimo-Aleut and Na-Dene, the latter with affinities further south, there has been relatively little contact, at least in recent centuries. Between Eskimoan and the Chukotian branch of the Chukotko-Kamchatkan family, however, there has been considerable contact and interaction.

The second area, discussed by Marianne Mithun, covers the rest of North America, where a substantial proportion of the languages are polysynthetic or at least relatively synthetic. It was some of these which first prompted Duponceau to distinguish his polysynthetic type, a type initially taken to characterize all of the languages of North America, though subsequent discoveries proved that to be an oversimplification. Within this continent are more restricted areas with their own foci of specific polysynthetic traits, such as the Northwest Coast (Salishan, Wakashan, Chimakuan) and the Eastern Woodlands (Iroquoian and Algonquian).

One of these smaller areas is described in Carmen Jany's chapter on a set of languages sometimes referred to as Northern Hokan, centered in Northern California and Southern Oregon. The term 'Hokan' was earlier thought to designate a set of languages genetically related at a very deep level, though subsequent work has shown that many of the structural traits once attributed to common inheritance are in fact the result of longstanding contact. (p. 8) A great many of the traits shared by these languages are found as well in other neighboring languages never considered genetically related.

The Amazonian basin, described by Alexandra Aikhenvald, is home to a complex patchwork of highly synthetic languages, many of which have barely been documented. One of the better known families is Arawakan, which generally comprises the most synthetic languages of the entire area, though its northern members show somewhat fewer polysynthetic traits. Noteworthy is the relative scarcity of bound object marking in many of these languages.

The concentration of polysynthetic languages in northern Australia is well known. Languages of this area, described by Nicholas Evans, show contrasting varieties of polysynthesis, one type with a single verb stem plus canonical noun incorporation, as seen in languages of the Gunwinyguan family, and the other with a more elaborate two-part verb structure deriving from the combination of a light verb and an inflected auxiliary, as seen in languages of the South Daly River region. Evidence for the stability of the Gunwinyguan-type pattern over many millennia comes from the striking similarities in patterning of the verbal template between Gunwinyguan and the isolate Tiwi, cut off from

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contact with the mainland for over 6,000 years, and between mainland Gunwinyguan and the Enindhilyakwa language of Groote Eylandt, also cut off from the mainland for several millennia: Enindhilyakwa was formerly considered an isolate but now demonstrated to be related to the Gunwinyguan languages (Van Egmond 2012). At the same time, the structural homogeneity of these languages should not be exaggerated, and a comparison of superficially similar languages from within Gunwinyguan reveals interesting variations on such dimensions as the semantic relationships contracted by incorporated nouns with the verb stem, the overt registration of all person/number values by affixal morphology, and the absence vs. elaboration of subordinative morphology. This speaks against any simplistic view that particular typological features necessarily cohere.

The final area considered is the Sepik Valley region of Papua New Guinea, described by William Foley. In this area of extreme genetic and typological diversity, the nature of the polysynthesis reflects the preponderance of extensive verb serialization in the neighboring Papuan languages. In Yimas and Alamblak, for example, comparable sequences are compacted into single word structures. Foley shows that when four parameters are considered, namely head marking, pronominal marking in the verb, noun incorporation, and clause linkage by parataxis, these languages show that polysynthesis is not an all or nothing trait.

In Part III the phenomenon of polysynthesis is examined from a diachronic perspective. Various routes into polysynthesis are described, all involving a drift towards increased head marking and greater elaboration within the verbal morphology. The demise of a polysynthetic language can be gradual or abrupt, especially under competition from more analytic colonial languages and an influx of adult second-language learners. Sometimes the results are unpredictable, as in the case of mixed languages.

The emergence of complex templatic morphology is described by Edward Vajda, with examples from Yeniseian and Athabaskan (Na-Dene) languages. This particular coupling is not fortuitous: Vajda argues that the two families may ultimately be genetically related. If they are, their similarities indicate how durable complex polysynthetic morphology can be, despite major adjustments and reanalyses within the templates involved. In the case of Yeniseian Ket we see how language contact, here with Uralic and other Siberian languages, can induce major structural changes that result in still greater complexity and irregularity.

The emergence of complex verb structure from sequences of verbs is discussed by Tom Givón in his description of Ute. He traces two pathways from syntactic to morphological (p. 9) structure, one via the embedding of complement clauses within main verb clauses, the other via the condensation of clausal chains into serial verb constructions. Both may involve the ‘co-lexicalization’ of a light verb plus a superordinate main verb, but only the former results in full clause-union. For Givón however, polysynthesis is not necessarily an endpoint, but rather one of many transitional phases along recurring pathways of grammaticalization.

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The range of effects that language contact may have on polysynthetic languages is addressed by Peter Bakker and Hein van der Voort, who contrast the impact of contact on Algonquian, Eskimo-Aleut, Wakashan, Athabaskan, and Sepik Papuan languages. Most contact situations result in simplification of one sort or another, but they may also result in the increased complexification of the contact language. They cover lexical borrowing and the diffusion of grammatical traits, as well as the emergence of pidgins and trade jargons involving these languages.

The impact of obsolescence on polysynthesis is discussed by Ekaterina Gruzdeva and Nikolai Vakhtin. Such processes may run their course rapidly, as in Tiwi, which moved from highly polysynthetic to nearly isolating within a couple of generations. The catalyst is often language contact, though the nature of the contact may range from rapid shift to a dominant language, as is occurring in so many parts of the world, to more subtle influences of neighboring languages, like that of Chukchi on Siberian Yupik. The degree of synthesis of the dominant language does not appear to be a significant factor: both Chukchi and Siberian Yupik are polysynthetic. Gruzdeva and Vakhtin investigate the order in which polysynthetic traits tend to be lost, comparing noun incorporation, inflection, and allophonic variation.

Part IV is concerned with an area requiring urgent attention: the acquisition of polysynthetic languages. With few exceptions, very few children are currently learning polysynthetic languages. How children acquire such complex structures with apparent ease would appear to be something of a mystery. Numerous factors come into play, in part according to the nature of the polysynthetic structures to be acquired. Phonology can affect acquisition in various ways. Extreme fusion structures should delay the identification of morphological components, but other factors can enter in as well. In Mohawk, for example, children first acquire the stressed syllables of words, which most often align with the root or a part of it, providing a communicative advantage (Mithun 1989a).

In the first of the three chapters in this section Shanley E. M. Allen describes the acquisition of Inuit languages, focusing on Inuit children between the ages of 1 and 16 in Arctic Quebec. The order of emergence of different types of affixes appears to be very similar to that of related West Greenlandic described in Fortescue (1984) and Fortescue and Olsen (1992a). All Inuit dialects lack distinctive stress, which may have some bearing on the strategies children apply; comparison with the acquisition of Yupik languages, which do have it, might be instructive. Among the topics covered in this chapter are nursery vocabulary, word-internal morphological complexity, verb inflection, incorporative structures (sequences of noun stems followed by verbalizing suffixes with relatively concrete meanings), passives, causatives, tense, and aspect. Allen also briefly considers aspects of narrative acquisition.

In the second chapter on acquisition, Bill Forshaw and colleagues describe the acquisition of Murrinh-Patha, a polysynthetic language of Australia. The complex morphology of this language is of a quite different kind from that of Inuktitut: it is templatic, with

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discontinuous (p. 10) dependencies among components of bipartite verbs. The authors point out that children learning this language make heavy use of a handful of highly productive ‘classifier’ stems which combine with a wider variety of lexical stems as a key to unlocking the bipartite verb system.

In their chapter, Sabine Stoll, Balthasar Bickel, and Jekaterina Mazara investigate the acquisition of Chintang, a Sino-Tibetan language spoken in the Himalayas (Kiranti group). In this language, a verb stem combines with a large number of other morphemes that have an adjacency requirement and range from grammatical affixes to other verb stems, and the expression of these combinations shows considerable variation in exponence. Many of these morphemes take on different shapes, depending on other morphemes in the same string, which presents considerable challenges for the child learner. Such combinations bring with them yet another challenge: while morphemes like English third person *-s* on a verb stem are compatible with a very large number of contexts, its equivalents in Chintang are far more specific, tailored to specific configurations of the participants in an event. And since apart from person, many other categories are expressed as well, each string is extremely specific to a particular context. This inevitably lowers the chances of finding repeated occurrences of the same string, and thus increases the challenges for the learner even more.

Part V, the final section of the volume, contains grammatical sketches of a set of representative polysynthetic languages, distributed as shown in Map 1.1. These chapters speak for themselves and illustrate many of the general points raised in earlier chapters.

Salient morphosyntactic features across the individual languages can be compared as tabulated in Table 1.1. The sub-type of each of them according to Mattissen’s four-way distinction can be seen in Table 1.2.

Many theoretical challenges remain in the study of polysynthetic languages, above and beyond those presented in this volume. We mention five of them here.

The first concerns the crucial question of how far production and perception are routinized in normal speech, in any language. As Pawley and Snyder (1983) argued three decades ago, the production of fluent speech requires the rehearsed recall of large preassembled chunks into which a typical maximum of one new element per breath-group is inserted. This view locates normal, fluent language production much closer to the holophrastic end of the spectrum than to the generative, compositional end making ‘infinite use of finite means.’ This phraseological view of language use, and language learning, has recently been bolstered by studies such as that of Tomasello (2003) showing the close matching of child language learning with large chunks of adult input. On the one hand, polysynthesis now appears as a natural consequence, given this more phraseological view of language use: polysynthetic languages simply wear their holophrastic hearts on their structural sleeves more clearly than some other languages. On the other, when we turn this view back on actual descriptive and analytical practice to ask how many of the vast arrays of possible word-forms are actually employed by speakers of polysynthetic languages, we may find that descriptions have exaggerated the

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morphological productivity of the system. This makes corpus-based studies of actual occurrences of different combinations an important challenge for future work, as outlined in Rice's chapter.

The second challenge concerns the distribution of semantic labor between predicate, arguments, and other expressions in the polysynthetic lexicon. Capell (1969: 14–17) elaborated a distinction between 'event-dominated' and 'object-dominated' languages, in an (p. 11) (p. 12) (p. 13) attempt to capture whether the burden of expression focuses on the encoding of events or on the entities involved in them.[39]

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Map 1.1 Location of languages described in Part V

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Table 1.1 Main polysynthetic features of languages in volume sketches

	1	2	3	4	5	6	7	8	9	10	11	12	13
Yup’ik	+		+				+		+	(no)[3]		+[4]	+
Innu	+	+	+	+	+	+	+	+	+	+[5]			+
Nuuchahnulth	+[6]		+			+	+	+	+[7]			+	+
Sliammon	+					+		+					+
W. Apache	+					+	+	+		+	+	+	+
Caddo	+	+				+	+			+	+	+	+
Purepecha	+[8]					+	+			+			+
Nahuatl	+	+	+[9]	+	+		+	+[10]		+		+	+

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Tariana	+[11]			+[12]			+	+[13]	(no)[14]	+			(no)[15]
Lakonde	+	+		+				+		+		+	+
Mapudungun	+	+	+[16]	+	+	+[17]	+			+			+
Koryak	+	+	+	+[18]	+		(no)[19]			(no)[20]	+		+
Ket	+	+		+[21]	+[22]			+[23]		+	+	+	+[24]
Nivkh	+[25]	+	+[26]	+					+	+[27]		+[28]	
Ainu	+	+	+[29]		+				+	+[30]		+	+
Yimas	+	+[31]		+	+		+		+[32]		(no)[33]		+
Dalabon	+	+		+	+	+	+		(+)	+	+	+	+
Sora	+[34]	+		+	(no)[35]								

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Adyghe	+	+[36]					+		+	(no)[37]		+	+
1. Bound core pronominals													
2. Noun incorporation													
3. Heavy verbalizing affixes													
4. Verb incorporation (single word serialization)													
5. Adverb incorporation													
6. Lexical affixes (locative and/or instrumental)													
7. Heavy adverbial affixes (manner, etc.)													
8. Classificatory affixes, i.e. verbal affixes of the Na-Dene/ Wakashan/ Algonquian type that indicate the substance/shape, etc., of the principal argument of the verb													
9. Recursive derivational morphology, i.e. recursivity of the Eskimo type with the potential for building up complex words through successive derivational affixes[38]													
10. Templatic derivational morphology, i.e. not just inflectional sequences arranged by fixed ‘slot’													
11. Discontinuous morphemes													
12. Inflectional/derivational entanglement, i.e. within the polysynthetic word whether inflections ever lie inside the derivational morphemes over which they have semantic scope, in violation of what is sometimes known as the mirror principle													

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13. Applicatives

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We know that languages are subject to considerable variation in whether aspects of the encoded world are presented as events and states (typically by verbs) or entities (typically (p. 14) by nouns), whether, for example, tides are depicted as actions (as in Iwadja) or entities (as in English), or whether kinship relations are represented by verbs or nouns (Evans 2000). It has also been hypothesized (Sasse 1988) that the proportion of verbs in the lexicon is higher in polysynthetic languages, but this is not fully borne out by some recent studies (Evans 2012, Wnuk 2016). We now need a three-pronged attack on this problem, first extending studies of the lexicon to a wider range of languages, second comparing token frequencies between (p. 15) corpora of polysynthetic and non-polysynthetic languages, and third examining the mutual frequency adjustments languages make in their coding choices in cases where they are moving towards or away from a polysynthetic high point.

Table 1.2 Assignment of the languages sketched to Mattissen's sub-types

Yup'ik	**Af+Sco**
Innu	Af/Com+Tem/Sco
Nuuchahnulth	Af+Sco
Sliammon	Af+Tem
W. Apache	Af+Tem
Caddo	Com+Tem
Purepecha	Af+Tem
Nawatl	Com+Tem
Tariana	Af+Sco
Lakonde	Af+Tem
Mapudungun	Com+Tem/Sco
Koryak	Com+Sco
Ket	Com+Tem
Nivkh	Com+Tem/Sco

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Ainu	Com+Tem/Sco
Yimas	Com+Tem/Sco
Dalabon	Com+Tem
Sora	Com+Tem/Sco
Adyghe	Af+Sco

The sub-types according to Mattissen's four-way distinction (note the mixed types):

Af. The affixal type allows only one lexical root per verb complex (and has non-root bound affixes for all other morphemes within the word)

Com. The compositional type combines more than one lexical root (whether noun plus verb or verb plus verb) in complex verb forms in an ad hoc manner.

Tem. Templatic organization is characterized by a fixed number of slots in a fixed order.

Sco. By scope ordering, successive affixes are chained freely, as conditioned by their semantics, scope relations, and compatibility restrictions.

The third issue concerns how far the notion of polysynthesis can be applied to sign languages, in particular to their frequent use of 'classifier construction signs' (like CL:PLANE-DOWN for 'planes crash'). The Berkeley Transcription System Manual[40] includes explicit instructions for transcribing 'polycomponential signs,' and the deaf linguist Lars Wallin has argued for the existence of polysynthetic signs in Swedish Sign Language (Wallin 1994).

The fourth issue concerns the question of what difference it makes whether grammatical encoding is accomplished by the morphology or the syntax. One view of what happens in polysynthetic languages, forcefully espoused by Mark Baker (1996), is that polysynthetic languages essentially exhibit syntax in morphological clothing, motivating his account of such issues as constraints on what nouns can incorporate by appeals to their place within phrase structure relationships. An alternative view espouses the reinstatement of 'morphology by itself' (Aronoff 1993) as a distinct level of grammatical organization with its own properties. An obvious difference is the way in which recursion is handled by different languages, either by syntax or by morphology. It can be seen from the sketches presented in this volume that not all polysynthetic languages treat this the same way: while some display a degree of morphological recursion, many—following from their templatic structures—do not. In fact templatic morphology is by far the commonest type in our sample. In others, such as Dalabon or Bininj Gun-wok, there is limited potential for recursion by incorporating one verb inside another, but this appears to be capped at one

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level of embedding. For other languages, such as Yimas, the descriptions mention the possibility of multiple compounding of stems, but without giving actual statistics on the distribution curve. The most celebrated case of all, of course, are Eskimoan languages, long cited for the recursive nature of their morphology, but even there one encounters limits. We face the very real possibility that no polysynthetic language allows truly unbounded recursion, and moreover that this is not merely an issue of performance but that there are (possibly still undiscovered) limits on productivity. If templatic morphologies can be likened to 'finite state grammars' this may be taken to suggest that they involve just a small number of choices, but in principle a finite state grammar can generate many hundreds of thousands of forms for a given lexeme, and figures in the tens of thousands may turn out to be the working stock of memorized forms, at least of common verbs, for speakers of the more exuberant polysynthetic languages. Here again polysynthetic languages are not mere freaks, but have the potential to illuminate normal features of all languages in a particularly revealing way, by confronting us with the fact that human memory may be a much more powerful tool in normal language use than we have assumed.

This brings us to the fifth point, the question of how polysynthetic languages are processed, in both production and perception. Are polysynthetic 'word-sentences' broken down into subcomponents, or treated as single units? How does prosody guide the parsing process, particularly because the role of prosodic contrast appears to be absent or virtually so inside the verbs of polysynthetic languages—it appears that no polysynthetic languages represent (p. 16) an incorporated element in one word as contrasting with a structurally equivalent incorporate in another, of the type 'she-MEAT-ate but he-FISH-ate,' or 'he-wood-CHOPPED but he-wood-HACKED.' What lemmata are accessed during processing? How is the rhythm of processing affected by what is likely to be a different pattern of inter-word transitional probabilities as between polysynthetic and other languages, given the much looser connection between polysynthetic words and the elements around them? At present we have no answers to these questions, a lacuna reflected in the absence of any chapter addressing them in this book, but we hope that the collection of materials assembled here will at least furnish a body of material from which good candidates for research on the processing of polysynthetic languages can be singled out.

In conclusion, we believe that the contents of this volume will provide the general reader —not only linguistic typologists—with a state-of-the-art overview of research into the phenomenon of polysynthesis at a time when the very object of this research, the languages themselves, is rapidly diminishing. We hope that it will encourage more researchers to get out there and study them from all the various facets that the studies in this volume have covered—and more—before it is too late. There are plenty of questions, both theoretical and empirical, that await investigation in greater detail.

Notes:

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(1) Predominant head marking is assumed for most polysynthetic languages at the clausal level, though some (like Eskimo and Chukchi, with nominal case) have double-marking patterns here.

(2) Compare the presence of a nominal case system in Eskimo-Aleut with the lack of same in the equally affixing-only Wakashan languages, lacking case.

(39) Capell's view—philosophically provocative but perhaps naïve—was that in event-dominated languages "[t]the whole interest of the utterances lies apparently in what happened, when and how it happened, rather than in the people or object involved or the place of the utterance" (Capell 1969: 14). Interestingly, the recent neo-Whorfian resurgence of interest in testing relationships between language structure and cognitive bias has not, to our knowledge, led to any studies focussed on this type of suggestion.

(3) But there is a small number of 'verbal postbases with templatic properties' occurring just before the inflection (otherwise called 'sentential affixes').

(4) As regards 'quasi-incorporation' of possessor- or case-marked nominals.

(5) As regards root-medial-final shape of primary derivation.

(6) But bound object only in imperative, subjects (non-3rd) clitic.

(7) Minimal (some successive lexical affixes possible).

(8) Fixed 2nd position clitics, except 3pl object (suffix).

(9) Only a few productive ones, a general intransitive ('become', etc.) and a general transitive ('make', etc.), also an instrumental ('do with').

(10) Non-productive.

(11) Subject only.

(12) Limited.

(13) Limited.

(14) But some limited reduplication of the causative/applicative affix.

(15) Causative affixes have applicative use.

(16) Several 'verbalizing verbs' in special meanings as verbalizing suffixes, and inchoative ('become') sense of reflexive suffix.

(17) Body parts only.

(18) Limited.

(19) But some heavy deverbal-verbal affixes.

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(20) But ‘onion skin’ morphological ordering (with circumfixes).

(21) Quasi-verb-incorporation with action nominals.

(22) Closed class directionals and some affix-like bleached nominals.

(23) Non-productive

(24) Small closed class of comitative applicatives made from basic motion verbs.

(25) Object but not subject (except in converbs).

(26) Just a few, general ones (‘make’, become’, ‘comprise’, etc.).

(27) Only on righthand side of main stem.

(28) Modality more peripheral than (future) tense at least.

(29) Just general verbalizers (‘make’ and ‘have’ and copulative ‘be’).

(30) Limited to righthand side of stem.

(31) Non-productive.

(32) Incorporation recursive.

(33) But paucal number may be marked in final position, going with a paucal/plural number pronominal prefix.

(34) Usually only one pronominal argument suffix at a time.

(35) Nominals in instrumental adverb functions only.

(36) Limited to zero verbalization of incorporating nominal structures and body part applicative objects.

(37) But with templatic ordering of the more inflectional affixes.

(38) Of course this may be a matter of degree – e.g. Dalabon allows one layering of recursion of this type, by incorporating up to one verb into another, but not more.

(40) See http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.61.4684&rep=rep1&type=pdf (accessed 12 March 2017).

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Polysynthesis and Complexity

Östen Dahl

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Abstract and Keywords

The notion of polysynthesis has been linked up with that of complexity from the very start. A discussion of the relationship between these two concepts is thus highly motivated, also in view of the recent increased interest in questions relating to complexity among linguists. The chapter discusses different ways of understanding and measuring complexity and how these can be applied to polysynthetic languages. Other topics treated in the chapter are how complexity develops over time in polysynthetic languages, the question of to what extent the notions of maturation and non-linearity as defined in Dahl (2004) are relevant to the synchrony and diachrony of polysynthesis, and how the complexity of constructions in polysynthetic languages compares to functionally equivalent constructions elsewhere.

Keywords: polysynthesis, complexity, non-linearity, maturation, measuring complexity

2.1 Introduction

THE notion of polysynthesis has been linked up with that of complexity from the very start. Thus, the scholar credited with having introduced the term “polysynthesis”, Peter Stephen Duponceau, states in his report to the American Philosophical Society that American languages are “rich in grammatical forms, and that in their complicated construction, the greatest order, method and regularity prevail” (Duponceau 1819: 11), and “[t]hat these complicated forms, which I call polysynthetic, appear to exist in all those languages, from Greenland to Cape Horn”—admittedly using the term “complicated” rather than “complex”. In contemporary linguistic characterizations of polysynthetic languages, the term “complex” often has a salient role: Fortescue (1994:

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2600) speaks of “languages with complex morphologies”, Aikhenvald (2007a: 5) of languages “characterized by extreme internal complexity of grammatical words”, and Baker (1999) of “the formation of extremely long and complex words”.

While various attempts have been made to delimit the notion of polysynthesis in qualitative terms, many authors characterize polysynthetic languages simply as “highly synthetic”, something that is obviously consistent with the etymology of “polysynthetic”, but which implies a more or less purely quantitative understanding of the notion. Such a view would be consistent with Sapir’s (1921: 128) claim that “[a] polysynthetic language illustrates no principles that are not already exemplified in the more familiar synthetic languages”. The most explicit attempt to operationalize a quantitative approach to polysynthesis was made by Greenberg (1960), who suggested that polysynthetic languages are characterized by having an “index of synthesis” above a definable level, connecting this index explicitly to complexity: “One such axis distinguished by Sapir may be said to relate to the gross complexity of the word, i.e., the degree of complexity exhibited on the basis of the number of subordinate meaningful elements it contains” (1960: 182).

A discussion of the relations between the notions of polysynthesis and complexity, therefore, is well motivated. Thus, this chapter will contain a general presentation of the notion of complexity, and a discussion of which measures of complexity are applicable to polysynthesis (p. 20) and whether any of these measures can be used to single out polysynthetic languages as a coherent structural type among human languages. Other topics that will be touched upon are the question to what extent the notions of maturation and non-linearity as defined in Dahl (2004) are relevant to the synchrony and diachrony of polysynthesis, and the relative complexity of incorporating vs. syntactic constructions.

2.2 Complexity

Although terms such as “complex” and “complexity” are widely used, both in everyday language and in scientific and scholarly contexts, there is no generally accepted definition of complexity, let alone a general algorithm or procedure to measure it. When speaking of phenomena that relate to human behavior, such as language, complexity can be understood in at least two fundamentally different ways. Thus, Kusters (2008: 9) defines the complexity of a language as “the amount of effort a generalized outsider has to make to become acquainted” with it. This is a **relative** or **agent-related** notion of complexity, which contrasts with one inspired by information theory and the theory of complex systems, where complexity is understood as an objective property of an object or a system, that is, an **absolute** or **objective** notion of complexity, in linguistics advocated by, for example, Dahl (2004) and Miestamo (2008).

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One frequently invoked idea (Dahl 2004: 21) is that the complexity of an entity can be understood as the amount of information needed to re-create or specify it—which can be identified with the length of the shortest possible complete description of it. This is often referred to as “Kolmogorov complexity” or “algorithmic information content” and has its most natural application when applied to strings (of symbols or characters): the Kolmogorov complexity of a string is the inverse of its compressibility. But as a consequence, since a random string cannot be compressed at all, maximal complexity is identified with maximal randomness. A more intuitive notion, although also not without its problems, is what has been called “effective complexity” (Gell-Mann 1994), which does not measure the length of the description of an object as a whole, but rather the length of the description of the “set of regularities” or structured patterns that it contains. The complexity of an object is thus identified with the complexity of its structure. Alternative understandings of absolute or independent complexity speak of the number of parts of a system and/or the number of interactions between them (Miestamo 2008: 24); there will at least be a very high correlation (if not identity) between these measures and the ones mentioned already. In principle, comparing the effective complexity of two objects requires knowledge of the shortest complete way of describing each of them. In practice, this is normally not feasible, so we are usually forced to make use of various measures that can serve as proxies for true complexity.

In linguistics, complexity measures could apply to different things, notably, on the one hand to a language seen as a system—what will be called here **system complexity**—and on the other to the structure of individual utterances and expressions—what will be called here **structural complexity**.

System complexity could be seen as a measure of the content that a language learner has to master in order to be proficient in a language, in other words, the content of their competence, but does not as such say anything about the difficulty they have in learning, (p. 21) producing, and understanding the language. The system that makes up a language is traditionally seen as having a number of components—phonology, morphology, syntax, etc. Although we could in principle speak of the total complexity of a language, it is questionable whether it is meaningful in practice to compare the complexity of different components of a language system, given that the meta-languages of the components are not necessarily commensurable, or, in more concrete terms, we may not be able to determine whether a certain difference in, for example, syntactic structure matches a difference in morphological structure. This is what Miestamo (2006) calls the “comparability problem”—his conclusion is that one should focus on “local complexity” that is the complexity of the specific components or areas. Taking this one step further, it may be suggested that to guarantee commensurability, comparisons of complexity should be maximally local and assume a *ceteris paribus* condition. What this means in practice is that we should ideally focus on the effects of adding or subtracting an item (e.g. a rule or a condition on a rule) from the description of a language, for example, “Everything else being equal, the addition of object marking increases the

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complexity of a language." However, what may become tricky in concrete situations is to guarantee that the *ceteris paribus* condition is actually fulfilled, that is, that nothing else has changed in the system.

Structural complexity refers to the complexity of individual expressions. It can be applied to one and the same object at different structural levels—syntax, morphology, etc., and there are also various measures that could be used. For instance, we could consider the depth of the maximal sentential embedding in a sentence. On this measure, a sentence such as *John said [that Mary said [that she was coming]]* is more complex than *John said [that he was coming]].* A more general measure would be the number of nodes in a structural representation.

The distinction between system complexity and structural complexity should be intuitively clear—it is obvious that using one and the same grammar both simple and complex expressions may be produced, and that one and the same expression may be generated by grammars of varying complexity. But when comparisons based on the two types of complexity point in the same direction, it is not always easy to know what level one is speaking of. Suppose we are comparing a language L_1 with case marking with a language L_2 which lacks it. It would appear that case marking would make the grammar of L_1 more complex than that of L_2, but at the same time a case-marked sentence can be said to have a more complex expression than one without it.

Another way of viewing the system–structure distinction is to say that while system complexity concerns competence/langue, structural complexity pertains to performance/parole, since it is about properties of individual utterances. However, in a given system, there may be a limit on how complex an utterance can be, and this **maximal structural complexity** would be a property, or at least a consequence, of the language system. In fact, this seems to be what is usually meant by "complexity" in the debate about recursion in natural language.

A further cause of potential confusion is that there is a way of looking at complexity that at least superficially seems to be halfway between system complexity and structural complexity. It arises because we may not only consider the complexity of individual sentences and utterances but also the complexity of sets of those. For instance, we may speak of the average or typical complexity of sentences in a text or a corpus—and crucially, if we see a corpus as representative of a language, that may be regarded as a property of the language, admittedly not of the system underlying the language (langue), but of its manifestation in use (parole). Let us call this **corpus complexity**. Corpus complexity is probably what authors (p. 22) most often have in mind when characterizing words in polysynthetic languages as being "long" and "consisting of many morphemes". It is also clearly behind the "typological indices" of Greenberg 1960, in particular his "index of synthesis", a.k.a. "morpheme/word ratio", which is said to reflect the "gross complexity of the word" (1960: 185).

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Greenberg does not elaborate on why he says “gross complexity”, but it should be noted that equating the number of morphemes in a word with its complexity assumes a rather crude understanding of complexity, since it leaves out the relationships between the morphemes. The words *oto-rhino-laryngo-logy* and *poly-syn-thes-is* both consist of four morphemes, but if their internal bracketing is taken into consideration the former is less complex, as its first three elements are simply a list (‘ear, nose, throat’): (*oto-rhino-laryngo)-logy* vs. *poly-((syn-thes)-is).* It should also be clear that corpus complexity as manifested in the morpheme/word ratio of a corpus is not straightforwardly correlated to the complexity of the morphological system. One reason for this is that words consisting of a large number of morphemes can be be obtained by means of a small set of relatively simple morphological operations. Another is that if grammars afford speakers a choice between morphological and syntactic operations, the morpheme/word ratio will depend on the actual preferences of speakers, which may vary, both between individuals and between different styles or genres.

But some formulations in the literature suggest yet another conception of complexity. For instance, Baker (1999) says that polysynthetic languages “allow the formation of extremely long and complex words”. Similarly, Comrie (1989: 45) says that in those languages “it is possible to combine a large number of morphemes, be they lexical or grammatical, into a single word”. Thus, this is not so much about what is really found in language use, but about what the language system allows, more specifically, the maximal structural complexity of a word. Theoretically, the long and complex words referred to could be relatively infrequent in a language, and thus be compatible with a low corpus complexity. Maximal structural complexity is clearly dependent on what the grammatical system looks like, although it is not necessarily directly correlated to it. In formal grammar, a single recursive rule such as $S \rightarrow S$ *and* S is enough to allow for indefinitely long expressions. Considering **minimal structural complexity** will take us another step closer to system complexity, since the minimal complexity of an expression will depend directly on what the grammar makes obligatory.

The morphological structure of words in polysynthetic languages is often represented in terms of a sequence of morpheme slots, referred to as a “template”, and it is tempting to assess the maximal complexity of a verb by the number of slots in a template. Again, such a count may leave out interdependencies between slots that make up a substantial part of the structural complexity. Likewise, templates do not always give information about which slots are obligatory, which would make it possible to evaluate another parameter, that of the minimal structural complexity of a word.

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2.3 Testing Measures of Corpus Complexity

Greenberg (1960) suggests that if a polysynthetic language is defined as one with an index of synthesis which is at least 3.0, “the results would conform to the usual nonquantitative judgments”. (Greenberg gives figures for eight languages, where “Eskimo”, i.e. West Greenlandic, as the only representative of polysynthetic languages, is highest with 3.72 and “Annamite”, i.e. (p. 23) Vietnamese, is lowest with 1.06. English has 1.68 and Sanskrit, as an example of a flectional language, 2.59.)

The claim that polysynthetic languages can be identified with an index of synthesis which is at least 3.0 rests on rather flimsy data, the only material from those languages being a 100-word passage from each text in one single language. No shadow should fall on Greenberg himself, who stressed that his investigation was to be “evaluated as purely a preliminary attempt”. But his hope for follow-up studies has not really been fulfilled, and Greenberg might be surprised to find that half a century after his paper, the most read encyclopedia in the world would claim, as an established fact that “[w]hereas isolating languages have a low morpheme-to-word ratio, polysynthetic languages have a very high ratio”, in spite of the lack of an empirical investigation where the index is applied to a larger set of languages, in particular assumed polysynthetic ones. The view of polysynthetic languages as generally having a high index of synthesis is seldom questioned. A skeptical voice is Mattissen (2003: 279), who argues that “the overall complexity of the verb form (measured by morpheme count …) is not a valid distinctive feature” that could distinguish polysynthetic languages from others. Mattissen’s counter-claim that most cited examples of polysynthetic verb forms in the literature contain no more than 2–4 morphemes is only impressionistic, however.

Without firsthand knowledge of the languages in question, calculations of morpheme-to-word ratios have to be based on published texts with interlinear glossings on the morpheme level. I have looked at such texts from four languages that are normally regarded as polysynthetic in the literature: West Greenlandic, Mohawk, Guerrero Nahuatl, and Coatlán Mixe. For West Greenlandic, the 153-word text in Sadock (2003: 69–74) (originally from Fortescue (1990b)) had an M/W index of 3.17, which is a bit lower than Greenberg’s “Eskimo” figure, but still above the 3.0 limit. A Mohawk text of 157 orthographic words (Hopkins 1988) had an index of 3.04, which would put it just above the line—but that requires including also 17 cases of zero morphs, without which Mohawk actually barely fails to meet Greenberg’s criterion. So far, it would seem that the situation could be saved by slightly lowering the threshold, but this looks rather difficult when looking at the figures from the other languages. A 477-word narrative text in Guerrero Nahuatl (Mason n.d.) was found to have a morpheme-to-word ratio which was as low as 2.0, which would give it a lower index of synthesis than Old English (“Anglo-Saxon”) in Greenberg’s analysis. This could of course mean that Guerrero Nahuatl is not really polysynthetic. But a text of 452 words in Coatlán Mixe (Hoogshagen n.d.), which belongs to the Mixe-Zoque family and is said to be “highly polysynthetic”, fares even

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worse, with a morpheme-to-word ratio of 1.66, which is at the level of English in Greenberg's investigation. A further polysynthetic language that seems not to meet Greenberg's criterion is Adyghe, according to the "preliminary count" of Lander and Testelets (this volume).

These results cast serious doubts on the possibility that the index of synthesis could be used in order to pick out the languages traditionally seen as polysynthetic. One thing that is immediately obvious in looking at the texts is that they all contain a high percentage of monomorphemic words, something that is bound to lower the index very significantly. In fact, although general characterizations of polysynthetic languages such as the ones quoted in the beginning of this chapter tend to refer to complex words in general, it is mainly complexity of verbal morphology that tends to be relevant for polysynthesis. One might thus propose to restrict the index of synthesis to verbs (cf. Mattissen's statement that the overall complexity of the verb form is not a valid distinctive feature of polysynthetic languages). This would undoubtedly give higher figures for the languages looked at here, but in order to (p. 24) determine whether such an index could distinguish polysynthetic languages from all others, a much larger investigation is needed, and the outcome is far from certain.

In the absence of such a larger survey, it is of some interest to look at some other possible measures of corpus complexity, which do not presuppose a morpheme-level analysis of texts. The number of distinct word forms (types) in a corpus is such a measure, which can be assumed to reflect to a larger or smaller extent the size of paradigms in the language, although other factors such as the size of the lexicon will also be important. It has the advantage of being easily computable for digital texts. A comparison between two languages should use texts which are equivalent with respect to length and content; in practice this means using a parallel corpus. I counted the number of word forms (NWF) in a corpus of New Testament translations in approximately one thousand different languages. The comparisons have to be restricted to versions using scripts with clear word divisions (which excludes many South East Asian languages). The range of variation is very large—from 1.4k (Tok Pisin) to 41k (Southern Nambikuara) (only rounded values will be given here). Not unexpectedly, the languages with the smallest number of word forms are isolating languages, including some creoles. The New Testament corpus shares only four languages with the ones that Greenberg looked at (West Greenlandic, Swahili, English, and Vietnamese), but the NWF parameter ranks them in the same order as Greenberg's index of synthesis. It is notable that the four Eskaleut translations in the sample occupy four of the six top positions in the NWF ranking list, with an average number of 35k distinct word forms. But like the index of synthesis, the NWF parameter also fails to single out polysynthetic languages as a group. If we look at the languages discussed above, Guerrero Nahuatl has only 14k distinct word forms and Coatlán Mixe 20k ones. There is no NT translation available for Mohawk; Cherokee, the only Iroquoian language in the sample has 26k word forms. This means that they all have lower NWF

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than, say, Niger-Congo languages such as Xhosa and Swati (both 28k), and many Quechuan varieties, none of which is usually considered polysynthetic.

Another possible parameter is the total number of words in the text—if polysynthetic languages pack more information into each word, they should also have lower word counts. This measure, the values of which in the NT sample range between 100 and 600 kwords, has a fair negative correlation with the previous one (-0.58), and the results are similar. The Eskaleut languages stand out (three of the four languages with the lowest numbers are Eskaleut), but other polysynthetic language are more scattered. Analogous results are obtained when combining the two parameters to the type-token ratio, and when calculating the average word length for the texts in the sample.

As we have mentioned, one could take the size of a verbal template as an indicator of morphological complexity. However, although some of the verb templates for polysynthetic languages in the literature contain an impressive number of slots, which, provided that all of them can be filled, suggests a high maximal structural complexity for verbs, Fortescue (1994: 2602) notes that the West Greenlandic verb has only two obligatory slots—the initial stem and the final person/mood/number inflection, while Navajo according to Young and Morgan (1987: 37–8) has three: classifier, subject pronoun, and modal-aspectual conjugation. This means that, with respect to minimal structural complexity, West Greenlandic verb morphology is not distinguishable from that of, say, Latin.

(p. 25) What these exercises in quantitative typology suggest is that it may not be so easy to find a simple measure of complexity, in particular what I have here called corpus complexity, that adequately delineates polysynthetic languages as a type. It also underlines the danger of generalizing from a single language or language family such as the Eskaleut languages, whose values on a number of parameters appear to be off the average for languages usually considered as polysynthetic. In this connection, it may be the place to point out a problem which is maybe rather of a pedagogical nature. It seems that authors often go out of their way to find examples of maximally complex words from polysynthetic languages, and this may well give readers a somewhat exaggerated picture of these languages. One thing that may strengthen this effect is the emphasis on the existence of words that can be used as full sentences, in spite of the fact that one-word sentences—or whatever corresponds to them in spoken language—do not have a high frequency in discourse. (Actually, one-word sentences, as such, are possible in the majority of the languages of the world, excluding only those where some syntactic slot such as the subject is obligatorily filled. Rather, what distinguishes polysynthetic languages is the possibility of expressing in a one-word sentence what would require a sentence with some syntactic complexity in a language like English.)

2.4 Non-Linearity

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The discussion of grammatical complexity in Dahl (2004) focuses on what was called (following Curry (1961)) 'phenogrammatical complexity' or the complexity of the mapping between content and expression—more specifically the extent to which the grammar deviates from a system of "unrestricted concatenation." Such deviations largely, but not exclusively, take the form of "non-linearity", meaning that elements of an expression are in one way or other dependent on each other or on external features. Non-linearity would include partial or total fusion of morphemes, cumulative or portmanteau expression, suppletion, dependence on lexical classes, and also prosodic (suprasegmental) features of expression and element order that are not predictable from hierarchical structure. To a large extent, this kind of complexity coincides with what others have called "degrees of opacity (or lack of transparency)" (Hengeveld 2011), defined as the extent to which a language adheres or does not adhere to the ideal of a one-to-one relationship between meaning and form. There are some non-trivial differences, though. While Hengeveld's approach assumes that any expression element that has some semantic or pragmatic impact is an element of the meaning, Dahl's approach takes into consideration the possibility that some meaningful elements are there because they are required by the grammar, but are redundant from the point of view of the intended message; such "verbose" elements contribute to complexity, at least as far that they are grammatically obligatory. This is typically the case of inflectional morphemes; the operational criterion is their 'cross-linguistic dispensability.' Another point is that there are deviations from the one-to-one meaning—form relationship that do not increase the complexity of a grammar in terms of increasing its length; thus, multifunctionality or polysemy of elements may make the decoding process more complicated for the addressee but does not in general make the grammar longer—on the contrary, it may increase the compressibility of the grammar by decreasing the number of distinct expressional elements.

(p. 26) In Dahl (2004), the growth of (pheno)grammatical complexity was associated with the development of "mature phenomena", that is, linguistic phenomena that presuppose a non-trivial prehistory. In other words, a mature phenomenon is one which cannot develop in a language overnight, without passing through specific intermediate stages. Thus, the later stages of grammaticalization processes would represent mature phenomena. It was suggested that grammaticalization involves both redundancy-increasing processes, leading to more "verbose" constructions, and redundancy-decreasing processes, which involve reduction of form and in many cases, increase of non-linearity. Furthermore, it was noted that there appears to be a correlation between the sociohistorical and/or "ecological" situation of the language in that mature phenomena tend to be more frequent in languages that have been spoken in small, low-contact communities over long periods of time, while such phenomena tend to get eliminated in high-contact situations, in particular ones with high incidences of second-language speakers who have acquired the language as adults (see Trudgill, this volume).

Can the notion of maturation be applied to polysynthesis? It may be claimed (Dahl 2004: 114), that morphology in the form of complex word structure is in general a mature phenomenon, in line with the assumption often made in grammaticalization studies that bound grammatical morphemes derive diachronically from free lexical sources. It is

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plausible that the bound elements that make up complex words in polysynthetic languages have similar origins; it may be noted, however, that these elements do not always “grammaticalize” in the sense of losing their lexical character. Still, it is possible to see similarities with the kind of maturation we can observe in grammaticalization.

Fortescue (2008) suggests that it is possible to distinguish “newer” from “older” polysynthetic structures, with layers of different age sometimes coexisting in the same language. Reformulating his conditions for newer and older polysynthesis in terms of language change, the maturation of polysynthetic systems would involve:

- loss of transparency of lexical sources of derivational affixes
- loss of stress on incorporated items
- loss of adhesion to the morpheme-ordering generalizations (elements that are more relevant to lexical meaning are closer to the stem) of Bybee (1985)
- loss of productivity of incorporation or morphological verb serialization
- rise of successive layering of affixes, with fossilization

Table 2.1 From pre-proto Eskimo to Late Inuit

	‘he didn’t go in again’	**‘they wanted to catch a walrus’**
1. Pre-Proto-Eskimo	iter-nerkig-ner-nil-tur	ayver-neg-yugema-tut
2. Proto-Eskimo	ite-nqi-nrit-tuq	ayver-neg-yugema-ðut
3a. Proto-Yupik	Itenqigtenrituq	ayveŋyuumaut
3b. Proto-Inuit	itenqinritcuq	aiwagumažut
4. Late Eastern Inuit	isiqqiŋŋitsuq	aaffakkumasut

(p. 27) More or less all of these changes have parallels in ordinary grammaticalization, but on the whole, they do not seem to increase non-linearity in any dramatic way. However, in an earlier paper, Fortescue (1992a) describes how the development of polysynthesis in Eskaleut languages has gone hand in hand with increasing morphophonemic complexity, reaching “especially in Alaskan Yupik—a daunting degree of complexity.” He gives ten examples of four stages of development of a number of forms to illustrate this (the earlier stages are obviously reconstructed), two of which are reproduced in Table 2.1. From stage 3 on, Fortescue omits morpheme-dividing hyphens, “as it becomes increasingly arbitrary where one puts them.” The reconstructed Pre-Proto-Eskimo versions are as follows:

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iter-nerkig-ner-nil-tur
(1) go in-again-NOMZR-be without-3SG.IND
'He didn't go in again'

ayver-neg-yugema-tut
(2) walrus-get-want_to-3PL.IND
'they wanted to catch a walrus'

This, then, is a straightforward case of increasing non-linearity, in the form of integration between adjacent morphemes.

The morphemes that make up words in polysynthetic languages form a continuum from lexical to grammatical ones. At one end, we find the productive incorporation of items that are also used as free lexical morphemes in the language; at the other, morphemes with a clear inflectional character. In the middle, there is a plethora of items that may or may not have non-bound counterparts in the same or other languages.

It may be noted that two of the phenomena that are considered most typical of polysynthetic languages are at each end of the scale: noun incorporation and indexing of subjects and objects on verbs, often referred to as "polypersonalism" even when the number of such indices is not greater than two. Inflectional morphology is a part of grammar where non-linear phenomena of different kinds are very common in languages—although there is great variation here, which is reflected in the traditional distinction between agglutinative and fusional languages which Greenberg (1960) tried to operationalize as the "index of agglutination", and which has later been inverted and referred to as the "index of fusion" (Comrie 1989: 46). Already Sapir (1921: 123) had claimed that polysynthetic languages can be both agglutinative and fusional. Lander and Testelets (this volume) characterize Adyghe as an agglutinative language with polysynthesis. There seems to be no evidence that polysynthetic languages exhibit more or less fusion in the inflectional part of their morphology than other languages. What one may wonder, however, is to what extent non-linearity is found with incorporation and related processes. It is reasonable to expect that highly productive incorporation processes will be less prone to show radical non-linearity, both because some non-linear phenomena are hard to combine with high productivity, and because such systems are likely to represent younger systems where non-linearity has not yet had time to develop. As systems grow older and become less productive, non-linear phenomena will show up, as illustrated by the Eskimo example given previously. However, (p. 28) this may not always lead to greater complexity in the end. If a grammatical morpheme fuses with a stem, or if two grammatical morphemes fuse, they may still retain their identities on a more abstract level, as when *women* is still considered the plural of *woman* although the plural morpheme is no longer segmentable. But although the noun *woman* is historically derived from a compound *wīf-man* it is synchronically a one-morpheme word.

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2.5 Incorporation vs. Syntactic Constructions

Another related issue is the relationship between the complexity of incorporating constructions and the corresponding syntactic constructions (discussed in Dahl (2009)). In a syntactic construction with a transitive verb and a direct object, we may find inflectional head marking (indexing of the object on the verb) and/or dependent marking (case marking on the object). We may also find free or bound articles and article-like items on the direct object. By contrast, incorporated objects in most cases (for some counterexamples, see Mattissen 2003: 178–80) come without such trappings—rather, the incorporated noun is simply joined to the verb stem, as illustrated in the following example from Southern Ute (Givón 1995: 189):

(3)

(a) kwana-ci ʻuway paqa-pųga
eagle-AN.OBJ DEF.OBJ kill-REM
ʻHe killed the eagle'

(b) kwana-paqa-pųga
eagle-kill-REM
ʻHe did some eagle-killing' or ʻHe killed eagles'

What this means is that the complexity of incorporating constructions is in some important respects lesser than that of the corresponding syntactic constructions—both with regard to system complexity (less information is needed to describe it) and structural complexity (it contains fewer elements on the surface). Furthermore, the absence of marking of the relationship between the incorporated noun and the verb gives examples like (3b) a somewhat paradoxical similarity to what is found at the other end of the analytic–synthetic dimension. In principle, there could be ambiguities in incorporating constructions parallel to that of English *hand-washing,* which can mean both ʻwashing by hand' and ʻwashing of one's hands', but this seems to be rare with canonical noun incorporation. However, as discussed in Dahl (2009), those types of noun phrases that cross-linguistically have minimal syntactic marking—inanimate, indefinite, non-specific ones—are also those that are most likely to undergo incorporation, and conversely, the ones that tend to be marked—high-referential animate NPs—tend to resist incorporation. It could be argued that the propensity to be incorporated reflects an inherent degree of tightness in a construction, which may or may not lead to full integration as a word.

(p. 29) abbreviations

AN

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animate
M/W
morpheme-to-word
NOM
nominative
NOMZR
nominalizer
NP
noun phrase
NWF
number of word forms
NT
New Testament
OBJ
object
REM
remote

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Argument Marking in the Polysynthetic Verb and Its Implications

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Abstract and Keywords

It is generally agreed that the essence of polysynthesis goes beyond sheer numbers of morphemes per word, but which other properties might be criterial is unclear. Most frequently cited is the marking of core arguments within the verb, such that the key elements of the clause, predicate, and arguments, are contained within that one word. Also often cited are noun incorporation, applicatives, rich inventories of adverbial affixes, and pragmatically motivated word order. But argument marking on the verb is not categorical: pronominal affix paradigms show a range of differential marking patterns dependent on various semantic and grammatical features, none reliably predictive of other characteristics typically associated with polysynthesis. Yet these characteristics tend to cluster, indicating that they are not reflections of a single, underlying governing principle, but rather constitute structural complexes that emerge from constellations of cognitive and social factors favoring the development and maintenance of complex morphologies.

Keywords: argument marking, noun incorporation, applicatives, word order, affix

GRAMMARS often open with statements like ‘L is a polysynthetic language …’, but what it means to be polysynthetic is far from straightforward. The etymology of the term would suggest that the criterial feature is the combination of many morphemes. But if the essence of polysynthesis is many morphemes per word, German should count as polysynthetic, with such words as *Unbedenklichkeitsbescheinigung* ‘clearance (certificate)’. This word does have many parts: *un-be-denk-lich-keit-s-be-schein-ig-ung* NEGATIVE-around-think-ADJECTIVALIZER-NOMINALIZER-LINKER-around-shine-ADJECTIVALIZER-NOMINALIZER. But German does not normally spring to mind as a prototypical polysynthetic language.

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The characteristic most often cited as central to the type is what might be called *holophrasis* narrowly defined: the expression of the essential elements of the clause, both predicate and arguments, within the verb. Most other characteristics often associated with the type involve further elaboration of verbal morphology, particularly noun incorporation, applicatives, and adverbial affixes, often with 'heavy' content more typical of roots. The specification of grammatical relations within the verb could have implications beyond morphology in syntax, where constituent order and case serve this function in other languages. Indeed, pragmatically based word order is sometimes cited as a characteristic of polysynthetic languages.

In what follows, it is first shown that argument marking on the verb is not categorical: pronominal affix paradigms show a range of differential marking patterns, dependent on various semantic and grammatical features. Next it is demonstrated that none of these features is perfectly predictive of the other characteristics, nor do the various marking patterns form an implicational hierarchy that might be predictive. Then it is noted that each characteristic can develop gradually over thousands of years, with intermediate stages showing long-term stability, but they do not necessarily develop in concert. Nevertheless, they do tend to cluster. Finally, various factors are explored that might contribute to the recurring clusters that occur.

(p. 31) 3.1 Holophrasis: a Full Clause within the Word

The term *holophrasis* was originally coined by Francis Lieber in 1853 to refer to the combination of many ideas into a single word. Here we use the term in a narrower sense: the specification within the verb of the essential elements of a clause: the predicate and core arguments. This is a kind of head marking: the relations between the predicate and arguments are marked on the head of the clause, the verb.

Such a system can be seen in Koryak, a Chukotko-Kamchatkan language of the Russian Far East described by M. Kurebito (this volume). Koryak shows pronominal reference to all core arguments in three persons in the verb. (Schwas break up consonant clusters at morpheme boundaries.)

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(1) Koryak: M. Kurebito this volume

a. K-ajaʕ-ə-ŋvo-**ŋ** ɣətə-ə-k.
IPFV-fish-ə-HAB-IPFV-**3SG** lake-ə-LOC
'S/**he** always fishes in the lake.'

b. T-ə-ja-pəŋlo-ŋ-ə-**n**.
1SG-ə-POTENTIAL-ask-POTENTIAL-ə-**3SG**
'I will ask **him/her**.'

c. T'-ə-jici-new omlecʕ-o
1SG-ə-gather-**3PL** woodchip-ABS.PL
'I gathered (**them**) the woodchips.'

In Koryak, as in the other languages discussed here, the pronominal affixes appear whether or not there are also coreferential lexical nominals in the clause.

The representation of arguments in the verb is far from an all-or-nothing feature, however. Most pronominal affix paradigms contain markers for first and second persons, but there is wide variation in reference to third persons.

3.1.1 Definiteness and specificity

In a number of languages, the identifiability and/or specificity of referents is significant. In Yimas, a language of Papua New Guinea described by Foley (1991, this volume), core arguments are generally identified by pronominal prefixes in the verb, though the system is complex. (Forms show a mix of ergative and accusative patterning, and their order follows a referential hierarchy.) There are pronominal prefixes for first, second, and third persons.

(2) Yimas pronominal affixes: Foley 1991: 196

a. **Ama**-wa-t.
1SG-go-PFV
'I went.'

b. **Pu**-kay-tay.
3PL-**1SG**-see
'I saw **them**.'

(p. 32) The shapes of prefixes referring to non-humans distinguish noun class: 'betelnut', for example, is in class V.

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(3) Yimas third person inanimates: Foley 1991: 230, 236

a. Na-ka-wayk-t
CLASS.V.SG-1SG-buy-PFV
'I bought it (betelnut).'

b. Patn na-kay-ŋa-ntuk-mpun.
betelnut.V.SG CLASS.V.SG-1PL-give-REM.PAST-3PL
'We gave (it) betelnut to them long ago.'

Foley notes, however, that the referents of the prefixes must be specific and definite. New referents may be introduced with just a lexical nominal and no pronominal affix in the verb. The following examples came from running texts in which the referents were just being introduced or re-introduced after a longish gap.

(4) Yimas new participants: Foley 1991: 233

a. Num-n-mat Kampramanan wapal-k.
village-OBL-PL hill.name climb-IRR
'The villagers climbed Kampramanan.'

b. M-n impa-tay-k paympan.
NEAR.DIST-III.SG 3PL.OBJ-see-IRR eagle.III.SG
'It, the eagle, saw those two.'

c. Patn pu-nan-ŋa-t.
betelnut.V.SG 3PL-2SG.DAT-give-PFV
'They gave you betelnut.'

Both the men and the betelnut below are non-specific, so not mentioned in the verb.

(5) Yimas non-specific: Foley (this volume)
Payum patn ka-ŋa-a-n.
man.CLASS.I.PL betelnut likely-1SG.ACC-give-PRES
'There's a good chance some men will give me betelnut.'

Identifiability and specificity also play a role in languages of the Eskimo-Aleut family. Core arguments are identified by pronominal suffixes on verbs: one for intransitives and two for transitives. Three persons are distinguished in indicative clauses. The examples

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cited here are from Central Alaskan Yup'ik, of southwestern Alaska, provided by speakers Elena Charles, Nick Charles, George Charles, and Elizabeth Ali.

(p. 33)

(6) Yup'ik pronominal suffixes

a. Qerrutua.
qerru-tu-**a**
be.cold-INTR.IND-**1SG**
'I'm cold.'

b. Paqciiqaqa.
paqete-ciiqe-ar-**ka**
go.check-FUT-TR.IND-**1SG>3SG**
'I'll go check **it**.'

There are, however, no indefinite or non-specific transitive absolutives. In (7) neither the indefinite parkas nor the non-specific game are mentioned in the pronominal suffix, and the verbs are intransitive.

(7) Yup'ik indefinite and non-specific entities

a.	Aren	atkunek	atelliniuq.
	aren	atku-nek	ate-llini-**u**-q
	oh.my	parka-ABL.PL	put.on-apparently-**INTR**.IND-3SG
	'Oh my, she put on many parkas.'		
b.	Ataucirqumek	avai	pitellrunritukut.
	atauciq-rqu-mek	avai	pi-te-llru-nrite-**u**-kut
	one-time-ABL	that.EXTD	thing-catch-PAST-NEG-**INTR**.IND-1PL
	'Just once that time we did not catch game.'		

3.1.2 Animacy

Degrees of animacy can affect argument marking in the verb as well. In the Iroquoian languages of eastern North America, pronominal prefixes distinguish first, second, and third persons; singular, dual, and plural numbers; inclusive and exclusive first persons; masculine, feminine-indefinite, and neuter-zoic genders, and grammatical agents and patients. The following examples are from Mohawk, spoken primarily in Quebec, Ontario,

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and New York State. Material cited here comes from speakers Watshenní:ne Sawyer, Konwatsi'tsaién:ni Phillips, Charlotte Kaherákwahs Bush, Kaia'titáhkhe' Jacobs, Sonny Edwards, and Mary McDonald.

(8)

Mohawk intransitives

K-ká:wehs.	'I am paddling.'	**Wák**-hteron's.	'I am afraid.'
S-ká:wehs.	'You are paddling.'	**Sá**:hteron's.	'You are afraid.'
Ie-ká:wehs.	'She is paddling.'	**Iakó**-hteron's.	'She is afraid.'
Ra-ká:wehs.	'He is paddling.'	**Ró**-hteron's.	'He is afraid.'
Ka-ká:wehs.	'It is paddling.'	**Ió**-hteron's.	'It is afraid.'
etc.			

(p. 34) Transitive pronominal prefixes are fused combinations of agent and patient markers. In a few cases, traces of the individual elements can still be discerned, but in others, not.

(9)

Mohawk transitives

Kón-hsere's.	'I am following **you**.'	**Ták**-hsere's.	'You are following **me**.'
Khé-hsere's.	'I am following **her**.'	**Iónk**-hsere's.	'She is following **me**.'
Rí-hsere's.	'I am following **him**.'	**Rák**-hsere's.	'He is following **me**.'
Shé-hsere's.	'You are following **her**.'	**Iesá**-hsere's.	'She is following **you**.'
Í-hts-hsere's.	'You are following **him**.'	**Iá**-hsere's.	'He is following **you**.'
Ronwá-hsere's.	'She is following **him**.'	**Shakó**-hsere's.	'He is following **her**.'
etc.			

Third person neuters, however, are mentioned only if there are no other core arguments. If a neuter agent acts on a neuter patient, only the agent is identified.

(10)

Mohawk neuters

Í-k-hsere's.	'I am following (it).'	**Wák**-hsere's.	'(It) is following **me**.'
Í-hs-hsere's.	'You are following (it).'	**Sá**-hsere's.	'(It) is following **you**.'
Ié-hsere's.	'She is following (it).'	**Iakó**-hsere's.	'(It) is following **her**.'
Rá-hsere's.	'He is following (it).'	**Ró**-hsere's	'(It) is following **him**.'
Ká-hsere's.	'It is following (it).'		
etc.			

Neuters (inanimates) and zoics (mainly animals and some women) are distinguished in just a few contexts. When a third person indefinite, dual, or plural acts on a third person zoic, for example, the prefix is *konwa-* 'one/they > it'.

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Mohawk zoic

Ne:	sé’s	iá:ken’	thi:,
ne:	se’s	iak-en-’	thiken
it.is	formerly	INDF.AGT-say-ST	that

‘Then, they say,

	tsikónhses	kéntson’	enkonwaié:na’
(11)	tsi-konhs-es	ka-itsi-on’	en-konwa-iena-’
	CHAR-face-long	N-fish-NS	FUT-INDF>ZOIC-catch-PFV

they would catch a sturgeon

tánon’	enkonwaniató:’ase’.	
tanon’	en-konwa-niat-o’ase-’	
and	FUT-INDF>ZOIC-throat-slit-PFV	

and slit its throat.’

(There is some added complexity in the use of this form not pertinent here.)

(p. 35) ### 3.1.3 Grammatical role

In many languages, third person objects are not mentioned. In Barbareño Chumash (Šmuwič), from the California south coast, subjects are identified by pronominal prefixes on the verb, and objects by suffixes. Three persons are distinguished, three numbers, and an indefinite ‘one/they/people’ category.

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(12)

Barbareño Chumash: Harrington ms 59.27, 59.88

K-apit.	'I am riding.'
K-**iš**-apit.	'We two are riding.'
K-**iy**-apit.	'We all are riding.'
P-apit.	'You are riding.'
P-**iš**-apit.	'You two are riding.'
P-**iy**-apit.	'You all are riding.'
S-apit.	'He/she/it is riding.'
Š-**iš**-apit.	'They two are riding.'
S-**iy**-apit.	'They all are riding.'
S-**am**-apit.	'One is/they are riding.'
S-iy-e-ʔitá:q-**in**.	'They don't hear **you**.'
S-iy-e-ʔitá:q-**it**.	'They don't hear **me**.'
S-iy-e-ʔitá:q-**wun**.	'They don't hear **them**.'

But third person singular objects are not marked.

(13)

Barbareño: Harrington 59.32, 59.593

a. S-iy-qili-axtatan.
3-PL-HAB-chew
'They used to chew (it).'

b. S-iy-qili-axtatan hi=l=woqo.
3-PL-HAB-chew DEP=ART=asphalt
'They used to chew asphalt.'

c. S-uniyiw-waš hi=s-am=siniw'e hi=kikš ho?=l-xus.
3-be.necessary-PAST DEP=3-INDEF-kill DEP=EMPH DISTAL=ART-bear
'They had to kill the bear itself.'

In many other languages, third person subjects are not marked. Van Driem describes such a system in Limbu, a Tibeto-Burman language of the Kiranti group spoken in eastern Nepal. First and second persons are identified by pronominal affixes on verbs. (The

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system is complex, with person and number indicated in different sections of the verb, and a mixture of accusative and ergative patterning.)

(p. 36)

(14)

Limbu: van Driem 1987: 113, 78, 79

a. Wa'dhi:n thɛnd-**u**-**ŋ**.
egg boil-**3OBJ**-**1SG.ERG**
'I'm boiling (**it**) an egg.'

b. **A**-ab-**u**-**m**-**si**-**m**.
1-shoot-**3OBJ**-**PL.ERG**-**NON.SG.OBJ**
'**We** (INCL.PL) shot **them**.'

c. Nəksa **a**-**gɛ**-dzo:g-ɛ-ba-i:?
picture **1**-**2**-do-PAST-IPFV-Q
'Have **you** taken **our** picture?'

Third person subjects of both intransitive and transitive clauses are not mentioned, though third person objects are.

(15)

Limbu: van Driem 1987: 82, 82, 81, 353

a. Pe:g-ɛ.
go-PAST
'(He) went.'

b. Ni:r-**u**.
read-**3OBJ**
'(He) read **it**.'

c. **Kɛ**-ghɛm.
2-hear
'(He)'ll hear **you**.'

d. Ku-sa-:n te:-yaŋ.
her-son-ABS come-PERF
'Her son came back.'

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A similar pattern with no third person subject marking can be seen in Nahuatl, described by Canger (this volume).

3.1.4 Person

In a great many languages, person is the primary determinant of representation in the verb. In Navajo, an Athabaskan language of the North American Southwest, first and second person subjects and objects are identified by pronominal prefixes, but basic third persons are usually not. Material cited here without other attribution comes from speakers Dolly Soulé, Jalon Begay, and Melvatha Chee.

(16) Navajo subject prefixes with intransitives

naa-**sh**-né	'I am playing.'
na-**ni**-né	'you are playing.'
naané	'(he or she) is playing.'

(p. 37)

(17) Navajo object prefixes with transitives

ha-**sh**-niłteeh	'You are carrying **me** up.'
ha-**ni**-shteeh	'I am carrying **you** up.'
haniłteeh	'You are carrying (him/her) up.'

There are additional prefix categories for unidentified subjects and objects and areas/conditions/surroundings, etc.

But basic third person objects are identified in combinations with third person subjects (themselves not marked in the verb).

(18) Navajo third person objects

ha-**bi**-ɬteeh	'(He/she/it) is carrying **him/her** (PROX) up.'
ha-**i**-łteeh	'(He/she) is carrying **him/her/it** (OBV) up.'

The form of the object prefix depends on the relative discourse status of the referents. If the object is more topical then the subject, the prefix *bi-*, usually termed 'proximate', is used.

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(19)

Navajo proximate object

T'óó	shį́į́	áłchíní	dabidoo'niid …
t'óó	shį́į́	ałchíní	da-**bi**-di-oo-d-niid
just	probably	children	DIST-**3PROX.OBJ**-orally-PFV-CL-tell.PFV

'The children (**PROXIMATE**) were probably asked, " … "'.

If the object is less topical than the subject, the prefix *yi-*, termed 'obviative' is used. The object in (20) was a hat, less topical then the subject, a group of boys.

(20)

Navajo obviative object

Dayiiłtsą́ǫ	éí	hándeidii'ą́.
da-yi-i-ł-tsą́=go	éí	h-á-nída-i-dii-'ą́
DIST-**3OBV.OBJ**-PFV-CL-see.PFV	that	4-for-TH-DIST-**3OBV.OBJ**-TH-handle.round-PFV

'(They) saw **it** (**OBVIATIVE**) and picked **it** (**OBVIATIVE**) up for him.'

Apache, described by de Reuse (this volume), shows similar patterns.

Finally, in a great many languages, basic third persons are not represented at all. This pattern can be seen in Ainu, a language isolate of Japan described by Bugaeva (2004, 2010, 2014, this volume). First and second person subjects and objects are identified by outer pronominal prefixes on the verb.

(21) Ainu first and second persons: Bugaeva

Eci-**en**-hotuyekar	yak	pirka	p
2PL-1SG.OBJ-call	if	be.good	but

'**You all** may have called out to **me**.'

But basic third persons are not.

(p. 38)

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(22)

Ainu basic third persons: Bugaeva

a. Cikap **ku**-nukar.
bird **1SG.SBJ**-see
'I saw a bird.'

b. Toan hekaci **en**-koyki.
that boy **1SG.OBJ**-bully
'That boy bullied **me**.'

c. Akor turesi … cise uhuy-ka mosir uhuy-ka.
have younger.sister house burn-CAUS land burn-CAUS
'My younger sister burned houses and burned the land.'

Aynu ronnu kor ek ruwe ne.
human kill.PL and come.SG INFER.EVID COP
'(She) came killing Ainu people.'

Like Barbareño Chumash, Ainu contains an indefinite third person category 'one, they, people', as do Caddo, described by Chafe (this volume), and Lakondê, described by Telles and Wetzels (this volume).

3.2 Typological Correlations

The marking of arguments in the verb is thus not an all-or-nothing feature. There may be reference to all third persons, all but indefinite or non-specific third persons, all but non-human or inanimate third persons, all but third person objects, all but third person subjects, third persons only in some contexts, or no third persons at all. The next step is to determine whether these degrees of distance from full head marking correlate in any way with other characteristics sometimes cited as typical of polysynthetic languages.

Mohawk, with pronominal affixes in three persons except for neuters in transitives, shows noun incorporation and applicatives, but no syntactically based word order or noun case, as predicted. Koryak, with pronominal affixes for all first, second, and third person arguments, shows extensive noun incorporation and 'heavy' adverbial affixes. As predicted, word order is not syntactically defined. But Koryak lacks applicatives. It also has an elaborate inventory of noun cases: absolutive, ergative, locative, dative, allative, prolative, ablative, narrative, designative, comitative, and associative.

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(23)

Koryak case: M. Kurebito, this volume

Nəki-**ta**	unmək	ŋənvəq	jetem-**u**	t-ə-nni-new.
midnight-**INS**	very	many	tent.cover-**ABS.PL**	1SG-ə- sew-3PL

'I sewed that lot of tent covers in the middle of the night.'

Marking of all third persons in the verb is thus not sufficient to ensure the presence of applicatives or absence of noun case.

(p. 39) Yimas has pronominal affixes for three persons but no indefinites or non-specifics. It still contains noun incorporation, applicatives, 'heavy' adverbial affixes, but no syntactically based word order or noun case. Yup'ik is nearly identical in its inventory of pronominal affixes, an applicative, and 'heavy' adverbial suffixes. But it lacks prototypical noun incorporation and has both syntactically based SOV constituent order and robust noun case.

Barbareño Chumash lacks a third person singular object affix. It still contains applicatives and extensive 'heavy' adverbial prefixes, and it lacks noun case. But it also lacks prototypical noun incorporation and shows a basic syntactic predicate–initial constituent order. Nahuatl and Limbu both lack third person subject affixes. But Nahuatl has noun incorporation, applicatives, pragmatically based word order, and no noun case, while Limbu lacks noun incorporation and applicatives, and has syntactically based SOV constituent order and noun case.

Finally, Ainu, Caddo, and Lakondê have no pronominal affixes for third persons. These languages still have noun incorporation and applicatives, and lack noun case, but they also have basic syntactically defined SOV order.

There are thus recurring clusters of these frequently cited characteristics, but no precise correlations between degree of head marking and any of the others.

3.3 Making Sense of the Arrays

Explanations of the variation emerge once it is recognized that these characteristics usually develop gradually over time, from a variety of sources.

3.3.1 Pronominal affix patterns

It is generally agreed that the most common diachronic sources of pronominal affixes are unstressed free pronouns. Unstressed pronouns are among the most frequent words in speech. They represent given or accessible referents, so the new information they contribute is low. Unlike pronouns representing shifted topics or contrastive focus, they

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are often near the verb rather than at the periphery of the nuclear clause. It is often noted that elements are more likely to fuse when together they comprise a conceptual chunk, a cognitive unit. An event or state with its major participants can constitute just such a unit. The high frequency of unstressed free pronouns, their low information, their position, their relevance to the verb, and their lack of stress make them likely targets for affixation to the verb.

Each of the head-marking patterns illustrated in Section 3.1 reflects some discourse pattern characteristic of connected speech cross-linguistically. In languages with only free pronouns, first and second persons are almost always identified by unstressed pronouns: their identity is clear from the speech context. Third persons, by contrast, may be brand new, accessible, given, or incidental. In speech, they may be represented variously by lexical nouns or larger phrases, demonstratives, unstressed pronouns, or nothing at all. It is no surprise that first and second person pronouns would tend to attach to verbs earlier than third. (Indefinite/generic/unspecified referents differ from basic third persons; in many languages they are represented by other small, unstressed forms, like French *on*, German *man*, and English *one*.)

(p. 40) Pronominal affix paradigms without third person subject markers also continue patterns characteristic of connected speech. As described by Chafe (1976, 1991, 1994: 82–92) and others, subjects are essentially grammaticalized topics, serving as a hitching post for new information. Speakers tend to take an established referent as their point of departure and maintain it through a stretch of discourse. Examination of spontaneous speech in many languages by Chafe and others has shown that subjects are most often human or at least animate, and given or accessible, already identifiable to the listener. In many languages third person subjects are not represented overtly when they are identifiable, a pattern sometimes referred to as zero anaphora. Such systems are a likely source of pronominal affix paradigms without third person subject markers, such as Limbu and Nahuatl.

Pronominal affix paradigms without neuter forms, like those in Mohawk, also continue recurring discourse patterns. Non-humans or inanimates are less likely to be selected as topics if there are other human or animate participants, so they are less frequently represented by unstressed free pronouns in speech. The low frequency of neuter pronouns reduces their propensity to grammaticalize as verbal affixes.

Each of these pronominal affix patterns can be very stable. Most can be reconstructed to proto-languages estimated to have been spoken thousands of years ago. In a few cases, we can see paradigms in the process of evolving. In some languages, subjects or ergatives are represented by pronominal clitics, and objects or absolutives by pronominal affixes, as in the Coosan languages of Oregon and the Tsimshianic languages of British Columbia, in North America. Chamoreau (this volume) describes an incipient shift in Purepecha, a language isolate of western Mexico, whereby pronominal clitics are becoming verbal affixes. First and second person pronouns are usually second-position enclitics, attaching to the first element of the clause, whatever its lexical category. Third

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persons are unmarked. But the pronominals have recently begun to appear after the syntactic predicate, frequently a verb, whatever its position in the clause. A text count showed that while 93.8 percent of the enclitics occurred in second position, 2.9 percent occurred after predicates not in second position.

Once pronouns are attached to verbs, the pronominal affix paradigms can of course continue to evolve, as speakers fill in gaps, add more distinctions, and rearrange their functions.

3.3.2 Noun incorporation

Perhaps the second most frequently cited characteristic associated with polysynthesis is noun incorporation. Incorporation, like pronominal affix marking, is not a monolithic phenomenon. It shows varying degrees of productivity, varying semantic patterns, and varying stages of development.

One of the most frequently cited examples of a language with productive noun incorporation is Mohawk. Noun incorporation is indeed pervasive in the Northern Iroquoian languages, but its productivity is a function of individual lexical noun and verb stems rather than the language as a whole. Some noun stems never incorporate, some rarely do, some often do, and some occur only incorporated. Some verb stems never incorporate, some rarely do, some often do, and some occur only with incorporated nouns. There are even pairs of noun stems with essentially the same meanings, of which one is never incorporated and the other always is. Similarly, there are pairs of essentially synonymous verb stems, of which (p. 41) one incorporates and the other does not. It is like other word formation: the productivity of derivation is not a property of a language, but of individual affixes. Speakers of Northern Iroquoian languages are generally aware of which noun–verb combinations exist in the language, which could but do not, and which could not. They notice when they hear a combination for the first time, though just as with derivation, the sharpness of this awareness varies with the productivity of the constituents.

As in other compounding, the relationship of the noun to the verb is not specified by the construction. The noun simply qualifies the verb. The Mohawk verb *-iio* ‘be good’, for example, is quite general semantically and highly productive. It never occurs without an incorporated noun, which narrows its meaning.

(24)

Mohawk incorporation

Ronwe’tí:io.	‘He is a good **person**.’	onkwe’t-	‘person’
Raksa’tí:io.	‘He is a good **child**.’	-ksa’t-	‘child’
Kanahskwí:io.	‘It is a good **animal**.’	-nahskw-	‘domestic animal’

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The derived stems denote different qualities. Being a good person involves such traits as honesty, generosity, kindness, etc.; being a good child involves good behavior; being a good animal might involve health, strength, perhaps breeding, docility, etc. Even such high-frequency forms can have idiomatic meanings. The stem *-ksa't-iio* 'child-be.good', for example, is also used to say that a woman is attractive.

Incorporated nouns in Northern Iroquoian languages often evoke semantic themes/goals/patients, but they can also evoke instruments, sources, locations, and more.

Mohawk incorporation: Mithun 2009: 576

Wahonatewerá:ienhte'.

(25) wa-hon-ate-**wer**-a-ien-ht-e'

FACT-M.PL.PAT-MID-**wind**-LK-fall-CAUS-PFV

'They were hit by the **wind**.'

(26)

Mohawk incorporation: Mithun 2009: 576

Tóhsa'	kí:ken	tesat**sha**'nén:tonhk	ne	ohwísta'.
tohsa'	kiken	te-hs-at-**hsi**-a'nenton-hkw	ne	o-hwist-a'
PROH	this	NEG-2SG.AGT-**hand**-fall-CAUS-INS.APPL	the.aforementioned	N-metal-NS

'Don't let the money just slip through your **fingers**.'

A given verb root can occur with incorporated nouns serving different semantic roles, like *-itahkhe-* 'be inside something moving'. In the first example below, it incorporates the noun *-ia't-* 'body', evoking passengers inside a car, and in the second, the noun *-hah-* 'road', the path of the motion.

(27)

Mohawk incorporation: Mithun 2009: 576

a.	Tóka'	ótia'ke	ákte'	nihatii**a't**itáhkhe'.
	toka'	otia'ke	akte'	ni-hati-**ia't**-itahkhe-'
	maybe	other	nearby	PRT-M.PL.AGT-**body**-be.in.moving-STATIVE

'Maybe some of them were riding in another car.'

b.	Ó:nen	ni'	ken'	tahonat**hah**itáhkhe'.
	onen	ohni'	ken'	ta-hon-at-**hah**-itahkhe-'
	now	also	here	CISLOC-M.PL.AGT-MID-**road**-be.in.moving-ST

'And now here they come down the road.'

(p. 42)

There is ample evidence that the compound stems are usually stored in memory as chunks rather than formed online during speech, even when they are phonologically and semantically regular. The passage below contains four clauses, each with an incorporated noun. Each pertains to fish. But the noun root *-itsi-* 'fish' was incorporated in only two of

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the verbs, and the root *-ia't-* in the other two. The speaker chose full verb stems as lexical items: *-itsi-atorat* 'fish-hunt' = 'to fish', *-itsi-a-ienta'* 'fish-get' = 'to catch a fish', *-ia't-a-tshenri* 'body-find' = 'to find an animate being', and *-ia't-i* 'body-be.in' = 'for an animate being to be inside something'.

(28)

Mohawk incorporation: Mithun 2010: 54

Tanon'	ní:	kon'tákie'	ionkwan**itsi**atorá:ton
tanon'	n=ì:'i	kon'takie'	ionk-w-an-**itsi**-atorat-on
and	the=1	all.day.long	1PAT-PL-MID-**fish**-hunt-ST

'And we were fishing all day long

kwah	iáh	ne	skaià:ta	teionkwen**tsi**aientà:'on.
kwah	iah	ne	s-ka-**ia't**-at	te-ionk-wa-**itsi**-a-ient-a'-on
even	NEG	the	REP-ZOIC-body-be.one	NEG-1PAT-PL-**fish**-LK-have-INCH-ST

and we didn't even get one fish.'

[…]	wahshe**ia't**atshén:ri'	karón:takon	konti**ià:**ti	kéntsion'?
	wa-hshe-**ia't**-a-tshenri-'	ka-ront-a-kon	konti-**ia't**-i	ka-itsi-on'?
	FACT-2>3PL-body-LK-find-PFV	N-log-LK-be.in	Z.PL.PAT-**body**-be.in	N-fish-NS

[How could it be that] you found the fish inside a log?'

The transitivity of verb stems formed by incorporation is a lexical matter, not an automatic syntactic effect: those formed from intransitive verb stems are generally intransitive, but some formed from transitive stems are intransitive, some transitive, and some either.

Noun incorporation is not homogenous across languages. Koryak exhibits robust incorporation. Nouns evoking semantic patients, themes, instruments, locations, sources, goals, and more can be incorporated into the verb.

(29)

Koryak noun incorporation: M. Kurebito this volume

a. T'-**omlecʕ**-ə-jece-k.
1SG-**woodchip**-ə-gather-1SG
'I woodchip-gathered' = 'I gathered woodchips.'

b. **Tijk**-ə-jelqiv-i.
sun-ə-set-3SG
'It sunset' = 'The sun set.'

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c. T'-ə-**nəmnəm**-jonat-ə-k.
1SG-ə-**village**-live-ə-1SG
'I village-lived' = 'I lived in a village.'

(p. 43)

Larger nominal phrases and adverbial elements may be incorporated.

(30) Koryak incorporation: M. Kurebito, this volume
T'-ə-**nk'e-mejŋ**-ə-**jetem**-ə-nni-k.
1SG-ə-**midnight-big-tent.cover**-ə-sew-1SG
'I sewed a lot of tent covers in the middle of the night.'

But in some languages incorporation never became very productive, and in others it was apparently once productive but subsequently faded. Foley describes incorporation in Yimas:

> Noun incorporation is rather rare in Yimas and seems a sporadic process which produces idiom-like structures.
>
> (Foley 1991: 319–21)
>
> One typical feature of polysynthetic languages that Yimas largely lacks is noun incorporation. It does have it, but mainly with body parts and essentially in fixed idiomatic expression.
>
> (Foley this volume)

Vajda describes Ket, a Yeniseian language of Siberia:

> Only two transitive bases allow incorporation of their patient-role noun object with any productivity: *bed* 'make' and *-a* 'eat, feed upon'. A few others, including *-doh* 'ingest (liquid or smoke)', *-ted* 'beat', and *-aq* 'give' have been attested with isolated incorporated objects.
>
> The list of unproductive object incorporating types in (12) could be extended (see Krejnovič 1968: 219 for verbs meaning 'spend the fall, winter, spring, summer', etc.), suggesting that object incorporation may have once been more prevalent.
>
> Two bases allow incorporation of the instrument-role noun: *-ted* 'hit endwise (using a long object)' and *-kit* 'smear (with a substance), rub (with an object)'.
>
> (Foley this volume)

A few other Ket verbs incorporate: 'become', 'possess', and 'fall' (of rain or snow).

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Incorporation can be quite stable over long periods of time. It can be reconstructed for Proto-Iroquoian, probably thousands of years ago. But in Cherokee, the only member of the Southern branch of the family, it is no longer productive. Still, some sets of verb stems contain initial elements suggestive of earlier incorporated nouns.

(31)

Cherokee verbs: Cook 1979: 186

tsi?vhska	'I am putting it down (a round object or default).'
tsinv:?vhska	'I am putting it down (a flexible object).'
tsine:?vhska	'I am putting it down (liquid).'

The initial *tsi-* is the first person singular agent pronominal prefix. The element *-ne:-* of the third verb is apparently cognate with the Proto-Northern Iroquoian noun root (p. 44) *-hnek- 'liquid', which occurs pervasively throughout the Northern languages incorporated into verbs. Cherokee still contains the array of pronominal prefixes for three persons, three numbers, and two grammatical roles of Proto-Iroquoian.

Incorporating constructions can also take on new lives in productive affix constructions. Productive noun incorporation occurs in Northern Athabaskan languages. Axelrod describes incorporation in Koyukon, of Alaska.

> Most productive Koyukon verb themes permit incorporation, although there are some themes which have no attested derivatives with incorporates.
>
> The derivational productivity of themes which admit incorporates varies, as does the range of incorporates admissible in any given theme. The productivity of themes with thematized incorporates varies as well.
>
> Both basic and derived inanimate noun stems, body-part terms, and areal nouns can incorporate. They may evoke themes, manners, instruments, locations, etc.
>
> (Axelrod 1990: 181–3)

A sample of the variety of semantic roles can be seen in the examples below.

(32)

Koyukon incorporation: Axelrod 1990: 191

Nee-**kkun'**-de-nee-tonh.

up.to.point-**wood**-G-ASPECT-long.object.move

'S/he stocked up on **wood**, built a woodpile.'

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Koyukon incorporation: Axelrod 1990: 181

	Neelan	enohʉghʉłgheʾoł
(33)	neelan	e-no-hʉghʉł-ghe-ʾol
	meat	PP-ITER-**raft**-ASPECT-handle.compact.object

'S/he's bringing meat home by **raft**.'

Koyukon incorporation: Axelrod 1990: 185

Nono**beł**yeeteneʾoyh.

(34)	no-no-**beł**-ye-ee-te-ne-ʾoyh.	
	down-ITER-**sleep**-3SG.OBJ-ASP-ASP-ASP-compact.object.move	

'S/he is nodding from **drowsiness**.'

Koyukon incorporation: Axelrod 1990: 187

Nee**to**neeyo.

(35)	nee-**to**-nee-yo	
	up.to.point-**water**-ASPECT-one.go	

'The **water** stopped rising.'

Other Athabaskan languages, such as Navajo, no longer have productive incorporation, but they do have a closed class of verb prefixes many of which can be seen to be descended from nouns.

(p. 45)

Navajo prefixes: Young, Morgan, and Midgette 1992: 707

	Shikeeʾ	bąąh	**tó**ʾdiisool.
(36)	shi-keeʾ	b-ąąh	**tó**-dii-sool
	1SG.POSS-foot	3-on	**water**-plump-swell

'A water blister formed on my foot. < tó 'water'

(37)

Navajo prefix: Young 2000: 45

	Bi**záá**ʾą.		
	bi-**za**-yí-ʾą		
	3-**mouth**-1SG.SBJ-handle.solid.round.object		

'I put it into his **mouth**.' < zéé' 'mouth'

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In some languages the verbal elements of incorporating constructions evolve into affixes. Affixes that develop from the constituents of compounds often have more concrete and specific meanings than other affixes, so are sometimes referred to as ‘lexical affixes’. Watanabe (this volume) describes such suffixes in Salishan languages.

It should be noted that some languages with pronominal affixes that have been said to lack incorporation, such as those of the Eskimo-Aleut family, actually contain substantial inventories of affixes likely descended from earlier incorporation constructions. Here words now consist of a single initial root, optionally followed by various derivational suffixes (postbases), then a final obligatory inflectional complex consisting of mood and pronominal suffixes. There is a rich inventory of verbalizing suffixes with often concrete meanings more typical of verb roots in other languages. Many attach to noun roots, such as the Yup’ik *-(ng)ar(ar)te-* ‘hit or get hit in the (body part)’, *-ci-* ‘buy __’, *-cugnite-* ‘smell or taste like __’, *-cur-* ‘hunt/seek/check __’, *-i-* ‘spend the (time)’, *-(ng)icag-* ‘need, lack __’, *-(ng)ir-* ‘deprive, remove __’, pass through (area)’, *-(ng)ir(ar)-* ‘have cold (body part)’, *(ng)i:rute-* ‘no longer have __’, *(ng)-ite-* ‘lack __’, *-(ll)ite-* ‘encounter __’, *-kegci-* ‘have good __’, *-ke-* ‘have __ as one’s’, *-kiur-* ‘prepare __’, among many more. The resulting derived verb stems look very similar to the kinds of stems formed by noun incorporation, and they serve very similar functions.

(38)
Yup’ik suffixes

a. **Ataake**nritcaaqaat.
ataa-ke-nrite-yaaqe-a-at
father-have.as.own-NEG-actually-TR.IND-3PL>3SG
‘They do not have him as their own father’ =‘He is actually not their natural father.’

b. **Neqkiur**luni.
neq-kiur-lu-**ni**
food-prepare-SUBORD-3SG
‘She is preparing food.’

It is likely that at least some of these formations are descended from earlier noun incorporation.

(p. 46) Overall, we do see some correlations between argument marking on the verb and noun incorporation, but they are far from precise, and when the two co-occur, their degrees of development do not necessarily coincide. While Mohawk and Koryak, with pronominal paradigms for arguments in three persons, show pervasive incorporation, Yimas, with a similar inventory of affixes, shows only limited incorporation. While Nahuatl, which marks all but third person subjects, shows extensive incorporation, Limbu, with the same pattern, shows none. Ainu, Caddo, and Lakondê, with no basic third person marking on the verb at all, show robust incorporation. And there are languages

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such as Zuni, of the American Southwest, which have no argument marking in the verb but still have noun incorporation (Miner 1986).

3.3.3 Applicatives

Languages with pronominal affixes often contain applicatives. Among the languages seen here, all but Limbu and Koryak contain them. Their presence does not correlate with degrees of argument marking, however. While Limbu does not mark third person subjects, Koryak marks all arguments. In fact applicatives occur in languages without any pronominal affixes at all, such as those of the Yokuts family of California.

(39) Yawelmani Yokuts applicative: Newman 1944: 86

Xip'wiy-sit-k'a	nan
make.rubbing.motion-**BEN.APPL**-IMPER	1SG.OBJ

'Make a rubbing motion **for** me.'

Like pronominal affix paradigms and noun incorporation, applicatives can develop from various sources and show different degrees of elaboration. A rich description of Ainu applicatives is in Bugaeva 2010. Ainu contains three applicatives: a benefactive *ko-*, an instrumental *e-*, and a locative *o-*. They increase the valency of the verb, adding an argument that might otherwise (or not) be expressed as an oblique. Bugaeva reports that the Ainu applicatives generally serve a discourse function, allowing significant participants to be coded as core arguments.

(40) Ainu locatives: Bugaeva 2010: 753

a. Location oblique

Casi	**upsor**	**ta**	ahun-an	ruwe	ne.
castle	**inside**	**to**	enter.SG-INDF.S	INFER	COP

'I went **into the castle**.'

b. Locative applicative

Casi	upsor	a-**o**-ahun	ruwe	ne.
castle	inside	INDF.A-**LOC.APPL**-enter.SG	INFER	COP

'I **entered** the castle.'

Bugaeva reconstructs the sources of the applicative prefixes in lexical verbs and nouns. The benefactive applicative *ko-* is traced to the verb *kor* 'have something, (p. 47) someone' (2010: 773–4), the instrumental applicative *e-* to a relational noun *he-* 'head/top' (2010: 762), and the locative applicative *o-* to a relational noun *ho* 'buttock/bottom' (2010: 784). Bugaeva cites Peterson's hypothesis that applicatives are unlikely to develop directly from nouns without an intermediate adpositional stage (Peterson 2007:

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141), but points out that just such direct developments have been described for several Australian languages: Murrinh-Patha (Nordlinger 2011b, this volume), Ngan'gityemerri (Reid 2000), and Marrithiyel (Green 1989).

The development of applicatives from adpositions via reanalysis is well known. Navajo has a rich set of postpositions, which contain pronominal prefixes identifying their objects.

(41)

Navajo postposition

T'óó	diné	bizaadjí	**bee**	hach'į'	hastsíí'.
t'óó	diné	bi-zaadjí	b-**ee**	ha-ch'į'	ha-s-tíí'
just	Navajo	4.POSS-lg	3-**with**	4-to	out-1SG.SBJ-speak.CONT.IPFV
just	Navajo	language	with it	to them	I spoke

'I just spoke to them **in Navajo**.'

(42)

Navajo postposition

Yaateeł	bi**káá'**	nda'iilwosh.
yaateeł	bi-**káá'**	ná-da-'-iid-l-wosh
sheepskin	3-**on**	repeatedly-DIST-something-1DU.SBJ.DETR-sleep.ITER
sheepskin	on it	we customarily sleep

'We slept **on sheepskins**.'

There are also applicative prefixes on verbs.

Navajo applicative

	Hooghan	bii'danhighanáadą́ą́'
(43)	hooghan	b-**ii'**-da-nihi-ghan=ą́ą=dą́ą́'
	hogan	3-**in**-DIST-1PL.OBJ-live=NMLZ=PAST

'When we used to **live in** hogans, …'

(44)

Navajo applicative

Asdzą́ą́	naakaii	léi'	yi**ł**ní'áázh.
asdzą́ą́	naa-kai-ii	léi'	y-**ił**-ná-'áázh
lady	about-PL.go.PFV=NMLZ	some	3-**with**-back-two.go.PFV
lady	the ones who go about	a	they two came back **with** her

'(He) **came back with** a Mexican lady.'

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Young, Morgan, and Midgette (1992: 922) list fifty-eight Navajo postpositions, some of which are compounds, and thirty-eight applicative prefixes. The two sets differ in several ways. While the postpositions directly specify the role of their objects (‘with Navajo’, ‘on sheepskins’), the applicatives derive verb stems (‘live in’, ‘come back with’). While the postpositions can appear with any lexical noun that makes sense, the applicatives are word-formation (p. 48) devices: speakers know what applicative-stem combinations exist and their precise meanings, which may be idiomatic.

Significantly, twenty-one of the Navajo postpositions and applicatives match in form. The shape of the postposition *-ee* ‘with’ seen in example 41 in ‘I just spoke to them with (in) Navajo’, for example, matches the applicative prefix *-ee-* in ‘eat with’ and ‘be afraid of’ in examples 45 and 46.

(45)

Navajo matching applicative

Bíla’	yee’ííyą́ą́’lą.
bí-la’	y-**ee**-’-íí-yą́ą́’=lą́
3POSS-hand	3-**with**-something-3OBJ.PFV-eat.PFV=MIRATIVE
his hand	he started to eat it **with** it

‘He just started **eating with** his finger.’

(46)

Navajo matching applicative

Éí	sh̨į́į	łéé**ch**ą́ą’í	b**éé**jílzido.
éi	sh̨į́į	łee-chą́ą’-i	bi-**ee**-ji-l-zid=go
that	probably	pet-excrement-NMLZ	3-**with**-4SBJ-DETR-fear.PRV=SUBORD
that	probably	dog	(it) was afraid of **them**

‘I guess it (the mountain lion) was **afraid of** the dogs.’

Here we see a development in progress, from postpositions to applicatives, complete with their pronominal prefixes. The mechanism is reanalysis: ‘[hand it-with] eat’ > ‘hand it-with-eat’.

Earlier lexical sources of most of the Navajo markers are no longer discernible, but some similarities in form are suggestive. The applicative *-ná-* ‘around encircling’, for example, matches the verb stem *-ná* ‘move with household, move camp, migrate, move en masse (people, migratory birds, ants)’. Young, Morgan, and Midgette trace this verb root to Pre-Proto-Athabaskan *nay, which developed into Proto-Athabaskan *na (ablauting to *ne) ‘move household or camp, migrate’.

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(47)

Navajo applicative prefix *-ná*: Young, Morgan, and Midgette 1992: 927

Łį́į́ʼ	hooghan	binásłóós.
łį́į́ʼ	hooghan	bi-**ná**-s-lóós
horse	hogan	3-**around**-1SG.SBJ-pull

'I'm leading the horse **around** the hogan.'

(48)

Navajo verb stem *-ná* 'move, migrate': Young, Morgan, and Midgette 1992: 402

P-chʼį́ʼ	ʼadahaaz**ná**
P-chʼį́ʼ	ʼa-da-haa-s-**ná**
P-toward	away-DIST-area-SERIATIVE-**move**.PFV

'They **moved** wave upon wave bound for P (a destination)

Applicatives can develop via another route. Mohawk contains benefactive, instrumental, and directional applicatives, with cognates throughout the family. There are several (p. 49) benefactive applicatives, with different shapes in different aspects. One is *-awi* with habituals and statives.

Mohawk benefactive applicative *-awi*

Khenatahren**á:wi**hs.

(49) khe-natahren-**awi**-hs

1SG>F.SG-go.visiting-**BEN.APPL**-HAB

'I visit her.'

This suffix has a likely source in the habitual and stative allomorph of the verb root *-awi* 'give': *khei-**á:wi**-hs* 'I give it to her' (1SG>F.SG-give-HABITUAL). Verbs meaning 'give' are a common source of benefactive applicatives cross-linguistically. Another Mohawk benefactive applicative that occurs with habituals and statives is *-ni*.

Mohawk benefactive applicative *-ni*

Tewakatoʼktá:**ni**ʼ

(50) te-wak-at-oʼkt-a-ni-ʼ

DV-1SG.PAT-MID-come.to.end-LK-**BEN.APPL**.ST

'It has **run out on** me' = 'I'm short of it.'

This form has a likely source in the verb root *-ni* 'lend': *shé:-**ni*** '**Lend** her (something)'.

An instrumental applicative has the form *-(h)st.* It appears most frequently in verbs used to designate objects according to their use.

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Mohawk instrumental applicative *-(h)st*

ionrahsi'tohrókstha'

(51) ie-ar-ahsi't-ohrok-**st**-ha'

INDEF.AGT-MID-foot-insert-**INS.APPL**-HAB

'one foot-inserts **with** (it)' = 'slippers'

The source of this applicative is the verb root *-(h)st* 'use', again a common source for instrumental applicatives cross-linguistically: *k-at-**st**-ha'* 'I **use** it' (1SG.AGT-MIDDLE-**use**-HABITUAL).

Another instrumental applicative has the shape *-hkw*.

Mohawk instrumental applicative *-hkw-*

iehwistaientá**hk**hwa'

(52) ie-hwist-a-ient-a-**khw**-ha'

INDF.AGT-metal-LK-lay-LK-**INS.APPL**-HAB

'one keeps one's money with it' = 'bank'

The source of this applicative is clear as well: it is the verb root *-hkw* 'pick up', as in *tekéhkhwa'* 'I pick it up' (te-ke-hkw-ha' DUPLICATIVE-1SG.AGT-**pick.up**-HABITUAL).

These applicatives are apparently descended from verb–verb compounds, though such compounding is no longer productive in Iroquoian. In noun–verb compounds (noun (p. 50) incorporation), if an incorporated noun ends in a consonant and the incorporating verb begins in a consonant, a linker *-a-* is inserted to break the consonant cluster. This linker can be seen in the word for 'bank' above, *-hwist-**a**-ient*. (Orthographic *i* represents a consonant here, a palatal glide.) The same linker can be seen between the stem and the instrumental applicative suffix *-hkw-* in the same word: *-hwist-a-ient-**a**-khw-*.

Yet another pathway of development is suggested by patterns in Yimas. Among the Yimas, applicatives is a benefactive apparently descended from a serial verb construction. The source of the suffix *-ŋa* is the verb *ŋa-* 'give'.

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(53)

Yimas benefactive applicative: Foley 1991: 309

a. Tpuk ku-n-awl-mpi-**ŋa**-r-akn.
sago.pancake CLASS.X.THEME-3SG.ERG-take-SEQ-**give**-PRF-3SG.DAT
'She took a sago pancake and **gave** it to him.'

b. Awt ŋa-kra-yawra-mpi-waraca-**ŋa**-n.
fire IMPERATIVE-1PL.DAT-pick.up-SEQ-return-**BEN.APPL**-IMPERATIVE
'Bring back fire **for** us.'

And still another pathway is discussed by Evans for Dalabon (this volume). Here nouns were incorporated into verbs along with their comitative case suffixes. At a certain point, the case suffix was reanalyzed as an applicative and began to appear in verbs without an incorporated noun.

(54)

Dalabon: Evans (this volume)

a. Ka-h-rla-**ye**-yurdm-inj.
3SG-REALIS-spear-**COM**-run-PAST.PFV
'He ran away **with spears** in his body.'

b. ['I used to kill animals, and get fish']

nga-h-**ye**-rdudjm-inj nah-ngan-kûn.
1SG.A>3SG.O-REALIS-**COM**-return-PAST.PFV mother-1SG.POSS-GEN
'and I'd **bring** them **back for** my mother.'

The applicatives found in languages with pronominal affixes thus arise from a variety of source constructions through several mechanisms. Though applicatives frequently co-occur with argument marking in the verb, neither their productivity nor their stage of development correlates with the degree of elaboration of pronominal affix paradigms.

3.3.4 Other heavy verb morphology and the sequencing of grammaticalization processes

It has been observed that polysynthetic languages can contain rich inventories of adverbial affixes, though this characteristic varies widely across languages. As noted earlier, (p. 51) compounding constructions do not specify the semantic relation between constituents, but certain semantic patterns may become established in particular languages or language areas. Languages of the Uto-Aztecan family of western North America and Mesoamerica, including Ute described by Givón, and Nahuatl described by

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Canger (both this volume), have both noun–verb compounding (noun incorporation) and verb–verb compounding. Givón provides examples from Ute, spoken in the Colorado Rockies and mountains of eastern Utah.

(55) Ute compounding functions: Givón 2011a: 58

a. **Núu**-ʾapagha-rʉ.
Ute-speak-HAB
'(S/he) is a **Ute**-speaker.' = 'S/he speaks Ute.'

b. **Wií**-tʉka-y-akh.
knife-eat-IMM-it
'(S/he) is **knife**-eating it' = 'S/he eats it with a knife.'

c. **Mama**-paghay-ʾwa-y.
woman-walk-IMM
'(He) **woman**-walks.' = 'He is walking like a woman.'

d. **Sakʉ**-paghayʾwa-y.
limp-walk-IMM
'(S/he) **limp**-walks.' = 'S/he is limping.'

e. **Pia**-ʾapagha-y.
sweet-talk-IMM
'(S/he) is **sweet**-talking.'

The extent of noun–verb and verb–verb compounding varies from language to language in the family, but in some languages, it has developed into a productive means/manner prefix construction. Examples below are from Northern Paiute, a language of the Numic branch spoken in eastern Oregon and beyond.

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(56)

Northern Paiute prefixes on *-kwonao* 'open': Thornes 2003: 355

kɨ-kwonao	'open' (with the mouth or teeth)
ma-kwonao	'open' ((like a cat through a pet door, by pushing)
pi-kwonao	'open' (with the hips or buttocks, by backing into)
tsa-kwonao	'open' (a jar, a door, a bottle)
tsi-kwonao	'open' (with a key, by inserting something)
tso-kwonao	'open' (with the head)
wɨ-kwonao	'open' (with a can opener, by wind)

Michael Nichols (1974) has reconstructed Proto-Numic (PN) and even Proto-Uto-Aztecan (UA) sources of such prefixes. Some are descended from nouns and others from verbs. Thornes cites twenty of them, some of which follow.

(p. 52)

(57)

Lexical sources: Nichols 1974 cited in Thornes 2003: 356.

kɨ-	'with the teeth, by biting, edge'	UA *kɨʔi	'bite'
ma-	'with the hand (usually open)'	UA *moʔo	'hand', PN *mai
pi-	'butt' buttocks/back/behind/base'	UA *pih	'back'
tsa-	'grasping, with fingers, toward body'	PN *tsaʔi	'grasp'
tso-	'head, shoulders'	UA *tsohŋi	'head'
wɨ-	'along or against the length of a long object, radial motion, natural forces'	?UA *wɨpaa	'whip'

A number of languages discussed in this volume contain adverbial affixes with relatively concrete meanings, among them Purepecha (Chamoreau), Dalabon (Evans), Innu (Drapeau), Nuuchahnulth (Nakayama), Sliammon (Watanabe), Koryak (Kurebito), Yimas (Foley), and Yup'ik (Woodbury), as well as the Chumashan languages seen earlier. Some of the affixes indicate means or manner of motion like Northern Paiute, some location or direction, some time, and more. For Purepecha, Chamoreau lists adverbial suffixes meaning 'early', 'quickly', 'suddenly', and 'violently', and locative suffixes with such meanings as 'patio', 'street', 'inside the house', and 'front area', 'arm', and 'body'. She notes that while many could be related to body parts, their actual meanings are more diffuse. The suffix *-narhi*, for example, may refer to the face, the eye, hair, the center of a dish, the sun, light, a leaf, a wall, texture, or dreaming, or an emotion of fright. For Dalabon, Evans lists adverbial prefixes with such meanings as 'properly', 'in a bunch', 'flock', 'in the wrong place', 'flat', 'in the sun', 'close up', 'hanging', 'lying on back', 'propped up, leaning against', 'underneath, concealed inside', 'by night', 'in the morning',

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'afraid', 'unbeknownst', 'sneaking up on, intending to attack', 'keeping an eye on', and 'in vain'.

Adverbial affixes, like other constructions seen here, can develop via several pathways. In some cases, words or phrases first undergo processes of grammaticalization involving semantic abstraction and generalization, decategorialization, and reduction in phonological substance, then subsequently fuse with a verb. Such processes can be seen in Navajo, where the independent adverb sources for some verb prefixes still survive. The first sentence below occurred early in a narrative, and the second later.

(58) Navajo adverbials

a. **Adáh** náánádá.
adáh nááná-dá.
down reverse-sit.PFV
'He came back **down**.'

b. Hastiin **ada**náátsaad ndęę' …
hastiin **ada**-náá-tsaad ni=dęę
man **down**-again-scoot.MOM.PFV that=from
'When the man came back **down** from there …'

In other cases, nouns or verbs first attach to verbs in compounds, then subsequently undergo semantic abstraction and generalization, then perhaps reduction in substance. An origin in compounding would explain the relatively concrete meanings and sometimes large inventories of adverbial affixes in some languages. When the markers became attached, they still had their root meanings. It would also account for the large inventories: elements of (p. 53) compounds could be drawn from the full lexicon of nouns and verbs. Again, however, the presence of extensive sets of adverbial suffixes does not correlate precisely with argument marking in the verb, or any of the other characteristics. Central Pomo, a language of the Pomoan family of Northern California, contains pervasive means/manner prefixes much like those in Northern Paiute, but there is no argument marking in the verb.

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3.3.5 Word order and case

If grammatical relations are fully specified in the verb, syntactically based constituent order and case could be redundant. Some languages do show correlations between argument marking in the verb and the absence of syntactically based constituent order and noun case, like Koryak, Yimas, Mohawk, and Nahuatl. The Eskimoan languages are much like those languages in argument marking, with probable descendants of noun incorporation, applicatives, and substantial inventories of 'heavy' adverbial suffixes. But unlike those languages, they have a basic syntactically based SOV constituent order and case suffixes with ergative, absolutive, locative, ablative, terminalis, vialis, and equalis forms. These characteristics have been stable over several thousand years. Differences between the two sets of languages begin to make sense once it is recognized that clause structure can develop via a variety of pathways (Mithun 2009b).

In Mohawk, word order is essentially pragmatically based: the most newsworthy information appears early, followed by established and peripheral information. There is no noun case. What would be a subject in English might appear early if it is introducing a significant new referent.

One speaker opened an account of an adventure from her childhood: 'I was a naughty child. One time, my cousins and I did something.' In the following sentence, what would be a subject in English appeared at the end of the clause. It did not convey new information: she had just mentioned her cousins. The added information was where they lived.

(59) Mohawk word order

Kén:	nekwá:	thatì:teron,
there	side	there.they.reside

'They lived over there,

rakenonhà:'a	**shakoien'okòn:'a.**
he.is.uncle.to.me	he.has.them.as.offspring.variously

my uncle's children.'

She continued with 'We were such naughty children.' Her next sentence introduced what would be an object in English, at the beginning of the clause. The paint was important new information.

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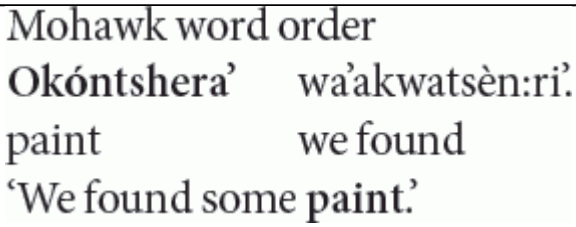
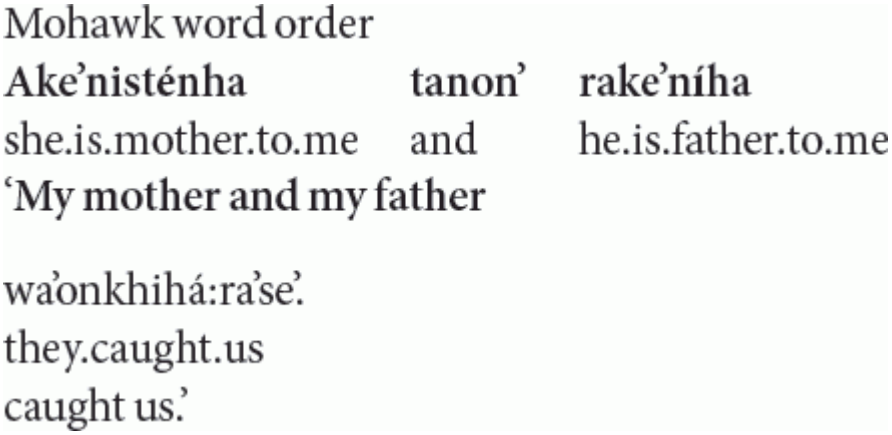
(60)



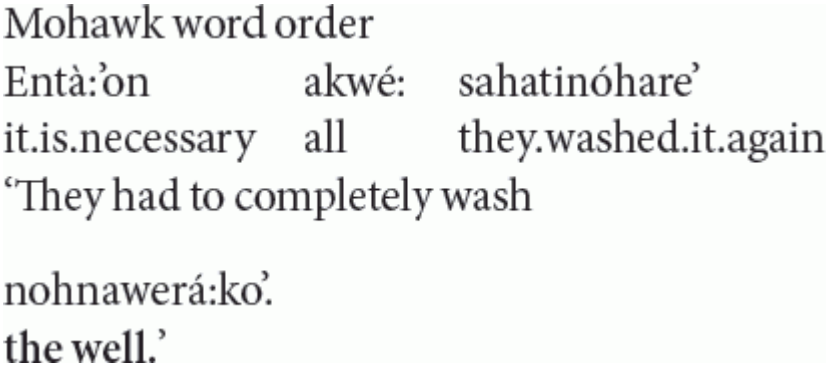
(p. 54) There was a well, and the children dipped up some water, emptied the bucket, poured in the paint, then lowered it back down. Her parents caught them and gave them a thrashing. Here the parents, accessible but introduced for the first time, appeared early in the clause.

(61)



When she next mentioned the well, now an established part of the scene, this speaker put it at the end of the clause, after the verb conveying new information.

(62)



We thus find counterparts of both English subjects and objects occurring both before and after the predicate. Similar ordering occurs with other constituents expressing locations, times, and other information. They may be introduced early to set a scene or convey significant ideas or referents, as just shown in 'Over there they lived my cousins', or occur late as incidental or established detail. In multi-clause complement constructions, however, the matrix clause regularly occurs before the dependent clause.

Because so much is expressed morphologically, clauses generally contain fewer constituents than their English counterparts.

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(63) Mohawk clauses

a. Né:ne akwaksa'táksen.
ne:ne akwa-ksa't-aks-en
it.is 1EXCL.PL.AGT-child-be.bad-ST
'We were such naughty children.'

b. Wa'akwahnekakétsko'
wa'-akwa-hnek-a-ketsko-'
FACT-1EXCL.PL.AGT-liquid-LK-raise-PFV
'We pulled up a bucket of water.'

c. Wa'akwahnekatáhko'.
wa'-akwa-hnek-a-ta-hkw-'
FACT-1EXCL.PL.AGT-liquid-LK-be.in-REVERSIVE-PFV
'We poured the paint (liquid) out.'

(p. 55) These structures can be reconstructed for Proto-Iroquoian, but the morphology suggests they might have emerged from an earlier basic SOV clause structure. Where components of the transitive pronominal prefixes can be discerned, the agent generally precedes the patient, and both precede the verb stem (as do incorporated nouns). It appears that earlier syntactically based word order has amalgamated within the verb. The modern pragmatically governed word order apparently developed out of earlier information structure, whereby shifted topics and focused constituents appeared before the nuclear clause, and antitopics, reiterating old information, appeared after the nuclear clause (now the verb). Since that time, new marked information structures have been added.

Modern Eskimo-Aleut sentence structure apparently developed via a different route. Yup'ik order is basically verb-final, though alternative orders occur in marked pragmatic situations.

(64)

O	V
Ataurluqa	kenkuralarqua.
ata-urluq-ka	kenke-urar-lar-ar-ka
father-poor.dear-1SG>3SG	love-continue-regularly-TR.IND-1SG>3SG
my dear father	I continue to keep loving him

'I continue to love my dear father.'

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(65)

S	V
Datiim-am	payugtellruanga.
Datii-m=am	payugte-llru-a-nga
Daddy-ERG=EMPH	bring.food-PAST-TR.IND-3SG>1SG
'Daddy brought me some.'	

(66)

LOC	V
Elitnaurvigmi	uitaunga.
elite-naur-vik-mi	uita-u-nga
learn-customarily-place-LOC	stay-INTR.IND-1SG
at school	I am
'I'm at school.'	

(67)

ABL	T		V
Nuamnek	watua	avai-i	ayallruunga.
nuna-m-nek	watua	ava=i	ayag-llru-u-nga
land-1SG-ABL	just.now	over.there-EMPH	leave-PAST-INTR.IND-1SG
from my home	just now	over there	I left
'I traveled from my home just a little while ago.'			

The Eskimo-Aleut languages show a recurring process of development (Mithun 2008b). Various dependent clause structures have been formed by nominalization. Several have been extended from marking syntactic dependency of clauses within the sentence, to pragmatic dependency of independent sentences within discourse. The modern basic indicative clause structures apparently developed by this route.

All Yup'ik verbs end in a mood suffix (indicative, interrogative, optative, etc.) followed by a pronominal suffix identifying the core arguments. The modern ergative case marker has (p. 56) the same form as the genitive suffix on possessors. The pronominal suffixes on transitive verbs have the same form as the suffixes on possessions, which mark both the possessor and the possessed.

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(68)

Yup'ik genitive and ergative case

a. Arna**m** ila**i**
arnaq-m ila-**i**
woman-GEN relative-3SG>3PL
'the woman's relatives'

b. Arna**m** nunura**i.**
arnaq-m nunur-a-**i**
woman-ERG scold-TRANSITIVE.INDICATIVE-3SG>3PL
'The woman scolded them.'

The form of the modern transitive indicative mood suffix matches that of the transitive nominalizer, with all of its phonological idiosyncrasies. The suffix is listed as *+'(g)a(r)-* by Jacobson (2012: 920). The initial + indicates that the suffix retains the final consonant of preceding basis. The apostrophe ' indicates that the suffix causes gemination of the final consonant of a base of the form (C)VCe-. The *(g)* indicates that the velar is present after a base ending in two vowels. The *(r)* indicates that the uvular is present after a base ending in te- (2012: 730–1).

(69)

Yup'ik nominalzer and indicative: *iaqir-* 'wash'

a. iqair-aq
wash-NMLZ
'washed thing, laundry'

b. iqair-a-nka
wash-NMLZ-1SG>3PL
'my washed things' = 'my laundry' = 'I washed them'

An origin in possessed nominalized clauses accounts for the matching ergative and genitive cases. It accounts for the presence of other case endings within the clause. (The absolutive is generally unmarked.) It also accounts for the basic SOV order. The clause was nominalized as a whole. Constituent order is rarely manipulated in subordinate clauses to mark special information structure.

Other factors can of course shape basic clause structure as well. Describing Tariana, Aikhenvald (this volume) notes that earlier word order was pragmatically determined, but contact has resulted in a newer basic SOV order, as well as case markers on nouns.

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3.4 Factors Contributing to Polysynthesis

The preceding sections have shown that none of the characteristics typically associated with polysynthetic languages, such as argument marking in the verb, noun incorporation, (p. 57) applicatives, or 'heavy' adverbial affixes, is categorical or perfectly correlated with any others. Nonetheless, we do find recurring clusters of them.

Dahl describes polysynthesis as a 'mature' phenomenon:

> In Dahl (2004), the growth of (pheno)grammatical complexity was associated with the development of "mature phenomena", that is, linguistic phenomena that presuppose a non-trivial prehistory. In other words, a mature phenomenon is one which cannot develop in a language overnight, without passing through specific intermediate stages. Thus, the later stages of grammaticalization processes would represent mature phenomena. (Dahl this volume)

Understanding the nature of polysynthesis might depend on an appreciation of the kinds of factors that can shape its development.

Components of highly frequent collocations that together constitute a conceptual unit are most likely to fuse. As noted in Section 3.1, unstressed pronouns often fuse with adjacent verbs over time. They are among the most frequent words in speech, they represent given or accessible information, they often occur adjacent to the verb, and, significantly, their combination with a verb forms a conceptual unit: an event or state with its participants. Rice (this volume) cites Biber et al. (1999: 1001), who found that the most frequent type of collocation in their English corpus was a personal pronoun + lexical verb phrase. Once verbs represent whole propositions, more distinctions become pertinent to them, paving the way for the affixation of additional morphemes.

The relevance factor can be seen in sometimes subtle differences associated with the locus of morphologization. Earlier it was seen that some Navajo adpositions are in the process of being reanalyzed as applicative prefixes on verbs. While the adpositions can be combined with any noun that makes sense, yielding predictable meaning, the applicatives are derivational, combining with verbs to form new lexical items. A particular applicative-verb combination may or may not exist, and if it does, its meaning may or may not be transparent. Some doublets coexist, with subtle differences.

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(70)

Navajo postposition and applicative *naa-*: Young Morgan, and Midgette 1992: 927

a. [Hooghan bi-**naa**=go] ahéénishwod.
hogan it-**around**=at about.area.I.ran
'I ran [**around the hogan**].'

b. Bi-**naa**-shnish.
it-**around**-I.move.quickly
'I'm **working on** it.'

Rice (this volume) opens her chapter by pointing to the major role of collocations in everyday speech: of frequent, highly conventionalized, utilitarian, and semi-idiomatic expressions. She cites Wray and Perkins (2000: 1), who define a formulaic utterance as "a sequence, continuous or discontinuous, of words or other meaning elements which is, or appears to be, prefabricated: that is, stored and retrieved whole from memory at the time of use, rather than being subject to generation or analysis by the language grammar." She also cites Altenberg (1998: 102), who report that over 80 percent of the words in an English corpus form parts of recurrent word combinations. The routinization or chunking of recurring sequences of tasks is a well-known cognitive mechanism, one behind the amalgamation of frequent collocations into single words (Bybee 2006).

(p. 58) We might wonder why all languages are not polysynthetic. Over the years, a number of scholars, among them Thurston (1988), Grace (1997), Wray and Perkins (2000), Wray and Grace (2007), Trudgill (most recently 2011 and this volume) and Rice have noted that polysynthetic languages tend to be spoken in certain kinds of speech communities. Trudgill (this volume) observes that "linguistic complexity is particularly associated with relatively small, isolated, stable communities with dense social-network structures and informational homogeneity … large amounts of communally shared information." Rice cites Wray and Grace (2005: 549), who hypothesize that in such communities, "much of what needs to be said can be said elliptically and formulaically, with huge reliance on shared knowledge, pragmatics, and common practice." It seems likely that in small societies of intimates, frequency effects would be heightened: speaker choices such as semantic distinctions to specify, turns of phrase, and collocations, would recur all the more often. Frequency would facilitate the memorization of large numbers of recurring words.

Trudgill (2011, this volume) brings up additional factors that can affect the development of polysynthesis. While highly complex morphological structures are acquired seemingly effortlessly by children learning their first language, they can present serious hurdles to untutored adult second-language learners. Most languages with elaborate morphological structures also contain more analytic counterparts, usually with slightly different pragmatic and stylistic functions. Given the choice, adult learners are likely to opt more often for the analytic structures. If they represent a small proportion of the community of speakers, they may have little effect on the structure of the language. If, however, they

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constitute a substantial proportion (Trudgill suggests perhaps over 50%), they could provide an inhibiting force on the development and maintenance of polysynthesis. One could imagine, for example, situations in which significant numbers of women move to a community as adults, perhaps because of practices of exogamy or warfare, and then serve as the primary models of the community language for their children. But contact can also have the opposite effect. In many small communities, most residents are multilingual from an early age, perhaps learning different languages natively from each parent. Competent bilinguals can seek to replicate distinctions from one of their languages in the other, potentially increasing morphological complexity over the long term.

The fact that polysynthetic languages do not constitute a crisp, monolithic type, with perfect correlations among properties, indicates that they are not reflections of a single, underlying, governing principle, but rather structural complexes that emerge from constellations of cognitive and social factors favoring the development and maintenance of complex morphologies. Certain circumstances must accelerate such developments, and others inhibit them. The number of factors in play at any moment, and the fact that little documentation exists of moment-by-moment social histories of the speakers going back millennia, will continue to present challenges to our understanding of the roles played by each and their interaction. Much remains to be learned about the factors that shape language types.

Marianne Mithun

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Polysynthesis and Head Marking

Johanna Nichols

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Abstract and Keywords

Polysynthetic languages are mostly head-marking. But the great majority of polysynthetic languages come from what I will call the Greater Pacific Rim (GPR) population, where the head-marking type is extremely common compared to the rest of the world. Is head marking a genuine distinctive property of polysynthetic languages, or a conspicuous accident of geography that is equally common in non-polysynthetic languages of the GPR? A typological survey shows that polysynthesis entails open head marking: either verbal slots and/or their fillers are not a closed set. Polysynthesis is conditioned by grammar (head marking), not geography. It is an inevitable development in a population of mostly head-marking languages, but the geographical distribution of head marking is the result of historical contingency.

Keywords: head marking, Pacific Rim, typology, historical contingency, geographical distribution

4.1 Introduction

POLYSYNTHETIC languages are mostly head marking. But the great majority of polysynthetic languages come from what I will call the Greater Pacific Rim (GPR) population, where the head-marking type is extremely common compared to the rest of the world. Is head marking a genuine distinctive property of polysynthetic languages, or a conspicuous accident of geography that is equally common in non-polysynthetic languages of the GPR? This chapter uses a typological survey to answer this question and assess the status of head marking among polysynthetic languages.

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The GPR population is the same as what is called Circum-Pacific in Bickel and Nichols 2006. Most of it belongs to the Pacific Rim macroarea as defined there and in Nichols et al. 2013: coastal and near-coastal areas all around the Pacific (clockwise: northern Australia; the north coast of New Guinea; Oceania; coastal eastern Asia; western coastal North America; Mexico and Central America; western coastal South America), all defined as extending from the coast itself to the far side of the major coastal range. In addition to the stricter Pacific Rim area, the GPR includes the rest of the Americas, New Guinea, and Australia. Though in geography, linguistic typology, traditional economy, and other respects these non-coastal areas differ from the coastal regions, they have the same ultimate colonization history as their coastal counterparts (settlement from Beringia and Southeast Asia respectively), so the entire GPR needs to be considered in studies, like this one, bearing on possible founder effects in the linguistic populations. Southeast Asia (defined as including both mainland and island Southeast Asia) is an area unto itself, and it is not clear whether it should be placed in the Pacific Rim population or the general Eurasian population. Here I follow Bickel and Nichols 2006 in excluding it from the Pacific Rim and GPR because of its cultural, traditional economic, and geographical connections to Eurasia.[1] The implications of (p. 60) this decision for the present study are minor, as only three polysynthetic languages are found in Southest Asia: Chintang (Sino-Tibetan: Kiranti), Mundari (Munda: North Munda), and Sora (Munda: South Munda).[2]

4.2 Survey: Morphological and Morphosyntactic Properties of Polysynthetic Languages

Here I survey 15 morphological and morphosyntactic variables in the 155 languages of the GPR and 121 others (total 276) for which most of the relevant variables are found in the Autotyp database (Bickel et al. 2017). Of these, 58 are polysynthetic, 48 in the GPR and 10 elsewhere. Frequencies of typological variables in the GPR generally differ, often significantly, from frequencies elsewhere (Bickel and Nichols 2006), and since nearly all polysynthetic languages come from this distinctive population, comparisons of polysynthetic to non-polysynthetic languages will be done here only within the GPR set. The non-GPR polysynthetic languages are the Southeast Asian ones (Chintang, Munda, and Sora), plus Ket (Yeniseian) from western Siberia and Kabardian (West Caucasian) from the Caucasus. Table 4.1 summarizes the results.

The following typological variables are significantly more frequent in the GPR than elsewhere and are available for enough polysynthetic languages to make possible a valid survey.

Inclusive/exclusive opposition in first person pronouns:

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The presence vs. absence of any kind of inclusive/exclusive opposition in either independent pronouns or agreement/indexing markers. Though it is typologically more revealing to track the different subtypes of inclusive/exclusive systems and the different places where they are marked, subdividing the variable in this way among the relatively small number of polysynthetic languages causes totals for any one type to be too low to reach statistical significance, even when there is a strong asymmetry. This observation applies to several of the other categories that follow and will not be repeated for them all.

Numeral classifiers:

Obligatory morpheme in all NPs containing a numeral. Requiring that they be obligatory and universal rules out considering English to have numeral classifiers because it has a few phrases like *bar of soap, head of cattle*. Numeral classifiers are ordinarily sets of shape-based and/or animacy-based morphemes, but in principle a single non-classifying dedicated marker of counted or quantified NPs would also qualify. Classifiers are considered obligatory even if they are sometimes omitted in very colloquial style.

Possessive classes:

Alienable/inalienable oppositions and the like. See Nichols and Bickel 2005a, 2011 for the definition and examples. **(p. 61)**

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Table 4.1 Polysynthetic vs. non-polysynthetic languages in the GPR

	Polysynthetic		**Non-polysynthetic**		***p* (Fisher's)**	
	Yes	**No**	***Yes***	***No***	**1-tailed**	**2-tailed**
GPR traits:						
Incl/excl	15 (41%)	22	54 (50%)	55		
Num. class.	7 (25%)	21	9 (12%)	69		
Poss. classes	13 (50%)	13	60 (69%)	27		
Mult. poss. cl.	3 (12%)	22	18 (21%)	69		
Gender	7 (23%)	24	20 (21%)	75		
HM clause	18 (90%)	2	23 (63%)	39	0.02	0.03[3]
Mult. agr.	34 (92%)	3	68 (64%)	38	0.0007	0.0013
HM NP	19 (79%)	5	41 (55%)	34	0.03	0.05
High synth.	5 (36%)	9	49 (4%)	2	0.004	0.004[4]
N incorp.	25 (93%)	2	15 (75%)	5		

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TAM fusion	27 (93%)	2	53 (86%)	9		
Lex/infl person	6 (55%)	3	5 (45%)	4	*	
n-m pronouns	3 (25%)	9	7 (39%)	11		
Geographically neutral traits:						
Noun plural	27 (82%)	6	49 (78%)	14		
Acc/Erg	13 (57%)	10	46 (70%)	20		

Only significant p values (≤ 0.05) are shown (Fisher's Exact Test). The one-tailed version tests the specific hypothesis that the 'Yes' value will be more common among polysynthetic languages; the two-tailed version just tests the hypothesis that there will be some difference.

(*) close to significant ($p > 0.05 < 0.08$).

(**) Survey in progress; sample still too small ($N = 22$).

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Multiple possessive classes:

More than just the two-way alienable/inalienable opposition. See Nichols and Bickel 2005a/2013a.

Noun genders:

Agreement classes lexically associated with nouns, following the definition of Corbett 1991 and excluding gender marked only on pronouns as in English.

Clause head marking:

Following Nichols and Bickel 2005b/2013b, marking of the monotransitive O or ditransitive T only on the verb.

NP head marking:

Following Nichols and Bickel 2005c/2013c, marking of possessive and/or other adnominal relations only on the head of the NP.

(p. 62) Multiple agreement:

Agreement of the verb with more than one argument. This variable is similar to clause head marking but broader, as it also includes double marking.

Inflectional synthesis of the verb:

Following Bickel and Nichols 2005a/2011a, the total number of inflectional categories marked on the finite verb. Degrees of synthesis are binned as high/medium/low here and only high vs. low are counted.

Noun incorporation:

Following Caballero et al. 2008 and most other works, incorporation of a noun (usually an object) into the inflected verb form.

Fusion of TAM morphemes:

Following Bickel and Nichols 2005b/2011b, concatenative vs. other (non-linear and isolating) connection of TAM morphemes to the finite verb.

Lexical vs. inflectional person:

Whether the category of person is mostly lexicalized or mostly inflectional. Based on a 45 questionnaire including such things as whether there is a separate independent pronoun root for each person category, person is fused or coexponential with lexical categories such as gender (lexical), there is argument indexing in person, person and number are

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factored out, independent pronouns have person affixes (inflectional), and others. Inflectional person is much like the *pure person* of Cysouw 2003.

n-m pronouns:

Following the definition of Nichols and Peterson 1996, 2005, in the person system (independent pronouns, verbal affixes, possessive affixes, etc.) there is a paradigm where first singular has *n* as its first consonant and second singular has *n*. Only North America, where *n-m* pronouns are relatively abundant, is surveyed.

The following variables are not significantly different in frequency between the GPR population and the rest of the world:

Noun plurals:

Plural number overtly marked on nouns.

Morphological alignment:

Accusative or ergative dominant alignment of morphological paradigms (in split systems, of noun paradigms). Only these two most frequent types were surveyed here.

4.3 Discussion

Distribution:

Within the GPR, polysynthetic languages differ from non-polysynthetic ones only in high synthesis of verbs, clause head marking, multiple agreement, and NP head marking. Now, a high value for inflectional synthesis of the verb is largely the same thing as polysynthesis, as is multiple agreement, and head marking of O is usually entailed by multiple agreement, so three of these four variables coincide closely with polysynthesis by definition. Thus polysynthesis and head marking, and only those two variables, pattern closely together.

Polysynthesis as open head marking:

The head marking on the verb in a non-polysynthetic language such as German or Georgian or Acoma is strictly limited by argument role and consists of a closed set of person markers in a closed paradigm of forms. (All of these can exhibit allomorphy, but that is nonetheless within closed sets of morphemes.) In a polysynthetic language, some or all of these limits are lacking, so the possible head-marked roles, the slots in which they appear, and/or the morphemes that realize them are not closed sets but open to at least some extent. This pertains in particular to referential elements such as argument indexes and incorporated nominals.

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(p. 63) *Open roles:* Some polysynthetic languages mark on the verb, in addition to the regular set of arguments, one or more additional roles that are argument-like in some respects. In Circassian (West Caucasian) languages, A, S, O, G, and T are head-marked and the verb indexes up to three arguments of basic valence (A, T, G).[5] In addition, the G slot can contain both a G and the causee of a causativized ditransitive (*had him give it to her*). There is also a less structured slot, distinct from the others in position and allomorphy, which contains one or more oblique objects and/or adverbials[6] including instrument, comitative, and benefactive (Arkad'ev et al. 2009: 42–4; Lander 2012; Smeets 1984; Colarusso 1992; 2006 :27, 31–2; also Dumézil 1975). When more than one is present their order within the slot is not strictly fixed.[7] In Algonquian languages the *relative root* is a verb element (the first part of a bipartite stem) that registers the presence of a notionally adverbial-like nominal (the *relative root complement*) that is brought into an object-like relation to the verb (Rhodes 2010a). The adverbial-like semantic roles have to do with quantity (length, extent, number), location, direction, and manner. Both Circassian and Algonquian languages index up to three arguments, and any additional one is in some respects a fourth argument; it meets some but not all of the criteria for argument status in the language.[8] I will call this additional argument-like role the *fourth argument* for simplicity, recognizing that it is not necessarily a full-fledged argument; not all languages having this fourth argument necessarily have three others marked on the verb, and some languages have more than one fourth argument. (Recall that for Circassian there can be more than one, distributed over two slots: one or more of benefactive, comitative, etc. in the oblique-object slot and causee of ditransitive in the G slot.) The morphological markers of fourth arguments differ from those of true arguments: in Circassian they can include PPs, and in Algonquian they merely register the presence of the complement rather than indexing or agreeing with its grammatical categories. While for the true arguments the basic person-number markers of a head-marking language are markers of case (Kibrik 2012), I believe many of the Circassian fourth arguments cannot be identified with any particular case (Algonquian languages mostly lack cases; in Meskwaki/Fox, which distinguishes oblique and locative cases, relative roots variously take one or the other of these). In Circassian some of the fourth arguments are obvious incorporated PPs, and in Algonquian they are less transparent but derive from incorporated postpositions (Rhodes (p. 64) 2010a: 321). The semantics of the fourth arguments is not the same in the two languages. In both they are positioned in the middle of the prefix string, suggesting that their origin is incorporation and not simple fusion of a pre-verbal phrase to the verb.

Thus, in both Circassian and Algonquian, a variety (a different variety in each family) of more or less adverbial roles have some properties of arguments, including indexation or registration on the verb, without becoming full-fledged arguments. They are semantically richer and closer to semantic roles than A, S, and O, but probably no more so than G and T. The differences in the semantics of fourth arguments in the two families, and the less than full argument status in both, are important evidence that head marking is open in the two families: if it were not, instead of fourth arguments we would have ordinary

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adverbials or promotion to object status via applicatives. The fourth argument slot creates a way to increase the head-marked roles, without actually expanding what appears to be the universal maximum set of core argument roles.

Fourth arguments are not the only kind of open head marking. Many polysynthetic languages expand the possible head-marked relations beyond true arguments by treating external possessors (which are not clause members at all) as objects. (For examples from Munda languages and elsewhere, see Anderson 2007: 92–8. In Santali, an external possessor is indexed not in an object slot but with a dedicated possessive affix set: 95–6.) This is unremarkable, and cross-linguistically it is a common type of applicative in non-polysynthetic languages, but it is a step toward open head marking if this is done without an applicative, for example if a referential or other hierarchy ranks possessors above goals for object status. Perhaps the Santali example should simply be considered a fourth argument.

A borderline example of a fourth argument also occurs in Catalan:

el	caçador	va	cama-trenc-ar	l'ocell
the	hunter	PST	leg-break-3SG.PST	the-bird

'The hunter broke the bird's leg(s).'

(Grácia and Fullana 1999: 240, cited from Caballero et al. 2008: 406)

where the external possessor is the direct object and the O of 'break' is incorporated.[9]

In all of these, a fourth argument, incorporate, or other morpheme is marked on the verb in addition to the full quotient of arguments, occurring in an additional slot; sometimes the set of slots is itself open.

Open markers:

In Circassian again, the markers for O, G, and T can include not only the usual person–number markers but also incorporated PPs consisting of postposition plus person–number marker (this would be the object of the PP if that were a free-standing PP; whether it is still a PP when incorporated is a question I am not raising).

Open sets of markers:

In very many polysynthetic languages one or more roles can be marked by noun incorporation rather than a person–number marker. These are most often limited to particular roles (usually only O or S/O) in some languages, but they can be open ended, as in Yimas, where various kinds of adverbials (and I think possibly even circumstantials) can be incorporated. Where incorporation fills an argument slot (e.g. displacing (p. 65) ordinary pronominal marking of the O), we have open sets of markers; but where it occupies a different slot and co-occurs with the full quotient of role markers, then we have open roles.

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Importantly, in all these kinds of open head marking, *open* does not mean 'infinite'; even if, for example, some nouns can be incorporated or some morphemes can function as fourth arguments, this does not mean that *every* noun must be incorporable or *anything* can be a fourth argument but just that some such transgression of a closed set of core argument markers must be possible. Also, it does not mean that all core arguments must be marked on the verb: regardless of how many arguments a language normally indexes on the verb, if that set of arguments makes up a closed set that cannot be expanded the language is not polysynthetic. If there is some possible expansion—a fourth argument in another slot on the verb, incorporation, etc.—then the language is polysynthetic. Polysynthetic languages can have as few as one core argument marked on the verb (Nuuchahnulth: Nakayama 2014) or as many as three (Circassian).

I suspect that open head marking could be used as criterial or definitional of polysynthesis, as it subsumes or implies such criteria as grammatical relations marked exclusively or chiefly on the verb (Arkad'ev et al. 2009: 410); more than one lexical root, or "heavy" morpheme, per verb form (Mattissen 2003; co-definitional for Fortescue this volume);[10] holophrasis (co-definitional for Fortescue this volume; see also Arkad'ev et al. 2009: 40); pronominal arguments (Boas 1911a, Jelinek 1984, Van Valin 1985, Baker 1996, and now especially Kibrik 2011, 2012; though in Kabardian the argument-indexing prefixes can and often do double arguments included independently in the clause: Colarusso 2006: 27); wordforms (i.e. inflected words) not selected from forms listed in the dictionary (as in word and paradigm models), but composed in speech much as clauses are (Arkad'ev et al. 2009, Lander 2012, Gerasimov and Lander 2008: 291) (or perhaps some of them are selected from the dictionary, but the open-endedness means that some of them are composed in speech: see Mithun 1984b); both prefixal and suffixal (and/or some circumfixal) verb morphology (Léonard 2013; perhaps just an incidental effect of the large number of grammatical morphemes on polysynthetic verbs and their varied origins; in any event Southern Wakashan and Eskimoan languages, exclusively suffixing languages, are counterexamples); minimal or no distinction between verbal inflection and verbal word formation, which follows from the open-ended nature of role (and non-role) markers and especially from the possibility of noun incorporation; or templatic verb morphology, which is common in polysynthetic languages but may simply be a consequence of the clitic-like origins of many verb morphemes in an open system.

As defined here, open head marking is most useful for eliminating languages with morphologically complex verbs from the status of polysynthetic. It is less useful, or at least less easily applicable, as a tool for identifying previously unnoticed polysynthetic languages from the world's languages at large. I thank Peter Hook for pointing out that, by the definition as worded here, Kashmiri comes close to passing muster as polysynthetic, since it has two-argument agreement (like many Indo-Aryan languages) and an additional slot for what looks (p. 66) to be a fourth argument (the *white suffixes* of Hook and Koul 1984).[11] This is the only respect in which Kashmiri looks at all polysynthetic; otherwise it is an ordinary double-marking language and an ordinary Indo-Aryan language. The white suffixes index person–number of experiencer (with verbs that have an experiencer subject; Hook and Koul's examples are 'miss [someone/something

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absent]' and modality of obligation), and (with non-experiencer verbs) variously beneficiary, ethical dative, and others (but never the core argument G, as Kashmiri is a primary/secondary object language and a G argument receives ordinary object marking as one of the two core roles). This suffix slot is then not a true fourth argument but a slot for dative experiencer A's (i.e. a case variant of the canonical A, which in Kashmiri is ergative or nominative depending on the tense) plus metaphorically related roles (beneficiary, ethical dative, etc.) of predicates that do not have an experiencer subject. That is, an existing argument slot is filled with a semantically related non-argument (or non-core argument). The roster of external noun or independent pronoun referents which that slot can index[12] is expanded (from experiencer to beneficiary, ethical dative, etc.), and the roster of their forms is expanded (mostly dative, but sometimes a postpositional phrase), but—and this is crucial—the fillers of the slot on the verb are unchanged. The Kashmiri example shows that careful examination of the exact fillers of a slot and the forms and functions of their external referents is required in order to accurately identify a fourth-argument marker.[13]

There is another consideration that bears on whether expansion of argument indexing should be counted as polysynthetic or not. There are three ways that an incorporated noun (p. 67) or an additional pronominal can interact with an argument indexing slot on the verb (illustrated here with noun incorporation and an additional pronominal):

Add.

The incorporated noun (IN) does not go into any existing slot; rather, it creates an additional slot, and the other argument markers retain their usual forms and functions. Similarly, a pronominal argument does not go into an existing slot but creates an additional one and becomes a fourth argument.

Fill.

The IN or pronominal occupies an existing slot. This necessitates adjustment to the rest of the valence; typically, what would have been the object is no longer indexed on the verb (or, if eligible, it may become a possessor). An applicative derivation may signal this valence adjustment explicitly.

Cancel.

The IN takes away the argument slot of whatever it displaces. Typically, it makes the verb intransitive, removing the O slot and leaving only an S slot. (I am not sure that the analog exists for pronominal arguments: reflexives and reciprocals often cancel an argument slot and detransitivize the verb, but this is due to coreference rather than to introducing some additional argument.)

Of these three, adding certainly counts as polysynthetic. Filling does, iff it opens up the possible fillers of the slot beyond some fixed morphological paradigm; noun incorporation does precisely that. Applicatives do not count as open head marking; they are derivations controlling what argument has access to which slot. What is diagnostic of open head

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marking is simple addition of another slot without any regulating derivation. Canceling probably should not be counted as polysynthetic: far from adding a slot or filler, it makes an argument slot inert. Followed through consistently, this would mean that detransitivizing noun incorporation does not count as open head marking and does not contribute to polysynthesis.

4.4 Conclusions

In lieu of actual conclusions I close with three questions and some speculation.

Genders:

Why are genders so uncommon in polysynthetic languages (or for that matter in the GPR more generally)? It would seem useful to a polysynthetic language (or head-marking language), or for that matter any language to classify nouns in various ways. This could help track reference in narratives with several third-person referents. The answer may be that in a polysynthetic language (or maybe in head-marking languages generally) nouns are not arguments and possibly not clause constituents of any kind, but simply appositives that lexically specify or qualify the actual arguments, which are on the verb (Boas, Jelinek, Van Valin, Kibrik, and many others).

Fourth arguments:

We have seen that fourth arguments are not full, bona fide arguments in any of the languages that have them. Despite the morphosyntactic and other diversity of polysynthetic languages, apparently none has succeeded in expanding the core argument (p. 68) slots beyond three. Is there some firm, perhaps universal, grammatical constraint here? Or does development of a full-fledged fourth argument simply require a set of unusual preconditions that are so rare that we happen to have no successful example? Or is polysynthesis in the GPR a sufficiently recent development that there has not been time enough for the relevant grammaticalization and elaboration?

Geography:

We have seen that polysynthesis is significantly more common in GPR languages than elsewhere, and in fact vanishingly rare elsewhere. But polysynthetic languages do not stand out typologically in the GPR population. That is, they are not a distillation or exaggerated version or prototype of the GPR population, except as regards head marking and two closely related variables. It must be that polysynthesis is a natural consequence and concomitant of head marking, and arises relatively readily in strongly head-marking languages. Since head marking is common in GPR languages, polysynthesis has arisen there, probably independently and more than once. On this view the position of head marking in the GPR population is analogous to that of clicks in southern African languages. Clicks are an extreme and complex kind of airstream manipulation, and sub-

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Saharan Africa boasts a great elaboration of airstream mechanisms including ejectives, ingressives, and others. The rise of clicks must require a preexistent elaboration of airstream mechanisms, and in fact clicks, which at first glance appear to be a striking singularity of Africa, are then not a singularity but a regular, expectable development in language populations with elaborated airstream mechanisms. There happens to be only one such population on earth, that of sub-Saharan Africa, and it has developed clicks as expected. Similarly, polysynthesis is not a GPR singularity but a regular development in that population with its extensive head marking, and it must have arisen separately at least in northern Australia, New Guinea, North America, and South America.

But why is head marking so unusually common in the GPR languages? The best explanation would seem to be that elaboration to extremes normally happens in language populations that are old enough, large enough, and isolated enough. A population that is isolated, that is, has very little linguistic immigration, can continue to develop in its own direction without deflections from outside (Trudgill 2011, this volume, Dahl 2004, this volume). If the language population is large enough, a range of variations on this grammatical theme can arise and, in some cases, diffuse. If it is old enough, there is time for some combination of selection (in contact situations) and favorable kinds of change to work together and expand an extreme typological profile over the whole population. This is a kind of stabilization of variation, a phenomenon well known in genetics. In linguistics it leads, not to a fairly standard frequency profile in equilibrium, but to one or another extreme profile, perhaps because linguistic typological variables, unlike biological characters, have very little sensitivity to environmental constraints and are much freer to develop in any direction.

Unfortunately, there are few linguistic populations that are old enough, large enough, and isolated enough to provide enough examples to test this suggestion. One of the two clear examples is Africa, not geographically isolated but primarily a donor rather than a recipient of languages, probably for most of its long history; not only airstream mechanisms but such usually recessive variables as genders and tones are unusually common there. The other is Australia, geographically isolated from 16,000 years ago, and for some reason rarely a recipient of immigrant languages since then; its extreme developments include unusually high frequencies of ergativity and inclusive/exclusive oppositions, as well as distinctive sound systems with few manners of articulation and many places of articulation, especially in (p. 69) the anterior part of the oral cavity. The Americas have had a long history of immigration (a single colonizing population could not possibly have given rise to the 150+ separate language stocks of the Americas in any plausible time frame), but only through the Beringian bottleneck, a pinhole compared to the geographical area of the whole hemisphere, and from a source population with the low diversity expected at high latitudes. Thus, head marking in this hemisphere may be a chance property that happened to reach some kind of tipping point. If this is the explanation of head marking in the Americas, then head marking in New Guinea and Australia must have a separate origin.

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To summarize, polysynthesis is a natural concomitant of head marking, and head marking in the GPR population is a chance extreme development. The first part of this explanation —the connection of polysynthesis to head marking—is grammatically principled and theoretically groundable, but the second part is pure historical contingency. But what it lacks in theoretical fruitfulness it gains in its implications for universals and prehistory, as it suggests that there is no limit to the ways and extents that languages can differ, provided there is enough time and enough opportunities for experimentation and diffusion.

Notes:

(1) All of these areas are defined on strictly geographical, culture-historical, and economic grounds, not in terms of distributions of language types or language families, so as to avoid circularity in typological sampling and surveys. This means that these populations are not at all the same thing as language areas and do not necessarily coincide with language areas.

(2) Here and in the rest of the chapter, classifications of languages as polysynthetic follow Fortescue, this volume. I count his possibly polysynthetic languages as polysynthetic in order to increase the sample size.

(3) Very similar result if double marking is binned together with head marking. Non-significant if double marking is binned with dependent marking. This shows that the relevant factor is presence of head marking, regardless of whether alone or together with some dependent marking.

(4) Similar outcome if medium is binned with either high or low.

(5) I use the following terminology for head marking. A marker on the verb *indexes* an external referent if the marker is a pronominal argument (to which the external referent is related by some kind of anaphoric or appositive relation); it *registers the presence* of the external referent if it simply indicates that there is one but does not carry categories such as person from that referent (Nichols 1992: 48–9). An *external referent* is an independent NP or pronominal in the clause that is indexed or registered on the verb. This is a convenience term covering true arguments which the verb agrees with, coreferents to pronominal arguments, and non-arguments of various types.

(6) Here and in the following text I use *adverbial* as a loose cover term for all roles that have more or less adverbial-like semantics (manner, instrument, goal of motion, etc.) and a more or less inner relation to the verb. *Circumstantial* will be used for anything that is not at all argument-like (e.g. time, place, and condition).

(7) In addition, there is a slot for a deictic prefix, which registers motion, transfer, etc. relative to first person and also functions as an inverse marker, registering among other things inversion of a referential hierarchy including person.

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(8) For Algonquian it is a fourth *type* of argument but never a literal fourth argument on any verb; no ditransitive verbs license relative root complements. I thank Rich Rhodes for discussion of Algonquian morphology; I hope I got it right this time.

(9) Depending on the number of argument-indexing pronominal clitics allowed on the verb, Catalan might then qualify as an incipiently polysynthetic language.

(10) Defined carefully so as to exclude counting ordinary compounding or ordinary nuclear serialization as polysynthetic devices. These can be excluded by requiring the open head marking to be referring morphemes or generics linked to referring morphemes, but that would eliminate all incorporation of verbs as defining polysynthesis.

(11) Hook and Koul name the three person–number suffix series with color terms since they do not correspond straightforwardly to either cases or roles (whether syntactic or semantic). The Kashmiri suffixes could provide an interesting test of Kibrik's 2012 claim that head marking marks cases, since here there is syncretism of cases that are distinct in the external referents. At least mnemonically, the green suffix series could be thought of as nominative (i.e. S/O indexing), the gold series as core oblique (ergative A or accusative O/G in the tense-split alignent of Kashmiri; Hook, and Koul aptly call it *anti-absolutive*), and the white series as dative (syncretizing dative and PP as noted just below in the text). I assume that the different suffix series for ergative, nominative, and dative A means that the suffixes mark case (though with syncretism as noted) rather than roles (though the assignment of dative case to experiencer subjects in the first place shows that case government is sensitive to role). Kashmiri exhibits an interesting mix of the oblique experiencer subjects that are common in southern Eurasia and the primary/secondary object alignment that is common in south central and southeastern Eurasia: usually in primary/secondary object languages an oblique experiencer subject is coded the same as a primary object, giving rise to split intransitivity (Nichols 2008), but here it is in a case which Hook and Koul properly call dative (though it does not mark the indirect objects that are the prototypical function of dative cases in western Eurasia), and dative experiencer subjects are common in southwestern Eurasian (with a recent expansion to Germanic and Slavic in Europe).

(12) The white suffixes agree with an external referent in first or second person but are pronominal arguments in the third person (Hook and Koul 1984: 126–7).

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(13) Kashmiri could, in theory, make the transition to true fourth argument marking if dative experiencer subjects were replaced with canonical ergative/nominative A's, and/or if they began to trigger S/A agreement (the gold series of suffixes: see again note 10). The white suffix slot would then no longer be a core argument slot. Such a transition is conceivable but seems unlikely in southern Eurasia, where dative experiencer subjects are well installed and robustly resistant to A/S-like behavior, since processes such as voice alternations, control of reflexives, converbs, etc. are mostly case-sensitive and do not apply to datives. See Bhaskararao and Subbarao 2004; their Preface (ix–x) has an overview of some of the subject properties that non-nominative subjects generally lack in languages of India. Bickel 2000 shows that the *integrative agreement* typical of Indo-European languages is often strongly case-restricted, unlike the *associative agreement* of Tibeto-Burman languages where, for example, subject agreement is basically blind to case, as in Belhare (Bickel 2000: 600–1), where experiencers coded as goals nonetheless have the same syntactic properties as ergative or nominative subjects and trigger the same agreement.

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Sub-Types of Polysynthesis

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Abstract and Keywords

The structural heterogeneity of polysynthetic languages is captured by a sublassification of allegedly polysynthetic languages according to their word-formational type (number of roots allowed in a verb form), namely, compositional, transitional, or affixal, and their internal organization (template vs. scope or both). Further parameters show correlations to these independent ones: the number of participants encoded on a verb, the imaginable evolutionary path via which the structure has come about, namely layering (“onion type”), internal expansion (“sandwich type”) or coalescence (“burdock type”), and the characteristic design of a complex verb form: Grammatical category accumulation (integration of non-obligatory, rather grammatical information); ping-pong recategorization (multiple verbalization and nominalization); productive in/excorporation; dependent-head synthesis; multiple packing (integration of rather lexical information); holophrasis (all wordforms being predicates—or particles); composite-stem layout (composite root-like morphemes, unitary concept); and building-block design (multiple classifer-like morphemes make up a wordform). The classification along these parameters reconciles conflicting approaches to polysynthesis.

Keywords: polysynthesis, subclassification, internal organization, evolutionary path, incorporation, dependent-head synthesis, holophrasis

5.1 Heterogeneity within polysynthesis

AN impressive range of languages have been described as polysynthetic. The following examples are picked from three acknowledgedly polysynthetic languages.

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(1)

Cayuga (Iroquoian, Sasse 1993: 204)

ne'	hak-hso:t-kęhę:'	J.B. ha-yasǫ-hne:'	ha-hsęn-o:t-a'k
REF	3sm>1SG-grandfather-PST	J.B. 3sm-called-PST	3sm-name-stand-PST

ho-yęte-'-ǫ-hne:'	hne:'ha-ya'ta-ha'
3sn>3sm-know-INCH-STAT-PST	it.is 3sm-paint-IMPF

'The one who was my grandfather, his name was J.B., was famous for being an able painter.'

(2)

Greenlandic (Eskimoan, Fortescue 1984: 18)

apiqquta-a-ginnar-puq	naqinnir-it	surli-it	ki-mut
question-VBL:be-only-IND:3S	letter-PL	which-PL	who-ALL

nalunaarutiqar-nir-sut
indicate-I_wonder-converb:3p
'The question is simply which letters stand for which person.'

(3) Haida (Swanton 1911: 255)

GIEN	l'	L-gī-gî'l-gAN
then	3SG	shape_of_man-swim-landward-PST

'Then he swam landward.'

What is their common denominator, characterizing polysynthetic structure?

(p. 71) Whereas we observe a chain of independent predicate forms in Cayuga, Greenlandic distinguishes case-marked argument and dependent and independent predicate forms with agreement in person and number. Cayuga distinguishes two main root types, defined by their inflectional paradigm and position in an incorporating construction (cf. Sasse 1993), for example 'stand' of type 1, 'name' of type 2 in (1); Greenlandic has two main lexical categories defined by their inflectional paradigm and derivational potential. Whereas morphemes of both root types may occur together in one word form in Cayuga (incorporation, e.g., 'name-stand'), they cannot in Greenlandic. Haida allows more than one root of the same lexical category in one word form. In contrast, Greenlandic has nominalizers and verbalizers (e.g., 'be' in (2)) which convert word forms into the other main lexical category, even recursively back and forth within one word form.

Cayuga disposes of two predicate affixes with local semantics, Greenlandic has none. On the other hand, Greenlandic has hundreds of suffixes denoting degree, manner of action, modality (e.g., 'I wonder'), etc., Cayuga does not. Haida has local (e.g., 'landward'), instrumental, manner, and especially classificatory affixes (e.g., 'shape of man' in (3)).

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In a Greenlandic word form, the root takes the initial position, inflection the final one, the rest are non-obligatory morphemes contributing grammatical and lexical information. In Cayuga, obligatory inflection is to both sides of the root(s) in well-defined position classes.

Whereas Cayuga and Greenlandic mark two participants on a transitive verb, Haida does not encode person on its predicates.

These features reveal how different the structures of these languages actually are. Are they all equally polysynthetic then? Is one polysynthetic and the others not? Are they polysynthetic to different degrees? It is argued here that they are all polysynthetic, but of different subclasses.

These subclasses reflect the observation that polysynthetic languages are heterogeneous in several aspects (restricting ourselves to the morphological level):

(0-i) in the components working together to yield the complexity:

- the number and ontological variety of bound morphemes which are not roots (Mattissen 2006)
- the existence of polypersonalism (marking of more than one participant on the verb)
- the existence of distinct lexical categories (especially nouns and verbs)
- the existence of noun incorporation (morphological and phonological integration of a lexical noun stem into a finite verb, cf. Gerdts 2001)
- the existence of verb-root serialization (morphological and phonological integration of a further verb stem into a finite verb, see Bisang 1995; Bruce 1988)
- the existence of incorporation of items of further categories, e.g. adverbs, adjectives, and adpositions

(0-ii) in the basic morphological structure

- in morphological coding, i.e. fusional or agglutinative, head marking or dependent marking, etc.
- in status of a wordform (morphological or phonological word)
- in the arrangement of morphemes in a wordform
- in the degree of maximal and usual complexity (p. 72)

(0-iii) in how many of the distinct lexical categories form complex word forms, i.e., whether there is also a polysynthetic noun (Mattissen 2004a, 2011).

The analysis of a sample of about eighty languages lead to the following common denominator of polysynthesis (Mattissen 2003, 2004c, 2006):

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(4)

Languages qualify as polysynthetic if they have complex, polymorphemic verbal units which necessarily integrate productively non-root bound morphemes with 'lexical' and grammatical meanings, especially local ones, and optionally allow concatenation of lexical roots within a verbal wordform.

Non-root bound morphemes express several of the following categories:

event or participant classifiers and quantifiers	
setting	(e.g. 'in the night')
location or direction	
motion	
body part, instrument	(e.g. 'by hand')
manner of action	('by pulling,' 'quickly')
modality	(including evidentiality)
chronology	(e.g. 'first,' 'again')
degree	(e.g. intensive, diminutive)
scale and focus	(e.g. 'only,' 'also,' 'just')
reversative	('undoing')
minor categories:	medium/natural force, plants, animals, human beings, artefacts/man-made environment

as well as categories independent of polysynthesis such as valency, voice, central participants, tense, aspect, or phase of action (e.g., 'begin,' 'complete,' 'keep'), mood, polarity.

This list is to be understood as a pool of ingredients: no language exhibits all of them.

The category of 'instrument' mentioned in (4) is not an ontological, but a functional class. Morphemes referring to body parts, classifiers, the medium, humans, animals, plants, and artefacts may specify both a patient or an instrument, for example in Haida (Athapaskan, Haeberlin 1921–23: 159), Spokane (Salishan, Egesdal 1981), Maidu (Maiduan, Dixon 1911: 693), and Washo (Kroeber 1907).

(5) Washo (Kroeber 1907: 288)
di-liwi-lup-gic-ue-hi
1SG-foot-with-roll-thither-FUT
'I will roll it this way with the foot.'

'Non-root bound morphemes' are understood to be non-obligatory productive affixes marked on a verb form ad hoc with meanings which would be expressed by independent forms, especially lexical roots, in more analytic languages, but which never make up free (p. 73) word forms on their own in the languages concerned. They are not roots,[1] nor are they clearly derivational or inflectional morphology: the output is not lexicalized. The

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larger part of such morphemes are known as ‘lexical affixes’ or ‘field-affixes’ from grammars of polysynthetic languages. Such morphemes determine the polysynthetic character of a language.

Even though their existence is a necessary criterion for polysynthesis in the definition we have given, it is not one with sharp contours (Mattissen 2004c, 2006): Out of sixty-six sample languages with non-root bound morphemes, fifty-six have at least one local or directional affix. In comparison, manner-denoting elements occur in twenty-seven languages, four of which do not have locationals; instrumentals in twenty-four languages, seven of which have manner morphemes at the same time. Chronology affixes occur in nineteen languages. All of these are equipped with locationals, but only three also have instrumentals. Degree affixes are found in eighteen languages, four of which lack locationals and instrumentals. Locationals, manner, chronology, and degree affixes are extant in Kwakwala (Wakashan, Boas 1911c), Yana (Hokan, Mithun 1999: 565; Jany, this volume) and Paumarí (Arawan, Chapman/Derbyshire 1991); however, these languages lack instrumentals. In terms of cross-linguistic dissemination, the most common domains after locationals are classifiers, manner, phase of action, and modals (Mattissen 2006), the latter two not being exclusive to polysynthetic languages.

These results do not allow us to establish any implicational hierarchy, the broad dissemination of locationals suggests making their existence a necessary condition for polysynthesis. They are also the largest and most variegated ontological class in absolute numbers of extant morphemes cross-linguistically, particularly in Kwakwala, Tsimshian (Boas 1911b), Klamath; body parts are second, followed by classifiers, medium/natural force, and manner (Mattissen 2006).

On the other hand, local non-root bound morphemes as a necessary condition would exclude the following languages from the polysynthetic type: Greenlandic (Eskimo-Aleut), Kiowa (Kiowa-Tanoan, Watkins 1984), Cahuilla (Uto-Aztecan, Seiler 1977), Yuki (Kroeber 1911), Tariana (Arawak, Aikhenvald 2003a, and this volume), Urarina (Olawsky 2006), Pirahã (Mura-Pirahã, Everett 1986), Urubu-Kaapor (Tupí-Guaraní, Kakumasu 1986), Ainu (Tamura 2000; Bugaeva, this volume), and Nivkh (Mattissen 2003, this volume), which lack bound locationals although having affixes encoding several of the domains manner, degree, chronology, instrument, modality, and phase of action. Greenlandic, Kiowa, Cahuilla, and Yuki also have motional affixes, Nivkh incorporates local nouns and has incorporating local verbs. In Greenlandic, the closest candidates for local or setting morphemes are *-jaar-* ‘early’ and *-jaallu-* ‘early (habitually).’ Greenlandic also lacks instrumentals.

Now, the richer an inventory of non-root bound morphemes a language manifests, the clearer its case for polysynthesis becomes. From this point of view, Greenlandic is exemplary, alongside Wakashan (see Nakayama, this volume), Klamath, Slave (Athapaskan, Rice 1989), Purepecha (Tarasco, Foster 1969; Chamoreau, this volume), and Capanawa (Panoan, Loos 1999).

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(p. 74) In view of these distributional figures, the minimal condition for polysynthesis here is either one local non-root bound morpheme or several non-root bound morphemes of the other domains under (4) in addition to any polysynthesis-independent categories.

To approach the heterogeneity of polysynthesis, languages fulfilling the conditions are subclassified here according to two main independent parameters: the word-formational type of the complex verb form and its internal organization. In addition, polysynthetic word forms are classified according to their encoding of participants, their evolutionary path and their characteristic overall design.

5.2 Parameter 1: The Word-Formational Type

The first parameter of polysynthesis concerns the assignment of the categories listed in (4) to non-root bound or lexical morphemes (roots) and whether more than one root is allowed to (but need not) occur within one word form. Depending on the number of lexical categories a language distinguishes, an additional lexical morpheme in a verb form may be a noun, verb, adverb, or adjective. Adposition incorporation as in Slave, Sarcee (Athapaskan, Cook 1984) and Abkhaz (North-West Caucasian, Hewitt 1989: 67) is not considered to be integration of another root here.

The morphological and phonological integration of a (lexical) noun root or stem into a finite verb complex, then, is known as noun incorporation (see Gerdts 1996), and of an additional verb root or stem, as verb-root serialization (see Bisang 1995; Bruce 1988). These are the most pervasive mechanisms.

Thus, the fundamental difference in word-formational type is the number of lexical roots allowed within one verb complex:

(1-i) Languages which allow only one root per verb complex and use non-root bound morphemes otherwise exhibit the affixal type.
(1-ii) Languages which, besides having non-root bound morphemes, allow concatenation of more than one lexical root in a verb form exhibit the compositional type.
(1-iii) Languages which basically allow only one root but have a small residue of (fossilized) noun incorporation or verb-root serialization represent the transitional type.

‘Affixal’ and ‘compositional’ correspond to the terminology for word formation but are not meant to imply that the formation of polysynthetic word forms lead to lexicalized products (see text following (5)).

The affixal type (1-i) is exemplified by Greenlandic (cf. (2)). Greenlandic allows only one root morpheme per word form, which is in initial position. Other categories are expressed

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with non-root bound morphemes or the final inflectional suffix (for mood and person). Fortescue (1990a: 321–32) lists 262 suffixes (excluding category-changing, nominal affixes and inflection) which express concepts from the list in (4), e.g.

(6) Greenlandic

-nngit-	'not'	*-juma-*	'want to'
-juit-	'cannot, never'	*-rusug-*	'would like to'

(p. 75)

-niar-	'try'	*-sariaqar-*	'must'
-niinnar-	'try at all costs'	*-gasuar-*	'quickly
-sinnaa-	'can'	*-lluar-*	'well, a lot'
-siriar-	'be easy to'	*-jurtur-*	'one after another'
-llaqqig-	'be good at'	*-galuar-*	(contrary to expectancy)

For these suffixes, a lexical source cannot even be reconstructed (see Fortescue 1992a: 245).

This affixal type is also represented in Kwakwala, Quileute (Chimakuan, Andrade 1933), Wappo (Radin 1929), Wintu (Wintuan, Pitkin 1984), Miwok (Miwokan, Broadbent 1964), Coos (Kusean, Frachtenberg 1922), Eastern Ojibwa (Algonquian, Bloomfield 1956), Navaho (Athapaskan, Young/Morgan 1980), Karok (Bright 1957), Purepecha (Tarasco), Abkhaz (Hewitt 1989, Lucassen 1985), and Tiwi (Non-Pama-Nyungan, Osborne 1974) to name but a few.

On the whole, affixal-polysynthetic languages that exhibit the largest sets of non-root bound morphemes both in number and variety, are most common in North America and practically absent from Asia (except for Eskimoan languages) and Oceania/Australia.

The compositional type (1-ii) is manifest in Chukchi (Chukcho-Kamtchatkan, Kämpfe/ Volodin 1995). All morphemes in the complex predicates in the following example except the inflectional circumfix are roots, there is noun incorporation, verb-root serialization, and adverb incorporation (*janot* 'first' in (7c)) (cf. Skorik 1961, 1977; Spencer 1995).

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(7)

Chukchi (Skorik 1977: 241)

a. mən-nəki-ure-qepl-uwicwen-mək
1ps-night-long_time-ball-play-IMP:1PL
'Let's spend a lot of time playing ball at night.'

b. (Skorik 1961: 100)
tə-majŋə-wetgawə-rkən
1SG.SBJ-big-speak-PRSI:1SG
'I am speaking loudly.'

c. (Spencer 1995: 456)
… məggətkalʔən qejwe nə-janot-pəker-gʔan
many_legged_one indeed 3SG.SUBJ-first-come-CND:3SG.SUBJ
'Indeed, the many legged would come first.'

In addition, there are non-root bound morphemes expressing person marking, valence operations (such as reflexive, reciprocal, antipassive; a total of 6 affixes) and aspectual categories (9 affixes), as well as degree (8 affixes), quantification (2 affixes), manner (2 affixes), reversative (1 affix), direction (1 affix), and one scalar operator (all counts done in Kämpfe/Volodin 1995: 34–6). In the following example, *-mec-* is a prefix of degree (the rest are again lexical roots, except for the circumfix).

(8) Chukchi (Spencer 1995: 459)
ənko mət-mec-qora-gərke-plətko-mək
then 1PL.SUBJ-almost-deer-hunt-finish-AOR:1PL
'Then we almost finished hunting reindeer.'

(p. 76) Because of the definitional non-root bound morphemes, there cannot be such a thing as purely compositional polysynthesis (see 5.7). Affixal and compositional polysynthesis are thus not complementary types.

For compositional polysynthesis, only noun incorporation and verb-root serialization are considered here, even if there is adverb incorporation as in Chukchi or adjective incorporation as in Paumarí with a distinct adjective category (*danoki* 'strong' in the example following), as they are minor phenomena.

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(9)

Paumarí	(Chapman/Derbyshire 1991: 320)
va'o-ra	va-nako'di-danoki-'iana-vini
3PL-OBJ	3PL-seek-strong-again-DEP:TRANS

'They were seeking hard again to find them.'

There are, then, among compositional polysynthesis:

(1-ii-a) languages with both noun incorporation and verb-root serialization,

e.g. Wichita (Caddoan, Rood 1976), Nez Perce (Sahaptian, Aoki 1970), Lakhota (Siouan, Boas/Deloria 1979, de Reuse 1994), Kiowa, Tanoan languages (Harrington 1910a, 1910b; Allen/Gardiner/Frantz 1984), Comanche (Uto-Aztecan, Charney 1993), Tümpisa Shoshone (Uto-Aztecan, Dayley 1989), Classical Nawatl (Uto-Aztecan, Andrews 1975; Canger, this volume), Pano (Loos 1999), Chukchi, Ket (Yeniseian, Werner 1997a, Drossard 2002; Vajda, this volume), Ainu, Sora (Munda, Pinnow 1966; Anderson, this volume), and Bininj Gun-wok (Gunwinjguan, Evans 2003, see also this volume),

(1-ii-b) languages with verb-root serialization, but without noun incorporation,

e.g. Chinook (Chinookan, Boas 1911d), Maidu, Tunica (Gulf, Haas 1941b), Tonkawa (Hoijer 1933), Capanawa, Yagua (Peba-Yaguan, Payne/Payne 1990), Urubu-Kaapor, Arabana (Pama-Nyungan, Hercus 1994), Awtuw (Papuan, Feldman 1986), Yimas (Papuan, Foley 1991, and this volume); this type is typical for South America and Oceania.

Yimas, for instance, is characterized by complex verb forms, chiefly as the result of verb-root serialization, with a small number of affixes expressing chronology ('first,' 'again'), manner ('quickly,' 'badly'), and location ('up,' 'down').

(10)

Yimas	(Foley 1991: 344)
na-mpɨ-mampi-kwalca-mpi-tay-ɲcut	
3SU-3dA-again-rise-SEQ-see-REMPST	

'They both got up again and saw him/got up and saw him again.'

(1-ii-c) languages with noun incorporation but no verb-root serialization

In the sample these are only Sarcee, Takelma (Sapir 1922), Blackfoot (Algonquian, Taylor 1969), Baure (Arawak, Danielsen 2007) and Japhug (Sino-Tibetan, Jacques 2012). Cayuga (p. 77) parallels this type with its two distinct root classes, of which one is incorporated into the predicate formed from the other (Sasse 1993).

Takelma offers slots for a patient incorporee, a local prefix (Sapir 1922: 86 lists sixteen different ones), an instrumental incorporee, a manner, modal, or phase prefix ('truly,' 'probably,' 'continuously'), and suffixes for valence operations, person, and tense/mood.

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(11)

Takelma (Sapir 1922: 65)

a. dan-bāᵃ-ᵉī-sget!eʾsgidiᵉn
rock-up-hand-lifted:1SG
'I lifted up the rocks with my hands.'

b. gwãn-ha-yaxa-t!ülüᵘ̈lgaʾᵉn
road-in-continuously-follow:1SG
'I keep following the trail.'

Noun incorporation and verb-root serialization are independent of each other and of polysynthesis even though contributing to the polysynthetic character of a language. However, most noun-incorporating languages are indeed polysynthetic and have verb-root serialization at the same time; pure (non-polysynthetic) noun incorporating languages are hard to find. An example of a pure verb-root serializing language (lacking non-root bound morphemes and noun incorporation) is Yamphu (Kiranti, Rutgers 1998). Among the verb-root serializing languages, Chinook, Eastern Pomo and Urubu-Kaapor show vestiges of earlier noun incorporation.

The third word-formational type constitutes transitional polysynthesis (1-iii). This subclass comprises languages which are basically affixal-polysynthetic (allowing only one root per verb), but have a small residue of (fossilized) noun incorporation or verb-root serialization. Examples are from Maskoke (Muskogee/Creek, Muskogean, Haas 1941a), Klamath (Barker 1964, DeLancy 1991, 1999) and Spokane (Salishan, Carlson 1972, 1990; see also Watanabe, this volume).

Maskoke manifests, more or less transparently, petrified remains of noun incorporation, for example with the root *-nok-*, for example (12b), in a range of verb forms such as (12a):

(12)

Maskoke (Haas 1941a:312)

a. nok-sómk-iˑ
throat-get_lost-past_participle
'hoarse'

b. ca-nók-wa
1SG-neck-suffix
'my neck'

As there are cognate classificatory elements in other Muskogean languages (Chahta/Choctaw, Koasati), Haas assumes noun incorporation for "Proto-Muskogean" (1941a).

Klamath has three verb roots which may precede another verb root in a serial construction: *sdig-* 'smell,' *nqen-* 'shout' and *pʼac'-* 'eye/water-filled object bursts' (DeLancey 1999: 77). DeLancey further presents bound morphemes originating in verb roots, especially local and manner ones (1991: 442–3, 1999: 57, 61, 76–9), and even classifiers originating in incorporated noun roots. Most importantly, Klamath belongs to the 'bipartite-stem' languages (as Washo, Sahaptin (Sahaptian), Atsugewi (Palaihnihan), Maidu, etc., Jacobson 1980, DeLancey 1988). (p. 78) This means that although a minimal

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free verb form in Klamath consists of a stem and a final suffix and roots may occur with suffixed or prefixed bound morphemes as in (13a) and (13b), a prefixal and a suffixal bound morpheme *together* form a stem (the 'bipartite stem') used as a free word form together with a single inflectional suffix (13c)—without containing a lexical root (cf. DeLancey 1999: 60–1):

(13)

Klamath (DeLancey 1999: 60–1)

a. bam-ba:ta — verb root-suffix
dive/wade-to_shore
'wade to the shore'

b. la-cý́a — prefix-verb root
round_object-split
'slit open a round object'

c. l-aba:ta — rootless stem
round_object-to_shore
'put a round object up on shore'

This pattern is the most common construction type for a Klamath predicate.

Although Spokane is affixal-polysynthetic, there is a construction integrating a complex form (formed from one root and non-root bound morphemes) into another inflected stem, that is, a compositional mechanism. The verb *tix* ^{w} - 'get' already occurs "almost exclusively in [these] compounds" but is "not yet bound" (Carlson 1990: 80–1), not yet a verbalizer. In contrast to the above languages, this seems to be an innovation, that is, suggests a development from affixal to compositional polysynthesis.

(14)

Spokane (Carlson 1990: 70; roots are in boldface)

[ti<ʔ>x^{w}]-ɬ-[n-**šńú**-s-tn] — [stem 1] + [stem 2]

get<RES>-LINKER-in-sheet_of_solid_material-eye-INSTRUMENT

'He finally got some new eyeglasses.'

Languages such as these constitute the diachronic link between compositional and affixal polysynthesis.

This link is corroborated (cf. Mattissen 2004b)—in the presence of only little diachronic data for polysynthetic languages—by evidence furnishing:

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(i) language-internal etymological relations, e.g., for 4 out of 125 prefixes in affixal Washo, for a seventh of about a hundred prefixes in affixal Tiwi and for nearly all Tümpisa Shoshone instrumental prefixes, Dayley 1989: 92–103),

(15)

Washo	(Jacobsen 1980: 86)
prefix *dulˇ*- 'with the hand':	free noun *á:du* 'hand'

(16)

Tiwi	(Osborne 1974: 48–50)
prefix *pula*- 'knee':	free noun **jimpula* 'knee' (no longer extant)

(p. 79)

(ii) cognates of different morphemic statuses across affiliated languages, e.g.

(17)

Slave	Dogrib	(Athapaskan, Rice 1989: 647–69)
affix *-la-* 'work'	free noun *la* 'work, job'	

(18)

Cherokee (S. Iroquoian, Blankenship 1997: 97–9)	Cayuga (N. Iroquoian, Sasse 1993: 216)
lexicalized classificatory element	incorporated root
-neeh- 'liquid patient'	*-hnék-* 'water'

(iii) and structural traces within a language (e.g., Klamath, as already shown): synchronic non-root bound morphemes in both affixal and compositional polysynthesis can be shown to have grammaticalized or morphologized from lexical roots within noun incorporation or verb-root serialization as source constructions (for evidence from Lowland South American languages, see Payne 1990: 223, Aikhenvald, this volume), e.g.

(19)

Tunica	(Haas 1941b: 70)	
si'nk-en	ta'pi-**po**-kɔ'nì	with *-po-* conative < *po'* 'look'
3fp-hand	take-CONATIVE-QUOTATIVE	
'He tried to take her hands.'		

For affixal-polysynthetic languages this means that in an earlier stage more than one lexical root had to be allowed in a complex verb form, that is, there must have been an earlier compositional stage. This suggests a path leading from compositional languages which develop non-root bound morphemes via compositional-polysynthetic languages in which first noun incorporation, later also verb-root serialization fossilize (or the other way round) to transitional-compositional languages and eventually into affixal polysynthesis when all incorporated/serialized forms have lost their root status and their connection to extant roots.

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There is, however, no evidence that all non-root bound morphemes go back to a root, nor that all synchronically affixal-polysynthetic languages evolved from compositional-polysynthetic ones, for instance not in Eskimoan languages.

5.3 Parameter 2: Internal Organization

The word-formational type of polysynthetic languages is cross-classified with a second, independent parameter, the internal organization of the polysynthetic verb form, based on the order of elements in a verb form. The different organizational types are not restricted to polysynthetic languages, however.

Type (2-i), the templatic organization, describes a verb form that offers a preset number of slots for the various elements which are fixed and mutually exclusive in their position, and fixed in their order relative to each other. The maximally complex verb form is determined by the number of slots, although not every slot need be filled in a single verb form. The verb form may thus be described by a template.

(p. 80) Such an organization is found in polysynthetic languages of any word-formational type, for example in Navaho, Ojibwa (Bloomfield 1956: 25), Karok, Wappo (Radin 1929: 23), Wintu (Pitkin 1984: 98–103), Abkhaz (Hewitt 1989: 50–1), and Tiwi with affixal polysynthesis, in transitional Maskoke (Martin et al. 2003), in Chinook, Awtuw, Arabana (Hercus 1994: 204) with verb-root serializing compositional polysynthesis, in Takelma, Sarcee, and Japhug (compositional with noun incorporation), and in Wichita, Comanche, Tümpisa Shoshone, Classical Nawatl, Sora, and Ket (Werner 1997: 154–5) of the compositional type.

Navaho, for instance, has eighteen pre-root positions (Young/Morgan 1980: 107). The organization of a verb form in Awtuw is:

(20)

Awtuw (Feldman 1986: 53)

modality-reality-location-yet-again-dual-imperfective-reciprocal-ROOT-non_root_bound_morpheme-aspect-plural-conditional-tense-plural

Type (2-ii), the scope-ordered organization, describes a verb form for which no template can be set up, as its components are not fixed in their position, but in their scope, which allows them to be ordered according to the intended meaning. Affix chaining is thus conditioned by semantics and compatibility restrictions, and the verb form is not restricted in its complexity and length. There is, however, no pure scope-ordering, as the root and obligatory inflectional positions are usually fixed.

Scope-ordered organization is found in a few languages only, for example, Greenlandic (Fortescue 1980: 260, 1984: 313), Kwakwala, Tsimshian (affixal), Capanawa, Yagua

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(Payne/Payne 1990: 383) (compositional verb-root serializing), Pano and Chukchi (Loos 1999: 244; Payne 1990: 226–9) (compositional).

Let’s take Greenlandic as an example of this organizational type: the initial (root) and the final (person and mood inflection) positions are fixed. Between them, derivational suffixes and suffixes with fairly lexical or grammatical meanings are combined in different orders, even if there are ordering preferences.

(21) Greenlandic (Fortescue 1984: 315)
an-niru-lir-sin-niqar-sinnaa-suri-nngik-kaluar-pakka
big-more-begin-CAUS-PASS-POT-think-NEG-but-IND:1SG>3PL
‘I do not think they can be made any bigger, but …’

Especially morphemes for causative, passive, and negation may appear in various positions and even recursively within a verb form, depending on their scope. Putting suffixes in a different order yields different meanings, as shown in (22), whereas in the templatic type there are no ordering alternatives at all.

(22) Greenlandic (Fortescue 1984: 137)
a. Kaalat tiki-nngik-kallar-puq
Kaalat arrive-NEG-yet/still-IND:3SG
‘Kaalat has not arrived yet.’
b. Kaalat tikik-kallan-nngi-laq
Kaalat arrive-yet/still-NEG-IND:3SG
‘Kaalat still has not arrived.’

(p. 81)

These two types of verbal organization are not completely mutually exclusive. Type (2-iii), the mixed organization, describes verb forms

(2-iii-a) which have a limited scope ordering within a templatic ordering.

This is the case with positions being recursive (e.g. directional prefixes in Spokane), when more than one affix of the same position class may be combined (e.g., in Bininj Gun-wok, Evans 2003: 317), or with particular affixes (e.g., voice or polarity) occupying different positions according to their scope, while the rest have fixed positions, for example in Baure, Miwok, Quileute (Andrade 1933: 258), Tonkawa and Klamath (DeLancey 1999).

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(23)

Miwok (Broadbent 1964: 39–40)

a. ʔetal-nukʻu-lumhu-ʻ
return-CAUS-ready-PRS.IMPF:3S
'he is ready to take him home' (lit. 'he is ready to make him go home')

b. ʔetla-lamhy-nukʻu-ʻ
return-ready-CAUS-PRS.IMPF:3S
'he is making him ready to go home'

(2-iii-b) with differently organized sections, e.g. the pre-root, post-root or clitic domains displaying different organizational principles.

In Tariana (Aikhenvald 1999: 237), the verbal suffixes are fixed in their positions, the enclitics "allow variable ordering." In Nivkh, the suffixal domain is templatic (with some recursivity), namely,

(24)

Nivkh
… -verb_root-transitivizer-aspectoid/degree-causative-aspectoid/degree/temporal-scalar_operator-modality-mood/scalar_operator/focus/converbal_suffix

To the left of the verb root, however, there is a slot for another verb root and/or an undergoer (transitive verbs). The serialized verb root, if transitive, in turn governs its own undergoer which is integrated into the complex verb form, as well, and any undergoer incorporee may bring along a modifier (another noun or verb stem) or possessor synthesizing to it (Mattissen, this volume).

(25)

Nivkh (Krejnovič 1979: 308)

ekto	wi-nd-aʁr	pʻ-əṭx-nřə-nau-f-pʻi-ra
there_to	go-IND/NML-even	REFL-old_man-see-suffice-LOCNML-be_in-ENU:3S

'Having gone there she settled down at a place from where her husband was in sight.'

(p. 82) Due to the recursiveness, a template for the concatenation of lexical roots cannot be set up. There is

- rich morpheme chaining to the left of the head root (the scope-ordered 'Greenlandic strategy') and
- a template rich in slots on its right side (the 'Navaho strategy').

As in grammars the organizational principle is not always discussed. It proves difficult to sort languages into these categories. Table 5.1 presents the polysynthetic subclasses gained from cross-classifying word-formational type and internal organization.

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Sub-Types of Polysynthesis

Table 5.1 Polysynthesis types

Non-root bound morpheme	scope-ordered	templatic	noun incorporation	verb-root serialization	language	subclass
+	–	+	+	+	Sora, Ket, Wichita	compositional
+	+	+	+	+	Nivkh, Lakhota, Bininj Gun-wok	
+	+	–	+	+	Pano	
+	–	+	+	–	Takelma, Sarcee	compositional noun incorp.
+	+	+	+	–	Blackfoot, Baure	
+	+	–	+	–	(specimen wanted)	
+	–	+	–	+	Tonkawa, Awtuw	compositional verb-root ser.
+	+	+	–	+	Maidu, Yimas	

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+	+	–	–	+	Capanawa, Yagua	
+	–	+	(+)	–	Maskoke	transitional
+	+	+	–	(+)	Klamath	
+	+	+	(+)	–	Spokane	
+	–	+	–	–	Navaho, Tiwi	affixal
+	+	+	–	–	Quileute, Tariana	
+	+	–	–	–	Greenlandic, Kwakwala	

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(p. 83) 5.4 Parameter 3: Participant Encoding

Another, more or less independent, parameter is the encoding of participants on the verb. Leaving aside referentially active noun incorporation, but conflating so-called pronominal and cross-referencing affixes and agreement, there are again three types (which apply to non-polysynthetic languages as well):

(3-i) polypersonalism, i.e. the encoding of at least two participants on a bivalent verb;
(3-ii) monopersonalism, encoding of no more than one participant on any verb, and
(3-iii) apersonalism with no person marking on verbs.

Polypersonalism is usually considered a necessary condition for polysynthesis (Mithun 1988: 446–7, Fortescue 1994: 2601); in the traditional concept of polysynthesis, however, a language can be polysynthetic without being polypersonal (cf. Boas 1911a: 75, Drossard 1997: 252).

A maximum of two participants (3-i) are marked on the verb for instance in affixal Greenlandic, Quileute, Kwakwala, Navaho, Purepecha (Tarasco), Tiwi, compositional Wichita, Mohawk, Lakhota, Pano, Chukchi, Ket, Sora, Bininj Gun-wok, verb-root serializing Yimas, Capanawa, Tunica, Tonkawa, noun-incorporating Blackfoot, Takelma, Sarcee, Baure, and Japhug and transitional Spokane.

Up to three participants (3-i) are encoded on the verb in Southern Tiwa (Tanoan), Classical Nawatl, Chinook (compositional), Maskoke (transitional), and Abkhaz (affixal).

(26) Southern Tiwa (Allen/Gardiner/Frantz 1984: 307)
ka-kuchi-thã-ban
1SG>2SG|Animate.SG-pig-find-PST
'I found your pig.'

On the other hand, there is no person marking (3-iii) on the verb in compositional Tümpisa Shoshone, Haida (see (3)), verb-root serializing Maidu, Arabana, and transitional Klamath (see (13), (30)).

Awtuw does not mark person on its predicates, but there is number agreement with the actor:

(27) Awtuw (Feldman 1986: 52)
ka-d-ma-taw-owra-t-akla-kow-kay-e
NEG-FAC-go-yet-again-DU-dig-BEN-PRF-PST
'(Two) had not gone and dug again for (s.o.) yet.'

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Monopersonal polysynthesis (3-ii) is found in Paumarí, Urubu-Kaapor (verb-root serializing), and Wintu (affixal) with actor marking. For marking conventions in Northern Hokan, see Jany, this volume.

(p. 84) Nivkh (compositional) obligatorily marks the undergoer, the actor is marked on three polypersonal converbs and on four polypersonal directive moods, but not on other moods or converbs. In addition, there is number agreement with human or focused actors on one predicate type, which amounts to defective polypersonalism (Mattissen, this volume).

So, the majority of polysynthetic languages are indeed polypersonal. This person-related parameter is not completely independent of the word-formational type and the internal organization as almost all affixal (and all noun incorporating) polysynthetic languages in the sample are polypersonal, whereas apersonal verbs are found mostly among compositional and verb-root serializing languages. Nearly all apersonal verbs are organized in a templatic way, but templatic languages are the big majority, anyway.

5.5 Parameter 4: Evolutionary Path

The synchronic structures of polysynthetic verb forms probably have a diachronic dimension of structural evolution. The fourth parameter tries to describe the structure of a polysynthetic verb form in view of potential formation mechanisms. As this parameter correlates to some degree with others it is not a defining parameter of polysynthesis.

In Navaho (Young/Morgan 1980: 107) and Athapaskan languages, in Wichita, Blackfoot, Tonkawa, Spokane, Cherokee, Awtuw, and Tiwi, for instance, we encounter different layers of morphemes within the verb form which seem to have been taken up on both sides of the root over time. Categories belonging to the domains of person, number, aspect, etc. are found in different places in the verb form, and the verb form is not further expandable—compare the Wichita template with twenty-four positions in front of and seven positions after the verbal root:

(28)

Wichita (see Rood 1976: 17–22)

NSG.S-QUO.T/A-AGENT-PRV-UNDERGOER-AOR-UNDERGOER-RECIPIENT-PRV-PST.NEG-PL.A-DEF-FOCUS/MANNER/CHRONOLOGY-NSG.REC-SIZE.INCORPOREE-PATIENT.INCORPOREE-COLL.U-NON_SG.U-CLASS-TR-INS.INCORPOREE-LOCAL-DU-**VERB.ROOT**-DISTR-ITER-CAUS-ASPECT-SERIAL.VERB.ROOT-ASPECT.SUB-IRR-LOC.PTCL

This layering characterizes the ‘onion type’ (4-i).

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Second, in Greenlandic and Chukchi, the verb forms are expandable by morphemes which are chained inside them between lexical and inflectional morphemes which thus constitute a frame around them. In Chukchi, the first and last morphemes are inflectional, between them, lexical roots and non-root bound morphemes may be integrated into the verb form.

(29)

Chukchi (Skorik 1961: 103)
tə-tor-taŋ-pəlwəntə-pojgə-pela-rkən
1SG.SBJ-new-good-metal-spear-leave-PRSI:1SG>3SG
'I am leaving a good, new, metal spear.'

(p. 85) Washo, Tsimshian, Nez Perce, Maidu, and Purepecha (Tarasco) are further examples. This internal expansion is called the 'sandwich type' (4-ii) here, which clearly correlates with scope-ordering.

In a third type (4-iii), exhibited by Muskogean, Klamath, Takelma, Baure, Bininj Gun-wok (Evans 2003: 319),Yimas, Ket, and Nivkh, the structure suggests coalescence of word forms which were adjacent in origin, resulting in a synchronic single word unit. For Klamath, DeLancey concludes that the morpheme *-nannwi-* 'as soon as, right away,' which is transcribed as a separate word by Gatschet in 1890, "in Gatschet's time" already had "a distinct grammatical status, governing an uninflected verb form which could not occur independently, but—accepting Gatschet's transcription at face value—[…] was not yet completely morphologized" (DeLancey 1991: 434–5).

(30)

Klamath (Gatschet 1890: 113)
a. … qtanc'an nannwi sq'ol-lG-o:t-a-k
fall_asleep as_soon_as SG.lie-down-while-IND-EMPH
'(He) fell asleep as soon as he lay down.'

b. (Barker 1964: 158)
qtan-c'n-nannwi-ank
sleep-just_do_&_no_more-right_away/at_once-PST.PTCL
'having gone right to sleep'

In Yimas, there are sequential markers between two serialized verb roots inside a complex verb form. They are reminiscent of converb suffixes, which are characteristic of languages in that region. The complex verb form may thus have arisen from the fusion of a converb and a main verb.

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(31) Yimas (Foley 1991: 344)
na-mpɨ-mampi-kwalca-mpi-tay-ɲcut
3SU-3dA-again-rise-SEQ-see-REMPST
'They both got up again and saw him/got up and saw him again.'

In Tariana, Aikhenvald observes three synchronically parallel stages of monoclausal verb combinations: predicates in series of which the non-last ones are marked by a subordinator (2003a: 449, 451, 456), asyndetic serial predicate constructions which are nominalized en bloc (2003a: 425, 428) and former verb roots which—coalesced to another verb root—have been grammaticalized to expressions of phase, degree, chronology, etc. (2003a:447, 326). All of these are non-interruptible sequences; the first two are separate phonological words marked for identical verbal categories (2003a :458). They open up a path for the evolution of non-root bound morphemes via coalescence.

In Nivkh (and to a lesser degree in Ket), we observe inflection on incorporees and serial roots (see Mattissen, this volume; Werner 1997: 154–5).

(32) Nivkh (Krejnovič 1937: 61)
a. if p'-ətək-vark-to-ḍ
3SG REFL-father-only-help-IND/NML
'He helped only his father.'
b. (Otaina 1978:106)
if tuz-ivu-bəñx-ṭ'χa-ḍ
3SG cool(down)-PROG-soup-loathe-IND/NML
'He loathed soup which had begun to cool down.'

(p. 86)

This coalescence is called 'burdock type' (4-iii) here.

5.6 Characteristic Design

The parameters presented so far already allow a significant characterization of polysynthetic languages, carving out the territory for polysynthesis on the whole. Still, they do not describe the genius of the single polysynthetic languages in a pithy manner. These geniuses manifest themselves in characteristic recurrent patterns of their complex forms which arise in part through the concurrence of the defining parameter values. They are captured here as 'characteristic designs.' These designs are still provisional, non-exhaustive, and not completely mutually exclusive, but allow the highest recognition value. They are presented here in an order from languages involving more syntax to

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languages with less syntax and dominant morphology. They are not meant to be consecutive stages of the evolution of polysynthesis.

5.6.1 Grammatical category accumulation

Polysynthetic languages of this type are mainly affixal, stand out for the multitude of categories on the verb akin to inflection (especially modality; valency, tense, focus, etc.) and constitute a possible transition gate from agglutinating languages to polysynthetic ones (see Sections 5.2, 5.7), e.g. Navaho, Tariana, Baure, and other Arawak languages (Aikhenvald 1999), Urarina, Abkhaz, Awtuw, and Yimas.

(33) Baure (Danielsen 2007: 83)
p=eh-mo-e-k-poei-yi-n=niš
2SG=wash-CLF:woven-DUR-ABS-GO-LOC-NML=XCL
'Where are you going to wash clothes then?'

(34) Urarina (Olawsky 2006: 502)
su-ana-i=tɕe=he=lʉ=ra
kill-IN.LAW.TALK-NEG:3SG/A-POLITE=REP=REM=EMF
'He (my in-law) is said to not have killed it (at that time).' (man talking to woman)

(35) Awtuw (Feldman 1986: 52)
ka-d-ma-taw-owra-t-akla-kow-kay-e
NEG-FAC-go-yet-again-DU-dig-BEN-PRF-PST
'(Two) had not gone and dug again for (s.o.) yet.'

(p. 87) Several of these languages have classifiers on the verb; on the whole, classifiers cut across various characteristic designs, however. This type is well represented in South America and Oceania and among verb-root serializing languages, also non-polysynthetic ones (e.g., Yamphu).

5.6.2 Ping-pong recategorization

Recursive derivation with lexical category changes in a ping-pong fashion between the main lexical categories noun and verb are observed in affixal Greenlandic: a nominal root is verbalized (e.g. *-lirsur-* 'provide' in (36a)), then renominalized (*-llamma-* 'one good at'), then again verbalized (with copula *-u-*) etc. Greenlandic—as an affixal language—makes productive use of denominal verbalization instead of noun incorporation, and of quite specific nominalizers.

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(36)

Greenlandic (Fortescue 1983: 97)

a. aliikku-sirsu-i-llamma-ssua-a-nirar-ta-ssa-galuar-paal=li
entertainment-VBL:provide-AP-NML:one_good_
at-big-VBL:be-say-HAB-FUT-but-IND:3PL>3SG=but
'However, they will say that he is a great entertainer, but ...'

b. (Fortescue 1984: 68–9)
ilinnia-ruma-nngit-su-tut isuma-qar-vi-gi-niqar-put
study-DES-NEG-IP-EQU.PL thought-VBL:exist-LOCNML-VBL:have_as-PASS-IND:3PL
'They were thought of as unwilling to study.'

Greenlandic resembles the in/excorporation type below in having two distinct main lexical categories, an argument-and-predicate structure, a periphrastic way of construction as alternative to denominal verbalization (as in (37), (38)) and syntactic mechanisms such as stranded modifiers, antipassivation, and subordination. These parallels hint at the idea that the very old polysynthetic structure of Greenlandic might have developed from incorporation via the loss of root status of the incorporating verbs. The large number of non-root bound morphemes, on the other hand, is untypical for in/excorporating languages, and the types of non-root bound morphemes in Greenlandic (manner, degree, etc.) hint at earlier verb-root serialization, their usual source (cf. Mattissen 2006). However, there is no diachronic evidence for either of these projections.

(37)

Greenlandic (Fortescue 1984: 83)

a. ikinnguti-qar-puq
friend-VBL:exist-IND.3SG
'S/he has a friend/friends.'

b. ikinnguti-nik pi-qar-puq
friend-INS dummy-VBL:exist-IND.3SG
'S/he has some friends.'

(p. 88)

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(38)

Greenlandic (Sadock 1980: 312)

a. su-tur-pit?
what-VBL:consume-INTERROGATIVE:2SG
'What did you eat?'

b. su-mik niri-vit? (using lexical verb)
what-INS.SG eat-INTERROGATIVE:2SG
'What (specifically) did you eat?'

5.6.3 Productive in/excorporation

Languages such as Chukchi, Ainu (Shibatani 1990: 63), Tanoan languages, and Bininj Gun-wok (Evans 2002: 20, 2003a: 323ff) have noun incorporation of different statuses according to Mithun (1984) and exploit productive and referentially active noun incorporation and parallel analytic constructions ('excorporation') for syntacto-pragmatic purposes, for example signalling information value status (thetic vs. categorical statements, focus; Sasse 1987, 1996, Kuroda 1972). They are compositional by definition, have at least two distinct lexical categories, an argument-and-predicate structure, syntactic mechanisms, for example voice, and dependent (embedded) verb forms. Their number of non-root bound morphemes is rather small.

(39)

Chukchi (Kozinsky/Nedjalkov/Polinskaja 1988: 663, 667)

a. ətləg-e utkuc?ə-n təkec?ə-pela-nen
father-ERG trap-ABS.SG bait-leave-AOR:3SG>3SG
'Father left bait in the trap.' (lit. 'bait-left the trap')

b. ətləg-e təkec?ə-n utkuc?ə-k pela-nen
father-ERG bait-ABS.SG trap-LOC leave-OR:3SG>3SG
'Father left bait in the trap.'

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(40)

Southern Tiwa (Allen/Gardiner/Frantz 1984: 294–5)

a. ti-seuan-mũ-ban
1SG>Animate.SG-man-see-PST
'I saw the/a man.'

b. seuanide ti-mũ-ban
man 1SG>Animate.SG-see-PST
'I saw a/the man.'

Non-polysynthetic Yucatec Maya (Mayan, Sullivan 1984, Blair 1964, Mithun 1984: 858), by the way, has productive in/excorporation, as well. Southern Tiwa shows a trace of dependent-head-synthesis (see Section 5.6.4) as inanimate nouns, plural unmodified animate and undetermined animate nouns (referential or not) are necessarily incorporated, and only one of several coordinated items is incorporated (Allen/Gardiner/Frantz 1984).

(p. 89)

5.6.4 Dependent-head synthesis

Admittedly, the only known dependent-head-synthetic language is Nivkh (compositional, Mattissen, this volume). Dependent-head-synthesis makes use of argument-predicate structure, productive and referentially active noun incorporation (with excorporation more restricted than in 5-iii), but in addition integrates most kinds of dependents (complement, modifier, possessor, in nominal, verbal, clausal, and affixal form) pervasively and recursively on both nouns and verbs (41a). Of coordinated items, only the last one is integrated, leaving the others stranded (41b). Dependent-head synthesis presupposes scope-ordering in complex forms. Nivkh, to a lesser degree, also makes use of nominalization (comparable to Greenlandic) and verbalization.

(41)

Nivkh (Krejnovič 1937: 30)

a. ñ-ətək-ruvŋ-eʁlŋ-gun
1SG.POSS-father-sibling-child-PL
'my father's brother's children'

b. (Panfilov 1962: 167)
ñi həjk-xe kʻeq-xe-ḍif-ku-nřə-ḍ
1SG hare-ASC.SG fox-ASC.SG-track-PL-see-IND/NML
'I saw the tracks of a hare and a fox.'

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5.6.5 Multiple packing

In languages with multiply packed polysynthetic verb forms, be they compositional or affixal, morphology plays a more pronounced role than syntax, but a clause is still larger than a predicative wordform alone, and the information integrated into the predicate is rather lexical than grammatical (as in 5-i), for example Wichita, Lakota, Takelma, Kiowa, Nez Perce, Paumarí, Tiwi, etc.

(42)

Kiowa (Watkins 1984: 180)
hègɔ́ yą́-kɔ́y-tǫ̀-mɔ̀·gɔ̀-ɔ̀mdè-hɔ̀
now 3SG.A>1SG.U.PL-Kiowa-speak-adept-become-go
'I am getting better at speaking Kiowa.'

(43)

Wichita (Rood 1976: 12)
has?a:kí-riwa:c-é:rhir?as-?i
EVID.AOR.3SG-big-buffalo-be
'It was a big buffalo.'

(44)

Tiwi (Osborne 1974: 36)
ji-ni-məni-kə-marikuaŋəpə-puŋipa
3SG.A.PST-distance-1S.U-evening-dance-hit_eye
'He came and hit me in the eye while I was dancing in the evening.'

(p. 90) 5.6.6 Holophrasis

Holophrastic polysynthesis is taken here in a strict sense, that is, not only including adverbials and person encoding of all central participants on the verb, but characterized by a smaller set of syntactic rules due to all wordforms being predicates, including expressions for objects and animates (46), excepting interspersed particles. Not so much lexical categories but different root classes are distinguished by their inflection and position in incorporation (cf. Sasse 1993). Compositional Cayuga (Sasse 2002, see (1)), Onondaga (Woodbury 1975), both Northern Iroquoian, Chinook (Boas 1911c: 573) and Nawatl (Launey 2002: 116–118) are of this type, which represents the most consistent species of polysynthesis, closest to a 'genuine' morphological type.

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(45)

Classical Nawatl (Launey 2002: 128)

a. ki-kwa ko:wa:-tl
3SG.OBJ-eat 3SG.snake-ABS
'It bites him, it is a snake.' or 'He eats it, it is a snake.'

b. ko:wa:-kwa-lo
3SG.snake-eat-PASS
'He gets snake-bitten.'

(46)

Cayuga (Sasse 2002: 217)

a. te-ká:-tęh
DUALIC-it-fly_off:HAB
'It habitually takes off.' / 'plane'

b. t-kat-í'trǫ'
CISL-they(neuter)-live:STATIVE
'(Animals) live there.' / 'stable'

5.6.7 Composite-stem layout

Languages with a noun-verb-distinction which compose a unitary verb concept out of two or three roots or root-like morphemes show the composite-stem layout. Ket, for instance, uses a handful of verbs with quite general meanings ('make,' 'have,' 'hit') which incorporate specific nouns.

(47)

Ket (Drossard 2002: 237–8)

a. d-ul'-t-a-i-bet
1SG-water-out-PRS-3SG.OBJ-make
'I spit.'

b. en-ba-s'-uk
memory-1SG-PRS-fly
'I forget.'

Algonquian languages have their characteristic three stem positions which compose the verbal semantics.

(48)

Meskwakie/Fox (Algonquian, Goddard 1990: 451)
wa•pešk-inamešk-e•-wa
white-skin-have(animate.intransitive)-3SG.
'He has white skin.'

(p. 91) This design comes close to the following one (5-viii) which operates with classifiers and has no clear noun–verb distinction. With their additional non-root classifiers, Algonquian languages manifest transitional features between the two designs (5-vii) and (5-viii).

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(49)
Shawnee (Algonquian, Denny 1989: 251)
ni=peʔš-ičāl-ē-n=a
1SG=touch-nose-abstract_final-by_hand=1>3
'I tweaked him on his nose.' with root *čāl* 'nose'

5.6.8 Building-block design

The building-block design is recognized for languages which compose a concept out of multiple classifier-like morphemes spread over different positions in the wordform, which makes them morphologically and semantically most complex, and the other core case of polysynthesis, for example Haida (as in (3)), Wakashan, Quileute, Salishan, Klamath, and Purepecha (Tarasco).

(50)
Atsugewi (Talmy 1985: 74)
ćw-a-sťaqʼ-íćta
3.SUBJ-from_wind_blowing_on_it-runny_icky_material into_liquid-FAC
'The guts blew into the creek.'

(51)
Spokane (Carlson 1990: 74)
čʼɬ-ʔoɬxʷ-álqʷ
under-go-long_cylindrical.object
'He crawled along under a log.'

(52)
Purepecha (Friedrich 1971: 232)
koɻ́-koɻ́-**nda**-pa-ni
drag_making_noise-RED-along_the ground-en.route_going-citation_form
'drag sth. along on the ground, noisily'

Expressions for objects and animates are likewise complex and semantically composite.

(53)
Kwakwala (Boas 1911c: 551)
Ḷōᵋ-s (stand-on_ground) 'tree'

Building-block languages are of the affixal type and presuppose a large inventory of non-root bound morphemes with concrete lexical semantics: Quileute and Spokane are well equipped in the ontological domains of body parts, artefacts, human environment (housing, vehicles), eggs, and even humans; Kwakwala and Tsimshian abound in local morphemes (Mattissen 2006). (p. 92) Typically, there is a weak noun–verb distinction, this

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time with roots, bound morphemes, and stems which indiscriminately appear in wordforms of distinct categories, distinguished by their outermost affixes (Wakashan, Boas 1911c: 441–2, 443, Salishan, Quileute, Andrade 1933: 193). Building-block languages do not show holophrasis in the strict sense of (5-vi). Austerlitz suspects Nivkh of having evolved from a building-block proto-language (e.g., 1980: 83).

These characteristic designs lay the foundation for finer-grained studies among peer languages in the sense of the subclasses.

5.7 Delimitation of Polysynthesis

The features used here to capture polysynthesis, namely, numbers of roots in a wordform, templatic or scope-ordering, polypersonalism, grammatical category accumulation, in/excorporation and recategorization are not polysynthesis-exclusive and open up a pathway for evolution towards (and away from) polysynthesis. Therefore the borderlines of polysynthesis to other morphological types have to be delineated.

Sheer overall complexity of a verb form measured by morpheme count is not a valid feature to this end: On the one hand, agglutinating languages may exhibit quite impressive morpheme chains (e.g., Turkish, Japanese, Yamphu), on the other, actual polysynthetic verb forms usually contain ‘disappointingly’ few morphemes. Morphemes expressing categories such as mood, modality, tense, aspect, person, number, valency, or voice may occur in all morphological types of languages and do not define polysynthesis. Thus, grammatical category accumulation is no sufficient criterion, either:

(54) Japanese (Mattissen 1995a: 7)
tabe-sase-rare-na-katta-roo
eat-CAUS-PASS-NEG-PST-SUPP
‘s.o. would not have been made to eat it.’

(55)

Yamphu	(Rutgers 1998: 160)
mokliŋ-mokliŋ	seʔ-yuŋ-ghæp-pe··tt-iŋ-æ
dizzy	be_drunk-put-take_along-RES-perfect-1.exclusive.patient.subject-factitive

‘I had become quite inebriated.’

Productive noun incorporation and verb-root serialization are found in Yucatec Maya, Japanese, and Swedish; Greek has productive incorporation of lexical local, manner, degree, and chronology adverbs (cf. Rivero 1992).

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(56)

Yucatec Maya (Mithun 1984: 858)

a. k-in-č'ak-ik če' (ičil in-kool)
ICPL-1SG.A-chop-IMPF.TR tree in 1SG.POSS-cornfield
'I chop a tree.'

b. k-in-č'ak-če'
ICPL-1SG.A-chop-tree (IMPF.ITR)
'I wood-chop'

(p. 93)

c. (Blair 1964: 65)
ku seb'-b'in
ICPL.3SG fast-go
'he goes fast'

(57)

Swedish (Tarek Ahmed, personal communication)

a. Nu slut-spurt-ar svensk hockey.
Now end-spurt-PRS Swedish hockey
'Now the Swedish hockey is making a final spurt.'

b. Sedan kryp-klättr-ade Astarot på takskiffer-n …
then creep-climb-PST A. on roof_slate-ART
'then Astarot creep-climbed onto the roof ...'

(58)

Japanese

a. Ainu-go=no benkyô=o su-ru
A.-language=GEN study=ACC do-NPST
's.o. does Ainu language studies.'

b. Ainu-go=o benkyô-su-ru
A.-language=ACC study-do-NPST
's.o. studies the Ainu language.'

c. (Martin 1988: 441–55)
nori-hagure-ru board-separate-NPST 'miss [public transport vehicle]'
tobi-das-u fly-send_out-NPST 'fly out'
yomi-kaes-u read-return-NPST 're-read'
tabe-sugi-ru eat-pass-NPST 'overeat'

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Japanese even has productive verbalizers reminiscent of Greenlandic and Akhaz.

(59)

Japanese	(Martin 1988: 282–6)	
kanemoti-bur-u	rich_person-pose_as-NPST	's.o. plays the rich man'
otona-bir-u	adult-become_like-NPST	's.o. shows signs of precocity'
genki-zukeru	vitality-provide_with-NPST	's.o. encourages s.o.'

All these languages lack non-root bound morphemes with semantics and functions listed in (4), particularly local ones.

But then, there are languages with an array of local non-root bound morphemes such as German, Russian (and Slavic languages), Hungarian, and especially South Caucasian (p. 94) languages (e.g., Georgian, Laz). They have more local morphemes than the polysynthetic languages Chukchi, Sora, and Arabana, which have one single local/directional morpheme each, and Classical Nawatl and Iroquoian languages which have two (termed 'cislocative' and 'translocative' in Iroquoian).

(60) Mohawk (Iroquoian, Mithun 1999: 139)

a. **ta**-s-at-áwei-a't
CISL-2.A-MED-be.in-CAUS
'come in!'

b. **ia'**-s-at-áwei-a't
TRSL-2.A-MED-be.in-CAUS
go in!'

German and Russian even integrate local prepositions into a verb form, Laz is polypersonal (cf. Mattissen 1995b), but, like Russian, does not have noun incorporation nor verb-root serialization. German has a few cases of adverb incorporation and of incipient noun incorporation with the only fully inflecting one based on denominal backformation (63). The qualitative difference between these local morphemes and, say, non-root bound morphemes in Ket, lies in their being lexicalized on their roots.

(61)

Ket	German	Russian	Laz
d-ʌla-l-aq	raus-geh-en	vy-xodit'	gama-b-ul-ur
1SG.SUBJ-outside-PRF-go	out-go-INF	out-go:INF	out-1.A-go-PRS.1S
'I went outside'	'to go out'	'to go out'	'I go out'

(62)

Laz	(Sevim Genç, personal communication)	
eş ǩe-bulur	(up_in_enclosed_space-go)	'I climb [a mountain, tower]'
o ǩo-biyam	(asunder/together-take)	'I gather sth.'
ǩeş ǩe-pxer	(in_middle-sit)	'I sit in the middle'

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(63)

German

Ich	staub-saug-e	den	Teppich.
1S	dust-suck-1SG.IND.PRS.ACT	the(ACC)	carpet(ACC)

'I am hoovering the carpet.' with *staubsaug-en* 'hoover'<*Staubsauger* 'vacuum cleaner'

These observations lead to establishing productive integration of local non-root bound morphemes into the verb form as defining criterion, ruling out pure compositional polysynthesis. Table 5.2 compares relevant features of languages to both sides of the assumed polysynthesis border.

The abbreviations NI and VV stand for noun incorporation and verb-root serialization, respectively, which express comparable categories to affixes. Numbers indicate absolute numbers of tokens.

The table shows that the exact borderline cannot be drawn without considering productivity and degree of lexicalization of relevant features. Yucatec Maya, Nivkh, and Sora, as well as Pirahã, Yamphu, Kotiria (Tukanoan, Stenzel 2013), and Cavineña (Tacanan, Guillaume 2008) seem to mark the very threshold of polysynthesis. (p. 95)

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Table 5.2 Borderline cases in comparison to polysynthesis

	persons encoded on verb	**local affix**	**manner affix**	**other affixes**	**noun incorporation**	**verb root serialization**	**polysynthetic**
	compositional						
Swedish	1	−	−	−	+	+	−
Japanese	(2) [2]	−	(VV)	−	+	+	−
Yucatec Maya	2	−	−	degree, chronology	+	+	−
Nivkh	(2)	(NI)	(VV)	+	+	+	+?
Sora	2	1	−	−	+	+	+
Ainu	2	−	+	degree	+	+	+
Nawatl	2	2	(VV)	−	+	+	+
Ket	2	+	(VV)	−	+	+	+
Shoshone	−	4	+	instrumental	+	+	+

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Chukchi	2	1	+	+	+	+	+
	serializing						
Pirahã	−	−	−	degree	−	+	−
Yamphu	2	(VV)	(VV)	degree	−	+	−
Kotiria	2	(VV)	(VV)	degree, evidential	+	+	−
Cavineña	−	+	(VV)	−	(+)	+	+
Chinook	3	+	−	−	(+)	+	+
Awtuw	−	+	+	degree, chronology	−	+	+
	affixal						
Laz	2	+	1	+	−	−	−
Abkhaz	3	+	−	degree, chronology	−	−	+

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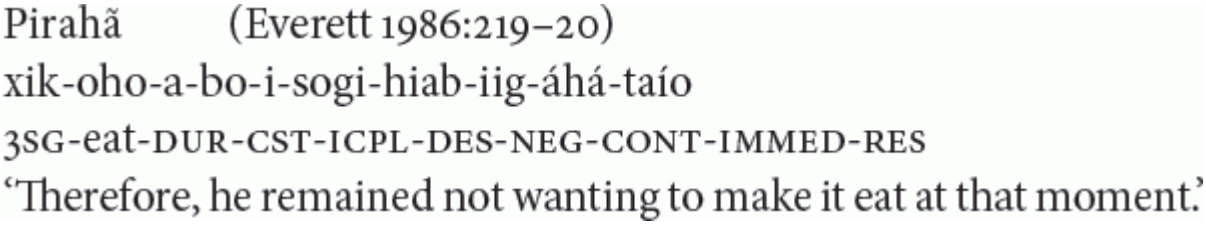
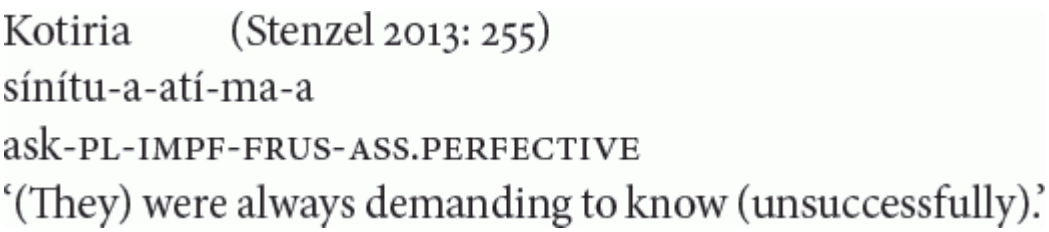
(64)


Pirahã (Everett 1986:219–20)
xik-oho-a-bo-i-sogi-hiab-iig-áhá-taío
3SG-eat-DUR-CST-ICPL-DES-NEG-CONT-IMMED-RES
'Therefore, he remained not wanting to make it eat at that moment.'

(p. 96)

(65)


Kotiria (Stenzel 2013: 255)
sínítu-a-atí-ma-a
ask-PL-IMPF-FRUS-ASS.PERFECTIVE
'(They) were always demanding to know (unsuccessfully).'

The latter four suggest a second path of evolution towards polysynthesis starting from languages with verb-root serialization and grammatical category accumulation, such as Yamphu.

5.8 Conclusion

The five parameters presented here, namely, word-formational type, internal organization, person encoding, evolutionary path, and characteristic design, help to delineate the heterogeneous field of polysynthesis. The former two are independent of each other and allow the subclassification of polysynthesis into the following types:

Word-formational types:

- **1-ii** compositional polysynthesis with subtypes
- **1-ii-a** noun incorporating and verb-root serializing
- **1-ii-b** verb-root serializing only
- **1-ii-c** noun incorporating only
- **1-iii** transitional polysynthesis
- **1-i** affixal polysynthesis

Internal organization:

- **2-i** templatic organization
- **2-ii** scope ordering
- **2-iii** mixed organization.

As there are traces of grammaticalization of roots within (earlier) noun incorporation and verb-root serialization to non-root bound morphemes, suggesting an evolutionary path from compositional to affixal polysynthesis, a distinction of affixal and compositional

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polysynthesis into two independent morphological types does not make sense. For the emergence of predicate-internal complexity, three possible ways suggest themselves:

layering (onion type, 4-i),
internal expansion (sandwich type, 4-ii) and
coalescence (burdock type, 4-iii).

Person encoding cuts across the above subclasses with the majority of languages manifesting polypersonalism on the predicate (3-i), but monopersonal (3-ii) and even apersonal predicates (3-iii) exist without derogating other structural features typical of polysynthesis. Polypersonalism thus does not qualify as necessary condition.

(p. 97) The heterogeneity of polysynthetic structures is pithily depicted in the characteristic designs:

(5-i) Grammatical category accumulation
(5-ii) Ping-pong recategorization
(5-iii) Productive in/excorporation
(5-iv) Dependent-head synthesis
(5-v) Multiple packing
(5-vi) Holophrasis
(5-vii) Composite-stem layout
(5-viii) Building-block design

The defining parameters and the characteristic designs accommodate the structural variabilities of polysynthetic languages delineated in 0-i and 0-ii and allow for the reconciliation of conflicting approaches to polysynthesis.

Abbreviations

A
actor
ABS
absolutive, absolute
ACC
accusative
ACT
active
AOR
aorist
AP
antipassive
ART

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article
ASC
correlative-associative
ASS
assertive
BEN
benefactive
CAUS
causative
CISL
cislocative
CLF
classifier
CND
conditional
COLL
collective
CONT
continuative
CPL
completive
d
dual
DEP:TRANS
dependent:transitive
DES
desiderative
DISTR
distributive
DU
dual
DUR
durative
EMF
final emphatic
EMPH
emphatic
ENU
enumerative
ERG
ergative
EQU
equative

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EVID
evidential
f
feminine
FAC
factual
FRUS
frustrative
FUT
future
GEN
genitive
HAB
habitual
ICPL
incompletive
IMMED
immediate
IMP
imperative
IMPF
imperfective
INCH
inchoative
IND
indicative
INF
infinitive
INS
instrumental
INT
intentional
IP
intransitive participle
IRR
irrealis
ITER
iterative
ITR
intransitive
LOC
locative
LOCNML

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local nominalization
m
masculine
MED
medium (p. 98)
n
neuter
NML
nominalization
NEG
negation
NPST
non-past
OBJ
object or objective
p
plural
PASS
passive
PL
plural
POSS
possessor
POT
potential
PROG
progressive
PRF
perfect
PRS
present
PRV
preverb
PST
past
PTCL
participle
Q
question marker
REF
referentializer
REFL
reflexive

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REM
remote past/future
REMPST
remote past
REP
reportative
RES
resultative
SG
singular
SBJ
subject
SEQ
sequential marker
STAT
stative
SUPP
suppositive
TR
transitivizer
TRSL
translocative
U
undergoer
VBL
verbalizer
XCL
exclamative

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I started research on this topic within the Polysynthesis Project of the Research Program ‘Theory of the Lexicon’ funded by the Deutsche Forschungsgemeinschaft (DFG) in 2000–2, whose support I would like to acknowledge.

Notes:

(1) To count as a root, a morpheme with lexical semantics must constitute a free word form on its own or in combination with an inflectional affix.

(2) See Mattissen (2015) for person encoding in Japanese.

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The Subjectivity of the Notion of Polysynthesis

Jerrold Sadock

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Abstract and Keywords

It is argued that no quantitative measures, nor any simple structural distinctions, can accurately separate languages that we would impressionistically count as polysynthetic from those that we would not. Rather, our intuitions are influenced by the type of morphology a language presents, by the phonological and lexical facts associated with its morphology, and by the degree to which its morphology does the work of syntax. Disregarding such features, it can be argued that biblical Hebrew is more synthetic than the Inuit language Kalaallisut, a conclusion that I, and perhaps most typologists would reject. I conclude that a thorough description of the morphology of language and its relation to the other components of grammar is superior to any method of placing that language on a scale of syntheticity.

Keywords: Inuit, Kalaallisut, morphology, polysynthesis, polysynthetic, synthetic

6.1 Introduction

DEFINITIONS of *polysynthetic* and *polysynthesis* abound. Most make vague reference to the length and complexity of words, to the number of morphemes that words can contain, and to the expressive power of these long words. The following definition of *polysynthetic* from the American Heritage Dictionary is typical:

> Of or relating to a language such as Eskimo or Mohawk, characterized by long, morphologically complex words with a large number of affixes that express syntactic relations and meanings usually expressed as phrases or sentences in other languages.

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> (American Heritage Dictionary 2011: 1367)

There have been various attempts to quantify synthesis and establish cut-off points on the continuum: analytic (or isolating), synthetic, polysynthetic. Greenberg's (1960) measure is the earliest:

> The ratio M/W where M equals morpheme and W equals word, is a measure of this synthesis and may be called the synthetic index. Its theoretical lower limit is 1.00, since every word must contain at least one meaningful unit. There is no theoretical upper limit, but in practice values over 3.00 are infrequent. Analytic languages will give low results on this index, synthetic ones higher, and polysynthetic languages the highest of all.
>
> (Greenberg 1960: 185)
>
> … if we define an analytic language as one with a synthetic index of 1.00+1.99, synthetic as 2.00+2.99, and polysynthetic as 3.00 +, the results would conform to the usual nonquantitative judgments.
>
> (Greenberg 1960: 194)

Various other quantitative measures of synthesis have been suggested that allow us to order languages on a scale of synthesis. Some of these will be reviewed here and shown to give some anomalous results.

Comrie defines an *ideal* polysynthetic language, which does not, and presumably cannot exist.

(p. 100)

> in a polysynthetic language, or rather in an ideal polysynthetic language, each sentence consists of just one word, this word in turn consisting of as many morphemes as are necessary to express the intended meaning.
>
> (Comrie 1983: 46)

But recognizing that the set of languages fitting this bill is empty, Comrie proceeded to adopt Greenberg's synthetic index, though without fixed points on the scale that discriminate between the analytic and the synthetic, the synthetic and the polysynthetic.

In contrast to these scalar characterizations, Mark Baker provided a well-known *qualitative* definition of a polysynthetic language that actually does categorize certain existing languages as polysynthetic and excludes others. The definition requires that a polysynthetic language must 1) make it possible to refer to all core arguments of a sentence by means of agreement affixes, and 2) have productive, syntactically active, robust noun incorporation, which he described as follows:

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> we may consider noun incorporation to be “robust” … if (a) it is reasonably productive, (b) the noun root is fully integrated with the verb morphologically, (c) the noun is referentially active in the discourse (…), and (d) both the noun root and the verb root can, in general, be used independently.
>
> (Baker 1996: 19)

The general problem I address in this chapter is that none of the quantitative measures, nor Baker’s qualitative definition, produce categorizations of languages that correspond to our intuitive judgments. The major piece of evidence I provide is a demonstration that Kalaallisut (West Greenlandic Inuit) and Biblical Hebrew are comparable according to any of the several empirical measures, and in fact, Hebrew will be evaluated as more synthetic than Kalaallisut according to some measures, whereas Hebrew is ordinarily classified as “synthetic”, and Kalaallisut is frequently taken to be a paragon of polysynthesis.

I will suggest that the fault lies with the idea that all morphology is created equal. I will argue first of all, that only what I will call “expressively active” morphology ought to count as contributing to synthesis in the relevant sense. Roughly speaking, expressively active features of word building take over the role of independent syntactic words in less synthetic languages. Secondly, I claim that more superficial sorts of morphology—simple cliticization and special cliticization, in the terminology of Zwicky 1977—make even expressively active morphology less impressive than the deeper sorts of morphology, in particular, inflection and derivation. I also believe, though I will not be able to back up that feeling here, that the *manner of expression* of the morphology also influences our subjective feelings concerning synthesis. The more transparent the manner in which the morphology is expressed, the less striking it is to typologists, and therefore agglutination contributes less to the feeling of synthesis than fusion, and fusion contributes less than symbolic change.

6.2 Baker 1996

It is to Baker’s credit that his definition is quite clear and reasonably precise. There are clear examples of languages like Mohawk that meet his definition, and clear examples (p. 101) of languages that don’t. As Baker points out, “Criterion (d) excludes languages of the Eskimoan family, where NI is obligatory with some verbs and forbidden with the rest.” He’s right about this, of course. There are on the order of only 100 denominal suffixes with a verbal meaning in any particular Inuit-Yupik language. They obligatorily attach to noun stems, deriving verb stems from them.[1] All other verbs, simple or derived, are independent and cannot be compounded with a noun stem. In fact, there is virtually no compounding of any kind in languages of the “Eskimoan family”. And it is for this reason that Sapir 1911 said, “Eskimo, a language particularly rich in suffixes that verbify nouns,

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has been termed polysynthetic, but has not been employed by serious students as a source of examples of noun incorporation."

The resulting claim—that Inuit and Yupik languages are not polysynthetic—flies in the face of the traditional polysynthetic classification of these languages. Michael Fortescue (2002: 257) characterized Eskimo-Aleut as "arguably the most polysynthetic family in the world."[2] Now Baker has every right to use his definition of polysynthesis in the technical way he does, and I fully recognize that Baker has uncovered very interesting and important linguistic correlates of the definition he adopts; but the class of languages it selects is not a set that researchers like Sapir (1921), Fortescue (2008), and Mithun (2009) place under the rubric of polysynthetic.

6.3 Quantitative Measures

I turn next to the more numerous suggestions of statistical techniques that are supposed to be litmus tests to measure how synthetic a language is. We may begin with Greenberg 1960. His definition of the synthetic index makes crucial reference to morphemes, and here is his structuralist technique for extracting them:

> A square exists when there are four meaningful sequences in a language which take the form AC, BC, AD, BD. An example is the English *eating: sleeping*:: *eats:sleeps,* where A is *eat-*, B is *sleep-,* C is *-ing* and D is -s. Where a square exists with corresponding variation of meaning, we are justified in segmenting each of the sequences of which it is composed. Once it has been segmented, each of its segments may then be tested to discover if it also is a member of a square. If it is, it in turn will be segmented into two morphs. If it is impossible, then we have reached the limit of analysis and cannot divide further. (p. 188)

There are at least two troublesome features of Greenberg's measure that lessen its utility in identifying polysynthesis, one having to do with how morphemes are identified, and the other having to do with the fact that morphology is often present only for historical reasons, or redundantly expresses what has to be put syntactically anyway.

(p. 102) 6.4 Greenberg's Definition of the Morpheme

Greenberg's method amounts to the now standard claim that a morpheme is the smallest unit with a constant form and a constant meaning. Already in a footnote to the passage just quoted, Greenberg allowed the *absence* of form to count as a form so that *eat* is bimorphemic, consisting of the morphemes *eat* and *zero*. He then further diluted the

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formal requirement in order to recognize “formally defective” relations. In this way, both *men* and the plural *sheep* will be bi-morphemic. Soon after that he rescinded the *semantic* requirement, as well:

> Corresponding to formally defective squares we have those which are semantically defective. Here, if there are parallel non-automatic variations, the analysis is permitted even though definite meanings cannot be assigned to the morphs. Thus, the sets deceive: *receive:: decep+tion: recep+tion::decei+t: recei(p)t* justify the segmentations *de* + *ceive* and *re* + *ceive*. (p. 189)

The weakening of the definition of the morpheme gives the analyst a great deal of freedom to increase or decrease the morpheme count of a text to suit his or her preconceptions, and that renders unsound Greenberg’s synthetic index and the degrees of syntheisis that are based on it.

6.5 Expressively Inert Morphology

A problem that is not mentioned by Greenberg, but one which seems to me just as important as the difficulty of counting morphemes, is the existence of morphology that does nothing to decrease the length or complexity of an alternative syntactic expression. If a language does not have morphological tense distinctions but expresses tense relations, it will have to express them by means of the more complicated syntax of an auxiliary construction or the like. But if it has an auxiliary construction, let’s say *have* followed by a verb phrase, the marking of the head of the subordinate VP is not necessary. We might just as well say *I have go to Boston* as *I have gone to Boston*.[3] The morphology we see in *gone* might be helpful for parsing, but it is what I will call *expressively inert*.[4] I will say that a morphological process is *expressively active* if it does expressive work that would otherwise be encoded syntactically.

As another example of expressively inert morphology, let us compare the 39th verse of the first chapter of the Gospel of Luke in Icelandic and in Danish.

(1)

Icelandic

En á	þeim	dögum	tók	María
en á	þei-m	dag-um	taka-3sg.PST	Mari-a
but on	they-DAT.pl	day-DAT.pl	take-PAST	Mary-NOM.sg

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(p. 103)

sig	upp	og	fór	með	flýti
si-g	upp	og	go.1sg	með	flýt-i
self-ACC.sg	up	and	go-PAST	with	haste

til borgar	nokkurrar	í	fjallbyggðum	Júda
til borg-ar	nokkur-rar	í	fjall- byggð-um	Júda
to town-GEN.sg	certain-GEN.sg	in	mountain-district-DAT.sg	Judah

(2)

Danish

I	de	dage	brød	Maria	op	og	skyndt	sig
i	de	dag-e	bryde-PAST	M	op	oq	skynde-PAST	sig
in	those	days-pl	broke	M	up	and	hurried	self

til	en	by	i	Judæas	bjergland
til	en	by	i	Judæa=s	bjerg-land
to	a	town	in	Judea=s	mountain-country

The Icelandic has lots of inflectional morphology, an area of grammar where Danish is quite poorly supplied. Icelandic has both case and number morphology and agreement in those categories within a noun phrase, but Danish makes no case distinctions in nouns, adjectives, or determiners. The case distinctions in Icelandic, however, are not expressive enough to eliminate the need for prepositions. Furthermore, Icelandic verbs display considerable person and number morphology in agreement with the subject, but Danish has lost all traces of it, even in the verb *være* “to be,” which has the single form *er* in the present tense of all persons and numbers. Nevertheless, Icelandic uses pronouns in the same way as Danish does. So even though Icelandic displays a higher index of synthesis (1.66) than Danish (1.33), there is very little compensatory simplification of the syntax. In that sense, it is no closer to being polysynthetic than the very analytic Danish.

Contrast this situation with the difference between the rendering of the same verse of Luke in that shining example of polysynthesis, Kalaallisut (West Greenlandic Inuit).

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(3)

Kalaallisut			
Kingunerileraa		Maria	aallarpoq
kingu-neq-gE[5]-lir-gE-a		Maria	aallar-Vuq[6]
after-NOM-have.as-begin-TPART-3s>3s		Maria. ABS	leave-IND.3sg
tuaviinnarlu	illoqarfimmukarluni		
tuavi-innar=lu	illu-qar-fik-mut-kar-lu-ni		
hurry-just=and	house-have-place-ALL.sg-go-CONJ-3Rsg		

(p. 104)

Judæap	qaqqalittaaniittumut;
Judæa-p	qaqqaq-lik-taq-ani-i-Tuq[7]-mut
Judea-ERG.sg	mountain-having-portion-LOC.3sg>sg-be-IPART-ALL.sg

(From http://old.bibelselskabet.dk/grobib/web/bibelen.htm)

5 6 7

Kalaallisut exhibits a great deal of both inflectional and derivational morphology, carrying case, person, and number, and tense/aspect information, and because of that, it makes no use of prepositions, does not require the use of personal pronouns, and has no auxiliary verb structures of the usual kind. Thus a great deal of Kalaallisut inflectional morphology is expressively active, whereas much of the inflectional morphology in Icelandic is expressively inert.

Besides the possession of morphology that is redundant on the basis of obligatory independent words, a second source of expressively inert morphology is the lexicalization of forms whose meanings are not a compositional function of the meanings of the morphemes they contain. In many cases these morphological idioms could just as well be, or actually are, interchangeable with word forms that consist of fewer morphemes. Thus *investigate*, in the right contexts, can be paraphrased by *probe, insinuate* by *hint,* and *fortification* by *fort.* The great majority of the formations like *define, refine confine, reflect inflect, deflect,* that Greenberg would count as bi-morphemic could be paraphrased by mono-morphemes, since they are, after all, mono-*sememes*. As such, they do nothing to reduce the number of words needed to express a text beyond expanding the vocabulary, the effect of which we go on to discuss. Whatever morphological complexity word-sized idioms contain is therefore expressively inert.

From these considerations it seems to me that the following holds generally:

(4)

Only expressively active morphology is relevant to degree of synthesis.

And from this it almost follows, or at least it makes sense that:

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(5)

The smaller the number of words a language needs to express a particular, elaborate meaning, the closer it is to being polysynthetic.

Here is the way that Östen Dahl puts this idea in his contribution to the present volume:

> Another possible parameter is the total number of words in the text—if polysynthetic languages pack more information into each word, they should also have lower word counts. This measure, the values of which in the N[ew]T[estament] sample range between 100 and 600 words, has a fair negative correlation with the previous one (+0.58), and the results are similar.

Despite the two problems with the synthetic index that were just discussed, there is a general tendency for that index to give a rough approximation of the synthetic quality of a language, as we will see shortly. So we now have two more-or-less objective tests that, though flawed, tend to align to some degree in diagnosing expressively active morphology: Greenberg's synthetic index, and the number of words needed to render a standard text.

The previous measure mentioned by Dahl is the number of *unique* words in a text, and that provides a third numerical way of rating syntheticity:

> it is of some interest to look at some other possible measures of corpus complexity [besides Greenberg's index of synthesis], which do not presuppose a morpheme-level analysis of (p. 105) texts. The number of distinct word forms (types) in a corpus is such a measure, which can be assumed to reflect to a larger or smaller extent the size of paradigms in the language, although other factors such as the size of the lexicon will also be important. It has the advantage of being easily computable for digital texts.

As Dahl says, the size of the lexicon also exerts an influence on how many words are used to encode a particular corpus. A principle originally due to Kempson (1980) and elaborated by Horn 1984 says that hyponomy in a language will allow the hypernym to refer to its original designation minus the designation of the hyponym. If a mug is a kind of cup, then where it is relevant, saying *cup* will pick out cups that are not mugs. A language with a word for cup, but no word for mug will have to use more words to narrow the reference to mug, for example *large, straight-sided cup* to pick out mugs, and therefore will need more words to refer to exactly the class of non-mug cups, for example *cup for tea.* With Dahl's caveat, the number of unique words per text would seem to provide a third objective measure of expressively active syntheticity.

There is a problem with the unique words test, however. Given a smaller sample, say a few hundred words, the more synthetic in the sense of (5) that a language is, then the fewer words it will need, but the fewer words it needs, the fewer *unique* words it will present. If there are, say fifty sentences in the text and six words per sentence in an isolating language, the isolating language may present, say 100 to 200 unique words, but

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the ideal polysynthetic language will have only fifty words in toto. As the corpus grows, however, the number of unique words in an isolating language will tend toward an asymptote equal to the size of the lexicon. A language with lots of expressively active morphology will tend more slowly to an asymptote, and for Comrie's ideal polysynthetic language, the number of words (roughly equal to the number of sentences) will tend toward infinity as the corpus increases. To correct for influence of the length of the text, it ought to be enough to calculate the *percentage* of unique words in a standard text. The text should be long enough to ensure that even the most synthetic language will not have as many unique words as it has words altogether.

6.6 Previous Results

Greenberg's 1960 study tested the validity of the index of synthesis by applying the measure to eight languages which were chosen because they were "those frequently cited as examples of specific types in the existing literature in typology, subject to the limitations of my own knowledge of specific languages." The language he picked as a representative of the analytic type was "Annamite" (Vietnamese), and for the polysynthetic language, he chose "Eskimo" (actually a Northern dialect of Kalaallisut). That language won the Greenbergian contest hands down, with a morpheme-to-word ratio of 3.72. The next highest score was a mere 2.59 recorded by Sanskrit, and Annamite brought up the rear with a count of only 1.06.

I recently used the words-per-text measure in an informal investigation of twenty languages ranging from the highly analytic to the highly synthetic. The text I used was Luke 1:39–45, which is available for a wide variety of languages. I found that the results accorded with intuition to a fair extent. Kalaallisut, Standard West Greenlandic, again took the prize, needing only forty-eight words to translate the passage. Second place in the syntheticity contest, rather surprisingly, was garnered by Hebrew, in an 1886 translation imitative of the style of the Hebrew Bible. That translation amounted to sixty-eight words, a fact that I will come back to.

(p. 106) After reading Östen Dahl's article, I decided to see what the number of unique words and the percentage of unique words in a shared text would reveal. For this, a longer text was required. I also chose a biblical passage for the obvious reasons that Dahl mentions, here Chapter 8 of Genesis, in which Noah makes landfall. As benchmarks, the translation into Kalaallisut had 175 unique words in the space of 244 altogether, making the text 71.7 percent unique, the English of the King James Version is 584 words long, 200 of them unique, yielding a uniqueness quotient of 34.25 percent, and the text in Haitian Creole is 571 words long and is 31.70 percent unique, with 181 different word forms. These results generally jibe with my feelings about the relative syntheticity of the languages.

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But the results for biblical Hebrew were again unexpected: There were 204 distinct words in the 259 words of text in Genesis 8. So 78.76 percent of the words were distinct, and that is seven percentage points *higher* than the percentage of distict word forms in the Kalaallisut version. Kalaallisut still is a little more lexically spare than Hebrew, but not much. Sapir's (1921) six-dimensional analysis of twenty-one languages, however, judges five of them to be polysynthetic or mildly polysynthetic, and Hebrew is not among them; Sapir labels it just plain synthetic. Greenberg (1960: 184) accepts that estimation, and I think most typologists today would do the same.

It is instructive to ask why our intuitions don't match the various objective measures of synthesis, why Hebrew with its modest morphological component scores comparably to a language that is a stellar representative of what is "arguably the most polysynthetic family in the world." The answer, I believe, lies not just in how much of the expressive load of a language is carried by the morphology, but also in *what kind of morphology accounts for the expressivity of the words* .

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6.7 Synthesis in Kalaallisut and Hebrew

In (6) and (7) we see the Kalaallisut and the Hebrew of the first two verses of Genesis 8.

(6)

Genesis Chapter 8:1–2 Kalaallisut

1. Kisianni Guutip puiorsimanngilai Noa nersutillu nujuartat nersutaatillu umiarsuarmeeqatai tamaasa.
2. Guuti nunap qaavagut anorersuartitsimmat imeq appariartulerpoq. Itinersuup puilasui qilaallu igalaavi matuneqarput, sialuillu qilammit torartut unitsitaapput.

(7)

Genesis Chapter 8:1–2, Hebrew[8]

v.1 wayyizkōr ʾĕlōhîm ʾeṯ-nōaḥ, wəʾêṯ kāl-haḥayyāh wəʾeṯ-kāl-habbəhêmāh, ʾăšer ʾittōw battêḇāh; wayyaʿăḇêr ʾĕlōhîm rūaḥ ʿal-hāʾāreṣ, wayyāšōkkū hammāyim.
v.2 wayyissāḵərū maʿyənōṯ təhōwm, waʿărubbōṯ haššāmāyim; wayyikkālê haggešem min-haššāmāyim.

8

(p. 107) The two texts are similar, at least insofar as neither one has any short words and both have some fairly long words. The mechanisms by which the two languages avoid short words and produce long words, however, are quite different, and it is this difference, I suggest, that gives us the impression, despite the statistics, that Hebrew is not polysynthetic, and Kalaallisut definitely is. To see this difference, a little morphological analysis is in order, and to provide that, I will have to explain the morphological framework I assume. (For details on “pure morphology,” see Sadock 2012.)

6.8 Morphology

Morphology is the structure of WORDs as defined by the morphological component of the grammar. Morphological WORDs are ordinarily also syntactic words, but not necessarily, and they are ordinarily semantic atoms—but sometimes they aren’t. Examples of both morphosyntactic and morphosemantic mismatches will figure in the analyses of Kalaallisut and Hebrew to follow.

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One of the basic categories of morphology is, then, the WORD. The only other irreducible morphological category is a sub-WORD, which I will call a STEM. There are therefore four first-order processes of morphology: functions from stems to stems or words, and functions from words to stems or words. Three of these resemble the familiar processes called derivation, inflection, and cliticization, but now defined in purely morphological terms. One of the four, though a well-attested kind of morphology, has no standard name: the function that applies to words and derives stems. In Sadock 2003 and 2012, I call this *derivational cliticization*. An example of a derivational clitic will turn up in the discussion of the Kalaallisut text of Genesis 8.

(8) The first-order morphological functions:

	Input		Output	Morphological Type
a.	STEM	→	STEM	derivation
b.	STEM	→	WORD	inflection
c.	WORD	→	WORD	cliticization
d.	WORD	→	STEM	derivational cliticization

Secondary processes lead from one of the fundamental categories to one of the first order functions, for example a process that takes a stem and produces from it a clitic. This kind of a function is found in the Hebrew text we will examine.

Our ordinary understandings of the terms “derivation,” “inflection,” and “cliticization” confound syntactic, semantic, phonological, and lexical considerations with morphology, but none of the cross-modular generalizations of this kind that exist are exception free. The correspondences can be handled as defaults, but not as definitional of the morphological processes. When I speak of derivation, or inflection, or cliticization, I will mean the purely morphological process as defined in (8), and nothing more.

(p. 108) 6.9 Kalaallisut

With this background in mind, I turn to the analysis of the first two verses of Genesis 8 in Kalaallisut, which is presented in (9), along with a morphemicization and a morpheme-by-morpheme gloss.

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(9)

v.1	Kisianni	Guutip	puiorsimanngilai	Noa
	Kisianni	Guuti-p	puiur-sima-nngit-lai	Noah
	but	God-ERG.sg	forget-have-NEG-INDIC.3s>3pl	Noah.ABS.sg

nersutillu	nujuartat	nersutaatillu
nersut-t-lu	nujuartaq-t	nersut-ut-t=lu
mammal-DIR.pl-and	wild.one-DIR.pl	mammal-owned-DIR.pl=and

umiarsuarmeeqatai	tamaasa.
umiaq-(r)suaq-mi-it-qat-i	tamaq-isa
boat-big-LOC.sg-be-fellow-ABS.3sg>3pl	all-ACC.3pl

v.2	Guuti	nunap	qaavagut	
	Guuti	nuna-p	qaa-vagut	
	God.ABS.sg	land-ERG.sg	surface-PER.3sg	

anorersuartitsimmat	imeq
anorersuar-tit-si-mmat	imeq
be.very.windy-cause-ANTIP-PSUB.3sg	water.ABS.sg

appariartulerpoq.	Itinersuup
appar-riartor-ler-Vuq	iti-niq-(r)suaq-p
go.down-more.and.more-begin-INDIC.3sg	be.deep-NML-big-ERG.sg

puilasui	qilaallu	igalaavi
puila-suq-i	qilak-t=lu	igalaaq-i
well.up-NOM-3sg>3pl	heaven-pl=and	window3pl>3pl

matuneqarput,	sialuillu	qilammit.
matu-neqar-Vut	sialuk-t=lu.	qilak-mit
close-PASS-INDIC.3pl	rain-DIR.pl=and	heaven-ABL.sg

torartut	unitsitaapput
turar-Tuq-t	unit-tit-taq-u-Vut
fall-IPART-3pl	stop-cause-PASSPRT-be-INDIC.3pl

The first big word in this excerpt is *puiorsimanngilai* “(he/she) has not forgotten them.” It consists of, in order, the following pieces: 1) a transitive verb stem *puior-*, “forget it/them,” 2) a derivational affix *-sima-,* meaning “to have (apparently) V’ed,” that derives verb stems from verb stems, preserving the transitivity of the stem, 3) another verb stem-to verb stem affix, *-nngit-,* that means “not to V,” and finally a transitive inflection, *-lai-,*

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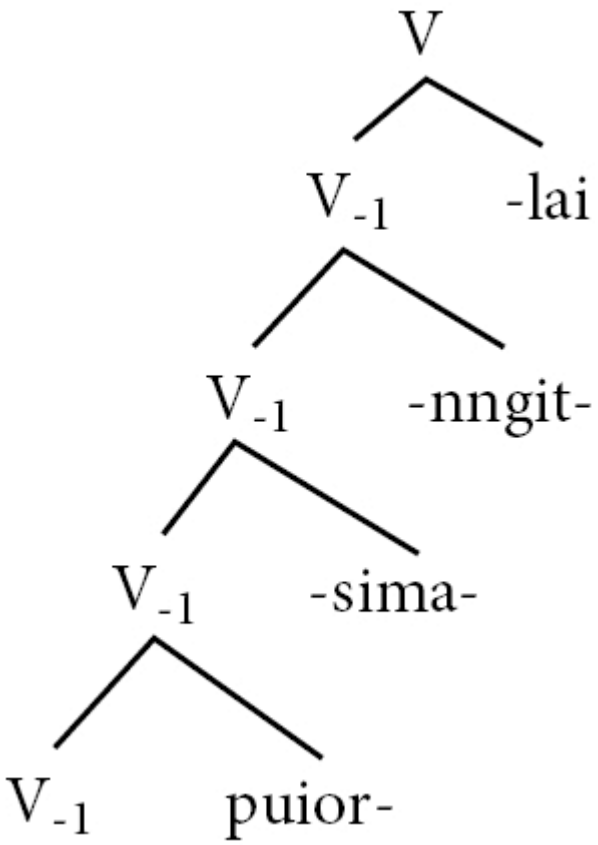
that attaches specifically (p. 109) to the negative marker *–nngit-* and makes an indicative verb with a third person singular subject (in the ergative, if there is an external NP) and a third person plural object (in the absolutive, if expressed by an external NP).

The morphological structure of this word is given in (10), where V-1 represents a verb stem, and V represents a whole morphological verb including its necessary verbal inflections.

(10)



There is no reason that I know of that would prevent the syntax of this verb from being just an unanalyzable syntactic verb. In other words, despite the complex morphology, it would do to assign a mono-clausal syntactic structure to the sentence *Guutip Noa puiorsimanngilaa* "God had not forgotten Noah." And since there is little or no evidence for the existence of a VP in the syntax of Kalaallisut (Sadock 1994), the syntactic form of the sentence is (8), the same simple syntax that *Guutip Noa takuaa,* "God saw Noah" has:

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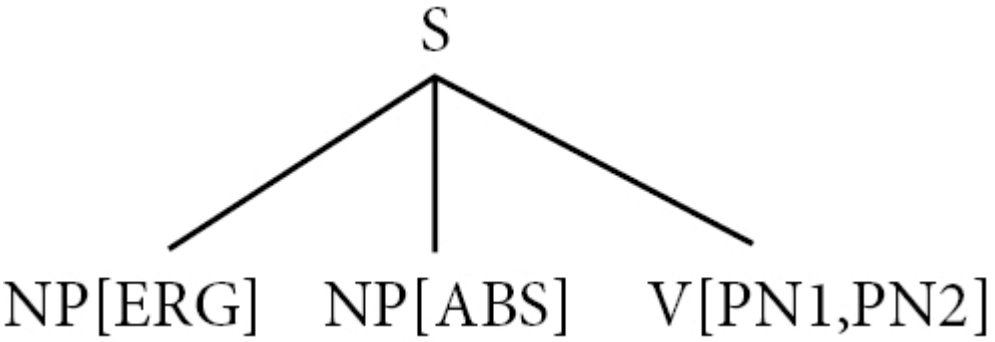
(11)



Negation in Kalaallisut, however, is generally ambiguous in semantic scope between predicate negation and propositional negation. Fortescue (1984: 136ff) provides example (12), where the first translation is predicate negation, and the second propositional negation:

(12)

akulikitsumik	tikittanngilaq
akulikit-sumik	tikit-Tar-nngit-laq
do.often-ADV	come-repeatedly-NEG-IND.3sg

"He often didn't come" or "He didn't come often."

Puiorsimanngilai in Genesis 8:1 is a case of predicate negation. Here the verb "not forget" is semantically equivalent to "remember" making the coordination of absolutive complements false if God forgot Noah, or forgot the beasts, or forgot the cattle. The wide scope negation: "It was not the case that God forgot Noah and forgot the beasts, and forgot the cattle," would be false only if God *remembered* all three, a nonsensical, but possible reading. So the negative affix, which is firmly ensconced within the morphological structure of a word, can nevertheless appear in different places in semantic structure.

(p. 110) Phonologically, *-nngit-* is added to a vowel-final form of the stem, which is /ti/~/ta/ for stems ending in /t/,[9] and is the last vowel of the verb stem for all other stems. The lexical representation of the negative suffix in Kalaallisut is therefore (13).

(13)

–nngit-	
morphology:	V-1, αTRANS → V-1, αTRANS
semantics:	1) PRED → PRED
	2) PROP → PROP
syntax: nil	
phonology:	/…Vt/ → / … Vtinngit/
	/ …V(C)/ → /… Vnngit/

Next, consider example (14), also from verse 1:

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(14)

umiarsuarmeeqatai,	
umiaq-(r)suaq-mi-it-qat-i	tamaq-isa
boat-big-LOC.sg-be-fellow-ABS.3sg>3pl	all-ACC.3pl
“those that were with him in the ship”	

Here the noun STEM *umiaq-* has the noun-to-noun derivational suffix *–(r)suaq* “big,” forming another noun STEM, *umiarsuaq-.* “big boat,” “ship.” Next is the unpossessed locative singular inflection *–mi,* producing the WORD *umiarsuarmi* “in the ship.” Then we find an example of a derivational clitic *-it-* “be (in a location),” which is added to a locative case noun WORD and makes a verb STEM *umiarsuarmiit-* “be in the ship.” The suffix *–qat-* is a derivational nominalizer applying to a verb STEM to make a noun STEM meaning “fellow V-er.” Finally there is the absolutive plural possessed by a third person singular inflection *–i-*, which produces the word of the text *umiarsuaqatai* “his/her several companions on the ship.”[10]

Besides the derivational suffixes, inflectional suffixes, and derivational clitics that we find in Genesis 8:1–2, there are also clitics, for example *–lu* in the phrase *nersutaallu nujuartat* “and the wild animals.” This phrase is coordinated with *Noa* to its left, and with *nersutaatillu umiarsuarmeeqatai tamaasa* “and all the cattle that were with him in the ark.” It is clear that the morphological WORD *nersutaallu* is mismatched with the syntax, whose structure is (*-lu* (*nersutaat nujuartat*)), “and mammals wild.ones”.

6.10 Hebrew

Let us now examine the morphology of Genesis 8:1–2 in Hebrew, which we see in (15), along with a morphological gloss of the text. Segmentable morphemes are separated by plus signs both in the morphemicization and in the glosses. The nonsegmentable morphological processes are represented only in the gloss, separated by periods. Hyphens are shown in the first (p. 111) lines as written in the Masoretic, punctuated Hebrew. The morpheme PTB (person, tense, binyan) induces non-concatenative morphophonology as explained in McCarthy 1981, for example. It will be discussed in more detail following the figure in example 17.

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(15)

v.1	wayyizkōr		ʿĕlōhîm	ʿeṯ-nōaḥ,			
	wa=yyizkōr		ʿĕlōh-îm	ʿeṯ=nōaḥ,			
	and=PTB.remember		God-pl	DEF.ACC=Noah			
	wəʾêṯ	kāl-haḥayyāh		wəʾeṯ-kāl-habbəhêmāh,			
	wə=ʿêṯ	kāl=ha=ḥayyāh		wə=ʿeṯ=*kāl*=ha=bbəhêmāh,			
	and=DEF.ACC	all=the=wildlife		and=DEF.ACC=all=the=cattle			
	ʿăšerʿ	ittōw	battêḇāh;	wayyaʾăḇêr	ʿĕlōhîm	rūaḥ	
	ʿăšer	ʿitt=ōw	b=a=ttêḇāh;	wa=yyaʾăḇêr	ʿĕlōh-îm	rūaḥ	
	which	with=3m.sg	in=the=ark	and=PTB.send.across	God-pl	wind	
	ʿal-haʾāreṣ,	wayyāšōkkū	hammāyim.				
	ʿal=hā=ʿāreṣ,	wa=yyāšōkkū	ha=mmāy-im.				
	on=the=earth	and=PTB.abate	the=water-pl				
v.2	wayyissāḵərū	maʾyənōṯ	təhōwm,	waʾărubbōṯ			
	wa=yyissāḵərū	maʾyən-ōṯ	təhōwm,	wa=ʿărubb-ōṯ			
	and=PTB.stop	fount-pl		deep	and=window-pl		
	haššāmāyim	wayyikkālê		haggešem	min-haššāmāyim.		
	ha=ššāmāy-im	wa=yyikkālê		ha=ggešem	min=ha=ššāmāy-im		
	the=heaven-pl	and=PTB.restrained		the-rain	from=the=heaven-pl		

The longest word in verse 1 is *wəʾeṯ-kāl-habbəhêmāh,* the first element of which is the conjunction *w-*, which is always a pro-clitic to the first word of the phrase it introduces. It has various allomorphs that are predictable from the phonology of the first syllable of the host word. The Masoretes wrote the conjunction as forming an orthographic word with its host. Its host here is the preposition *ʿeṯ-,* a preposition that is used with definite direct objects. As here, it is almost always joined to the first word of its complement NP by a *makef,* a punctuation mark similar to a hyphen in form and use.[11] That word is the quantifier *kāl-* "all," which is likewise joined by a *makef* to the next word, *habbəhêmāh* "the cattle," and that word is composed of the definite article, *ha-,* whose vowel varies depending on the phonology of the syllable that follows it, and like the conjunction, is always written as one word with its morphological host.

It is clear that the syntax is the right-branching tree diagrammed in (16):

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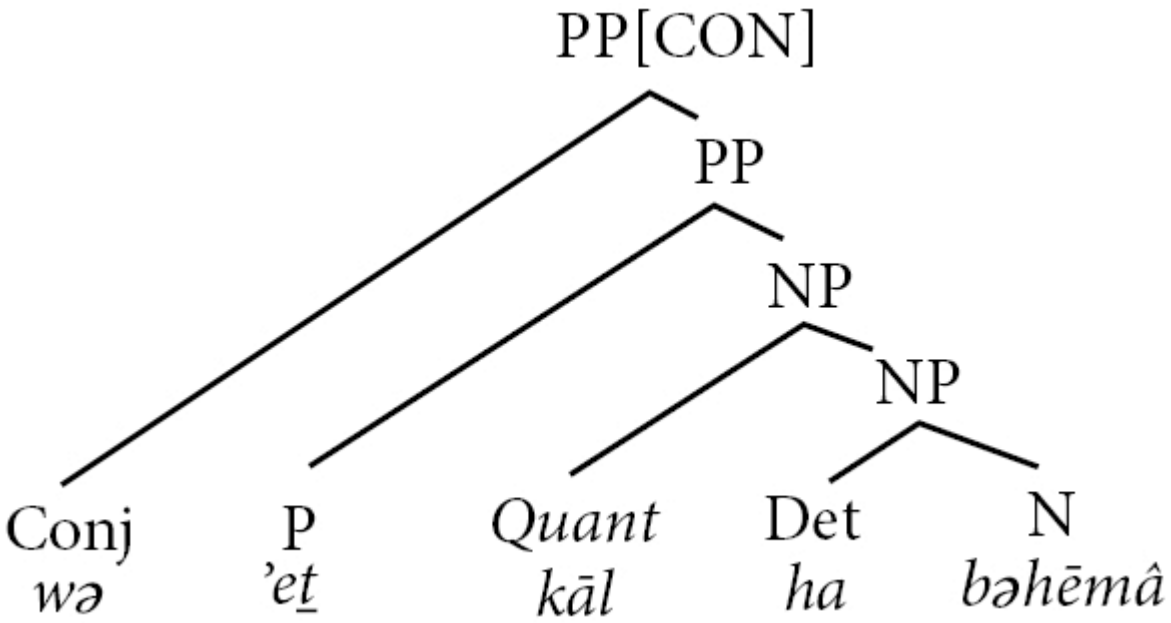
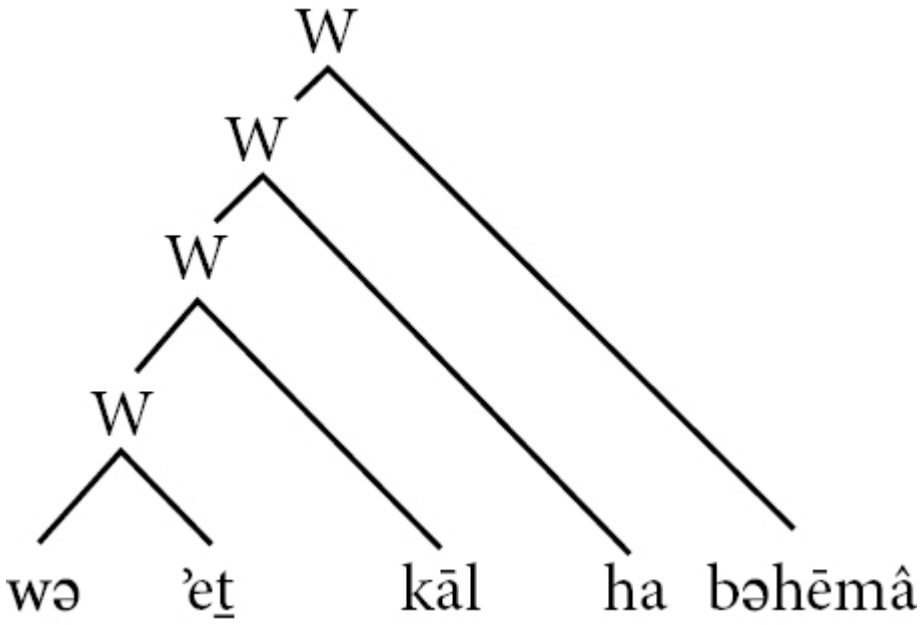
(16)



(p. 112) But I find this to be a quite counterintuitive morphological structure. The conjunctive clitic that begins the phrase would have to be added to the entire word *ʿeṯ-kāl -habbəhêmāh* and therefore could not be added until that word was formed. The same is true for each of the remaining clitics. A much more plausible morphological structure is (17), in which each clitic is associated with the next word, and if that is itself a clitic, it, in turn, is joined to the next word, and so on.

(17)



Most of the word building in the Hebrew excerpt from Genesis 8 is due to cliticization. In the corresponding Kalaallisut text, most complex wordhood is due to inflection or derivation. There is some inflection and some derivation in Hebrew, of course. In Genesis 8, for example, there are noun plurals, for example *ʿărubb-ōṯ* “chimneys (windows)”, and *māy-im* “waters”, and inflected prepositions, like *ʿittōw* “with him”. Verbs in Hebrew

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consist of two to four consonants that need intercalated vowels, tense, and personal inflections to be pronounced. In order to acquire these pieces, a verb must be in one of several *binyanim,* traditionally seven in number. The *binyan* also supplies an increment of meaning, intensive, passive, or causative content, for example. The form of any verb is thus simultaneously inflectional and derivational, and cannot be neatly decomposed into a sequence of morphemes. (See, again, McCarthy 1981.) I therefore gloss the nonconcatenative features as PTB (person, tense, and *binyan*), which I will count as one inflectional and one derivational process in further analysis of the text. Just as there is inflection and derivation in Hebrew, there is also cliticization in Kalaallisut, for example the conjunctive clitic *-lu,* that was discussed at the end of Section 6.9.

6.11 Kalaallisut and Hebrew Compared

Now while Kalaallisut and Hebrew both make use of inflection, derivation, and cliticization, an analysis of the whole of Genesis Chapter 8, or any longer text, clearly reveals a striking difference in the relative *balance* of the types of functions that the two languages use in their expressively active morphology.

For the whole of Genesis 8, the comparative figure for the total number of the four fundamental morphological functions that we have defined are given in Table 6.1.

As we found out earlier, Kalaallisut and Hebrew in the Masoretic version have nearly the same number of words, 244 and 259 respectively—a surprising fact in and of itself. To correct for this small difference in the number of words, we can take the ratio of the number or each kind of morphological process to the number of words in the text. The results are in Table 6.2.

Note that according to Greenberg’s index of synthesis, Hebrew actually comes out very slightly ahead of Kalaallisut with 2.62 morphemes per word (the root plus the average (p. 113) number of morphological processes per word), versus 2.59 morphemes per word in Kalaallisut.[12]

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Table 6.1 Number of morphological processes by type

	Derivations	Inflections	Clitics	Derivational Clitics
Kalaallisut	166	188	31	2
Hebrew	69	126	222	0

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Table 6.2 Morphological processes per word according to type

	Derivations per Word	Inflections per Word	Clitics per Word	Derivational CliticsWord	M-processes per word
Kalaallisut	.68	.77	.13	.01	1.59
Hebrew	.27	.49	.86	0	1.62

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In the sample text that has been considered here, Kalaallisut has almost twice as much derivational and inflectional morphology per word as Hebrew has. On the other hand, Hebrew has more than six times the percentage of clitics. I believe that our impressionistic judgment of synthesis is colored by the very strong role that cliticization plays in Hebrew morphology and the relatively smaller role it plays in Kalaallisut. Hebrew has more clitics per word on average than it has derivational processes and inflectional processes combined; Kalaallisut makes use of more than ten times as many derivational and inflectional processes per word as it does clitics.

I speculate that since clitics often represent syntactic elements either in form or in their position relative to ordinary syntactic rules, or both, their morphologization is less impressive than the “deeper” sorts of morphology that are typical of both derivation and inflection. The deeper morphological processes ordinarily present a form that is unrelated to any free word and a position that cannot be accounted for by the ordinary syntax.

6.12 Conclusions

There is a hierarchy of depth of morphology that orders three of the four first-order morphological functions of the following kind:

(18) Superficiality of morphological processes
cliticization > inflection > derivation

(p. 114) Michael Fortescue (in a personal communication) brought to my attention the idea that not all clitics are apprehended by typologists as equally indicative of synthesis. Fortescue argues that the Wakashan language Nuuchahnulth is “core polysynthetic without any ‘qualification’, despite the fact that pronominal inflections are clitics.” It seems to me, preliminarily, that there are several axes that distinguish between the more superficial properties of clitics (and the other morphological functions as well) that are less likely to contribute to “core synthesis” than the opposite properties, which might strike us as genuinely synthetic. Table 6.3. sets out a brief list.

Table 6.3 Properties of clitics

More Superficial	Deeper
phonologically resembles free word	phonologically unrelated to free word
alternates with free word	does not alternate with free word
in same linear position as a	not in same linear position

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possible free alternative	as any free alternative
morphologically promiscuous	morphologically choosy
instantiates categories	does not instantiate categories
farther from the STEM	closer to the STEM

A fine example of the superficial sort is the English auxiliary clitic *'ll,* which indicates futurity, a category that is often realized as inflection, but otherwise fits perfectly all of the other criteria of superficiality.

At the other end of the scale are Hebrew pronominal enclitics, which are added to inflected words. When cliticized to nouns, they indicate the possessor, and with propositions and verbs, they represent a definite object with the pronominal features that they carry. In all these uses, but particularly with verbs, they get high marks in the right-hand column of (Table 6.3), and could easily be labeled inflections when non-morphological considerations are brought to bear. The sole example of this usage in Genesis 8 is the word *wayyiqqāḥehā* "and he took her" in Verse 9. Note the fact that this usage endows Hebrew with the holophrastic ability that is often mentioned as a property of polysynthetic language.

As Fortescue says in his chapter on the limits of polysynthesis in this volume, "it should be stressed that polysynthetic languages, far from representing a single homogenous 'type', are arguably the most diverse and complex languages on earth, at least as regards their morphology." Perhaps, then, a thorough and precise description of the morphology of each language and its ramifications in the lexicon, the syntax, and the semantics is the best typology.

Notes:

(1) The requirement in all the Yupik and Inuit languages is that the suffixal verb attach to a morphological noun *stem,* not necessarily a root. The noun stem itself may be morphologically complex, theoretically without limit.

(2) Fortescue's remark is also noted in Mithun 2009: 3.

(3) Compare this with Haitian Kreyòl which has a number of pre-verbal particles that can be used individually or severally with an invariable verb form in an intricate tense–aspect system. See DeGraff 1992.

(4) We might also call it *vestigial morphology* or *decorative morphology*.

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(5) /E/ is an abstract phoneme that alternates between /i/ and /a/. For the most part, /i/ is found when the following affix begins with a consonant, and /a/ is found when that affix begins with a vowel. A few exceptions occur that need not concern us here. This phoneme is distinct from non-alternating /i/ and non-alternating /a/.

(6) /V/ is /p/ after consonants and /v/ after vowels, as opposed to non-alternating /p/ and /v/.

(7) /T/ appears as /t/ after consonants and /s/ (or /š/ in some speakers of Central West Greenlandic) after vowels. Other instances of /s/ and /t/ do not alternate in these environments.

(8) The transcription appears in http://biblehub.com/interlinear/genesis/8.htm, an Internet version of Strong's Interlinear Bible, with a transliteration that seems to be identical to the Brill standard (Rietbroek 2011). The transliteration includes dots syllabifying the words that do not correspond to anything in the Masoretic vowel and punctuation points. I have therefore removed the syllable marks in what appears here. The Hebrew text appears to be identical to that in Plaut 1981.

(9) The allomorph /ti/ is chosen if the suffix begins with a consonant and is /ta/ if the suffix begins with a vowel. Alternatively, stems that behave in this fashion can be listed as ending in /tE/ with the proviso that /E/, mentioned in footnote 5 is deleted if it ends a word.

(10) Here *-i* is neutral as to the number of the ergative argument, so it could also mean 'their several N.'

(11) Harper 1896: 23 says that the *makef* is "placed between two words, to indicate that they are to be pronounced together and accented as if they form but a single word."

(12) This number is far less than the 3.7 morphemes per word that Greenberg (1960) reported. He did not provide his own morphemicization, but the text he used (Thalbitzer 1911) includes grammatical notes indicating the morphemes of each word. According to that, the first 25 words contain 67 morphemes, giving an average figure of 2.68 morphemes per word, which is very close to the figure I arrived at for the Kalaallisut text.

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What are the Limits of Polysynthesis?

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Abstract and Keywords

Of the various labels for morphological types currently in use by typologists ‘polysynthesis’ has proved to be the most difficult to pin down. For some it just represents an extreme on the dimension of synthesis (one of Sapir’s two major typological axes), while for others it is an independent category or parameter involving incorporation and bound pronominals with far-reaching morphosyntactic ramifications. If the nub of polysynthesis is the packing of a lot of material into single verb forms that would be expressed as independent words in less synthetic languages, what exactly is the nature of and limitations on this ‘material’? This chapter investigates the limits—both upwards and downwards—of what the term is generally understood to cover and suggests a rule-of-thumb definition. Cognitive constraints on its maximal extent are also considered.

Keywords: types of polysynthesis, bound pronominals, incorporation, cognitive constraints, morphosyntactic ramifications

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7.1 Introduction: the Diversity of Polysynthesis

THE apparently simple question posed by the title of this chapter actually covers several distinct questions, none of them particularly easy to answer. At the most superordinate level ‘limits’ can refer to limits on the complexity displayed by any polysynthetic language, but it can also refer to the very definition of polysynthetic languages—what counts as one in the first place? The question as to the most extreme manifestations of polysynthesis can itself be broken down into several sub-questions: what are the limits on the pure number of morphemes per word—and should one include clitics as well as roots and affixes in that count? How many lexical roots are possible in a single word? How many functions can incorporated nouns serve? How many distinct slots can there be in a templatic form of morphology—and how many individual lexical affixes can fill the individual slots? How many pronominal referents can a polypersonal ‘word-sentence’ refer to? How recursive can a polysynthetic word be (with successive changes of syntactic status)? And how many different (types or tokens of) adverbials can be drawn into the verbal complex? Ideally, we would like to be able to say in each case that no polysynthetic language can be found that has more than ‘X’ (where X is a number referring to any of these ‘limits’). There is of course no guarantee whatsoever that a maximal number on any one score means a particularly high number on any of the others. One can easily sift through the literature and find languages that take the prize on one or another of these counts (the five hundred or so lexical affixes of southern Wakashan languages, the great number of templatic slots in northern Athabaskan languages, the recursivity of Eskimo, the multiple incorporation of stems in Chukotian, and so on), but it is unlikely that any one language would be able to maintain a maximal score on all the vectors listed.

A major problem for determining ‘X’ on any of these measures is that for many of these senses of ‘limit’, the answer must remain fuzzy, a matter of production and comprehension constraints and individual skill or style. Take the question of recursivity. The Eskimo word in particular is theoretically extendable *ad libitum*, although it becomes increasingly (p. 116) more difficult to find words with more than two or three (productive) switches back and forth between verbal and nominal base before being capped off by a suitable inflection. Lexicalization of complex bases (stems plus affixes) may extend this number somewhat, but limitations of memory/intelligibility will soon curtail further expansion. Despite all this, I would claim that it is useful to have a rule-of-thumb definition of what counts as polysynthetic. I shall present such a definition in what follows, one that bears certain consequences for the question of quantitative limitations that have been listed.

First of all, it should be stressed that polysynthetic languages, far from representing a single homogenous ‘type’, are arguably the most diverse and complex languages on earth, at least as regards their verbal morphology. Nor are they just any language with long words.[1] Boas described polysynthesis thus: ‘A large number of distinct ideas are amalgamated by grammatical processes and form a single word, without any

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morphological distinction between the formal elements in the sentence and the contents of the sentence' (Boas 1911: 74). One might add that the criterion for deciding what counts as a 'single word' is generally understood to be the obligatory ordering of constitutive morphemes (with no interruption or cut-off possible between the first and the last), under a unitary prosodic 'packet' and with at least some degree of morphophonemic 'glue' between constituents. The only potential problem with this is the status of clitics (I shall return to this in connection with Wakashan languages).

Since the time of Boas there have been various attempts to characterize the exact purport of the term more precisely. All of these remain however rather impressionistic. For some researchers the term just refers to an extreme elaboration of the dimension of synthesis, one of Sapir's two orthogonal typological axes, along with morphological 'technique' (Sapir 1921: 20–130). These correspond more or less to Comrie's 'index of synthesis' as opposed to his 'index of fusion' (cf. Comrie 1983: 42–3).[2] For others it is an independent category or parameter with far-reaching morphosyntactic ramifications (cf. Baker 1996). Whether languages like Eskimo, lacking noun incorporation and compounding, count as polysynthetic has remained a matter of theoretical controversy, despite their displaying holophrasis and great morphological complexity.

One of the principal goals of the present handbook is to narrow down the extension of the term while at the same time expanding our understanding of its content and possible theoretical ramifications. The starting point for this endeavour is the following question: If the nub of polysynthesis is the packing of a lot of material into single verb forms that would be expressed as independent words in less synthetic languages, what exactly is the nature of and limitations on this 'material'? Beyond the sheer number of such constitutive morphemes, 'core' or 'prototypical' polysynthesis involves holophrasis, which can be defined in a narrow technical sense: verb forms that can stand alone as independent clauses without any additional lexical arguments, with all core arguments referred to by bound pronominals. This feature appears central in the sense that it has implications beyond itself, particularly (p. 117) as regards the nature of syntactic structures in the language. However, according to a widespread view as to what qualifies as a polysynthetic language, not all languages that display holophrasis in this sense will necessarily qualify as core polysynthetic. It would also seem necessary that more than one lexically 'heavy' morpheme can appear in complex verb forms, whether this be an additional lexical stem—nominal, verbal, or adverbial—capable of standing alone, or a bound morpheme functionally equivalent to a stem, such as the lexically heavy suffixes of Eskimo-Aleut and Wakashan or the Algonquian 'medials' and 'finals' with verb-like meanings. Both these major features are symptomatic of strong head-marking tendencies – although polysynthetic languages are not exclusively head-marking.[3] Nor are all head-marking languages polysynthetic (e.g. many Nilo-Saharan languages).

There is, I repeat, great variation among polysynthetic languages: they are not all complex in the same way. Thus in Fortescue (1994: 2602) the following sub-types were distinguished: pure incorporating (as in Chukchi); recursive suffixing (as in West Greenlandic); lexical (or field-) affixing (as in Atsugewi); and various hybrid combinations

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of these—also a fourth ‘serial verb compounding’ type (as in Yimas) was mentioned. Mattissen (2003: 281–8) has a somewhat different (but compatible) breakdown into sub-types. She classifies them according to two cross-cutting dichotomies which can be combined in various ways. The first dimension indicates the principal word-formational type (i and ii below), and the second the principal method of organizing the morphology internally (iii and iv).[4] She defines them as follows:

> **i)** The affixal type allows only one lexical root per verb complex (and has non-root bound affixes for all other morphemes within the word).
> **ii)** The compositional type combines more than one lexical root (whether noun plus verb or verb plus verb) in complex verb forms in an ad hoc manner.
> **iii)** Templatic organization is characterized by a fixed number of slots in a fixed order.
> **iv)** By scope ordering, successive affixes are chained freely, as conditioned by their semantics, scope relations, and compatibility restrictions.

Compositional languages may display both noun incorporation and heavy verbalizing affixes, the latter a species of what Mattissen calls non-root bound morphemes more typical of the affixal type of language. Hence her ‘mixed’ types (op. cit.: 284–5). Within the compositional type there is a distinction between those that (primarily) incorporate nominal stems and those that incorporate (or serialize) verb stems—though many allow both. There is also diversity of a functional nature, along a continuum ranging from simple word-internal compounding to ‘syntactic’ incorporation (when the ‘incorporate’ may display some degree of referentiality and/or adjectival modifiers be stranded when the NP head is incorporated—see Sadock 1991: 88–91).[5] The degree of productivity of verb-internal (p. 118) morphemes and incorporative constructions can vary considerably, as can the number of templatic ‘slots’, the number of items filling them, and the transparency of incorporates. The kinds of morphemes representing fully grammaticalized categories can also vary—thus animacy distinctions in Algonquian languages, aspectual ones in Southern Wakashan, deictic ones in Northern Wakashan, and distinctions of subject/object ‘figure’ in Athabaskan are all obligatorily marked and pervasive, contributing significantly to the distinctive profiles of these families.

Another way of looking at Mattissen’s four-way distinction is to say that polysynthetic languages split into those that allow canonical incorporation and those that don’t, and that cross-cutting this is the degree to which a given language exploits the natural rigidity of morphology, a continuum from maximal (purely templatic, compensated for by syntactic flexibility) to minimal (purely scopal, with syntax-like flexibility). Languages displaying canonical incorporation tend to have various restrictions on what can be incorporated, while polysynthetic languages of the affixing type have fewer restrictions on the single stems that can be quasi-incorporated. Much of the diversity attested may be due to different historical pathways into polysynthesis, for which see Fortescue (2016).

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Although this diversity makes it difficult to delineate a purely linguistic ‘macro-type’ behind polysynthesis, there is a positive side to it: a careful comparison of the traits shared by languages both within such sub-types and across them promises, by virtue of the very complexity of their morphological systems, to reveal many more ‘(micro-)implicational universals’ of the type: noun subject incorporation presupposes noun object incorporation, or bound indirect object pronouns presupposes bound direct object pronouns. Further research will hopefully show that such relationships (in so far as they hold) tend to link up into somewhat larger functional clusters of interrelated universals. It may eventually be possible to list a set of interrelated features common to each of the sub-types that have been suggested, although doing so may prove difficult, given the existence of hybrid types and varying stages of grammaticalization.

However diverse in internal structure and constituent types the polysynthetic ‘word-sentence’ can be, I shall suggest in the following section that the source of this characteristic holophrasis is a certain way of codifying the underlying ‘macro-event’ (to use Talmy’s term). All polysynthetic word-sentences display what Bohnemeyer et al. (2011: 48) call the ‘macro-event property’, by which they mean that sub-parts of the complex clause cannot be individually modified by temporal operators (tense and/or aspect), such operators by necessity taking scope over the whole clause.[6] In polysynthetic languages tense and aspect are typically marked by affixes within the holophrastic word-sentence (though sometimes by displaceable clitics), with scope over the whole word. Recognizing this will actually help us narrow down the limits of ‘what counts as a polysynthetic language’. The resulting tentative definition will hopefully harmonize with the intuitions of both typologists and specialists in (p. 119) individual language families. En route I shall present arguments as to why certain languages should be excluded and others included within the core category.

7.2 A Limit for the Polysynthetic Word-Sentence: The Macro-Event?

For Talmy, the ‘macro-event’ is the ‘conceptual integration of a complex event’ (see Talmy 2000, vol. 2, Ch. 3 on the typology of ‘event integration’). It consists of one main or ‘framing’ event defining the abstract core of the event (including its ‘upshot’) plus one or more subordinate or ancillary event (‘co-event’) filling in the more specific and perceptually vivid content of the macro-event, as in Figure 7.1 (from Talmy op. cit.: 221).[7]

A macro-event may be compacted into a single clause (as typically in polysynthetic languages—but not limited to them) or expressed as more than one syntactic clause (more typical of analytic languages). In polysynthetic languages this integration is maximal, potentially compacting the macro-event into a single *word*—though there is often a choice between maximally integrated and less integrated constructions,

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depending for instance on the referenciality of nominal elements in the clause or on the relative independence of the verbs in a serial chain.

Now although this appears to be a reasonable starting point for investigating polysynthetic 'holophrasis', questions start to pile up when one looks at specific manifestations, applying Talmy's 'macro-event' framework to all varieties of polysynthetic language across the board. How, for instance, can Talmy's conception of the 'framing-event' be applied to Eskimo word-sentences containing 'double transitivizer' affixes like -*niRaR*- 'say that'—in example (1) (from Fortescue 1984), or to multiple applicative constructions as in Ainu sentence (2) (from Shibatani 1990), or to word-sentences containing more than one 'clause', as in the Bininj Gun-wok sentence (3) (from Evans 2003)? And what of a sentence like (4) in Yimas (from Foley 1991), which contains two serially combined lexical verbs, or the Nuuchahnulth word-sentence (5) (from Nakayama 1997) containing numerous clitic elements that include an (inverse) subject pronominal, or sentence (6) from Koyukon, a language displaying discontinuous morphemes? And what, for that matter, of the Nivkh verb (p. 120) in (7) (from Mattissen 2003) that clearly does *not* contain a whole clause (this is spread over several independent words)?

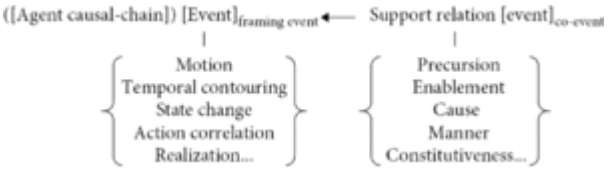

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Figure 7.1 The conceptual structure of the macro-event

(Talmy 2000)

(1)
Maalia-p miiRaq iRniinnaq sini-li-ssa-gunaR-niRaR-paa
Maalia-REL child right.away sleep-begin-FUT-seem.to-say.that-3SG/3SG.IND
'Maalia said that the child would probably soon fall asleep.'

(2)
usa-oruspe a-e-yay-ko-tuyma-si-ram-suy-pa
various-rumours 1SG-APPL-REFL-APPL-far-REFL-heart-sway-ITER
'I wonder about various rumours' (lit.: 'I keep swaying my heart afar and towards myself over various rumours.')

(3) ga-yau-ganj-ngu-nihmi-re
3-child-meat-eat-IVF-go.NP
'The child goes along eating meat.'

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(4)

marŋki	kia-ka-nanaŋ-kamal-kula-ntut
leaf.stem.VII.PL[8]	VII.PL.OBJ-1SG.AG-DUR-search-walk-RM.PAST

'I walked around looking for leaf stems.'

[8]

(5)

ʔu-qḥýu:-iɬ=ʔan=i=na=ʔa:ɬ=ʔaɬ						
PRO-(related)	together	-in.the.house	-INV-PAST	-1PL	-always	-PL

'They used to live with us.'

(6)

ye-tl-o-ye-ghee-'onh		
3SG-(into)	palm-3SG.OBJ	-3SG.SUBJ.PFV-handle.compact.object.PFV

'She gave it (a compact object) to him.'

(7)

ñ	hejk-xe	k'eq-xe-dif-ku-nře-d'
I	hare-ASS	fox-ASS-track-PL-see-IND

'I saw the tracks of a hare and a fox.'

Despite these apparent difficulties, it is not unreasonable to suggest that, for instance, in (1) the suffix *-niRaR-*, which takes in its scope everything that precedes it and determines the transitivity of the whole clause, represents a framing event, here of the type Talmy calls 'action correlation' linking two events with different agents.[9] This is not just simple causation, which would be a matter of a co-event. In the Ainu case (sentence 2) the two applicative (p. 121) morphemes draw different oblique elements into the body of the clause, but cognitively a unitary macro-event is still being described and it could be argued that the applicative constructions reflect co-events. As for the Bininj Gun-wok sentence (3), the incorporated 'clause' (marked by a special affix IVF) clearly expresses a subordinate co-event (of 'concomitance' or simultaneity)—the main event just happens to be expressed by elements around it. In sentence (4) from Yimas, one of the verb roots arguably refers to the main framing event ('searching', which takes an externally expressed object), while the other refers to a subordinate event of manner ('walking').

Sentence (5) from Nuuchahnulth, (6) from Koyukon, and (7) from Nivkh likewise refer to single macro-events. In the case of (5) the 'doing together with someone else' affix, even though it requires an 'empty' stem to attach to, can be analysed as referring to the main framing event—another example of Talmy's 'action correlating' type. In (7) only part of the referring expression (the object of the verb)—that is, half of the coordinated NP—is incorporated into the verb complex. This is a matter of 'stranding', required in this kind of incorporating structure and does not effect the status of the sentence as referring to a unitary event.

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Sentence (7) is also significant in another way: it leads us to question whether such a structure really is 'polysynthetic' since the subject of the main clause is not incorporated into the complex verb. Subjects, whether lexical or pronominal, are independent words in this language, separable from the verb by other material. We shall need to turn to the matter of definition in order to see if we can fit languages like Nivkh into a general characterization of the phenomenon—certainly it would be desirable to be able to do so, given other, strongly polysynthetic aspects of its verbal morphology (including noun incorporation). Our rule-of-thumb definition of prototypical or 'core' polysynthesis should allow for such a decision.

Approaching the question of limits from the perspective of form rather than content, another useful starting point lies in the nature of the holistic 'word'. In discussing the word in Central Alaskan Yupik (a quintessentially polysynthetic Eskimo language), Miyaoka (2012: 26–30) distinguishes between free/independent words, weakly or strongly bound phrases, and free phrases, as in Figure 7.2.

A free word in Yupik—a single prosodic '*articulus*'—may be of any degree of complexity (by affixation), and an inflected verb may stand alone as a complete sentence/clause. A free word can easily be distinguished from a bound phrase in this language, that is, from the combination of a free word and a clitic (itself a word but one requiring a host). There are also non-clitic bound phrases, a word-like phrase consisting of two words capable of standing alone but still forming one *articulus* with an internal boundary between the words (e.g. CAY *aŋyaq(-)qaa* 'is it the boat?', where *qaa* on its own means 'is that right?'). There is a continuum between strongly and weakly bound phrases, with weakly bound phrases close to free or (p. 122) syntactic phrases. Strongly bound phrases tend with time to become fixed compounds—of these Yupik displays few if any. Depending on the language type concerned, there may be no clear-cut divide between morphology and syntax. This descriptive apparatus can nevertheless be applied to all languages that one might wish to characterize as polysynthetic.

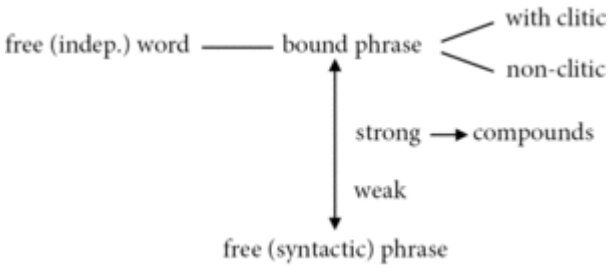

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Figure 7.2 Miyaoka's (2012) analysis of the 'word'

7.3 Towards a Definition of Polysynthesis

From the arguments presented so far it should be evident that the definition of core polysynthesis that I have been homing in on is something like this:

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- To qualify as core polysynthetic a language must display holophrasis (i.e. be able to represent a whole clause—including all bound core pronominals—by a single word) *and* must allow more than one lexically 'heavy' morpheme within the holophrastic verb, whether it be lexical or affixal.

This combines an inflectional and a derivational component, note (bound pronominals on the one hand and more or less open-ended derivational/incorporative productivity on the other). This is not meant to claim that polysynthetic languages *have to* produce holophrastic sentences of this kind, only that they can choose to do so. Most such languages have less synthetic alternative constructions, utilizing the difference for pragmatic or referential purposes. As regards bound pronominals, this must include object (patientive) as well as subject (agentive) affixes—clitics may usually be included here (as I shall discuss in connection with Nuuchahnulth). 'Pro-drop' or simple zero-marking of all verbal arguments does not count.

It is important to understand what is meant by 'heavy morpheme' in the definition just given. It refers of course to semantic as opposed to phonological heaviness. As a rule of thumb, what is meant to be covered by the term—apart from actual independent stems or their bound variants—are items that could in theory be represented by an independent word or stem in the language concerned, that is, to which there exist semantically comparable (but not identical) words in the language, although lexical stems will typically be more specific than comparable word-internal morphemes. Mithun (2009: 13) has in fact suggested that the heavy verbalizing affixes of Eskimo-Aleut must derive historically from full verbs in incorporating constructions. Certainly there is evidence that auxiliaries **ŋu-* 'be' and **ŋit-/ŋil-* 'be without', now affixes, were once independent stems.[10] But this may not be the whole story: incorporated auxiliaries could combine with various preceding affixes or bring their own modifying affixes with them, producing new lexicalized combinations like West Greenlandic *-sinnaa-* 'can' from nominal affix *-sinnaq* 'only' plus *ŋu-* 'be'. Some synchronic verbalizers conceal earlier combinations of a more general verbalizer plus a verbal extender, such as Inuit *-niaq-* in the sense 'hunt X', which is actually a combination of **-χ-* 'catch' (< **-nəχ-* 'get') plus verbal extender* *-ni(C)aR-* 'try to'.

(p. 123) The term 'heavy morpheme' refers at all events to morphemes with a stem-like lexical content, whether nominal, verbal, or adjunct. This is not particularly difficult to determine with 'verbalizing' affixes of the Eskimo kind or 'lexical affixes' of the Wakashan kind, which may be compared with verbal and nominal stems respectively, but abstract or general verbalizers depending for lexical content on the nominal stem they attach to (as in many agglutinative languages) do not count. It should also be borne in mind that in some languages meanings such as 'want to' and 'intend to' when expressed morphologically may retain full lexical semantics, whereas in others they form a grammatical category (entering into paradigmatic oppositions/choices). In some polysynthetic languages prosody may provide assistance to distinguish the two cases, as in Chukchi, where (newer) lexical incorporates tend to maintain secondary stress as

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opposed to the same morphemes when they have become fully grammaticalized—for example *pələtku-* 'finish', which loses its independent stress when occurring as an aspectual affix of completed action.

As regards adjuncts (adverbial or adjectival) the degree of lexical heaviness may be more in doubt. This is in part the inevitable result of grammaticalization processes, whereby morphemes may lie anywhere on a cline between fully lexical (and concrete) and fully grammaticalized (more abstract). They may even occur in more than one meaning reflecting different 'layered' historical stages (for instance, morphemes referring to concrete motion on the way to becoming aspectual or tense morphemes). The difference between incorporated adjunct and heavy adverbial or adjectival affix may also be obscured (where the source lexeme is lost or shifted in meaning). This does not cause any great practical difficulty in applying the definition as given, since any language having incorporated heavy adjuncts will almost certainly have the possibility of other lexically heavy morphemes (nominal or verbal) incorporated within the polysynthetic verb too.

In order to give a better idea of what I mean by 'lexically heavy' affixes, consider the following types in one polysynthetic family, namely Eskimo (as in Fortescue 1983). Some of these are verbalizing (those with 'X', indicating a suitable nominal stem) and some verb-extending. All may be considered 'heavy' in having concrete behavioural, perceptual or mental semantics beyond the expression of abstract grammatical or class-shifting categories.

Lacking X
Feeling X
Having X
Acquiring X
Movement to/from/via X
Acting or seeming like X
Doing with or providing X
Judging or saying
Wishing or waiting for
Asking to
Striving after or intending

Affixes of (adverbial) manner could also be added—these are more concrete/perceptible than, for example, aspectual affixes, and arguably display a degree of lexical weight. Simple adverbial affixes (including path directionals, aspectual, modal, and valency-changing (p. 124) affixes) I do not count as heavy, but affixes of manner I do if they display types of meaning corresponding to lexical verbs or verbal phrases ('by swimming', 'by walking', etc.).[11]

The definition I have given appears more categorical and less disjunctive than the loose list of 'typical' polysynthetic traits in Fortescue (1994), which included: noun stem incorporation within the verbal complex; a large inventory of bound morphemes hand in hand with a limited stock of independent stems; derivational processes being productive

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in the formation of individual words as minimal sentences; bound pronominal marking of subjects and objects; integration of locational, instrumental, and other adverbial elements into the verbal complex; productive morphophonemic processes resulting in allomorphy for both stems and affixes; non-configurational syntax; and head-marking type of inflection. But it is still the case that no one concrete feature is treated as criterial under the present definition—neither noun incorporation, polypersonalism, head marking, recursivity, nor the presence of applicatives, etc., all of which can be found individually in non-polysynthetic languages. Thus, for example, colloquial Arabic is more 'polypersonal' than West Greenlandic (allowing three bound pronominal affixes on verbs—indirect object, direct object, and subject—while West Greenlandic allows a maximum of two), but surely no one would want to call Arabic polysynthetic. Only 'entanglement of syntax and morphology' from the list remains a feature largely restricted to polysynthetic languages —though also here not all polysynthetic languages share it (especially 'younger' ones closer to their non-synthetic syntactic origins).

My definition is broader than that of Baker (1996: 17–18), which requires both bound pronominals and noun incorporation for a language to be considered polysynthetic (in his narrow technical sense). This excludes, among others, Eskimo, Navajo, Haisla, Abkhaz, and Yimas, which specialists would all want to call polysynthetic, and Baker has received considerable criticism from such quarters (see, for example, Evans and Sasse 2002: 4). My definition is nevertheless narrower than Mattissen's (2003: 277) in so far as she does not demand polypersonalism (i.e. all core pronominals being bound) of polysynthetic languages. In Appendix 2 I present an approximate list of those languages which can be considered 'core polysynthetic' according to my definition. It should be understood that the definition is really only a practical rule of thumb: lexicalization and grammaticalization may gradually reduce the 'heaviness' of originally heavy incorporated morphemes to more abstract or (p. 125) grammatical ones, resulting in a transitional grey zone. Within the definition there is obviously room for a continuum from weakly to strongly polysynthetic—something that can be roughly quantified in terms of average number of productive morphemes per (verbal) word in running text.

Note that the definition precludes Spoken French and Bantu languages as core polysynthetic (though both of them have sometimes been considered 'polysynthetic'): they both fall short as regards the second part of the definition. One can nevertheless characterize them as 'mildly' or 'peripherally' polysynthetic, drawing the boundary somewhat arbitrarily.[12] Japanese, on the other hand, has multiple verbal (and adjectival) stem serialization but lacks bound pronominals entirely, so falls short as regards the first part of the definition. The definition does, however, include Yimas since this language allows multiple verbal stem serialization in one word (although it does not have productive noun incorporation), also Eskimo languages since they display 'heavy' verbalizing affixes, and Na-Dene languages such as Koyukon since many of its prefix strings are 'heavy' in this sense—this is even so in those southern Athabaskan languages that do not display noun incorporation.

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But what of Nivkh (as in the example given in sentence 7), which does not display complete holophrasis, since the pronominal subject of the clause must be expressed as a free constituent? And what of Wakashan languages (as in sentence 5) in which core elements of the clause are expressed by displaceable clitics rather than affixes? As regards the former, the rather special kind of polysynthesis displayed by Nivkh—Mattissen's 'dependent-head' organization—may be said to force the subject pronominal to precede any object phrase. This is because it requires, in conjunction with the strict SOV syntax of the language, objects of any kind to immediately precede the head verb, and this includes bound (pronominal) and free NPs. So if the subject were a bound pronominal, any free NP object would have to precede it, breaking the strict dependent-head relationship that cuts across the morphology/syntax boundary. Once pronominal subjects have to precede NP objects, other constituents like adverbial phrases may intervene between the subject and the verb. In other respects Nivkh qualifies as polysynthetic. Perhaps it can be characterized as 'polysynthetic with qualifications' (hence the question mark after it in Appendix 2) since it still meets the first criterion—but only as regards bound object (not subject) pronominals. Usually incorporation of the former presupposes that of the latter. In fact, many verb-forms in Nivkh (including most 'converbs') *do* reflect the subject/agent, it is only the plain indicative that does not, and, moreover, the Nivkh verb can stand alone as a complete sentence without subject marking (Mattissen 2003: 205–6). Note that 'with qualifications' does not necessarily mean 'mildly polysynthetic', just that one crucial aspect of 'core polysynthesis' is only partially realized. Thus many of the highly synthetic Amazonian languages discussed by Aikhenvald in Chapter 15 of this volume do not mark all pronominal object referents by bound markers on the verb and thus must be characterized as 'polysynthetic with qualification'. This underlines the fact that highly complex (verbal) morphology and polysynthetic 'type' are not necessarily equivalent under any definition of the latter.

Other North American languages that may best be qualified as 'polysynthetic with qualifications' according to my definition include Aleut, Tsimshianic, and Haida, which display **(p. 126)** pronounced polysynthetic traits (heavy verbalizing affixes in the first two, a wealth of instrumental prefixes in the last), but in which pronouns are not always bound to the verb (they display what Mattissen this volume, Chapter 40 calls 'defective polypersonalism'). Unlike Eskimo, Aleut object pronominals are only bound in the 3rd person anaphoric object construction. In the case of Tsimshianic (Nishga), pronominal subjects of transitive verbs are independent words (1st/2nd person) or enclitic (3rd). In the case of Haida, object pronominals usually cliticize to verbs but weaker elements can in turn cliticize to them. When more than one pronoun is involved, only the one nearest the verb cliticizes to it. The chaining of verb roots and adverbials in the verb complex in Haida is moreover very loose and open phonologically, but such chains can nevertheless be analysed as representing polysynthetic wholes, given the obligatory position of shared inflectional material following them. As with Nivkh, we are dealing with a language where the border between morphology and clausal syntax is not watertight. Foley (1991:

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280) also characterizes Yimas in the same way: as a language with a hazy distinction between word and phrase and between clause and sentence.

It is easier to consider Wakashan languages like Nuuchahnulth as core polysynthetic without any 'qualification', despite the fact that pronominal inflections are clitics (at least according to the analysis of Davidson 2002: 252ff.).[13] It should be pointed out that clitics in Wakashan do not quite fit Miyaoka's characterization of a clitic as 'a word with a certain independence, but one requiring a host' (which fits the case of Eskimo), since clitics in these languages can hardly be said to have *any* degree of independence. Like Eskimo clitics they are typically added to a wide variety of hosts and generally refer to the phrasal/clausal level rather than just the verbal semantics. However, the latter point can also be made of affixes (lexical and aspectual) in these languages, so this does not get us very far. The only essential difference between affixes and clitics here concerns their relative ordering (clitics follow affixes) and some rather minor phonological differences in behaviour. Neither clitics nor affixes are obligatory: a stem (with or without an aspectual or lexical suffix) may represent a well-formed clause in most instances. Third person singular subject is generally marked by zero and even 1st/2nd person clitics may be left out in certain circumstances (cf. Nakayama 1997: 84).[14] Bound object pronominals of any person are only present in imperative paradigms today (they are better preserved in related Ditidaht and Makah). The point is that pronominal arguments that are clitic, in the absence of any other independent words, can bind directly with the verb to form a unitary word-sentence. There is no question of obligatory free-standing pronominals in any construction. This is not to say that clitic core argument pronominals will *always* contribute to polysynthesis. They may not in languages where such morphemes are more loosely associated with predicates, occurring always in a fixed clausal position (usually on other hosts) or where they can appear *either* as clitics or as independent words. Neighbouring Salish may be a case in point (see Watanabe this volume). For a broader typological coverage of clitics see Aikhenvald (2002a).

(p. 127) To sum up: rather than stating that a language X simply is or is not polysynthetic, one should say something like: 'X is a highly/mildly polysynthetic language of the predominantly compounding or affixal (and scopal or templatic) type—with or without qualifications'. Further consequences/expectations will arise from this characterization, and any 'qualifications' (deviations from my definition of 'core' polysynthesis) can be specified. There will usually be some diachronic or areal reason lurking.

7.4 Conclusions

How does my tentative definition relate back to Talmy's notion of underlying 'macro-event'? Let us take up the case of Eskimo recursivity again: however many shifts between verbal and nominal base may accumulate in a single word, it appears that the result will always correspond to a single 'macro-event'. Thus consider sentence (8) following (from

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Fortescue 1984), in which a verbal stem is verbalized, then nominalized, then re-verbalized, then nominalized again, and finally verbalized (to be inflected as a verb).

(8)

nannu-n-niuti-kkuminaR-tu-Rujussu-u-vuq
polar.bear-catch-means.for-good.for-INTR.PART-enormous-be-3s.IND
'He (a dog) is really good for catching polar bears with.'

The affixes here vary in productivity. The first affix (underlying *-t-*) is limited to a handful of stems indicating animals, whereas all the others are quite productive (fully so in the case of *-u-* 'be', which can attach to any nominal base). Nevertheless, there is clearly a single 'macro-event' described here (an ascription of a quality to an entity). The first four morphemes define a single abstract quality, while the addition of the next two extends this to a type of entity displaying this quality to a high degree. The specific entity exemplifying this type is only referred to (following the copular affix) by the 3rd person inflectional ending. Now Talmy states that it is the framing event (whether expressed by a satellite or a verb) that reflects the main 'upshot' of the macro-event and not the semantically richer co-event (Talmy 2000: 282ff.). The element in the clause that determines this 'upshot' will determine its syntactic transitivity (as well as, for instance, its telicity). That certainly applies to the final (intransitive) suffix *-u-* in (8), which requires the following inflection to be intransitive. By contrast, in sentence (1) the final suffix *-niRaR-* required a following transitive inflection, despite the base to which it attaches being intransitive. X-*u-*, and X-*niRaR-* thus represent different types of superordinate framing event, determining the overall 'profile' of any clause in which 'X' is spelled out in detail. Moreover, under negation it is the assertion associated with the framing element that is negated—thus *-niRaR-* followed by an affix of negation would negate the reporting event, not that reflected by the base. This too is a characterization of morphemes reflecting the 'framing event' (Talmy op. cit.: 219). It is also the same element that is demanded in imperatives and asked about in interrogatives.

This suggests that there is indeed one—and only one—element in the morphology of the polysynthetic word-sentence that directly reflects the main framing event, the core schema plus activating process. In Eskimo at least, this is the final valency-determining, lexically (p. 128) heavy affix—only if there is none present is it expressed by the underlying semantics of the base itself (and the restrictions this imposes on possible inflections). The polysynthetic word-sentence may, on the other hand, contain several 'co-event' elements, some reflected in the choice of base, others—for example, of manner—in additional affixes. (This is a matter that Talmy, focusing on Atsugewi, does not go into in detail.) Which co-event elements are chosen for expression in this manner is very much a language-specific matter.

Much of the multiple category shifting in Eskimo languages is embedded in complex nouns, as in (9) from West Greenlandic, with a stranded modifier of 'quasi-incorporated' *kavaajaq* (here in allomorphic form *kavass-*) 'coat'.[15] Here the nominalizing affix (*-ɣaR-*)

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has of course nothing to do with the framing event of the whole clause—that is determined solely by the verbalizing affix *-isaaR-* ‘wear’, which reflects a stative framing event.

(9)

kavass-isaaR-taR-puq	aŋi-ɣi-laa-ɣaR-suaR-mi-nik
coat-wear-HAB-3SG.IND	be.big-have.as.too-a.bit-PASS.PART-big-4SG-INS

‘He would wear a coat rather too big for him.’

This latter construction is not typical of polysynthesis generally, and is probably limited to the ‘recursive’ type which West Greenlandic represents. As I have emphasized throughout, when we talk of polysynthetic languages in general we are really conflating a number of different sub-types. The templatic northern Na-Dene languages and the scopal (‘onion skin’) Chukotian ones, for instance, display quite different properties on a number of dimensions despite noun incorporation being common to both. But in all of these sub-types there appears to be a limit of ‘one word = one macro-event’. Thus the Chukchi sentence in (10) (from Skorik 1961) also refers to a unitary macro-event—the complexity stems from the complex nature of the incorporated nominal phrase.[16]

(10)

tə-tor-taŋ-pəlwəntə-pojɣə-pəla-rkən
1SG-new-good-metal-lance-leave-1SG.IPFV

‘I leave a new good metal lance.’

The lexical core of the word lies in the (inherently transitive) verb *pəla-* ‘leave’. In Talmy’s scheme of things it directly reflects the ‘framing event’ (one of caused motion/position). This is an abstract schema involving a figure and a ground expressed by the verbal base and an associated relationship of agency. The actual concrete contents of the schema is indicated by the choice of verb plus its incorporated object. In this case, then, the main framing event could again be said to be concentrated in one morphological element—here the base rather than an affix.

Even Yimas, which is rather extreme as regards the sheer number of morphemes that can be packed into a single word, is limited by the ‘macro-event’ principle. According to Foley (1991: 331) up to three verbal stems can be compounded into a complex verb, although two is (p. 129) far more common. This suggests a challenge for the applicability of the notion of the unitary ‘macro-event’ to the individual polysynthetic word-sentence. It can nevertheless be argued that in this language there is indeed only one verb stem corresponding to the main ‘framing’ event, namely that upon which the transitivity of the whole clause (and its general ‘upshot’) depends, the one with the highest inherent transitivity—or if both share the same transitivity, then the final one. The whole word-sentence refers to ‘a single complex event’ (Foley 1991: 326), but the bound pronominal affixes refer to the arguments of the verb of highest transitivity (the subject must be the same for all the serialized verb stems regardless of transitivity). The others can be regarded as subordinate, either simultaneous or sequential. Note that this refers to semantic subordination, not to linguistically marked subordination—the serialized verb

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construction in Yimas is specifically referred to by Foley and Van Valin (1984: 242) as 'co-subordination' (at the level of 'nuclear juncture'). Note that this is a somewhat different conclusion from Foley's dependent-head analysis of Yimas (this volume), whereby the rightmost serialized verb (just before the tense markers) is regarded as the morphosyntactic 'head' of these constructions.

Sentence (4) was an example of the 'simultaneous' case, with the verb of highest transitivity being the 'main' one determining the pronominal marking. More complex is the case of sequential serialization, where the individual verb stems are linked by a sequential marker *-mpi-* as in (11). The sequence is purely temporal, the final one being the last in the series of actions conceptualized as a unitary whole.

paŋkra-kaykaykay-kwalcu-mpi-kuanaŋ-tal-kiantu-ŋkt
(11) 2PC.S-quickly-rise-SEQ-walk-start-FR.PAST-PC
'We few got up quickly and started to walk.'

Here, where both lexical verbs are intransitive, there is no difficulty seeing the last sequence ('start to walk') as the core of the event (*tal*, literally 'hold', has a purely inchoative sense here). Foley (op. cit.: 331) also gives examples with three transitive verbs of the type 'split-break-tie' referring to splitting things, breaking them, and tying them in bundles in a purely temporal sequence, also of cause/effect relationships between serialized verbs of the type 'hit-break'. In both cases it is the last verbal stem that bears the main focus of the shared 'upshot' (the whole clause conceptualized as a single sequential action). But in (12) there is a mixture of transitive and intransitive verbs in sequence:

pu-kra-awl-mpi-ayn-pi-ya-kia-k-ŋkt
(12) 3PL.A-1PL.O-get-SEQ-put.in-SEQ-come-NIGHT-IRR-PC
'They got us (few) and put us inside (a canoe) and came back.'

Here it is the first and second serialized verbs (not the third) that determine the transitivity of the whole clause, and the second can be regarded as the core bearing the 'upshot' since it follows the first temporally. The temporal morpheme 'at night' refers to the whole complex event. Under negation it is the whole verb complex in such holistic word-sentences that is negated (as also with the marking of mood and tense), not just one element of it (Foley op. cit.: 328). These highly compacted serial constructions contrast with a dependent verb construction in which several separable independent verbs can be serially chained, each (p. 130) potentially taking their own affixal material (as in most of the Papuan languages of New Guinea).

In fact, all the complex sentences (1) to (7) given in Section 7.2 can be analysed as containing just one (albeit complex) element directly reflecting the core 'framing event'. To do so it is necessary to be a little less abstract about the type of framing event concerned than in Talmy's cognitive typology (though I do not deny that there may be a

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deeper relationship of analogy between them all).[17] West Greenlandic sentence (1) I have already characterized as expressing a 'reportative' event with an affix representing the framing event. In the case of (2) (Ainu) the verbal stem ('sway') plus its own incorporated object ('heart') is the main framing element in a 'mental event' (it forms a unitary idiomatic expression for 'wonder about s.th.'). The two applicative additions refer to co-events associated with it—the first one taking an external argument referring to the object of the verb and the second, internal one, referring to the cognitive location of the event (within the speaker). The applicative morphemes do not in themselves define the 'upshot' of the event. In sentence (3) (Bininj Gun-wok) the stem ('go') has the main framing function (determining the transitivity of the whole clause), as does the stem ('see') in (7) (Nivkh), in respectively an event of motion and one of perception. In (5) (Nuuchahnulth) it is, on the other hand, an affix ('together') that is the main framing element—expressing an 'action (or here: physical state) correlation' event. It determines the transitivity of the whole (the stem is just a peg element hosting it).

More problematic at first glance is the case of example (6) from Koyukon, a language displaying discontinuous morphemes. Both the satellite ('in(to) the palm') and the stem ('handle a compact object') would seem to contribute to the expression of the main framing event (one of motion). The satellite (*tl'o-*) can have a stative or a motion sense, depending on the morphological context in which it is found. The stem in turn can be inserted into several distinct frames—here it functions as a verb 'theme' of classificatory motion, 'carry or handle a compact object', and combines with a preceding object prefix (also a gender prefix and a particular momentaneous aspect prefix). The satellite introduces its own 'postpositional' object here. Nevertheless, the whole 'derivational chain' P + *tl'o* 'giving or selling to P' can be regarded as representing a more specific co-event that stands in a relationship of Path/Ground to the abstract classificatory motion stem. Since it does not define the core schema of the event on its own (a subject acting on a certain type of object) it cannot be regarded as the framer of the whole clause as opposed to supplying an ancillary co-event. Thus there is no real problem with seeing a single framing event here either—one anchored in the stem.

I conclude that if something like the macro-event is indeed the universal basis for constructing individual utterances in any language, it is only the distribution of 'event integration' across the syntax/morphology divide that will vary significantly from language to language. Polysynthetic languages are those that allow the maximal compacting of a whole macro-event into a single independent word, while by contrast an ideal isolating language allows only one element of the macro-event at a time to be expressed as a single word (whether Figure, Ground, activating process, or any co-event element). However, one further constraint needs to be added here as regards the kind of co-event that can be compacted into a single polysynthetic word-sentence. As we have seen from the examples given, it would appear that co-events can generally only be integrated that share the same subject or (p. 131) agent with the main framing event: the

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pronominal arguments may be cumulative but they refer to the whole complex event, with shared subject.

An apparent exception is Talmy's 'action correlation' type of framing event, as illustrated by West Greenlandic sentence (1), with two different underlying subjects. However, this is precisely a type of framing event: the inflection of the word-sentence (when one removes the three independent words) is limited to one subject (the agent of the reporting event) and one object (= the subject of the 'underlying' co-event). This is easier to see in Nuuchahnulth sentence (5) since here it is a matter of two 'subjects' of the same concerted state—the pronominal marking is again determined by the superordinate framing element (the affix). In both cases a special kind of affix is required to perform this kind of integration.

The limit on the type and number of morphemes that may appear in a single polysynthetic word-sentence is then ultimately a limit on what a sentence in general may express in terms of underlying cognitive content. This limit is equally relevant to more analytic languages—as a limit to what may be packaged into the single multi-word clause. After all, Talmy emphasizes the universality of his 'macro-event'. Also sign languages are relevant here—the 'polymorphemic' structure typical of such languages can be directly compared with polysynthesis in spoken languages, classifier verbs on their own representing holistic events. Engberg-Pedersen (1993: 253f.) specifically points out the striking parallelism between Danish Sign Language and the sub-type of polysynthetic language exemplified by Atsugewi, with which it shares similar lexicalization patterns. The limits on what can be compacted into a single 'utterance' or 'prosodic phrase' in sign languages (definable in terms of successive 'movements' and 'holds') would appear to be quite similar to what can be compacted into a single complex verb form in polysynthetic languages. Thus several predicates can be linked by a single maintained classifier hand shape indicating a chain of motion and location (sub-) events so long as the subject of the overall (macro-)event remains the same, much as in the compound serialization constructions of Yimas (Aronoff et al. 2005: 327). Just as polysynthetic spoken languages often combine templatic and concatinative sub-parts of their morphology, so do sign languages combine simultaneous (classificatory) and sequential (affixal) aspects. As Aronoff et al. (op. cit.: 335) point out, the 'simultaneous' aspect of sign language is grounded in visuo-spatial cognition.

Perhaps all of this does not take us very far beyond Sapir's and Comrie's treatment of polysynthesis as an extreme degree of (head-marking) synthesis, but it does, I believe, make more explicit the elements that may be integrated into the polysynthetic word-sentence and the constraints that cognition sets upon them. What is common to these holophrastic languages is relatively open-ended verbal morphology that takes over many of the functions of syntax in analytic languages.

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7.5 Appendix 1 A passage in West Greenlandic

Igimarasussus-suar=uuq=una nuli-ir-aju-qa-aq.
Igimarasussussuk-big=it.is.said=that wife-lose-frequently-very-3SG.IND

(p. 132)

Nuliar-niar-aangami iikasing=aasiit nuli-ir-ara-aq.
take.as.wife-try.to-4SG.CONTING poor.sod=as.usual wife-lose-HAB-3SG.IND

Ukiur=luunniit naa-nngit-suq nuli-ir-sar-ami
year=even finish-NEG-3SG.PART wife-lose-REP-4SG.CAUS

nuli-ir-luni=lu nulia-mi=lu ilagisa-anut upik-kiartur-luni.
wife-lose-4SG.CONTEMP=and wife-4SG-and relative3SG/PL.ALL lament-go.and-4SG.CONTEMP

Ilaanni=aasiit nuli-ir-ami anguti-rpaat avannarli-mik
once=as.usual wife-lose-4SG.CAUS man-many.REL northern.dweller-4PL.REL

arnar-ta-tua-at Masaannaa-mik ati-lik
woman-pertaining-only-3PL/SG Masaannaaq-INS name-provided.with

nuliar-siri-lir-paa.
wife-ask.to.be.one's-INCH-3SG/3SG.IND

'It is told that big Igimarasussuk frequently lost his wives. Each time the poor sod married a new wife he would lose her. Before a year had passed, he would lose his wife. Having lost his wife he would go lamenting to his wife's relatives. One time, having lost another wife, he began to woo a woman by the name of Masaannaaq, the only one amongst the many men living to the north.'

7.6 Appendix 2 Core polysynthetic languages

North America:
Eskimo (all)
Aleut?
Na-Dene (all)
Algonquian (all)
Siouan (all)
Kutenai?
Tsimshianic?
Haida?
Wakashan (all)

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Salishan (all)
Chimakuan
Numic Uto-Aztecan?
Sahaptian?
Chinook
Klamath?
Northern Hokan (Palaihnihan, Shastan, etc., but not Pomoan)
Washo
Kiowa-Tanoan (all) (p. 133)
Iroquoian (all)
Caddoan (all)
Muskogean?
Yuchi?
Meso-America:
Purepecha (Tarascan)?
Totonac-Tapehua (all)
Mixe-Zoque (all)
Nahuatl (Uto-Aztecan)
Yucatan Mayan[18]
South America:
Mapudungan
Arawak (most)[19]
Aymara?
Nambikwaran
Mosetén
Harakmbet
Cahuapena
Yanomami
Guahibo
Tupi-Guaraní
Nadëb (Makú)?
Matses (Panoan)?
Cariban (some)?
Eurasia:
Chukotian (but not Itelmen)
Ket
Nivkh?
Ainu
So:ra (and other South Munda)
Chintang (and other Kiranti)
Northwest Caucasian (all)
Oceanic/Australian:
Tukang Besi (Sulawesi)[20]

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Yimas
Alamblak
Barupu
Warembori (p. 134)
Gunwinyguan (all)
South Daly River
Tiwi

Abbreviations

A or AG
agent
ALL
allative
APPL
applicative
ASS
associative
CAUS
causative (mood)
CONTEMP
contemporative (mood)
CONTING
contingent (mood)
DUR
durative
FR
far (past)
FUT
future
HAB
habitual
INCH
inchoative
IND
indicative
INTR.PART
intransitive participle
INS
instrumental

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INV
inverse
IPFV
imperfective
IRR
irrealis
ITER
iterative
IVF
incorporating verb form
KIN
kinaesthetic
NEG
negative
NP
non-past
O or OBJ
object
PART
participial (mood)
PASS.PART
passive participle
PFV
perfective
PC
paucal
PL
plural
PRO
proverb
REFL
reflexive
REL
relative
REP
repetitive
RM
remote (past)
S or SUBJ
subject
SEQ
sequential

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Notes:

(1) See Appendix 1 for a typical passage in West Greenlandic, a language widely regarded as polysynthetic and high on the ‘index of synthesis’. It is taken from the traditional tale ‘Igimarasussussuaq’, as told by Jaakuaraq of Nuuk to Knud Rasmussen and reproduced in Fortescue (1990b: 103). It can be seen that it consists of twenty words, corresponding to the seventy-three words of the English translation. The language is simple, with no particularly long words by Greenlandic standards.

(2) See also Bickel and Nichols (2007: 188ff.) who rename the synthesis dimension ‘semantic density’ (at the word level).

(3) Chukchi, for example, is dependent-marking as far as nominals are concerned (it displays a robust case system), and Eskimo is double-marking. What counts as regards degree of polysynthesis, however, is arguably the verb.

(4) But note that languages may combine general scope-ordering with templatic organization of a sub-section of the morphology (as with West Greenlandic ‘sentential’ affixes). Nivkh combines free Eskimo-like ordering to the left and rigid templatic ordering to the right of the main stem (Mattissen op. cit.: 212).

(5) Syntactic incorporation is typically displayed by scopally organized languages with ‘heavy’ verbalizing affixes affecting valency and interacting with the external syntax in a productive manner, for example Eskimo-Aleut with its verbalizing affixes or Wakashan with its ‘governing’ lexical affixes. Noun incorporation does not usually attain this degree of freedom (cf. Mithun 1984: 889), though it would appear to approach it, at least in purely incorporating languages like Sora (Anderson, this volume). Purely templatic morphology on the other hand would seem not to favour this type of morphosyntactic behaviour.

(6) Bohnemeyer et al. deal mainly with causal constructions, but within this context they also discuss serial verb constructions, which are maximally compacted in polysynthetic languages like Yimas.

(7) ‘Constitutiveness’ here refers to the support relation of filling in the conceptual ‘body’ of the temporal contour provided by the framing event. This could, for instance, be an agent’s action in bringing about the macro-event.

(8) VII is a nominal agreement class.

(9) More specifically, in which ‘an intentional Agent effects or maintains a particular correlation between an action performed by herself and an action performed by another Agency’ (Talmy 2000, vol. 2: 253–61). This covers the cases he terms ‘concert’ (i.e. together with someone), ‘accompaniment’, ‘imitation’, ‘surpassment’, and ‘demonstration’ (when the two actions are complementary rather than equivalent).

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(10) **ŋit-* is also an ingredient in the verbal negation extension **-nRit-* ‘not’ from nominalizer **-nəR* plus **ŋit-*.

(11) Applying the same criteria to Cree, a polysynthetic language of the Algonquian family displaying a rather different morphological type, at least the following non-stem morpheme meanings (from Wolfart 1996) can be regarded as lexically heavy:

Medials: classificatory (wood, stone, fabric, etc.)
body parts
Finals: instrumental (do by hand, by cutting edge, by vision, by mouth or speech, by tool, by vehicle, etc.)
(do) at or to a place
move
run
have X
arrange X
make X

There are also ‘pre-verbs’ with meanings like ‘go to’, ‘want to’, ‘intend’, ‘audibly’, which probably belong here too. One kind of lexically heavy morpheme not found in either Eskimo-Aleut or Algonquian is the spatial lexical suffixes of the Wakashan family. These cover meanings of both Path (directional) and Ground (location)—and combinations of the two—of considerable topographical specificity. A listing of these for Nuuchahnulth can be found in Sapir and Swadesh (1939).

(12) One could say the same of Nama (Khoisan), which also displays a surprising degree of synthesis but falls short on obligatory bound pronominals and productivity of incorporation.

(13) Pronominal clitics typically appear on the first element of the clause in this strictly VSO language, even when that element is not the main verb but some other highlighted element, as in *ʔa:ni-sa ʕac’ik-šiƛ* (really-1SG know.how.to-MOM) ‘I really learnt how to do it’.

(14) A somewhat similar situation holds in Ute (also as regards the variety of hosts pronominal clitics can adhere to), though also 3rd person clitics are involved, in object as well as subject function. The conditions in which they may all be replaced by zero in Ute is primarily a matter of reference continuity (T. Givón, pers. comm.).

(15) 4SG = ‘fourth’ (reflexive 3rd) person, here indicating the same subject as that of the superordinate predicate.

(16) Incorporating adjuncts in this manner is relatively rare in polysynthetic languages, as are inflectional circumfixes.

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(17) I shall not attempt to relate the sentences to Talmy's distinction between satellite-framed and verb-framed languages (problematic for polysynthetic languages).

(18) And perhaps other lowland Mayan languages with noun incorporation. All of these are only mildly polysynthetic.

(19) Tariana, under the influence of neighbouring Tucanoan, does not mark pronominal objects of transitive verbs on the verb (unlike most Arawak)—though subject-marked transitive verbs with Ø-marked 3rd person object can apparently constitute a complete word-clause (cf. Aikhenvald 2002b: 61–5). So Tariana may qualify as 'polysynthetic with qualifications'.

(20) And possibly some other Austronesian languages of southwest Sulawesi, the northern Philippines and Taiwan.

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The Lexicon in Polysynthetic Languages

Louis-Jacques Dorais

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Abstract and Keywords

This chapter shows Eastern Canadian Arctic Inuktitut words are formed and used in the context of polysynthesis. It starts with a very basic classification of word-types along distributional lines: how various categories of morphemes combine or don't combine with the same or other categories, in order to generate various types of words. On the basis of a number of examples, it will be shown that the lexicalization of morphemic groupings lies at the core of the Inuktitut lexicon. In contemporary language usage, this process of lexicalization may be either covert or overt. When covert, the combined meaning conveyed by the addition of each original morpheme in a word is mostly imperceptible to modern speakers, the only semantic function of the lexicalized word being to signify its new denotatum. When overt, however, it can serve as a powerful tool for creating new words apt at describing a world in constant change.

Keywords: polysynthesis, Inuktitut, covert lexicalization, overt lexicalization, constantly changing world

8.1 Introduction

EVANS and Sasse (2002: 3f.) summarize the core characteristics of polysynthesis as follows:

> A prototypical polysynthetic language is one in which it is possible, in a single word, to use processes of morphological composition to encode information about both the predicate and all its arguments, for all major clause types … to a level of specificity, allowing this word to serve alone as a free-standing utterance without reliance on context.

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In such holophrastic constructions, words are liable to include several semantically meaningful and grammatically functional units. The lexicon of polysynthetic languages thus risks yielding extremely complex and specific significations, far too numerous to be listed in a dictionary of all available lexical forms. See, for example, the following Inuktitut utterance I once heard in Nunavik (Arctic Quebec):

(1)

sinnatuuma-ju-ujaa-raalut-tu-ujaa-nirar-ta-u-qatta-lau-runnai-nira-laur-tu=ugaluaq
to.dream-INTR.PTCP-look.like-much-INTR.PTCP-look.like-say.that-PASS.PTCP-
be-DUR-PST-not.anymore-say.that-PST-3SG.IND=however
'However, he said that it was not usual anymore for him to be said to look like
somebody who looks a lot like one who is dreaming'

Obviously, examples like this cannot be considered basic lexical units, even if from a morpho-syntactic standpoint they fully qualify as words. A computerized analysis of the Inuktitut transcription of deliberations in the Legislative Assembly of the Canadian territory of Nunavut elicited a total of 408,000 different words, only 1,000 of which occurred more than 100 times (Benoit Farley, pers. com., 20 July 2004, quoted in Dorais 2010: 9). What is lexical, then? How is it possible to tell which holophrastic words—or morphemic clusters within them—are lexicalized?

(p. 136) In order to shed light on the nature of the lexicon in one core polysynthetic language, this chapter will examine word-formation in Inuktitut, a group of dialects of the Inuit language spoken in the Canadian eastern Arctic.[1] I will discuss how, in that language, compositionality (productive derivation) can (sometimes) be distinguished from lexicalization. This will be followed by a brief comparison with Iroquoian and Algonquian, two unrelated North American language families also characterized by holophrasis, in order to reach a tentative definition of the polysynthetic lexicon.

8.2 Derivation and Lexicalization in Inuktitut

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The grammatical structure and areal distribution of Inuit and other languages belonging to the Eskimo-Aleut (or Eskaleut) family are discussed elsewhere in this book (see chapters by Woodbury, Allen, and Fortescue). It will suffice to mention here that in Inuktitut, there are four word-classes: verbs, nouns, localizers, and particles (Dorais 2010: 70). The canonical structure of verbs and nouns can be summarized as follows:[2]

STEM +/- DERIVATIONAL AFFIX/ ES + INFLECTION

Stems—the mono-morphemic basic elements of words—always occur word-initially, with the result that any word includes only one of them. By contrast, derivational affixes—which constitute a set of morphemes completely different from stems—must appear word-internally. Their presence is facultative and in current speech, their number may vary between zero and *ca*. ten units.[3] Stems may combine with a limited number of derivational affixes to form bi- or poly-morphemic word-initial semantic compounds called bases. As (p. 137) regards inflections (flexional affixes), they are compulsory (except with particles) and most generally occur in word-final position.[4]

Here are a few examples of IN words drawn from the Quaqtaq narrative:

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(2)

a. taik-ani
there.away-LOC
STEM-INFLECTION
'At that place'

b. qauji-gii-laur-sima-jugut
know-finish.doing-PST-PFV-1PL.IND
STEM-DERIVATIVE AFFIX-DERIVATIVE-DERIVATIVE- INFLECTION
'We have finally known'

c. inuusi-nganik
life-POSS.3SG/SG.INS
STEM- INFLECTION
'His or her life'

d. qauji-sima-jara
know-PFV-1SG/3SG.IND
STEM-DERIVATIVE AFFIX- INFLECTION
'I know it'

e. piu-ju-alum-mik
to.be.good-INTR.PTCP-much-SG.INS
STEM-DERIVATIVE-DERIVATIVE-INFLECTION
'Something very good'

In these examples, what is properly lexical as opposed to grammatical or simply derivational? Entire words? Morphemic units (individual or in clusters)? The Merriam-Webster dictionary defines the term 'lexical' as follows:

> **1:** of or relating to words or the vocabulary of a language as distinguished from its grammar and construction
> **2:** of or relating to a lexicon or to lexicography.
> (http://www.merriam-webster.com/dictionary/lexical?show=0&t=1397660584)

According to this definition, "lexical" relates to the vocabulary of a language "as distinguished from its grammar and construction." In the case of Inuktitut, this means that flexional affixes (inflections), whose primary function is to mark syntactic relations within the sentence, do not belong to the lexicon but to grammar. But what about stems and derivational affixes? When and how do they become part of the lexicon? Up to what point do they need to be lexicalized in order to be considered lexical?

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(p. 138) Lexicalization will be defined here as the process of deriving a linguistic unit to make it denote a specific concept that will thereafter be treated as a semantically unitary item. Such derived denotative linguistic units may be called lexemes. One way of understanding which Inuktitut words or word-parts are considered as lexemes is to cast a look at how bilingual and monolingual Inuit dictionaries are organized.

8.2.1 The lexicography of Inuktitut

Unsurprisingly, existing dictionaries of Inuktitut—and of other Inuit dialects—do not include inflections as entries. Grammatical endings are rather listed and described in separate works titled "grammars."[5] However, most word-lists *do* enclose some flexional affixes. Inuktitut-English and Inuktitut-French dictionaries by Schneider (1970, 1985) and Spalding (1998), my multi-dialectal glossary (Dorais 1990), as well as the North Baffin dictionary of Inuktitut definitions by Ootoova et al. (2000) list intransitive verbs with their 3SG.IND (or 3SG.DECL) inflection, and transitive (ergative) verbs with their 3SG/3SG.IND (or.DECL) ending. Moreover, a number of localizers occur as separate stem-*cum*-inflection entries. As regards nouns, they are entered in their absolutive singular non-possessed form (with morpheme zero). As far as I know, only two dictionaries of Inuktitut are structured otherwise, and both have something important to tell about lexicology.

In 1991, Taamusi Qumaq, an elder from Puvirnituq, published a dictionary of definitions, the first of its kind in IN. Qumaq had never been to school (but had learned the Inuit syllabic characters from his mother), only spoke his native tongue, and had not been coached or supported by linguists and other language specialists. His dictionary was the outcome of a personal project aimed at preserving a language he perceived as changing rapidly. So, Qumaq's lexicography is liable to reflect an unschooled native speaker's views on the vocabulary of Inuktitut.[6]

Qumaq's objective was to list all the words he knew. Of course, it was impossible for him to enter everything he had said or heard during his life, but he managed to include in his dictionary most terms he deemed really significant. This included verbal stems (or stems plus derivational affixes) with two, three, or more, person and mode endings; nouns in the dual, plural, possessive, and non-absolutive inflections; localizers with their own endings; etc. Qumaq's dictionary comprises over 30,500 different entries.[7] By way of example, here are, with my apologies, some of those derived from *miriaq* ('vomit'), in their order of occurrence, that of the Inuit syllabic script (Qumaq 1991: 325):

(3) miriaq: 'vomit' (noun)

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miriarputit: ‘you vomit’
miriarpunga: ‘I vomit’
miriartutuq: ‘it [dog] eats vomit’
(p. 139) miriartaq: ‘something vomited’
miriakka: ‘my vomited matters’
miriangujuq: ‘it is vomit’
miriarmijuq: ‘he/she/it vomits too’
miriarmat: ‘because he/she/it vomits’

Qumaq’s definitions often consist in examples of one specific semantic or cultural context in which a particular word is used. For instance, *miriarmat* is defined as:

> There is a pouch made of a sealskin. Because its contents [seal meat] is very full, it vomits meat. (my translation)

In this example, the meaning of the word (‘because it vomits’) stems from the fact that in that kind of situation (an overflowing meat-pouch), one could hear something such as: “Because it vomits [its contents], I know it is very full.” Qumaq’s choice of entries thus appears motivated by the semantic importance, cultural relevance and, maybe, frequency of use of the words he selects, rather than by any strictly linguistic criterion.

This suggests an ethno-linguistic definition of the lexicon of Inuktitut—and, perhaps, of other polysynthetic languages—based on the subjectivity of its speakers:

> Would be a lexeme any word considered by its speakers as a semantically and culturally significant speech unit, without consideration for its linguistic composition and eventual holophrastic nature.

This concept of lexical subjectivity will be further discussed later on.

More satisfying perhaps from a stricter linguistic viewpoint is the Inuktitut–English dictionary of the Labrador dialect edited by Rose Jeddore (1976), a native speaker. As with other glossaries, nouns are listed in their absolutive singular non-possessed form, but verb entries consist in verbal stems without any inflection. Compare for instance:

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(4)

a. sinip-puq
sleep-3SG.DECL
'He is asleep' (Schneider 1985: 358)

b. sinik-tuq
sleep-3SG.IND
'He sleeps or he is sleeping' (Spalding 1998: 135)

c. sinik-
sleep-
'To sleep' (Jeddore 1976: 131)

Localizers, however, often occur with each—or most—of their inflections, as separate entries. See, for instance, the four entries related to the localizing stem *ma-* ('here'):

(p. 140)

(5)

maanngat: 'from here' (ibid.: 64)
maani: 'here' (ibid.)
mauna: 'through here' (ibid.: 69)
maunga: 'to here' (ibid.)

Jeddore also seems to consider that some verbs in the imperative mode behave as interjectional particles, listing them as main entries:

(6)

taku-git
see-2SG.IMP
'You see! Look!' (ibid.: 141)

Generally speaking, however, her lexicographical presentation of verbs and nouns as non-affixed stems—and of particles as main entries—suggests another, more properly linguistic definition of the Inuktitut lexicon (or at least part of it):

> Would be a lexeme any verbal or nominal stem, as well as any particle.

Localizing (adverbial and demonstrative) stems would, possibly, be too abstract (marking a spatial position per se), and their morphology probably not obvious enough to allow speakers to perceive them as lexically meaningful items, even if these speakers were trained in linguistics, like Jeddore was.

8.2.2 The derivational affixes and the lexicon

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Up to now, we have seen that linguistically speaking, inflections do not belong to the lexicon of Inuktitut—to that of dictionaries at least—while verbal and nominal stems, as well as particles, do. As concerns localizers, they can be formally divided into stems and inflections, but are more readily considered by speakers as indivisible wholes. These conclusions, reached for a good part thanks to a look at current lexicographical usage, are corroborated by the different roles played by these morphemes. Stems express the basic meaning of the word, that from which its complete signification progressively develops, while inflections mark its syntactic function. This explains why flexional affixes belong to grammar rather than lexicon. This division generally corresponds to the perception of those native speakers of Inuktitut who are somewhat familiar with Euro-American linguistics, interpretation–translation, or the teaching of language.

Where do derivational affixes stand, in terms of their relation to the lexicon? They are generally positioned between the stem and the inflection, so that in Inuktitut lexicography they do not belong to dictionaries except, occasionally, as morphemes affixed to an initial entry stem, within derived or lexicalized words. Derivational affixes are not to be found in grammars either. They are rather listed in special compilations of ‘infixes’, ‘suffixes’, or ‘post-bases’ (e.g. Peacock 1974, L. Smith 1978, Schneider 1979, Harper 1979, Briggs et al. 2015).

As already mentioned, derivational affixes are optional—while stems and inflections are compulsory. They allow speakers to develop the basic meaning of a word in the direction they want, adding information about various predicates, entities, and qualifying attributes (p. 141) related to the stem, as well as about their modalities of occurrence. Derivational affixes thus play a major part in the creation of holophrastic words.

These affixes are liable to yield all sorts of meanings, some of which are of a lexical nature (expressing the occurrence of a predicate or entity), some others more akin to grammatical morphemes (marking a modality or circumstance of occurrence). In his *Comparative Manual of Affixes*, Fortescue (1983) has classified Inuit derivational affixes into twenty-seven different types, on the basis of their semantics. For the purposes of this chapter, most of these types can be reduced to six, more encompassing categories.[8] Examples for each category follow the list:

1. Verbalizers: denote a predicate whose object or attribute is expressed by the word’s stem or base; cf. example (7).
2. Nominalizers: denote an entity that acts as the agent, object, or cause of the predicate expressed by the word’s stem or base, or that makes a noun out of it; cf. example (8).
3. Qualifiers: denote a quality, quantity, or circumstance attributed to a predicate or entity; cf. example (9).
4. Extenders: add an element of modality or valency-shifting to the meaning of a verbal stem or base or, less frequently, express a predicate whose object is denoted by the word’s nominal stem or base; cf. example (10).

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5. Sentential affixes: stand halfway between derivational and flexional affixes; they express temporal and other modalities pertaining to a predicate; cf. example (11).
6. Enclitics: add an accessory meaning at the end of the word; cf. example (12).

Here are IN examples of the six categories of derivational affixes. In each example, the affix belonging to the relevant category is underlined:

(7)

(1. Verbalizers)

a. arna-u-jutit
woman-be-2SG.IND
'You are a woman'

b. Quaqta-liar-tugut
Quaqtaq-go.to-1PL.IND
'We travel to Quaqtaq'

(8)

(2. Nominalizers)

a. pinasu-qati-ga
to.work-who.does.with-POSS.1SG/SG
'My working mate'

b. autla-riaq
to.leave-NMLZ
'The action of leaving; departure'

(p. 142)

(9)

(3. Qualifiers)

a. uqa-tlarit-tuq
speak-fully-3SG.IND
'He or she speaks fully; is a good speaker'

b. itlu-alum-mi
house-big-SG.LOC
'In a big house'

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(10)

(4. Extenders)

a. tusa-ruma-jutik
hear-want.to-2DU.IND
'Both of you want to hear'

b. itlu-lim-mut
house-that.has-SG.ALL
'Towards the place or person with a house or houses'

(11)

(5. Sentential affixes)

a. tiki-langa-junga
arrive-FUT.PROX-1SG.IND
'I will arrive soon'

b. qai-nngi-latit
come-NEG-2SG.DECL
'You do not come'

(12)

(6. Enclitics)

tikit-tunga=guuq
arrive-1SG.IND=QUOT
'I arrive, says he/she'

At first glance, on the basis of their meanings when translated into English, many derivational affixes appear to be semantically akin to lexical elements. For instance, affixes *-liar-*, 'to go to' (22b), *-qati-*, 'mate' (23a), *-alum-*, 'big' (24b), or *-ruma-*, 'to want to' (25a), express predicates or denote entities or attributes, as would most word-stems.[9] Such nearly lexical meanings might explain why, in IN, speakers often drop a stem or, more rarely, an inflection if the signification of these elided morphemes has already been disclosed or made obvious in the ongoing conversation. Here are three extracts from the already quoted Quaqtaq narrative, where the second word has no head-stem:

(p. 143)

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(13)

a. ilinnia-qu-ja-u-gama
study-ask.to-PASS.PTCP-be-1SG.CAUS
ja-vini-u-lir-mi-gama
PASS.PTCP-former.one-be-now-again-1SG.CAUS
'Because I am asked to study, because I had now again [been asked]'

b. kangirsu-miu-nngu-si-laur-sima-jut
Kangirsuk-dweller.of-become-start.to-PST-PFV-3PL.IND
litainna-laur-sima-jut
for.the.first.time-PST-PFV-3PL.IND
'They had started to become dwellers of Kangirsuk, they had for the first time'

c. piusi-ri-suu-kka
habit-have.as-something.usual-POSS.1SG/PL
sima-ja-kka
PFV-PASS.PTCP- POSS.1SG/PL
'My usual habits, those I already [have]'

It is not clear whether this process, very frequent in IN but much less so in other dialects of Inuktitut, must be considered a simple instance of elliptical discourse or a deeper re-arrangement of the lexical structure.

Despite some degree of surface semantic similarity between lexemes and derivational affixes—including, as we just saw, a limited propensity for the latter to be used as word-initial elements—a thorough analysis of the syntax of Inuit words shows that derivational affixes cannot be considered full lexical units. As verbalizers (category 1 above) are concerned for instance, a ground-breaking article by Alana Johns (2007) argues that in Inuktitut, the set of verbs involved in noun incorporation are all 'light' verbs, that is, functional elements that exclude lexical or root material. This process might, thus, be considered a subset of a general syntactic operation which targets stems (nominal in this case), rather than incorporation of lexical stem by (lexical) verb.

Johns is right when stating that in Inuktitut noun incorporation, verbalizers express a limited number of relatively basic predicates as, in IN: 'be' (*-u-*), 'have' (*-qar-*), 'move towards' (*-liar-*), 'use' (*-tur-*),[10] 'contact' (*-si-, -siur-*), 'provide' (*-lir-, -liur-*),[11] etc. Some of these predicates can also be denoted by way of one or several verbal stems, but the form of such stems has nothing to do with that of their semantically equivalent affixes, as in:

(p. 144)

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(14)

a. tii-tur-tunga tuttu-tur-sunga
tea-use-1SG.IND caribou-use-1SG.CONT
'I drink tea while I eat caribou'

b. tii-mik imir-tunga
tea-SG.INS drink-1SG.IND
tuttu-mik niri-tsunga
caribou-SG.INS eat-1SG.CONT
'I drink tea while I eat caribou'

Other verbalizers have no stem equivalent—for instance, it is impossible to say 'I am' in Inuktitut—but some of them can attach to the empty stem *pi-*, which may be glossed as 'something':

(15)

pi-ta-qar-tunga
something-gotten-have-1SG.IND
'I have [gotten something]'

Like verbalizers, other categories of derivational affixes express or denote a limited number of predicates, entities, and attributes. Nominalizers are few and far apart, qualifiers mostly denote quantitative ('big, small, long, short', etc.) and appreciative ('good, bad, complete', etc.) attributes,[12] while extenders, which are mostly verbal, express a limited set of notions ('want, must, can, start, finish', etc.). As regards enclitics, they do not belong to the syntax of the word.

As far as I know, no stem exists whose meaning would be equivalent to that of a verbal extender. To express their bare, basic signification, extenders must form lexemes by becoming attached to the empty stem *pi-* (that occurs here as a verb). Compare, for instance, a. and b. below:

(16)

a. pi-juma-junga
do-want-1SG.IND
'I want'

b. niri-juma-junga
eat-want-1SG.IND
'I want to eat'

In examples such as (16a), however, speakers of IN—and, less frequently, of other Inuktitut dialects—often delete the *pi-* stem, whose presence fulfills a purely syntactic function. Doing so reveals that the predominant semantic charge of the lexeme lies in the

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derivational affix. This deletion process also occurs with *pi*-initial nominalizers and sentential affixes but, (p. 145) apparently, not with verbalizers.[13] Here are a few examples of *pi*-deletion drawn from the Quaqtaq narrative:

(17)

a. vatlai-juq (< pi-vatlai-juq)
seem.to-3SG.IND
'It looks like'

b. ruma-ir-tunga (< pi-guma-ir-tunga)
want.to-NEG-1SG.IND
'I don't want'

c. qata-u-tsunga (< pi-qata-u-tsunga)
who.does.with-be-1SG.CONT
'While I am part of it'

It thus seems safe to conclude that no derivational affixes that might sound 'lexical' in English translation rightly belong per se to the lexicon of Inuktitut. If they do, it is always when attached to a stem, although in some circumstances, this stem may be deleted (at least in IN) when its semantic weight is inferior to that of the affix, or when it would repeat an already-stated argument. *This means that the linguistic items which may be defined as lexical generally comprise a word-initial stem that is, or is not, followed by derivational affixes*. The words to which such items belong can only become fully grammatical when ending with an inflection marking their syntactic function.

8.2.3 Compositionality and lexicalization

In a way, the definition above introduces a measure of instability. Because linguistic elements deemed lexical may or may not include a number of derivational affixes, it might well prove impossible to reach a precise count of them. The lexicon of Inuktitut would include all stem +/- affix combinations (with or without their final inflection) liable to become a bi- or poly-morphemic base from which longer words can be derived. Such combinations would express a meaning that speakers or lexicographers consider significant, and they would often be perceived as semantically unitary items (lexemes).

For native lexicographers, the lexicon comprises full words (Qumaq 1991, Ootoova et al. 2000), or words plus verbal stems (Jeddore 1976).[14] For non-native compilers of bilingual dictionaries, it mostly includes—often as sub-entries—words or phrases with a primary meaning in the author's first language.

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(p. 146) This means that subjectivity has a part to play in defining what is properly lexical, but up to what point? Selecting dictionary entries is subjective: lexicographers seek to compile a practical list of lexemes corresponding to unitary concepts, whether native or largely drawn from a foreign compiler's own semantic baggage. With natural speech, however, delimitating what is lexical is a matter of linguistic usage rather than choice: the lexicon consists in a speaker's mental compilation of all individual morphemes that may be combined with other morphemes at the word and sentence level. Some of these combinations are endowed with a meaning that speakers equate with a unitary concept and that may, thus, be considered lexemes.

We must distinguish here between compositionality (productive derivation in general) and lexicalization (deriving lexemes that denote a semantically unitary item). There generally exists no evidence indicating with a satisfying degree of precision when a derived unit becomes lexicalized. Here again it is a matter of subjectivity and pragmatics: lexicalization occurs when speakers 'feel' that a certain word or word-part forms an indivisible semantic unit, with a well-defined denotation. One marker of such a situation is when the literal meaning of a derived term has lost all relevance to current reality,[15] or when language users do not realize anymore that a word is a derivative.[16] However, because derivation is an active process in Inuktitut, the literal signification of many lexicalized items remains apparent and, thus, discernible to attentive speakers, even if they perceive them as unitary lexemes.

By way of example, let us have a look at the word *inuusinganik*. In (2c), it is glossed *inuusi-nganik* (life-his/her). But the stem *inuusi-* ('life') can itself be subdivided into three morphemes, although it looks probable—but not certain—that most native speakers consider it an indivisible lexical unit:

(18)
inu-u-si[q]-
person-be-NMLZ
'The fact of being a person (of being alive)'

Speakers are, or can be made aware of the literal meaning of recently lexicalized terms, even if these are currently used as indivisible items. However, several Inuktitut words belonging to the pre-contact language also result from lexicalization, although this is not always recognized. I remember Inuit teachers-in-training who vehemently denied that the following examples meant anything else than 'good', 'bad', and 'tomorrow':

(19)
a. pi-u-juq
something-be-3SG.IND
'It is something; which is something' (= 'It is good; which is good')

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b. pi-u-nngi-tuq
something-be-NEG-3SG.IND
'It is not something; which is not something' (= 'It is bad; which is bad')

c. qau-ppat
to.be.light-3SG.COND
'When it will be light; when the sun will rise' (= 'Tomorrow')

(p. 147) This means that except for words whose usage is very old, or whose etymology is not readily discernible in synchrony, the line between compositionality and lexicalization is difficult to draw.

8.2.4 Lexicalization and neology

Lexicalization has played, and still does, a major part in neology. Since foreign cultural items and ideas started being introduced among the Inuit, their language has regularly derived new lexemes for creating neologisms describing the function or, less frequently, the appearance of new concepts (Dorais 2010: 151–62). These 'new' words—some of them date back to the eighteenth century, though—thus constitute privileged examples of lexicalization at work.

In my dictionary of 2,153 Nunavik and Labrador nouns designating some 950 items, mostly from material culture, introduced by Euro-Canadians, 76.8 percent of all entries are lexicalized terms ('newly' created lexemes), while 15.8 percent extend the meaning of an already-existing word, and a mere 7.3 percent have been borrowed from English—and German in Labrador (Dorais 1983: 90).[17]

From a semantic standpoint, the 'new' lexemes included in my corpus may be subdivided into three sub-categories:

1. Those expressing the principal function that speakers attribute to the denoted entity or predicate (60.3% of the sub-category).
2. Those describing the appearance of the denotatum (36.1%).
3. Those equating the denotatum to an element of pre-contact culture (3.6%).

Here are examples of these three types of lexicalized neologisms:

(20)
(1. Expressing the function)
a. ilin-nia-vik
learn-go.to.do.it-place.where
'A place where one goes to learn'
'School'

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b. itiga-guti
foot-that.is.used.for
'That is used for the feet'
'Shoe'

c. nitja-uti
utter.a.sound-that.is.used.to
'That is used for uttering a sound'
'Accordion'

(p. 148)

d. immu-liur-ti
milk-to.make-one.who.does.something
'The one who makes milk'
'Cow'

e. aupalut-si-guti
something.red-to.make.it.so-that.is.used.to
'That is used to redden something'
'Lipstick'

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(2. Describing the appearance)

(21)

a. kiina-ujaq
face-which.looks.like
'Which looks like a face'
'Money'

b. au-kuluk
blood-nice.little
'Nice little blood'
'Chocolate'

c. qianngu-juuq
emit.a.crying.sound-which.usually.does.it
'Which usually emits a crying sound'
'Outboard motor'

(3. Equating to an element of pre-contact culture)

(22)

qamuti-kallak
sled-short.and.wide
'Short and wide sled'
'Snowmobile'

In a smaller proportion (15.8% of the corpus) neology resorts to semantic change. Instead of deriving a new lexeme, the original meaning of an already existing word is extended without modifying its form. About half of these neologisms (50.5% of the sub-category) belong to the general vocabulary of Inuktitut and another half (49.5%) make use of a lexeme that refers to an element of traditional Inuit culture.

(p. 149)

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(23)

(General vocabulary)

a. ata-juq
adhere-INTR.PTCP
'Which adheres'
'Long one-piece underwear'

b. putlaq
'Air bubble'
'Electric bulb'

(24)

(Traditional culture)

a. umiaq
'Traditional sealskin collective boat'
'Any modern boat or craft'

b. uvva-uti
to.wash-that.is.used.to
'That is used for washing'
'Blubber, fish roe and secretions traditionally used for washing'
'Store-bought soap'

Finally, 7.3 percent of the corpus consists in words borrowed from English (82.3% of the sub-category) or German (15.2%).[18] It should be noted that borrowing accounts for 17.2 percent of all corpus items in the Labrador Inuttut dialect, but for only 5.6 percent of those in IN.

(25)

a. paniuppaaq
'Frying pan' (from English)

b. siisi
'Cheese' (from English)

c. luivi
'Lion' (from German *Loewe*, 'lion')

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Like all other neologisms, borrowings now belong to the general corpus of Inuktitut lexemes. They regularly occur as word-stems—cf. (26) below—and speakers are generally unaware of their foreign origin.

(26)
siisi-tuqar-tu-tuq
cheese-old-eat-3SG.IND
'He or she eats old cheese'

(p. 150) Because foreign items and concepts were introduced separately to different areas of the Inuit-speaking world, neologisms tend to vary a lot—in literal meaning as in type—from one region or place, to another.[19] Look for instance at the following examples:

(27)
a. atla-tuq
draw/sew.a.design-3SG.IND
'He or she draws or sews an ornamental design'
'He or she writes' (IN and Labrador Inuttut)

b. titiraq-tuq
to.dot-3SG.IND
'He or she dots something'
'He or she writes' (Nunavut Inuktitut)

(28)
a. ika-ur-niq
to.cross-DUR-NMLZ
'The fact of crossing space repeatedly'
'Hour (on a clock)' (western IN)

b. kaivatla-gusiq
turn.on.oneself-NMLZ
'The fact of turning on oneself'
'Hour (on a clock)' (northeastern IN)

c. situnatik
'Hour (on a clock)' (Labrador; from German *Stunde*, 'hour')

In spite of their regional variation, all neologisms are semantically related to one or another aspect (function, appearance, perceived link with an element of pre-contact culture) of the concept they denote.[20] This may yield lexemes that express quite similar

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meanings under different guises, as in the names given to the airplane in various Inuit dialects (Dorais 2010: 152):

(29)

a. tingmisun (Malimiutun Alaskan Inupiaq)
'That is used for flying frequently'

b. tingmijualuk (western Canadian Inuvialuktun)
'Big flying one'

c. tingmin (western Nunavut Inuinnaqtun)
'That is used for flying'

d. tingmisuuq (Aivilik and North Baffin Inuktitut)
'Which has the habit of flying'

e. qangattajuuq (South Baffin and northeastern IN)
'Which has the habit of ascending'

(p. 151)

f. timmijuuq (western IN)
'Which has the habit of flying'

g. tingisuuk (Labrador Inuttut)
'Which has the habit of flying'

h. timmisartuq (West and East Greenlandic)
'Which flies frequently'

The examination of neologisms brings to light two important features of lexicalization: (1) the contextual nature of lexemes and (2) the fact that they become meaningful within well-defined speech communities.

It is within specific contexts that lexemes denote or express unitary concepts. For instance, the word *atajuq* (23a) refers to a 'long one-piece underwear' when speaking about wearing clothes, but otherwise, it just functions as a derivative of *ata-* ('to adhere'), without reference to any more specialized semantic unit. In a similar way, *nitjauti* (20c; 'that is used for uttering a sound') denotes an accordion in discourses dealing with musical instruments, dancing, or partying, but outside of that, it can refer to any sound-producing circumstance or object—a concert and a firecracker could both be called *nitjauti*. Neologisms and other lexicalized units operate as lexemes within specialized

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fields of experience, that is, cultural and environmental elements that occur together in different types of situations. The words denoting these elements form a web of significant relationships which link them semantically into a structure (Dorais 1977, 2010: 157–9).

Neologisms are meaningful within a well-defined community of speakers. Words quoted in (27), (28), and (29), may be understood outside their area of current use, but without referring to the same unitary concept, or to any concept at all. For example, in the North Baffin dictionary of definitions (Ootoova et al. 2000: 226) the entry *aglaktuq*—cognate of IN *atlatuq* (27a), 'he or she writes'—is defined according to its original, pre-contact meaning only: "She sews the woolen ornaments of a garment or a stocking; for instance, she *aglak*- images of flowers" (my translation). In North Baffin Inuktitut, 'he/she writes' is *titiraqtuq* (27b).

A lexeme referring to two concepts that are perceived as sharing a common characteristic may denote very different entities in two separate speech communities. This is the case with the IN word *mamarsauti*:

(30)
mamar-sa-uti
pleasant.to.taste/smell-find.it.so-that.is.used.to
'That is used so that it is found pleasant to taste or smell'
'Sugar' (western IN)
'Perfume' (northeastern IN)

(p. 152) The study of Inuit neologisms, which has the advantage of examining words whose lexemic nature appears evident, shows that lexicalization operates within specific semantic contexts and well-defined speech communities. It is speakers from each of these communities who feel that in such and such a context, this or that assemblage of stem and affix/es corresponds to a unitary concept, and use it accordingly. In spite of its collective dimension—lexemes have no linguistic usage unless shared by a group of speakers—lexicalization thus retains some degree of subjectivity. With, perhaps, the exception of neologisms, it is impossible to define precisely which elements of a speaker's mental lexicon function as fully lexicalized lexemes, and which others are circumstantial derivatives that resort to compositionality.

In view of the preceding discussion, the lexicon of Inuktitut might, finally, be defined as comprising:

> All morphologically single or composite (stem +/- derivational affix/es +/- inflection) language elements, whether lexicalized or not, whose linguistic usage in a well-defined speech community tends to show that in specific contexts, they act as semantically and/or pragmatically significant basic units upon which a longer holophrastic word can eventually be built.

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8.3 Some Comparative Data

Inuktitut doubtlessly offers a good example of the nature of the lexicon in one polysynthetic language, but things can be somewhat different in other languages of the same type. Although I cannot attempt any extensive comparison here, I shall briefly compare Inuktitut with some Iroquoian and Algonquian lexical data.

In her already-quoted article, Johns (2007: 565) contrasts Inuktitut with Mohawk, a language she considers typical of 'classical' noun incorporation: "In classical noun incorporation, the verbs are not restricted to light verbs; the incorporating verb may have lexical meaning, and the nominal may appear either within or outside the verbal complex." A Mohawk example can be found in Mithun (1984: example 101):

(31) wa-hi-ʾsereht-anʌ́hsko
PAST-he/me-car-steal
'He car-stole me' (= 'He stole my car')

What interests us here is that the morphemes *anʌ́hsko* ('steal') and '*sereht* ('car') can occur as separate word-elements. As we saw, this would be impossible in Inuktitut, where the vast majority of predicates and nouns are expressed by way of word-initial stems that cannot combine together. Huron-Wendat, an Iroquoian language like Mohawk, offers several examples (drawn from Lukaniec 2011) of such an extensive compositional process —although verbs do not always need to be noun-incorporating (see 32c):[21]

(p. 153)

(32)

a. [Ø]-at-wɛ̃n-ahtonʔt-i (example 42)
[3.FZ.SG]-MID-voice-make.someone.lose.something-STAT
'To make oneself lose his/her voice' (= 'To quiet oneself')

b. [Ø]-atate-nɔ̃r-ɔ̃hkw-a-niɔ̃ (example 126)
[3.FZ.SG]-REFL-scalp-to.grease-JOIN-DISTR.STAT
'To grease each other's scalp' (= 'To greet one another')

c. k-atati-ahk (example 39)
1SG-speak-HAB
'I speak'

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Algonquian languages too show a high degree of lexical versatility (see Lynn Drapeau in this volume, as well as Drapeau 1991 and 2014). In his grammatical description of the Whapmagoostui (Great Whale River) sub-dialect of northeastern Cree, Vincent Collette (2014) quotes examples of holophrastic words where two otherwise independent verbal morphemes, or a verb and a noun, coalesce:

(33)

a. muwičisiwâw-pimipiy-i-w (example 83b)
to.visit-to.drive-AI-3SG
'He/she visits-drives' (= 'He/she visits someone in a motor vehicle')

b. natûhu-šuwiyân (example 89c)
to.hunt-money
'Money for hunting' (= 'Income security program for hunters and trappers')

c. nâ-natû-sâm-âhtikw-e-nân-iwi-w (Collette, pers. com., 3 June 2014)
REDUPL-seek-snowshoe-filiform-abstract.final-INDF.SBJ-II-0SG
'There is wood-getting to make snowshoe frames going on'
(= 'Wood is sought after to make snowshoe frames')

Comparison between examples (31) and (33b) and their translation in IN illustrates the versatility of Mohawk and Cree polysynthesis. While the latter languages combine two stems into a single lexical unit, Inuktitut must resort to two separate words, whose syntax is marked by grammatical inflections:

(34)

a. nunakkuujuu-ranik titli-laur-tuq
car-POSS.1SG/SG.INS steal-PST-3SG.IND
'He/she stole my car'

b. uumajurnia-ni-mut kiinauja-it
to.hunt-NMLZ-SG.ALL money-PL.ABS
'Moneys for the action of hunting' (= 'Hunting money')

(p. 154)

As regards polysynthetic word construction, a sharp difference thus exists between a language like Inuktitut, where two or more stems cannot occur simultaneously within a word, and languages of the Iroquoian or Algonquian families where, due to canonical noun incorporation, otherwise independent stems and, consequently, a wider range of meanings can combine word-internally.[22]

In spite of their differences, these languages share common characteristics. Verbal persons—of the subject and object—and nominal possessives are expressed by way of bound morphemes: suffixed in Inuktitut (and Eskaleut in general), always or mostly prefixed in Iroquoian and Algonquian. There is a limited number of word classes (or parts

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of speech)—four in Inuktitut (verbs, nouns, localizers, particles); three in Huron-Wendat (verbs, nouns, particles, according to Lukaniec 2011: 49); five in northeastern Cree (verbs, nouns, pronouns, preverbs, particles, according to Collette 2014: 55)—among which verbs occupy the foremost semantic and grammatical position.

Distinguishing between compositionality and lexicalization appears as subjective in Iroquoian and Algonquian as it is in Inuktitut. The same criteria of linguistic usage and native speakers' perceptions apply when one wants to define what a lexeme is. In the Cree examples above, (33b), 'money for hunting', is most probably a lexicalized item, because it now denotes a specific institution (the Quebec Cree income security program for hunters), while (33c) is not. The case is less clear, however, with (33a), 'visit-drive'. Is the activity of visiting people with a motor vehicle frequent and specific enough to be considered a *sui generis* unitary semantic category by Cree speakers? I do not dare answer.

As regards Mohawk, Mithun (1984: 868) mentions that lexical compounds denoting unitary concepts are very frequent, and that the derivation of new compounds is extremely productive. In her opinion, this would lead to a systematic classification of predicates, like, for example, those referring to events designated as affecting the body or mind. Such derivatives might perhaps be considered lexicalized, as in:

t-a-yoti-'nikù:r-v'ne (example 99)
(35) change-PST-it/them-mind-fall
'It felled their mind' (= 'It shocked them')

(p. 155) On the other hand, Mithun notes that noun incorporation can also be pragmatically conditioned, as in (31) above ('he car-stole me'). We can surmise that such lexical compounds are compositional rather than lexicalized. More generally, it is possible to hypothesize that in polysynthetic languages, lexicalization would generally have to do with derivatives operating as current semantic units of the language, while compositionality would primarily concern derivations generated on the fly by the pragmatic circumstances of ongoing speech. This said, however, we must recognize that the line between semantics and pragmatics is not always easy to draw.

With all of this in mind, we may consider that the definition of the Inuktitut lexicon given at the end of the preceding section also applies, *mutatis mutandis*, to other polysynthetic languages:

> The polysynthetic lexicon includes all morphologically single or composite language elements whose linguistic usage shows that they act as semantically and/or pragmatically significant basic units upon which a longer holophrastic word may eventually be built.

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This definition implies that some non-lexicalized words may be considered part of a speaker's mental lexicon if this speaker (and his/her interlocutors) perceives and uses them as basic units of meaning. Units of this type would include mono- and bi- or, perhaps, tri-morphemic verbal and nominal words and word-parts, such as IN *umiaq* ('boat'; 24a) and *-vatlai-* ('seem to'; 17a), Labrador (and IN) *sinik-* ('to sleep'; 4c), or Huron Wendat *-atati-ahk* ('speak habitually'; 32c). They might also comprise poly-morphemic compositional derivatives that native lexicographers would consider significant enough to be included in their dictionary, as is the case with Taamusi Qumaq's inclusion of *miriangujuq*, 'it is vomit' and *miriarmat*, 'because he/she vomits' (3), in his *Inuit Uqausillaringit* (Qumaq 1991: 325).

A final point remains to be discussed. Literature has often mentioned the low number of stems in polysynthetic languages, as compared with less synthetic ones. A computation of synchronically non-derived word-initial elements appearing as entries in Lucien Schneider's *Dictionnaire esquimau-français* (Schneider 1970) shows that in IN, the number of stems amounts to approximately 760 units.[23] A similar count of flexional affixes listed in Schneider's grammar (1972–6) yields a maximum of 950 grammatical inflections (630 of which are verbal, 312 nominal, and 8 pertaining to localizers).[24] As far as derivational affixes are concerned, Fortescue (1983) lists 488 of them for the Tarramiut (northeastern) sub-dialect of IN.

In Whapmagoostui Cree, Vincent Collette (pers. com., 4 April 2014) estimates that there are approximately 400 stems, alongside some 171 derivational elements and 128 grammatical affixes (70 of which are inflections, and ca. 58 finals).

(p. 156) Finally, in the Iroquoian languages, the number of stems has never been estimated (Marianne Mithun, pers. com., 11 June 2014). However, these languages would include, on average, some 92 prefixes and other affixes attaching to verbs (among which 16 derivational affixes, 1 negative prefix, 10 tense/aspect/modality affixes, 5 nominalizers, and 60 pronominal prefixes), 25–30 possessive prefixes (+ 1 noun suffix) attaching to nouns, and 12 clitics. This would yield a total of ca. 135 prefixes and other affixes, 45 of which are derivational, and 90 flexional.

In Inuktitut and Cree, stems are, indeed, limited in number, much more so in the latter than in the former language. Inuktitut is characterized by its high number of affixes, both derivational and flexional. Derivational affixes are actually three times more numerous in Inuktitut than in Cree, and almost eleven times more so than in Iroquoian. As concerns inflections, they are extremely numerous in Inuktitut (respectively, 7.5 and 10.5 times more so than in Cree and Iroquoian). This is due to the fact that Inuktitut exhibits an extensive system of verbal modes and noun declensions merged with pronominal and possessive persons, thus yielding a very high number of semantically composite (mode or case + person[s] + number) grammatical markers.

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The relatively small number of stems in Cree, and of derivational affixes in both Cree and Iroquoian, might be due to similar factors. In contrast with Inuktitut, these languages are allowed to combine two or, perhaps, several stems within a single word. They, thus, enjoy a degree of lexical versatility that enables them to denote and express a high number of entities and predicates through stem combination, rather than having to resort to a larger number of affixes and stems, as Inuktitut does. Comparative research on the lexicon in polysynthetic languages should be pursued in that direction.

abbreviations

ABS
Absolutive
AI
Animate intransitive
ALL
Allative
CAUS
Causative mode
COND
Conditional mode
CONT
Contemporative mode
DECL
Declarative mode
DISTR
Distributive
DU
Dual number
DUR
Durative
FUT
Future tense
FZ
Feminine zoic
HAB
Habitual
II
Inanimate intransitive
IMP
Imperative mode
IN

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Inuttitut Nunavimmiutitut (Arctic Quebec dialect of Inuktitut)
IND
Indicative mode
INDF
Indefinite
INS
Instrumental
INTR
Intransitive
JOIN
Joiner
LOC
Locative
MID
Middle voice
NEG
Negation
NMLZ
Nominalizer
Ø
Morpheme zero
PASS
Passive
PFV
Perfective aspect (p. 157)
PL
Plural number
POSS
Possessive
PROX
Proximate
PST
Past tense
PTCP
Participial
QUOT
Quotative
REDUPL
Reduplication
REFL
Reflexive
REL
Relative

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SBJ
Subject
SG
Singular number
STAT
Stative

Notes:

(1) Unless otherwise mentioned, examples will be quoted in the Nunavik dialect of Inuktitut, Inuttitut Nunavimmiutitut (henceforth IN), which subdivides into two sub-dialects (western and northeastern Nunavik); almost all quoted examples will belong to the latter sub-dialect. The morphology and lexicon of IN are generally similar to those of other Inuktitut dialects, the principal differences being phonological. In IN, etymological /ɬ/ (a voiceless lateral fricative) has merged with /s/, most consonant groupings (except those starting with a uvular) have become geminates (e.g. /pt/ and /kt/ > /tt/), and within the confines of a word, geminates and groupings delete their initial consonant when following another geminate or grouping (the so-called law of double consonants). The quasi-phonemic Nunavik spelling system in use here does not differ much from the Canadian Inuit standard orthography (exposed in Harper 1992). In order not to overburden the text with data irrelevant to the topic of this chapter, morphemic analysis will subdivide words as they are written (and pronounced), without taking into account morphophonemic processes such as consonant elision or regressive consonant assimilation.

(2) Localizers (adverbs and pronominal demonstratives) admit no affix between stem and inflection, and particles cannot be inflected.

(3) In an autobiographic 3,287-word spoken narrative I recorded in March 2013, words comprising between eight and twelve derivative affixes are relatively numerous, for example *ilitari-ja-u-nir-taa-rasu-qatta-riaqa-tlarit-sima-gatta*, ‘because we really have had to try repeatedly to get recognizance’ (Deer 2015: 75). The narrator is a woman born in 1946 who lives in Quaqtaq, a small (ca. 350 h.) ethnically homogeneous Inuit village of northeastern Arctic Quebec. Henceforth, I will refer to her oral text as the Quaqtaq narrative.

(4) Inuktitut inflections include morpheme zero (Ø), a grammatically functional absence of visible morpheme that marks the absolutive singular form of the noun (e.g. *nuna-Ø*, land-SG.ABS).

(5) Grammars of IN include Schneider (1972–6) and Dorais (1988).

(6) Beyond lexicography, Qumaq’s definitions also cast a fascinating light on Inuit ethno-semantics.

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(7) By comparison, the North Baffin dictionary of definitions (Ootoova et al. 2000), prepared by a team of elders working for an educational project (and, thus, coached by professional teachers), lists many entries derived from basic stems, but verbal endings are almost always in the third singular person of the indicative, and nominal inflections in the absolutive form of the singular (sometimes with a possessive marker). The dictionary comprises a total of ca. 14,300 entries.

(8) Sincere thanks to Michael Fortescue for helping me to refine this typology (as well as several other points in the chapter).

(9) This explains why, in Dorais (2010: 69), I call these types of morphemes lexical, rather than derivational affixes.

(10) The gloss ‘use’ is the one that conveys best the pragmatic usages of *-tur-*: ‘to eat or drink something,’ ‘to smoke or chew tobacco,’ ‘to travel by [a mean of conveyance],’ ‘to have sexual intercourse with someone,’ etc.

(11) Etymologically, *-siur-* and *-liur-*, whose contemporary meanings are, respectively, ‘to search for something (e.g. game)’ and ‘to work manually on something; to build’, derive from *-si-* (‘be in contact; see’) and from *-lir-* (‘provide with something’) + *-ur-* (a frequentative).

(12) Nominal and verbal stems denoting attributes that can also be expressed by way of affixes do not look at all like their affixed semantic equivalents: cf. *angi- juq* (‘it is big’) vs. *-aluk-* (‘big’), *piu juq* (‘it is good’) vs. *-tsiaq-* (‘good’), etc.

(13) The non-deletion of *pi-* when followed by a verbalizer affix—as well as the fact that to the best of my knowledge, no stem immediately preceding a verbalizer is ever deleted, even in elliptical speech—might confirm Johns’ (2007) argument about noun incorporation in Inuktitut: it is part of a general syntactic operation involving ‘light’ verbs, whose semantic weight would be inferior or, at most, equal to that of the nominal stem they target, thus impeding the deletion of that stem.

(14) It should be mentioned that most word entries found in native Inuit dictionaries never include more than two derivational affixes.

(15) For example, the IN word for ‘Friday’ is *niritsivik* (‘the time when one is fed’). Its meaning refers to the period (late nineteenth, early twentieth centuries) when fur traders gave their employees their weekly ration of biscuits on Friday. Sadock (2017) discusses examples of this type in Kalaallisut.

(16) This sometimes entails restructuring the derivative’s morphology, as when speaking about the Canadian territory of Nunavut (‘Our land’), about which one says, for instance: *nunavu[t]-mi* (Nunavut-SG.LOC, ‘in Nunavut’) rather than *nuna-ttini* (land- POSS.1PL/SG.LOC, ‘in our land’).

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(17) A fourth type of neologism has now appeared, semantic borrowing; cf. IN *itsivautaq* (‘seat’), designing the chair(person) of a meeting or assembly.

(18) The balance of 2.5% includes two words borrowed from Kalaallisut (West Greenlandic), and two others from the Innu (Montagnais) Algonquian language. The borrowings from German were introduced into Labrador by Moravian missionaries originating from Germany.

(19) Out of the 950 imported items whose names constitute my Nunavik and Labrador corpus of neologisms, only 133 (14%) are designed by the same term in all 12 villages where I conducted my research.

(20) Borrowings seem to denote items which, when introduced, were perceived as completely alien to any already familiar semantic category.

(21) It is not clear up to what point examples (32) resort to compositionality rather than lexicalization, although it can be argued that (32a, b) are indeed lexicalized derivatives. Their unitary meanings (when elicited by Jesuit missionaries in the seventeenth and eighteenth centuries)—‘quiet oneself’ and ‘greet each other’—stem from the contextual usage of composite words whose basic semantics are more circumstantial: ‘make oneself lose his/her voice’ and ‘grease each other’s scalp’. It is impossible to say, though, if eighteenth-century speakers were completely aware of the literal meaning of the terms they used for ‘quieting’ and ‘greeting’.

(22) As regards IN, I am aware of only one word combining two (nominal) stems analyzable in synchrony: *qaniusinaa* (‘lip’). It can be glossed as follows: *qani-u[p] sina-a* (mouth-SG.REL edge-POSS.3SG/SG: ‘of the mouth, its edge’). It should be noted, however, that some Inuit dialects make use of lexicalized noun phrases that are phonologically compacted, and whose original morphology is not readily discernable to modern speakers. e.g. West Greenlandic *atsipaaq* (‘cuff of sleeve’), that can be glossed as: *atsi[p] paaq* (‘of the sleeve, [its] entrance’), where a final absolutive-like *-q* occurs instead of expected POSS.3SG/SG final *-a* (this example is suggested by Michael Fortescue, pers. com., 3 July 2014).

(23) Instead of going through all entries one by one, I chose twenty dictionary pages at random, figured out how many entries were eligible on each of them, and multiplied the average number of entries by the total number of pages in the dictionary.

(24) This is a maximum because nowadays, a few inflections have fallen into disuse or, more often, merged with one another.

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The ‘Word’ in Polysynthetic Languages: Phonological and Syntactic Challenges

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Abstract and Keywords

Polysynthesis presupposes the existence of ‘words’, a domain or unit of phonology and syntax that is extremely variable within and across languages: what behaves as a ‘word’ with respect to one phonological or syntactic rule or constraint may not behave as such with respect to other rules or constraints. Here we develop a system of variables that allows cataloguing all verb-based domains in a language in a bottom-up fashion and then determining any potential convergence of domains in an empirical way. We apply the system to case studies of Mapudungun and Chintang. These confirm earlier observations that polysynthetic languages do not operate with unified units of type ‘word’ in either phonology or syntax.

Keywords: word, word domain, Mapudungun, Chintang, verb-based domains

9.1 Introduction

CONSIDER the following data from Mapudungun (isolate; Chile and Argentina), a canonical polysynthetic language:[1]

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(1)

Mapudungun

a. entu-soyüm-yaw-küle-i.
remove-shrimp-PERAMB-PROG-IND
‘They are going around gathering shrimp.’ (Salas 2006: 179)

b. pepi-rume-küme-wentro-nge-tu-rke-i-ngu.
can-very-good-man-be-TEL-REP-IND-3DU
‘Both of them were able to turn into very rich (lit. good) men, they say.’ (based on Salas 2006: 181)

Even though all studies that address examples like (1a) agree in treating them as instances of nominal incorporation, it is in fact an open issue whether the elements *entu-* ‘remove’, *soyüm* ‘shrimp’, and *yawküley* ‘[they are] going around V-ing …’ indeed make up a single word, be it in syntax (syntactic word) or phonology (phonological word). While (p. 159) a case for this can be made, this is, as we will see in this chapter, a challenging enterprise. Mapudungun constructions like (1b) add another complexity: arguably under the influence of Spanish spelling conventions, those rare speakers of the language who write the language, would most likely choose a different spelling from the one chosen by Salas and other linguists, namely something like *pepi rume küme wentru ngeturkeingu*. This would suggest that such speakers perceive or construe the whole construction as significantly larger than a word—as consisting of a modal marker *pepi* ‘can’, an NP *rume küme wentru* ‘very rich man’, and a semi-copula-like element *ngeturkeingu* ‘both have become X, they say’. Lastly, note that (1a) and (1b) represent different kinds of complex expression: the former consists of a lexical verb root, a subject and a lexical object or incorporated patient, whereas the latter consists of a lexical NP that is the dependent of the semi-copula, or is verbalized by some verb-like material and subordinated to a modal element. Do these two cases represent the same kind, and the same degree, of cohesion, either syntactically or phonologically?

Similar challenges arise in many languages that have been labelled polysynthetic in the literature. Our aim in this chapter is to highlight these problems and to sketch the outlines of the analytical tools that are needed for solving them. We begin with a theoretical discussion of the parameters (variables) that are needed for addressing polysynthetic wordhood (Section 9.2) and then proceed to applications in invidual languages, focusing on Mapudungun and Chintang (Sino-Tibetan, Nepal) in Section 9.3, two systems which are quite different from each other and thus give a sense of the diversity that there is in polysynthesis. Section 9.4 concludes the chapter.

9.2 A Multivariate Approach to Polysynthesis

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Most explications of polysynthesis start from the observation of multiple ‘semantically heavy’ elements inside a word, variously explicated as ‘heads’, ‘stems’, ‘lexical elements’, ‘predicates’, ‘arguments’, etc. But what is a semantically heavy element, and what is a word? Over the past few decades much progress has been made with regard to the second question. The notion of word has been successfully decomposed into phonological and syntactic words (starting in the modern sense with Dixon 1977),[2] and within these domains, it has become clear that many languages distinguish various non-isomorphic sub-domains: various phrase-structural projection (*X*) levels or more vs. less tightly knit phrases in syntax, and various groupings like the ‘clitic group’ or the ‘prosodic stem’ in phonology. We will briefly summarize the state of the art in these areas in what follows, and sketch a tentative system of variables that allows us to capture the diversity we find in polysynthetic word domains.

(p. 160) However, before getting to this, we need to address the first question: what are in fact the elements that are combined in a polysynthetic word? Is it heads? Predicate and argument stems? Or heads and affixes? Stems and affixes? And what are heads? Stems? Affixes? How are stems and affixes distinct from clitics and particles? Without resolving these issues, polysynthesis remains elusive: how can we tell whether the examples in (1) consist of several independent heads that are combined syntactically, or of various lexical elements that are morphologically fused with auxiliaries and affixes? Turning to questions of cohesion alone does not help, as long as it is unclear what it is that coheres.

9.2.1 Building blocks: *what* is combined?

Taking a fairly traditional perspective, one would like to start from a notion of independent vs. dependent or free vs. bound occurrence: unlike an affix, a semantically heavy element is a ‘minimal free form’ as Bloomfield (1933) famously put it—a form that has enough content that it can be used on its own. But that does not take us far (Haspelmath 2011): many morphemes that one would think of as semantically heavy—indeed as heads—cannot occur freely on their own, for example intensional and other syncategorematic adjectives like *former* and *mere* require the presence of a noun that they can qualify. Conversely, an auxiliary in a periphrastic tense construction depends on a verb stem or participle. This would suggest that is not a free form, more like an affix. But at the same time, auxiliaries enjoy considerable syntactic freedom in many languages, as if they were heads. It is notoriously unclear whether elements such as auxiliaries are free or bound, and hence whether they belong to verb morphology or to syntax.

A natural and equally traditional alternative is the idea that semantically heavy elements are lexical elements, that is, stems, as opposed to grammatical elements, that is, affixes. But when is a morpheme lexical? Is a hodiernal past tense marker grammatical or lexical? If such a marker is grammatical, isn’t a word like *today* grammatical too? What about modal (e.g. ‘must’), phasal (‘begin’), or desiderative (‘want’) markers, such as Inupiat *-allak* ‘begin to V’ as in *avaalaallak-* ‘begin to yell’, with the verbal host *avaala-* ‘yell’? Calling these lexical if they occur as independent elements in syntax, but grammatical if

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they appear as ‘affixes’, would bring us back to square one: a heavy element is something that can occur as a free form … So, an appeal to semantics does not solve the problem. Also, some languages, indeed especially those called ‘polysynthetic’, show an abundance of what is known as lexical affixes that behave differently from stems (e.g. in Eskimoan languages), something that is impossible to distinguish from stems if the stem vs. affix distinction is equated with the lexical vs. grammatical distinction.

If the lexical vs. grammatical distinction does not help, this also means that we cannot just use lexical category labels like ‘noun’, ‘verb’, etc. as definitional criteria of heavy elements, although of course providing such a category label is one of the things that one expects from a semantically heavy element when this is formally explicated as a head. But also affixes can come in several lexical categories (e.g. various sets of so-called postbases in Eskimoan languages), and the function of affixes is often precisely to establish or change lexical categories (nominalization, verbalization). Not surprisingly, some models of grammar assume that it is affixes, not stems, that are the key locus for category establishment.

A further alternative is to identify semantically heavy elements as open class elements, in contrast to closed class elements. Yet this immediately runs into serious problems in (p. 161) languages where the elements that behave as stems (and category providers) are a closed class as, for example, in languages with a finite number of inflecting verbs, such as Jaminjung (Schultze-Berndt 2000) or, as we will see, in Chintang, although the set is much larger in this language. Conversely, one of the properties often associated with polysynthesis is precisely that some affix-like slots in a verb can be filled by a seemingly open-ended class of incorporated and other lexical elements. Thus, the question of class size and productivity is fully orthogonal to what counts as a heavy element.

A possible way out starts again from the observation that some elements cannot occur as free forms, but now keeps this notion distinct from whether or not forms are included in specific word domains (i.e. the question of cohesion, which we discuss in Section 9.2.2). Also, we distinguish two ways in which elements can be free or require other elements: When an expression—that is, a morpheme[3] or a morpheme complex—requires the presence of another expression, this can either mean that the expression requires the other expression as a host for realization, or as further material for fitting the expression into a syntactic context. Requiring a host means that the expression has a HOST-SELECTION constraint, for example a tense marker might need a verb stem where it can dock for realization. Requiring further material means that the expression needs INFLECTION in the sense of Bickel and Nichols (2007), that is, a verb might require some marking that responds to the context in which the expression is used. We elaborate these two variables in what follows.

9.2.1.1 Selection

Expressions vary in the complexity of what they select: does an expression select a single morpheme, a stem (as when English *-ed* selects a verb stem), or does it select a complete phrase (like the English genitive *’s*), or some intermediate level (like English

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determiners)? Another important dimension of variation is the category of what is selected: a morpheme may select a phrase of any category, or only phrases of specific categories, for example only noun phrases (defining various kinds of phrasal affixes and clitics), or an element can be attached to various stems (e.g. Algonquian person prefixes on verbs or nouns), or to only, say, noun stems (a classical affix), or only to a small subset of stems (e.g. English negative *-n’t*).

Selection is defined independently of whether two elements make up a coherent word unit: an intensional adjective like *former* selects a noun as its host. Yet it does not cohere with its host in any respect (e.g. other words can intervene: *the former American president*). Conversely, an element that does not select any kind of host, and can freely occur without a host, can nevertheless be encapsulated inside a coherent domain of other morphemes: this then is the classical case of incorporation. For example, a Mapudungun noun like *wentru* ‘man’ can occur as a head of an independent NP, but it can also occur inside a domain that coheres in terms of phonological and syntactic rules:

(p. 162)

(2) adkintu-wentro-yaw-küle-i
look.after-man-PERAMB-PROG-IND
‘S/he is going around looking for men.’

The phonologial cohesion of (2) is shown by the fact that in word-final position *wentro* is normally realized as *wentru*, while in non-word-final position, *o*-to-*u*-raising is only optional. The syntactic cohesion of (2) is evidenced by the fact that no additional (e.g. adverbial) element could be inserted at any position in the string and the order of elements is strictly fixed.

Selection is also a critical parameter in verb compounding. While such compounds in Mapudungun form a coherent word domain, stems critically differ from each other (and have changed over time) in whether they select a host. A stem like *kim* ‘know’ does not need a host but it can combine with another verb into a single word (cf. 3a vs. 3b), parallel to noun incorporation. By contrast, the stem *pepi* ‘can’ obligatorily selects another verb stem as a host. The stem can no longer be used without such a host (cf. 3c vs. 3d):

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(3)

a. kim-fi-i
know-3P-IND
‘s/he knows him/her’

b. kim-lef-i
know-run-IND
‘s/he knows how to run’

c. *pepi-i lef-n
can-IND run-INF
‘s/he can run’

d. pepi-lef-i
can-run-IND
‘s/he can run’

Crucially, there is no difference in the extent to which *kimlefi* ‘s/he knows how to run’ and *pepilefi* ‘s/he can run’ form word domains in phonology or syntax. The difference is only in the selection behavior of the first verb stem.

9.2.1.2 Inflection

Expressions sometimes require the presence of additional morphemes or morpheme complexes so that they can be appropriately used in a sentence. There is substantial variation in what exactly is required, ranging from individual morphemes and particles to auxiliary complexes. For example, most Indo-European verb stems require tense/aspect/mood and agreement marker for use in independent sentences. In the Mapudungun examples (1–3), verb stem *adkintu* ‘look after’ requires the presence of some marker, here the indicative suffix *-i*, though this can be realized as zero under special circumstances.

Often, these requirements include elements that do not cohere with the stem in any way. This is the case with auxiliaries or tense/aspect particles that are common in many languages. (p. 163) When assessing the amount of morphology and polysynthesis in a language, it clearly makes a big difference whether or not one counts such elements as part of morphology. Consider, for example, the English perfect tense where the auxiliary does not need to be adjacent to the verb stem (*he’s gone* vs. *has he gone*?): the auxiliary is required by verb inflection and from this point of view, the resulting periphrastic form is a verb form, hence a word. At the same time, the auxiliary is a syntactically independent entity which does not form a word together with the verb stem.

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Such contradictory conclusions are resolved once inflection is kept as a distinct parameter from cohesion. Saying that an element X is part of the inflection of an element Y is then completely independent of whether or not X and Y form coherent words in either syntax or phonology.

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9.2.1.3 Variation

Selection and inflection define a large space of variation in what kinds of building blocks exist in a given language because each of these parameters spans many possible values: selection across the many different elements that are selected (kinds of stems, phrases, etc.); inflection across the many different elements that are required in context (types of markers and marker complexes). Some locations in this space come close to traditionally recognized units, but many do not. For example, affixes are traditionally differentiated from clitics by what they select (affixes select stems, clitics phrases). But clitics differ in whether or not they select specific phrases (English *'s* only attaches to NPs, whereas the Turkish interrogative clitic attaches to a larger variety of phrases, including entire sentences). Also, clitics differ in whether or not they inflect themselves (e.g. English auxiliaries do, the English genitive *'s* does not). Further, some affixes require stems as their host, but it does not need to be verb stems, that is, they are less selective than what we would expect from a traditional affix, for example, Algonquian person prefixes combine with both verb and noun stems. Or the Swiss German diminutive *-l(i)* attaches to both noun stems (*blüem-li* 'small flower' from *blueme* 'flower') and verb stems (*schäffe-l-e* 'work a bit' from *schaffe* 'work'). Attempts at reducing such variation and capturing it with a simple taxonomy tend to fail (as also noted by Spencer and Luís 2012). Further, as long as nobody has demonstrated empirically that some locations in the space of variation are preferred when languages evolve, we see no grounds for privileging the locations implied by traditional terminology.

But even when allowing such rich variation, a challenge remains: the challenge of morpheme identity. Consider a morpheme like *thand* in Chintang. This usually translates as 'bring downhill' when it occurs alone (see 15 below for illustration) and usually as a morpheme for any caused downward movement when it occurs right next to a verb stem (as in 11b below). If we analyze *thand* as a single morpheme with the abstract meaning 'cause to change place along a downward trajectory', coupled with a stereotype implicature to a concrete transportation event, then *thand* will be analyzed as not selecting anything: *thand* can freely occur with or without a verb. But if we posit two morphemes, *thand* $_1$ 'bring downhill' and *thand* $_2$ 'caused downward motion', only *thand* $_1$ will be non-selective, while *thand* $_2$ will select a verb host. The same issue arises in many languages with morphemes that translate as 'give' when used alone and as benefactives when used with other verbs: are they two morphemes, or an abstract morpheme meaning 'do in favor of' that has a stereotype implicature of concrete giving when used alone?

(p. 164) These are fundamental and frequent questions of morpheme identity. They are important empirical issues in the diachronic build-up, the ontogenetic development, and the processing of languages. However, the questions are orthogonal to the formal constraints that an expression imposes on its combinatorial potential. Morpheme identity is ultimately a probabilistic, gradient notion that is driven by the way in which forms and meanings build up networks of association during acquisition and in processing. With regard to polysynthesis, critical insight here comes from psycholinguistic research into the associations between incorporated and freestanding nouns (e.g. in lexical retrieval, or

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memory associations). For example, if indeed the Mapudungun processing system treats *wentro* 'man' in (2) as being lexically the same as the free form *wentru* in an NP like *chi wentru* 'the man' (with the determiner *chi*), this is genuine incorporation in a psycholinguistically real, fully synchronic sense.

An alternative to this psycholinguistic view is based on lexical semantic analysis. While this is certainly an option, it is fraught with substantial uncertainty and heavy dependence on the assumption of one's favorite language-description theory. Take the case of 'give' and benefactives: how can we demonstrate that we have two morphemes here, rather than a more abstract benefaction semantics which, when used alone, is pragmatically enriched to denote a stereotypical, concrete giving event? Speaker intuitions may not be the same as how morphemes are represented and processed in the brain, and it is far from clear what such intuitions eventually reveal.

Finally, the question of morpheme identity can of course be approached from a diachronic perspective. This presupposes that we know the synchronic states (which is a tall order), but it is an important dimension since we know (e.g. from grammaticalization research) that such identities change.

As noted before, the two variables of selection and inflection each span a large variety of options. In addition, each of these options can associate with (i) lexical or grammatical meanings (however one wants to define this, possibly as a gradient), (ii) closed or productive classes (or any value in between if this is conceptualized as a gradient), and (iii) any kind of category (pronouns, nouns, verbs, nominalizers, verbalizers, etc.).

These three additional variables enlarge the space of variation even more. Yet, we submit, this is the space that one needs for a proper analysis of polysynthesis. Still, it is just the first step, because the next question is how each of the many possible types that a language may have can combine into larger domains.

9.2.2 Domains: *How* are building blocks combined?

One of the major results of recent research on phonological and syntactic wordhood is that languages operate with many more diverse domains than a simple word vs. phrase dichotomy would suggest. This has been clear in the arena of syntax for a long time, and grammarians often talk about multiple bracketing structures within a word and multiple structures inside phrases.[4] In phonology, some authors argue for a simple hierarchy of domains, (p. 165) allowing basically only one unified 'word' domain that is then expanded and diversified by a technical apparatus for capturing deviations from this (e.g. Vogel 2009). A more direct approach simply admits multiple domains from the start, based on whatever domains are referenced by a specific language (e.g. Bickel et al. 2009; Schiering et al. 2010, 2012; Hildebrandt 2014).

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Here, we adopt an approach that allows multiple syntactic and multiple phonological domains between morphemes and phrases, and between syllables and phrases, respectively. Also, there is no reason to expect an isomorphism between syntactic and phonological domains (as any cliticized pronoun, such as in English *meet them*, attests), and there is no reason to expect isomorphism within phonology, or within syntax. For example, the domain of Turkish vowel harmony is not isomorphic to the domain of stress assignment (Kabak and Vogel 2001). In syntax, the domain of inflection-hosting is sometimes smaller than the domain established by what cannot be interrupted. This is the case, for example, with bipartite stems in Nakh-Daghestanian, where gender agreement markers attach to a smaller unit than what is established by the unit that cannot be interrupted by other material (e.g. Andi [*a*-[*b*-*ch*-*o*]] ‘[wash-[AGR-wash-PST]]’, where the agreement prefix *b*- is inserted before the second part of the stem *ach*-, which appears as an uninterruptable unit in most other regards; Bickel and Nichols 2007).

In both syntax and phonology, the identification of each domain rests on formal, empirically demonstrable properties that are tied to the specific grammatical system of each language. For example, a common property of syntactic words is that their constituents cannot be freely moved. But this is obviously only relevant if the language allows some general kind of movement to begin with. Likewise, a property of a phonological word may be final devoicing, and this obviously depends on the presence of a voicing contrast to be at all critical in a given language. This means that for capturing syntactic and phonological word domains, we need a large array of variables, each of which not only has the values ‘holds of a given string’ vs. ‘ does not hold’, but always also includes the possibility of being a structural ‘NA’, where the variable is just irrelevant. Here are rough indications of some of the variables that are most often cited in the literature:[5]

(4)

X is part of the same syntactic domain as *Y* if *X* and *Y* behave as an arbitrarily defined single unit with respect to:

a. modification by an attributive element (e.g. an adjective, an adverb, a subordinate clause)
b. string integrity:
   i. other elements can be interspersed only if these other elements select *X* or *Y* or are required by the inflection of *X* or *Y*
   ii. neither *X* nor *Y* can be deleted without concomitant deletion of another element (corresponding to what is sometimes called cross-slot dependencies of affixes)

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(p. 166)

iii. neither *X* nor *Y* can be displaced (i.e. extracted, moved, copied) by a general operation independently of each other
iv. the relative order of *X* and *Y* is fixed arbitrarily (as opposed to be driven by semantics, information structure, or random processes)

c. the determination of lexically conditioned allomorphy (‘idiosyncracies’; ‘flexivity’)
d. …

(5)

X is part of the same phonological domain as *Y* if *X* and *Y* behave as an arbitrarily defined single unit with respect to:

a. stress assignments
b. tone shift rules
c. phonotactic requirements (e.g. onset requirements, final devoicing, etc.)
d. phonological alternations at the boundary between *X* and *Y* (e.g. intervocalic voicing)
e. harmony rules (e.g. vowel harmony, consonant harmony, nasalization, etc.)
f. epenthesis/prothesis and other liaison and sandhi effects
g. length requirements: minimum or maximum numbers of moras, syllables, feet, etc.
h. prosodic subcategorization (e.g. when *X* attaches to a certain phonological domain anchored in *Y*)
i. …

We call the variables in (4) and (5) variables of ‘COHESION’: the more of them hold for a given string, the more does this string form a coherent unit, a ‘word’. But it is worth re-iterating that such an accumulation of cohesion is by no means necessary: it is very well possible that a string behaves as a unit in only one regard (e.g. blocking the interspersion of non-selecting elements), but that the same string disintegrates into many smaller units in other regards (and so, for example, allows re-ordering based on scope properties). In the same vein, we do not expect properties of cohesion to converge on what one might want to call ‘lexical’: it is an empirical issue whether cohesion in one or the other property goes together with idiosyncracy (noncompositionality), with containing derivational morphemes, or with being structure-preserving in phonology—to name just a few of the many readings of the term ‘lexical’.

The literature sometimes adds other variables than what we list here. But some of these are problematic because it is in fact unclear what they really pick up: for example, properties like ‘potential for pauses’, ‘semantic compositionality’, ‘lexical storage’, or ‘anaphoric island status’ arise from a blend of many different factors of speech production, string memorization, and conceptual construal during language acquisition and processing. These are not necessarily tied to a grammatical structure, and so it is no suprise that they often do not (as Haspelmath 2011 observes) differentiate between domains in any clear-cut manner.

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As in the case of morpheme identities discussed before, these psycholinguistic dimensions cross-cut the nature of grammatical constraints, and help to keep them separate. For language acquisition, for example, what is of key interest are morphemes that select some host or require some inflection. These properties induce grammatically constrained co-occurrence patterns that need to be learned as such early on, often posing a considerable challenge (see the chapter by Stoll et al., this volume). The cohesion of the morphemes is, however, independent of such co-occurrence patterns: cohesion relies on more advanced (p. 167) phonological and syntactic generalizations. For other purposes, for example research on lexical access in comprehension, however, aspects of cohesion, specifically phonological cohesion, may be the key issue of interest, while selection and inflection behavior may be less relevant.

Finally, it is important to bear in mind that some criteria that are sometimes mentioned in the literature are not really diagnostic of cohesion but just follow from the kind of selectivity an element may have. For example, if an element selects a phrase rather than a stem, it follows that it can be gapped in coordinated expressions if they form a phrase (cf. English [$_{\text{NP}}$ *my mum and dad*]*’s house*). Such properties need not be stated separately.

9.2.3 Other variables

The variables we surveyed so far are all orthogonal to several other dimensions. First, there are what one may call variables of POSITION (Klavans 1985): these are the various ways in which elements can be placed with respect to each other, for example with respect to the phonological host (prefixes vs. proclitics; suffixes vs. enclitics, etc.), or if they select a phrase, with respect to their position in the phrase (before the last element, in second position, variably depending on the host category, or freely variable, etc). Then, there are variables of BEHAVIOR (Bickel and Nichols 2007) (or what Dench and Evans (1988) call ‘domain conventions’): does an element appear only once in a phrase, or does it spread inside it? For example, plural marking spreads inside a noun phrase in German, but not in English.

When one brings all variables together, it becomes clear that the space of variation in possible polysynthetic words is gigantic. We will explore and illustrate this space in detail in the two case studies on Mapudungun and Chintang (Sections 9.3.1 and 9.3.2). We will encounter substantial variation in both languages, and it is clear that positing a single notion of a polysynthetic word will fail to do justice to the empirical complexities. There are many conflicting domains, and in order to describe them we need to keep distinct the variables that define morpheme types (selection and inflection) from the variables that define domains (phonological and syntactic cohesion). In some cases we will also need variables of position and behavior because some affixes escape traditional expectations about ‘words’ by spreading to adjacent hosts.

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It is certainly possible to pick any one value in any one variable as definitional of polysynthesis. For example, one could say that a word is polysynthetic iff it contains at least two elements that don’t select anything (e.g. freely usable verb and noun stems), belong to open classes, and cohere with each other with respect to all (or most) cohesion variables. This would capture a traditional notion of incorporation. However, on closer inspection, not many phenomena will satisfy such a definition because most ‘polysynthetic’ words escape one or the other cohesion variable; instead of fully open classes one might find various restrictions (not all nouns can be incorporated); and instead of being non-selective some elements might select verb stems (e.g. some verb-like elements need hosts). One could of course loosen some of the criteria, for example some or all requirements of cohesion. But then the definition would quickly include many phrasal phenomena that one might not want to associate with polysynthesis, such as syntactically tightly knit verb+object, noun+adposition, or noun+intensional adjective phrases in many languages. The same problems apply to the other criteria.

(p. 168) Rather than hunting for the right definition and ‘true polysynthesis’, an alternative approach is to work with canonical or prototypical definitions that bring together what are expected to be typically or frequently associated properties. But it is not clear to us what a canon (in Corbett’s (2005) sense) would yield beyond the array of variables that we already need anyway. For prototypes, one would first of all need a large database that carefully codes for all relevant variables, and then one would need to perform similarity measures and clustering computations. But this work has not been done yet, and we first need to explore the space of variation more deeply.

9.3 Implications for Analysis

Given the large space of variation we sketched in the preceding, it is clear that the questions we raised in the introduction defy simple answers. It doesn’t help to try to conclude that the examples in (1) are ‘words’ or ‘phrases’. Instead, we want to know how the constitutive elements behave. In what follows we apply the multivariate analytical apparatus that we propose in two case studies, one on Mapudungun and one on Chintang. In each case, we concentrate on the verb complex, that is, a verb stem plus any other morphemes that show some kind of cohesion with the stem in at least some regards.

9.3.1 Mapudungun

9.3.1.1 Building blocks

Table 9.1 gives an overview of the morpheme types that need to be distinguished on account of their behavior in Mapudungun. The table defines these types in terms of the

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variables outlined in Section 9.2.1, suggests practical labels, and provides a rough illustration of the range of meanings covered.

Non-selecting formatives without inflection include non-relational nominal roots (an open class), like *wentru* ‘man’ and *soyüm* ‘shrimp’, as well as possibly some particles whose functions are still somewhat unclear. Non-selecting formatives with inflection include verb roots, like *entu-* ‘remove’, and adjective-modifying adverbs, like preposed *rume* ‘very’. (Note that all Mapudungun adjectival roots are also verbal roots, typically with an inchoative–stative temporal structure unless some morphology forces another aspectual interpretation. Thus, the element meaning ‘good’ in (1b), namely *küme*, can also occur as the root of the verb ‘be(come) good’.)

Verbal roots are an open class. Augusta (1916), the most complete dictionary of the language to date, lists some 400 adjectival and ca. 1,000 strictly verbal roots—as opposed to ca. 1,600 nominal roots. Their segmental/syllabic make-up varies within the overall phonotactic restrictions of the language, cf. *i-* ‘eat’, *pi-* ‘say, tell’, *kon* ‘enter’, *af-* ‘end’, *amu-* ‘go’, *illku-* ‘get angry’, *dungu-* ‘speak’, *ramtu-* ‘ask’, *kutran-* ‘hurt, get sick’, and *ütrüf-* ‘throw’; monosyllables are possible, but not frequent, and roots with three syllables or more (e.g. *arofü-* ‘sweat’ and *üngapu-* ‘yawn’) are rare—the default root is disyllabic and possibly C-initial. Elements borrowed from Spanish behave just like all other roots (e.g. *kansha-* ‘get tired’ < Sp. *cansar* ‘tire’). (p. 169)

Table 9.1 Overview of major morpheme types involved in Mapudungun verb complexes, with practical labels and rough illustration of the kind of content covered

Select	**Inflect**	***label***	***content***
—	—	NP; nonrelational N	lexical
X	—	clitic particles (CL)	illoc. force, presupposition-relation, etc.
—	TAMP, AGR	V	lexical
V	—	infl.; redupl.; DERIV	most agr., TAMP, nonfin.; nominalizers
V(P),NP	—	INFL	some 3NSG agreement
V	(AGR)	V1, V3	derivations, lexical

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V,NP	—	reportative	

X stands for any part of speech category; TAMP for tense, aspect, mood, and polarity; AGR for agreement (note that only some V3 elements control independent agreement inflection, as explained in the main text.)

Some verbs have an apparently lexicalized element *-tu* (which is not lexicalized when occurring with many, perhaps most, other roots), like *ülutu-* ‘perform a (particular) healing ceremony’ and *papeltu-* ‘read, study’ (< Sp. *papel* ‘paper’), but these are not bipartite stems.

Selecting formatives without inflection requirements include nominalizers like *-fe*, the nominal plural marker *pu* (e.g. *pu wentru* ‘men’), and (derivational or inflectional) verbal affixes of various types, e.g. *-i* ‘INDICATIVE’, *-yaw* ‘PERAMBULATIVE’, *-küle* ‘PROGRESSIVE’, *-rke* ‘REPORTATIVE’, *-tu* ‘TELICIZER’, *-ngu* ‘3DUAL’, *pepi-* ‘can’ (cf. example 3d), and nonfinite suffixes. Such elements are heterogeneous, however. The nominalizer *-fe* can occur either after a verb-only element (e.g. *küdaw-fe* ‘worker’, built on *küdaw-* ‘work (v.)’) or after a complex stem, that is, with nominal incorporation, for example *dungu-ñma-che-fe* [speak-APPL-person-NMLZ] ‘lawyer, intercessor’, but not after a whole (non-incorporated) NP).

The reportative/mirative *-rke* typically occurs as a verbal suffix (cf. example (1b)), but it can also occur on Ns or NPs, for example (*kurü*) *trewa-rke!* ‘why, a (black) dog!’ The indicative, the progressive, and future *-a*, on the other hand, occur only on verbs (which can have an incorporated nominal).

The behavior of the verbal third person nonsingular markers *-ngu* (dual) and *-ngün* (plural) is more complicated in that these markers systematically differ along phonological and syntactic cohesion; the following examples illustrate their appearance as syntactically bound elements after a V host (6a), after an NP host (6b), after a VP (or possibly a clause) (6c), and after a plain verb (6d).

(6) a. kuñifall-nge-i **ngu.**
abandon-PASS-IND **3DU**
‘They were both left behind / abandoned.’ (*-ngu* after V)

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b. ñi chaw **engu**
3.POSS father **3DU**
'their (du) father' (*engu* after an NP)

c. anü-m-ka-i pinu **yengu.**
sit.down-CAUS-CONT-IND cane **3DU**
'Both of them planted cane.' (=*(y)engu* after VP/clause)

d. tripa-pe **(y)engu!**
exit-3.IMP **3DU**
'May both of them go out!' (*-(y)engu* after V)

(p. 170)

Nonfinite suffixes like *-yüm*, used in temporal adverbial clauses, require that the subject of the verb forms they occur on be marked as possessive pronouns, but the latter are not obligatory:

(7)

a. amu-yüm ∅ waria mew, ngilla-meke-i asukura.
go-NFIN town POSP buy-HAB-IND sugar
'When s/he goes to town, s/he buys sugar.' (Harmelink 1996: 221)

b. dew i-kunu-yüm engün, ka llitu-ke-i-ngün tüfa ngillatun.
already eat-stay-NFIN 3PL.POSS other begin-HAB-IND-3PL this rogation.ceremony
'When they have already eaten, they start with the rogation ceremony one more time.'
(Salas 2006: 168)

Roughly, reduplication is an operation used to express iterativity that repeats a portion of the verb and cooccurs with either *-tu, -ye, -nge* or ∅. The repeated portion is typically the root, can be a whole stem and occasionally includes even inflectional material (see Zúñiga and Díaz-Fernández 2014 for details).

The number of inflectional formatives that verbs take is not unexpected for a head-marking language of South America: three persons and three numbers are marked via dedicated formatives that show virtually no allomorphy, future tense has *-a*, there are about half a dozen aspectuals and half a dozen modal markers (up to a dozen modality-related elements if one counts the obsolescent ones), and the negative suffix comes in three mood-dependent forms: indicative *-la*, subjunctive *-no* and imperative *-ki*. Nonfinite affixes are also about half a dozen (but may have been more numerous in the past). Nominal derivational and inflectional morphology is comparatively less developed and shows less than a handful of such affixes. Other selecting formatives without inflection include directionals (cislocative *-pa*, translocative *-pu*, andative *-me*, and others) and other

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assorted, mostly modal(-like) affixes, up to about a dozen. This is, therefore, quite a different situation from the one found with pervasive lexical affixation, like in Algonquian, Eskimoan, or Northwest Coast languages.

Finally, selecting formatives with inflection include causatives and applicatives, which require a verbal host and alter the predicate’s argument structure in that they add an object to the clause (typically an animate entity that is often interpreted as beneficiary/goal with *-(l)el* and as maleficiary/source with *-(ñ)ma*):

(p. 171)

(8)

a. ngilla-i kiñe kawellu.
buy-IND one horse
‘S/he bought a horse.’

b. ngilla-lel-fi-i (Antonio) ñi kawellu.
buy-APPL-3P-IND A. 3.POSS horse
‘S/he bought a/the horse for him/her (Antonio).’

c. ngilla-ñma-fi-i (Antonio) ñi kawellu.
buy-APPL-3P-IND A. 3.POSS horse
‘S/he bought a/the horse from him/her (Antonio).’

The new argument, in this case a third person, is obligatorily marked via the third person agreement marker *-fi*, and it is optionally expressed by an overt NP (here: Antonio, a proper name). All these valency-changing suffixes, like the applicatives *-tu* and *-ye* on the one hand and the causatives *-l* and *-m* on the other, precede the TAMP and person-number-direction inflection and cannot occur at the end of phrases, or on nouns.

Another important set of selecting and inflecting elements are the closed class of morphemes labelled V1 and V3 in Table 9.1. These can occur either before or after the main verb (cf. Zúñiga, this volume):

(9)

pepi-ütrüf-püra-m-i tüfa-chi kura.
can-throw-ascend-CAUS-IND this-ATTR stone
‘S/he can throw this stone upwards.’

The main verb here comes from an open class and is *ütrüf-* ‘throw’; the leftmost element *pepi-*‘can’ (V1, formerly a verb in its own right) and the causativized verb *püra-m-* ‘lift’ (V3) select a verb (in different ways: *pepi-* can no longer occur on its own, as noted in (3), and *püra-m-* must agree in valency with the main verb). More generally, some V3 elements impose their own argument structure on the whole verbal complex and require specific inflection accordingly; most V3 elements and all V1 elements, however, simply

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inherit the argument structure of their V host and follow a simple same-subject or same-subject+same-object rule (cf. Section 9.3.1.3 for more on this effect of "transitivity harmony"). Unlike raising affixes in some North American languages, V1 and V3 elements cannot have TAMP values that differ from the ones taken by their V host.

9.3.1.2 Cohesion

In-depth work on phonological cohesion in Mapudungun still needs to be done (e.g. on length requirements and prosodic subcategorization, on which nothing is known), but some things can be said about this dimension. First, regarding stress assignment, the basics are as follows: disyllables in isolation are typically stressed depending on syllable structure (although a few, like *iNA* 'near, by', have lexically assigned stress), with closed syllables attracting stress, for example *KOna* 'young man', *WENtru* 'man', *soYÜM* 'shrimp', and *tralKAN* 'thunder'; monomorphemic trisyllables have secondary stress on the antepenultima, for example *AchaWALL* 'hen'; plurisyllabic verb forms are usually more complex, with some (p. 172) inflectional affixes attracting stress (e.g. *fi* '3P') and word candidates in phrase candidates following more intricate patterns that are not well understood yet (cf. Zúñiga 2006: 63f and Zúñiga 2014c for more details). Overall, however, it is not sufficiently clear yet under which conditions these elements behave as prosodically independent domains.

As to phonotactic requirements, only syllable-final obstruents are excluded, but there is an optional "word-final" *o ~ u* alternation with many strings consisting of more than one syllable, for example *wentro ~ wentru* 'man'. With respect to phonological alternations, a case in point is the limited fortition of some non-obstruents before causative *-(ü)m* (e.g. *nag-* 'descend' *> naküm-*'lower', and *lef-* 'run' *> lepüm-* 'make run' vis-à-vis the default pattern in *wadkü-* 'boil (itr.)' *> wadkü-m-* 'boil (tr.)'). There are no other harmony rules, except for an obsolescent root-internal harmony of interdental consonants versus denti-alveolar ones (cf. *l̪afkeɳ̪*'sea, lake', with inter-dental /l̪/ and /ɳ̪/, and *entu* 'remove', with denti-alveolar /n/ and /t/). Lastly, epenthesis is frequent in order to break up consonant clusters (maximal syllable structure is CVC, so all clusters of more than two consonants trigger *ü*-insertion). There is also an optional "word-initial" homorganic glide prothesis, for example *(y)iwiñ* 'fat', *(g)üñüm* 'bird', *(w)ule* 'tomorrow'.

More is known about syntactic cohesion in the language. Lexically conditioned allomorphy does not appear to exist outside the realm of causatives: some verbs take either the *m-* or the *l*-causative based on causation type (related to control and animacy of the causee), but many verbs take only one of them, often in a non-predictable fashion (Golluscio 2007). As to the hosting of agreement markers, the adjectival nonsingular marker *-ke* is in principle obligatory on all adjectival words, but this is perhaps not a bona fide agreement marker. Verbal person and number marking is obligatory (and right-end) on every finite verb form with a first or second person argument (unless the inflectional string is a candidate for wordhood, in which case it is 'auxiliary-final') and is in complementary distribution with nonsingular third person NPs, with varying degrees of phonological cohesion depending on clause structure and mood.

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Relative order is largely fixed arbitrarily for verbs (and totally fixed for other words), albeit roughly following the tendency mentioned in Bybee et al. (1994) as to inflection being more peripheral than derivation, which is closer to the root; within the derivational domain, when numerous such affixes are present, some “modal” affixes seem to be able to change slots without any semantic/pragmatic/syntactic consequence whatsoever (‘voice’ affixes never do). Finally, as far as the modification by an attributive element is concerned, coordinated elements with only one adjective/adverb are rare; there is a clear and strong tendency to repeat the adjectives and adverbs with every head. (This needs more research, however, especially in the context of subordinate clauses.)

As to string integrity and insertion potentials, linear adjacency is the rule for all of verbal and nominal morphology, with the proviso that nominal incorporation inserts a nominal element (a root, a compound, or a limited NP) into a verb. Adverbs cannot be inserted into nouns or verbs. There is a cross-slot dependency, with verbal stem composition (‘transitivity harmony’): *rüngkü-tripa-* ‘jump up’, consisting of the intransitive roots *rüngkü-* ‘jump’ and *püra-*‘ascend’, vis-à-vis *ütrüf-püra-m-* ‘throw up’, consisting of the transitive root *ütrüf* - ‘throw’ and the causativized stem *püra-m-* ‘lift’.

Possible bans on displacement apply to all verb morphology except nominal incorporation, but to different degrees in the case of 3NSG markers; as mentioned above, depending (p. 173) on whether verb forms are finite or nonfinite, and with the latter, on whether they are indicative, subjunctive, or imperative, the dual *-(e)ngu* and the plural *-(e)ngün* cohere differently (Zúñiga 2014c).

9.3.1.3 Position and behavior

The morphology of Mapudungun is basically suffixing (nouns, verbs, adjectives), with some minor prefixing (verbs; probably mostly former verb roots that have lost their autonomous cognate counterparts) and extensive compounding (nouns, verbs). Proclitics seem to be limited to prepositions and articles, but enclitics are more numerous (see Zúñiga 2014c for an overview of enclitic formatives and an in-depth discussion of selected enclitics). Regarding behavior, neither nominal nor verbal morphology has been found to spread in any way.

9.3.1.4 Summary of domains

The data and analyses available to us at the moment suggest that (i) there are systematic mismatches between phonological cohesion and syntactic cohesion, with phonological domains being typically smaller than syntactic domains, and (ii) there are different phonological domains, some of which coincide with a syntactic domain. This is summarized in Table 9.2 in terms of the building blocks defined in Table 9.1.

While derivational and inflectional morphology, and especially verb stems and/or incorporated NPs appear to show some phonological autonomy, syntactic rules and constraints lead us to postulate larger units. Moreover, the two types of complexes, namely nominal incorporation and NP verbalization, seem to behave differently regarding

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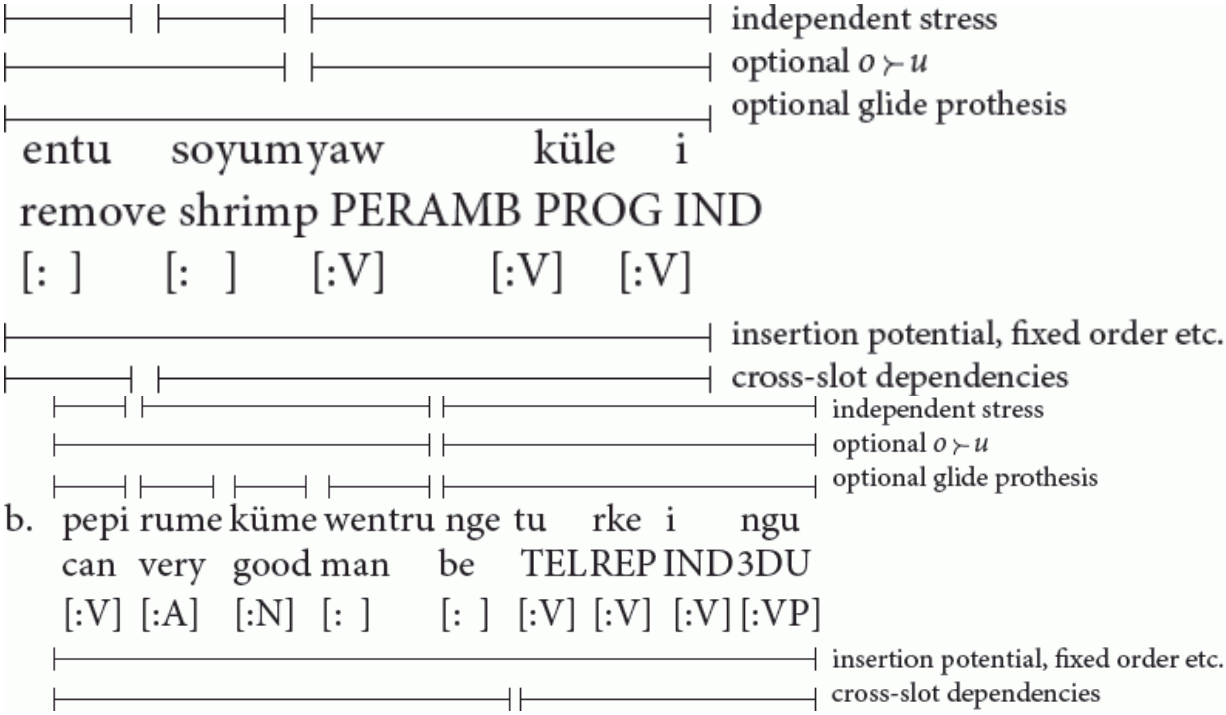
phonological cohesion (signified as a light shading in Table 9.2): perhaps unsurprisingly, the optional glide prothesis rule does not work as robustly with verbalized NPs, although the optional *o/u* alternation rule works more robustly in such cases.

These and other details are made concrete in what follows, analyzing the data in (1). Elements after a colon define the categories that a morpheme selects. Lines indicate the (p. 174) domains within which the relevant rules and constraints apply, above the example for phonology and below the example for syntax.

(10)



We briefly explain in the following how each constraint applies in these two examples:

- **Independent stress:** This is found with NPs and nouns and (at least some) verb stem strings; derivational and inflectional affixes following complex verb stems behave as units (except for some individual affixes that attract stress and disrupt such sequences).
- **Optional o≻u:** This is basically found at the end of NPs and nouns; adverbs (which could potentially occur within the incorporated NP) might show this behavior as well, but more research is needed on this.
- **Optional glide prothesis:** This seems to operate between verb stems and demarcating NPs both externally and internally.

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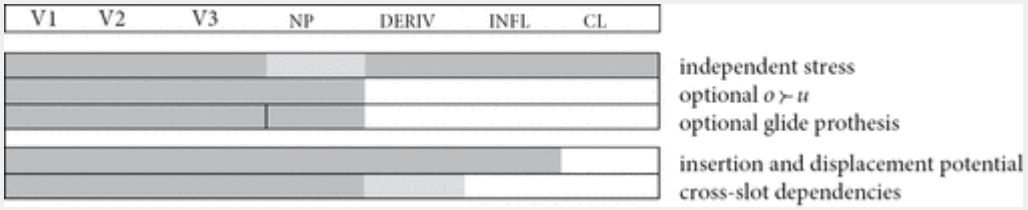
• **Insertion and fixed order:** There is no single position in the examples where one could insert any other NP or noun, adverb, or any other syntactic unit. The strings have to occur in the order given above. (To be sure, there is a non-incorporating counterpart of (10a), where the NP occurs outside the string, but this is a different construction; the NP is then less restricted regarding their internal structure—it can accommodate numerals and determiners, for example—and the predicate is bivalent rather than monovalent. To the best of our knowledge, there does not exist a non-verbalizing counterpart of (10b), e.g. a nominal predication featuring a non-verbal copula, which is used in equative constructions in the language.)

• **Cross-slot dependencies:** Different mood affixes require person markers from different sets; in (10b), if indicative

-i were to be replaced by subjunctive *-l* or imperative *-∅*, an additional third-person marker *-e* or *-pe* would intervene between the mood affix and the third person dual marker *-du*, respectively. More importantly, the verb stems at (p. 175) the beginning of the string normally fulfill specific argument structure requirements, i.e. host Vs and V3 elements normally have the same valency, and all Vi elements share the subject (and objects, if any).

Table 9.2 Overview of word domains in Mapudungun phonology and syntax in terms of the building blocks defined in Table 9.1



Gray-shaded combinations of elements behave as a coherent unit with respect to at least one syntactic of phonological rule or constraint. Light shading means optionality. A vertical bar inside a grey-shaded cell means that the element to the right (e.g. an NP) starts its own domain if it occurs.

Even though phonological cohesion needs to be studied in much more detail in this language, these preliminary results make clear that the received notion of a ‘Mapudungun word’ is problematic at best. Different phonological and syntactic operations target different domains, essentially with potentially large syntactic units consisting of smaller phonological words.

9.3.2 Chintang

Chintang is a member of the Kiranti group of Sino-Tibetan, a group that is radically different from the usual images that come to mind when thinking of the more famous members of the family, such as Chinese, Burmese, or Tibetan: Kiranti verb complexes are

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exceedingly complex, especially those of the Eastern branch, to which Chintang belongs. In the following we first analyze the range of morpheme types that go into the verb complex and then discuss various aspects of cohesion.

9.3.2.1 Building blocks

Table 9.3 gives an overview of the morpheme types that need to be distinguished on account of their behavior in the language. The table defines these types in terms of the variables SELECTION and INFLECTION as outlined in Section 9.2.1, suggests practical labels, and provides a rough illustration of the range of meanings covered.

The non-selecting morphemes of the Chintang verb complex control a series of obligatory agreement, tense, aspect, mood, and polarity markers and can therefore be best referred to as verb stems (label ‘V’ in Table 9.3). Native Chintang verb stems consist of a CV(C) root (p. 176) which may or may not be followed by a coronal ‘augment’. Augments chiefly (but not exclusively) derive from proto-Sino-Tibetan valency and Aktionsart markers. Although they are now mostly semantically opaque, they behave differently in phonology than root-final coronals.[6] Since the core root follows a strict one-syllable template and there are only two augments that can follow CVC roots, there is a theoretical maximum of 2,346 stems, that is, the class of verb stems is closed. Of these, about half are attested in our corpus (which comprises a dictionary of over 11,000 lemmas and about 1 million running orthographic words from 258 hours of recording). Additional stems are bipartite, resulting from lexicalizations of formerly independent elements (*kha-siŋs-*‘ask’ or *som-tukt-* ‘love’); there are thirty-four such formations attested (and used fairly frequently). Borrowed stems are obligatorily marked as such by a special nativizer suffix and require an auxiliary verb to be used in Chintang (Stoll et al. 2015).

Table 9.3 Overview of major morpheme types involved in Chintang verb complexes, with practical labels and rough illustration of the kind of content covered

Select	**Inflect**	***label***	***content***
—	TAMP, AGR	V	lexical
V	—	affixes (PF, SF)	agreement, TAMP, nonfinite forms
V	(TAMP, AGR)	V2	derivations, lexical, aspect
VP	—	phrasal affixes (PA)	optative, some clause linkage markers
XP	—	free phrasal affixes (FPA)	nominalizers, conjunctions, IS markers, etc.

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X(P)	—	clitics (CL)	IS markers
X	—	reduplication	intensifying functions

IS stands for information structure; X for any part of speech; TAMP for tense, aspect, mood, and polarity; and AGR for agreement. (With V2 elements, the choice here is in many cases subject to harmony constraints, as explained in the main text)

All other morphemes that show some cohesion with verb stems select these stems, or they select a larger category or phrase that includes verb stems. Morphemes that select verb stems—‘affixes’ in a narrow sense—include eight prefixes and thirty-seven suffixes, expressing inflectional categories like agreement (in three persons, three numbers, and with up to two arguments), tense, aspect, mood, polarity, and various non-finite formations (participles, infinitives, etc.).

Another important class of verb-selecting morphemes are themselves verb stems. These are traditionally labelled ‘V2 stems’ or ‘vector verbs’ in research on Kiranti languages. V2 stems select not only a general class of verbs but impose various constraints on valency and Aktionsart, specific to each V2. Some V2 specify whether they combine with monovalent or polyvalent verbs. For example, the V2 thi- selects monovalent verb stems (11a), thand- polyvalent stems (11b):[7]

(11)

a. jamma hod-a-**thi**-a-ŋs-e-ta.
all break-PST[3ss]-V2:move.down.INTR-PST-PRF-IND.PST-FOC
‘It’s all broken down.’ [CLLDCh1R12S03.697]

b. yo dhukkur-a apt-u-**thand**-u-ku-ŋ paĩ.
DEM.ACROSS dove-NTVZ shoot-3[s]O-V2:move.down.TR-3[s]O-IND.NPST-1SA today
‘I’ll shoot that dove over there down today.’ [CLLDCh1R05S05.303]

Other V2 stems combine with verbs of any valency, e.g. *-loĩs* ‘move out’ combines both with mono-valent and bivalent predicates (whereas closely related *-lond* ‘go out’ seems to be limited to monovalent stems):

(p. 177)

(12)

a. phaŋ-mo suʔwa-lo pend-a-loĩs-e
buzz-CIT wasp-SURP fly-PST-V2:move.out-IND.PST
‘The wasp flew out with a buzz’ [story_tiger.124]

b. ba-khi u-nap-yaŋ u-lem-ŋa tott-u-**loĩs**-e.
PROX-MOD 3SPOSS-snot-ADD 3SPOSS-tongue-ERG [3SA-]prick-3[s]O-V2:move.out-IND.PST
‘She snatched out her snot with her tongue like this.’ [CLLDCh2R12S04.581]

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Such differences are not predictable, and they thus represent selection properties intrinsic to each V2.

V2 stems behave morphologically like other verb stems, except that they require a two-syllable template as their host. This template consists of a verb stem and as much finite verb morphology as is needed to fulfill the two-syllable constraint (Bickel et al. 2007).[8] In (11), the templates are satisfied by the combination of the stems *hod-* 'break' and *apt-* 'shoot' with single-vowel markers (*-a* 'PST' and *-u* '3[s]O', respectively). If there is no suitable inflectional material available, as happens to be the case for example in third person subjunctive forms, a dummy syllable *na* is inserted in order to meet the two-syllable constraint. This is shown in (13), where the V2 stem *ca-* denotes some kind of self-benefaction:

(13)

mai-met-th-a,	joso-ta	num-na-**ca**-ne-na.
NEG-do-NEG-IMP[2SS]	whatever-FOC	do-NA-V2:enjoy.for.oneself[3SS.SBJV]-OPT-INSIST

'Don't do that, let her do whatever she wants on her own.' [CLLDCh1R02S04.0781]

V2 can be added recursively but examples like the following, with three V2 in a row, are rare:

(14)

jo-go-yaŋ	na-khutt-i-**ca**-i-**hatt**-i-**bir**-i.
whatever-NMLZ-ADD	3[s]>2-steal-2PO-V2:eat-2PO-V2:move.away.TR-2PO-V2:do.for-[SBJV.]2PO

'It (a cat) may steal everything from you and eat it all up!' [story.cat.204]

Some V2 elements control their own agreement morphology (e.g. those with a causative or benefactive meaning component like in 13) and some also control their own tense morphology (e.g. a V2 which marks imperfective aspect and requires past tense morphology, a phenomenon to which we return in 9.3.2.2). Other V2 follow the agreement and TAMP pattern of their host.

Most V2 bear etymological resemblence to regular, non-selecting verb stems, and it is sometimes unclear whether there is one morpheme used in two ways or two morphemes. Compare the use of *thand-* as a V2 in (11b) and as an independent verb in the following case:

(15)

ba	com-ce-ta	a-**thand**-u-ce	haŋ	i?s-akt-e?
DEM.PROX	sort-NS-FOC	2[s]s-move.down-3O-3NSO[SBJV]	if	be.not.good-PST-IPFV-IND.PST

'Wouldn't it be good if you brought down this sort of (stuff)?' [CLLDCh3R12S04.448]

(p. 178) Similar examples can be found with several other V2 stems. For example, *ca-* has an abstract meaning in (13) but a very concrete one of eating in (14). In the concrete meaning, *ca-* is a regular stem that can also be used as such (e.g. *ca!* 'eat!'). Whether or not speakers have acquired a generalized representation or at least a dense association

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network covering all such usages is an open issue. There may be variation across individuals. From a diachronic point of view, it seems clear that V2 stems originate from regular verb stems and have gradually acquired the selection properties of V2 stems.

Beyond these two classes of verb-selecting morphemes, the verb complex can also host various markers that select entire phrases, either flexibly phrases of various kinds, or only verb phrases. An example of a morpheme that selects VPs is the optative marker *ne* and the 'insisting' marker *na* which attach to verb phrases and can be gapped when the forms are coordinated (see Bickel et al. 2007 for further discussion):

	ta	ki	khi-ne-na!
(16)	come[3ss.sbjv]	seq	quarrel[3ss.sbjv]-opt-insist
	'Let him come and fight!' [CLLDCh1R04S05.0556]		

Morphemes that combine not only with VPs but phrases of any category ('XP' in Table 9.3) include various information structure markers and conjunctions, such as the sequential coordinator *ki* in (16). Even more radically promiscuous are morphemes that need some host but do not specify whether this is a phrase or terminal node, or what category is required (notated 'X(P)' in Table 9.3). There are four information structure markers with this behavior: *le* marking restriction, *lo* surprise, *ta* focus, and *yaŋ* additive focus. These morphemes can be attached to phrases or entire clauses, as in (17a), as much as to single affixes, as in (17b) (Bickel et al. 2007):

(17)

a.	utti	para	paisa-ŋa-**yaŋ**	miʔmuŋ	na-laiʔ-yokt-e	kina-**yaŋ**.
	that.much	over.there	money-erg-add	a.little	3[s]>2[s]-be.enough. for-neg-ind.pst	seq-add
	'It was also because the money wasn't quite enough over there.' [kamce.talk.0065]					
b.	a-kha-**yaŋ**-mai-paiʔ-yokt-e				naŋ.	
	2[s]A-1nso-add-neg-call-neg.pst-ind.pst				but	
	'But you also didn't call us.' (i.e. also us) [RM.JK.talko1.041]					

Finally, we note reduplication as an abstract morpheme (cf. footnote 3) that combines with various stems (notated 'X' in Table 9.3).

9.3.2.2 Cohesion

The building blocks surveyed in Table 9.3 combine into strings that show various kinds of cohesion. To allow concise overview representations, we use the following abbreviations apart from V and V2: PF and SF for pre-positioned and post-positioned inflections (prefixes and suffixes), CL for clitics, PA for phrasal and FPA for free phrasal affixes. Reduplications always cohere with the stem in all variables, and we leave them out from the discussion in the following.

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(p. 179) We first discuss syntactic cohesion. The key variables that are relevant and that have been analyzed in Chintang are insertion and displacement potentials, ordering constraints and cross-slot dependencies.[9] These define several non-isomorphic syntactic word domains:

Insertion potential: [PF-V-V2-SF-CL-PA-FPA]. *Evidence:* neither adverb nor noun phrases can be inserted in such a string (see data in Bickel et al. 2007).

Displacement potential: [PF-V-V2-SF-CL-PA-FPA]. *Evidence:* All elements are strictly local and cannot be displaced independently of each other.

Cross-slot dependencies: [PF-V-V2-SF]. *Evidence:* PF and SF depend on each other in multiple ways. For example, the negation PF *mai-* requires the concomitant appearence of a SF *-t*, or the person, number, and role specification of agreement markers relies on a combination of PF and SF markers (see data in Bickel et al. 2007 and the discussion of example 26). Also, the PF and SF elements of V2 elements must agree with those of the V element, no matter where they are licensed. For example, the V2 *yakt-*, which marks imperfective aspect, requires both V and V2 to be marked as past tense, as for example in a form like *pid-a-yakt-a-ce* ‘give-PST-V2:IMPFV-PST-DU’ ‘we (dual inclusive) were giving it to him/her’, where *yakt-* enforces the tense markers *-a* after both stems (Bickel et al. 2007: 68). Conversely, if a V stem is marked as past tense, a V2 must follow suit. This can be seen in the form *pendaloĩse* ‘flew out’ in (12a), where both stems are inflected in the past tense (*pend-a-* ‘fly-PST’ and *loĩs-e* ‘V2:move.out-IND.PST’, with *-e* also marking indicative mood, a choice that is only available at the end of the string.) As far as we know, no such constraints involve phrasal affixes or clitics.

Ordering [V(2)-SF-PA-FPA]. *Evidence:* The linear order of suffixes and phrasal affixes is arbitrarily fixed after a verb or V2 stem, following a strict template of morphological slots. By contrast, the ordering of V and V2 is driven by content and the position of PF and CL elements is freely variable. As shown in Bickel et al. (2007), all logically possible permutations of the prefixes in curly brackets in (18a) are possible without any effect on meaning or situational felicity. Prefixes can also precede V2 stems, where they follow the two-syllable unit selected by these stems (*kosa* in 18b):

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(18)

a. {u-kha-ma-}cop-yokt-e
3nsa-1nso-neg-see-neg-pst
'They didn't see us.'

b. **u**-kos-a-gond-e ~ kos-a-**u**-gond-e
3ps-walk-pst-v2:do.here.and.there-ind.pst
'they walked around'.

An example of a clitic inserted into the prefix string is the form *a-kha-**yaŋ**-mai-pai?-yokte* 'you also didn't call us' in (17b). The additive focus clitic *yaŋ* could just as well follow most of the other prefixes here (see Bickel et al. 2007 for details), or as we have seen, it could occur at the end of the entire clause. Clitics between a V-based and V2-based string are illustrated by the following examples:

(p. 180)

(19)

a. akka lud-u-**yaŋ**-ta-wakt-u-h-ẽ-kha.
1s tell-3[s]o-add-foc-v2:ipfv-3[s]o-1sa-ind.pst-nmlz
'I was also really telling it to her.' [CLLDCh2R07S02.1606]

b. khad-a-**yaŋ**-loĩs-e kina.
[3ss-]go-pst-add-v2:come.out-ind.pst seq
'It (the dirt) has also gone." [CLLDCh3R06S04.605]

Turning to phonological cohesion, we again observe that different rules and constraints target partly different domains:

Independent stress [PF-V-V2-SF-CL-PA-(FPA)] vs. [FPA]. *Evidence:* This unit has a single main stress on the V stem (or occasionally on the V2 stem), followed by an optional dactylic pattern of secondary stress in the SF and PA string. Some but not all free phrasal affixes can be stressed on their own. Examples are *ki* 'and' in (16) or *naŋ* 'but' in (17b). (The possibility of stress is what guides orthographic word breaks in our transcripts.)

Onset requirement [V(2)-SF] vs. [PF] vs. [CL-PA-FPA]. *Evidence:* Each of these domains requires a syllable onset on their left edge; if there is no onset in the underlying representation, this results in optional glottal stop prothesis, for example:

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mai-a-ep-t-e > mai?a?epte
(20) NEG-2[ss]-get.up-NEG-PST
'You didn't get up.' (Bickel et al. 2007)

Inside the domains, hiatus is never resolved in this way but by various patterns of vowel coalescence or diphtongization. This is true both of suffix-suffix sequences and clusters of clitics.

Four frequent V2 stems (*hatt-* 'move away sth completely (transitive)', *hat-* 'move or be(come) away (intransitive)', *dhend-* 'complete', *yakt-* ~ *wakt-* 'imperfective') have newly developed vowel-initial variants *att-, at-, and-* and *akt-* that cohere with the V stem: they do not trigger onset prothesis, no longer impose a two-syllable constraint on their host, and they no longer form prosodic subcategorization domains (on which see below). This results in a special unit [V-{*att, at, and, akt*}-SF] (Bickel et al. 2007).

Voicing [V(-V2)-SF]. *Evidence:* Single stops are regularly voiced between vowels or between nasals and vowels inside, but not between [V(-V2)-SF] domains. Some V2 alternate between cohesion and separation in this regard, e.g. *kuŋs-* 'go down, do in a downward manner' is found both as *kuŋs-* and as *guŋs-* after vowels, while other V2 always cohere, e.g. *gond-* 'do here and there' is never attested as **kond-*. Some of the free phrasal affixes elements cohere. An example is the nominalizer *-ko*, which mostly occurs after vowels or nasals and is therefore voiced (21a). The voiceless variant survives optionally after suffixes with an underlying coda such as the indicative nonpast marker *-nok* ~ *-no?* in (21b):

(21)

a. paraya u-si-a-go ma?mi-ce jamma Rai-ta.
almost 3nss-die-PST-NMLZ person-ns all Rai-FOC
'Almost all people who died were Rais!' [Story.chintang.015]

b. u-ko-no-ko-ce sa-ŋa hiŋ-ma hid-u-ku-ce?
3nsS-roam-NPST-NMLZ-ns who-ERG keep.alive-INF [3sA-]be.able-3O-NPST-3nsO
'But who can feed the people who roam around here?' [RM.JK.talko1.073]

(p. 181) Most free phrasal affixes and all clitics, however, escape voicing and therefore do not cohere with their hosts in this regard (e.g. the conjunctions *para* 'if' or *ki(na)* 'and, and then' are not attested with voiced onsets). Suffixes cohere and are therefore voiced (except when they go back historically to geminates), but prefixes are outside the voicing domain. Compare the fate of /t/ at the prefix-stem vs. the stem-suffix boundary in the following examples of *tat-* in V (22a) and V2 (22b) function:

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(22)

a. phak-sa-ta u-tad-e.
pig-meat-FOC 3nsS-bring-PST
'He brought pork.' [CLLDCh4R05S05.0713]

b. u-mu-ba-ŋa ramese-ŋa ek jora lab-u-tad-e.
DIST-DEM.DOWN-LOC-ABL Rameś-ERG one pair [3SA-]take-3[s]O-V2:bring-IND.PST
'Rameś has brought one pair from down/there' [CLLDCh2R12S07.874]

Prosodic subcategorization [V(2)-SF] vs. [PF] vs. [PA-FPA]. *Evidence:* These three domains are the possible hosts of prefixes and clitics and they are isomorphic to the domain defined by onset requirements (Bickel et al. 2007). When prefixes attach to the [PF] and the [V-SF] domain, the result appears as free permutation of the kind illustrated by (18a). When they attach to the [V2-SF] domain, the result is prefixes following suffixes, as in the second variant of (18b). Clitics subcategorize for the same domains, but they follow these domains. In (19), the focus markers *yaŋ* and *ta* follow a [V …] domains, right before a subsequent [V2 …] domain; in (17a) *yaŋ* follows phrasal affixes.[10]

9.3.2.3 Behavior

Agreement prefixes cannot be displaced by a general rule of syntax nor do they attach to entire phrases. However, under two tightly constrained conditions, they allow spreading behavior in the sense of Bickel and Nichols (2007). First, we occasionally observe agreement prefixes to be copied to borrowed verb stems, for example onto *man-* 'observe, honor' (<Nep. *man-*) which combines (obligatorily) with the nativizer suffix *-e* and an auxiliary verb *numd-* 'do':

(23)

dasai a-man-e a-numd-o kina
Daśaĩ 2[s]A-observe-V.NTVZ 2[s]A-do-[SUBJ.NPST.]3[s]O SEQ

a-kaʔ-na-ca-no.
2[s]S-come.up-NA-V2:complete-IND.NPST
'So when you are to observe the *Daśaĩ* festival, you come up.' [DR.exp.0762]

Evidence that this is spreading is that borrowed verb stems cannot host any prefixes outside this construction, and that the borrowed verb stem must be strictly adjacent to the auxiliary (potentially forming a single word domain in this regard).

(p. 182) Second, when (and only when) infinitives occur in strict adjacency to raising verbs, agreement prefixes can occasionally appear on the infinitive instead of the verb that controls them. This is shown by the data in (24a), which is a variant of the more common construction in (24b):[11]

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(24)

a. hicce **na**-teĩ-ma lapt-i-ki paĩ.
two 3[s]>2-beat-INF be.about-2PO-IND.NPST today
'She's going to beat the two of you.' [CLLDCh2R03S01.198]

b. maʔmi-ce-ŋa theʔnuwa thuk-ma **na**-lapt-i-ŋs-i-hĕ.
person-NS-ERG saliva spit.at-INF 3[s]>2-be.about.to-2PO-PRF-2PO-IND.PST
'People are about to spit at you.' [CLLDCh3R08S01.1021]

Evidence that *na-* has spread in (24a) is that the form *laptiki* would be ungrammatical in this context without *na-* nearby, while infinitives are nominal forms that cannot host agreement prefixes outside a raising context.

There are a few other morphemes that allow spreading in Chintang, but these are all free phrasal particles. A particle that spreads relatively often is the reportative marker *pho*, which can appear several times in a clause (subject to ill-understood pragmatic conditions):

(25)

dosi-ko phak-**pho** thippa-ŋa-ta sed-o-ko-**pho**.
Daśaĩ-GEN pig-REP grandpa-ERG-FOC [3SA-]kill-3[s]P-IND.NPST-REP
'I heard it's grandpa who will kill the pig for the Daśaĩ festival.' [CLLDCh1R13S02.1469]

9.3.2.4 Summary of domains

Table 9.4 summarizes the word domains in Chintang in terms of the building blocks defined in Table 9.3. There is not much overlap within and across syntax and phonology, except for a recurrent relevance of an all-encompasing 'major word', and a general tendency for domains to exclude prefixes (in line with worldwide tendencies: Bickel et al. 2007, Schiering et al. 2012, Himmelmann 2014, and references cited there). If we also consider the special behavior of agreement prefixes which can spread onto adjacent verb complexes (Section 9.3.2.3), the 'word' in Chintang becomes even more elusive: under certain conditions, inflectional morphology can even distribute across larger syntactic units.

What is of most interest in discussions of polysynthesis is the combination of 'lexical' elements (incorporated nouns or verbs, lexical affixes) in coherent strings. What comes closest to this in Chintang are V2 stems. These cohere in most phonological and syntactic regards, but they start their own domains with regard to ordering constraints in syntax (where their position is governed by semantics and syntax) and some of them are exempt from a voicing rule.

To see the patterns in Table 9.4 in action, consider the following example (meaning 'after (the cat) will eat me', adapted from a folktale). Elements after a colon define the category that (p. 183) a morpheme selects (empty, if it does not select anything). The lines indicate

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the domains within which each rule or constraint applies, above the example for phonology and below the examples for syntax:

(26)

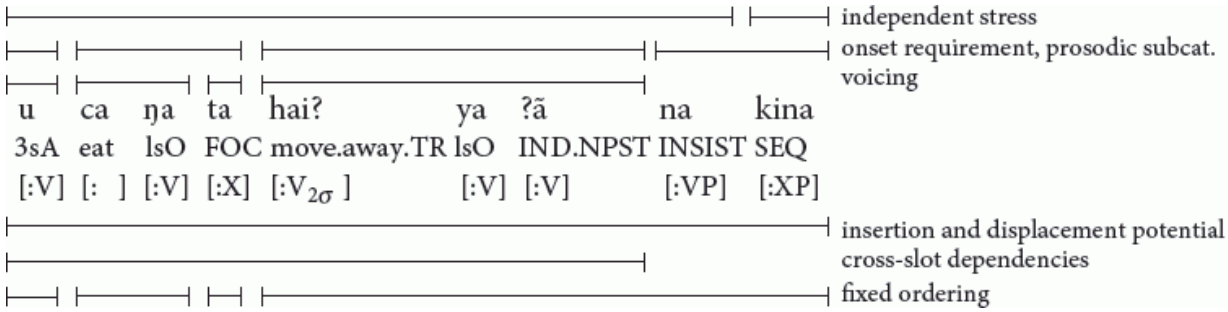
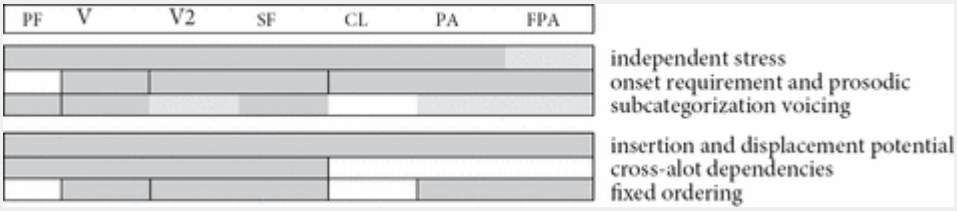


Table 9.4 Overview of word domains in Chintang phonology and syntactic in terms of the building blocks defined in Table 9.3



Gray-shaded combinations of elements cohere with respect to the syntactic and phonological constraint listed on the right. Light shading means that only some elements cohere, depending on their lexical specification. A vertical bar inside a grey-shaded cell means that the element to the right (e.g. a V2) starts its own domain if it occurs.

We briefly explain in the following how each constraint applies in this example:

- **Independent stress:** This is found only in two places: on the first stem (*ca* 'eat') and then again on the sequential marker *kina* at the end, defining two separate domains.
- **Onset requirement and prosodic subcategorization:** The onset constraint is vacuously satisfied in most morphemes in the example because the elements have an onset underlyingly. The initial prefix *u-* by contrast receives an optional glottal stop: [ʔu-]. Likewise, if the main stem had no onset (as is the case in 20), the onset constraint would be satisfied by the optional prothesis of a glottal stop. The same holds at the beginning of the V2 element, but not anywhere else in the string. The onset requirement domains are isomorphic with the prosodic subcategorization domains. Therefore, the focus clitic *ta* can be inserted, as it is here, after the sequence *caŋa*. Alternatively, the clitic could be inserted after the third person singular agreement prefix *u-*,[12] or at the very end of the inflection string, right before the insistive particle *na*. (p. 184)

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- **Voicing:** this can occur at the boundary between *ca-* ‘eat’ and a suffix although in the example the rule has no effect because there is no underlying voiceless element that could be voiced. If instead we had a combination of *tat-* ‘bring’ and the past tense suffix *-e*, the result would be *tade* ‘s/he came’, showing the effect of voicing. No such effect is observed at the boundary between the suffix *-ŋa* and the focus clitic, which is realized as *ŋata*, not **ŋada*. Voicing again applies at the V2/suffix boundary, although again in the example the rule has no effect because of a general intervening rule that glottalizes *t*-final stems before palatal glides. Other V2/suffix boundaries show voicing, cf. e.g. the form *lab-u-tad-e* ‘brought here’ in (22b) where V2-final /t/ is voiced. The phrasal affixes in the example, by contrast, are outside the voicing domains, and so the sequential marker *kina* is realized without voicing, even though it is flanked by vowels (**na-gina*).
- **Insertion and displacement potential:** there is no single position in the example where one could insert any noun or adverb phrase or indeed any other syntactic unit. Likewise, no element could be extracted from the string.
- **Cross-slot dependencies:** The prefix *u-* and the suffix *-ya* depend on each other: agreement with a third person singular A argument triggers the *u*-prefix only when there is at the same time the first person singular O marker *-ya* (or one of its allomorphs). In no other context do third person singular A arguments trigger overt agreement morphology in Chintang. For example, when a third person singular acts on a second person, the form is *na-ca-no* [3>2]-eat-IND.NPST, without the *u*-prefix (Bickel et al. 2007).

As we see in the example, most constraints define slightly different domains. What we find is that different syntactic and phonological operations target different domains, similar to what has been reported for other Kiranti languages (Hildebrandt 2007). Like in Mapudungun, one does not gain much from trying to define a single ‘word’ domain in Chintang.

9.4 Conclusions

Polysynthetic ‘words’ are often not unified entities defined by a single domain on which all criteria would converge. They tend to be non-coherent in one way or the other. This has already been shown by Russell (1999) for Cree, by Rice (2000) for Athabaskan or by Evans et al. (2008) for Dalabon, and it has been confirmed by our own analysis of Mapudungun and Chintang. But then, it is important to note that this is by no means a pecularity of polysynthesis: languages generally tend to avoid fully convergent, unified word entities. Phonology and syntax are well known to target different domains. And over the past decade, it has become clear that is also true within phonology and within syntax.

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We also observed that domains frequently do not nest, and this leaves little hope for prosodic hierarchies and similar generalizations. As with the overall approach to polysynthesis, one can of course pick any one word domain and declare it the central or canonical one, and then explain away all the others (e.g. claiming the relevant properties as irrelevant for wordhood). But it is not clear what one would gain with this, given that, one the hand, we do not (p. 185) know yet the full range of variation, and that on the other hand, we do know that different variables/dimensions have different relevance for acquisition and processing.

What is therefore needed now are (i) many more fine-grained analyses of each domain in each language, (ii) quantitative assessments of trends in how domain structures evolve over time and space, and (iii) more psycholinguistic research on how such domains are acquired and processed. For (i), there is an increasing number of collective volumes documenting diversity (Hall and Kleinhenz 1999, Hildebrandt et al. 2008, van Gijn and Zúñiga 2014b) and much descriptive work on individual languages. With regard to (ii), Bickel et al. (2009) and Schiering et al. (2012) have started to explore the phylogenetic stability and areal spread potential of phonological domains. Finally, for (iii), that is, psycholinguistic perspectives, see the contribution by Stoll et al. in this volume (and references cited there).

Abbreviations

A
transitive subject
ADD
additive focus
ATTR
attributive
CONT
continuative
DIST
distal
DU
dual
HAB
habitual
INSIST
insistive
NA
(epenthetic syllable in Chintang)
NFIN

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nonfinite
NTVZ
nativizer
O
object
OPT
optative
PERAMB
perambulative
POSP
postposition
REP
reportative
S
intransitive subject
SEQ
sequential
TEL
telic

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Notes:

(1) For the Mapudungun data cited in this article, we follow the traditional *Alfabeto Mapuche Unificado* convention still widely used by linguists in Chile, which is specific about segmental representation but, like other spelling conventions (such as the one used in Argentina, or the *Azümchefi*), not prescriptive in a principled way when it comes to word boundaries. With respect to the latter, we follow the sources cited almost everywhere—except when the issue of wordhood and/or morpheme type is at the center of attention and we draw the reader’s attention to alternative or less conventional segmentation.

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(2) Terminology varies: instead of phonological, some authors prefer ‘prosodic’; instead of syntactic, some authors prefer ‘grammatical’, ‘morphological’, or ‘morphosyntactic’. We gloss over any difference that authors might make here because we find the space of variation to be bigger than any such distinction would imply.

(3) We use the term ‘morpheme’ here as an abstract concept of a minimal Saussurian sign of any kind (including e.g. a past tense meaning expressed by an ablaut or tone rule), and we take no position on whether morphemes are represented by strings or realization rules, whether their combinations are modeled as derivations, as constructions, or as paradigms. These are questions of technical modeling that are independent of our concerns.

(4) We note, however, that a quest for unified syntactic word definitions seems to persist in many corners; see Haspelmath (2011) for a review.

(5) Some of the work that contains similar lists include Zwicky and Pullum (1983), Bresnan and Mchombo (1995), Dixon and Aikhenvald (2002b), Bickel et al. (2007), and van Gijn and Zúñiga (2014a), but they all seek criteria that are expected to converge on unified notions of phonological and syntactic words in a given language, whereas we leave open the number and possible convergence of domains in a language.

(6) The main difference is that augments only surface before vowels while root finals always surface in some form, e.g. *pha+t-: phade* ‘s/he helped’ vs. *phama* ‘to help’ with an augment *+t*, in contrast to *phat-: phade* ‘s/he exchanged’ vs. *phaiʔma* ‘to exchange’ with a root-final /t/. In our corpus work (http://www.clrp.uzh.ch) and the examples here, we use a pratical notation that marks augments by different stem-final symbols, e.g. *phad-* instead of *pha+t-*.

(7) In our practical orthography word boundaries are based on whether or not items can receive stress. See Section 9.3.2.2 for other phonological word domains.

(8) In nonfinite forms, the two-syllable constraint is optional, and there are a few lexically defined exceptions.

(9) An additional variable is whether adverbs can independently modify V2 stems. There is no evidence that they can, but more research is needed to establish this firmly.

(10) There is one suffix which can host prefixes and clitics, the negation marker *-yokt*. This marker behaves like a V2 in terms of its ability to form a host for prefixes and clitics and it also selects a verb stem as its host, but unlike V2 morphemes, *-yokt* does not impose a two-syllable constraint on the host. This suggests the existence of an exceptional domain [*yokt*-SF].

(11) Thanks to Robert Schikowski for drawing our attention to these data.

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(12) Bickel et al. (2007: 61) found this to be ungrammatical. However we have now come across several examples in our corpus where *ta* attaches to an agreement prefix. The unacceptability in the 2007 report is better explained by the specific pragmatics of the example.

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The Anthropological Setting of Polysynthesis

Peter Trudgill

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Abstract and Keywords

A sociolinguistically oriented study of polysynthesis literature reveals one rather striking observation. Varieties often cited as being incontrovertibly polysynthetic include languages from many different language families and different areas of the world. But many of these languages have a number of social characteristics in common: they are spoken in relatively small, traditional, non-industrialized communities, over relatively small territories. This chapter suggests that this is not a coincidence. There seems to be considerable agreement in the literature, for instance, that polysynthetic languages are ‘highly’, ‘extremely’, or ‘extraordinarily’ complex. And the literature on polysynthesis abounds in descriptors referring to their complexity as ‘exuberant’, ‘unusual’, ‘spectacular’, ‘baroque’, ‘rich’, ‘daunting’, and ‘startling’. This tallies nicely with the suggestion (Trudgill 2011) that linguistic complexity is particularly associated with relatively small, isolated, stable communities which have dense social-network structures; and is relatively unlikely to be found in large, high-contact (for example urban, colonial, standard) language varieties.

Keywords: linguistic complexity, small communities, small territories, dense social networks, sociolinguistic study

A sociolinguistically oriented study of the literature on polysynthesis throws up one really rather striking observation. Languages which are often cited as being incontrovertibly polysynthetic, in works such as Evans and Sasse (2002), Fortescue (1992b), Mithun (1999), Foley (2000), and Anderson (2007), include language varieties which come from many different language families and are found in several different areas of the world, including the Americas, northern Australia, Papua New Guinea, and northeast Asia. Amongst them we find Iroquoian languages such as Mohawk and Cayuga; Eskimo-Aleut languages such as Yup’ik and Greenlandic; Athabaskan languages like Apachean; Caddoan languages such as Wichita; Tanoan languages like Tewa and Jemez;

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Gunwinyguan languages such as Bininj Gun-wok, Ngalakgan, and Rembarrnga; Papuan Sepik languages like Yimas and Alamblak; the Chukotko-Kamchatkan language Chukchi; the Yeniseian language Ket; and isolates such as Ainu.

But in spite of this broad genetic diversity, and this extraordinarily wide geographical spread, a sociolinguist–typologist cannot help noting that all of the above languages have two characteristics in common.

First, and strikingly, all of them are spoken in relatively small communities. They nearly all have fewer, mostly very many fewer, than 10,000 speakers, with some exceptions such as Apache (16,000) and Greenlandic (50,000); and some of them now have no speakers at all. (There has been at least one polysynthetic language with large numbers of speakers: see the discussion of Nahuatl in Section 10.3.) They are all, moreover, spoken by traditional, non-industrialized rural tribal communities.

Secondly, there appears to be very considerable agreement in the literature that polysynthetic languages are ‘highly complex’ (Fortescue, 1992b: 242), ‘extremely complex’ (McConvell, 2010: 785), or ‘extraordinarily complex’ (Adelaar and Muysken, 2004: 151). The literature on polysynthesis abounds in descriptors referring to their complexity as ‘exuberant’ (Evans 2002: 3), ‘unusual’ (Korotkova and Lander 2010: 299), ‘spectacular’ (Evans 2002: 5), ‘baroque’ (Wier 2006), ‘legendary’ (Rice 1999: 392), ‘rich’ (McDonough and Sussman 2006: 1), ‘daunting’ (Fortescue, 1992b: 243), and ‘startling’ (Aronoff, 1994: 89).

In this chapter I argue that the co-occurrence of these two characteristics, one social-anthropological and the other linguistic, is not a coincidence. The conjunction is entirely (p. 187) consistent with the sociolinguistic-typological argument (Trudgill 2011) that linguistic complexity is particularly associated with relatively small, isolated, stable communities with dense social-network structures and informational homogeneity; and is relatively unlikely to be found in large, high-contact (for example urban, colonial, or standard) language varieties. The sociolinguistic argument is that the complexity which characterizes polysynthetic languages did not and could not have arisen in larger, higher-contact, more fluid communities. This is not to say that small, isolated, stable communities inevitably give rise to such languages. They do not. But it is only such communities which are hospitable to the development of complexification to the degree necessary for the development of polysynthesis. Once developed, moreover, polysynthesis may diminish and disappear if a language community changes the extent to which it maintains these social characteristics.

In this chapter I will explore this argument by considering, first, some aspects of the complexity demonstrated by polysynthetic languages; and, secondly, the sociolinguistic-typological factors which, I argue, have allowed for the development of this complexity in the types of community where these languages are spoken, rather than elsewhere.

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10.1 The Complexity of Polysynthetic Languages

There is general agreement, then, that polysynthetic languages are complex, and indeed this is very readily apparent to inspection. I will in this chapter, however, not consider in any great technical detail the nature of the linguistic complexity of polysynthetic languages (for this, see Dahl, this volume). I will, rather, approach the topic from the direction of the sociolinguistics literature which has, over the years, produced many discussions of linguistic simplicity and of the simplification processes which produce it. These discussions have occurred most notably in treatments of dialect contact and koineization/new-dialect formation, but more especially in treatments of language contact and creolization/pidginization. It is generally agreed that the most dramatic results of linguistic simplification processes can be found in pidgin and creole languages.

Studies of the processes involved in the development of pidgins and creoles out of more complex source languages have shown what are the major types of simplification which have been involved in the growth of, say, Sranan out of contact between English and West African languages during the Atlantic slave trade. Following Mühlhäusler's pioneering work on simplification (1977), and earlier important work such as that of Ferguson (1959, 1971), it is clear that obvious components of contact-induced diachronic simplification include *reduction in morphology,* that is, the reduction or loss of the morphological expression of grammatical and semantic categories; increase in transparency, that is, *reduction in opacity; reduction in grammatical agreement* and other forms of repetition of information; and *reduction in irregularity*. These changes make for greater L2 learnability (see Trudgill 2011, for further discussion and justification). Pidgin languages usually lack all morphology: there are no cases, numbers, tenses, aspects, moods, voices, persons, or genders that are morphologically marked. Anything which is signalled is signalled analytically; person can be indicated by pronouns or nouns; case can be pragmatically deduced or marked by word order; location of (p. 188) events in or through time can be indicated through adverbials, as can modality. Pidgins are also highly analytic, transparent and regular, and lack agreement phenomena.

This simplification results from language contact which is specifically of the type which involves untutored adult second-language learning (see further in Section 10.10). As Dahl has it, simplification is a 'sub-optimal transmission' effect (2004: 274) in which features which represent 'L2 difficulty'—which cause problems in terms of adult second-language acquisition—disappear. These are structures and features which cause acquisition difficulties for adult and adolescent non-native learners—learners who are beyond the critical period for natural language acquisition (Lenneberg, 1967). (Long-term co-territorial contact involving child bilingualism, on the other hand, typically leads to complexification, as categories and mechanisms are transferred from one language to another (Trudgill 2011, Chapter 2).)

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The sociolinguistics literature, on the other hand, has seen very few, if any, discussions of complexity and complexification. I therefore adopt here the—I would suggest—rather reasonable assumption that complexification quite simply consists of changes and processes which are precisely the reverse of those which are generally accepted by sociolinguistic researchers, as representing simplification. Complexification consists of processes which are the opposite of the above—including processes which lead to *increases in morphology, opacity, repetition of information,* and *irregularity*.

To what extent do we see the results of these processes as being present in polysynthetic languages? As far as morphology is concerned, it is entirely obvious that polysynthetic languages by definition depart massively from what Kusters has termed (2003: 21) the Economy Principle of simplicity, which states that 'as few semantic categories or category combinations as possible should be expressed morphologically'. While pidgin and creole languages have no or little morphology, polysynthetic languages have large or even colossal amounts. They are at the opposite end of the analyticity scale from creoles, and replete with morphological categories. One well-known characteristic of polysynthesis is that a great deal of work is done in such languages by means of morphology, which in other languages would have been performed by lexis.

The fact that it is most definitely not the case in these languages that 'few semantic categories are expressed morphologically' can readily be shown quantitatively. Moshinsky's grammar (1974) of the northern Californian language Southeastern Pomo, for instance, lists 116 different categories which are expressed morphologically, covering a wide range of category types and functions. These include instrumentals consisting of bound morphemes such as /q-/ 'with biting or scratching', /ʔ-/ 'with the hand', /ʃ-/ 'with a long, flexible object', and /f-/ 'with the side of a long object'; directionals such as /joh-/ 'downstream', /mal-/ 'across water', and /lil-/ 'into an enclosed space'; aspect markers like /-l-/ 'durative', /-t-/ 'imperfective', and /-ja-/ 'perfective'; modals such as /-d-/ 'potential', /-do/ 'quotative', and /-s/ 'imperfective negative'; and many other categories such as /-tta-/ 'dual number', and /-it/ 'inalienable possession'. Sadock (2003: 3) tells us that West Greenlandic has approximately 1,000 inflectional affixes—which compares rather dramatically with, say, the eight inflectional affixes of English.

As far as opacity is concerned, the position requires a little more discussion. Kusters (2003: 21) writes that the lowest level of opacity is when 'every single meaning is expressed in a separate form'. His Transparency Principle demands that 'the relation between form and meaning is as transparent as possible'. The highest level of transparency or analyticity is when 'every single meaning is expressed in a separate form'.

(p. 189) One aspect of such 'separateness' will be the degree of allomorphy a language has. The other, often related, aspect will be the extent to which morphemes are clearly separable or segmentable, as in strongly agglutinating languages, or not, as in fusional languages. As is well known, Turkish *adam-lar-dan* 'from the men' can readily be segmented as man-PLURAL-ABLATIVE; while with Latin *hominibus*, which also represents

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the ablative plural of the noun for ‘man’, clear segmentation is not possible: inflectional languages ‘have internally complex words which cannot easily be segmented into an exhaustive and non-overlapping string of formatives’ (Anderson 1985: 8). The more non-segmentability and allomorphy a language has, therefore, the more opaque and the more complex it will be.

How much fusion and allomorphy, then, do polysynthetic languages have? Aikhenvald (2007a) argues that Chiricahua Apache is a classic fusional language in which a high degree of fusion conflates several units into nonanalysable portmanteau morphemes (see further in Section 10.8). But according to Fortescue, many polysynthetic languages, such as Iroquoian and Eskimo, have complex fusional phenomena of a rather different type. There is a tendency for these languages to indeed have ‘sequences of affixed morphemes and stems that are in general clearly separable and agglutinative in essence’ (Fortescue 1992: 242). But it is the allomorphy aspect of opacity Fortescue is pointing to; and specifically—and this is why he argues that ‘fusion’ is a valid term here—allomorphy of the type which occurs at morpheme boundaries. It is ‘the variability of individual morpheme shapes depending on word-internal environment’ that produces the opacity. The operation of morphophonemic rules at morpheme boundaries producing ‘ “fusion” as a morpheme boundary phenomenon’ is what Fortescue is basing his assertion on. According to him, this type of fusion is not uncommon in polysynthetic languages; and the many of those which do not have it are those which ‘are only weakly polysynthetic’, including ‘several of those noted by Sapir (1921: 142–3) as being closer to agglutination by technique: Haida, Sioux, and Yana’.

For Greenlandic, Sadock writes (2003: 12) that ‘the interaction of suffixes to a morphological host can involve adjustments of the content of both the host and suffix. This adjustment is at the boundary between the host and suffix and therefore affects the end of the host and the beginning of the suffix.’ This is also not a necessarily simple matter, as the actual phonology of the morpheme shapes ‘often requires reference to the morphological class of the two joined elements’. Stems often have more than one allomorph which may to some extent be predictable from phonological context, but may also be morphologically or lexically determined. Every stem, moreover, has both a full form and a vocalic form for example, /panik/ - /pani/ ‘daughter’, with suffixes being lexically specific with respect to which one they take. (The degree of complexity of these fusional processes can be gauged from the fact that about one-eighth of Sadock’s entire grammar is devoted to them.)

Comanche, on the other hand, is described by Charney as being an ‘agglutinative’ language where ‘in almost all cases prefixes and suffixes maintain their identity’ (1993: 5). This comparison with Greenlandic would seem, then, to make the point about polysynthetic languages being more or less agglutinative and fusional. It is clear, however, that Comanche actually does have rather large amounts of fusion in Fortescue’s sense, even if not so much as Greenlandic. Charney tells us that Comanche has series of ‘what people who work on Numic languages term final features’. These pervasive abstract ‘features’ are associated with individual stems and affixes. They determine the

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shape of following stops (apart from nasals) and affricates by producing lenis, fortis, pre-aspirated, and aspirated variants not unlike Celtic mutations. They thus have morphophonological consequences for suffixation: to give just (p. 190) one example, the postposition meaning 'on' has four different allomorphs: /-paʔa/, /-vaʔa/, /-ɸaʔa/ and /-hpaʔa/, which are lexically selected by the stem or affix to which they are attached.

In Chiapas Zoque, which is only moderately polysynthetic (see Faarlund 2004), there are a significant number of morphophonological processes which operate at the junction between roots and affixes. The most important is metathesis: there are a number of subtypes, including a morpheme boundary process whereby, in a suffix or clitic which begins with a glottal stop preceded by a nasal, the glottal stop moves before the nasal:

(1)

tom-ʔäju	>	toʔmäju	'came close'
pän=ʔis	>	pʌʔnis	'man' (gen./erg.)
tuŋ=ʔomo	>	tuʔŋomo	'on a road'

Palatalization, aspiration, nasal assimilation, voicing, degemination, and vowel harmony may all also apply (Faarlund 2012).

For Southeastern Pomo, Moshinsky lists twenty-two different phonological rules which operate to 'derive phonetic representations from sequences of morphemes' (1974: 18), but they mostly apply automatically and seem not to have very drastic segmental consequences. For example:

(2)

ʔuji + wijaq + bdu + ba + χle + kic't
that - my - acorn - AGENT - tree - grew
gives
/ʔuji-wijaq-budu-ba-χle-kic'it/
'That tree grew from my acorn.'

So, while this type of fusion does indeed appear to be normal in polysynthetic languages, it seems to be so to different degrees. It would seem rather clear that the more of this type of fusion a language has, the more complex it is.

The combined role of divergence from both of the creole-like economy and transparency principles in producing complexity can be further examined on the basis of Sapir's well-known (1921) typological discussion. Sapir showed that the morphological typology of languages can be considered along two parameters: the degree of word-internal complexity in a language, and the transparency of word-internal boundaries. (Kuster's principles of economy and transparency of course derive rather directly from this dichotomy.)

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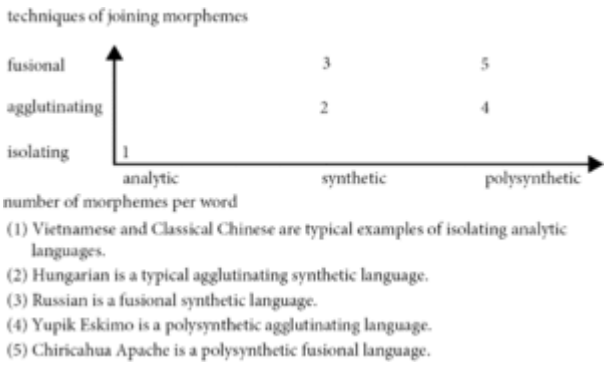
The first parameter has to do with the number of morphemes per word; and it produces a typological continuum ranging from very analytic languages, which have only one or very few morphemes per word; through synthetic languages, which have more than that; to polysynthetic languages, which have very many. In the polysynthetic southern Alaskan Athabaskan language Tanaina, 'the verbal morphology consists of stem preceded by nearly 20 prefix positions', with each of the stems having three different forms: imperfective, perfective, and progressive. The Comanche verbal template has fifteen positions, though 'no verb root occurs with all the above morphology' (Charney 1993: 113). Southeastern Pomo has twenty-three positions, though once again 'no single verb form contains a member of each position class' (Moshinsky 1974: 41). And Faarlund (2012) shows that Chiapas Zoque has a verbal template with twelve potential positions (Figure 10.1) (p. 191)

Click to view larger

Figure 10.1 Chiapas Zoque verbal template



Click to view larger

Figure 10.2 Interaction of two types of parameters in word-formation

Aikenvald 2007

The second, transparency, parameter produces, as is well known, a classification of languages into three major types: isolating, agglutinating, and fusional. Isolating languages such as Vietnamese are inevitably also totally analytic. But when we come to agglutinating and fusional languages, the two dimensions diverge. More or less synthetic languages, including polysynthetic languages, can be more or less agglutinating and/or more or less fusional. The diagram supplied by Aikhenvald (2007), given here as Figure 10.2, is helpful in this respect.

At position 1, there are languages such as Vietnamese, as just discussed; at 2 we have agglutinating languages like Turkish; and at 3 fusional languages such as Latin. And then at 4 and 5 we have polysynthetic languages. It can clearly be said, then, that the least complex languages—the ones that adhere most closely to Kuster's principles—are those such as Vietnamese which are located at position 1. Agglutinating languages, at position 2, are then obviously more complex than isolating languages. And languages at positions 3, 4, and 5 are more complex again than these.

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So polysynthetic languages are more or less complex to the extent that they have, amongst other features:

- a (very) large stock of bound morphemes
- a (very) large number of morphemes per word
- large amounts of allomorphy, including fusion in the sense of Fortescue
- large amounts of fusion, as more usually defined.

(p. 192) 10.2 Contact and Complexification

We therefore need to consider what exactly the social conditions are that are most likely to be hospitable to the production of these types of complexity, individually and collectively. Before we do that, however, there are two other points to consider.

The first is that we have to note the possibility that non-polysynthetic languages may become polysynthetic as a result of language contact with neighbouring polysynthetic languages. In this case, the contact would have to be specifically of the long-term co-territorial child-bilingualism type which leads to the additive borrowing of structures from one language to another. There is no doubt that polysynthesis can be an areal feature, suggesting diffusion of polysynthesis from one language or language family to another. This is argued for Amazonia by Dixon and Aikhenvald (1999), and for South America generally by Payne (1990). The geographical proximity of Uto-Aztecan Comanche to the totally unrelated Navaho-Apache and the also unrelated Tanoan language Kiowa in the American Southwest is just one further example.

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10.3 Maintenance of Polysynthesis

Secondly, it will be helpful to consider what sort of sociolinguistic matrix is necessary for the *maintenance* of polysynthetic complexity—and therefore for its survival in the polysynthetic languages which are currently known to us. And the answer to this question is very clear. Languages of this type would not have survived as such if they had not been spoken in ***communities with low levels of adult language contact*** (Trudgill 2011).

We have to be very careful, however, to reflect in a rather nuanced way on exactly what sociolinguistic conditions are required for complexity to be lost through adult contact. The point is that for this to happen, languages must have had a history of being learnt by large numbers of post-adolescent and adult non-native learners, ***in a way and to the extent that, over time, the language of native speakers themselves becomes simplified***. High levels of adult contact in themselves do not necessarily lead to loss of complexity. Take the case of Nahuatl. This remained a polysynthetic language even though it was the language of administration of a large empire and had, presumably, many non-native speakers. This should not be a surprise, however. In a situation where a continuous native-speaker tradition is maintained (Thomason and Kaufmann 1988), we cannot necessarily expect to see simplification occurring. When pidgins develop, this is because there is an intergenerational break in transmission, and the result is effectively a new language. But where native speakers transmit their language from one generation to another in the normal way, the fact that there may also be non-natives around who are speaking simplified versions of the language will normally have no effect on this transmission whatsoever.[1]

Consider what it means to assert that loss of complexity occurs as a result of adult language contact. How does this work? How are we to unpack the phrase ‘as a result of’? It would be (p. 193) no surprise if the Nahautl spoken by native speakers of other languages was simplified—undoubtedly it was. But the big question is: why would this simplification have spread to the speech of native Nahuatl speakers, and thus to subsequent generations?

The answer to this question lies in two factors central to contact processes: demography and transmission. As far as demography is concerned, studies indicate (see Trudgill 2011) that when the proportion of non-native speakers in a population comes close to 50 per cent, the number of face-to-face interactions—and therefore potential instances of accommodation (Trudgill 1986) by natives to non-natives—reaches a threshold level at which some aspects of the non-native variety may transfer to the native. If the demography is right, natives can and will accommodate, to different extents, to non-natives.

As far as transmission is concerned, we can note the case of Afrikaans as a form of Dutch that underwent simplification as a result of contact. Afrikaans is not a pidgin.[2] There has been a continuous native-speaker tradition throughout its history, and the Dutch/

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Afrikaans language has been transmitted from one generation to another in the normal way since the arrival of Dutch/Flemish speakers in southern Africa in the 1600s. Many modern Afrikaans native speakers are the direct genetic as well as cultural descendants of earlier generations of Dutch speakers, in a way that, say, Tok Pisin speakers are not genetically descended from earlier generations of English speakers.

So how did non-native features, on a rather wide scale, make it into native Dutch/Afrikaans? Demography was relevant. According to Combrink (1978), the population of Cape Town in 1795 was about 1,500, and about 1,000 of these were 'slaves that had come from Guinea, Mozambique, and the far East' and 'people of Khoin extraction, most of whom had given up their mother tongue and could speak only the Cape Dutch' (Combrink 1978: 77). Dutch was acquired by very large numbers of non-native speakers, initially speakers of the indigenous Khoi and San languages, and then by speakers of Bantu languages, and immigrant speakers of European languages, Malagasy, Malay, Indonesian languages, and others. There was much racial mixing and intermarriage, as the current 'Coloured' population of South Africa shows. Wives in particular were quite likely to be native speakers of some language other than Dutch. This led to a situation where the nature of transmission became crucial. So many people initially acquired and used Dutch as an L2 that, in later generations, children were born who became, as it were, native speakers of non-native Dutch. A non-native variety became nativized and in time the dominant, and subsequently only, variety.

We can suppose that, in the case of Nahuatl, the demographic and transmission factors were simply not of this type. If adult language-contact conditions are right sociolinguistically, then polysynthetic languages certainly do become less synthetic. According to Fortescue, for example, this is possibly—I would say likely—to have been what occurred in the case of Aleut. Aleut has undergone simplification relative to other members of the Eskimo-Aleut family, and Fortescue feels, surely correctly, that this may well be due to 'substratum effects' (2002: 273). Aleut (Bergsland 1989: 73) is less polysynthetic than Eskimo and has far less morphophonemic complexity of the multiple allomorphy type. Fortescue writes that these developments support the supposition of a 'scenario of a relatively recent "catastrophe" … [but] whether this "abnormal" development was accelerated by external upheaval (p. 194) must for the time being remain an open question' (1992: 245). A sociolinguistic-typological perspective, however, suggests that the question is not at all that open: it looks very much as if some sociolinguistic event or events leading to increased contact and/or instability did in fact occur.

The extent to which polysynthesis is not able to survive adult language contact can be seen in the extreme case of Eskimo-based pidgins, of which there are many reports, for example Bakker (1996a), de Reuse (1996). What we know about Eskimo-based pidgins shows that these were no different from other pidgins. Van der Voort's (1996) treatment of descriptions of the West Greenland Eskimo Pidgin by seventeenth-, eighteenth-, and nineteenth-century British, German, and other visitors to Greenland is particularly revealing. In this language, there was not a trace of polysynthesis. There was no

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systematic inflection; and what West Greenlandic nominal and verbal inflections there were, were clearly not to be analysed as such in the pidgin. Locative endings occurred with place names, for example, but were clearly not analysed as such by speakers. Nouns were often cited with the instrumental case ending *-mik* which however, once again, was simply an integral part of the noun stem in the pidgin. And verbs might appear with a third-person subject indicative ending but were invariant, with person actually being marked by independent pronouns (Van der Voort 1996: 174ff.).

10.4 L2 Difficulty

Polysynthesis, however we actually define complexity, makes for L2 difficulty, and is likely to be the first casualty of this type of contact. Consider Rice's (1999) review of Leonard Faltz's *The Navajo verb: a grammar for students and scholars* (1998). She notes the 'legendary' complexity of Navajo and describes how the verb consists of a morphological template which takes the form: outer prefixes + distributive plural prefix + object prefix + inner prefixes + subject prefix + classifier + verb stem; and how there are also very large amounts of allomorphy, with different prefixes within a class interacting with each other phonologically. Rice also very helpfully discusses this complexity specifically in terms of the difficulty of its acquisition. She describes what has to be learnt in order for the Navajo verb system to be mastered fully:

> First, the form of the verb must be determined. This is in itself a complex task, as the form of the stem varies across different modes (imperfective, perfective, future, progressive, optative). Second, the choice of the so-called classifier must be learned. Third, any lexical prefixes, either outer or inner, must be recognized. Fourth, the transitivity of the verb must be stated. Fifth, each verb has a conjugation, or pattern of forms that the verb exhibits in different modes. Finally, it is necessary to learn three further types of information, rules of combination, the form of the subject prefixes in the different modes, and vocabulary principles.
>
> (Rice 1999: 392)

One might compare these difficulties, as experienced by any learner attempting to cope with the complexity of the Navajo verb system, with the ease of acquisition for any learner of the verb in Sranan, one of the English-lexifier creoles of Surinam. A reading of Winford and (p. 195) Migge (2004) shows that all that one needs to know in order to master the structure of the Sranan verb system is as follows: Sranan verbs are formally completely invariant; they can optionally be preceded by the tense and aspect particles *ben* PAST, *o* FUTURE, *de* IMPERFECTIVE; and there is an optional postposed COMPLETIVE marker *kaba.* That's it. Other meanings which would be associated with the Navajo verb are expressed lexically in Sranan, or not at all.

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Small children, obviously, have no problems with such L2-difficult features as are found in Navajo: as Dahl says (2004: 294), ‘human children indeed seem to have an advantage compared to … adult members of their own species’. Up to a certain age, children demonstrate a genetically inherited capacity for the acquisition of linguistic complexity: ‘young children learn perfectly any language to which they are adequately exposed … [but] few adults can perform the same feat’ (Trask 1999: 63). And it is clear from, for example, Mithun (1989a), Fortescue (1985), and Kelly et al. (forthcoming) that the first-language acquisition of Greenlandic and other polysynthetic languages like Navajo proceeds no differently and no more slowly than the acquisition of more analytical languages. But for adolescents and adults, some languages are genuinely—because more complex—more difficult to learn than others (Trudgill 2011). Rice (2006) has it that Athabaskan languages are ‘notoriously difficult for outsiders’. And De Reuse, in his didactic grammar of San Carlos Apache (2006a: 202), at at least one point abandons all hope:

> The ways in which the subject prefixes combine with prefixes preceding it and with prefixes following it and/or with the verb stem are very complex. There are rules that you can learn in order to properly insert a subject prefix inside a verb, but … you are better off memorising the paradigms with the subject prefixes inserted, rather than trying to learn a long list of complex rules. Having explained why we are not discussing the subject prefixes …

It is not only polysynthesis as such, however, which causes L2 difficulty. Fusion is also a very important factor in producing L2 difficulty, especially when combined with irregularity. Whether we should consider fusional synthetic languages, at position 3 in Figure 13.2, to be more or less complex than polysynthetic languages, at position 4, is presumably open to discussion, and will depend on the details.

Fusional languages are highly L2 difficult, particularly to the extent that, like Latin for example, they have different conjugations and declensions with plentiful irregularity. Evans (2012) writes, of the northern Australian language Iwaidja, that of two grammars of the language,

> neither mentions anything about the internal structure of the verb stem, for the good reason that recurring elements are very difficult to find. As a language learner it can be difficult to master large numbers of long stems without any evident internal logic of composition. Verb stems are long, and lack obvious segmentability once inflectional and derivational suffixes have been peeled off.

So surely the most complex and therefore L2 difficult of languages are those that are both polysynthetic and fusional, such as Algonquian (Sapir 1927) and Apache (Aikhenvald 2007a). Some polysynthetic languages are much more L2 difficult than others, a major difference in difficulty being due to the degree of fusion: languages at position 5 are more L2 difficult than those at position 4.

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(p. 196) 10.5 Hospitality to Complexity Development

Polysynthesis, then, survived in the polysynthetic languages known to us today because these languages never experienced significant amounts of language contact of the post-critical period, imperfect adult-acquisition type.

But this raises another more intriguing question. These languages have been protected, because of the sort of communities they are spoken in, from the high-contact sociolinguistic conditions which would have led to the disappearance of polysynthesis. But what were the sociolinguistic conditions which permitted or favoured its development in the first place? Where did polysynthesis 'come from' originally?

Let us consider the social and anthropological conditions which might have been hospitable to the complexification associated with the development of polysynthetic languages 'in the first place'. Writers on polysynthetic languages generally assume that these languages were not always 'like that'. The assumption is that they became polysynthetic out of some earlier, non-polysynthetic state. Their polysynthesis, in other words, is the result of a series of complexifying linguistic changes through time, which made them that way. If we are to argue that it is not a coincidence that polysynthesis is found in, say, Apache but not in Chinese, then the complexifying linguistic processes we would have to consider from a sociolinguistic-typological point of view as being responsible for this would have to include those involving the transition from an earlier simpler state. Such processes would include an increase in allomorphy, and growth of fusion.

But for polysynthetic languages in particular, we have to note that Fortescue writes (2002: 257) not only that 'the morphology of these languages was surely not always so complex' but also that they 'may have reached their present typological extremity from far less synthetic origins reflecting a middle-of-the-road agglutinative type quite familiar in northern Eurasia'. Fortescue writes revealingly of languages that have become polysynthetic only 'relatively recently' and are therefore still 'closer to agglutination by technique', for example Haida.

So in the context of this chapter, it is especially the movement from synthesis to polysynthesis that we have to account for. This means that we have to consider how, when, and where these languages have undergone simplicity-principle-defying changes leading to an increase in morphology: specifically a growth in the stock of bound morphemes; a growth in the number of morphemes per word; and an increase in opacity —the development of fusion in at least Fortescue's but also in the more classic sense.

Some of the changes we have to account for are likely to be, to use Aronoff's term, rather startling. What, for example, does it take, linguistically and sociolinguistically, for a language to acquire a thousand inflectional affixes? What does it take for a language to

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develop a bound morpheme such as Southeastern Pomo /f-/, meaning ‘with the side of a long object’? And what does it take for a language like Navajo to produce ‘very large amounts of allomorphy, with different prefixes within a class interacting with each other phonologically’?

(p. 197) 10.6 Growth in the Stock of Bound Morphemes

We can begin by considering the issue of the growth in the stock of bound morphemes: what, for example, are the linguistics and sociolinguistics of the development of the Southeastern Pomo bound morpheme /f-/?

Instrumental affixes of this type are widespread in certain areas of North America (Mithun 1999: 118ff.), with some languages having very large inventories indeed. But the question as to what it takes, sociolinguistically, to produce such inventories is presumably best answered first of all by examining the linguistics of how these affixes arose. Mithun writes (1999: 123) that ‘the origins of most of these instrumental affixes are no longer recoverable, but in a few languages resemblances can still be perceived between them and noun or verb roots’. So from Proto-Uto Aztecan *mai ‘hand’ and *kuh ‘fire’ respectively we have contemporary Comanche /ma-/ ‘with the hand’, and /ku-/ ‘with heat’ (see Charney 1993: 117–18). If Proto-Uto Aztecan dates to around 3000 BC—Mithun (1999: 540) says that ‘the languages are assumed to have diverged around 5000 years ago’—we can say that there has been a grammaticalization of nouns such as ‘hand’ and ‘fire’ at some time during the last 5,000 years, into a set of instrumental affixes which have added to the morphological complexity of their languages.

The scenario painted by Mithun is surely correct (1999: 123): ‘the prefixes apparently developed from the initial roots of noun-verb and verb-verb compounds’; and ‘part of the usual process of grammaticalization, as elements evolve from roots to affixes, is loss of categoriality. When noun or verb roots are compounded, those that are not heads lose their status as arguments, and become general modifiers of their heads’ (1999: 126). That might not seem to help us very much for morphemes such as ‘with the side of a long object’. But Mithun has insights here too. For example, Proto-Uto Aztecan *ci-a ‘rose’, perhaps built on a term meaning ‘thorn’, is hypothesized to be the, one supposes, metonymic source of the Proto-Numic instrumental *ci- ‘with the point of a long object’—which corresponds to modern Comanche /tsi-/ ‘with a sharp point, with the finger’ (Charney 1974: 121).

One of the answers, then, to the question as to what it takes to develop a large stock of instrumental affixes would seem to be: time. As Lichtenberk (1991) points out,

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grammaticalization is gradual; but some such processes are clearly much more gradual than others.

Another factor must have been the small size of these communities, their dense social networks, and their large amounts of communally shared information. There is evidence that long-term grammaticalization of morphological categories progresses to a much greater extent in small face-to-face societies of intimates with informational homogeneity (Givón 1979) than elsewhere. Suggestive work which gives us some insight into why this might be so has been carried out by Perkins (1980, 1995). Perkins takes as his starting point a suggestion by Keenan (1976) that large morphological deictic systems are better developed in non-literate communities with fewer than 4,000 speakers than in larger communities (see further Trudgill 2011).

(p. 198) Perkins' argument is that deictics identify referents by linking them to the spatial–temporal axis of speech events. Deictics like persons, tenses, demonstratives, directionals, and inclusive versus exclusive markers need the spatio-temporal context of their use to be available to listeners for the identification of the referents. This means that deictics can be more salient in smaller societies with larger amounts of shared information than in larger ones; and they are therefore more likely to occur in the inflectional systems of their languages than periphrastically: the more frequently free deictic morphemes occur, the more likely they are to become grammaticalized into bound morphemes, something which of course is crucial for the development of polysynthesis.

Perkins investigated fifty languages and seven deictic affixes: tense, person marking on verbs, person marking on nouns, spatial demonstratives on verbs, spatial demonstratives on nouns, inclusive versus exclusive on person markers, and dual in person markers. Communities were ranged by 'cultural complexity' from 1 (e.g. Andamanese) to 5 (e.g. Vietnamese). Perkins showed that there was indeed a correlation between social complexity and the number of deictic affixes: languages spoken in the most complex cultures—those scoring 5—had an average of 1.22 affixes, while those scoring 1 averaged 3.28. Perkins concluded that deictic affixes are lost as cultures become 'more complex'.

For the sociolinguistic typologist, however, it is rather clear that what is instrumental here is not so much 'complexity' as such as simple community size and amount of shared information. What is important is how many members a speech community has, and how much informational homogeneity there is—the degree, that is, to which the community meets the profile of a society of intimates.

10.7 Growth in the Number of Morphemes Per Word

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Growth in the number of morphemes per word is, of course, related to the growth of the stock of bound morphemes. The more bound morphemes there are in a language, the more morphemes there are likely to be per word, although this does not necessarily follow. It is therefore no surprise that this development, too, would appear to require very considerable periods of time to play out. This is nicely illustrated in DeLancey's discussion (1991) of the growth of affixes in the southern Oregon/northern California Penutian language Klamath, which has twenty-five morphological position classes on the verb.

DeLancey deals with the gradual increase over time in the number of such affixes per word in terms of 'chronological strata' (1991: 426) of suffix classes. This is a geological metaphor which paints very nicely a picture of the gradual accretion of morphological complexity in the language over considerable periods of time, as more and more classes are added, and as more and more members are added to those classes.

Some of the morphemes discussed are of 'considerable antiquity' and their 'fairly minimal phonological profile … is also consistent with the notion that they are of considerable age' (DeLancey 1991: 427), pointing to phonetic erosion over time as forms become more and more grammatical. Moreover, 'there are clearly differences among the various morphemes in these classes in the relative antiquity of their incorporation into the verb complex' (p. 199) (1991: 429). DeLancey's goal is to sort these out into separate chronological layers. For example, in (aspectual) classes 17 to 22 of the twenty-five ordered positional classes, there is (1991: 430):

> a clear gradient of lexical specificity. The members of classes 15–19 all have broad meanings which are often associated with grammatical morphemes. Those of 20 (except for *o:t*) ['while'], on the other hand, show more lexically specific senses, which tend to be less common cross-linguistically as grammatical categories. There is a similar gradient of phonological bulk: while none of the members of classes 15–19 has more than two consonants [e.g. *obg* 'durative'], and only one more than three segments, five of the seven members of class 20 have both [e.g. *nannwi* 'at once']. Both of these suggest a greater degree of grammaticalization for 15–19 and imply a more recent origin for class 20.

So more and more bound morphemes have been developed, and at the same time more and more categories have been created as well, gradually adding to the morpheme-per-word ratio. Once again, this would appear to be a very time-consuming process.

10.8 Growth in Fusion

Any linguistic change which leads a language in the direction of developing a more fusional character will produce increased opacity as a consequence, and therefore

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increased complexity. This can be seen from Comrie's comparison of Finnish, an agglutinating language, with the less agglutinating Finnic language Estonian (Comrie 1989: 50–1):

	Finnish:		Estonian:	
	'leg'	'flag'	'leg'	'flag'
nom.sg.	*jalka*	*lippu*	*jalg*	*lipp*
gen.sg.	*jala-n*	*lipu-n*	*jala*	*lipu*
part.sg.	*jalka-a*	*lippu-a*	*jalga*	*lippu*
part.pl.	*jalko-j-a*	*lippu*	*jalgu*	*lippe*

The Finnish forms are readily segmentable: it is clear that *-j-* is the plural morpheme, *-n-* the genitive, and *-a* the partitive. The stem remains constant throughout the paradigm, except for the small amount of allomorphy in the genitive singular. The Estonian paradigms are much less transparent. The separate partitive and plural morphemes in Finnish (*-j-a*) have been fused in Estonian as *-e*, for instance. It is known that the Estonian forms are more innovative than the Finnish, having developed out of more agglutinating forms, so Estonian has experienced changes which have not occurred in Finnish, and which have obscured the originally more transparent structure. And it is clear that the changes involved were originally phonological in origin: all original word-final segments, for instance, have been lost in Estonian.

Phonological change is crucial: fusional forms develop in the first place out of the phonological fusing of agglutinating structures—'fusional structures depend diachronically upon agglutinating ones' (Dahl 2004: 184)—and are mature phenomena which require long (p. 200) periods of time to be completed. The more dramatic the fusion, the longer the process is likely to have been.

Most Athabaskan languages are not only polysynthetic but fusional in the classic sense (see, e.g. Berez and Gries 2010): they have 'notoriously complex fusional morphology' (Poulson 2011). Chiricahua Apache is of this highly complex 'polysynthetic fusional' type, according to Aikhenvald (2007: 8), who cites Hoijer's (1945a: 14) example:

(3) hà-ń-ʔàh
out.of-2SUBJ+IMPF-handle.a.round.object+IMPF
'you take a round object (out of enclosed space)' [3]

3

Here /hà-/ is 'out of an enclosed space'; /-ń-/ is the disjunct imperfective second person subject pronoun; and /-ʔà:h/ is the momentaneous imperfective stem 'to handle a round object', where 'imperfective' and 'second person subject' are combined in one morph; as

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are also ‘handle a round object’ and ‘imperfective’. Hoijer cites many other such examples.

There are also countless instances of Fortescue-type fusion in Chiricahua. In /jà:jíńʔáõ/ ‘she gave it to him’, for instance (Hoijer, 1945a: 14), /jà:-/ is /ji/ ‘third person subject+third person object’ portmanteaued with /à:/ ‘to’.

From the sociolinguistic–typological perspective, we can suggest that processes which lead to an increase in fusional structures are such that they must be allowed to run for a long time, uninterrupted by periods of significant adult language contact, in order to result in the type of outcome we are discussing. Isolation and stability would again both seem to be crucial. High levels of contact would lead to more, not less, transparent forms; and only stable situations will permit the undisturbed development of a high-level fusional morphology in a language over the long periods of time required.

10.9 Growth in Irregularity

The apogee of linguistic complexity is reached by languages that are highly polysynthetic, highly fusional, and highly irregular. These are the languages which defy the Economy Principle and the Transparency Principle to the greatest extent, and which post-threshold learners have most difficulty learning. Regularity and transparency are more easily coped with than irregularity and opacity. Highly irregular and non-transparent features are harder to learn and remember—they are, as Carstairs-McCarthy says, ‘cognitive irritants’ (2010: 120). Arbitrariness in grammar produces material which has to be learned without any generalizations being possible. As Jespersen (1922: 332) says, ‘if Gothic, Latin and Greek burden the memory by the number of their flexional endings, they do so even more by the many irregularities in the formation of these endings’. Grammatical irregularity—‘lexical idiosyncrasy’ (Dahl 2004: 112)—occurs when a rule applies to lexical items in an unpredictable way (and includes also, according to Dahl, the presence of different inflectional classes). (p. 201) Dahl cites irregularity, too, as a classical example of a mature phenomenon: irregularity takes many generations of uninterrupted linguistic change to develop.

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10.10 The Social Matrix

All this suggests that there is a natural tendency for languages to gradually get more complex over time. Over the centuries, they tend to add layer upon layer of complexity, as we have briefly seen illustrated here in terms of the stock of bound morphemes, morphemes per word, fusion, and irregularity. Linguistic complexification seems in an important sense to be more 'normal' than simplification. It is what quite naturally happens if languages are 'left alone'. In small cohesive communities with little or no contact, there is a tendency, although probably there is no inevitability about it, for languages to accrue more and more complexity as a result of 'connatural changes' (Bailey 1982), such as the growth of morphology and fusion.

There is, moreover, no such thing as a morphological cycle as such. There is simply a morphological track of gradual complexification which languages may travel along, but do not have to take. Along this track, languages can move in such a way that isolating languages become agglutinative, and agglutinative languages become synthetic-fusional or polysynthetic. This can continue until, perhaps, some point of maximum complexity is reached in the form of fusional polysynthetic languages. But a language can very rapidly become more analytic again *at any point along this track* if it is subject to high contact conditions of the right sort and to the right degree—such as the 'catastrophe' hypothesized by Fortescue to have afflicted Aleut.

It is clear that polysynthesis is, in Östen Dahl's extremely insightful words, a very mature phenomenon. Some features of some languages come into being as a result of linguistic changes which take very long periods of time. Mature linguistic phenomena are linguistic features which imply a lengthy period of historical development—they 'presuppose a non-trivial prehistory' (2004: 2). According to Dahl, 'linguistic phenomena have life cycles in the sense that they pass through a number of successive stages, during which they "mature", that is, *acquire properties that would not otherwise be possible*' (2004: 2, my italics).

But how long is 'long'? In illustrations of the putative *morphological cycle* (Hodge 1970; Bynon 1977: 265; Dixon 1997), as just mentioned, the cycle is often portrayed as a clock face, with purely isolating languages like Classical Chinese at, say, 4 o'clock, agglutinating at 8, and fusional at 12. According to Dixon (1997), Proto-Finno-Ugric was perhaps at about 9 o'clock, while the modern languages in the family have moved to 10 or 11 o'clock, with Estonian clearly having moved further than Finnish. Now, if Proto-Finnic was at 9 o'clock and modern Estonian is, say, at 11 o'clock, then we can obtain a chronological estimate of how long this kind of change takes. Proto-Finno-Ugric dates back to about 4000 BC (Campbell 1997b), that is, 6,000 years ago. Even if modern Estonian has been at 11 o'clock for as long as 1,000 years, this would mean it took 5,000 years to 'travel' from 9 to 11, and arithmetic indicates that for a language to transform from fully isolating to fully fusional (i.e. from 4 o'clock to 12) would, if the same trajectory speed was maintained, take 20,000 years. I claim absolutely no reality whatsoever for this

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figure. It simply suggests that the development of mature phenomena can require very long periods of time indeed. Mature phenomena need hundreds, thousands, (p. 202) or even tens of thousands of years to take full effect. And, even from this brief discussion, I believe that it is clear that polysynthesis is one such mature phenomenon.

A discussion of millennia-long periods also makes it clear that mature phenomena depend for their development on lengthy periods with relatively little interruption or 'punctuation' (Dixon 1997) of the type that is due to significant periods of social instability and adult language contact. In large, high-contact, unstable communities with loose social networks, such lengthy periods of time are less likely to be available. Mature phenomena are also very vulnerable to being lost if high-contact situations develop: according to Dahl (2004: 207), mature phenomena 'are highly prone to being filtered out in suboptimal language acquisition', because 'there is a significant overlap' between them and 'those linguistic features which are most recalcitrant in second language learning' (2004: 286). The maintenance of existing complexity depends on low levels of adult language contact, and high levels of social stability. Where higher levels of contact or instability occur, as was very probable in the case of Aleut, relatively lower degrees of complexity may be observed.

This suggests that in human prehistory, when such contact-linked 'catastrophes' would have been less common, polysynthetic languages may have been more common amongst the world's languages than they are today. Human languages were spoken during the Palaeolithic, Mesolithic, and Neolithic periods for rather more than 95 per cent of their history (Trudgill forthcoming). Hassan (1981) reckons that the human population of the entire world 70,000 years ago was 1,200,000—about the same as modern Prague's. Such estimates are obviously subject to large margins of error, but this thought experiment does make the point that in the Middle Palaeolithic there would have been a much lower degree of intergroup contact than today, and therefore a much lower degree of language contact. And even in the Mesolithic period, population density was still extremely low: Mallory (2013), for instance, reports research indicating that the population of Ireland in the Mesolithic was about 3,000, or about 25 square kilometres per person. There would have been very little contact to interrupt linguistic complexity development.

Informational homogeneity, too, would have been the norm, favouring the development of morphological categories.

The other side of this coin is that, today, there is very little of the isolation and stability left which favoured complexity development; and there are fewer and fewer small communities with large amounts of shared information. Nearly all the polysynthetic languages spoken in the world today are endangered. Once polysynthetic languages are gone, there is no likelihood, under current demographic and anthropological conditions, that they will ever return.

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Notes:

(1) No language is currently used more by non-native speakers than English, but the mainstream native varieties of English—in the British Isles, for instance—are currently showing no serious signs of large-scale, ongoing, new simplification.

(2) Afrikaans is a actually a *creoloid*.

(3) /à/ etc. signifies low tone, /á/ etc. high tone.

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Phraseology and Polysynthesis

Sally Rice

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Abstract and Keywords

Polysynthetic languages are overwhelmingly oral. Oral languages are typically associated with small speaker groups describable as local and inward-oriented, a sociolinguistic context which is claimed to have structural effects on the language. The recent corpus revolution in linguistics has caused a renewed focus on spoken varieties of languages, even languages with thick and deep written records. Corpus analyses come with a concomitant realization that languages may be less productive and compositional than we thought, with speakers opting for a smallish set of lexically frozen and semantically opaque (though pragmatically rich) collocations. In this contribution, it is shown that collocations from spoken varieties of English can be characterized in terms similar to those classically used to describe polysynthetic languages: holophrastic, highly compressed, and idiomatic. At the same time, the compressed structures we associate with polysynthetic languages are considered as artefacts of their speakers' socio-cultural contexts, contexts which revolve around subjective, face-to-face conversation.

Keywords: collocation, corpus linguistics, esoterogeny, holophrasis, oralcy, phraseology, speech community, usage, Athapaskan (Dene)

> There are times when the language has me stopped … I love the language, but have to learn it blindly … after all Nav[ajo] is a hell of a language what with length, pitch, accent, verbs with a dozen principal parts … and all the rest. The FF [Franciscan Fathers'] vocabulary is very helpful but the grammar is nil. So I collect necessary phrases and learn them, even use them, and weeks after it dawns on me what they mean analytically. Well, perhaps that is the way to learn a language properly.
>
> (Gladys Reichard in a letter to Elsie Clews Parsons (cited in Lamphere 1992: 93))

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11.1 Introduction

WHILE there are many varieties of linguistic polysynthesis (including the variety exemplified by Navajo and its Athapaskan sisters alluded to in the quote above), as well as many different structural criteria for considering a language as polysynthetic or not (cf. Mithun 1983; Fortescue 1994; Baker 1996; Mahieu and Tersis 2000; Evans and Sasse 2002), there are types of expressions that all languages share that can make each look polysynthetic, up to a point. These expressions involve what corpus linguists might call *collocations* or one of its many synonym terms, *lexical bundles, prefabs, N-grams*, or *multiword units* such as the English examples *have a lot of, take a look at, give up the ghost, pull a fast one*, and *stuff like that* (cf. Alternberg 1998; Wray and Perkins 2000; Gries 2008). Wray and Perkins (2000: 1) have defined any such formulaic utterance as "a sequence, continuous or discontinuous, of words or other meaning elements which is, or appears to be, prefabricated: that is, stored and retrieved whole from memory at the time of use, rather than being subject to generation or analysis by the language grammar". Neither fish nor fowl, neither word nor sentence, such expressions could also be construed under the more old-fashioned rubric, "phraseme". As corpus linguistics and construction-based approaches rehabilitate the phraseme or collocation as a meaningful analytical and psychological starting point, we might reconsider polysynthesism in the light of phraseology and the idea of the contextualized collocation, borne of usage considerations and speech community conventions. In doing so, holophrastic verbs, that pack together event type, argument structure, and other (p. 204) inflectional and derivational material, could profitably be viewed as only a limiting case of collocational compression, one that is only considered extreme because it purports to happen within a grammatical word.

Of course, this is but half the story. Corpus linguistics and cognitive/functional approaches also remind us that a focus on structural form at the expense of the meaning and function of an utterance in context does not advance appreciably our larger understanding of language. In this contribution, illustrated with examples from an Athapaskan language, I suggest that sociocultural practice (e.g. oralcy, expressive need among small, cohesive speaker groups) may play a heretofore underappreciated role in shaping a language—or at least parts of a language—structurally. Thus polysynthesism, or heavy reliance on verb-centred collocation, may be a natural response to interactional exigencies, especially when the language already shows extreme head-marking to begin with and when the speakers comprise a very particular type of speech community—one that is inward-focused or, to use Thurston's (1988) term, *esoterogenous*.

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11.2 Phrasemes and Collocations from a Corpus/Constructional Linguistic Perspective

In a spectacular case of methodological affordances (re)shaping theory, the digital revolution, which has had a profound effect on our ability to record and store corpora of scripted and unscripted samples of a language across a range of speakers and genres, has had an even greater effect on what many linguists take to be primary data. Ready-to-hand natural language samples *in situ* have lowered the tolerance of a new generation of field linguists for elicited (if not introspected), one-off, well-formed, and usually de-contextualized phrases and clauses. For languages with long literary and grammatical traditions, a plethora of new phenomena are emerging in the linguistic literature based on corpus data, while descriptions and analytical treatment of old phenomena are being reappraised. Front and centre has been the consideration of a new beast, the *collocation*, providing a direct challenge to the lexis/syntax divide much in the way that the polysynthetic verb does. This idea of an in-between multi-unit string was famously articulated in a pre-corpus world as a "lexicalized sentence stem" by Pawley and Syder (1983) and Pawley (1985), as an "intonation unit" by Chafe (1988), or as "semi-filled idioms" by Fillmore, Kay, and O'Connor (1988), but it has been amply echoed in the post-corpus world by a burgeoning literature, too vast to do justice to here. Nevertheless, a few studies stand out as careful analyses of frequent, highly conventionalized, utilitarian, and semi-idiomatic expressions in spoken English (cf. Altenberg 1998; Biber 1999; Sinclair 2001; Wray 2002; and Stubbs 2007). Altenberg (1998: 102) reported that over 80 per cent of the words in the corpus he queried form part of recurrent word combinations. Sinclair (2001) investigated "extended lexical units" which might be *collocations* (in which a node word frequently co-occurs with particular individual forms) or *colligations* (in which the node word frequently co-occurs with particular grammatical categories). In their exploration (p. 205) of multi-word sequences in conversation, Biber et al. (1999: 1001) noted that "[a]lthough most lexical bundles do not represent complete structural units, they can be grouped into categories according to their structural correlates." The top three of their fourteen major categories include (i) personal pronoun + lexical verb phrase, (ii) pronoun/noun phrase + forms of *be*, and (iii) verb phrase with active verb, categories which look a lot like the average polysynthetic verb. Some of their conversational English examples are presented in Table 11.1.

According to Biber et al. 1999, many of the items in Table 11.1 feature a personal pronoun subject paired with a stative verb. They serve as "utterance launchers", presenting a subjective stance relative to the information in the following complement clause, or they articulate personal feelings, thoughts, or desires (Biber et al. 1999: 1003). Most striking is that these examples suggest a familiarity between interlocutors, as one would find in face-to-face conversation. This ingredient of intimacy may help explain both the production of the most high-frequency phrasemes in spoken English and the correlation

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of polysynthesism with certain types of speech communities and oral traditions, as discussed in §11.4.

In addition to corpus findings that demonstrate how cohorts of semi-propositional lexical items chunk together in speech—what we might call a syntagmatic finding) there are studies that have explored the degree to which certain lexical items only surface in highly particular inflectional contexts—what we might call a paradigmatic finding. That is, items (and verbs especially) do not seem to enjoy full distributional productivity across an inflectional paradigm. Simply put, one particular inflected form may swamp the others in terms of frequency and take on a highly unpredictable pragmatic meaning. For example, in Table 11.1, we can see that *know* and *think* prefer negative contexts, while *want* and *like* prefer positive contexts. Similarly, Rice and Newman (2005), based on queries of the spoken component of the British National Corpus, found distinct and highly skewed inflectional profiles for a (p. 206) wide range of verbal expressions in English. In more recent work querying the spoken component of the Corpus of Contemporary American English, they found that the ideational verbs *think* and *guess* overwhelmingly prefer the 1SG present tense in spoken English, while the perceptual verbs *see* and *hear* prefer the 2nd person present in an interrogative context. More pertinent to the discussion on holophrases and polysynthesis at the truly propositional level, English ideational constructions framed around an impersonal subject and a pronominal object, such as *it strikes PRO* , *it hit PRO* , *it occurs to PRO* , *it seems to PRO* , overwhelmingly "inflect" for 1SG objects (Rice and Newman 2014). Clearly, the expression of ideation is skewed to the first person, as is conversation in general.

Table 11.1 Some of the most frequent 4-, 5-, and 6-grams or lexical bundles found in the spoken English conversation component of the Longman Spoken & Written Corpus from Biber et al. (1999).

N-grams	***frequency***	***examples***
4	over 100 hits per 1M words	*I don't know what, I don't want to, I was going to*
4	over 40 hits per 1M words	*well I don't know, I don't know how, I don't know if, oh I don't know, I don't think so, I said to him, I would like to, I'm not going to, you know what I, you don't want to, you want me to, you want to go, you don't have to*
5	over 40 hits per 1M words	*I was going to say, you know what I mean*

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5	over 5 hits per 1M words	*I don't know how many, I don't know how you, no I don't think so, and I said to her, and I said to him, I want to go to*
6	over 5 hits per 1M words	*I don't know what it is, I don't know what to do, you want a cup of tea*

Much of the corpus research investigating the lexical chunking and inflectional skewing so prevalent in connected discourse has done so from the perspective of cognitive/construction grammars (cf. Langacker 1987, 1990; Goldberg 1985) or Pattern Grammar (Hunston and Francis 2000). These approaches have two major points in common. First, cognitive/functional theoretical approaches and corpus linguistics are both singing the same song when they claim that routine phraseology is pervasive in language use and it behoves us to determine empirically the distribution, entrenchment, and function of recurrent multi-unit sequences (Gries 2008). In such a bottom-up, exemplar-based, monostratal, emergentist view, paradigms and phrase structure grammars lose their explanatory force and the usage-in-context of individual utterances assumes centre stage descriptively and analytically. Secondly, irregularity is no longer swept under the non-analytical rug. Irregularity might pertain to inflectional skew, such that a lexical item might be attracted to a single agreement and TAM profile as well as a particular set of collocating items. Of course, irregularity might also mean idiomaticity and only partial compositionality. The prefabricated, often unanalysable lexical bundles that recur with high frequency in certain genres and registers mimic the shape and behaviour of typical bona fide polysynthetic verbs, as discussed next.

11.3 The Polysynthetic Verb as a Phraseme (or the Phraseme as a Polysynthetic Verb?)

The take-away message from the previous section's account of the collocation is that it is not just a structural entity, however intriguing morphosyntactically or impossible to define due to its inherent heterogeneity. The collocation or phraseme is a product of usage and thus has prosodic, pragmatic, and distributional properties, in addition to a distinct frequency and inflectional profile. Indeed, many scholars (most notably, Bybee 1985, 2006) have explored the role of frequency in collocational compression, with its concomitant phonological reduction and morphological opacity, an outcome that is easily illustrated by way of the evolution of the English periphrastic future construction shown in (1a–c):

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(1)
a. I am going to
b. I'm gonna
c. [aĩŋənə]

(p. 207) First of all, the fully realized fragment in (1a) has no traditional unit status, either in POS or phrase structure terms. In the grammaticalization literature (e.g. Bybee, Perkins, and Pagliuca 1994), however, it has plenty of status as an evolving phraseme or prefab signalling intentionality and futurity and one likely to (i) prefer 1SG subjects and present forms of the original progressive auxiliary *be* and (ii) tolerate some fusion with the infinitive or complementizer marker *to* and get reliably realized in spoken language as (1b) and even in some textual genres as well. The form in (1c) is an approximation of a common and an even more reduced pronunciation of (1b) prevalent in North American English casual conversation. At this point in its evolution, *aĩŋənə* looks very holophrastic and polysynthetic. Because of the co-existence of forms like *I am going to* and *I'm gonna*, however, and a long literary record matched by an ever-growing set of written and spoken corpora of many varieties of English, a future, perhaps post-apocalyptic, field linguist working only with a fragmented audio record in the absence of speakers might be commended for providing the following hypothetical interlinearization, shown in (2):

(2)
aĩŋənə
ai-ŋən-ə
1SG-FUT-COMPLZ
'I will'

That is, if English were exclusively an oral language and one only had *aĩŋənə* to work with, the analysis in (2) might not seem so strange, give or take the morphological breaks or technical glosses given to the individual "morphemes". Clearly, this analysis could never arrive at the fully reconstructed gloss 'I'm going to' on its own without the co-occurrence in the hypothetical linguist's notebook of forms like *s/he's gonna* or *we're gonna*, both of which are poorly represented in spoken corpora, by the way. These days, linguists of varying theoretical stripes have no difficulty construing the abstract string [be going to] as some sort of functional unit, often called the English catenative future, but exactly what kind of functional unit is this? The less partial and fully inflected realization of this catenative future, *aĩŋənə*, is surely akin to the strings we find permeating polysynthetic languages. The analysis in (2) is only strange because the full power of morphological deconstruction is rarely applied to spoken forms of English without taking into account more conservative and transparent written forms, which we have in abundance from a thick written record. The same cannot be said for most of the world's polysynthetic languages.

Nevertheless, a conceit of analyzability (that is, an assumption of decompositionality) pervades much of twentieth- and twenty-first-century field linguistics, especially in cases in which the linguist is dealing with languages that are highly inflectional structurally and perhaps a little bit fusional, too, as we frequently find around the Pacific Rim (Nichols,

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this volume). In the case of polysynthetic items like those full propositions given below in (3)–(5) from the northern Athapaskan language, Dene Sųłiné (ISO 639-3: chp), the hard-won exploded representations usually end up taking on a life of their own; that is, the analyses become the starting point for hypotheses about templatic vs. paradigmatic morphology, the identification of affixal zones, or even what it means to be polysynthetic in the first place.

(p. 208)

(3)
begháyéniłtį (Li 1946: 419)
be-ghá-yé-n-i-ł-tį
3SG-for-3SG.OBJ-MOMENTANEOUS-1SG.SUBJ-CLSF-handle.animate.object
'I have given him/her to him/her'

(4)
nįlostón (author's fieldnotes)
< nį-la-hu-s-tón
2SG-hand-OPTATIVE-1SG.SUBJ-clasp
'let me shake your hand'

(5)
hųlzé (Li 1946: 414)
< he-ghwa-n-l-zé
INCEPTIVE-OPTATIVE-2SG.SUBJ-CLSF-hunt/go
'you will start to hunt'

The polysynthetic proposition in (3) displays typical many-morphemes-into-one-word compression, with no fusion, so very clear parse points and no obvious portmanteau morphemes. The example in (4) shows a bit of fusion (of an incorporated noun and a TAM prefix!) along with the compression, while the verb word in (5) apparently shoehorns four abstract inflectional morphemes into a single pre-stem syllable. The exploded representations on each of the second lines in (3)–(5) rarely reflect the metalinguistic awareness of speakers (cf. Collins 1998; Rice, Libben, and Derwing 2002), but they are highly valued by fellow linguists trying to come to terms with what the underlying (sic) structural patterns of the language are. Even rarer than morphological transparency to speakers is any discussion about when and how the remnant of an historic polysynthetic amalgamation process has become a synchronic lexicalized construction—that is, a holistic phraseme memorized and left unanalysed by speakers.

The central concern is how we regard the italicized utterances and analyses in (2) versus those in (3)–(5). More to the point, if we take (2) to represent analytical overkill, while taking (3)–(5) to reflect insightful morphological interpretation, then we are being hypocritical. In all four cases, we are effectively starting with a spoken utterance and applying what we've deduced from detailed comparison and contrast with other extant forms. On the other hand, if we treat all four cases, (2)–(5), the same way, then we might

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need to admit that English can look awfully polysynthetic, at least in its spoken vernacular—a conclusion that the largely Anglocentric corpus world cannot really make on its own due to its general focus on more analytical languages that do in fact have long written traditions. However, the fact that we're comparing spoken forms to begin with that all share a great deal of bundling of argument and TAM information with the verb stem, is precisely the point. Polysynthesis, as will be discussed in Section 11.4, is likely a reflex of a particular "esoteric" form of social organization, one that encompasses oralcy among other attributes. Under conditions of extreme intimacy and oralcy, even English starts to seem highly synthetic.

Unfortunately, as Collins (1998: 263) has suggested, "an academic concern with systematic regularity leads to a neglect of linguistic practice, its historical situation, and its sociocultural implications". Such a situation values the structural abstraction and desire for completeness (p. 209) of the paradigm over the interactional and the human. What *is* the linguistic obsession with polysynthesis except for an opportunity to demonstrate an ability to crack the code of hyper-complex and likely fossilized verb conjugation? One such abstracted paradigm is given in Table 11.2 for a very common Dene Sųłiné verb, 'lie down/sleep' (the two shaded forms with asterisks are singled out and addressed below).

Athapaskan verbs feature the stem in right-most position, preceded by—potentially—a large number of prefixes. We'll ignore the stem suppletion we find in the paradigms both within aspectual columns (thus, the person and number-driven stem variation) and across columns (the aspect-driven stem variation). The pre-stem prefixes can mark TAM, agreement, voice and valency, and some other inflectional and derivational categories of sometimes indeterminate semantics and often variable order within the verb word (cf. K. Rice 2000 for a consummate treatment of Athapaskan verb morphology). A full account is both beyond the scope of this entry and at odds with the ethos of the position being considered here that polysynthesism is an analytical artifact of a focus on form to the exclusion of usage.

However, to better appreciate the claim that some of the exploded representations in Table 11.2 are as fanciful to speakers as the exploded representation given in (2) for English *aĩŋənə*, Table 11.3 gives a very schematic rendering of the prefixes and their positioning in an idealized Dene Sųłiné verb word. The specific association of certain prefixes with these positions for the word in (3) and the word with the single asterisk in Table 11.2 are also included. It should be noted that each Athapaskan language can support its own version of such a template, with unique numbers and positions of prefixes.

Returning to Table 11.2, note the impressive amount of phonological reduction and morphological opacity. While we can certainly imagine the ancient phonological processes such as assimilation, deletion, and lenition that may have given rise to the "citation" forms in the table, they are unimaginable and quite beside-the-point to speakers, whose interests tend to lie in the lexical, the idiomatic, and the phrasal (in the phraseme sense).

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The patience with which speakers provided the forms in Table 11.2, to say nothing of the extensive conjugation sets documented in Young and Morgan (1987) for Navajo, would have come at a huge cost. For all the hours needed to achieve thoroughness of the recalcitrant polysynthetic verb paradigm, linguists would have lost an opportunity to collect textual or conversational data that would have given us frequency and distributional information (along the lines of Table 11.1), (p. 210) that would have contributed to the documentation of inter-speaker variability, to say nothing of helping to enrich the lexical record and providing markers of subjectivity and stance. As a final aside, in my corpus of over 75 Dene Sųłiné stories (consisting of over 50,000 word tokens with nearly 10,000 unique word types), I found only two instances of one of the forms in Table 11.2 (the one with the double asterisks), both of which were *nuhtés* 'you two/all sleep', each in a different story in the context of individuals having to do something so that 'you can sleep'. Note that Li 1946 reports nearly the same form for the three aspectualized examples of the 2DU/PL form. All three share the same initial syllable, *nuh-*, which is left unanalyzed in the IMPERFECTIVE, but which receives two distinct morphological analyses in the PERFECTIVE and the OPTATIVE (i.e. <né- θɛ- uh- and nɛ- ɣwa- uh- , respectively, as shown in Table 11.2). This level of abstraction in which presumably three separate underlying representations are proposed for the very same syllable borders on the absurd. It is an analysis that advances an ideological adherence to morphological analysability at the expense of plausibility.

Table 11.2 A partial Dene Sųłiné conjugation paradigm for 'lie down/sleep' from Li (1946: 413).

	Imperfective	**Perfective**	**Optative**
1SG	*nɛstéih*	*nitį < nɛ-θɛ-i-tį*	*nustέ < nɛ-ɣwa-s-tέ*
2SG	*nįtéih < nɛ-n-téih*	*nįtį < nɛ-θɛ-n-tį*	*nųtέ < nɛ-ɣwa-n-tέ*
3SG	*nɛtéih*	*nɛðtį*	*nutέ < nɛ-ɣwa-tέ*
1DU/ PL	*nítés < nɛ-í-d-tés **	*nɛθítɛz*	*nútés < nɛ-ɣwa-í-d-tés*
2DU/ PL	*nuhtés ***	*nuhtɛz < né-θɛ-uh-tį*	*nuhtés < nɛ-ɣwa-uh-tés*
3DU/ PL	*hɛnɛtés*	*hɛnéðtez*	*hɛnuhtés*

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Table 11.3 A templatic (Li 1946: 410) and zonal (after Kari 1989) rendering of the Dene Sųłiné verb schematically, illustrated with analyses of two specific examples, (3) and *, cited earlier.

disjunct prefixes (lexical)							***conjunct prefixes (grammatical)***				
	PP	adv/dir	iterative	incorp N	3 pro subj	pro obj	mode	aspect	1/2 pro subj	voice/ valency “classifier”	verb stem
	1	2	3	4	5	6	7	8	9	10	
(3)	be-ghá-					ye-	n-		i-	ł-	tį
*							nɛ-		í-	d-	tɛ́s

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Let us recap the argument so far. Polysynthesism represents a language type in which major inflectional (and some derivational) categories like case, agreement (person/number), tense/aspect/mode are obligatorily morphologized into the verb word, hence polysynthetic languages challenge the analytical boundary that structural linguistics has tried to maintain between lexis and syntax. Across the world's languages, these inflectional categories may be expressed affixally, but more often than not they are expressed in separate words (i.e. through pronouns, adpositions, auxiliaries, and the like). In polysynthetic languages, these categories mainly surface as complexes of affixes attached to the verbal head. In both the analytic and synthetic cases, we could step back and see each typological pattern as involving collocation, of words in the analytic case and of morphemes in the synthetic case. For the latter, linguists frequently produce extensive conjugation sets—an off-line processing activity that bears little resemblance to actual language usage—which, if necessary, may need to be complemented by morpho-phonological rules when the morphemes don't quite line up right. By contrast, corpus studies and a host of post-structural theoretical frameworks are more concerned with the meaning and function of naturally occurring units of language, which may or may not conform to traditional lexical, phrasal, or clausal units. Working primarily with analytical languages, corpus linguists conclude that the building block of language is the lexical bundle or prefab, a recurring multi-unit sequence or chunk of language that is (p. 211) more idiomatic than compositional. They draw these conclusions because they have examined transcripts of connected discourse that contain many millions (if not billions) of words. That is, they have looked particularly at spoken forms of language and have concluded that highly idiomatic formulaic strings (not individual morphemes or words) make up the seeds of spoken expression.

Paradoxically, while cognitive and constructionally minded corpus linguists are abandoning written forms of language for spoken interaction, ostensibly to get at more essential and authentic phenomena, field linguists working on polysynthetic languages have had to rely on a written medium (their own field notes and databases) and a non-interactional activity (verb conjugation) to make the polysynthetic case. What if we were to return to the interactional milieu in which we typically find polysynthetic languages being used in the first place? In the case of a language like English, we know that face-to-face interaction produces highly recurrent chunks of multiword units that often run together morphologically and prosodically and are often only interpretable pragmatically. Thus, a multiword phrase that might be isolating or only mildly inflectional in written forms of a language can become quite compressed and fusional in rapid speech. Might we not reassess this synthesizing tendency that inheres in speech and hypothesize that similar pressures must have operated, and indeed keep operating, in the speech communities of languages deemed polysynthetic?

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11.4 Polysynthesis as a Reflex of Usage Conditions, Especially Esoterogeny

Polysynthetic languages are typically spoken in particular kinds of speech communities. These communities tend to manifest the same types of social organization that Thurston (1988) labelled as *esoterogenous* (inward-oriented), thus producing languages that are more esoteric (opaque, irregular, formulaic) than exoteric (analytical, learnable). This social organization overlaps extensively with the typical hunter/gatherer society: a smallish band of individuals related by blood or marriage, where interaction is oral, face-to-face, and among those regarded as co-equals. In contrast, more *exoterogenous* or outward-oriented speech communities tend to develop more exoteric languages of the *lingua franca* type. This idea has been taken up by other linguists, such as Grace (1997) and Crowley (2000), working primarily in Austronesian-speaking communities—languages which are not considered polysynthetic by any means. Nevertheless, the impressive sociocultural variation that one finds across the Austronesian world is mirrored in structural tendencies within the family to either the more exoteric or more esoteric end of the continuum. Wray and Grace (2007: 549) put it more bluntly: “languages realize their structures differently according to socio-cultural factors”. For speakers of esoteric languages they state, “much of what needs to be said can be said elliptically and formulaically, with huge reliance on shared knowledge, pragmatics, and common practice. The minimal level of compositionality ensures that, nevertheless, novel messages can be produced and understood, but the flexibility of the system to support such activity may be somewhat limited, reflecting customary need” (554).

Crowley (2000) associated exoterogeny with linguistic simplicity and sociocultural complexity, and esoterogeny with linguistic complexity and sociocultural simplicity. (p. 212) Polysynthetic languages lack conservativizing pressures like writing, that might put a brake on fusional tendencies, or stratified societies, that recognize a standard variant, thus putting a brake on idiolectal variation. He also saw esoterogeny as a gradual process in which

> diversification proceeds in the direction of greater linguistic complexity. According to this scenario, a language that is used primarily for intragroup communication, and which sets a group off from surrounding groups, becomes increasingly complex as it is transmitted from generation to generation. Phonological efficiency is developed at the expense of morphological transparency, which means that there is a greater number of portmanteau morphemes, and a greater amount of allomorphic variation. Such languages typically develop suppletive morphological marking, and the lexicon makes an increasingly fine set of semantic distinctions. Originally optionally marked categories become grammaticalised. Outsiders

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> typically find esoteric languages difficult to learn, which means that they function even more efficiently as markers of identity (177).

Similarly, Dorian (2010) lamented the language-centred rather than the user-centred tradition in linguistics that has overlooked "personal pattern variation" or what seems like an extreme amount of idiosyncratic phonological, morphological, lexical, and syntactic variation (and tolerance for that variation) in very small, very homogeneous, speech communities. In such communities, where interaction is "face-to-face, socioeconomically highly homogenous, with the local form of the minority language excluded from written use and with weak or absent extra-community norms" (309), personal idiolects may cross-cut familial and generational lines. Over a half century earlier, Reichard (1945) made the same general observation about the amount of individual variation among the Navajo. The Dene Sųłiné examples in (6), each with the general meaning 's/he ate because s/he was hungry', illustrate this last point.

(6)

a.	ber-ba-he-ðer	hoťa	ši-ɣe-tį
	meat-for-IMPF.3SG-crave	CONJ	food-PERF.3SG-eat
b.	ber-ba-θer	ťa	še-tį
	meat-for-crave	CONJ	food.PERF.3SG-eat
c.	ber-ba-hai-ðer	ʔa	še-tį
	meat-for-IMPF.3SG-crave	CONJ	food.PERF.3SG-eat

'S/he ate because s/he was hungry'

While I originally collected each version from a single speaker from three different Dene Sųłiné communities, I have since discovered that all three versions are attested in Cold Lake, Alberta, the linguistically conservative community in which I principally conduct fieldwork. I have also found similar *intra*-speaker variation for verb inflection when scrutinizing multiple versions of the same story told by the same speaker. Interestingly, communicative success does not seem to be hindered by this high degree of intra- and inter-speaker variation, nor do deeply entrenched collocational exemplars hinder variability.

Finally, along with morphosyntactic opacity, esoteric languages also feature a lot of light predicates and figurativity, to be expected if the lexicon is small and recombination or conversion are the only available word formation strategies (Rice 2012). Table 11.4 summarizes (p. 213) some of the properties associated with the two sociocultural styles, exoterogeny and esoterogeny, as originally proposed by Thurston and elaborated on by others.

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Table 11.4 Contrasting tendencies of exoteric and esoteric languages (after Thurston 1988, Grace 1997, Crowley 2000, and Wray and Grace 2007).

DOMAIN	***exoteric languages***	***esoteric languages***
SOCIETY	outsider-oriented	inward-focused
	open & stratified social group	closed & coherent social group
	high degree of bilingualism	low degree of bilingualism
MODALITIES	some literacy; multiple registers	oralcy only; few registers, but much variation
LEXIS	regular borrowing	little to no borrowing
	large lexicon	over-reliance on the endolexicon
MORPHOSYNTAX	analytic	synthetic
	regular	suppletive
SEMANTICS	transparent, literal	opaque, figurative, idiomatic
	isomorphic form-meaning pairings	allomorphic and ambiguous pairings
L2 ACQUISITION	easy for adults to learn; many L2 speakers	difficult for adults to learn; few L2 speakers
	dictionary/grammar model best	phrasebook model best

11.5 A Phrasebook Model for Polysynthetic L2 Pedagogy

In this brief examination of polysynthesis from a usage-based, phraseological perspective, two strands of research have been juxtaposed in hopes of enhancing our general understanding of polysynthesism in languages: (i) corpus findings that suggest just how

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different speech is from written forms of language, especially findings which show how much speakers rely on a small set of prefabricated chunks of highly subjectivized and compressed utterances in their everyday interaction; and (ii) sociolinguistic findings about esoterogeny and hyper-variation in certain small speech communities where the fact that all interlocutors are also intimates only exacerbates the already high degree of collocational synthesis associated with casual speech. A number of other characteristics have thus been proposed to stir into the pot of "what makes a language polysynthetic?" These properties are by no means meant to be criterial, but they are probably unavoidably correlated with the types of holophrastic utterances we find in speech communities associated with languages classified as polysynthetic. Along with reflecting a high degree of morphosyntactic compression in the (p. 214) verb word, parataxis rather than subordination (Mithun 1984a), and little to no embedding generally, polysynthetic utterances are also highly conventionalized and context-specific, as well as often highly variable. For the most part, such utterances are rather idiomatic, opaque, and non-compositional to speakers, being the product of heavy recycling of a smallish stem inventory. The forms used are largely non-paradigmatic or, rather, particular inflected forms of a "verb" account for most of the distributional frequency of a purported conjugation set. Given the reality of these lexical chunking and inflectional skewing tendencies in speech and (oral) polysynthetic languages, and the fact that so many polysynthetic languages are endangered, would it not be prudent to rehabilitate the idea of the phrasebook as a pedagogical tool? By memorizing and learning to credibly pronounce practical phrases for particular contexts, heritage learners (and linguists) could slowly build up their interactional repertoire and leave the analysis and decomposition for later. Returning to Reichard's quote above, "[t]he … vocabulary is very helpful but the grammar is *nil*. So I collect necessary phrases & learn them, even *use* them, & weeks after it dawns on me what they mean analytically. Well, perhaps that is the way to learn a language properly." Perhaps it is. It is certainly how children manage to do it, whatever the structural properties of their L1. Moreover, the mainstream (largely analytic) L2 pedagogical world is increasingly coming to see this same collocational light (Howarth 1998).

Abbreviations

CLSF
classifier (a pre-stem element in the verb used to mark voice/valency in Athapaskan.)
COMPLZ
complementizer
CONJ
conjunction
FUT
future

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IMPF
imperfective
L1
first language
L2
second language
PERF
perfective
TAM
tense/aspect/mode

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Polysynthesis in the Arctic/Sub-Arctic

Michael Fortescue

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Abstract and Keywords

The North American and north-eastern Siberian Arctic and Sub-Arctic contain a large contiguous area of highly polysynthetic languages belonging to three language families, Eskimo-Aleut, Chukotko-Kamchatkan, and Na-Dene. These contain some of the most extreme and yet diverse polysynthetic languages in the world; between them they cover three of the main sub-types of polysynthesis, respectively the suffixing-only, the noun-incorporating, and the templatic type. There has been contact influence between all three (especially between Eskimo and Chukotian), but they do not form a canonical language area as regards the diffusion of polysynthesis. The polysynthetic profile of the principal languages concerned is sketched, as well as those of somewhat less highly polysynthetic Aleut, Itelmen, and Tlingit.

Keywords: Arctic, Eskimo-Aleut, Chukotko-Kamchatkan, Na-Dene, suffixing type, templatic type, incorporating type, language area

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12.1 Overview

POLYSYNTHETIC languages are found throughout a vast contiguous area of tundra and northernmost boreal forest across the North American Arctic and Sub-Arctic and on into eastern Siberia. Here three large language families predominate: Eskimo-Aleut, Na-Dene, and Chukotko-Kamchatkan. Further south within North America there are adjacent polysynthetic families, treated in the separate areal section in Chapter 13. The movement southeast of Na-Dene resulting in contact with Algonquian and other major polysynthetic families of the North American continent was probably relatively late, after AD 500 according to Krauss and Golla (1981: 68), and the Inuit language did not reach Northern Quebec until some time after AD 1200 (Dumond 1977: 141). On the Siberian side of the Bering Strait polysynthetic outliers are more geographically isolated, and Chukotko-Kamchatkan appears to have moved up into the Bering Strait region from the southwest only within the last millenium (cf. Ackerman 1984: 115). By contrast, Eskimo-Aleut has been in Alaska for at least 4,500 years (Dumond 1977: 86), and Na-Dene for at least six or seven thousand—perhaps since Beringian days (Potter 2010: 154–6). The probable genetic link between Na-Dene and Yeniseian languages far to the west within Siberia has attracted much recent interest, and certainly the similar templatic type of polysynthesis displayed by both families is striking (Vajda 2010).

It may be misleading to speak of a canonical language area in the region at all, since the speakers of the three language families concerned have not had much contact with each other until relatively recent pre-historic times, long after their polysynthetic profiles must have developed independently. The historical focus of polysynthesis in the Arctic/Sub-Arctic lies in the interior of Alaska and the languages on either side of the Bering Strait, and there is evidence of linguistic contact between speakers of the three language families, for example in the extensive lexical loans from Chukchi in Siberian Yupik (cf. de Reuse 1994b: 330–409), of which only a few reached the Alaskan mainland, and in the phonological retention of a distinct uvular consonant series in just those Alaskan Athabaskan languages that border Eskimo ones, which all display uvular sounds (cf. Krauss and Golla 1981: 72). Otherwise, there are few borrowings between the three families—see Jetté and Jones (2000: 823–4) for Central Yupik Eskimo loanwords in Koyukon. There are only three certain loanwords going the other way (cf. Jacobson 1984: 688).

(p. 218) Nevertheless, there are a number of areal traits shared by Eskimo-Aleut and Chukotian at least. These include dual number and ergative morphology, typical of all Eskimo and Chukotian languages, though the dual and plural appear to have merged again in Chukchi—neither trait is found in Itelmen (cf. Fortescue 1997). The vowel systems of Alutor and Kerek (and the coastal Koryak dialect between) appear to have been reduced under influence from an Eskimo substrate, while Chukchi has acquired a voiceless /ɬ/ like Eskimo. Also, all Eskimo and Chukotian share a distinction between intransitive ‘have’ and transitive ‘have as’, in Eskimo a matter of affixes, in Chukotian of

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auxiliary verbs. The transitive affixes and auxiliaries are also used in the expression of 'directed emotion (or cognition)', in fact the class of 'emotional roots' in Eskimo (taking certain affixes) is almost exactly matched by the class of such roots in Chukotian (taking certain affixes and auxiliaries). And, most intriguing of all, limited to Yupik and Chukotian, is the secondary use of an applicative affix as an antipassive, namely Yupik *-utə-* and Chukotian prefix *inæ-*. Moreover, both of these have nominalizing correlates, Eskimo *-utə-/-un*, Chukotian *-inæŋ(æ)* 'means/instrument for V-ing'. Aleut, on the other hand, appears to share some unusual traits with adjacent Na-Dene, in particular 'promiscuous' number marking, which may indicate an earlier areal phenomenon (Leer 1991b).

The three families display very different kinds of polysynthesis—as also different patterns of subsistence (apart from the Chukchi who have assimilated to the earlier Eskimo population on the coasts of Chukotka). In fact they cover three major sub-types of polysynthesis, lacking only the (mainly) verb-stem compounding type typical of the Sepik River area of New Guinea (and Chukotian does indeed also display some verb compounding). Thus Eskimo-Aleut, spoken traditionally mainly by coastal marine hunters, is of the purely suffixing scopal (or 'recursive') type, with almost none of its myriad affixes relatable to lexical stems, and each successive affix cumulatively modifying or adding to what precedes it. Na-Dene, spoken traditionally by forest hunters of the interior, is of the prefixing templatic type, and Chukotian, spoken by reindeer herdsmen in the interior of Chukotka as well as coastal dwellers assimilated to an Eskimo way of life, is of the canonical incorporating type, with practically any kind of stem being incorporatable. The phenomenon in the three families is unlikely to reflect a common historical genesis, but they may well all have contributed to the mutual maintenance of morphological complexity throughout the region. There has at all events been no influence from significantly more analytic and flectional languages until the advent of English and Russian respectively.

On Map 12.1 are indicated all the extant languages of the Arctic and Sub-Arctic area discussed in this chapter—all of them (except West Greenlandic) endangered to some degree. Eskimo (sister as a whole to more remote Aleut) is thus traditionally divided into the four extant Yupik languages and a single dialect continuum for the Inuit language. Chukotko-Kamchatkan comprises the four Chukotian languages Chukchi, Koryak, Kerek, and Alutor, plus much more remotely related Itelmen. (Northern) Na-Dene consists of Athabaskan-Eyak (of which Eyak has recently become extinct) and Tlingit; Northern Athabaskan is a patchwork of individual languages (as indicated), with no obvious intermediate sub-divisions.[1] (p. 219)

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Map 12.1 Languages and dialects discussed in the chapter

(p. 220)

12.2 Eskimo-Aleut

12.2.1 Inuit

The Inuit branch of the Eskimo family stretches from the Bering Strait to East Greenland and encompasses a continuum of dialects and sub-dialects reflecting the Thule migrations out of Alaska about a thousand years ago. On Figure 12.1 the dialects are named as in Fortescue et al. (2010). The terms Inupiaq and Inuktitut are commonly used of the Alaskan and Canadian dialect groups respectively, but many dialects have their own preferred names (e.g. Inuvialutun for Sigliq, and Kalaallisut for West Greenlandic). For a summary of dialect differences across the Inuit continuum see Dorais (1990).

There is only minimal mutual understanding today between widely separated varieties but the differences are manifest mainly in the phonology and the lexicon (both stem and affixal). Structurally, however, there is considerable uniformity, as indeed between all forms of Eskimo. All are highly polysynthetic, having perhaps the highest index of morpheme count per word of any languages in the world, but none display canonical noun incorporation. The word consists strictly of an initial lexical base, any number of non-obligatory derivational affixes all suffixed to the stem (or ‘base’) and cumulatively modifying it, and concluding with an inflectional ending, which only a handful of conjunctional and expressive clitics may follow (see 12.2.2 on ‘postinflectional inflection’ however). Derivational affixes (‘postbases’) cover the same categories and behavioural patterns everywhere, though the actual forms within them differ considerably. Altogether, a typical dialect has something in the order of 400 more or less productive affixes, plus a still greater number of inflections (especially in the more conservative western dialects which have maintained their full complement of dual forms). Words with eight or so successive affixes are by no means uncommon.

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Instead of canonical incorporation, these languages display numerous bound verbalizing suffixes (with lexeme-like semantics) that may attach to nominal structures of any degree of complexity. This may be called quasi-incorporation. There is a considerable degree of recursivity, whereby a nominal base may be verbalized, or a verbal one nominalized, then re-nominalized or re-verbalized, etc., several times within a single word. Individual affixes may also affect the transitivity of the whole word. Transitive verbs inflected intransitively generally have a reflexive sense. They may be detransitivized by a 'half-transitive' or antipassive affix (which is sometimes zero), and any nominal object—semantically indefinite (though possibly specific)—is then put in the instrumental case.

There are also special 'postural' and 'emotional' stems requiring certain specific affixes to follow them. Eskimo languages display a great number of demonstrative stems according to vertical elevation, extendedness, and direction along the coast/river as well as proximity, and these too may take particular derivational affixes. Independent pronouns are only used for emphasis, and are not directly related to the bound core argument affixes obligatory in verbal inflections.

Other affixes extend verbal meanings or extend nominal meanings without changing word class (i.e. nominal vs. verbal). Paradigmatic inflection (which is extremely complex) falls outside this recursivity, as does a medial region of 'sentential affixes' for tense, modality, sentential negation, and subjective coloration. These must occur right before the inflection, in fixed order, but are not obligatory and do not form paradigms. The one exception is (p. 221) that certain 'double transitive' affixes like *-niRaR-* 'say that' may occur to their right, forming a higher morphosyntactic level with its own sentential affixes (for a Yupik example see under 12.2.2). Obligatory verbal inflection covers the choice of various subordinate as well as superordinate moods (including an interrogative one), transitive as well as intransitive, with all combinations of subject and object person and number. Nominal inflection covers case, number and—in possessive constructions—possessor. Otherwise the successive accumulation of derivational affixes (including aspectual ones, of which there are many, often combining non-aspectual elements) is guided solely by semantic expressivity.

Other categories typical of polysynthesis displayed by all Eskimo languages are the presence of applicative affixes; the lack of infinitives; morphological negation; adverbial affixes; an 'empty' verb stem (*pi-*); and minimal lexical class distinctions—only noun and verb and non-inflected particles. Copular and existential clauses are expressed morphologically (with affixes *-u-* 'be' and *-qar-* 'have' respectively). But these languages also display some less typical features, such as nominal case and ergativity (both also characterizing Chukotian), and 'double-marking' of the nominal phrase as opposed to the head-marked verbal phrase.[2] The function of adpositions is largely covered by a possessor-marked class of 'relational' noun bases, or else by applicative verbal constructions. From what has been said so far, it should be clear that derived nominal forms can be just as complex as verbal ones, again not a typical polysynthetic trait.

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That the resultant ‘word-sentences’ and ‘word-phrases’ are indeed units is easy to demonstrate on both morphological and phonological grounds since the word must start and finish as has been stated and falls under a unitary prosodic contour that may not be interrupted. In addition, there are complex morphophonemic fusion phenomena at morpheme boundaries. The syntactic unity of the ‘word-sentence’ is somewhat less apparent, since modifiers of quasi-incorporated nominal stems are stranded and marked for case and number (see 12.2.1 for an example). Moreover, causative ‘double transitive’ affixes like *-qqu-* ‘ask to’ introduce their own external object arguments and promote underlying absolutive objects to obliques, and verbalizing affixes may on occasion be attached to multi-word phrases as well as to simple nominal stems.

All these processes are productive and not limited to lexicalizations. This may present problems for dictionaries, since it is not always easy to recognize what is lexicalized, corresponding for example to some unitary item in English or Danish, and what is an *ad hoc* creation. The pattern of word-building for West Greenlandic (as for all dialects) can be expressed in terms of recursive phrase structure rules, as in Fortescue (1984: 314). It is clear that such complex units are not just compounds—there is in fact no canonical compounding of stems at all in these languages.

Besides sentential affixes, verbal affixes can be divided into the following semantic categories: being and becoming; lacking; feeling; having; acquiring; movement to/from/via; acting or seeming like; doing with or providing; judging or saying; wishing or waiting for; causing or requesting; striving after or intending; potentiality; aspect (phasal and frequentative/durative); degree; and manner. These affixes vary in productivity, some being only found on a small, semantically delimited class of base, others being completely free in applicability (like the ‘sentential’ affixes).

(p. 222) A typical example of an Inuit ‘word-sentence’, here from Polar Eskimo (Fortescue 1991: 159), can be seen in (1), where the second *-niR-*, ‘whether’, is used transitively (as a ‘double transitivizer’):

(1)

niRi-jama-niR-hiuR-hama-ɣalaaR-niR-aa
eat-want.to-NOM.ER-experience-PFV-otherwise-ask.if-3s/3s.IND
‘He asked him if he (otherwise) had suffered hunger.’

Differences between the Inuit dialects relevant to polysynthesis are small, but a few can be pointed out. The North Slope dialect of Alaska has innovated an obligatory paradigmatic tense distinction, namely between past (3s) *-žuaq* and non-past *-žuq*, both of participial origin (and with transitive correlates). In (2), taken from an excerpt in Fortescue (1983: 92), can be seen a common aspectual affix *-suu* (with allomorphs *-juu*/*-Ruu*/*-tuu*) specific to this region. It also exemplifies a stranded modifier, in a construction found throughout the Eskimo family. Note that the modifier itself is quite a complex nominal form, based on a verbal base.

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(2)

mapku-liuR-uu-mmi-ut	nalukata-uti-ɣša-nik
walrus.hide-make-habitual-also-3pl.IND	blanket.toss-means.of-FUT-4pl.INS

'They also make the blanket used for tossing.'

Within Canada the dialects of the east contain the maximal number of productive derivational affixes and display more innovations and lexicalized combinations than further west, where English has made widespread inroads. This is especially noticeable in the case of tense, Tarramiut of Arctic Quebec having up to eighteen sentential tense affixes, not all frequent though (Fortescue 1983: 46). The instrumental (also called 'accusative') object construction with intransitive/anti-passivized verbs is also used somewhat more widely than elsewhere in these eastern dialects (e.g. with proper name objects). In Tarramiut, verbal stems if understood from preceding context may sometimes be dropped, leaving what looks like a stem-less affixal base for inflection. The word order is somewhat freer the further west one goes, the original SOV order typical of the family being best preserved in Greenland and Arctic Quebec (giving way to more SVO ordering further west, perhaps under English influence).

West Greenlandic is the only fully developed literary dialect of Eskimo. The written register tends to be more complex morphologically and to display more hierarchical syntax than the everyday spoken language, which displays somewhat more parataxis and use of subordinate moods in main clause function. Polar Eskimo (a relatively late arrival from Arctic Canada) has developed some structural as well as phonological idiosyncrasies that reflect its geographical isolation. It is characterized by a high frequency of affixes of subjective coloration ('dear', 'big', 'bad', etc.) on main clause verbs, these in some instances representing a surer distinction between indicative and subordinate clauses than mood choice itself, participial mood having largely replaced the original indicative. Two of these affixes, verbal *-qi-/-qa-* of dynamic action and nominal *-(ɣ)huaq/-hiaq/-haaq* 'big', have encroached on the inflectional paradigms of verbs to form new, syncopated combinations. The dialect combines with these innovative traits conservative retention of the original dual inflections, largely (p. 223) lost elsewhere in Greenland. In East Greenlandic, divergences from West Greenlandic are more a matter of lexical innovation plus notable phonological developments.

12.2.2 Yupik

The Yupik languages of Alaska and Siberia have developed more complex morphophonological properties than the Inuit branch.[3] This is mainly due to the Yupik 'prosodic shift': Yupik languages are essentially more 'stress timed' than the 'syllable timed' Inuit language(s). However, this has hardly affected the essential structural traits they share with Inuit. There are perhaps somewhat fewer derivational affixes than in the latter, but the proclivity for long word-sentences, with multiple shifts between nominal

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and verbal within one such complex, matches that of the Inuit branch. Miyaoka (2012: 26–33) discusses the distinction between words, bound phrases (clitic vs. non-clitic), and free phrases in Central Alaskan Yupik (CAY), and this applies just as well to Inuit.

An example of a holophrastic word from Central Siberian Yupik (CSY) can be seen in (3), adapted from de Reuse (1994b: 83) for Saint Lawrence Island, which falls within Alaska geopolitically, but not linguistically.

(3)

iɣamsiqajuɣ-vik-umaŋinaR-jaRqaqə-jaR-aRpəsiku*t*
feel.thankful-have.as.object.of.one's.V(ing)-continuously-be.supposed.to-in.vain-2s/1pl.I
'You are supposed to thank us continuously, but …'

The ordering principles for successive affixes are also very similar (if not identical) to those for the Inuit branch. De Reuse's (1994: 95) analysis for Yupik, and Fortescue (1984: 313–14) for West Greenlandic can be directly compared. What de Reuse calls AUX postbases correspond to Fortescue's 'sentential affixes', which must occur in a fixed order just before the inflection. His postbase sub-category 'imputative' ('say that', 'think that') belongs under what in Greenland are called 'double transitive' affixes and in CAY 'compound verbal' postbases.

One further distinction made by de Reuse that suggests an illusory difference between Inuit and Yupik is his category of 'postinflectional postbase', which appears to attach to case- and number- and even possessor-marked nominal bases, as well as to various kinds of lexicalized, often inflected adverbial. There are two main kinds, those of degree/limitation (as in *maavəŋinaq* 'only towards here' from *maavək* 'to here') and those of location/direction. They are actually found in all Inuit dialects as well, but in most treatments are regarded in the first case as marginal extensions and, in the case of the second type, as lexicalized units, the variable inflection fusing with the following element, as in the following CSY example from de Reuse (1994: 171).[4]

(p. 224)

(4)

juɣ-əm	aŋja-ani-t-uq
man-REL	boat-3s.LOC-be-3s.IND

'He is in the man's boat'

The array of mood paradigms in Yupik languages is similar but slightly different from in the Inuit branch, especially as regards the so-called 'contemporative' moods of CAY, which are formed historically of nominalizing affixes plus subject/object inflections more typical of verbs.

Central Siberian Yupik as spoken on the tip of Chukotka is virtually identical with the variety spoken on St. Lawrence Island on the American side of the international date line. There is one trait shared by CSY and the separate Siberian Yupik language Naukan(ski) (NSY), that distinguishes them from Central Alaskan Yupik and Alutiiq on the Alaskan

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side, namely the extensive borrowing of particles (as well as other loan words) from neighbouring Chukchi. Some of these are subordinating conjunctions such as *inqun* 'in order that', others like *qajŋun* 'probably, evidently, indeed' express epistemic modality, and some appear to have replaced the use of semantically equivalent postbases (see de Reuse 1994: 366–409).

Much more deviant was the now extinct Sirenik(ski) language, which maintained a number of very archaic traits alongside extensive influence from Chukchi. It may have represented a third branch of Eskimo, one that never moved across to Alaska (whence CSY and NSY probably moved back west at some stage).

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12.2.3 Aleut

Aleut has undergone a radical reorganization of its inflectional system, equally in its eastern and Atkan dialects, with the original ergative vs. nominative (indefinite) transitive clause distinction being reinterpreted as one between ‘anaphoric’ and ‘non-anaphoric’. The correlates of the transitive inflections of Eskimo are now only used with pronominal reference without overt nominal object, and the number marking of the verb may then reflect either the number of the possessor or of the object itself, so a plural inflection is used when any entity referred to anaphorically in the sentence is plural (Leer’s ‘promiscuous number’). Rather strict SOV order helps distinguish subject from object nominals (both absolutive). Moreover, pronominal objects of the first and second and reflexive third person are free pronouns, not bound forms as in Eskimo. Nevertheless, Aleut has maintained its typical Eskimo-Aleut derivational apparatus and although it has far fewer productive derivational affixes than Eskimo languages—some 175 according to Bergsland (1997: 105)—there are fossilized traces of many more. There is also less allomorphy than that of (especially) the Yupik languages. It can still produce words of considerable complexity, such as that in (5) (idem: 106).

(5)
kuri-za-qaða-naaRi-itu-uðahli-lakaq
smoke-HAB-quit-try.to-want.to-even-1s.NEG.PRES
‘I don’t even want to try to quit smoking’

Successive affixes are cumulative in effect, and the same affix (e.g. habitual/ repetitive *-za-*) may occur more than once in a single word, depending on scope, as in Eskimo. There are verbal (p. 225) denominal, nominal deverbal, denominal nominal, and deverbal verbal affixes, also ‘double transitivizers’, applicatives, and affixes of subjective coloration, also as in Eskimo. However there is no modifier stranding nor ‘postinflectional’ affixes and concomitant inflection/derivation entanglement.

One area where Aleut differs notably from Eskimo is in its auxiliary constructions, which correspond to morphological ones with Eskimo ‘sentential’ affixes of modality and tense. These are built on copular *a-*, among other lexical stems, e.g. *a-Xta-* ‘apparently’, which constitutes the basis of an inferential mood. They are often contracted today, producing what look like new affixes. Details vary between the eastern and Atkan dialects. There is also an impersonal existential use of auxiliary *a-* following a participial form of the main verb—contrast the synthetic Eskimo one under 2.1. Aleut displays obligatory tense paradigms (largely lacking in Eskimo). Thus the present is distinguished from various past tenses, all found in both positive and negative paradigms. Some of these are expressed with auxiliary verbs, but the negative future is derivational. In some moods negation is expressed by an enclitic (*-ulax*).

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Other differences from Eskimo displayed by Aleut include internal-head relative clauses, complex possibilities of clause linking with non-final verb forms, and a synthetic reflexive construction.

12.3 Chukotko-Kamchatkan

12.3.1 Chukotian

The Chukotian languages—that is, Chukchi, Koryak, Alutor, and Kerek (the latter recently reported extinct)—are characterized by very productive incorporation processes, not only of noun objects, but of nouns in other functions, including, less commonly, the subject of intransitive verbs. Indeed, practically any kind of lexical stem can be incorporated, including other verb stems (at least in Chukchi) and both nominal and verbal adjuncts. Incorporation here covers both productive syntactic incorporation and lexical compounding—in the latter case the semantics is more complex/specific than the sum of the parts, thus *qora-nmat-* 'reindeer-kill' is 'slaughter reindeer for food and material', not for instance of a wolf's action (Dunn 1999: 234–5). Comrie (1981: 250) considers incorporation to be less productive today than in the past, prior to heavy influence from Russian. Dunn (1999: 236) disagrees with this verdict and sees it as continuing highly productive among monolingual speakers. He characterizes the use of incorporation as 'when the event is of greater interest than the participants' (idem: 222). In (6) an example from Chukchi illustrates how it can even include Russian loan words (adapted from Dunn1999: 267).

(6)

nə-ra-n-kolqoc-aw-ŋə-tko-qenat=ʔm
HAB-DESID-CAUS-kolxoz-VERB.ER-DESID-ITER-3pl=EMPH
'They wanted to put them (the reindeer herders) into kolxozes (collective farm

The outer layer here (ignoring the emphatic enclitic) is inflectional: *nə- -qenat,* which is the transitive 3pl/3pl form of the habitual TAM category, analysable as a circumfix. The (p. 226) suffixal part (probably the oldest) is preceded by a derivational aspectual suffix *-tko-*. The internal layers are both derivational: desiderative circumfix *ra- -ŋə-* and, within that, causative *-n- -aw-*, here best regarded as a combination of a causative prefix and verbalizing suffix. At the core is the nominal stem *kolxoz*.

There is little difference between the four languages in the nature and extent of the phenomenon—as opposed to distantly related Itelmen, which is far less synthetic. The verbal 'word-sentence' is as clearly delineated as in Eskimo-Aleut, bound together not only by morphophonemic processes at morpheme boundaries but more importantly by bidirectional vowel harmony that applies strictly across the morphological word. If there

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is one ‘dominant’ morpheme in a word in Chukchi all its vowels are dominant, even if otherwise recessive.[5] Very often the word is further bounded by inflectional or derivational circumfixes, nominal (e.g. for ‘comitative’ case) as well as verbal. This strong head-marking tendency is focused on the verb, however, with dependent nominals taking a full range of case endings, spatial and grammatical. The independent form of nouns in the absolutive case is usually longer—suffixed or reduplicated—than when it is incorporated.

Ergativity is fairly superficial, mainly a matter of case marking on nominal arguments, but is also in evidence in the suffixal marking of verb inflections, as opposed to the prefixes. Core arguments (both subject and direct object) are marked by bound pronominal affixes on the verb, and there is a complicated inverse system based on a hierarchy of 1st > 2nd > 3sg > 3pl person, expressed by various affixes. Pronominal possession is analytic, by independent pronouns rather than by affix. There is a clear demarcation between inflection—the outermost morphological layer consisting of the verbal TAM paradigms—and derivation—mainly incorporating but also involving a number of aspectual, valency-changing and subjective colouration affixes close to the stem. There is no intermediate zone of ‘sentential affixes’ as in Eskimo-Aleut. There are a number of deverbal nominal affixes and a few denominal verbal ones, of which some, notably *-u-* ‘eat, catch, take away’, and circumfix *te- -ŋ-* ‘make’, are highly productive. There is a reciprocal suffix, but the reflexive is analytic. In general there are fewer derivational affixes than in Eskimo-Aleut but a similar proliferation of inflectional paradigms.

As an example of both an incorporated adjunct and a case-marked possessor compare (7), from Skorik (1961: 112), which also exemplifies a circumfixed case inflection:

ɣa-mor-ək-tor-orvə-ma
(7) COM-1pl-LOC-new-sledge-COM
‘with our new sledge’

Incorporated adjuncts always stand before their head—external word order is by contrast quite free. Distinct from this is nominal-nominal incorporation, the equivalent of nominal compounding as in *ʔiɣə-nelɣən* ‘wolf hide’. In the following example, also from Skorik (1961: 103), is illustrated the incorporation of an adjunct plus noun in turn incorporated within a verb. This kind of recursion does not extend further to successive changes between verbal and nominal in the manner of Eskimo languages.

(p. 227)

tə-tor-taŋ-pəlwəntə-pojɣə-pela-rkən
(8) 1SG-new-good-metal-lance-leave-1S.IPFV
‘I leave a new good metal lance.’

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When another verb is incorporated (adverbially), the most common head—the second verb—is a verb of motion, as in *ʔire-lqət-* 'gallop off' (i.e. gallop-set off).

There are only two major word classes, verb and noun, adjectives being stative verbs that take a special circumfix *nə- -qin(e)* in absolutive usage. There is another circumfix for derived adverbs. Number marking on both nouns and in finite verbal inflections is obligatory.[6] There are a couple of postpositions taking locative case marking on a preceding noun, and numerous particles, subordinating, coordinating, and expressive. Subordinate clauses may be finite, in subordinate moods with or without a preceding particle, or non-finite, uninflected for subject or object but marked by case endings (locative or comitative) similar to those on nouns. Other verbal categories include applicatives and antipassives, both involved in the inverse system. There are two types of applicative, one simply an intransitive verb with causative circumfix *r- -at-* (or *-aw-*), the other 'transitive-rearranging' in Dunn's terminology, with prefix *ine-* (Dunn 1999: 215).

Quite unlike in Eskimo languages, where morphological derivatives would be used, is the widespread use of auxiliary verb constructions, both intransitive and—more unusually—transitive, as in *ɣemo ləŋ-* 'not know' and its resultative equivalent *ɣemo rətcə-* 'forget'. Here the auxiliaries as independent verbs both mean 'have as' and the preceding element is an adverbial or a noun in the equative case (*-u-/-o-*). Other auxiliaries include *it-* 'be' and *nʔel-* 'become'—there is no morphological copula like in Eskimo. These constructions are also found in one type of stative negative construction with circumfix *a- -ka* (see Dunn 1999: 328). Otherwise negation is usually expressed by particles plus the verb in one or other mood form.

Also unlike Eskimo is possessor raising as in (9), again from Dunn (1999: 228):

(9)

ʔinə=ʔm	pilɣə-lwi-nin=ʔm
wolf=EMPH	throat-cut-3s/3s.AOR=EMPH

'He killed the wolf (cut its throat)'

The major difference between the four languages (other than phonological) concerns their TAM paradigms. Whereas all the languages have paired paradigms according to aspect (perfective vs. imperfective/habitual or neutral vs. progressive), there are differences as regards their realization. For Chukchi, Dunn (1999: 176) breaks these down into two 'stative' paradigms of participial origin, perfect vs. habitual, plus eight 'active' paradigms, non-future or 'aorist', future, intentional and conditional, each in neutral or progressive aspectual variants. Koryak and Kerek have a single present tense with prefix *ku-* where Chukchi and Alutor have distinct habitual imperfective and progressive non-future paradigms.

Derivational affixes are in most cases transparently derived from lexical stems, and may retain a certain degree of independent secondary stress within the verb. This plus the sheer (p. 228) productivity of incorporation supports the case for regarding Chukotian as representing a relatively young form of polysynthesis (Fortescue 2013). There is at all

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events no evidence of earlier fossilized layers of noun incorporation having left their trace, as is the case in Athabaskan. What there is, however, is a category of lexically heavy verbalizing affix of the Eskimoan type, some of which are transparently still related to lexical verbs (e.g. Chukchi in *-ɣili-* ‘look for, hunt for’, corresponding to stem *ɣici-* ‘look for’).

12.3.2 Itelmen

Western Itelmen, the only remaining—and highly endangered—variety of the Kamchatkan branch of the Chukotko-Kamchatkan family, is divergent enough from Chukotian for some scholars (such as A. P. Volodin) to doubt its direct genetic relationship. There has certainly been massive influence from both Koryak and Russian in recent times. The differences are mainly lexical, but also morphological: despite sharing most of its inflectional apparatus with Chukotian it is far less synthetic, completely lacking productive incorporation.[7] It also lacks the ergative alignment of Chukotian—nominative and accusative case are zero-marked as ‘absolutive’. Core arguments are distinguished by a rather rigid SOV order. Otherwise nouns have a full array of case suffixes and an obligatory singular/plural distinction. It can be considered only weakly polysynthetic, displaying bound pronominal forms of all core arguments on the verb but only a handful of derivational affixes. An example of a maximally complex verb-sentence can be seen in (10), from Volodin and Khalojmova (1989: 229).

(10)
t-vil-aɬ-qz-aɬ-kičen
1s-drink-want.to-CONT-FUT-1s.IND
‘I will want to drink.’

Here can be recognized the 1st person singular prefix also found in Chukotian, though the relationship to the suffixed part of the inflection is more complicated. The stem and the derivational affixes have only uncertain correlates in Chukotian.

Other morphological features of the verb that it shares with Chukotian, besides circumfixes and bound pronouns, are affixal antipassives, inverse inflections, analytical negative constructions, and lack of nominal composition. There are also verb-like adjectives and adverbs (with special fixed suffixes), and auxiliary verbs—as *eɬe-s* in *xiq eɬe-s* ‘know’, with the auxiliary related to Chukotian *it-* ‘be’. It would appear to lack applicatives, but in fact what is called by Volodin the ‘indirect object’ conjugation corresponds to this function, expressed in a special paradigm rather than by derivational means. It also has a ‘general subject’ conjugation, a passive-like impersonal construction corresponding to 3pl subject forms in Chukotian, and an unusual ‘possessive’ conjugation, which corresponds to possessor raising in Chukotian (cf. Volodin 1976: 256–61). In general, the organization of its TAM paradigms is along rather different—and simpler—lines than the Chukotian equivalents, with tense (past, present, and future) and aspect (continuous/imperfective or neutral) being expressed (p. 229) by derivational

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affixes preceding the basic intransitive and transitive mood inflections. There are no subordinate moods apart from a no longer much used conditional/subjunctive, but the language displays a wide range of ‘infinitives’ in various functions, mainly subordinate.

12.4 Na-Dene

12.4.1 Northern Athabaskan

All Athabaskan languages are characterized by pronounced head-marking plus a complex templatic organization of the verb, mainly prefixing, with just a handful of suffixes or (clausal) enclitics.[8] Nouns are by contrast very simple (although ‘descriptive’ nominalizations of verb complexes are also common). They are unmarked for case—strict S-oblique-O-V word order helps distinguish the function of free nominals. Nominal composition is limited. Number is only marked on nouns for people (and dogs), but there are distinct singular, dual, and plural forms of certain common verb stems. Only a few of the slots in the verb template beside the stem—and any prefixes associated with it to form a ‘theme’[9]—are filled obligatorily in any one word. These are the bound pronominal slots for subject and/or object, the tense/mode prefixes, and the so-called ‘classifier’ (sometimes Ø) which immediately precedes the stem, originally indicating voice distinctions but today largely lexicalized.

The main difference between the Northern Athabaskan languages treated here and the Apachean and Pacific Coast varieties lies in the additional possibility of incorporating lexical noun stems in this complex. The northern languages are mostly distinguished by phonological developments, but the productivity of incorporation may also vary somewhat from language to language. It is everywhere more limited than in Chukotian. As Rice (1989: 668) puts it for Slave:

> The facts that incorporation of stems is of limited productivity, that whether a particular stem is incorporatable into a particular theme is not predictable, that incorporated stems cannot be directly modified, and that items of different lexical categories are related by incorporation all suggest that stem incorporation is a lexical rather than a syntactic process.

This does not belie the ‘enormous derivational productivity’ of these languages according to Kari (1990: 50), which presents a particular challenge for dictionary-makers.

Incorporates fall into the leftmost zone of prefixes called ‘disjunct’, as opposed to the more inflection-like ‘conjunct’ prefixes closer to the stem. The latter are distinguished by more complex phonological fusion, with processes of epenthesis and metathesis. Incorporates usually (but not always) have full lexical correlates, though they are sometimes simplified in shape. All varieties have a disjunct slot for incorporated

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postpositions, though their objects (unless pronominal) must precede as independent words. Nominal stems referring (p. 230) to inanimate entities as subject as well as direct object can be incorporated into certain verbs, especially the classificatory verbs. Rice gives for Slave a partial list of the kinds of nominal stems that may be incorporated, including words referring to body parts, natural phenomena, food, hunting and cooking equipment, and furniture, but also some verbal stems (in dependent form) referring mostly to noises like shouting or singing. Incorporated nouns can also have an adverbial (including locational) sense, as *da* 'mouth' in *r´ádaderʔį* 'she whispers' (cf. *ráreʔį* 'she hides (s.th.)'). The meaning of a noun may change somewhat when it is incorporated, thus *xee* 'pack', as in *xee rayehʔa* 'I am carrying the full pack (in my arms)', when incorporated does not refer to a specific pack but modifies the verb, as in *raxeeyehʔa* 'I'm packing it back' (a specific kind of carrying).

The details of the verb templates vary in detail from language to language, with some reversals of order. Everywhere discontinuous thematic prefixes belonging with the stem may be interdigitated between disjunct and conjunct affixes—and even bound pronominals are distributed across the template. Probably the most detailed templatic schema in the literature is that for Koyukon in Jetté and Jones (2000: 758f.) with thirty-seven slots, several of which contain only a single prefix, relevant to just a handful of stems. Kari (1990: 40–1) breaks down the conjunct prefixes for Ahtna into a pronominal zone, a qualifier zone, and a conjugation zone. A similar schema for Slave is presented in Rice (2000: 404).[10] The differences between these templates are somewhat less than might be imagined, since the level of detail may be pitched differently in each. Rice also details some further non-scopal differences between the languages.

In (11) a fully inflected Koyukon verb-sentence with incorporated object is illustrated (from Thompson et al. 1983: 259, whose orthography I use). The theme involved here obligatorily require an incorporate and can be schematized as: incorporate + *-'o* 'move incorporate', where the stem, here in its progressive form requiring a *gha-* mode prefix, indicates motion of a compact object, and the 3s subject is, as usual, Ø-marked.

(11)
no-hu̶ghu̶ɬ-gha-'o̶ɬ
ITER-raft-MODE-move.PROG
'He is bringing home a raft'

The same stem but with an incorporated subject argument can be seen in *kk'o'-a̶ɬts'eeyh-yee-'oyh* (around-wind-3s.OBJ.-move.PERAMB) 'the wind is blowing it around', where the theme is now 'incorporate + O + *-'o*' in the sense 'incorporate causes O to move', where 'O' is the pronominal object and the verb stem is in the form for the perambulative aspect, also requiring its particular tense/mode prefix (here fused with the object prefix). Sometimes this kind of construction involves an 'affected' animate subject, as in Slave *bosewehxee* 'I'm sleepy' (lit. 'sleep (*bo-*) overcomes me').

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A postposition with its own pronominal object may also be incorporated by certain themes, as for example Koyukon *yet'olyo* 'she caught up with him', where *ye-* is the object of *-t'o* 'beneath, behind, catching up' and the stem *-yo* is 'go' of a singular animate being, here (p. 231) with momentaneous prefix *l(e)-* required by this string. The construction is the equivalent of an applicative, drawing an oblique argument into the verbal complex. Thompson et al. (1983: 258) further illustrate a construction where an 'appositive' adjective can be incorporated with a schwa postposition and its object in the sense 'postpositional object acts in a condition or form described by the adjective', for example *baggunhlitonh* 'it is dried up' with *ggunh* 'dried', 3s postpositional object *b(a)-* and classificatory location verb *-tonh,* lit. 'it is there in dried condition'.

Rice further discusses incorporation in Slave of possessors along with possessed noun, as in *dekeeshįdeyįge* 'she untied her boots' (subject different from possessor marked by *de-*), vs. *keeshįdeyįge* (subject = possessor), although the more common construction would have the possessed nominal as an external argument. A modifier of an incorporated noun must be oblique, as in (12) from Rice (1989: 662), which also illustrates how an incorporate can be used in the same sentence as its lexical equivalent (of which it is probably a shortened form):

	nį-law'éné	rákee	hé	rí-w'i-rineh?a
(12)	2s-finger	two	with	2s-finger-point
	'You point two fingers.'			

The stem *-'o* in (11) is one of a set of 'classificatory' verbs typical of Athabaskan languages indicating the shape or texture (and also number) of the subject entity located or moving somewhere, or of the object entity being manipulated. In Koyukon these cover, besides compact entities, flat, rigid entities; entities in shallow containers; plural objects; bags or other enclosed entities; open shallow containers; flat, flexible entities; edible entities; burning entities; disorderly, scattered entities; mushy wet entities; and granular or powdery substances. More than one of these may be applied to the same kind of entity according to its condition. An example of the transitive use of these verb stems is given in (13):

	ye-tl'o-ye-ghee-tonh	
(13)	3SG-palm-3SG.OBJ-3SG.SUBJ.PFV-	handle.sticklike.object
	'He gave it (a stick-like or rigid object) to him.'	

Though very similar stems are found across the Athabaskan languages, there are some differences. In Slave and Ahtna, for instance, there is a clear division of the classificatory stems into those referring to controlled or careful action and correlates referring to uncontrolled or careless action, as for example between Slave *yadǫ* 'she drank it' and *yats'e* 'she drank it quickly/gulped it down'. Belonging to a different morphological category are the 'qualifiers' or gender prefixes, also indicative of overall semantic category according to shape etc., but here a matter of prefixes like *ne-* mentioned above

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or *de-* suggesting plant origin. Like true gender systems, these tend to be much more varied than the classificatory verb categories, the *de-* prefix, for example, referring to sticks, trees, bark, cups, baskets, feathers, hair, enclosed fluids, words, songs, units of time, fire, smoke, and stars (Jetté and Jones 2000: 124). Together with the classificatory stems they can nevertheless suggest a type of subject/object rather specifically in a given context, without needing to spell it out with an overt noun argument. Gender of nouns themselves is covert.

(p. 232) There are other verb stems of a very general meaning which become much more specific when preceded, as themes, by (thematic) prefix sequences, as for example Koyukon *-neek* 'move hand, feel'. This is ingredient in themes meaning 'work', 'be active', 'squeeze', 'offer', 'heal', 'check out', 'signal', 'set trap', 'keep tidy', 'shape', 'gather', 'love', and others (Jetté and Jones 2000: 442–54).

All Athabaskan languages contain a large pool of 'derivational strings', as many and as semantically varied as the derivational affixes of Eskimo, but distinguished by their discontinuous nature and by their predominant concern with spatial location and movement. A couple of examples have already been given, but some further examples from Koyukon in Jetté and Jones are (somewhat simplified): *daa#* 'out of (enclosure)'; *do#de* 'all over, scattered'; P+*gho#* 'fetching P, going to P'; *hu̷*+*nee#* 'marrying'; P+*aa#de*+*le* 'sound emanating from P'; *neeɬ*+*tu̷gh#* 'through a portage between lakes'; P+*e#ne* 'attaching (rope) to P'; *hu̷*+*e#ne* 'overcooking'; *tlee*+*do#* 'wrongly, abnormally'; P+*kkaa#* 'removing pants from P'; *neeɬ*+*ts'aa#* 'forking apart'; *de*+*ke#* 'going upstream'; *do#oo*+*ghe*+*de*+*ne* 'sealing a container'; P+*e#k'e* 'restrained by P'; *ke*+*nee#* 'into the snow'; *ho*+*no#de*+*ne* 'looping, walking half a circle'; and P+*t'e#de*+*ee* 'into the fold of P', where 'P' stands for the object of a postposition and '#' follows disjunct prefixes. The majority of such strings are 'aspectual', taking a specific combination of imperfective/perfective prefixes plus a specific stem allomorph.

Every stem has a set of monosyllabic forms, differentiated by vowel changes and/or added syllable-final consonants according to the four tense/modal categories of perfective, imperfective, future, and optative (as also marked by prefix). Stems in turn belong to about twelve 'theme categories' (stative vs. active, +/- control, +/- telicity), and these are each associated with a specific array of aspectual choices. On top of all this there are 'superaspect' strings like the conative, trumping the prefixes selected by more basic strings (Jetté and Jones 2000: 775).

Most of the prefixed elements in verb forms—apart from the incorporates—are etymologically opaque and for the most part phonologically single open syllables, reflecting earlier layers of incorporation. Several of these much reduced morphemes are relatable historically to stems—thus there is a 'qualifier' prefix *n(e)-* referring to roundish and rope-like objects that probably derives from a stem *naan'* 'face' (Jetté and Jones 2000: 460).

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Negation in some languages is by prefix plus suffix (e.g. Koyukon), while in others it is by an independent word (e.g. Slave). A sentence can function as an NP argument to a higher verb, with or without a complementizer particle (there are no subordinate moods). Relative clauses may be either internally or externally headed, usually with a complementizer *-i* (as in Slave) or a corresponding suffix/enclitic (as in Koyukon), one among several nominalizing elements following the stem. The only true tense distinguished is the future—the other tense/mode categories are aspectual and modal, with the imperfective acting as a default present, the perfective as a default past. Slave at least has further periphrastic tenses. Passive as well as reflexive and reciprocal meanings may be produced by a *d(e)-* classifier prefix, and a detransitivizing effect can also be produced by an indefinite or 'areal' direct object prefix—respectively *k'i-* 'something' and *hʉ-* in Koyukon. There is a limited inverse/obviative-like system, expressed by the choice of 3rd person pronominal prefixes when a 3rd person subject of lower animacy acts on a direct object of higher animacy, or one of lower topicality acts on one of higher topicality (usually a human being). Otherwise there is a same-as-subject/different-from-subject 3rd person distinction, much like Eskimo-Aleut 3rd vs. 4th person.

(p. 233)

12.4.2 Tlingit

Like Athabaskan, Tlingit displays templatic verbal morphology, but with the equivalent of the Athabaskan disjunct prefixes appearing as proclitic 'preverbs', notably ones of direction/location. Like derivational strings in Athabaskan, they may have requirements as to the aspectual form of the stem and its choice of prefixes—thus *daak* 'out from the shore' requires either a Ø-aspectual form of the stem or a 'superaspect' like progressive *na-*. Also the pronominal objects and possessors on nouns are proclitic, although 3rd person *a-* fuses with a following vowel and is written at least as a prefix. There is no nominal or verbal composition, nor is there any incorporation of nouns or of postpositions.

In Story and Naish (1973: 349) the template is broken down into: theme prefixes (mainly body parts), followed by inflectional prefixes—successively iterative, continuative, aspectival, distributive, and subject. Thereafter follows the stem immediately preceded by an 'extensor', and, finally, inflectional suffixes. Verb themes are made up of one or more theme prefix and a stem (with its extensor), forming discontinuous 'skeletons', as in Athabaskan.

The continuative prefixes include *na-* 'progressive', *ga/k-* 'ascendent', and *Ga/X-* 'descendent'.[11] They are associated with the four basic 'conjugations' of the stem. The 'extensor' prefixes correspond to Athabaskan 'classifiers', largely concerned with differences of voice and transitivity, but they form a more elaborate four-way system, each with four different prefixes, an A and a B set, sixteen in all. Which prefixes go with which lexical stem is a lexical matter, largely idiosyncratic, though with certain prefixes tending to go with certain types of stem (and particular aspects). The suffixal categories

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are aspectual (‘frequentive’, ‘repetetive’, and ‘habitual’) and, in the final slot, ‘functional’ suffixes covering the ‘decessive’ (a kind of pluperfect), ‘desiderative’ (‘let’s V’), and ‘optative’.

An example of a complex verbal form involving several slots in the template can be seen in (14) from Story and Naish (1973: 358).

(14)

oo-ga-Ga-Xa-Ø-góot	
ITER-CONT-IPFV-1sg-(Ø EXT)-go	
‘I’m going’	

Verb stems form sets of allomorphs, as in Athabaskan, chosen according to conjugation type and derivational affixes in the word, and there are also similar suppletive verbs of movement for singular vs. plural subject. Besides transitive and intransitive stems there are ‘stative’ ones. These have proclitic object pronominals and correspond semantically to the Athabaskan ‘affected subject’ construction with incorporated subject. There are also a small number of classificatory stems (see, for example, Leer 1979: 74 and 84). Negation is analytic rather than morphological. Word order is as in Athabaskan (SOV).

Like neighbouring Haida, Tlingit has a stative/active organization of its pronominal system. The Ø-marked 3rd person subject (as in Athabaskan) is also used for object marking when the subject is 1st or 2nd person, and the distributive prefix refers to the subject of (p. 234) intransitive verbs and to the objects of transitive ones. Like Athabaskan, Tlingit distinguishes a focused—or foregrounded—3rd person from a non-focal one. There is also a proclitic plural marker *has* which may indicate plurality of either subject or object 3rd person pronominals of transitive verbs. The pronominal category called ‘4th person’ by Story and Naish is for an indefinite ‘someone’, not reflexive as in Eskimo-Aleut. The category of ‘marker’ in Story and Naish corresponds to both postpositions and locative enclitics in Athabaskan.

All in all, Tlingit reinforces the picture of Na-Dene as a language family that has settled into long-term structural stability despite typological expectations.[12]

Abbreviations

AOR
aorist
CAUS
causative
COM
comitative
CONT

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continuative
DESID
desiderative
EMPH
emphatic
EXT
extensor
FUT
future
HAB
habitual
IND
indicative
INS
instrumental
IPFV
imperfective
ITER
iterative
LOC
locative
NEG.PRES
negative present
NOM.ER
nominalizer
OBJ
object
PFV
perfective
PL
plural
PROG
progressive
REL
relative
SG
singular
SUBJ
subject
VERB.ER
verbalizer

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Notes:

(1) Recent figures suggest that there are about 12,770 speakers of Chukotko-Kamchatkan remaining (of which only 70 speak Itelmen); 85,700 speakers of Eskimo-Aleut (of which 47,000 are in Greenland and 305 in Russia, and only 155 in all speaking Aleut); and 13,440 speakers of Na-Dene (mostly in Canada, with only 300 speakers of Tlingit left today; see respectively Tsumagari et al. 2007, Krauss 2007, and Krauss 1997).

(2) The (transitive) ergative construction has its historical source in nominalization, hence the close similarity of the possessive marking on nouns and transitive inflections on verbs (not so in Chukotian).

(3) Especially so Alutiiq, which moved southeast into its present territory at a relatively late date (cf. Fortescue et al. 2010: xi). There has been much lexical borrowing (in both directions) between Alutiiq and Aleut.

(4) The equivalent West Greenlandic construction can be seen in *Nuu-p iqqa-a-niip-puq* (Nuuk-REL proximity-3s-be.in-3s.IND) ‘it is in the vicinity of Nuuk’, where *-niit-* is treated as a unitary affix. It combines locative inflection *-ni* with stem *it-* (Yupik *ətə-*). This is a rather late development, since the stem can still stand independently in some dialects.

(5) Dominant /e/, /o/, and /a/, recessive /i/, /u/ and (/*æ/ >) /e/. This original ‘root retraction’ system has been somewhat disrupted in Koryak and the other languages.

(6) Chukchi has lost the dual, preserved—or reformulated—in the other languages.

(7) There are a few relics of simple noun incorporation to be found in the early texts in Worth (1961) however.

(8) I do not discuss here Eyak. Now extinct, it was considerably less polysynthetic than Athabaskan as regards prefixed elements.

(9) The verb theme is not an actual word but an abstract lexical structure before ‘grammatical derivation’ fills out the slots for the inflectional categories of mode, person, transitivity, etc.

(10) Rice (2000: 402–4) provides templates for a number of Athabaskan languages (though she queries the ‘templatic’ view of Athabaskan morphology as such). See Hargus (2007) for a more conservative British Columbian language, Babine-Witsuwit’en.

(11) The second used with preverb *kei* ‘up’, but also having future meaning, and the third occurring with preverb *yei/yaa* ‘down’.

(12) For the strong association otherwise of SOV order with suffixes and case systems and of prefixing with prepositions see Greenberg (1966). For further discussion see Kari (2010).

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Marianne Mithun

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Abstract and Keywords

North America is generally regarded as an area rich in polysynthetic languages. Structures usually associated with the type are indeed pervasive, but the variety they show indicates that neither polysynthesis itself, nor any of the characteristics typically cited, is monolithic or criterial. Each property shows varying degrees of development and robustness, none of which is predictive of any of the others. Nevertheless, a survey of the languages shows that the characteristics do tend to co-occur, and furthermore that particular semantic and structural patterns of development can be seen in major linguistic areas, suggesting that language contact may play a role in shaping the type.

Keywords: North America, linguistic areas, semantic patterns, structural patterns, language contact

NORTH AMERICA is generally known as a hotbed of polysynthesis, an impression not without merit. The continent shows considerable genetic linguistic diversity, with around 275 identified indigenous languages north of Mexico, constituting around 55 genetic groups. (Since a few of the languages are represented only by short wordlists, the numbers cannot be precise.) The families vary in size, from Athabaskan-Eyak-Tlingit with thirty-seven languages, to isolates like Zuni. The majority show traits typically associated with polysynthesis.

As can be seen from the contributions to this volume, what constitutes the essence of polysynthesis is far from straightforward. The etymology of the term would suggest the combination (synthesis) of many (poly-) elements, perhaps many morphemes in a word. But should this be the maximally complex possible word in a language, or the average number of morphemes per word in speech? Should it be the number of slots in a template, or the number of morphemes that can fill each slot? Languages considered

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polysynthetic typically have elaborate verb morphology, but often simpler noun morphology. Should morphemes in all kinds of words be counted together?

Typological categories become more interesting when they involve clusters of associated features rather than a single criterion. As discussed in the chapter on Argument Marking (Chapter 3, this volume), probably the most frequently cited features associated with a polysynthetic type in addition to general morphological complexity are head marking (the identification of core arguments in the verb), noun incorporation, and applicatives, which can affect and more closely specify argument structure. Adverbial affixes with relatively concrete and specific meanings are sometimes cited as well. Together these features could be said to result in a kind of holophrasis, whereby the verb contains all essential elements of the clause. Phonological fusion which obscures transparent relations between forms and functions is sometimes cited as well.

Each of these features is pervasive in North America, but the picture is far from uniform. Each varies in robustness across the languages, and none guarantees the elaboration or even presence of any other. In what follows, each is discussed in turn.

(p. 236) 13.1 Morphemes Per Word

Many North American languages offer the possibility of forming quite long, morphologically complex words. Speakers of Mohawk, an Iroquoian language of Quebec, Ontario, and New York State, know and enjoy words like that in (1).

(1)

Mohawk word
Tontaiakotahonhtaneken'tsheratkehrontakwenhákie.
t-onta-iako-te-ha-honht-a-neken-'tsher-at-kehront-akw-en-hatie'
DV-CISL-F.SG.PAT-DV-M.SG-ear-LK-be.side.by.side-NMLZ-MID-spread.out-REV-ST-PROG
'She's on her way back from peddling rabbits.'

Mohawk speakers sometimes sit around creating dizzyingly complex words for sheer amusement, and the word in (1) is a well-known product of such speech play. (This particular word is actually not quite well formed according to usual practices in the language. The incorporated *tahonhtané:ken* 'rabbit' is a morphological verb: 'his two ears are side by side'. Verb stems can be incorporated so long as they are nominalized with a suffix like *-'tsher-*. But here the whole word, complete with prepronominal and pronominal prefixes, has been incorporated rather than just the stem.)

Nevertheless, morphologically complex words are abundant in spontaneous speech, as in (2).

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(2)

Mohawk word

Ó:nen	kati’	ken	tensitewahthennoʔókha’?
onen	kati’	ken	t-en-s-it-wa-ahtenno-’ek-h-a-’
now	then	Q	DV-FUT-REP-1INCL.AGT-PL-ball-hit-ANDATIVE-PURP-PFV

‘How about we go there and play some golf?’

A first question to be posed is whether we should measure the potential morphological complexity of words or the actual number of morphemes per word in unscripted speech. The word in (1) could be extended with further recursive incorporation and added affixes: ‘she is not on her way back from selling rabbits’, ‘she is not on her way back from selling spotted rabbits’, etc. Grammarians often note, however, that though a given language might offer the capacity for a very high morpheme/word ratio, most words in normal speech generally show much lower average ratios. In his pioneering 1960 work on the quantification of degree of synthesis, Greenberg compared the morpheme/word ratios in 100-word samples of various languages and proposed that a language showing an index of synthesis of at least 3.0 could be defined as polysynthetic. It is not clear, however, that such figures capture the essence of the type.

A random 100-word sample of speech from the middle of a conversation among five Mohawk speakers yielded a morpheme/word ratio of 2.08. Such counts contrast sharply with examples like that in (1). But they also obscure crucial aspects of Mohawk. Skilled first-language Mohawk speakers tend to use numerous interactive and discourse particles, words with little or no internal structure. One speaker began her turn as in (3). (p. 237)

(3)

Mohawk conversation

Né:	ki’	na’	ni:	enkathrória’te’ …
né:	ki’	nà:’a	n=ì:i’	en-k-at-hrori-a-’t-e’
that	actually	guess	the=1	FUT-1SG-MID-tell-LK-INST.APPL-PFV

‘Actually what I guess I myself would like to discuss is …’

Morphological complexity in Mohawk, as in many North American polysynthetic languages, is concentrated in verbs. There are just three lexical categories in Mohawk defined in terms of their internal morphological structure: verbs, nouns, and particles. In the 100-word sample examined, there were sixty-nine particles, twenty-nine morphological verbs, and two morphological nouns. The lexical categories defined by morphological structure are not necessarily isomorphic with those defined by syntactic function: as seen above with ‘rabbit’, morphological verbs can function as referring expressions. Independent lexical arguments are conspicuously rarer in Mohawk than in

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languages like English, however. In the 100-word sample, with thirty clauses, there were only two.

Of course, linguistic analysis is not the same as speaker awareness of internal structure. The speaker cited in (3) did not create the verb stem *-at-hrori-a-'t-* MIDDLE-tell-LINKER-INST.APPL 'discuss' as she spoke. In fact she undoubtedly selected the whole word as a chunk from memory.

Various other ways of comparing morphological complexity have been proposed. Morphological structures of many languages are described in terms of templates: series of ordered slots for sets of morphemes. The model works well for Iroquoian languages. Figure 13.1 shows a summary of the Iroquoian verb with the obligatory morphemes in bold, Figure 13.2 a more specific template for the prepronominal prefixes, and Figure 13.3 a more specific template for the suffixes. The slots vary in the number of morphemes in each. There are nearly sixty pronominal prefixes, each showing considerable allomorphy, but just one duplicative, also with allomorphy.

Click to view larger

Figure 13.1 Northern Iroquoian verb morphology

Click to view larger

Figure 13.2 Northern Iroquoian prepronominal prefixes

(p. 238) Morphological structures of a number of other North American languages have been described in terms of templates, among them those of the Athabaskan-Eyak-Tlingit, Algic, Chinookan, Chumashan, Palaihnihan, Caddoan, Muskogean, and Siouan-Catawba families. One could compare templates for morphological elaboration in two directions: number of slots, and number of morphemes that could fill each slot. Some languages have templates with many more slots than Iroquoian, such as those of the Athabaskan and Caddoan families, and some have many more affixes per slot.

It is important to note that such templates are not intended to model speech processing: speakers do not select morphemes slot by slot, beginning at the left edge of the word. Templatic morphologies are often characterized by discontinuous dependencies. Within Northern Iroquoian, for example, many basic verb stems consist of a duplicative prefix and a root; some a partitive prefix and a root; some a repetitive prefix and root, etc. (The duplicative sometimes indicates a change of position or state, or an element of 'two-ness', but its contribution is often obscure.) Derivational and inflectional affixes are interleaved. The perfective suffix never occurs without a factual, future, or irrealis prepronominal prefix. Such dependencies raise the question of whether each element should be counted separately.

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Not all morphological structure is templatic. Many languages, such as those of the Eskimo-Aleut family, show hierarchical or layered structures. Stems are built up layer by layer. Usually it is only the derivational morphology that is hierarchical: Eskimo-Aleut words begin with a single root, which may be followed by a sequence of hierarchically ordered derivational suffixes, many with scope over the complex to their left, then closed with an inflectional MOOD-PRONOMINAL.SUFFIX complex. Central Alaskan Yup'ik contains nearly 1,000 derivational and inflectional suffixes (Jacobson 2012). Rosenblum (2015: 70) notes that Kwak'wala, a Wakashan language of British Columbia, contains fewer than 2,000 roots, but nearly 400 derivational suffixes. She shows that suffix order is the product of synchronic semantic effects and diachronic effects of conventionalization working in concert (2015: 315).

One might consider measuring morphological complexity in terms of affix inventory. But even here cross-linguistic comparisons cannot be precise. A major feature of morphology is routinization, the amalgamation of recurring strings. The degree of chunking and its implications for speaker processing vary across languages and individual sets of morphemes. We often see sequences of affixes gradually becoming grammaticalized as chunks in much the same way as root-affix sequences, to the point where they fuse into a single morpheme. Jacobson (2012) lists numerous Yup'ik suffixes with etymological sources in earlier sequences of suffixes, such as *-cugninarqe-* 'to smell or taste like N'.

(4)

Yup'ik suffix: Jacobson 2012: 755
Neqerrlug**cugninarq**uq.
neqe-rrluk-**cuk-ninarqe**-u-q
fish-departed.from.natural.state-**unpleasing-smell/taste.like**-INTR.IND-3SG
'It smells like dried fish.'

He traces the suffix *-ninarqe-* to an earlier sequence *-niq-narqe-*

'- smell.of-tend.to.cause.one.to-', and that second suffix *-narqe-* to an earlier sequence *-nar-rqe-* 'cause-time.after.time'. The modern suffix *-cugninarqe-* is now conventionalized as a single unit; its parts are no longer ordered individually. Jacobson notes that *-nar-* is no longer productive on its own (2012: 830, 816, 814, 857).

(p. 239) Overall, simply calculating polysynthesis by comparing morphemes/word is not straightforward and may not be a criterial feature for the type.

13.2 Head Marking in the Verb

Probably the next most frequently cited property of polysynthetic languages is the marking of core arguments within the verb, such that all essential elements of the clause are contained within a single word. In the vast majority of North American languages,

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arguments are identified with pronominal affixes in the verb. In nearly all of the languages, the pronominal affixes are present whether or not there are coreferential lexical nominals in the clause, as in Kathlamet, a Chinookan language from Washington State.

(5)

Kathlamet Chinook: Boas 1901: 30.8, Hymes 1955: 159

Akinlúta	iɣt	yaɣi	itsák'iti
a-k-n-l-ú-t-a	iɣt	yaɣi	i-tsák'iti
FUT-F.SG.ERG-M.SG.ABS-1SG.DAT-TRANSLOC-give-FUT	one	that	M-blanket

wuɣi aq'iyúqt.
wuɣi a-q'iyúqt
that F-old.person
'The old woman shall give me only her blanket.

North American languages vary widely in degree of fusion. Some, like Kathlamet, are relatively agglutinating, while others, like Kiowa, a Kiowa-Tanoan language spoken in Oklahoma, are quite fusional. Kiowa has four pronominal prefix paradigms, in which the components are not easy to untangle.

(6)

Kiowa: Watkins 1984: 111

a. **À**-bánmà.
1SG-go.IPFV
'I'm going.'

b. **Gyà**-t^{h}ɔ́n.
1SG>SG-find.PFV
'I found it.'

c. **Nén**-ǫ́.
1SG>2SG>DU-give.PFV
'I gave them to you.'

d. **Bágî:**-ǫ̀.
2PL>3SG>PL-give.PFV
'You (PL) gave them (PL) to him.'

Morpheme boundaries may be obscured by regular phonological processes, relics of earlier processes, and/or lexically conditioned allomorphy.

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(p. 240) 13.2.1 Differential argument marking

More often than not, pronominal affix paradigms show gaps for some or all third persons. The determining factor may be semantic or grammatical. In Northern Iroquoian languages, all arguments are identified by pronominal prefixes on verbs except for neuters in intransitives, as shown in the chapter on Argument Marking (Chapter 3, this volume). In Takelma, a language isolate of Oregon, arguments are identified by pronominal suffixes on the verb (Sapir 1922). Object suffixes precede subject suffixes. Third persons are generally unmarked.

(7) Takelma: Sapir 1922: 165

ṣaṣini:-t'e?	'I stand'
ṣaṣini:-t'as	'you stand'
saṣini:	'(he/she/it/they) stand'
ṣaṣini:-p^{h}ik^{h}	'we stand'
ṣaṣini:-t^{h}ap^{h}	'you all stand'

But human third person objects are marked with the pronominal suffix

-k^{h}wa.

(8) Takelma: Sapir 1922: 168

t'ayàk^{h}	'(he) found (it)'
t'ayã(k^{h})-k^{h}wa	'(he) found him'

A large number of languages contain first and second person pronominal affixes but no third. Such a system can be seen in Crow, a Siouan language spoken primarily in southeastern Montana.

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(9)

Crow: Graczyk 2007: 178–9

Baa-xalússhi-k.	**Bii**-apáa-k.
1AGT-run-DECL	**1PAT**-cold-DECL
'I was running.'	'I am cold.'
Da-lée-k.	**Dii**-háchka-k.
2AGT-go-DECL	**2PAT**-tall-DECL
'You went.'	'You are tall.'
Disshí-k.	Baakuhpáa-k.
dance-DECL	sick-DECL
'(S/he) was dancing.'	'(S/he) is sick.'
Dii-waa-lichí-k.	**Bii-láa**-lichi-k.
2PAT-1AGT-hit-DECL	**1PAT-2AGT**-hit-DECL
'I hit you.'	'You hit me.'
Baa-lichí-k.	**Bil**-lichí-k
1PAT-hit-DECL	**1AGT**-hit-DECL
'I hit her/him.'	(S/he) hit **me**.'
Dichí-k.	
hit-DECL	
'(S/he) hit (her/him/them).'	

(p. 241) ## 13.2.2 Stability through time

The pronominal affix paradigms generally show remarkable stability over time: most can be reconstructed for the common parent of each family at time depths of perhaps several thousand years. In a few cases we can see some developments within the systems. The Athabaskan languages are distributed over a wide geographical area of the West from Alaska to the Southwest. The languages are discussed by Fortescue in Chapter 12 on the Arctic and Subarctic, and by De Reuse in Chapter 25 on Western Apache.

In the Apachean languages of the Southwest, verbs contain both subject and object prefixes. The subject prefixes occur immediately before the transitivity-stem complex, but the object prefixes occur several slots earlier in the word, suggestive of slightly later

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development. Examples here are from Navajo, spoken primarily in Arizona and New Mexico.

(10) Navajo pronominal prefixes

	Objects	…	Subjects
1SG	sh(i)-		sh- / s-
2SG	n(i)-		ni/
1DP	nih(i)-		ii(d)- / aa(d)- / ee(d)- / oo(d)-
2DP	nih(i)-		o(h)/oo(h)-/a(h-/á(h)- / é(h)-
3	--		--
3PR	b(i)-		
3OBV	y(i)-		

Basic third persons are not usually represented. When one third person acts on another (3 > 3), however, the object is represented by *b(i)-* if it is more topical than the subject, and by *y(i)-* if it is less. There are additional prefixes for indefinite persons and objects, surroundings, etc.

Examples of basic pronoun use can be seen in the example below from the Navajo Conversational Corpus (Mithun: 2015). There are first and second person prefixes but no third.

(11) Navajo: nav001.27, 00:07:19. Miltina Chee, transcriber

T'ah	akoneʼó	nas**hí**diłkid.
still	saying	asking **me**

'(She) was asking **me** that.

(p. 242)

K'adéesh	háago	ch'aadi**n**yá	**shi**łneʼó?
almost.Q	where	**you**.are going to travel	telling.**me**

(She) was asking **me**, "Where do **you** really want to travel?"'

The third person object prefix *yi-* below refers to 'children' in combination with an unmarked third person subject.

(12) Navajo: nav002.26, Melvatha Chee. transcriber

Áajiʼó	ałchíní	ádaya**yi**iníił.
that.side	chldren	(they) put **them**

'(They) put their children on that side.'

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Northern Athabaskan languages have cognate pronominal prefixes, but the third person object prefixes are in complementary distribution with lexical nominals. In Tsilhqút'ín (Chilcotin), of British Columbia, the third person object *ye-* does not appear in the verb if there is a lexical object.

(13) Tsilhqút'in: Cook 2013: 342–3

Yeyan.	'(S/he) is eating **it**.'
Lhuy heyan.	'(S/he) is eating **fish**.'
Yínlhtšán.	'(It) spotted **it**.'
Dłɬg hínlhtšán.	'(It) spotted **a squirrel**.'
Yetižghán.	'(It) started to chase **it**.'
Gex-chugh tižghán.	'(It) started to chase **a jackrabbit**.'

Similar patterns are described for Slave, of the Northwest Territories, Alberta, and British Columbia (Rice 1989: 628); for Koyukon, of Alaska (Kwaraceius and Jones 2000: 777); for Tanacross, also of Alaska (Holton 2000: 250–1), and for Sarcee, of Alberta (Cook 1984: 203).

The Pacific Athabaskan languages of the California and Oregon coast have developed slightly different third person systems. In Hupa, *yɨ-* is a general third person subject prefix usually referring to animals, inanimate forces of nature, and occasionally women or children. There are also prefixes for (adult) humans, *č'ɨ-* for subjects and *xo-* for objects (Golla 1996: 371).

In a few families, some arguments are represented by verbal affixes and others by clitics. In the Tsimshianic languages of British Columbia, absolutives are identified by verb suffixes and ergatives by clitics. In Alsea, of the Oregon Coast, and some Salishan languages further north, objects are represented by verb suffixes and subjects by clitics. Some families show hierarchical systems, particularly in the Northern California and the Northwest Coast linguistic areas (Mithun 2007a, 2012b, Jany, Nakayama this volume). Only one argument may be represented. Typically first and second persons take precedence over third (1,2 > 3), but further details vary. In some languages, only second persons take precedence (p. 243) over third. In some, if first and second persons are involved, agents take precedence over patients.

Overall, of the fifty-five or so genetic groups, only three families and five isolates lack pronominal affixes. (For a few more the paucity of data makes it impossible to know.)

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13.3 Noun Incorporation

A third property often associated with polysynthesis is noun incorporation. This also shows variation across languages in its functions, productivity, and age.

Robust incorporation can be seen in Crow. As in many languages, incorporation is often used for recognizable, habitual, or ongoing activities and states.

(14) Crow noun incorporation: Gracyzk 2007: 279

a. B-achuuké **alápee**-chia-(a)-lee-k.
1POSS-younger.brother **fire**-extinguished-CAUS-go-DECL
'My younger brother went **fire**-fighting.'

b. Shóotdak Mr. Latch **bishka**-lúupia-i-k.
perhaps **dog**-dislike-HAB-DECL
'Perhaps Mr. Latch doesn't like dogs.'

Grazcyk notes (2007: 279–80) that there is no doubt that the noun–verb combinations are single words, based on stress patterns, processes of word-internal sandhi, and the fact that there is no possibility of a break in the stream of speech.

Incorporated nouns often represent generic entities.

(15) Crow incorporation: Gracyzk 2007: 279
Ilúk-baa-kaali-k.
meat-1AGT-ask.for-DECL
'I asked for **meat**'

Additional lexical items formed by incorporation listed by Gracyzk include ***bálaa****-kaali* 'ask for **money**', ***Apsáalook****-ilii* 'speak **Crow**', ***Apsáalook****-duupia* 'dislike **Crows**', ***iichíil****-aakinee* 'ride **horseback**', ***iichíil****-ataali* 'steal **horses**', ***bil****-isshíi* 'drink **water**', ***húppii****-lia* 'make **soup**', ***baáchuu****-isshuwi* 'wash **berries**', ***bal****-áachiwi* 'climb **trees**', ***bua****-chilasshía* 'catch **fish**', ***baaxuawaalaátxachii****-ikaa* 'watch **TV**', ***baaluúsh****-chiili* 'look for **food**', ***binnaxchi****-lía* 'fix **fence**', and ***ash****-atchée* 'put up **tipi**' (2007: 281). This kind of incorporation is typical of a great many languages.

As in other kinds of compounding, the incorporated noun is not a syntactic argument, and the construction does not specify a particular semantic relationship. Often the incorporated noun invokes a theme, goal, or patient, which serves to qualify the event or state in useful ways, but other semantic relations can also be seen.

(p. 244)

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(16)

Crow incorporation: Gracyzk 2007: 282

Ilúk-hilahp-ak.
meat-scarce-ss
'**Meat** is scarce.'

(17)

Crow incorporation: Graczyk 2007: 187

Iilúpta **ash-iilúupee**-l-uu-k.
both **house-other**-be.at-PL-DECL
'Both of them were in **the other room**.'

As in many languages, nouns referring to body parts are often incorporated, as in ***ishtá***-*xia***eye**-dim = 'nearsighted', ***ahkúx***-*alee***ear**-ache = 'have an earache', ***éel***-*isaa***belly**-big = 'pregnant, and ***íishpuu***-*xachii***stomach**-move = 'have stomach cramps' (2007: 282). Crow is unlike most languages, however, in that these verbs occur with possessive prefixes, which are similar to the patient prefixes but not exactly the same.

In Crow, as in many but not all languages, noun incorporation can be used to control the flow of information, so that the first introduction of a referent is accomplished with a free noun, then once established, it is carried along incorporated into verbs.

(18)

Crow incorporation: Graczyk 2007: 293

D-áasuua ashkawúua-n **hulé** dappaxí-ssa-h;
2POSS-house inside-LOC **bone** split-NEG-IMP
'Don't try to split **bones** inside your lodge;

Hun-náappax-bia-laa-lak awéelee-n dia-h.
bone-2AGT.split-try.to-2AGT-COND outside-LOC do-IMPER
If you want to split **bones**, do it outside.'

Crow shows more productive incorporation than many other Siouan languages. Morphologically complex verbs and nouns can participate in incorporation, like 'bead-string' = 'to bead' and 'a place to rest' as shown in the following examples.

(19)

Crow incorporation: Graczyk 2007: 297

Húulee-sh huup-**baam-maschí**-k.
yesterday-DET moccasin-**bead**-1AGT.**string**-DECL
'Yesterday I was **beading** moccasins.'

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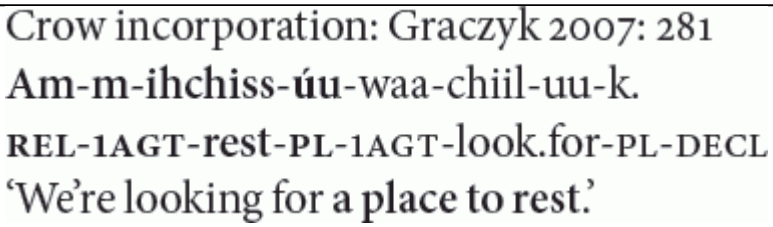
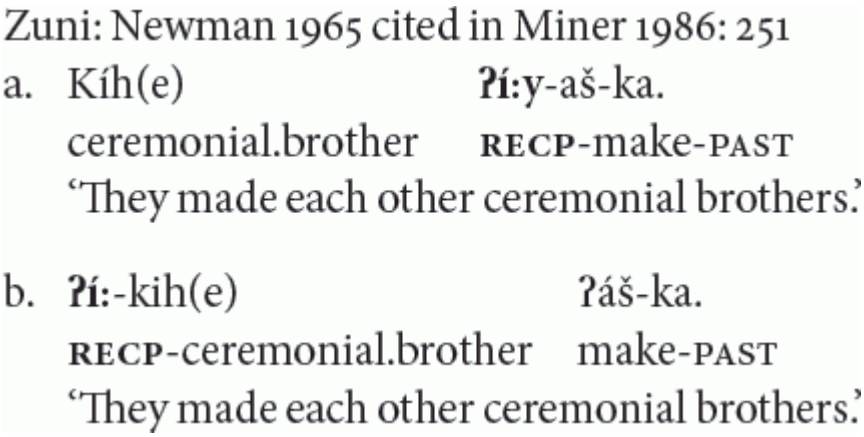
(20)



While noun incorporation is pervasive in North America and can be reconstructed back to proto languages, it is not necessarily static through time. In some languages the very (p. 245) beginnings of incorporation can be seen. Zuni, a language isolate of New Mexico, contains a construction termed 'noun stripping' by Miner (1986). Nominals are stripped of modifiers, determiners, and number, like incorporated nouns in other languages, and enter into close-knit units with their verbs, but, as Miner says 'stop short of actually being incorporated' (1986: 243). The process is highly productive. Like incorporation, these constructions serve to background a referent and strip it of its definiteness and referentiality. But in some cases, termed 'loose incorporation' by Miner, a verbal prefix may be attached, not to the verb, but to the noun–verb complex, suggesting further integration of the noun. Miner cites the two variants in 21a and 21b, with the reciprocal prefix *ʔí:(y)-*. In both, the two constituents 'ceremonial brother' and 'made', each retain their stress.

(21)



Zuni is among the few North American languages without pronominal affixes on verbs.

In some other languages, traces of earlier noun incorporation can be discerned in a few verb stems, but the process is no longer productive. Choctaw, a Muskogean language of the Southeast, has relicts of earlier noun incorporation, with elements in a few verb stems corresponding to nouns in Choctaw or related languages: *ok-* 'water/eye', *nok-* 'neck', *ibi-/ibak* 'nose/face', *yosh* 'hair/head'. (Only *ok-* corresponds to an independent noun in Choctaw.)

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Choctaw relicts of noun incorporation: Broadwell 2006: 136

ok-shalolih	'have sunken eyes'
ok-mochoolih	'close the eyes'
ok-chabaahah	'be thick (of liquid), viscous'
ok-loboshlih	'to sink'

(22)

ibak-tokolih	'be blunt-nosed'
ibii-kowah	'have a nosebleed'
yosh-bonoochih	'roll (hair)'
yosh-milaalih	'be totally bald'

Haas (1941a) and Booker (1980) show that the presence of noun incorporation can be reconstructed for Proto-Muskogean from a very few prefixes in the various languages that are apparently descended from nouns, often in a different language.

Noun incorporation may also develop into other productive morphological constructions. Either the noun or the verb may take on new life as an affix. At the outset, such affixes (p. 246) can still have relatively concrete meanings, somewhere between those typical of roots and those typical of older affixes. Some, like incorporated nouns, may be added to verbs to qualify them in terms of their theme/goal/patient, means/manner/instrument, or direction/location. Many evoke body parts. Some, like incorporating verbs, may be added to noun stems to form new verbs. When such affixes are young, their sources in noun or verb roots still surviving in the language may be discernible, but as time goes by, the roots are replaced and the affixes erode in substance, and their sources can become murky. Some languages contain large inventories of such affixes, not surprising in light of their root sources. Once they become affixes, they can lose their lexical categoriality, and it can be unclear whether they originated in nouns or verbs.

Languages of the Salishan family on the Northwest Coast show large inventories of suffixes with noun-like meanings, though the differentiation of noun and verb in these languages is slight. (Sliammon Salish is described by Watanabe in this volume.) The suffixes are attached to both verb-like and noun-like stems. Their meanings often seem more concrete and specific than is typical of older affixes. Examples below are from Bella Coola (Nuxalk), the northernmost Salishan language, spoken in British Columbia.

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(23)

Bella Coola *-u(u)ts*: Nater 1990

a. tsp-**uts**-m
wipe-**mouth**-MID
'wipe one's mouth'

b. anu-pus-m-**uuts**
around/through-grow-MID-**mouth**
'have a swollen mouth'

c. anu-putl'-**uts**
around/through-come-**mouth**
'saliva issues from one's mouth'

Many pertain to body parts. A number have an initial ***-al-***, like ***-al****-aaq-* 'rope' and ***-al****-uł* 'boat'.

(24)

Bella Coola *-al-*: Nater 1990: 7

tx-**al**-aaq-t-n	tiixw-**al**-aax-t-n
cut.with.knife-CONN-rope-CNTRL-TR	hit.with.hammer-CONN-rope-CNTRL-TR
'to cut a rope'	'to fasten a rope to a stake'
p'iixlay-**al**-uł-ts	scanm-**al**-uł-ts
drift.downstream-CONN-boat-1SG.OBJ	deteriorate-CONN-boat-1SG.OBJ
'my boat is drifting away from me'	'my boat is wearing out'

Compounding is no longer productive in most Salishan languages, but compounds can still be seen in some. In these, the roots are joined with a linker like *-ał-* in Lillooet, an Interior Salish language also spoken in British Columbia.

(p. 247)

(25)

Lillooet compound: van Eijk: 1997: 54
łəq'-**ał**-səm?ám
steal-LINKER-wife
'one who elopes with somebody else's wife'

An origin in compounding explains the often large inventories of suffixes, sometimes numbering in the hundreds, their relatively concrete meanings, and the frequent presence of the element *-al-*.

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The lexical suffixes function much like incorporated nouns in other languages. They form lexical items. They are not arguments, but their use can allow more significant participants, such as the owners of body parts, to be arguments. In the example below, it is the victims of a gruesome attack that are the arguments of ‘yawn’ and ‘have throat cut’, rather than the mouth and the neck.

(26)

Bella Coola: Davis and Saunders 1980: 218

ʔaay-na=k^{w}=lu=k’^{w}	s-sunq’-**uc**-aw	wa-ax^{w}ɬ
do-3PL-QUOT=still=USIT	NMLZ-start-**mouth**-3PL.SUBJECT	PROX-some

‘Some of them were just yawning

s-tc-**apsm**-tim=tu=ts’.
NMLZ-cut-**neck**-3PL.PASS=indeed=PFV
when they had their throats cut.’

The suffixes can also serve to carry along established referents in the discourse without drawing special attention to them. The account of the attack continued, first with an independent noun ‘head’, then a lexical suffix in the verb.

(27)

Bella Coola: Davis and Saunders 1980: 218

ʔaay-na=k^{w}=lu=k’^{w}	s-sunq’-**uc**-aw	wa-ax^{w}ɬ
do-3PL-QUOT=still=USIT	NMLZ-start-**mouth**-3PL.SUBJECT	PROX-some

‘Some of them were just yawning

s-tc-**apsm**-tim=tu=ts’.
NMLZ-cut-**neck**-3PL.PASS=indeed=PFV
when they had their throats cut.’

The lexical suffixes often have wider ranges of meanings than roots, more disparate and often more abstract senses. The suffix *-u(u)ts* can refer not just to the mouth, but also to food, eating, and speech.

(28) Bella Coola *-u(u)ts*: Nater 1990

a. mał-**uts**
slow-**eat**
‘eat slowly’

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b. Ałnap-**uts**-tsan-t.
(p. 248) know-**say**-1SG.OBJECT-3PL.SUBJECT
'They know what I said.'

It can evoke water.

(29) Bella Coola *-u(u)ts*: Nater 1990

a. us-pik'-**uuts**.
surface-shiny-**water**
'water surface is shiny, reflects sunlight'

b. atl's-**uuts**
inland/east/back-**tide**
'tide comes in'

It can also evoke openings, like doors.

(30) Bella Coola *-u(u)ts*: Nater 1990
nu-q'ił-**uts**-a
inside-scratch-**door**-TR
'scratch at the door'

Many of the lexical suffixes are themselves compound, like *-lx̣s-ał* 'toe', composed of *-lx̣s* 'nose, point, terminus' and *-ał* 'foot, lower leg, walking, tracks, shoes, vehicle, etc'.

For the most part, the forms of suffixes no longer resemble those of roots with similar meanings, but in a few cases similarities can be seen, either within a language or across languages. The Bella Coola noun for 'mouth', for example, is *tsutsa*. In many cases it can be difficult to determine whether a modern lexical noun was originally once complex, itself formed by compounding or with a lexical suffix. The suffix construction is so old, reconstructible to Proto-Salishan, that many independent nouns have been replaced.

Bella Coola shows another interesting development: prefixes with verb-like meanings. They include *tam-* 'make, construct', *tix-* 'catch', *tutu-* 'prepare, work on something', *sti-* 'have a physical asymmetry', *kał-*/kas- 'gather, collect, pursue, hunt' (found before nouns denoting animals, plants, etc.), *k'ił-* 'lack', *xł-* 'have, possess', *łuł-* 'have much', *ʔas-* 'have, contain, use', *'ʔasi-* 'consider the taste of something X', *ʔanus-* 'be deprived of, have lost', *ʔit-* 'speak the language of', *ʔit-* 'wear', *ʔis-* 'gather, take (in), consume', *ʔus-* 'crave', *ʔus-* 'don, put on' (with items of clothing), *-ʔun-* 'be fond of' (Nater 1984: 93–5). They can be prefixed to roots with noun-like meanings to form verbs.

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(31)

Bella Coola: Nater 1984: 93–5

tam-ts'la	**tutu**-st'ala
make-basket	**prepare**-hemlock.bark
'to make a basket'	'to prepare hemlock bark'

(p. 249)

k'ił-mnta	**ʔun**-lam
lack-route	**be.fond.of**-rum
'to have nowhere to go, wander around aimlessly'	'be fond of rum'
kuł-taala	**ʔit**-kuut
have.much-money	**wear**-coat
'to be rich'	'to wear a coat'

These prefixes appear to be descended from the initial elements of verb-noun noun incorporation and verb–verb compounds. This development is not typical of the rest of the family, suggesting that it may have been influenced by similar developments in the neighboring Tsimshianic languages.

Noun incorporation is fairly widespread in North America, though as noted there is great variety in its extent and productivity. It can be seen in languages of the Athabaskan-Eyak-Tlingit, Caddoan, Iroquoian, Kiowa-Tanoan, Sahaptian, Siouan-Catawban, and Uto-Aztecan families, as well as in Chimariko and Zuni. Relicts can be seen in Muskogean, Yuman-Cochimi, and Cherokee. Probable affixal descendants can be seen in Algic, Chimakuan, Salishan, Wakashan, Tsimshianic, and Eskimo-Aleut languages, and likely ones in Chumashan, Maidun, Palaihnihan, Pomoan, Sahaptian, Siouan-Catawban, and Uto-Aztecan languages, and in Haida, Karuk, Klamath-Modoc, Takelma, Wappo, Washo, and Yana. Together these constitute nearly two-thirds of the genetic groups in North America for which there is sufficient documentation to judge.

13.4 Applicatives

A majority of North American languages contain applicatives, derivational morphology in the verb which adds a second argument (grammatical object/absolutive/patient). In some languages there is just one, all-purpose applicative. In others there is a larger set, each of which indicates a more specific semantic role of the added argument, such as a recipient or beneficiary (benefactive), an instrument (instrumental), a companion (comitative), a location or direction, etc. Examples below are from Barbareño Chumash (Šmuwič).

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Barbareño Chumash: Mary Yee, speaker, JPH 59.88 text 9
['When Indians are eating a meal, they don't talk']

(32)

ʔiyé:mʔe	p-saq^{h}alalan-**us**-wun.
though	2SUBJECT-holler.RDP-**BEN.APPL**-3PL.OBJECT
though you	**holler at** them.'

(33)

Barbareño Chumash: Mary Yee, speaker, text 10 Harrington 59.180

ʔal-e-č^{h}ó	hi=s-am-eqwel-**in**
NMLZ-NEG-good	DEP=3-INDF-make-**INST.APPL**
hi=l=kaltu	hi=heʔ=l=wuluw'ul.
(p. 250) DEP=ART=soup	DEP=PROX=ART-crayfish
'It is not good to **make** soup **with** the crayfish.'	

(34)

Barbareño Chumash: Mary Yee, speaker, text 15 Harrington 59.385
['In the old days people used part of a whale's backbone to sit on. It made a good seat']

ik^{h}u	s-e-wil-waš	hi=l=ʔ-am-nexpey-**pi**.
but	3-NEG-be-PAST	DEP=ART=NMLZ-INDF-lean-**LOC.APPL**
but there was nothing to	**lean against**.' (The seat had no back.)	

In some of the languages applicatives are added only to intransitives. In some, they are added to both intransitives and transitives, as in the Barbareño examples above: 'holler' and 'lean' were intransitive on their own, but 'make' was transitive. In some, different applicatives are used for intransitives and transitives. In some, applicatives added to transitives produce ditransitives, while in others, the added argument displaces an original grammatical object/absolutive/patient and the result is still simply transitive. In the Chumashan languages, only two arguments can be identified in the verb, a subject and an object. (Third person singular objects are zero.) The objects of both the original simplex verb and the derived verb can remain in the clause, however, as here: the soup and the crayfish. (Determiners indicate dependency but not case.)

The applicative affixes are often very old, reconstructible to proto languages. They can develop from a variety of constructions, as discussed in the chapter on Argument Marking (Chapter 3, this volume). An early stage in the development of locative applicatives can be seen in Tunica, an isolate of the Southeast. Tunica identifies all core arguments with pronominal affixes, one for intransitives, two for transitives.

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(35)

Tunica: Haas 1941b: 114

ʔú-nir	**kí**-uhpɛ́kʔuhkɛ́kenì.
M.POSS-tooth	**in**-he.hit.him

'He **hit** him **in** the teeth.'

Other Tunica locative applicatives include *te-* 'about', *ki-* 'in, into', *ho-* 'out (of)', and *ha-* 'up, down'. Haas (1941b: 114–6)) notes that they are attached only to formally complete words, and that with the exception of *te-*, they appear to be related to adverbs and postpositions: *ki-* to *kíču* 'in, into', *ho-* to *hɔ́waši* 'outside of; outside, outdoors', and *ha-* to either *háyiši* 'above' or *háluši* 'below'. (The final *-ši* is a locative suffix.) They may co-occur with a lexical argument, as in (35). In some cases they co-occur with a postpositional phrase.

(36)

Tunica: Haas 1941b: 114

ʔu-šóhu	**kíčun**,	**kí**-ʔuhpɛ́kʔuhkɛ́kenì.
M.POSS-mouth	**in**	**in**-he.hit.him

'He **hit** him **in** his mouth.'

(p. 251) Haas notes that the available examples are about evenly divided between constructions with and without postpositions.

A slightly later stage of development can be seen in Maricopa, a Yuman language of Arizona. Gordon notes a tendency for the oblique case markers, and sometimes a preceding demonstrative suffix, 'to move off the end of the NPs to which they would appropriately be affixed and cliticize to the verb' (1986: 50). She considers the applicatives clitics, because they do not trigger a phonological change characteristic of prefixes, and they do not participate in a gemination process characteristic of independent words. They also do not bear stress.

(37)

Maricopa: Gordon 1986: 49, 50

a.

Kwnho	lames-**ly**	'-shvaw-k.
basket	table-**LOC**	1SG.SUBJECT-put-REALIS

'I put the basket **on the table**.'

b.

Tdish	mat	**ily**-k-shvaw-k.
corn	earth	**LOC.APPL**-IMP-put-REALIS

'**Plant** the corn **in** the ground.'

The fact that reanalysis has occurred is clear: the locative marker remains attached to the verb even when the locative noun is no longer adjacent.

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(38)

Maricopa: Gordon 1986: 50

Mat	tdish	ily-k-shvaw-k.
earth	corn	LOC.APPL-IMP-put-REALIS

'Plant the corn in the ground.'

Other Maricopa case markers are undergoing similar developments.

(39)

Maricopa: Gordon 1986: 48, 50

a.

Lynn-sh	'ii-m	hat	ashham-k.
Lynn-NOM	wood-INST	dog	hit.DIST-REALIS

'Lynn beat the dog with the stick.'

b.

'ii	hat	ny-m-'-aham-m.
wood	dog	DEM-INST.APPL-1SG.SUBJECT-hit-REALIS

'I hit the dog with the stick.'

Though the majority of head-marking languages in North America contain applicatives, and a few dependent-marking languages lack them, there is not a perfect match between the two properties. Kiowa, for example, contains ancient pronominal prefixes but apparently no applicative morphology. On the other hand, Yokuts and Zuni lack pronominal affixes but have applicatives.

(p. 252) 13.5 Adverbial Affixes

A number of North American languages show large inventories of adverbial affixes in verbs. Aoki (1970: 84–6) describes 167 adverbial prefixes in Nez Perce, a Sahaptian language of Idaho and adjacent Washington and Oregon. They supply a variety of meanings. Many indicating means or manner appear to be descended from nouns, such as *him-* 'with mouth', *cú:ye-* 'with implement', *hí:ti?m* 'with knee', *ke:-* 'with teeth', *mîs-* 'with ear', *inik-* 'with hide', *nîké:* 'with hand', *nim-* 'with eyes', *nú:xc* 'with nose', *tûkʷé:p-* 'with lower arm or hand', *tûkʷé:y* 'with forehead', *tuk'e-* 'with palm', *itú:k'e* 'with a cane-like object', *tulé:* 'with foot', *tûx̣píl-* 'with leg', *we-* 'with chopping instrument', *we:p-* 'with hand or paw', *wet-* 'sticklike object', *wilé:-* 'by wind', *'île-* 'in fire or smoke', *-'îp-* 'with fist, blunt instrument', *'îs-* 'with knife (plural objects)', *'îse-* 'with knife (one object)', and others.

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(40)

Nez Perce *himik* 'to loosen, detach': Aoki 1994: 145

cú:himkse
cú:-himik-se
pointed.instrument-loosen-1SG
'I loosen (e.g. corn) with a pointed instrument'

cú:ye-himkse	'I shake (e.g. fruits) loose'	(cú:ye-	'with implement')
tukép-himkse	'I rip or tear off with the hand'	(tuk^{w}ép	'with hand')
tulé:-himkse	'I loosen with the foot'	(tulé:-	'with foot')
we-hímkse	'I beat down (e.g. fruits) with stick (e.g. from a tree)	(we-	'with chopping instrument')
wilé-himkse	'Mine gets loosened by wind'	(wilé:-	'wind')

Others contribute more verbal meanings, such as *cîmi* 'by lying on', *cú-:* 'in single file', *cú:ye-* 'shaking', *hí:* 'subduing', *hicíl* 'climbing', *hí:tem-* 'dancing', *kiyé:-* 'wandering', *lek-* 'fussing (of babies)', *pîti* 'pounding, punching', *qûqu-* 'galloping', *sek-* 'soaring', *sîwí-* 'swimming', *su:ye-* 'pushing', *tîq'i-* 'hiding', *tu:-* 'throwing', *tûk^{w}-* 'diving', *wesqe-* 'sitting with legs spread', *wîse-:* 'standing', *wu:l-* 'walking (of quadruped), riding', and many more. These appear to be descended from verbs in verb–verb compounds. In some cases, root sources still survive in the language. There is, for example, a prefix *wis-* 'travelling', as in the verb ***wis****-te?épelehnece* 'I am unloading, taking a load down' (with root *te?pe-* 'throw' and directional suffix *-ehne-* 'down'). There is also a root *wis-* 'travel', as in ***wis****-éhne-cix*. 'we are traveling downhill (Aoki 1994: 328). Others no longer have root counterparts.

13.6 Phonological Complexity

It has sometimes been proposed that polysynthetic languages are characterized by substantial allomorphy and phonological fusion. In his discussions of complexity, Dahl (2004, this (p. 253) volume) observes that polysynthesis can be considered a 'mature' phenomenon, one that develops gradually over time. It is reasonable that this long duration would provide an opportunity for numerous phonological processes to arise and recede, obscuring the identities of morphemes and the boundaries between them. The two need not go together, however. As Dahl points out, Sapir (1921: 123) had already noted that polysynthetic languages can be either agglutinating or fusional, a fact easily seen by comparing language sketches in this volume.

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Phonological changes do not occur at regular rates through time, nor do they necessarily coincide with morphological developments. Mohawk and Seneca are both members of the Five Nations Iroquois subgroup of the Northern branch of Iroquoian. The morphological structures of the two languages are nearly identical. The verb templates in Figures 13.1, 13.2, and 13.3 characterize both. The modern forms of the languages are radically different, however. Only a few minor processes have affected Mohawk but not Seneca. But Chafe (2015: 17–22) details 43 phonological processes affecting Seneca not seen in Mohawk.

Proto-Northern-Iroquoian had only eleven consonants, five oral vowels, and two nasal vowels. Nearly all survive in their original contexts in Mohawk. Seneca, by contrast, shows extensive innovations, among them simplification of consonants clusters, the fronting of some vowels after *r, shifts of *r to n, w, and y in different contexts, the ultimate loss of remaining instances of *r, loss of initial glides, loss of resonants before *h, loss of *h before coda consonants, loss of intervocalic *h, numerous changes involving newly adjacent vowels, restructuring of original penultimate stress and length patterns, innovative allomorphy, and more. The Seneca changes have rendered the morphology quite opaque. Chafe illustrates the result:

> Phonological changes have often led to radical differences among members of a paradigm. For example, *o'ki'* 'I said' and *waę'* 'he said' have nothing in common except for the final glottal stop. However, the reconstructed sequences **wa?ki?* and **wa?hrai?* can be analyzed transparently as containing the factual prefix **wa?-*, the pronominal prefixes **k-* 1SG.AGENT and **hra-* M.SG.AGENT, the verb root **-i-* 'say', and the 'punctual' [PERFECTIVE] aspect suffix **-?*. (2015: 7)

The fact that such drastic phonological changes could occur provides good evidence that speakers are processing such constructions as chunks, not morpheme-by-morpheme.

We are fortunate to have earlier records of Seneca, manuscript dictionaries compiled by the French Jesuit missionary Julien Garnier. Garnier lived among the Seneca during two periods, 1671–83 and 1701–9. The dictionaries show that nearly all of the above changes occurred after his departure.

The changes did not occur in a vacuum. Another Northern Iroquoian group (not part of the Five Nations), the Huron (Wendat), were living in what is now Ontario. In 1649 they were decimated by Five Nations tribes. Survivors scattered in all directions, some taking up residence in various Five Nations communities. A substantial number established a settlement in Seneca territory in western New York State, with Seneca permission. Over the years, there was intermarriage with the Seneca, and ultimately the two communities merged. Some innovations that now distinguish Seneca from Mohawk match Huron innovations, such as the loss of *r from masculine pronominal prefixes and simplification of certain consonant clusters.

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(p. 254) Two other Five Nations bands, the Cayuga and Onondaga, lived in territories neighboring the Seneca in western New York State. In 1779, some Cayugas and Onondagas, who had sided with the British during the American Revolution, took refuge among the Seneca at their Buffalo Creek reservation. It is estimated that around 600 Senecas were living at Buffalo Creek at the time (Abler and Tooker 1978: 509), 350 Cayugas (White, Engelbrecht, and Tooker 1978: 502), and 300 Onondagas (Blau, Campisi, and Tooker 1978: 495). After a few years, most of the visitors left; by 1824, ninety Cayugas remained there. Seneca, Cayuga, and Onondaga show a number of major shared innovations, some of which may have originated with the Huron, such as the masculine pronominal prefixes and some consonant cluster simplification, and others not, particularly extensive changes involving *r, though the changes are not identical across the languages. Cayuga shows loss of *r in certain contexts, while Seneca and Onondaga lost the resonant entirely (after it conditioned various other changes). By the time Protestant missionaries arrived in Seneca territory in the early nineteenth century, the Seneca changes were in place (Houghton 1920, Wallace 1970). Comparison of documentation of Onondaga in 1750 and the early nineteenth century shows similar rapid shifts in Onondaga. It is intriguing to try to determine the sources and directions of spread of all of the changes. The important point here is that major phonological changes creating highly fusional structures took place in Seneca within little more than century at most, a period during which the basic morphological structure remained unchanged.

13.6 Areal Distributions

It has been observed that the distribution of structures frequently associated with polysynthesis such as argument marking in the verb, noun incorporation, applicatives, and adverbial affixes, are not distributed randomly across the globe. They are certainly prevalent in North America. There are also finer areal patterns. Some of the structures have developed in particular ways in certain areas.

One major linguistic area of North America is the Northwest Coast. Salishan lexical suffixes were described in Section 13.3 with examples from Bella Coola (Nuxalk). The lexical suffix pattern is also characteristic of neighboring families to the west, Wakashan and Chimakuan. Languages in all three families are basically predicate-initial and largely or exclusively suffixing. Verbs typically consist of a single root, followed by suffixes from large inventories, often with highly specific and concrete meanings typical of lexical items elsewhere.

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(41)

Kwak'wala (Wakashan): Rosenblum 2015:293 citing Boas 1947: 377

W'iGəmƛiʔƛas?

w'i-(s)(G)əm-ƛiʔ-ƛ=a

where-face-motion.water-FUT=2SUBJECT

'Which way will you go (canoeing)?' = 'Which way are you headed?'

(p. 255)

(42)

Quileute (Chimakuan): Andrade 1933: 212, 279.10–13

Kíʔtaχ̣	xabá:	ła	haʾyéqʾᵘbá:yili.
kíʔt-a-χ̣	χ̣ab-a	ła	haʾyé-qʾʷ-ba:y-i-l-i
go-DUR-CONT	be.all-DUR	indeed	carry.with.packstrap-on-basket-EP-action-SUBORD
going	all	indeed	carry basket

'They went on, each with her packbasket.'

The basic structures of languages in the three families are very similar, but the content of the lexical suffix inventories is subtly different.

Another well-known linguistic area of North America is the Southeast, at its core home to all languages of the Muskogean family (Choctaw, Chickasaw, Alabama, Koasati, Hitchiti, Mikasuki, Creek, Apalachee), some languages of the Siouan family, (Osage, Quapaw, Ofo, Biloxi) and various isolates. The Siouan family extended over a wide area of central North America stretching from Canada to the Gulf. Rood (1979: 278), citing work by Matthews (1958: 48–86), reconstructs three Proto-Siouan applicatives: **a-* 'on', **o-* 'in(to)', and **i-* 'with'. Descendants persist in all of the languages.

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(43)

Osage (Siouan): Quintero 2004: 234, 231, 227

a. Níi ámąδi
nii á-mąδí
water LOC.APPL-walk
'He walks on water.'

b. ohkíǫδe
o-hkik-ǫδe
LOC.APPL-REFL-toss
'throw oneself into a place'

c. Htaaníi hcúke íδaachapi
hataa-nii hcúke i-δaaché-a-api
meat-liquid spoon with-eat-IMPER-PL
'Eat soup with a spoon!'

Applicatives can also be seen in Muskogean languages. Booker (1980) reconstructs some applicatives for Proto-Muskogean. One is a general locative applicative **a-*.

(44)

Choctaw (Muskogean) locative applicative: Broadwell 2006: 156

Illipa' kaniimika lowak apákna' aa-nonaachi-cha …
food some fire top LOC.APPL-cook-ss
'She cooked some food on the fire and …'

Another is a superessive applicative which occurs only in Choctaw and Hitchiti/Mikasuki, but since these represent separate major branches of the family, Booker reconstructs it for Proto-Muskogean. (In the Choctaw orthography below, underlined vowels are nasalized.)

(p. 256)

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(45)

Choctaw (Muskogean) superessive applicative: Broadwell 2006: 158

a. Oklah si-**o**-hilha-tok.
PL 1SG.PAT-**SUPERESSIVE.APPL**-dance-PAST
'They danced on top of me.'

b. Choctaw superessive applicative: Booker 1980: 223, citing Jacob et al. 1977
sóbah **om**-binị:li
horse **SUPERESSIVE.APPL**-sit
'to ride a horse'

A third is an instrumental applicative prefix *išt-*.

(46)

Choctaw (Muskogean) instrumental applicative: Broadwell 2006: 159
Itti' iskị̲fa' **isht**-cha̲ya-tok.
wood axe **INST.APPL**-chop-PAST
'He **chopped** wood **with** an axe.'

The instrumental is a more recent addition. Its source persists in the verb **iši/isi* 'take, hold, grab', followed by the same-subject dependency marker *-t*. It is outside of the locative applicative when they co-occur. Furthermore, while the locative applicatives are prefixed to the verb inside of the pronominal prefixes, the instrumental is loosely attached outside of them.

A number of linguistic features can be seen to have been passed from Siouan languages in the Southeast into Muskogean languages via contact (Mithun 2017: 878–933). The similarities among the Siouan and Muskogean applicatives are suggestive, though since applicatives like these are widespread in North America, there may be no relationship. Given other observed contact effects on Muskogean from Siouan, however, it is possible that the development of the Muskogean applicatives was stimulated by contact with Siouan languages in the area.

A third major linguistic area of North America is the West, centered in Northern California and extending north into Oregon and east to the Rockies. The area is home to a large number of languages: around twenty genetic groups in California alone and another seven to the north. Many structural traits have spread across genetic boundaries here, some related to morphological complexity. Usually the forms of markers themselves show no resemblances, but the kinds of morphological patterns and categories that have developed are often strikingly similar.

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Means/manner prefixes like those seen earlier in Northern Paiute (Uto-Aztecan) and Nez Perce (Sahaptian) appear throughout the West in languages once hypothesized to be related in a large “Hokan” superstock (Pomoan, Yuman-Cochiti, Palaihnihan, Chumashan families, and Karuk, Yana, and Washo isolates), in languages once hypothesized to be related in another large “Penutian” superstock (Maidun, Klamath, Takelma, Sahaptian), and some never included in either. Other families once hypothesized to be part of these groups (Shasta, Esselen, Salinan; Wintun, Utian, Yokuts, Coos, Siuslaw, Alsea) show no such prefixes.

(p. 257) A second kind of areal morphological elaboration is pervasive in the West as well: sometimes substantial inventories of verb suffixes indicating location and direction. The areas with means/manner prefixes and locative/directional suffixes largely overlap but do not coincide exactly (Mithun 2007b). In many cases smaller affixes with more diffuse meanings occur in languages near the center of the area, while larger affixes with more concrete meanings, in some cases relatable to noun or verb roots in the language, occur at the periphery. The forms of the affixes are usually cognate within families but not shared across genetic boundaries.

Most of the languages in this area were spoken in small communities where contact is longstanding and exogamy and multilingualism the norm. Though the affixes were not transferred across language boundaries as such, it is likely that their precursors were. Bilinguals accustomed to specifying certain semantic distinctions in one language often carry over such tendencies into another. They may have replicated certain patterns of compounding. Over time, the recurring patterns of expression ultimately developed into affixal constructions, on their own or in concert. It should be noted that most of the relatively few North American languages without argument marking on the verb are part of this area.

13.7 Conclusion

North America is generally thought of as an area of high polysynthesis, though the defining criteria are not obvious. Measures of average morphemes/word over a 100-word sample do not necessarily correlate with other features often associated with the type. Many of the languages have the grammatical resources for the construction of extremely long, complex words, but such words may be relatively rare in actual speech. Furthermore, different lexical categories can show quite different morphological possibilities: often complexity is concentrated in verbs, while other parts of speech may be nearly isolating.

Other characteristics traditionally associated with polysynthesis, argument marking in the verb, noun incorporation, applicatives, and elaborate inventories of adverbial affixes, are indeed widespread across North America, despite the great genetic diversity. None of these are monolithic, however, and though they can be seen to have been highly stable

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over long periods of time, none is static. Argument marking varies from full paradigms of pronominal affixes for all core arguments in three persons, to gaps for some third persons, and to no third persons at all. Noun incorporation may be highly productive, limited, or vestigial, or it may develop into productive affix constructions. There may be just one applicative or a larger set, and they may vary in productivity. Inventories of adverbial affixes show the most diversity of all. Though such characteristics often cluster, there are no direct relationships among them. None correlates perfectly with any other, nor do the degrees of development of any of them form a predictive implicational hierarchy.

Dahl (this volume) observes that polysynthesis is generally a ‘mature’ phenomenon: polysynthetic structures tend to develop gradually over long periods of time. Most of the structures seen here can be reconstructed to proto languages probably dating back (p. 258) thousands of years. Over time, frequent collocations can become routinized; sequences of words can be automated as chunks, ultimately grammaticalizing into bound morphemes. At least some of the widespread propensity for polysynthesis might be attributable to the settings in which the languages have developed, as discussed by Trudgill and Rice (both this volume). Many are spoken in relatively small societies of intimates, where daily interaction is among familiar interlocutors who share common background knowledge, interests, and context. Certain topics of discussion, patterns of expression, and collocations might recur more often than in larger societies with different patterns of interaction.

Beyond the widespread tendencies toward polysynthesis observable across North America, there is diversity in specific directions of morphological development. Certain areal patterns emerge in both abstract structure and semantic elaboration, suggestive of the potential effects of language contact in shaping morphological complexity. Bilinguals, particularly children learning multiple languages during the critical age of acquisition, may be undaunted by complexity that might present difficulties for untutored adult learners and replicate semantic distinctions offered by one of their languages in another.

Profiles of the nature of polysynthesis across the world and in individual areas is showing that it is not a single, self-contained language type, but rather recurring associations of various properties, each of which can vary in its own way, and each potentially shaped by a multiplicity of factors.

Abbreviations

ABS
ABSOLUTIVE
AGT
GRAMMATICAL AGENT

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APPL
APPLICATIVE
ART
ARTICLE
BEN
BENEFACTIVE
CAUS
CAUSATIVE
CISL
CISLOCATIVE
COND
CONDITIONAL
CONN
CONNECTIVE
DAT
DATIVE
DECL
DECLARATIVE
DEP
DEPENDENT
DET
DETERMINER
DISTR
DISTRIBUTIVE
DU
DUAL
DUR
DURATIVE
DV
DUPLICATIVE
EP
EPENTHETIC
ERG
ERGATIVE
F
FEMININE
FUT
FUTURE
HAB
HABITUAL
IMP
IMPERATIVE
INCL

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INCLUSIVE
IND
INDICATIVE
INDF
INDEFINITE
INS
INSTRUMENTAL
INTR
INRANSITIVE
IPFV
IMPERFECTIVE
LK
LINKER
LOC
LOCATIVE
M
MASCULINE
MID
MIDDLE
NEG
NEGATIVE
NMLZ
NOMINALIZER
PASS
PASSIVE
PAT
GRAMMATICAL PATIENT
PFV
PERFECTIVE
PL
PLURAL
POSS
POSSESSIVE
PROG
PROGRESSIVE
PROX
PROXIMATE (p. 259)
PURP
PURPOSIVE
Q
QUESTION PARTICLE
QUOT
QUOTATIVE

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RDP
REDUPLICATION
RECP
RECIPROCAL
REFL
REFLEXIVE
REP
REPETITIVE
REV
REVERSIVE
SG
SINGULAR
SS
SAME SUBJECT
ST
STATIVE
SUBORD
SUBORDINATE
TR
TRANSITIVE
TRANSLOC
TRANSLOCATIVE
USIT
USITATIVE

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The Northern Hokan Area

Carmen Jany

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Abstract and Keywords

A number of languages indigenous to Northern California display structural similarities which raise interesting questions about possible contact effects on features of polysynthesis. In particular, the coding of grammatical relations and patterns of verbal compounding and lexical affixation reveal an undeniable areal distribution. The presence of these same features also defines the languages examined in this chapter (Chimariko, Shastan, Karuk, Yana, Atsugewi, Achumawi, and Pomoan) as polysynthetic. While other chapters in this volume are based on a single language family, the present chapter covers a hypothetical genetic grouping of languages spoken in a geographically contiguous area where structural similarities stem from language contact rather than from genetic affiliation.

Keywords: language contact, lexical affixes, genetic affiliation, areal distribution, hypothetic genetic grouping

14.1 Introduction

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A number of languages indigenous to Northern California display structural similarities which raise interesting questions about possible contact effects on features of polysynthesis. In particular, the coding of grammatical relations and patterns of verbal compounding and lexical affixation reveal an undeniable areal distribution. The presence of these same features also defines the languages examined in this chapter (Chimariko, Shastan, Karuk, Yana, Atsugewi, Achumawi, and Pomoan) as polysynthetic.

In an effort to reduce the vast number of North American languages to a few superstocks, earlier scholars took these similarities as evidence of genetic relationship (Dixon and Kroeber 1913b). As a result, the languages studied here have been hypothesized to be genetically related in a group termed Northern Hokan, a subdivision of a proposed Hokan stock relating over a dozen languages and language families. The putative stock extends geographically from Northern California to Nicaragua. Ever since it was first proposed in 1913 (Dixon and Kroeber 1913a), the Hokan stock has generated wide interest, as well as much discussion and criticism, due to difficulties in finding supporting evidence. Problematic is the antiquity of the stock and the fact that putative Hokan languages have been in close contact for centuries, making it difficult to distinguish cognates from ancient loans. While a discussion of the validity of the Hokan stock goes beyond the scope of this chapter, the areal implications merit further attention.

14.1.1 Geographic considerations

Six of the so-called Northern Hokan languages, Chimariko, Shastan (including Shasta, Konomihu, New River Shasta, and Okwanuchu), Karuk, Yana, Atsugewi, and Achumawi, were all spoken in a geographically contiguous area in Northern California; the seven Pomoan languages were spoken in an area detached from the former to their southwest (Map 14.1). (p. 261)

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Map 14.1 Northern Hokan and Pomoan languages

Handbook of North American Indians, v. 8, Washington: Smithsonian Institution

In general, California can be characterized as one of the most linguistically diverse regions in the world, comprising over twenty known language families and isolates. Golla (2011) attributes this linguistic diversity to a particular sociopolitical situation prior to contact with white explorers, in which each community retained its own language or dialect, which in turn was closely connected to the land. Language use was conditioned by geographic location, whereby each language was spoken in a specific locality (Golla 2011: 4). In pre-contact times many small village communities were living in proximity to one another, (p. 262) and immediate neighbors were in close contact via trade and intermarriage. Relations with more distant communities were practically nonexistent. As languages stayed within their geographic boundaries, multilingualism was the norm. Men spoke several neighboring languages due to trade, while women mastered multiple languages as a result of intermarriage. Such an intimate and longstanding relationship naturally is expected to result in linguistic contact phenomena.

In fact, California is a well-established linguistic area where many areal traits cut across genetic boundaries, and language convergence is apparent in geographically contiguous areas, in particular in Northern California (Bright 1973; Sherzer 1973; Haas 1976; Mithun 2007b, 2008a, 2010a, 2012b), including features typical of polysynthesis. Bright (1973) and Sherzer (1973) noted diffusion of grammatical features, such as reduplication, pronominal affixation, and instrumental and locative-directional affixes. Mithun (2008a, 2010a, 2012b) examined the areal spread of grammatical marking and showed how hierarchical and agent/patient systems have resulted from language contact. According to Mithun, the convergence of grammatical systems did not come from direct transfer of grammatical forms, but from an increased use of a stylistic option whereby low-ranked agents are omitted through passivization (Mithun 2012b), or through a reanalysis of a nominative–accusative system where third person pronominal markers are eliminated with no overt marking of transitivity remaining (Mithun 2008a), respectively.

Further grammatical parallelisms are also likely the outcome of the longstanding contact among these languages. Following Mithun (2007b, 2012b), compounding patterns could have resulted in areally present instrumental prefixes and directional suffixes. Again, Mithun suggests that it is not actual forms which were borrowed but rather ‘patterns of expression, tendencies to specify particular distinctions especially often and to exploit existing constructions, compounds, for these purposes’ (2007b: 164). Language contact then resulted in an increased frequency of use of certain compounding patterns which later grammaticalized into affixes. The observed contact phenomena indicate that while the validity of genetically grouping the languages treated in this chapter as Northern Hokan may be questioned, areal implications cannot be discarded.

14.1.2 Linguistic vitality

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One of the reasons for the disagreement among researchers in regards to deep genetic relationships and areal spread stems from the fact that many of the languages are either extinct or on the verge of extinction, making it difficult to test any assertions in modern language use. Furthermore, existing materials were collected many decades ago, are often limited, and generally lack data from everyday conversation, which is key for understanding linguistic structure and its frequency of use. Today, efforts are underway in many communities to revitalize the languages through school programs and other models. For a detailed account on the linguistic vitality of each language treated in this chapter see Golla (2011).

The following two sections outline the two main phenomena contributing to polysynthesis in the languages surveyed: the marking of grammatical relations (Section 14.2) and stem compounding and lexical affixes (Section 14.3).

(p. 263) 14.2 Grammatical Relations

With the exception of Pomoan, all languages examined are head-marking and thus allow for holophrasis, one of the key features for polysynthesis to occur (Fortescue 2008: 2). While in Yana, Karuk, Shastan, and for the most part in Chimariko, only one core argument is overtly expressed as a pronominal affix on the verb, Achumawi and Atsugewi show portmanteau prefixes and prefix-suffix combinations simultaneously encoding person (subject or subject-object combinations), number, and mood. In Achumawi, first, second, and third person, as well as singular, plural, and dual (inclusive/exclusive) are distinguished in five sets of pronouns according to modality (Table 14.1).

(1)

Achumawi grammatical marking: prefix–suffix combinations

Prefix–suffix combinations *h-… -má, k- … -tskà* (Angulo and Freeland 1930: 90)

a.	h-ám˙-î˙-má	b.	k-ám˙-î˙-tská
	1PL.INCL.IND-eat-V-1PL.INCL.IND		3/2- eat-V[1]-3/2
	‘We eat’		‘He ate you’

1

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Table 14.1 Achumawi pronominal portmanteau affixes

Person	Indicative	Subordinate	Optative	Volitional present	Volitional future
1sg	*s-*	*st-*	*sl-*	*l-*	*mál-*
2sg	*k-*	*m-*	*lg-*	*t-*	*k-*
3sg	*y-*	*t-*	*l-*	*tsl-*	*mál-*
1 dual incl	*h-*	*ts.h-*	*slh-*	*lh-*	*màh-*
1 dual excl	*s.h-*	*sts.h-*	*ìslh-*	*slh-*	*smàh-*
2 dual	*gìdz-*	*mìdz-*	*lìkts-*	*dz-*	*dz-*
3 dual	*eiy-*	*dìdz-*	*ld-*	*tsìnd-*	*mád-*
1pl incl	*h-…-má*	*st.h-…-má*	*slh-…-má*	*lh-…-dzà*	*màh-…-dzà*
1pl excl	*s.h-…-má*	*stsìs.h-…-má*	*ìslh-…-má*	*slh-…-dzà*	*smàh-…-dzà*
2pl	*gìdz-…-má*	*mdz-…-má*	*lkts-…-má*	*dz-*	*dz-*
3pl	*y-…-ú*	*d-…-ú*	*ld-…-ú*	*tsìnd-…-dzà*	*màd-…-dzà*

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1/2	*h-…-tskà*	*t.h-…-tskà*	*lh-…-tskà*	*lh-*	*mìh-*
3/2	*k-…-tskà*	*m-…-tskà*	*lg-…-tskà*	*tsìm-*	*mìd-*
2/1	*sk-*	*sm-*	*sl-*	*st-*	*sk-*
3/1	*sy-…-má*	*stìd-…-má*	*slid-…-má*	*sìnd-*	*smid-*
3/3	No special forms; just one core argument marked				

Angulo and Freeland 1930: 91

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(p. 264) Likewise, Atsugewi distinguishes first, second, third, singular, dual (inclusive/exclusive), and plural pronouns in eight verb classes as prefixes, prefix–suffix combinations, or as infixes and superfixes in certain conjugations (Olmsted 1961). Similarly, Shastan verbs consist of at least a portmanteau prefix and a root. The prefix encodes modality (hortative, imperative, volitional, potential, subjunctive, declarative), number (singular, plural, undifferentiated), tense in the declarative mode (present, near past, distant past, undifferentiated), and first, second, and third subject person. Second person may be 'prohibitory', 'mandatory', or 'undifferentiated', while third person differentiates 'direct evidential', 'inferential', 'reportative', 'gerundial', 'passive', and 'undifferentiated' (Silver 1966: 116–17). Subject person may also be left open.

(2) Shasta grammatical marking: portmanteau prefixes

a. Hortative	b. Volitional	c. Potential
tá-huˑsáʔ	tʼá-huˑsáʔ	s-áhuˑsáʔ
1.SG.HORT-talk	1.SG-talk	1.U-talk
'Let me talk!'	'I will talk'	'I might talk'

14.2.1 Hierarchical systems

While in Shastan the single core argument marked on the predicate coincides with the subject, in Chimariko, Karuk, and Yana it is chosen following a person hierarchy. Each of the three languages follows a slightly different hierarchy, but speech–act participants are always ranked higher than third persons. The three languages differ in the rankings and distinctions made for speech-act participants. For instance, Chimariko ranks second person plural over second person singular resulting in the following hierarchy: 1 > 2pl > 2sg > 3. Second person plural outranks second person singular because it shows an agent-patient distinction in transitives, the same as first person, while second person singular does not. Depending on the phonological shape of the verb stem, core arguments appear as prefixes or suffixes for first, second, and third person, singular and plural, except for third persons where number is not distinguished. For the purpose of deciding which core argument is to be indexed on the predicate, speech-act participants rank higher than third persons and agents trump patients in local relations: Chimariko indexing hierarchy: 1, 2 > 3 + agent > patient.

Chimariko hierarchical system: 2 > 3 = 2; 3 > 2 = 2 (Jany 2009: 147)

a.	b.
m-oko-xana-ʔ	qh-akʼo-ʔna-ʔ
2SG-tattoo-FUT-Q	2PL-talk- APPL-Q
'Are you going to tattoo her?'	'Was he talking to you?'

In Chimariko there is only one instance in which two core participants overtly surface on the predicate: when a second person acts on a first.

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(4) Chimariko hierarchical system with two overt core arguments: 2 > 1 = 2 + 1 undergoer

(p. 265)

a.	m-e-xota	b.	m-ixota
	2SG-1SG.P-look.at		2SG-look.at
	'You look at me.'		'You look at it.'

The Chimariko system is summarized in Table 14.2, and the pronominal affixes are listed in Table 14.3.

Spoken to the northwest of Chimariko, Karuk also features a hierarchical system, but the person hierarchy adheres to a different ranking: second person plural ranks highest: Karuk indexing hierarchy: 2pl > 1 > 2sg > 3.

Core arguments are marked as prefixes on verbs distinguishing first, second, and third person in singular and plural, and positive, negative, and optative sets (Bright 1957: 58; Macaulay 1992). A detailed analysis of the Karuk pronominal affixes is presented in Macaulay (1992).

(5)

Karuk hierarchical system (a-c: Macaulay 1992:185; d: Bright 1957:63)

a. 1sg > 3 = 1sg

karuk	xás	ni-mah
upriver	then	1SG.A-see
'I saw it when I was upriver.'		

b. 1sg > 2sg = 1sg

pu=kín-čúphi-uniš-aviš-ara
NEG=1SG.A.NEG-talk-to-FUT-NEG
'I will not speak to you.'

c. 2sg > 1pl = 2sg

ʔiim	pú=kín -ʔa·ku-tih-ap
2SG	NEG=2SG.NEG-hit-DUR-INV
'You're not hitting us.'	

d. 1sg > 2pl = 2pl

pu=ki·k-tapkû·pu-tih-ap
NEG=2PL.NEG-like-DUR-INV
'I don't like you all.'

Table 14.2 Summary of Chimariko grammatical system

Actor > Undergoer	**Affix on predicate**
1>1	1 agent
1>2	1 agent
1>3	1 agent
2>1	2 + 1 undergoer[1]
2>2	2

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2>3	2
3>1	1 patient
3>2SG	2
3>2PL	2PL patient
3>3	3

[1] The affix for the first person undergoer is different from the first person patient form

(p. 266)

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Table 14.3 Chimariko pronominal affixes

Pronominal prefixes					**Pronominal suffixes**				
	Singular Agent	Plural Agent	Singular Patient	Plural Patient		Singular Agent	Plural Agent	Singular Patient	Plural Patient
1	*y-, ʔ-*	*ya-*	*čh-*	*čha-*	1	*-ʔ(i)*	*-ya*	*-čh*	*-čha*
2	*m-*	*qh-*	*m-*	*qha-*[1]	2	*-m*	*-qh*	*-m*	*-qh*
3	*h-*	*h-*	*h-*	*h-*	3	*-h/Ø*	*-h/Ø*	*-h/Ø*	*-h/Ø*

[1] Occurs only in transitive sentences with third person actors

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However, the pronominal affix system in Karuk is not as neat as just outlined here and includes exceptions where the hierarchy seems to be violated (Macaulay 1992: 189–90). The system further distinguishes agents from patients for first person singular forms and shows traces of inversion.

For inversion to occur in the first place, a person hierarchy needs to be in place. When core arguments in a clause are such that the agent outranks the patient, there is direct alignment. If the opposite occurs, there is inverse alignment. Either one (usually the inverse) or both situations can be overtly marked on the predicate. Inversion differs from passivization in that an inverse-marked clause is still transitive, while a passivized one is not. Macaulay's (1992) examination of the pronominal system leads to the conclusion that *-ap*, previously thought to be a part of discontinuous pronominal affixes, is best analyzed as a somewhat imperfect inverse marker.

(6)

Karuk inverse marker *-ap* (Macaulay 1992: 195)

a. Direct : 2sg > 3 sg, positive

hô·y	ʔi-mah-tih	pa=išpuka
where	2SG.POS-find-DUR	the=money

'Where did you find the money?'

b. Inverse: 3sg > 2sg, positive

ʔî·m	ʔô·k	ke·miša	ʔi·n	ʔi-ʔaṽ-aviš-ap
outside	here	monster	SUBJ	2SG.POS-eat-FUT-INV

'A monster outside is going to eat you.'

Macaulay (1992: 194) observes that while all forms with a second person object and most forms with first person plural objects include the inverse marker *-ap*, the marker occurs only in some of the forms with a first person singular object. In interactions which violate the hierarchy and where the inverse suffix is absent, different shapes for subject and object pronouns signal grammatical function.

Yana shows a strategy similar to inversion. In Yana core arguments are indexed as pronominal suffixes on the predicate. The hierarchy is somewhat simpler than those in Chimariko and Karuk in that there is no additional ranking of speech-act participants: Yana indexing hierarchy: 1, 2 > 3. (p. 267)

Table 14.4 Yana pronominal suffixes with dialect differences

Person	Central/Northern Yana	Yahi
1sg	*-ndž(a)*	*-ʾniži, -nci*

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1pl	*-ʔnigi*	*-ʔnigi*
2sg	*-ʔnu(ma)*	*-ʔnu(ma)*
2pl	*-ʔnuga*	*-ʔnumga*

Sapir and Swadesh 1960: 10

Third persons are left unmarked in Yana. The system works differently from that in Chimariko, but in ways similar to that of Karuk in that there is obligatory passivization if the hierarchy is violated (Table 14.4).

(7)

Hierarchical system in Yana

a. 3sg > 2 sg = 2 sg (Sapir 1923:277)	b. 2sg > 1 sg = 1sg (Sapir 1910:184)
ībaakʾáp-si-wa-ʔnu	tʰípkʾu-wà:-č
pull.up-TAM-PASS-2SG	say-PASS-1SG
‘He will pull you up.’	‘You say to me.’

(8)

Obligatory passivization if hierarchy is violated

a. 1sg > 3sg = 1sg (Bright 1957:147)	b. 3sg > 1sg = 1sg + *-wa* (Bright 1957:147)
hoxpadablaucui-si-ndža	baxpaadablaucui-si-wa-ndža
hit.in.the.eye-TAM-1SG	hit.in.the.eye-TAM-PASS-1SG 11
‘I hit him in the eye.’	‘He hit me in the eye.’

Example (8) shows that each time the hierarchy is violated there is obligatory passivization whereby the (higher) ranked patient is overtly indexed on the predicate preceded by the passive suffix *-wa*. The same system is applied to instances in which only speech-act participants are involved.

(9)

Obligatory passivization in all local relations

a. 1sg > 2sg = 2sg + -wa (Bright 1957:183)	b. 2sg > 1 sg (Sapir 1910:137)
tim-xipʾa-x-wa-ʔma	dewáigadamadža-si-wa:-dž
tell-long.ago-TAM-PASS-2SG	see-TAM-PASS-1SG
‘I told you long time.’	‘You just see me.’

Given that each time the hierarchy is violated, as well as in all local relations, the patient rather than the agent is indexed on the predicate, Yana shows a second hierarchy, as noted in Mithun (2012b: 270), whereby patients trump agents: Yana indexing hierarchy: 1, 2 > 3 + patient > agent.

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This differs from both Chimariko and Karuk, where agents are indexed in situations involving only speech-act participants. In passive constructions, the agent is demoted (p. 268) to an oblique or omitted, and the patient becomes the main core argument, as in Yana. Unlike inversion, passivization is a detransitivizing mechanism. While both Karuk and Yana indicate violations of the person hierarchy by overt marking (inverse *-ap* in Karuk and passive *-wa* in Yana), the two systems are different. Passives are considered potential sources for inverse systems when passivization is extended to more situations, eventually becoming obligatory as certain conditions are met. As a result, the two systems may represent an evolutionary path at different stages. The Yana system, however, cannot be reduced to a pronominal subject suffix with or without the passive –*wa*, as Mithun notes (2012b: 271), since the pronominal affixes for first and second person contain additional elements. In intransitives and mixed relations an extra element *-n* for first person singular and –*nu* for second person singular appears in the pronominal shapes. Mithun (2012b: 271) suggests that these elements can be traced to proximal and distal demonstratives respectively.

Overall, in each of the three languages displaying a hierarchical system, when a first or a second person acts on a third, the latter is simply left unmarked on the verb. The languages differ in how they deal with local relations. Moreover, the languages use different strategies to disambiguate whether the single marked core argument is the actor or undergoer in a situation. While Yana uses obligatory passivization and Karuk inverse marking, Chimariko distinguishes different agent and patient forms for first and second person. Karuk also shows an incipient agent/patient system which has developed for first person singular. Pomoan, which does not follow a person hierarchy and is the only dependent-marking language studied here, makes the same distinction for the entire pronominal set.

14.2.2 Agent/patient systems

The indexing hierarchies that have been discussed apply to transitive and ditransitive situations, but do not affect intransitives. Agent/patient systems extend to all types of clauses, including intransitives. In Chimariko, distinct pronominal affixes occur for first person singular and plural and for second person plural, but not for second person singular. Third person does not distinguish semantic role.

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(10)

Chimariko agent/patient system in intransitive clauses

a. Harrington 020-1118[2]
no?ot ?-ik'o- nip
1SG 1SG.AGT-talk-PST
'I was talking.'

b. Harrington 020-1113
no?ot tew-čhu-xana-t
1SG big-1SG.PAT-FUT-ASP
'I am going to be big.'

c. Agent-patient system in transitive clauses (Jany 2009: 217)
čh-ušehe-m-de?w ?awa hida i-mam-da
1SG.PAT-take-DIR-DER house lot 1SG.AGT-see-ASP
'They took me off, I saw lots of houses.'

2

(p. 269)

(11)

Chimariko Actor-undergoer distinction with second person plural

a. Harrington 020-1126
qh-uk'o-?na-n
2PL.A-talk-APPL-ASP
'You (guys)talked to him.'

b. Harrington 020-1126
qha-k'o-?na-n
2PL.O-talk-APPL-ASP
'He talked to you (guys).'

c. Harrington 020-1113
mamqhedot tew-qho-xana-t
2PL big-2PL.A-FUT-ASP
'You are going to be big.'

In Chimariko, the second person plural shows a distinction between actor and undergoer, *qho-/qh-* and *qha-* respectively. The affix marking the undergoer does not occur in intransitives where a patient form would be expected as in (11c). Therefore, it is not a patient marker, but rather an affix indexing the undergoer. A system where second person plural but not second person singular affixes differentiate semantic role appears irregular and confusing. However, second person plural forms are also special in other Northern California languages, such as Karuk where they are ranked highest on the person hierarchy, and in Pomoan where they are used to show respect to elders (Mithun 2010a: 290).

In Chimariko the agent/patient system applies only to first persons. In intransitives, patient marking depends on the verb stem. Actions and states can occur with patient markers. A number of verb stems denote actions. Another language with traces of an agent/patient distinction for first persons is Karuk. Mithun (2008a: 310) shows how the

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prefix *na-* which signals the first person singular patient in transitives also appears in some intransitives, such as ‘to bleed’, ‘to be sick’, and ‘to be lonesome’. Bright (1957: 59) further notes that such predicates denoting states may be accompanied by a pronoun ‘it’ which would translate as ‘it … me’. Mithun (2008a) demonstrates a possible diachronic path for the development of agentive systems stating the following:

> In situations where pronominal reference to topical 3rd persons is usually omitted, and there is no overt marker of transitivity, it would be easy to reinterpret transitive clauses like ‘(It) is hurting me’ as intransitives like ‘I am in pain’ and object markers as grammatical patient markers.
>
> (Mithun 2008a: 332)

In both Chimariko and Karuk, 3rd person undergoers are omitted, and transitivity is not overtly marked. Karuk exhibits the initial stages of the development where the third person pronoun ‘it’ optionally still occurs in certain instances.

A fully developed agent/patient system with complete pronoun sets occurs in Pomoan, the only dependent-marking language family discussed in this chapter. The Pomoan language family consists of seven mutually unintelligible languages. Grammatical relations are marked as suffixes on nouns or as enclitics and on independent pronouns. There are three sets of independent pronouns (Table 14.5).

The first set indicates agents and the second patients. The third set represents possessives and obliques. Sets I and II both occur with transitives and intransitives. As with Chimariko, in intransitives the verb stem determines the choice of pronoun. Following Mithun (p. 270) (2008a: 306–7), agents ‘instigate, perform, and control events and states’ and participants are marked as patients only when they are ‘significantly affected by the situation’. Inanimates thus never occur as patients.

Table 14.5 Central Pomo independent pronouns

	Set I	**Set II**	**Set III**
1sg	*ʔa:*	*t̪o:*	*kʰe*
2sg	*ma*	*mt̪o*	*mkʰe*
3sg	*mu:l*	*mú:t̪u*	*mú:ʔkʰe*
3sg.r	*t̪i:*	*t̪í:t̪o*	*t̪í:ʔkʰe*
1pl	*ya*	*yal*	*yá:ʔkʰe*

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2pl	*máya*	*máyal*	*máya:ʔkʰe*
3pl	*mú:tuya̰*	*mú:t̰uyal*	*mú:t̰u:ya:ʔkʰe*
3pl.r	*t̰íya*	*t̰íyal*	*t̰íya:ʔkʰe*

Mithun 2008a: 304

(12)

Pomoan agent/patient system in transitives (Mithun 2008: 306-7)

a. Agent-marking

ʔa:	ʔel	bé-č-'
1SG.AGT	water the	hold-INCEPT-PFV

'I picked up water.'

b. Patient-marking

t̰o:	ʔ=mú:t̰u	ʔ-yá:q-an
1SG.PAT	COP=3.PAT	mentally-know- IPFV

'I remember her.'

c. Agent-marking on inanimates

mu:l	ʔa:	hk'úm
3SG.AGT	1SG.AGT	kill.PFV

'I killed it.'

d. Patient-marking on animates

mú:t̰u	ʔa:	hk'úm
3SG.PAT	1SG.AGT	kill.PFV

'I killed him.'

(13)

Pomoan agent/patient system in intransitives (Mithun 2008a: 306)

a. Agent pronouns		b. Patient pronouns	
ʔa: wáq'ʔile	'I would go'	t̰o: ʔʰál	'I'm sick'
ʔa: ná:č'	'I'm hiding'	t̰o: ló:ya	'I fell'

As in Chimariko, a few verb stems, such as 'to go to bed/ to fall asleep', 'to run into/to bump into', and 'to cough', can occur with both agent and patient pronouns (Mithun 2008a: 307).

14.2.3 Nominal case marking

In Pomoan, the agent/patient system is also reflected in nominal case marking with kinship terms and some animates for both transitives and intransitives. In Southern Pomo (Walker (p. 271) 2012: 359) the distinction is marked via enclitics, an agent case enclitic *=yey* and a patient case enclitic *=yčon.* [3]

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(14)

Nominal agent/patient case marking in Southern Pomo (Walker 2012: 359–60)

a. Agentive case enclitic

kʰáʔbekʰáčʰ=yey	do:lon	čoh:on-Ø
raptor.species=A	bobcat	marry-PFV

'Fish Hawk married Wildcat.'

b. Patient case enclitic

hamini(:)-ba	kʰaʔbé=yčon	sí:ma	mí:t̰i-w
and.then-s.SEQ	rock=PAT	sleep	lie-PFV

'Having done so, Rock [Man] went to sleep.'

In addition to the agent/patient enclitics, nominative/accusative case-marked determiner enclitics are optionally added to noun phrases regardless of the animacy of the head noun or pronoun (Walker 2012: 39 and 366).

(15)

Subject/object case-marked determiners in Southern Pomo (Walker 2012: 366)

čúmaṭ'=wám:u	hoʔ(:)ó=wi	biʔk'i-k':i-w	šiʔmi=ʔwan
gray.squirrel=DET.SUBJ	teeth= INSTR	gnaw-ITER-PFV	bow= DET.OBJ

'The Squirrel gnawed it with his teeth, the bow.'

While the Pomoan languages are the only ones with nominal case marking for core arguments, all languages examined exhibit oblique case markers for possessives, instrumentals, comitatives, and locatives. In Chimariko, there is an instrumental *–mtu*, a comitative *–owa*, two locative suffixes *–kunoi* 'inside' and *-če* 'at', and locative postpositions *xunoi/kunoi* 'inside' and *tcūmū* 'under' (Jany 2009: 74–5, 66–7). Karuk shows a series of adpositions marking obliques: instrumental *mû·k* 'by means of', comitative *kó·van* 'together with more people', and *xákka·n* 'together with one person', directional *ku·k* 'to', agentive *ʔî·n* (as in passives), and purposive: *kuθ* (Bright 1957: 129–30). Shasta, Achumawi, Atsugewi, and Pomoan all also show comitative, instrumental, and locative case marking. Shasta and Pomoan further include vocative and ablative case markers. Shasta also has two directionals (Silver 1966: 179) and Southern Pomo includes an allative *-šan* (Walker 2012: 216).

(16)

Oblique case marking

a. Karuk directional (Bright 1957: 130)

yuma·rári·	ku·k	ʔu·mi
hell	DIR	go

'Go to hell!'

b. Shasta ablative case (Silver 1966: 186)

tú·rustukú-c·uʔ
inside.basket-abl

'from inside the basket'

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Dependent-marked possession in Achumawi, Shasta, and Pomoan

a. Achumawi (Angulo and Freeland 1930: 83)
wàh-ú míktsàn
Bear-POSS children
'Bear's children'

b. Shasta (Silver 1966: 184)
pá·stiní·-tuʔ k'áhus·ik
white.man-POSS talk
'English' (=white man's talk)

c. Southern Pomo (Walker 2012: 376)
ʔawi-:kʰe ka:wi-ya=ʔwan=hča-n
1SG.OBL-POSS child-PL=DET.OBJ=COLL-PAT
'(I never told) my kids'

(p. 272)

c. Chimariko comitative (Jany 2009: 72)
ʔuwela-i-owa
boy-POSS-COM
'together with my boy'

d. Pomoan vocative (Walker 2012: 214)
me-deʔ
father-VOC
'father!'

Overall, oblique case is marked by suffixes (Chimariko, Shasta, Yana, Pomoan[4]), enclitics (Achumawi, Atsugewi, Pomoan), or postpositions (Chimariko, Karuk, Pomoan), except for possession which also features prefixes.

14.2.4 Possessives

Other than in Shasta and Pomoan, possession is indexed on the head noun. Possessive prefixes on possessed nouns occur in Chimariko and Karuk; Yana shows possessive suffixes on possessed nouns. Chimariko also exhibits a distinction between alienable and inalienable possession. Body parts count as inalienable possessions, as in Southern Pomo (Walker 2012: 376), while kinship and objects are alienable.

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(17)

Head-marking possession in Chimariko, Karuk, Yana

a. Chimariko alienable and inalienable possession (Jany 2009: 72)

čʰ-uweš	huweš-ʔi
1SG.POSS.INALIEN-horn	horn-1SG.POSS.ALIEN
'my horn' (deer says)	'my horn' (Frank says)

b. Karuk (Bright 1957: 56)

nanútta·t
1PL.POSS-mother
'our mother'

c. Yana (Sapir 1923: 266)

dāʾtʾi-niʾkʾ
child-1PL.POSS
'our child'

Often, the shapes of the possessive affixes are similar or identical to the forms of the pronominal affixes on verbs, as illustrated for Chimariko in Tables 14.6 and 14.3.

With the exception of the third person suffixes, the shapes of the possessives and the pronominal affixes are almost identical. In Yana, possession may also be marked via possessive demonstratives or the third person possessor particle *k(i)* (Sapir and Swadesh 1960: 11), and thus not on the head.

(18) Yana possession (Sapir 1923: 273, 266)

a. dju waʾwi
2.DEM.POSS house
'your house'

b. kʾ-i dāʾtʾi
3.POSS-OBJ child
'her child'

(p. 273) Achumawi, Atsugewi, Shasta, and Pomoan mark possession on the dependent. A possessive suffix *-əʼHtu* is added to nouns and pronouns in Shasta (Silver 1966: 184, 201), and a possessive suffix *–ú* is added to nouns in Achumawi (Angulo and Freeland 1930: 83). Pomoan includes a separate set of possessive independent pronouns, which can also be analyzed as adding a possessive case enclitic *=:kʰe* to a special shape of the personal pronoun (Walker 2012: 225–6). In Achumawi, as in Pomoan, a special set of independent pronouns also indicates possession (Angulo and Freeland 1930: 84). Atsugewi further shows possessive marking on demonstratives, similar to Yana.

Table 14.6 Chimariko possessive affixes

	Prefixes (inalienable)	**Suffixes (alienable)**
1sg 'my'	*čh-*	*-ʾe/-ʾi*

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2sg ‘your’	*m-*	*-mi*
3sg ‘his, her’	*h-*	*-ita/-ye*
1pl ‘our’	*čha-*	*-če*
2pl ‘your’	*qh-*	*-qh*
3pl ‘their’	*h-*	*-ita*

Jany 2009: 71

(19)

Dependent-marked possession in Achumawi, Shasta, and Pomoan

a. Achumawi (Angulo and Freeland 1930: 83)
wàh-ú míktsàn
Bear-POSS children
‘Bear’s children’

b. Shasta (Silver 1966: 184)
pá·stiní·-tuʔ k’áhus·ik
white.man-POSS talk
‘English’ (=white man’s talk)

c. Southern Pomo (Walker 2012: 376)
ʔawi-:k^{h}e ka:wi-ya=ʔwan=hča-n
1SG.OBL-POSS child-PL=DET.OBJ=COLL-PAT
‘(I never told) my kids’

In (19c) -:*k*^{h}*e* is only used for alienable possession. As in Chimariko, all but body parts may be alienably possessed in Pomoan. Kinship terms are treated as a separate category for possession in Pomoan. They are obligatorily inflected for possession via prefixation and may, in addition to that, be accompanied by an independent possessive pronoun (Walker 2012: 188). Thus, kinship terms show head marking for possession in Pomoan.

(p. 274) ## 14.2.5 Summary

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With the exception of the Pomoan languages, all languages index core arguments on the predicate. Pronominal markers are either prefixed, suffixed, or both with no clear preference. In all of the head-marking languages the 3rd person undergoer is left unmarked. The languages differ, however, in the cues they use to identify the actor and undergoer in transitive clauses. In most cases only one argument is overtly indexed on the predicate. Chimariko, Atsugewi, and Achumawi show some exceptions in that respect. The single argument indexed on the predicate is determined by the widely attested animacy hierarchy (Silverstein 1976) in Chimariko, Karuk, and Yana. The three languages vary in how they treat local relations. Karuk favors first over second person and ranks second person plural highest. Chimariko and Yana select the single marked core argument in local relations, making use of a second hierarchy ranking agent and patient, but each follows a distinct pattern. In Chimariko agents are ranked higher, while in Yana it is the patient. The other two languages do not follow a person hierarchy. In Shasta the subject is marked on the predicate, while Atsugewi and Achumawi include portmanteau subject-object affixes.

Some of the languages distinguish semantic role by using a different set of pronominal affixes for agents and patients, for some or all persons. Such distinctions are sometimes made only for first persons, as in Chimariko. Some languages extend this distinction to intransitives whereby the verb stem determines the choice of affix. Such an agentive system occurs in Chimariko and Karuk for first persons, and applies to all persons in Pomoan. Other languages determine the semantic role of the sole marked core argument by using either an inverse marker (Karuk) or obligatory passivization (Yana) in cases where the person hierarchy is being violated. The strategies used to ensure that core participants in a clause can be identified are different in each language, but many appear in more than one language, which points to contact-induced grammaticalization processes, as discussed in detail in Mithun (2007b, 2008a, 2010a, 2012b). One strategy that is not used to discern grammatical or semantic role is word order. Word order is either free (Karuk and Atsugewi), verb-final (Chimariko and Pomoan), verb-initial (Yana and Achumawi), or pragmatically based (Shasta), though it should be noted that available discourse data is often limited to oral narratives. Everyday conversation has rarely been examined for these languages, probably due to their linguistic vitality or lack thereof. Relatively free word order has also been identified as an accompanying feature of polysynthesis (Fortescue 2008: 2).

All of the languages discussed here also have independent pronouns, but they are used optionally for emphasis or for other pragmatic reasons in the head-marking languages. As a result, single inflected verb forms can and often are used as whole clauses. On one hand, clauses without any lexical arguments are frequent in these languages. In Pomoan, lexical arguments and independent pronouns are case-marked and, therefore, seem essential, but they are not always present. Pronouns, kinship terms, and animate nouns are marked for the agent/patient distinction (Walker 2012: 38), while only Pomoan shows core case marking, oblique case suffixes, postpositions, or enclitics surface in all languages examined. Obliques include locatives, instrumentals, comitatives, directionals, and possessives. Only Chimariko, Karuk, and Yana indicate possession through affixes on

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the head. Incidentally, these are also the only three languages following a person hierarchy for the indexing of core arguments on the predicate and where pronominal affixes are not fused (p. 275) (p. 276) with other inflectional categories. Two of the head-marking language families, Shastan and Palaihnihan[5] (Achumawi and Atsugewi), mark possession on the possessor via suffixation. Yana and Pomoan show a more complex system for possession with both head and dependent marking (Table 14.7).

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Table 14.7 Summary of marking of grammatical relations

	Chimariko	**Karuk**	**Shasta**	**Palaihnihan**	**Yana**	**Pomoan**
Locus	Head	Head	Head	Head	Head	Dependent
Form	Prefixes or suffixes	Prefixes	Portmanteau prefixes	Portmanteau pre-/suffix combinations	Suffixes	Enclitics/ suffixes
Number of core argu-ments on predicate	1 (except 2/1 = 2 + 1)	1	1	1 or 2	1	0
Hierarchical system	yes	yes	no	no	yes	no
Agentive system	yes (1st person)	yes (incipient; 1st person)	no	no	no	yes
Inverse system	no	*-ap* (defective)	no	no	*-wa* passive	no
Zero-marked arguments	3rd person undergoer	3rd person undergoer;	3rd person object	3rd person un-dergoer in 3/3	3rd person	nominative case (South-eastern)

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		some 2sg and 3sg forms				
Nominal core case	no	no	no	no	no	yes
Oblique case	Suffixes, post-position	Post-positions	Suffixes	Enclitics	Suffix	Suffixes, enclitics
Possession	Head: pre- or suffixes	Head: pre-fixes	Dependent: suffixes on noun or pronoun	Dependent: suffix special set of independent pronouns	Head: suffixes Dependent: posse-ssive demon-stratives; *k(i)* particle	Dependent: special set of indepen-dent pro-nouns; Head: prefixes on possessed kinship
Word order	verb-final	free	pragmatically based	free or verb-initial	verb-initial	verb-final

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14.3 Compounding and Lexical Verbal Affixes

The languages studied here exhibit somewhat limited nominal compounding and noun incorporation with varying degrees of productivity. Moreover, all languages share a similar pattern of expression: verb-initial encoding of means and manner, categorized either as instrumental prefixes or as the initial piece in a bipartite stem, and verb-final encoding of direction and location, equally categorized either as locative/directional suffixes or as the second element in a bipartite stem. The distinct analysis depends on the availability of independent nominal forms, concreteness of meaning, number of different affixes encoding means/manner and direction/location, and obligatoriness of co-occurrence. Mithun (2007b) discusses these patterns in great detail and shows how they could have spread through language contact crystallizing from frequently occurring expressions. Nominal and verbal compounding, noun incorporation, lexical affixes, and bipartite stems represent different stages in the grammaticalization process from independent word to lexical affix, as well as different outcomes, and the languages surveyed reveal traces of all stages in the process.

14.3.1 Compounding and noun incorporation

Noun compounding is far less frequent than the extensive verb compounding and other verbal derivational processes, but it is attested in all of the languages. Verbal compounding and noun incorporation are not established for all languages. Silver (1966: 97–8) asserts for Shasta that verbal compounds consist of two or three members and are endocentric and coordinate. Noun incorporation refers to a special kind of compounding whereby a nominal and a verbal stem together form a new verb stem. Languages with noun incorporation also show parallel analytic constructions in which the noun and the verb can be expressed in separate words (Mithun 1999: 44–5). While incorporated nouns do not function as grammatical arguments in the clauses where they occur, they may hold semantic relationships, such as patients of otherwise transitive verbs, instruments, or locations, thus being possible precursors to the instrumental and locative affixes discussed in Section 14.3.2. Noun incorporation occurs in Chimariko, although not productively, and in Yana. In Chimariko, noun incorporation has developed with body parts and locations (Jany 2009: 127).

(p. 277)

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(20)

Chimariko noun incorporation (Jany 2009: 127)

h-iṭa-wiʔmu-t	h-ičʰe-mta	h-iṭa-mtu
3-hand-take-ASP	3-say-PROG	3-hand-INST

'He took his hand telling him (to go home), he led him by the hand'

The incorporated stem in (20) expresses a new unitary concept: 'to hand-take' or 'to take by the hand'. The nominal stem *iṭa* 'hand' can also occur as a separate word (Jany 2009: 18). Only two examples of noun incorporation in Chimariko are reported in Jany (2009).

Yana shows extensive noun incorporation, in particular with the verbal roots *mic'* 'to have' and *k'ut* 'to want'. Both roots also occur without incorporated nouns (Sapir 1911: 270).

(21) Yana noun incorporation (Sapir 1911: 268–9)

a.	k'úru-wawi-si-ndja	b.	mic'-áu-gumma-nʔt'
	want-house-PRES-1SG		have-fire-truly-PST
	'I wish to have a home'		'they had fire indeed'

The incorporated nouns always follow the verb root and may differ in phonological shape from their unincorporated counterparts. For instance, the final *–na* present in monosyllabic nominal stems is dropped when incorporated, as in (21b). The incorporated noun may also be repeated as a grammatical argument in its unincorporated form.

(22) Yana incorporated and unincorporated noun (Sapir 1911: 269)

hái?y-au-si-ndja	gi	ʔáuna
carry-fire-PRES-1SG	OBJ	fire
'I have carried fire'		

Incorporated nouns in Yana may be followed or preceeded by derivational suffixes.

(23)

Yana incorporated nouns with derivational suffixes (Sapir 1911: 269–70)

a.	mic'-áu-wilmi-si-ndja	b.	s·ê'-ma-wal-ʔa-si-
	have-fire-on.one.side-PRES-1SG		drink-ind-mouth-CAUS-PRES-1SG
	'I hold fire in one hand'		'I give him to drink'

Given that the incorporated noun in Yana may be encircled with affixes, noun incorporation is to be considered morphologically 'on a par with the numerous derivative suffixes of the verb' (Sapir 1911: 271). It is easy to see how such constructions over time grammaticalize into affixes. Yana noun incorporation shows another feature illustrating the path to affixation, which is erosion of phonological shape.

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14.3.2 Means/manner and directional/locative verbal affixes

Lexical affixes arise from the compounding processes described above, but they differ from roots in compounds in that they have suffered phonological erosion and developed a more general and abstract meaning (Mithun 1999: 55). The languages surveyed here all exhibit a (p. 278) very similar semantic pattern: an initial verbal component encoding the means or manner of an action and a final component encoding direction or location. The former are often termed instrumental prefixes, while the latter are called directional suffixes. The two types of affixes may and often do co-occur.

14.3.2.1 Means/manner prefixes

Instrumental prefixes occur in Chimariko, Palaihnihan, and Pomoan. Verb-initial components with similar meanings also occur in Karuk and Yana (see Section 14.3.3). Mithun (1999: 126) notes that while the inventories of such prefixes differ cross-linguistically, they encode the same kinds of meanings beyond just indicating a specific instrument, but ranging across types of means and manners. Chimariko shows a relatively small list of instrumental prefixes (Jany 2009: 133). Large sets of means and manner prefixes are found in all Pomoan languages.

(24)

Eastern Pomo instrumental prefixes (McLendon 1975: 41–55)

ba·- 'with or affecting the top'	*bi·-* 'draw together, group collect'
c'i- 'intense, sustained manifestation'	*da·-* 'with or affecting the hand'
di·- 'by natural or unseen forces'	*du·-* 'with or affecting the fingers'
ka·- 'with or affecting an ovoid mass'	*ki·-* 'uninterrupted movement'
ku·- 'with a flat surface'	*kʰi·-* 'with a long thing instrument'
kʰu·- 'emanate, spread out'	*k'u-* 'sideways'
ma·- 'with or affecting the foot'	*mi·-* 'with the initial segment'
mu·- 'from internal energy'	*pʰa·-* 'from kinetic energy'
pʰi·- 'divide by piercing'	*pʰu·-* 'with energy of moving air'
qa·- 'with the jaws and teeth'	*sa·-* 'describing an arc'
si·- 'with or in water'	*ša·-* 'with a long object'
ši·- 'with extension'	*šu·-* 'involving simultaneous pull in opposite directions
ṭʰi·- 'outwards, spreading'	*xa·-* 'bringing together'

(25)

Eastern Pomo with instrumental prefix *pʰi·-* 'divide by piercing' (McLendon 1975: 51)

pʰi·dákʰ	'break open with an axe'
pʰi·dí·l	'cutting weeds out of garden hoe without disturbing roots'
pʰi·qó·	'recognize through sight'
pʰi·t'elqa·	'join two things together with spike'

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Atsugewi equally includes a large set of means and manner prefixes, whose semantic content has been examined in great detail by Talmy (1972: 407–67). As with noun incorporation, means and manner prefixes can co-occur with nouns specifying the instrument.

(26)

Central Pomo Instrumental prefix with separate noun (Mithun 2010a: 687)

qʰabé=wi	čʰ- bá:-č’
rock=with	massive.object-split-SEMELFACTIVE.PERFECTIVE
‘He cracked it open with a rock’	

(p. 279) In Yana and Karuk similar semantic verb-initial content has been analyzed as pieces of a bipartite stem structure (see 14.3.3). Following Hinton (1987: 9), in Yana there is very little difference between analyzing the structures as primary and secondary stems or as prefix-stem combinations. Hinton (1987: 9) argues that ‘frequently, the primary stem is very abstract, and most of the verb content is held in the secondary element instead’.

(27)

Yana means and manner primary stems (Hinton 1987:8)

lai- ‘hard round object lies’	*lui-* ‘hit with rock, hard round object’
po- ‘handle hard round object’	*pi-* ‘rocks lie’
mi- ‘wood lies’	*me-* ‘handle wood’
mil- ‘hit with wood’	*ho-* ‘do with long object, stick’
cu- ‘long object moves, is handled’	

Sapir and Swadesh (1960: 13) list similar examples and maintain that these are ‘used only with suffixes indicating specific action’, thus confirming a bipartite stem structure. Likewise, Karuk roots feature structures akin to the instrumental prefixes, which Bright (1957: 86–7) describes as ‘sub-morphemic elements at the beginning of verbs’.

(28)

Karuk means and manner ‘sub-morphemic elements’ (Bright 1957:87)

im	‘involving fire or heat’	*pa*	‘with the mouth’
ʔak	‘with the hand’	*imθa*	‘with a striking implement’
ta	‘with an implement’	*vu*	‘with a cutting implement’
θim	‘by rubbing’		

14.3.2.2 Directional suffixes

As with the verb-initial elements indicating means and manner, all languages feature rich sets of directional and locative elements verb-finally. Some of the suffixes can be combined, as shown in the following for Chimariko.

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(29)

Chimariko directional suffixes *-tap* + *-mu* combined (Jany 2009:135)

ye-čuču-tap-mu-n	hiṭiytew	y-uc'u$^{?}$-tamu-n
1SG.A-?-DIR(out)-DIR(towards.there)-ASP	fence	1SG.A-?-DIR-ASP
'I dodged, I jumped over the fence'		

Similarly, Shasta possesses directional/locative suffixes, some of which may co-occur, encoding meanings such as 'downstream, out of a container, across, in liquid, downward, outward', among others (Silver 1966: 144–52). Multiple locative suffixes may also co-occur in Yana. In fact, each of the stems in the bipartite stem structure can take locative suffixes, thus strengthening the point that Yana verb structures should be regarded as bipartite stems rather than as affix-stem combinations (Hinton 1987: 10).

Pomoan languages equally feature large sets of directional suffixes which can co-occur with the means and manner prefixes, just as in Atsugewi.

(p. 280)

(30)

Central Pomo directional suffixes (Mithun 2010a: 687)

čá-w	'run (one)'
čá-:la-w	'run down'
čá-:qač'	'run up (as up a hill)'
čá- č'	'run away'
čá-way	'run against hither, as when a whirlwind came up to you'
čá-:'w-an	'run around here and there'
čá-mli-w	'run around it (a tree, rock, house, pole, etc)'
čá-mač'	'run northward'
čá-:q'	'run by, over (along on the level), southward'
čá-m	'run over, on, across (as bridge)'

(31)

Central Pomo means/manner and locative/directional co-occurrence (Mithun 2010a: 688)

da-dí-:la-w	'push something over a cliff'
ma-dí-:la-w	'kick something over a cliff'
p^{h}a-dí-:la-w	'slowly glide into a swimming pool'
p^{h}-dí-:la-w	'jump down, over a cliff, into the water'

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(32)

Atsugewi means/manner and locative/directional cooccurrence (Talmy 1985:74)

a. w'ost'aq'ík·a	b. c'wast'aq'íc'ta
'-w-uh-st'aq'-ik·-[a]	'-w-ca-st'aq'-ic't·-[a]
3-3-INST-guts-LOC-3	3-3-INST-guts-LOC-3
'Guts are lying on the ground'	'Guts blew into the creek'
(Lit: 'Runny icky material is located on the ground from its own weight acting on it')	(Lit: 'Runny icky material moved into liquid from the wind blowing on it')

Likewise, Karuk exhibits large sets of suffixes specifying location and direction including markers which refer to orientation with respect to the Klamath River (Bright 1957: 92–105).

(33)

Karuk riverine directional suffixes (Bright 1957: 95)

-rupu	'hence downriverward'	*-ra·*	'hither from downriver'
-rô·vu	'hence upriverward'	*-várak*	'hither from upriver'
-kaθ	'hence across a body of water'	*-rina*	'hither from across a body of water'

The means/manner and locative/directional affixes in some of the languages examined seem to be ancient and already in place in the parent language (Mithun 2007b: 161), while in others they exhibit an intermediate stage of development where they can neither be regarded as stems nor as affixes, but as bipartite stem structures.

14.3.3 Bipartite stems

Bipartite stem structures represent an intermediate level between compounding and affixing whereby 'two interdependent elements of roughly equal lexical status fuse in a polysynthetic (p. 281) unit' (Golla 2011: 216). The first element refers to the entity involved in the action or state, while the second describes the motion, position, or some other attribute. The semantic content of these structures strikingly resembles that of other languages where these structures have been analyzed as instrumental prefixes and locative/directional suffixes. They are alike in that both types of semantic content may co-occur, in their placement with respect to one another, and in that neither may occur on its own without a root or some other root-like element. Bipartite stems differ from the affix-stem combinations in that they may constitute the only root-like elements in verbs, yet they have to occur in pairs. As Mithun explains (1999: 56) 'neither the manner markers nor the locative-directional markers can serve as stems alone, but together they can constitute stems that appear to consist entirely of a prefix and a suffix'. DeLancey (1996: 38) argues that calling these morphemes affixes may be misleading as this would imply a grammatical as opposed to a lexical phenomenon. Bipartite stems have been reported for

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Karuk, Yana, Achumawi, and Atsugewi. Macaulay (1993: 68–70) illustrates for Karuk how the same element can occur as a prefix or a stem and is therefore best analyzed as a piece of a bipartite stem.

(34)

Karuk bipartite stems with =*čak* 'to be closed' (Macaulay 1993: 68–9)

a.	stems with =*čak* 'to be closed' (p. 68)	
	ifčak	'to be tight, not to fit'
	páčak	'to taste, sip'
	pasčak	'to slam (a door)'
	vimčak	'to hold tighly in the hand'
b.	stem *ikriv*	'to sit' + 'suffix' -*čak* (p. 69)
	ikrívčak	'to sit in the way, blocking passage'
c.	*čak* with	'prefix' *ta-* (p. 69)
	tačak	'to clip, to cut with scissors'

In (34a–b) *čak* is combined with a root, while it occurs with just a derviational prefix in (34c). Macaulay argues that since none of the morphemes involved appear in free form, it cannot be decided which one to classify as root and which one as affix, and therefore it is best to define them as bipartite stem elements.

For Yana, Sapir (1922: 217) characterized the means/manner morphemes as stems, indicating that the language has no prefixes and acknowledging that certain 'verbs are instrumental', referring to 'activities performed with certain objects or parts of the body'. A number of these stems 'cannot be directly followed by grammatical (i.e. tense-modal and pronominal) suffixes, but must have their meaning complemented by one or more derivational suffixes'. This clearly implies a bipartite structure for these stems. Achumawi and Atsugewi verb stems are even more complex and show a tripartite stem structure. See Angulo and Freeland (1930: 92) and Talmy (1972) where each stem consists of three pieces, some of which may be analyzed as affixes.

14.3.4 Summary

Compounding patterns in the languages surveyed here have led to mutual dependencies of morphemic elements in verb stems, as well as to elaborate sets of lexical affixes. A particular (p. 282) type of compounding, noun incorporation seems to be the precursor to the semantic content specifying means and manner in the verbs, given that noun incorporation often describes the means or instruments by which actions are carried out. As Mithun explains (1999: 56) 'at a certain point the roots ceased to be used as

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independent stems, but they remained in existing compounds and in some cases took on new lives as productive affixes'. While for the most part the root sources of the affixes no longer exist in the languages, Mithun is able to find traces of the sources for the locative/directional suffixes in Central Pomo (2007b: 160). The strikingly similar semantic contents and structure of verbs in the languages surveyed are likely the result of longstanding language contact and borrowing, as discussed in Mithun (2007b).

Some of the languages examined include further lexical elements in their verbs. For instance, Karuk (Bright 1957: 91–4) contains several verbal suffixes encoding reference and manner of action, such as *-va* 'plural action, action involving several inanimate objects, action in several places, action at several times', or *-čak* 'closing up' and *-rivɔ̃* 'at rest'. Likewise, Shasta includes perception attribute suffixes covering meanings such as 'rigid, bright, careful, lacking sound, unexpectedly' and motion attributive suffixes covering meanings such as 'jerking motion, movement from one place to another, splitting motion' (Silver 1966: 140–1).

Overall, the languages generally include up to three or four lexically heavy morphemes in their verb structures, a polysynthetic pattern. Nominal compounding is present, but not pervasive. Extensive verbal compounding, on the other hand, is still visible in the form of noun incorporation in some languages, but has for the most part turned into either a multi-part verb stem structure or into elaborate sets of productive lexical affixes.

14.4 Conclusions

Overall, the languages examined display many of the features deemed typical of polysynthesis (Fortescue 1994, 2008). Polysynthesis often involves holophrasis, that is, verbs as free-standing clauses. With the exception of Pomoan, all languages examined are head marking, that is, core arguments are represented by pronominal affixes on the predicate, and the inflected predicate may function as a minimal clause. For possession, the situation is mixed: two show head marking (Chimariko and Karuk), two exhibit dependent marking (Shasta and Palaihnihan), and two feature both types of marking (Yana and Pomoan). As expected for polysynthetic languages, word order is relatively free and not used as a marker for grammatical relations. Only the position of the predicate with respect to the arguments, and not of the arguments with respect to one another, is relevant in some languages, with no clear pattern emerging for all languages surveyed. Chimariko and Pomoan exhibit verb-final word order, while Achumawi, Atsugewi, and Yana are verb-initial.

Morphological complexity is present in that more than one lexically heavy morpheme appears in the verb, in the form of noun incorporation, a bipartite stem structure, or various lexical affixes encoding means and manner and direction and location. Pomoan languages may not seem to represent typical polysynthetic languages in regards to the marking of grammatical relations, as they feature nominal case, but they show lexically

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complex verbs and large lists of lexical verbal affixes. All languages examined exhibit striking similarities in (p. 283) semantic structures: means and manner of events encoded verb-initially and location and direction marked verb-finally. The languages differ in the degree to which the encoding represents root-like or affix-like properties. Fortescue (2008:2) lists ‘a large inventory of bound morphemes (but restricted number of stems)’ as one of the defining traits of polysynthetic languages. The former is clearly attested in the languages via numerous instrumental and directional affixes; the latter also seems to be true, but needs to be considered with caution due to the limited data available for some of these languages.

To conclude, the languages examined clearly show clusters of many of the characteristics typical of polysynthesis. While other chapters in this volume are based on a single language family, the present chapter covers a hypothetical genetic grouping of languages spoken in a geographically contiguous area. Structural similarities stem from language contact rather than from genetic affiliation. Mithun (2008a, 2012b) maintains that both hierarchical and agent/patient systems are rare cross-linguistically, yet both show strong areal distribution, which can only be explained in terms of language contact. Furthermore, the resemblance in semantic content found in the lexically complex verbs likewise originated through borrowing, as discussed in Mithun (2007b).

Notes:

(1) Inflectional stem-final vowel, varies according to person, mood, conjugational class.

(2) The first three digits refer to the microfilm reel 020-021, and the last four digits refer to the page on the reel.

(3) When applied to kinship terms and pronouns, these markers are affixes and imply plurality (Alex Walker, personal communication).

(4) In Southern Pomo, oblique case-marking morphemes on pronouns and kinship terms are affixes (Alex Walker, personal communication).

(5) It should be noted that the Palaihnihan language family was established with little data and without consideration of the long contact between the two languages.

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Polysynthetic Structures of Lowland Amazonia

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Abstract and Keywords

Lowland Amazonia is the locus of substantial linguistic diversity in terms of genetic affiliation, language structure, and numbers of languages. This chapter will focus on the distribution of types of polysynthetic patterns within Lowland Amazonia, with special attention to the spread, and the types, of noun incorporation. The highest concentration of polysynthetic languages in Amazonia is the region south of the Amazon River, spanning adjacent regions of Peru, Brazil, and Bolivia. Polysynthetic patterns can be reconstructed for the protolanguages of some families, such as Panoan, Harakmbet, and possibly Arawá. Polysynthetic patterns in Arawak family (by far the largest in terms of its geographical spread) are often due to areal diffusion. We will focus on a number of mechanisms for the development of polysynthesis in established linguistic areas, for example the Vaupés River Basin linguistic area, and on a number of established instances of intensive language contact.

Keywords: linguistic diversity, areal diffusion, polysynthetic patterns, noun incorporation, Arawak family, areal diffusion, Panoan, Arawá, linguistic area

15.1 Lowland Amazonian Languages: A Backdrop

THE Amazon basin is an area of high linguistic diversity (rivalled only by the island of New Guinea). It comprises around 350 languages grouped into over fifteen language families, in addition to a number of isolates. The six major linguistic families of the Amazon basin are as follows.

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- The Arawak language family is the largest in South America in terms of its geographical spread, with over forty extant languages between the Caribbean and Argentina. Well-established subgroups include Campa in Peru and a few small North Arawak groupings in Brazil and Venezuela. Arawak languages are spoken in at least ten locations north of the River Amazon, and in at least ten south of it. European languages contain a number of loans from Arawak languages, among them *hammock* and *tobacco*.
- The Tupí language family consists of about seventy languages; nine of its ten branches are spoken exclusively in Amazonia. The largest branch, Tupí-Guaraní, extends beyond the Amazonian Basin into Bolivia and Paraguay. Loans from Tupí-Guaraní languages include *jaguar* and *jacaranda*.
- Carib languages number about twenty five, and are spoken in various locations in Brazil and Venezuela in northern Amazonia, and in the region of the Upper Xingu and adjacent areas of Mato Grosso in Brazil south of the River Amazon. The place name 'Caribbean' and the noun *cannibal* (a version of the ethnonym 'Carib') are a legacy from Carib languages.
- Panoan languages number about thirty, and are spoken on the eastern side of the Andes in Peru and adjacent areas of Brazil.
- The Tucanoan language family spans Brazil, Colombia, Ecuador, and north-eastern Peru, with a total number of about twenty languages. **(p. 285)**
- Macro-Jê languages are a less well established unit. Its central component are Jê languages with about ten members (the genetic relationship between a further eleven groups, such as Iatê, Maxacalí, and Karajá, is a matter for further work).

Smaller families include Guahibo, Yanomami, Jivaroan, Bora-Witotoan, Kawapanan, Zaparo, Peba-Yagua, Makú, Harakmbet, Arawá, Nambiquara, Tacana, Katuquina, and Chapacura.[1] National languages of the Amazonian states—Spanish, Portuguese, French, English, and Dutch—and contact languages such as Creoles came into play relatively recently.

The original languages of the Amazonian Basin (or Amazonia proper) share a number of structural features, enough to be considered a large diffusion zone which includes several linguistic areas. Many Amazonian languages have spread beyond the basin of the Amazon, coming in contact with languages of the Andes (including Quechua and Aymara) and those to the north and to the south of the Amazonian basin. The distribution of synthetic and highly synthetic languages reflects an interplay between contact-induced, and genetically inherited patterns.

More than half of the indigenous languages of Amazonia have become extinct since the European Invasion. As a consequence of constant pressure from major national languages, most indigenous languages of Amazonia are endangered. The remarkable

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linguistic diversity in Amazonia is on the wane. Language obsolescence affects every aspect of the languages, including their complex morphological structures.

15.2 Amazonian Languages in Typological Perspective

Most Amazonian languages are agglutinating with some fusion. There are no isolating languages.[2] The majority of Amazonian languages are highly synthetic.[3] A major feature (p. 286) of highly synthetic languages in Amazonia is extreme internal complexity of grammatical words with numerous templatic slots for bound morphemes, and several morphemes in each slot. The order of bound morphemes—affixes or clitics—may be variable.[4]

In most Amazonian languages, a verb is able to stand alone without additional independent lexical arguments. One or more core arguments can be cross-referenced on the verb.[5] Constituent order varies (in many languages it is determined pragmatically). Most languages have postpositions. Some languages have both prepositions and postpositions (e.g. Palikur, Baniwa, Baré, and Warekena). Grammatical words may contain incorporated nouns, adverbials, postpositions, and several verb stems. Morphological complexity of verbs in Amazonian languages is the topic of §15.3.

In the majority of Amazonian languages nouns (and other non-verbal word classes) can head the predicate of a clause. Nouns in the predicate slot may have most—albeit not all—of the verbal categories. In many Amazonian languages, including Arawak, Tupí, Carib, and Macro-Jê, nouns display further morphological complexity. They can be marked for nominal tense, aspect, evidentiality, modality, and reality status, in addition to multiple number marking, multiple classifiers, and multiple marking of grammatical function in a clause (known as double case). Morphological complexity of nouns is addressed in §15.4.[6]

In §15.5 we turn to the development of highly synthetic structures in Amazonian languages, and the role of areal diffusion. We also address the fate of morphologically complex patterns in language obsolescence and endangered languages. A summary is in §15.6.

15.3 Morphological Complexity of the Verb in Amazonian Languages

In all Amazonian languages, a clause can consist of just a verb. Notions which would be expressed with separate lexical items in less synthetic languages are expressed with

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bound (p. 287) morphemes. An example from Piro, an Arawak language of Peru (Matteson 1965: 81), illustrates this.

(1)

ø-yoxi-xpa-hima-na-t-ka-nˑa	*Piro*
3person-mash-PASTE-REPORT-TEMP-EP-PASSIVE-PL/DETRIMENTAL	
'It is said that they were then unfortunately mashed to a paste'	

Verbal affixes may not be obligatory for a form to be grammatical. They can be added if the speaker considers it necessary, and may occur once at the beginning of a sentence, or a narrative. The only obligatory suffixal category on a verb in Ashéninca, of the Campa subgroup of Arawak languages in Peru, is the realis/irrealis marker and reflexive/non-reflexive portmanteau morpheme (D. L. Payne 2002: 486). All verbal suffixes in Jarawara, an Arawá language from southern Amazonia in Brazil, are optional. The only obligatory elements within the predicate are the verb root and pronominal prefixal markers referring to core participants (Dixon 2004: 88, 97).[7]

In §15.3.1 we start with an overview of the types of morphemes, and their properties, in Amazonian languages. An overview of cross-referencing of core participants is in §15.3.2. Meanings expressed within a verbal word are addressed in §15.3.3. Then, in §15.3.4, we turn to the patterns of incorporation of nouns, postpositions, and adverbials. Two or more verb roots within one verbal word (or one-word serial verb constructions) are addressed in §15.3.5.

15.3.1 Types of morphemes and their properties

The majority of Amazonian languages are predominantly suffixing.[8] There are no clear-cut instances of non-concatenative morphology (but see Dixon 2004, on vowel changes in the formation of possessive forms of nouns in Jarawara).

15.3.1.1 Prefixes and suffixes in Amazonian languages

Languages with both suffixes and prefixes typically have fewer prefix positions than suffix positions. Panoan languages have just one prefix position per verb, and numerous suffix positions, with more than a hundred suffixes (Loos 1999, Fleck 2003 and forthcoming). Urarina, an isolate from north-western Peru, has one prefix slot, and seventeen suffixal slots, followed by seven enclitic slots (Olawsky 2006: 456–7).

(p. 288) A verb in Ashéninca Campa may contain a subject cross-referencing prefix and an irrealis prefix, followed by verb stem, incorporated noun, and then other incorporated elements (including verbal classifiers). Then come directionals, aspect markers, portmanteau morphemes indicating (again) realis versus irrealis and reflexive versus non-reflexive. These can be followed by up to two object agreement affixes, then plural, then relativizer, then mood, evidentiality, and adverbial subordinators. Some of these affixes

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can be organized into templatic slots, or zones: see an example of schematic representation of verb structure in Chapter 34, on Tariana.

Applying a strict templatic structure to determine relative positions for semantic groups of morphemes in many Amazonian languages is fraught with difficulties. A single category within the verbal word may be marked twice. Semantically related meanings can be expressed in different slots. Some aspectual meanings in Matses are expressed in slot 2 and others in slot 10. In Matses and in Campa languages the frustrative modality marker occupies a position closer to the verbal root than other modality markers. In contrast, the frustrative in Urarina is an enclitic placed further from the verbal root than modal markers of impossibility (slot 3) and probability (slot 13). In some languages, suffixes may have their own combinatorial properties (§15.3.1.2). The order of morphemes may be variable (§15.3.1.3).[9]

Prefix positions in those languages which have it tend to be occupied by cross-referencing and valency-changing markers. Throughout the Arawak family, prefixes mark the subject (A/S_a) on verbs. A valency-changing prefix tends to be closer to the verbal root than a person cross-referencing prefix. In (2), from Macushi, a North Carib language (Abbott 1991: 37), the subject person marker precedes the detransitivizer:

(2)

aw-e'-wî-'pî *Macushi*
3person-DETRANS-kill-PAST
'He killed himself'

Causative prefixes in Campa languages are also closer to the root than person-marking prefixes, as shown in (3), from Ashéninca Perené (Mihas 2010: 129).

(3)

i-v-anii-t-ap-ak-i=na *Ashéninca Perené*
3masc.A-CAUS.AGT-walk-EP-DIR-PERF-REAL=1sgO
'He took me down' [the son helped the wounded father get off the tree because the father was injured and unable to climb down on his own]

A verb in Arawá languages can contain three prefixes. A cross-referencing prefix is followed by the polysemous prefix *-ka-* 'dual subject, "inside", noun class agreement marker' and then by a valency-changing prefix, as in (4), from Paumarí (Chapman and Derbyshire 1991: 295):

(p. 289)

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(4)

papai-a	bi-ka-va-adaha-hi	*Paumarí*
father-ERG	3sgA-NOUN.CLASS-APPLIC:with-travel-THEME	
ida	kodi-vanami	
DEM.fem	my-paddle	

'Father travelled around with my paddle (ka-class)'

Nadëb, a highly synthetic language of north-west Amazonia and a putative member of the Makú family, is unusual in that it has nine prefix positions in its verb. Prefixes include thematic markers, exponents of aspect and valency-changing, locational, and subordinating morphemes. Cross-referencing markers are proclitics (Weir 1984: 50).[10]

Affixes in many Amazonian languages are polyfunctional. A possessor on nouns can be expressed in the same way as the subject or the object of a verb. Table 15.1 summarizes patterns of shared person marking on verbs and on nouns in a number of Amazonian languages.

So, in Kamaiurá, a Tupí-Guaraní language, proclitics mark the intransitive subject (e.g. *je=katu* (1sg=be.good) 'I am good'), the object (e.g. *je=pyhyk* (1sg=hold) 'You/(s)he hold(s) me') and the possessor (e.g. *je=Ø-menyt* (1sg=REL-child) 'my child') (Seki 2000: 137–9 160–3 301–4). In Warekena, a North Arawak language, prefixes mark the transitive subject (e.g. *nu-yutʃia* (1sg-kill) 'I kill (someone)'), the subject of an active intransitive verb (e.g. *nu-tapa* (1sg-walk) 'I walk') and the possessor on nouns (e.g. *nu-ʃumiawa* (1sg-wife) 'my wife').[11]

More than one prefix position is a prerogative of verbs, and seldom of nouns. Amuesha is a rare language to allow 'stacking' of two possessive prefixes on nouns, for example, *no-pa?-sme?ly-or* (1sg-3sg-tail-POSS) 'my tail (which I have obtained from some animal, lit. my-its-tail)' (Wise 1986: 575; see also Adelaar 2006: 308, and §15.6 of this chapter). That is, in some ways nouns can be considered simpler than verbs (see §15.4).

15.3.1.2 Suffixes with special features

Verbal roots and suffixes may vary in how they combine with other affixes. Verbs in Tacana languages can be either inflecting or non-inflecting. The intransitive verb *tsajaja-* 'run' in Cavineña is fully inflecting. Suffixes attach to it directly (Guillaume 2008: 123)—see (5).

Table 15.1 Shared person marking on verbs and nouns

A=S=POSSESSOR	O=S=POSSESSOR
Arawak; Arawá (A/S=Poss)	Carib, Jê, Tupí-Guaraní, many Tupí, Urarina, Kwaza

(p. 290)

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(5)

tu-ke	tupuju=tu	iba	tsajaja-chine	*Cavineña*
3SG-FORMATIVE	following=3sg(-FORMATIVE)	jaguar+ABS	run-REC.PAST	
'The jaguar ran following him' (i.e. chased him)				

Non-inflecting verbs in Cavineña require an auxiliary whose choice depends on whether the verb is intransitive or transitive. Inflecting verbs are an open class, while non-inflecting ones number about a hundred. An intransitive non-inflecting verb, for example *jae* 'fish with arrow', requires the auxiliary *ju* - 'be, AUX.INTR', which then takes all the suffixes, in (6) (Guillaume 2008: 156).

(6)

tume	ekana$_S$ …	jae	u-kware	*Cavineña*
then	3PL	fish.with.arrow	AUX.INTR-REM.PAST	
'Then they went fishing'				

A transitive non-inflecting verb, for example *emiwaki* 'put as bait' in (7), requires the auxiliary *a*- 'affect, AUX.TR' (Guillaume 2008: 157).

(7)

Tu=dya$_O$=datse=tuna$_A$	emiwaki	a-ya	*Cavineña*
3SG(nonfem)=FOC=FRUST=3PL(-ERG)	put.as.bait	AUX.TR-IMPERFV	
'They were putting (it) as a bait, but that didn't work'			

Some verbal suffixes in Cavineña and in other Tacana languages cannot be immediately followed by inflectional suffixes. They trigger an auxiliary, whose choice depends on the verb's transitivity. Such 'auxiliary-triggering' suffixes include the desiderative modality, in (8). A transitive inflecting verb 'eat' triggers the transitive auxiliary *a*- (Guillaume 2008: 323).

(8)

Datse=tu-ke=Ø	ara-kara	a-kware	*Cavineña*
FRUST=3SG-FORMATIVE=1SGERG	eat-DESID	AUX.TR-REM.PAST	
'I wanted to eat (a caiman) but couldn't'			

Verbs in Jarawara and other Arawá languages also divide into inflecting—which can take suffixes and prefixes directly—and non-inflecting ones which require an auxiliary to carry the affixes. Verbal affixes have idiosyncratic features. 'Normal' verbal suffixes add directly to a verb, an auxiliary, or another suffix. Auxiliary-bound suffixes are always added to their own auxiliary (like in Cavineña in (8)). The suffix *--haba* 'do all night' cannot be added to a verb directly. In (9) it is used with an inflecting verb *-tafa* 'eat', and attaches to the auxiliary *-na-*:

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(9)

o-tafa	o-na-haba	-oke	*Jarawara*
1SG.SUBJ-eat	1SG.SUBJ-AUX-DO.ALL.NIGHT	1SG.SUBJ-DECL.fem	
'I ate all night'			

Auxiliary-taking suffixes fall into two subtypes. Prefix-retaining suffixes maintain a pronominal prefix on a preceding inflecting verb or auxiliary and also repeat it on their own (p. 291) auxiliary. Prefix-poaching suffixes omit a pronominal prefix from the inflecting verb or the auxiliary, but include it on their own auxiliary. The difference between a prefix-retaining suffix -^{i}*bote* 'soon' and a prefix-poaching with a similar meaning *-kabote* 'soon' is shown in (10) and (11). Both suffixes require the auxiliary *-na-* (see Dixon 2004: 128–37).

(10)

o-sawi-**bote**	o-na-habana	o-ke	*Jarawara*
1SG.SUBJ-join.in-SOON	1SG.SUBJ-AUX-FUT.fem	1SG.SUBJ-DECLfem	
'I'll soon join in'			

(11)

sawi-**kabote**	o-na-habana	o-ke	*Jarawara*
join.in-SOON	1SG.SUBJ-AUX-FUT.fem	1SG.SUBJ-DECLfem	
'I'll soon join in'			

The resulting complex predicates (or extended verbal words) are strictly contiguous. In both Cavineña and Jarawara, auxiliaries act as 'support verbs' for non-inflecting verbs and also for suffixes covering a number of modal, aspectual, manner, and time-related meanings. The structure of the predicate and the distribution of affixes within a verbal word depends on the properties of suffixes and of roots. Morphological complexity, and highly synthetic structures, extend beyond a grammatical word into a predicate complex.

15.3.1.3 Variable order of morphemes, and scope effects

In highly synthetic Amazonian languages, some suffixes may occur in different places within the verb structure.[12] However, incorporated nouns and person markers do not generally display variability in their placement. The order of components of one-word serial verbs is usually fixed. In languages with several prefix positions, these always occur in fixed order.

The semantic effect of variable morpheme order in verbs may depend on the scope of an affix (similar examples from Yagua are in D. L. Payne and T. E. Payne 1990: 401–2). The suffix *-a¢* in Amuesha, an Arawak language from southern Amazonia, means 'to do in a bad manner'. In (12) it appears before the suffix *-a.r* 'habitual'. Its scope is the verb's root, and the whole sentence means 'talk badly' (that is, joking or using obscene language). This is indicated with square brackets.

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(12)

[py-ot-a¢]-eʔt-aˑr-ʔt-eˑn	*Amuesha*
2SG-say-DO.IN.BAD.MANNER-EPENTHETIC-HABITUAL-EPENTHETIC-PROG	
'You are always talking badly' (i.e. just joking or using obscene language)	

In (13), the suffix *-a¢* follows the habitual *-a.r*. Its scope is the combination of *-ot* 'say' and *-a.r* 'to say habitually'. The suffix *-a¢* now implies 'it would be bad to always say', and is effectively a negative command, 'don't do it' (Wise 1986: 583):

(p. 292)

(13)

ama-č	py-ot-[aˑr-eʔt-a¢]-č-e	*Amuesha*
NEG-FUT	2SG-say-HABITUAL-EP-DO.IN.BAD.MANNER-EP+3SG-NEG	
'Don't always be telling him (everything)'		

Variable position of the causative suffix *-aka(g)* in Ashéninca correlates with the scope of causation. In (14), the habitual marker *-apiint* follows the causative. The causative, and not the caused action, is within the scope of the habitual. The meaning is 'constantly make cut'.

(14)

no-ag-ak-i=ro	i-banki	*Nanti*
1SGA/Sa-get-PERF-REAL1=3fem.SG	3masc.SG-feather	
'I plucked its feather'		

In (15), the habitual marker precedes the causative. The caused action ('cut') rather than the causation is 'habitual': the meaning of the form is 'make constantly cut' (D. L. Payne 2002: 492).

(15)

pi-n-[chek-apiint-aka]-e-ri	*Ashéninca*
2person-IRR-cut-HAB-CAUS-IRR-3mascO	
'You should make him constantly cut'	

Scope effects do not explain all the instances of variable order of affixes. A number of verbal enclitics in Tariana (Chapter 34) allow variable ordering, depending on what facet of the activity is being focussed on.[13]

15.3.2 Cross-referencing the core arguments

A morphologically complex verb can cross-reference two arguments, usually an A and an O. In predominantly suffixing languages, such as Kwaza (an isolate from Brazil: Van der Voort 2004: 282, 257), suffixes can cross-reference two arguments: either the A and the O of a transitive verb, as in (16), or the A and the Recipient of a ditransitive verb, as in (17).

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(16)

huhui-le'ja-a-xa-ki	*Kwaza*
kill-2O.FUT-1PL-ASSOCIATED.PERSON-DECL	
'We are going to kill you'	

(17)

wa'dy-etele'tay-a-xi-ki	*Kwaza*
give-2PL.OBJ.fem-1plA-ASSOCIATED.PERSON-DECL	
'We gave (it) to you women'	

(p. 293) In most Arawak languages prefixes cross-reference the subject, and suffixes, or enclitics, cross-reference the object. This was shown in (3), for Asháninca Perené. A non-core participant can become a core argument as a result of an applicative derivation. It is then cross-referenced on the verb. Example (20), from Nanti (Michael 2013: 164), contains a separative applicative meaning 'from (something or someone)'; the erstwhile locative oblique 'from me' is now a core argument and is cross-referenced on the verb. The O, 'knife', is no longer cross-referenced.

(18)

i-koshi-t-apitsa-ak-i=na	kotsiro	*Nanti*
3masc.sgA-steal-EP-APPLIC:SEP-PERF-REAL.1=1sg	knife	
'He stole the knife from me'		

Some Campa languages allow three arguments to be cross-referenced on the verb. In Nomatsiguenga, both recipient and the object given can be cross-referenced on the verb (Wise 1986: 585; Lawrence 2013). The sentence in (19) is ambiguous—depending on the context, either suffix can refer to what is given or to recipient.

(19)

i-p-ë-mi-ri	*Nomatsiguenga*
3masc.sgA-give-NONFUTURE-2sg.obj-3masc.sgO	
'He gave you to him' or 'He gave him (a chicken, for example) to you'	

No Amazonian languages cross-reference more than three arguments.[14]

15.3.3 What goes into a verb

We now turn to the meanings expressed by bound morphemes within the verb in Amazonian languages.[15]

Numerous causative and applicative derivations are a feature of many highly synthetic languages of Amazonia. Nanti, a Campa languages, has five causatives, marked with prefixes: (i) an 'agent causative' whose subject is volitional and agentive (see (3), for an example from Asháninca Perené, a closely related language); (ii) a 'non-agent causative' (with an inanimate or non-volitional causee); (iii) a 'destructive' causative involving destructive (p. 294) damage to an inanimate or non-volitional causee; (iv) a

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'malefactive' causative whereby both causer and causee are volitional and the action adversely affects the causee, and (v) an 'influential' causative whereby both causer and causee are volitional and no coercion is involved.[16]

Highly synthetic Amazonian languages have numerous applicative derivations whereby an erstwhile oblique becomes the O of a clause to which an applicative derivation is applied (see Aikhenvald 2012a: 243). The major function of applicatives is focusing on the erstwhile oblique, now in the O function (a common feature of applicatives, cross-linguistically: Dixon 2012: 294–342, Mithun 2001). A comitative applicative in Paumarí was illustrated in (4). A separative applicative in Nanti was shown in (18).[17] There are typically fewer valency-decreasing derivations than valency-increasing ones. Valency-decreasing devices include passives, antipassive, reflexives, and reciprocals (see Aikhenvald 2012a: 227–34).[18]

Amazonian languages have rich and diverse aspectual systems. Hup, from the putative Makú family, distinguishes dynamic, inchoative, perfective, completive telic, habitual, iterative, and persistive ('activity still in progress') (Epps 2008: 522–3). Campa languages have perfective, iterative, repetitive, punctual, incompletive, terminative, perfective, inchoative, habitual, durative, and progressive aspects, in addition to the intransitivizing habitual/customary and stativity markers (Mihas 2010: 104; see also Lawrence 2013, D. l. Payne 1981, 2002). Kwaza has a large array of aspects, including habitual, repetitive, intensive habitual, intensifying, consecutive ('do something on top of something else') and procrastinative (to refer to an action postponed until later) (van der Voort 2004: 433–65).

Many Amazonian languages obligatorily mark how one knows things—that is, 'evidentiality', or the source of information. Evidentiality systems in Amazonian languages vary (see details in Aikhenvald 2012a: 253–9). Two-term systems typically distinguish first-hand and non-first-hand information, as in Jarawara (Dixon 2004: 203–7), and Mỹky, an isolate from southern Amazonia in Brazil (Monserrat and Dixon 2003). Or they may just have one marker for reported information, as do Cavineña, Baniwa of Içana and Nhêengatú (a Tupí-Guaraní language spoken in the Amazonian north). Three-term systems may have visual, non-eyewitness, and reported specifications, as in Bora; or experiential, inferred, and conjecture, as in Matses. Systems with four choices may include direct information source, inferred, assumed, and reported, as in Shipibo-Conibo, a Panoan language from Peru. Five choices, with visual, non-visual, inferred, assumed, and reported, have been described for Tariana, Hup, and some East Tucanoan languages. Mamaindê, a Northern Nambiquara language, distinguishes six evidentials: visual, non-visual, inferred, general knowledge, second-hand report, and third-hand report (see Eberhard 2009; Loos 1999: 275–6 on southern Nambiquara). In a number of languages, a clause can contain two markers of information source, each with its own timeframe (see Fleck 2007, on Matses).

(p. 295) Modal meanings are a further area of morphological wealth in Amazonian languages. These may include obligation, speculation, supposition, and counterexpectation, as in Puinave (Girón 2008). Kwaza has purposive, volitional,

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preventive, and desiderative modalities. A special Amazonian feature is a ‘frustrative’ modality meaning ‘in vain’. This is a feature of Panoan, Jivaroan, Tupí-Guaraní, Arawak, Makú, Puinave, Bora, Guahibo, and a few other languages. Many languages have an array of markers of interrogative and of imperative moods.[19]

Direction, time, manner, and extent are typically expressed with an array of bound morphemes in the highly synthetic languages of Amazonia. These are often described as ‘adverbial’ suffixes (e.g. Thiesen and Weber 2012, on Bora).[20] Directional suffixes in Ashéninca Perené include *-ap* ‘directional goal: towards’, *-an* ‘directional source: from’, and *-av* ‘directional O-oriented goal’ (Mihas 2010: 104). Nanti (Michael 2008: 256–62) has a regressive marker *ah* ‘back to a salient point of origin’, returnative *-ut* ‘motion there and back’, a translocative ‘far from deictic centre’ (with different forms for perfective and for imperfective), an ablative *-an* ‘from, and an adlative *apah* ‘towards the deictic centre’. Directional suffixes may have completive overtones and overlap with aspectual categories, for example Bora *-iñu* ‘go after VERBing’, *-hɛ* ‘come after VERBing’ (Thiesen and Weber 2012: 118). Directional suffixes with non-motion verbs in Ashéninca Perené acquire aspectual overtones: *-an* ‘towards’ > ‘inceptive, change of state’; *-ap* ‘away from’ > ‘endpoint of an activity’ (Mihas 2015; also see J. K. Payne 1982 for the same phenomenon in another Ashéninca variety).

Jarawara has numerous miscellaneous suffixes with directional and elevational meanings, for example, *-tima* ‘upstream’, *-* $^{(i)}$ *misa* ‘up’, *-risa* ‘down(hill)’, *-kI* ‘coming’, *-ma* ‘back, return’, *-riwaha* ‘across’, *-basa* to/on the edge’, *-* ^{i} *joma* ‘passing through gap (including entering a house through a door)’. Further verbal suffixes relate to environmental locations, for example *-fara* ‘clear space’, *-rI* ‘raised surface, edge’, *-* ^{i} *fi* ‘relating to water’ (Dixon 2004: 138–49). Directional suffixes in Jarawara acquire ‘metaphorical’ meanings: *-risa* ‘down(hill)’ > ‘not fully satisfactory’; *-* $^{(i)}$ *misa* ‘up’ > ‘better’; *-kI* ‘coming’ > ‘getting to be’ (change of state); *-ma* ‘back, return’ > ‘return to a state; to full health’ (Dixon 2004: 141–4 and p.c.).

Paumarí, another Arawá language, has twenty-six directional suffixes, for example *-misi/-misaha* ‘from mid-water towards the shore, from shore towards the jungle, from open ground into the jungle’ or ‘bring two vertical objects together’, *-nai/-najaha* ‘coming from the jungle towards water; going from shore to the middle of a lake or river’, *-mai/-majaha* ‘parallel to water or edge or from one house to another’, *-mi/-maha* ‘movement within a defined area’, *-onani/-onahana* ‘coming from within a defined area’, *-thima/-thimaha* ‘upriver’, *-mari/-maraha* ‘downriver’, *-baoni/-baonaha* ‘along shoreline’, *-bakosi/-bakosaha* ‘along shoreline by water’. A further set of suffixes indicates location and position, for example *-ma'o* ‘on the ground, horizontal plane’, *-rakosi* ‘down outside of container’, *-nakosi* ‘front of canoe’, *-saga* ‘fixed at one extremity’, and *-rivana* ‘hanging downwards in hammock’ (Chapman and Derbyshire 1991: 312–16).

Verbal suffixes may refer to specific time frames and to time sequence. Examples include Ashéninca Perené *-aman* ‘early’ (Mihas 2010: 104), Paumarí *-kajoma* ‘early next morning’, (p. 296) *-biinini* ‘first time’, *-maina* ‘next’, *-jora* ‘ahead of time’ (Chapman and Derbyshire

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1991: 321), Jarawara *-mina* ‘in the morning, tomorrow’, *-iba(ha)* ‘do first’, *-mata* ‘short time’ (Dixon 2004: 151–4, 185). Verbal suffixes may refer to manner, for example Amuesha *-a¢* ‘to do in a bad manner’ ((12)-(13)), Jarawara *-kosa* ‘something happens clearly and cleanly, do once’, speed, for example Urarina *-uri* ‘quickly’, with overtones of politeness. Many languages have special markers expressing ‘degree’ of action, for example Nanti *-uma* ‘undesirable extremal’ and *asano* ‘desirable extremal’ (Michael 2008: 263–4), Bora *-pi* ‘excessive’ (Thiesen and Weber 2012: 117), Puinave *-tenoǩ* ‘verbal diminutive: a little bit’, *-jeu* ‘somewhat’, *-pãi* ‘high degree of completion of activity’, *-nomjei* ‘very high degree of completion of activity’ (Girón 2008: 305–6) (see also Chapter 34, on Tariana).

Verbal affixes can have evaluative meanings, for example Ashaninca Campa *-aseint* ‘be incorrect in doing something’, Nomatsiguenga *-memeg* ‘pretend to do something’ (Wise 1986: 588). The suffix *-tsy* in Kwaza expresses resignation, indifference, or general lack of involvement by the speaker (van der Voort 2004: 429). Urarina has an enclitic *=tau* expressing ‘reassurance’, an enclitic *=naate* ‘fear’, and a number of other attitudinal markers (Olawsky 2006: 503, 508). The suffix *-jari/-wana* in Cavineña (Guillaume 2008: 241–2) expresses a wide range of negative emotions including anger, disgust, resentment, and regret. Verbal suffixes expressing attitude in Puinave include ‘compulsive’, ‘serious attitude’, and ‘pity’ (Girón 2008: 289–91).

Many highly synthetic Amazonian languages have elaborate systems of classifiers on verbs. Classifiers categorize the noun, typically, in S or O function, in terms of its shape, dimensionality, and other inherent properties. Palikur has eleven verbal classifiers (which are different from classifiers of other types). The classifier *-buk-* indicates that the object of the verb ‘untie’ is linear, and serves to classify a more specific object like *mawru* ‘cotton, string’, for example *nah watak-buk-e (ini mawru)* (I untie-VERBAL.CL:LINEAR-COMPLETELY this:neuter cotton/string) ‘I untied (a linear object, that is, this string) completely’. The same set of classifiers may appear in multiple environments—with number words, verbs, possessive constructions, adjectives, demonstratives, and on nouns themselves in many North Arawak and Campa languages. Classifiers often originate in incorporated nouns, as a consequence of reinterpretation of classificatory noun incorporation (see §15.3.4.1).[21]

Some applicative markers can be traced to incorporated postpositions. Markers of direction and position may go back to grammaticalized verbs: see §15.5.

15.3.4 Incorporation

In many Amazonian languages a noun (§15.3.4.1), a postposition, or an adverb (§15.3.4.2) can be incorporated into a verb. The resulting form remains a verb and forms one single grammatical word. Incorporation can be rather versatile. It may affect the verb’s valency. Or it may help organize the flow of discourse, foregrounding what is important and

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backgrounding (p. 297) what is not.[22] In §15.3.4.3, we focus on morphemes which are reminiscent of noun incorporation, but cannot be considered noun incorporation synchronically: body-part prefixes in Panoan languages and instrumental prefixes in Bora.

15.3.4.1 Noun incorporation

Noun incorporation is a feature of a number of highly synthetic languages in Amazonia. It is found in many South Arawak and a few North Arawak (e.g. Palikur), in Carib, Tupí, Tacana, and Movima (an isolate), in Carib, Yanomami, and Bora. Nadëb, from northern Amazonia, displays most unusual incorporation patterns.[23] Arawá languages, Kwaza, Jivaroan, and Urarina have no productive incorporation of any sort.

The simplest kind of noun-incorporation is lexical compounding. A noun and a verb form a new lexical item, and the process applies to just a handful of nouns and of verbs. The semantics of a compound is often non-compositional, and may not be productive. Urarina has a few noun-verb compounds with rather idiosyncratic meanings, e.g. *s ~~uu~~ h ~~u~~ -tía* (heart-give) 'consult, advise', *suna-bía* (afternoon-announce) 'make a sound to announce the afternoon (as done by a cricket)' (Olawsky 2006: 429).

A more regular and productive incorporation may have a syntactic effect, changing the roles of the participants. This is what Mithun (1984b) calls 'the manipulation of case'. In many Tupí-Guaraní languages, incorporating a noun makes the transitive verb become intransitive. A transitive sentence in (20), from Paraguayan Guaraní, a Tupí-Guaraní language, has an object expressed with a noun, 'thing':

(20)

A-jogua-t	petei	mba'e	*Paraguayan Guaraní*
1ACTIVE-buy-FUTURE	one	thing	
'I will buy something'			

An object can be incorporated into the verb. Then the verb becomes intransitive. The combination 'thing-buy' now refers to a unitary activity, 'shopping' in general (Velazquez-Castillo 1996: 107).

(21)

A-mba'e-jogua-ta	ko-ka'aru	*Paraguayan Guaraní*
1ACTIVE-thing-buy-FUTURE	this-afternoon	
'I'll go shopping this afternoon'		

The exact meaning of incorporation may depend on the type of noun. In Kamaiurá, a Tupí-Guaraní language from the Xingu area in southern Amazonia, incorporating a noun which is not obligatorily possessed results in creating an intransitive verb with a lexicalized (p. 298) meaning. The noun *y* 'water' can be incorporated into the erstwhile transitive verb -'*u* 'ingest (something)'. The resulting form *y*-'*u* means 'drink liquid'. Similarly, if -*momot* 'throw (something)' incorporates *pina* 'hook', the resulting intransitive verb *pina-momot* means 'fish with fish hook'; and *pira*-'*ywo* (fish-throw.arrow.at) means 'fish with

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arrows'. These verbs behave just like any intransitive verb in the language (they occur with intransitive person markers, can be made transitive again with the prefix *mo-* which only applies to intransitive verbs, and cannot take a direct object) (Seki 2000: 143–6).

If an obligatorily possessed noun is incorporated, the effect is quite different. Then, incorporation does not affect the number of the verb's valencies, or participants. It simply rearranges them. Kamaiurá has two ways of saying 'you castrated the pig'. In (22) 'pig's testicles' is the direct object.

(22)

tajau	r-api'a	ere-'ok	*Kamaiurá*
pig-NUCLEAR.CASE	REL-testicle	2SG-tear.off	
'You tore off pig's testicles' (i.e. castrated the pig)			

An alternative is (23) where 'pig' is the direct object. The verb maintains its transitivity.

(23)

(ene)	tajau-a	ere-api'a-'ok	*Kamaiurá*
you.SG	pig-NUCLEAR.CASE	2SG-testicle-tear.off	
'You tore off pig's testicles' (lit. you testicle-tore off the pig)			

This is known as 'possessor ascension'. In (23), the focus is on the pig itself, rather than its body part. Along similar lines, (24), from Nanti, a Campa (Arawak) language, does not contain noun incorporation. The example locates 'the action of the verb relative to a subpart of the affected entity' (Michael 2013: 162):

(24)

no-ag-ak-i=ro	i-banki	*Nanti*
1SGA/Sa-get-PERF-REAL1=3fem.SG	3masc.SG-feather	
'I plucked its feather'		

In contrast, (25)—a counterpart of (24) with an incorporated noun—emphasizes 'the effects on the whole of the affected entity' (Michael 2013: 162).

(25)

no-ag-a-banki-t-ak-i=ri	*Nanti*
1SGA/Sa-get-EP-FEATHER-PERF-REAL1=3masc.SG	
'I defeathered him'	

A noun can be incorporated into an intransitive verb. In Nanti, intransitive verbs which undergo noun incorporation typically express qualities or attributes, as in (26) (Michael 2013: 161).

(26)

i-kuta-panki-t-ak-i	*Nanti*
3masc.SG-be.white-FEATHER-EP-PERF-REAL.1	
'He is white-feathered'	

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(p. 299) In agreement with the universal tendencies, S and the O are the constituents which are typically incorporated. In the majority of Amazonian languages, only obligatorily possessed nouns can be incorporated.[24] In Nadëb, nouns divide into (a) obligatorily possessed, (b) optionally possessed, and (c) non-possessable ones (which include fish species, and natural objects).[25] Only possessable nouns (groups (a) and (b)) can be incorporated (Weir 1990: 324).

If the Possessor of the incorporated noun is coreferential with the subject of an intransitive verb (A), the verb becomes intransitive (Michael 2008: 328–30; 2013: 162–3). In (27), the subject (S) is syntactically intransitive: the erstwhile possessor cannot be cross-referenced on the verb with an object enclitic (as was the case in (25) where the A and the Possessor were not coreferential).

(27)

no-tot-a-bori-t-ak-i	*Nanti*
1SG.SUBJ-cut-EP-leg-EP-PERF-REAL1	
'I cut my leg'	

That is, incorporation has different syntactic effects depending on the relationships between the A and the Possessor of the possessed noun.

A number of Amazonian languages have classificatory noun incorporation (Mithun 1984a). A noun with a generic reference is incorporated into a verb (in O or S function). The verb may be accompanied by a specific noun. In (28), from Apurinã, an Arawak language from southern Amazonia, the classificatory noun *-pe* 'pulp of' delimits the semantic field of the object, classifying it as belonging to pulped items. The object itself, *komuru-pe* (manioc-pulp.of), can be overtly mentioned (Facundes 2000: 338).

(28)

ata	komuru-pe	usonãka-pe-ta-ka
1PL	manioc-pulp.of	dry-PULP.OF-VERBALIZER-CAUS
'We put the manioc pulp to dry'		

The incorporated classificatory *-pe* 'pulp of' does not have to be repeated on the object 'manioc':

(29)

ata	komuru	usonãka-pe-ta-ka	*Apurinã*
1PL	manioc	dry-PULP.OF-VERBALIZER-CAUS	
'We put the manioc pulp to dry'			

A classificatory incorporand can be used without an accompanying noun. In (30), the classificatory noun *xiti* 'earth of' is incorporated into the verb, to anaphorically refer to the noun *kiko* 'field' previously mentioned in the text:

(p. 300)

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(30)

ata	yotika-xiti-ta	tha-ru	*Apurinã*
1PL	burn-EARTH.OF-VERBALIZER-CAUS	AUX-3masc.SG.OBJ	

'(First, we prepare the field (*kiko*) by cutting down the trees, then) we set it (the field) on fire'

Over time, a classificatory noun may grammaticalize into a verbal classifier, losing its nominal features. Many verbal classifiers in Palikur and also in Mundurukú, a Tupí language, come from grammaticalized body parts.[26]

Noun incorporation may have pragmatic effects. An incorporated noun will then have a more general reference than a free-standing one. This corresponds to the function of noun incorporation identified as 'information flow' by Mithun (1984b). In Palikur a body part in O function cannot get incorporated if it refers to one, individual body part as in (31) (Aikhenvald and Green 2011: 426):

(31)

nah	sukuh	nu-uty-ak	*Palikur*
1SG	wash	1SG-eye-AFFIX	

'I washed one eye' (lit. I washed one eye)

In contrast, (32) refers to both eyes; the non-individuated form meaning 'eyes' is incorporated. The verb is marked as reflexive (and is intransitive), since the A and the Possessor are coreferential:

(32)

nah	sukuh-hot-aw	*Palikur*
1sg	wash-EYE-REFL	

'I washed (all) my eyes' (lit. I eye-washed myself)

An incorporated body part and a non-incorporated one (with the same reference) in O function can co-occur, if a complete involvement of a body part is focussed on—see (33).

(33)

nah	sukuh-**hot**-aw	nu-uty-ak	*Palikur*
1SG	wash-EYE-REFL	1SG-eye-RECIPROCAL	

'I washed both of my eyes' (and not ears)

Incorporating a noun in Palikur has two effects. The participants are 'rearranged'; that is, their roles in the clause change. In addition, the participant which becomes the O acquires further prominence. This is what Mithun (1984b) calls 'the regulation of information flow'.

Incorporation of a body part with 'possessor ascension' may have a further pragmatic effect of complete affectedness of the possessor of the body part (D. L. Payne and T. E. Payne (p. 301) 2013: 331–2; T. E. Payne 1995: 300–2, on Panare, and Derbyshire 1999 on other languages including Waiwai). In Panare, only body parts can be incorporated. The

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possessor of a body part becomes the O. The difference between a clause with and without body part incorporation lies in the ‘degree’ of affectedness of the O. In (34), the person’s head received a cut:

(34)

y-pu-n	y-Ø-kˆtë-ñe	amën	*Panaré*
3-head-POSS	TRANSITIVIZER-DI-cut-NONPERF:TR	2SG	

‘You cut its head/protruding part’ (a participant receives a cut on the head)

In (35) the ‘head’ is incorporated into the verb. The meaning is now quite different from that in (34): the head was completely cut off from the body:

(35)

y-pu-~~kiti~~-ñe	amën	*Panaré*
3-head-cut-NONPERF:TR	2SG	

‘You cut off its head’ (the head was severed from the body)

Noun incorporation in Nadëb is highly productive. The participant which acquires the O function is the one affected by the action. Unlike any other Amazonian languages, Nadëb allows incorporation of multiple nouns into the same verb, each involving possessor ascension. In the examples given by Weir (1990: 331–2) up to three nouns can get incorporated into a verb. They form one grammatical word (hyphens added by the author, to reflect this). In (36), ‘you’ (the object) is more affected by the action than any other participant:

(36)

õm	kad	[hoonh-tób-nooh-ga-~~juu~~	dúk]	*Nadëb*
you.SG.O	uncle_A	grandmother-house-mouth-THEME-close	be.suspended	

‘Uncle closed the door of your grandmother’s house on you’ (lit. uncle grandmother-house-mouth-closed you)

In most Amazonian languages verbs with incorporated nouns can get lexicalized and become semantically non-compositional. Examples include Panaré *y-o-n-kïtë* (3-eye-POSS-cut) ‘open eyes of (a) newborn’ (D. L. Payne and T. E. Payne 2013: 179), Trio *-ere-kuika-* (liver-swallow) ‘be extremely angry’ (Carlin 2004: 263), Palikur *kamax-duka* (grab-CHEST+REFL) ‘He had a quick snack’ (lit. he grabbed his own chest), *nah barew-wok* (1sg clean-HAND) ‘I am poor, destitute’ (lit. I am clean-handed) (Aikhenvald and Green 2011; also see Weir 1990: 336, for further examples from Nadëb).

15.3.4.2 Incorporating adverbs and postpositions

In many Amazonian languages adverbs, adjectives, and postpositions can be incorporated. The iterative suffix *-bakhia* ‘repeatedly, frequently’ in Paumarí appears as a free form in ‘*afo-bakhia* (adverbializer-repeatedly) ‘frequently’. A number of adjectives and adverbs can occur as verbal suffixes of manner and time, for example *'bo'da* ‘old (adjective), long ago (adverb)’ in (37) (Chapman and Derbyshire 1991: 280, 320).

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(37)

va-ka-'ojomo'i-ha-'bo'da-'i-ki	*Paumarí*
3PL-TRANSITIVIZER-teach-DUR-LONG.AGO-ASP-NONTHEME	
'They taught a long time ago'	

Incorporating a postposition may add a direct object to the verb: in other words, an NP marked by a postposition becomes the verb's object, and the intransitive verb becomes transitive. The valency-increasing applicative suffix *-ta/-tya* in Yagua (Peba-Yagua: Wise 2002: 332) indicates that a location, an instrument, or a comitative oblique has become the direct object. In (38) 'knife' is an oblique with instrumental meaning, and is marked with the cliticized *=tya*.

(38)

si-ichité-rya	javanu	quiichi=tya	*Yagua*
3SG-poke-INANIMATE.OBJECT	meat	knife=INST	
'He poked the meat with a/the knife'			

In (39), 'knife' is the direct object, and *=tya* is incorporated in the verb.

(39

si-ichité-tya-ra	quiichi	*Yagua*
3SG-poke-INST-INANIMATE.OBJECT	knife	
'He poked something with the knife'		

There appears to be a requirement that this new direct object has to be definite to warrant incorporation of a postposition.[27] Incorporating a postposition appears to have a pragmatic effect.

Nadëb has a rich system of noun incorporation (see Weir 1990, and §15.3.4.1 of this chapter). Postpositions can also be incorporated, with a syntactic outcome. If a verb is intransitive, the noun marked by the postposition becomes O, and the S becomes A (Weir 1990: 326ff). The clause in (40) is intransitive.

(40)

éé	a-hɨng	hxóóh	go	*Nadëb*
father	FORMATIVE-go.downriver	canoe	in	
'Father goes downriver in a canoe'				

The clause in (41) is transitive. The postposition has been incorporated into the verb (with a changed vowel), and the noun is now the direct object of the verb 'go in' (the form has become *ga-* in this context). The verb and the incorporated postposition are in square brackets.

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(41)

hxóóh	éé	[ga-hɨng]
canoe	father	in-go.downriver

'Father goes downriver in a canoe' (lit. father in-goes downriver a canoe)

(p. 303) If the verb is transitive, the object of the postposition becomes the O, and the old O is demoted to the periphery. 'With aunt' is an oblique in (42):

(42)

kalaak	dab	Subi	a-wʉ́h	kaat	sii	*Nadëb*
hen	meat	Subih	FORMATIVE-eat	aunt	with	

'Subih is eating chicken with aunt'

In (43), 'aunt' is the O, and the postposition 'with' is incorporated.

(43)

kaat	Subih	sii-wʉ́h	kalaak	dab	hã	*Nadëb*
aunt	Subih	with-eat	hen	meat	DAT	

'Subih is eating chicken with aunt' (lit. Subih is with-eating aunt with respect to hen meat)

Incorporating a postposition affects grammatical relations: an erstwhile oblique becomes an O. Nadëb has an ergative-absolutive pivot in clause combining. Only constituents in S or O function can be conjoined or relativized on (Weir 1984, 1990). Incorporation of a postposition can be viewed as 'feeding' the syntactic pivot (in the sense of Dixon 1994). Over time, an incorporated postposition may develop into an applicative marker; more on this in §15.5.

15.3.4.3 Beyond noun incorporation

Some highly synthetic languages of Amazonia display further phenomena reminiscent of noun incorporation but synchronically of a distinct nature.

A special feature of Panoan languages is a large closed set of about thirty monosyllabic productive prefixes which can occur on verbs, adjectives, and nouns. Panoan languages have a large number of suffixes, and typically just one prefix position. These prefixes refer to body parts and their extensions. They bear a resemblance to terms for body parts. For instance, the prefix *bë-* in Matses can refer to 'face (***bë****tantete*), forehead (***bë****shbed*), eye (*ëşhë*), eyebrow (***bë****şni*) or front, surface'.[28] A body part prefix can provide locational specification with regard to a body part of an S (intransitive subject) or O. In (44), the body-part prefix *ma-* 'head, top, ground surface' specifies the body part which is hurting:

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(44)

ma-nën-e-bi	*Matses*
HEAD-hurt-NONPAST-1person	
'My head hurts/I have a headache' (lit. I hurt on the head/with respect to the head)	

In (45), the prefix *da-* 'trunk, stem, outer surface, side' specifies the part of the trees affected:

(p. 304)

(45)

kuëte-Ø	**da**-daëṣh-tsek-kid	madu-n	sipi-n	*Matses*
dicot.tree-ABS	TRUNK-eat.gnawing-DIM.HAB	demon-GEN	tamarin-ERG	
'Pygmy marmosets gnaw the trunks of dicot trees' (lit. demon's tamarins (=pygmy marmosets) gnaw trees on the trunk)				

Body part prefixes have some functional similarities with noun incorporation (Fleck 2006a: 86–92). However, synchronically they cannot be considered incorporated nouns, because they have no corresponding free nouns.

A set of seven instrumental prefixes in Bora verbs (Thiesen and Weber 2012: 123–4) may also reflect traces of erstwhile noun incorporation. These are *tò-* 'do with the hand', *t ɨ̀-* 'do with the teeth', *t^{h} à-* 'do with the foot', *k^{h} à-* 'do with something pointed', *k^{h} ì-* 'do with some cutting tool', *p^{h} ɨ̀-* 'do with something like a saw', and *kpà-* 'do by a series of blows'. These prefixes are not productive, and appear to be restricted to verbs of breaking. For some of these, there are cognate classifiers. Compare *t ɨ̀-* 'do with the teeth' versus *-t ɨ̀-* 'a formative in a classifier for something held between the lips or teeth', *k^{h} ì-* 'do with some cutting tool' versus formative *- k^{h} ì-* in classifier forms involving 'cuts'; and *t^{h} à-* 'do with the foot' versus *-t^{h} à-* as a formative in classifiers referring to legs, cf. free noun *thá^{x} k^{h}ì:* 'leg' (Thiesen and Weber 2012: 170). It is likely that both the prefixes and the cognate classifiers could have grammaticalized from free-standing nouns.

Body-part prefixes in Panoan languages and instrumental prefixes in Bora can be compared to noun-like 'lexical affixes' in Salishan languages which also include body part terms. In all probability, these markers have their origins in noun incorporation or compounding.

15.3.5 Two verbs in one word: one-word verb serialization

One-word serial verb constructions consisting of two, and occasionally more, verbal roots is a feature of many synthetic languages of Amazonia. In terms of their composition, one-word serial verb constructions can be asymmetrical—that is, consisting of a 'minor' verb from a closed subclass which imparts a directional, aspectual, modal, or another grammatical specification to the whole construction, and another, 'major', verb from an

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open class. Or they can be symmetrical—consisting of two verbs from open classes.[29] The typical meanings of symmetrical construction cover cause–effect or sequence of subactions. A typical asymmetrical one word serial verb construction with directional meaning comes from Mamaindê (Eberhard 2009: 527). Verbs are in bold face.

(46)

tu-ʔnĩu-ten-lat^{h}a-Ø-wa	*Mamaindê*
get-return-DESIDERATIVE-S3-PRESENT-DECLARATIVE	
'He will bring it'	

(p. 305) Symmetrical serial verbs include *mãn-to* (burn-die) 'die of heat' and *sun-tanãun* (hit-throw) 'kill'. They can contain up to three verb roots, for example *tu-k-wa0-we* (get-SERIAL.CONNECTIVE-come-put) 'get, come and put; bring and put'. Some are lexicalized, for example *eu-ta-luka-tai* (see-SERIAL.CONNECTIVE-separate-take.out) 'see and choose' (Eberhard 2009: 385–7).

A one-word serial verb construction in Puinave can contain up to three verbal roots (Girón 2008: 226). These may refer to manner of action and position of the subject. In (47) 'run' refers to the speed of action (quickly, strongly), and 'sit' reflects the subject's sitting position.

(47)

i-**jap**-**mán**-**tek**-ót	*Puinave*
ATR-paddle-run-sit-PL	
'those who were sitting paddling strongly'	

Two verbal roots in a one-word serial verb may express subactions in sequence to one another, as in (48):

(48)

a-ma-u-**déu**-**yuk**	*Puinave*
1SG-2SG-IMPV-see-come	
'Come see me'[30]	

30

Grammaticalized minor verbs (e.g. verbs of motion and stance) in one-word serial verb construction are a frequent source for verbal suffixes. Contact-induced grammaticalization of verbs in Makú languages and in Tariana has resulted in emergent highly synthetic structures: see §15.5.

15.4 Morphological Complexity in Nouns

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In many Amazonian languages nouns and noun phrases can be morphologically complex. A noun phrase can constitute a clause on its own, just like a verb. (49), from Jarawara (Dixon 2004: 307) illustrates this.

(49)

Wakari-ri-ka	*Jarawara*
name(masc)-REM.PAST.EYEWITNESS.MASC-DECL.masc	
'It was (a man called) Wakari'	

Jarawara has a large set of verbal affixes (which vary in how they can occur with other affixes and verbs: see examples (10)–(11)). Only nine tense-evidentiality and modal affixes, (p. 306) and three 'miscellaneous' suffixes *-tasa* 'again', *-bisa* 'also', and *-tee* 'habitual, customary' can occur on nouns as predicates. They then provide tense, evidentiality, and aspect specifications for a noun phrase which is independent and different from that of the verb within a clause. In (50), 'Purús River' is marked for habitual future, and the clause is cast in far past reported evidentiality (Dixon 2004: 193). This also reflects different time frames and information sources for the noun 'Purús' and for the clause itself.

(50)

[Foro-tee-ba]$_S$	wata-re-mete-mone	ama-ke	*Jarawara*
Purús-HABITUAL-FUT	EXIST-NEG-FPnon.eyew.fem-REPfem	EXTENT-DECLfem	
'What was to be the Purús River is said not to have existed long time in the past'			

Nominal tense is a prominent feature of South American languages (see Nordlinger and Sadler 2004 on nominal tense in general). Present is usually unmarked. Nominal past and nominal future have been documented for numerous Tupí-Guaraní, Nambiquara, Arawá, and Arawak languages, and also Puinave and Movima.

Nominal affixes can express further modal and aspectual-like meanings, for example Trio (a Carib language) *-sepï* 'pleasing', *-pe(ke)* 'not pleasing', *-rïpï* 'useless', *-me* 'similative' (being like something)' (Carlin 2004: 123–36), Mawayana (Arawak) *-ni* 'similative', *=kwe* 'affective' (expressing a feeling of affection) (Carlin 2006: 325). The structure of a noun in Piro includes seven suffixal slots, with meanings covering nominal tense, aspect, frustrative modality, sequence, repetition, 'interest', and 'calling attention to the head word' (Matteson 1965: 9–8).[31]

Amazonian languages with several cases on nouns may allow 'stacking' of case markers. In some languages, double case reflects double marking of syntactic function of an NP within a main clause and an embedded clause (see Aikhenvald 2003a: 85, 158–63 on Tariana). Or two locative cases can be stacked to specify the location and the direction, for example Baniwa *awakada-ʒiku-hɾe* (jungle-LOC:IN-TOWARDS) 'towards the inside of the jungle', Baré *nisa-ní-wa-ku* (1sg+canoe-POSS-PERLATIVE-LOC) 'along (a river) on my canoe' (Aikhenvald 2002a: 107).

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15.5 The Rise and Fall of Morphologically Complex Structures

Grammaticalization of independent lexical items often results in creating verbal suffixes. In Yagua (Peba-Yagua, Peruvian Amazonia: D. L. Payne 1990: 223–4), verbal suffixes indicating location, direction, and modality come from grammaticalized minor verbs in one-word serial verb constructions (see §15.3.5). The verb root *siiy* ‘run’ occurs as an independent verb root. A related form *-siy* has grammaticalized as a suffix indicating that an action was done upon departure, with perfective overtones, for example *sa-suuta-siy* (3sg-wash-UPON. (p. 307) DEPARTURE) ‘he washed upon (or just prior to) leaving’. Along similar lines, the Yagua modal suffix *-rụụ* ‘potential’ is etymologically related to the verb *nirụụy* ‘love, desire’ (see D. L. Payne 1990: 228).

Aspectual suffixes may be transparently related to verbs. The inchoative marker *-htxe-* meaning ‘begin’ in Hixkaryana is transparently related to the transitive verb *-htxe-* ‘begin’. The completive suffix *-t i̵-hka-* is related to the transitive verb *-t i̵-hka-* ‘finish, complete’ (Derbyshire 1985: 224–5). Evidentiality markers in Hup and Tariana developed from grammaticalized verbs, for example Hup *=hɔ* ‘nonvisual evidential’ from *hɔ̃h* ‘make noise’, Tariana *-mha* ‘non-visual evidential’ from *-hima* ‘hear, feel’ (Epps 2006: 278, Aikhenvald 2002ab).

Most markers of direction, position, and associated motion in Cavineña and in other Tacana languages have recently grammaticalized from minor verbs in asymmetrical one-word serial verb constructions. For instance, the positional affix *-jara* ‘be in lying position’ in Cavineña developed from the verb *jara* ‘lie down’, for example *tawi-jara-* (sleep-LIE:POSITIONAL.AFFIX) ‘sleep lying’ (see Guillaume 2008: 307–30, for a discussion of whether to analyse such markers as serialized verbs or as affixes).

Incorporation of postpositions may result in their grammaticalization as applicative markers. Cognates of postpositions and applicatives suggest a similar grammaticalization path for other languages, for example the comitative applicative *-ta* and the comitative postposition *=ta* in Arabela (Zaparoan: Wise 2002: 331). Applicative and causative markers in Arawak in southern Amazonia can be cognate to postpositions in related languages in northern Amazonia. The ‘presential’ applicative suffix *-imo/-omo* in Campa languages is related to the postposition (-)*m i̵i̵-n* ‘towards’ in Guajiro, an Arawak language spoken in the region of the Guajiro peninsula, in Venezuela and Colombia (Wise 1990: 108, 111). Causative prefixes in Baure *i(mo)-*, Ignaciano *imi-/im-*, and associative applicatives Apurina *mi-,* Piro *him-* (Wise 1990: 108, Danielsen 2007: 250 on Baure) are cognate to the adposition *-ima* ‘together with’ in a number of North Arawak languages, including Tariana, Baré, and Warekena of Xié. The separative applicative *-apitsa* in Campa languages (see (18), from Nanti) is cognate to the adposition *-apidza, -apiya* in Tariana and in Baniwa varieties.

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Noun incorporation is another source for the emergence of affixes. We can recall, from §15.3.4.3, that body-part related prefixes in Panoan languages and instrumental prefixes in Bora may have developed out of incorporated nouns. Classificatory noun incorporation (see (28)–(29), from Apurinã) historically gave rise to verbal classifiers. These typically originate in incorporated body and plant parts. Mundurukú, a Tupí language, has over 120 classifier morphemes which characterize the referent in terms of its shape. [32] Classifiers are used with verbs, demonstratives, modifiers, and on nouns themselves. At least a quarter of the classifier morphemes are transparently related to body parts, for example *-ba*^{4} 'long and rigid objects' and *ba*^{4} 'arm'.[33] Incorporated nouns can result in other affixes. The reported (p. 308) evidential *-hima-* in Piro, an Arawak language from Peru, comes from a noun meaning 'sound' (Matteson 1965: 127).

Affixes with a fixed position within a verb may come from clitics. This path of development for tense-modal affixes in Jarawara was demonstrated by Dixon (2004: 577–80).

Areal diffusion offers an additional factor in the development of highly synthetic structures. Complex verbal morphology appears to be an areal feature shared by most languages in southern Amazonia, especially in Peruvian Amazonia (Wise 2002: 341). Arawak languages south of the Amazon tend to be more morphologically complex and more synthetic than those to the north. This may be accounted for by past contact with other highly synthetic languages, including Panoan, Harakmbet, and Kawapanan.[34]

Borrowing of forms (or direct diffusion) may constitute a further source for morphological enrichment. Amuesha, a highly synthetic Arawak language, bears traces of extensive language contact with Quechua (Adelaar 2006). Some affixes in Amuesha appear to have been borrowed from Quechua, including *-n*^{y}*a* 'discourse marker', *-Vn*^{y}*-* 'desiderative' and *-V:r-* 'stative'. Structural similarities in complex expression of negation and double marking of possessor on nouns (see §15.3.1) may be due to indirect diffusion of patterns from Quechua into Amuesha (Adelaar 2006: 308). Contact-induced changes in Mawayana, an endangered Arawak language dominated by Trio and Waiwai (of the Carib family), resulted in the development markers of nominal past, a similative (on nouns), and a verbal frustrative marker, to match Carib patterns (Carlin 2006).

The Vaupés River Basin is the only well-established linguistic area within north-west Amazonia (spanning Brazil and adjacent areas of Colombia: see Aikhenvald 2002b, 2012a: 75–83). The area is characterized by institutionalized multilingualism, and includes speakers of East Tucanoan languages, Tariana (an Arawak language), and also, marginally, a number of Makú languages (Hup, Yuhup, and Dâw).[35] There is a strong cultural inhibition against borrowing forms. However, a long-term interaction between East Tucanoan, Tariana, and Makú has resulted in a rampant areal diffusion of grammatical patterns. Hup and Yuhup developed complex agglutinative morphology involving root and stem compounding and single word serial verb constructions, matching the patterns in Tucanoan languages (see Epps 2006, 2008 on Hup; Silva and

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Silva 2012 on Yuhup). Examples (51) and (52) illustrate structural parallelism between Hup and Wanano, an East Tucanoan language (Epps 2006: 281):

(51)

ʔam	wæd-túk-uw-ăn	d'oʔ-nǽn-ǽh	*Hup*
2SG	eat-want-FILLER-NON.A/S	bring/take-come-DECL	

'(We) brought what you wanted to eat'

(p. 309)

(52)

~bʉ'ʉ	chʉ-dua-re	~da-ta-i	*Wanano*
2SG	eat-DESID-NON.A/S	bring/take-come-VISUAL.PERFECTIVE.1	

'(We) brought what you wanted to eat'

The desiderative marker in Wanano is a bound morpheme developed out of a one-word serial verb construction. The meanings expressed with bound morphemes in Wanano are mirrored by exponents of one-word serial verbs in Hup. The development of categories such as evidentials and tense, causatives and directionals in Hup through grammaticalization of verbal roots has also been shaped by the Tucanoan model. In Chapter 34, we turn to similar developments of highly synthetic structures in Tariana as a result of contact with East Tucanoan languages in the same area. Arawak languages closely related to Tariana but spoken outside the area have much less complicated verb and noun structure. The development of highly synthetic structures in Arawak and Makú languages of the Vaupés River Basin linguistic area is relatively recent, and is a consequence of predominantly unilateral diffusion (see Aikhenvald 2002b, for further features of the area).

The full array of internal mechanisms behind the development of highly synthetic structures in most Amazonian languages requires further study. Highly synthetic structures in Panoan languages can be traced back to a proto-language (Fleck 2006c). Jarawara, Paumarí, and other Arawá languages have over a hundred verbal suffixes each, with fairly specific meanings including directionality, manner, time sequence, and so on; however, 'unlike in other parts of the grammar there are very few cognates between languages' (Dixon 2004: 582). Few if any of suffixes can be shown to originate in independent verbs. It is likely that many of the affixes may have been developed separately in each individual branch.

If a highly synthetic language becomes obsolescent and is on the way out, it is likely to become more simple morphologically. Latundê/Lakondê is a northern Nambiquara language, known to just a few elderly people (Telles 2002). The language is synthetic, with a number of markers of tense, aspect, and evidentiality and noun incorporation. However, it is much simpler than Mamaindê, from the same subgroup (Eberhard 2009), and lacks many of the tense, aspect, manner, and directionality markers found in Mamaindê. Sabanê, another Nambiquara language (Antunes de Araujo 2004), is now

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spoken by one person. Its system of verbal morphology looks impoverished if compared to Mamaindê: there is no noun incorporation, single verb serial constructions, and just a few tense, aspect, evidentiality, and modality markers.

The results of my own work with the last speaker of Baré in the early 1990s point in a similar direction. The variety of Baré recorded in the 1960s had a much richer morphology than the language I recorded. A variety of aspectual and modal markers (e.g. *-phéi* 'durative' and *-ya* 'dubitative'), and a marker of reported speech *-man* were not in use by Candelário Silva, the last speaker I worked with. Verb forms recorded in the 1960s contain up to five suffixes, whereas Candelário Silva never used more than one suffix on the verb (Aikhenvald 2012b). The disintegration of synthetic structures and the ultimate loss of morphologically complex patterns go together with extreme language endangerment, and may be partly due to the influence of the local varieties of the dominant national language (Portuguese) and other lingua francas with their analytic structures.

(p. 310) 15.6 To Conclude

Amazonia is a locus of high linguistic diversity in terms of genetic affiliation of languages and their structural features. The majority of Amazonian languages are highly synthetic, with a dauntingly large inventory of bound morphemes. Verbs and often also nouns can stand alone as independent clauses. Many languages can cross-reference two (rarely three) arguments on the verb. There are fewer prefix positions than suffix positions. Many—but not all—instances of variable suffix ordering can be accounted for by the scope of an affix.

Amazonian languages are rich in valency-changing and valency-rearranging affixes. They often have a large set of morphemes expressing mood, tense, aspect, modality, evidentiality, and reality status. There may be affixes expressing emotional attitude, endearment, direction, time, and manner. In languages with a less synthetic profile such meanings tend to be expressed with independent grammatical words (Fortescue this volume refers to them as semantically 'heavy' affixes).

The majority of languages with morphologically complicated word structure are located south of the River Amazon. A number of North Arawak languages (including Palikur, Wapishana, Guajiro, and Tariana), and East Tucanoan languages, Guahibo, Yanomami, Makú, and North Carib languages in northern Amazonia display substantial complexity in their morphological make-up.[36]

Noun incorporation is common among the highly synthetic Arawak languages south of the Amazon, among Tupí-Guaraní, some Tupí, and Carib languages, and also Nadëb. Noun incorporation has numerous effects, including changing or manipulating valency, and organizing discourse flow. In a number of languages, postpositions and adverbs can

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undergo incorporation, creating applicative-like formations and additional manner markers. Incorporation can result in developing new grammatical markers, and also in the emergence of new lexicalized words. Numerous Amazonian languages have verbal classifiers ultimately developed from grammaticalized body part terms. Similar mechanisms may underlie the development of a special category of 'body-part' prefixes in Panoan languages and instrumental prefixes in Bora. Numerous languages have single-word serial verb constructions. Grammaticalization of their components gives rise to additional markers of direction, position, modality, evidentiality, and aspect.

Nouns in Amazonian languages tend to be less morphologically complex than verbs. They often take just a subset of verbal morphology. However, they may have numerous structural slots, and express an array of grammatical categories, including tense, aspect, and evaluative morphology, in addition to patterns of compounding, and stacking of case marking.

Structural similarities between Amazonian languages are likely to come about as a consequence of language contact and areal diffusion. Morphological complexity can be developed, or enhanced, as a result of convergence within a multilateral linguistic area. This is the case (p. 311) for the Vaupés River Basin linguistic area, and a few other regions with intensive language contact. The morphological complexity in highly endangered Nambiquara and Arawak languages is on the wane, as a consequence of language obsolescence and the influence of more analytic dominant languages.

Abbreviations

1,2,3
first, second, third person
A
subject of a transitive verb
ABS
absolutive
APPLIC
applicative
APPLIC:SEP
separative applicative
ASP
aspect
ATR
attributive
AUX
auxiliary
AUX.INTR

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intransitive auxiliary
AUX.TR
transitive auxiliary
CAUS
causative
CAUS.AGT
agentive causative
CL
classifier
DAT
dative
DECL
declarative
DEM
demonstrative
DESID
desiderative
DETRANS
dependent! initial
DIM.HAB
diminutive habitual
DIR
directional
EP
epenthetic
ERG
ergative
fern
feminine
FOC
focus
FP
far past
FRUST
frustrative
FUT
future
GEN
genitive
HAB
habitual
IMPERFV
imperfective

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IMPV
imperative
INDEF
indefinite
INST
instrument
IRR
irrealis
LOC
locative
masc
masculine
NEG
negative
NON.A/S
non-subject case
non.eyew
non-eyewitness
nonfem
nonfeminine
NONPERF.TR
nonperfective transitive
O
object of a transitive verb
OBJ
object
PERF
perfective
PL
plural
POSS
possessive
PROG
progressive
REAL
realis
REC.PAST
recent past
REFL
reflexive
REL
relational prefix
REM .PAST

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remote past
REP
reported
S
subject of an intransitive verb
sa
subject of an active intransitive verb
SG
singular
S^0
subject of a stative intransitive verb
TEMP
temporal

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Notes:

(1) Various macro-groupings have been suggested, none of them with any scholarly validity. Authors vary in how they refer to some of the families, e.g. Guahibo or Guahiboan, Tucano or Tucanoan; these are acceptable variants. There is just one exception: the name Arawak (or Maipuran) refers to a well-established family of languages, while 'Arawakan' is a putative subgrouping with no scientific basis to it, and is to be avoided by careful scholars. An up-to-date classification of Amazonian languages, and names for Amazonian families, are in Aikhenvald (2012a: 19–23); further details are in Aikhenvald (2013b). The 'Amazonian' linguistic type is contrasted to the 'Andean' type in Dixon and Aikhenvald (1999) and Aikhenvald (2012a: 74).

(2) Jê and some Macro-Jê languages have a more analytic profile than other Amazonian languages. Jê languages have little inflectional and derivational morphology. Jê peoples stand apart from Amazonians in their habitat and cultural patterns (see Aikhenvald 2012a: 48–9, 2013a). The centre of dispersal of the Jê languages most likely lay in the savannahs of Central Brazil, outside Amazonia proper. Chapacura languages in Bolivia and adjacent regions of Brazil also display strong analytic patterns (see Apontes

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forthcoming). Trumai (an isolate spoken in the Upper Xingu area in Brazil) is mildly synthetic.

(3) In Boas' (1911a: 74) words, 'a large number of distinct ideas are amalgamated by grammatical processes and form a single word'. The types of concepts encoded in their grammatical words, and the sheer number of templatic slots and affixes would allow us to categorize them as 'polysynthetic' (or highly synthetic: see Dixon 2010: 226–7, Aikhenvald 2007a, 2014c). The typological profile of Amazonian languages, verbal and nominal categories, incorporation, and other features are summarized in Aikhenvald (2012a: 128–36, 179–275).

(4) Difficulties in distinguishing between clitics and affixes are partly due to the presence of different types of clitics, some of which can form independent grammatical words and some cannot; see Aikhenvald (2002b) on the notion of clitic as a scalar concept. Grammarians vary in what criteria they apply to decide if a morpheme is an affix or a clitic. Mihas (2010) considers person markers on verbs and on nouns as proclitics solely based on their polyfunctionality (see Table 15.1), since they are also used as possessor markers on nouns; she notes that they are prefix-like in other respects. Wise (1986), Payne (1981) and many others consider them prefixes. Note that person markers are prefixes throughout the Arawak family. Olawsky (2006), Guillaume (2008), and Aikhenvald (2003a) distinguish enclitics from suffixes based on their capacity to attach to varied hosts depending on pragmatic factors. A comprehensive discussion of affixes versus clitics in Amazonian languages requires further investigation.

(5) Some dependent marking, including cases expressing grammatical relations on nouns, is found in Tupí (especially Tupí-Guaraní), Tucanoan, Makú, Witotoan, Tacana, Panoan, Jê, Jivaroan, and a few Arawak languages.

(6) The status of adjectives and adjectival concepts across Amazonia is a separate matter (see a brief discussion in Aikhenvald 2012a: 136–40). In many languages, such as Arawá and Witotoan, adjectives are a small closed class (unlike nouns and verbs which are always open classes). In other languages, adjectives are similar to nouns, or to verbs. Morphological complexity in adjectives is of a different nature than morphological complexity in verbs and in nouns, and will not be addressed here.

(7) This creates difficulties in drawing a line between what is strictly inflectional and what is strictly derivational material (see further discussion by Olawsky 2006: 457).

(8) Tucanoan, Pirahã, Harakmbet, Nambiquará, Yanomami, and Hup and Yuhup (Makú) have no prefixes. Tatuyo, an East Tucanoan language, has one prefix *ka-* which is likely to result from areal diffusion (Metzger 1998); a few fossilized prefixes in Dâw (Makú) may well be indicative of the loss of proto-Makú morphology. Nadëb and Kakua (putative members of the Makú family) do have prefixes. Jivaroan languages have just one fossilized causative prefix (Overall 2008).

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(9) The difficulties to do with applying a templatic structure to the verb for Preandine Arawak languages Piro, Amuesha, and Campa are outlined by Payne (2002: 486), and Wise (1986: 584).

(10) See Weir (1984: 50), on how their position could be determined by their phonological form. Puinave, an isolate from north-west Amazonia (Colombia), has up to four prefix positions (Girón 2008: 226, 288).

(11) Not every language has such patterns: for example, Movima and Panoan languages express person differently on nouns and on verbs (see Aikhenvald 2012a: 176, for a summary; see Haude 2006: 111–12 for morphemes which can be used on nouns and on verbs with different meanings, and §15.4).

(12) See Wise (1986), Aikhenvald (2012a: 135–6) on variable affix placement in Amazonian languages; see Rice (2000) and Beck (2008) for parallels in other languages.

(13) See Wise (1986: 583), on Ashaninca Campa, and Payne (2002: 492) on Ashéninca; Mihas (2015: Chapter 4), on Ashéninca Perené. Five of the seventeen suffix positions in Urarina allow variable order. These include continuous aspect, distributive or plural object, velocity, diminutive and counterexpectation, and plural, without any discernible semantic effect (Olawsky 2006: 523, 472).

(14) In some languages a cross-referencing marker can occur together with a full NP, as in Ashéninca Perené (Mihas 2010: 129) and Kwaza (van der Voort 2004: 257). In other languages, including Warekena of Xié and Baniwa of Içana, cross-referencing markers for O and S_o do occur with a full NP (see Aikhenvald 1995: 160, 180).

(15) The category of ‘person’ in many Amazonian languages has more values than just ‘the speaker’ (or first person, I), ‘the addressee’ (or second person, you) and ‘third person’. A number of languages add to this an inclusive (speaker(s) including the addressee), e.g. Tucano marî ‘we including you’, *ĩ-sâ* ‘we excluding you’ (Ramirez 1997: 322). This is a feature of Tucanoan, Bora, Urarina, Kwaza, and Movima, many Tupí-Guaraní and other Tupí languages, and many Macro-Jê languages. Further person values may include indefinite person whereby the identity of a subject or an object is unspecified, meaning ‘someone’ or ‘anyone’, ‘impersonal’ (‘everyone’), as in Kwaza, Arawak, and Tucanoan languages, and a reflexive signalling coreferentiality of an argument within a clause (as in Matses: Fleck 2008) or across clauses, as in Tupí-Guaraní languages (Jensen 1999; Seki 2000: 281–2).

(16) See Michael (2008: 279–85); see also Wise (1986: 593–4; 2002); and a summary in Aikhenvald (2012a: 238–41).

(17) Also see Valenzuela (2011) and Wise (1999: 326–7) on Kawapanan languages from Peruvian Amazonia; see Aikhenvald (2012a: 244) for details and references.

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(18) Antipassive derivations with no option of including the erstwhile O have been described for a number of Jê languages, Aguaruna (Jivaroan), Karitiana (Arikém branch of Tupí), Matses, and Cavineña (Overall 2008, Fleck 2006b, Guillaume 2008). Katukina-Kanamarí, from the small and poorly documented Katuquina family, appears to have an antipassive derivation which allows the inclusion of the erstwhile O (Aikhenvald 2012a: 427).

(19) See Overall (2017), for an overview of the frustrative; Aikhenvald (2012a: 183–4) for a brief summary; see Aikhenvald (2008). on the numerous imperative markers in Tariana and Tucanoan languages.

(20) Cf. the notion of ‘heavy’ suffixes in Chapter 7, this volume.

(21) Multiple classifier systems are also found in Ignaciano, Terêna (both Arawak), and Tucanoan, Yagua, Bora, Witotoan, Guahibo, and some Tupí languages. See Aikhenvald and Green (2011) on classifiers in Palikur; Aikhenvald (2000: 149–71, 204–40; 2012a: 292–8) on verbal classifiers and multiple classifier systems, especially in Amazonia.

(22) I follow the typological principles of the analysis of noun incorporation established by Mithun (1984b); see Aikhenvald (2012a: 192–9) on incorporation in Amazonian languages.

(23) Juxtaposed noun-plus-verb constructions in which the noun has a generic reference but both noun and verb remain independent phonological and perhaps grammatical words are analysed as instances of noun incorporation for Wanano by Stenzel (2013: 242–3). This approach to Wanano and other East Tucanoan languages in north-west Amazonia is controversial.

(24) Also see Guillaume (2008: 144–7) on Cavineña, Emkow (2007) on Araona, T. E. Payne and D. L. Payne (2013) on Panare, and Carlin (2004) on Trio.

(25) Similarly to other Amazonian languages: see Aikhenvald (2012a: 172–4).

(26) See Aikhenvald and Green (2011: 424–9) on synchronic similarities and differences between verbal classifiers and incorporated body parts in Palikur. Classificatory noun incorporation is a feature of Piro, another Arawak language of southern Amazonia, and Panare, a Carib language (T. E. Payne and D. L. Payne 2013: 178–9; Aikhenvald 2012a: 197).

(27) See Wise (1986: 340); similar examples from Waurá, an Arawak language of the Xingu area, are in Derbyshire (1986: 531).

(28) See Fleck (2006a) on Matses, Valenzuela (2003) on Shipibo-Conibo; a summary in Aikhenvald (2012a: 134–5).

(29) Multi-word serial verb constructions are a feature of many Amazonian languages, including highly synthetic ones, e.g. Ashéninca Perené (Mihas 2013). As shown in

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Chapter 34, Tariana has both. The discussion of different types of serial verb constructions in Amazonian languages and further examples are in Aikhenvald (2012a: 307–8); one-word serial verb constructions are discussed in Aikhenvald (2006a); see further references there.

(30) One-word serial verb constructions are productive in Bora (Thiesen and Weber 2012: 106–7), Chayahuita and Harakmbet languages (Wise 1999: 325), East-Tucanoan languages and Dâw, Hup, and Yuhup, the Makú languages spoken in the same area (Ramirez 1997: 181; Epps 2008: 412; Martins 2004). In Yagua, one-word serial verbs are restricted to a few intransitive movement verbs (D. L. Payne and T. E. Payne 1990: 413).

(31) Recursive agreement with multiple heads within an NP and double marking of nominal number in Tariana is addressed in Chapter 34 (see also Aikhenvald 2003a: 83–5).

(32) See Gonçalves (1987) , Crofts (1973), (1985) and Moreira Gomes (2006) (with the data from the closely related Kuruaya), and Haude (2006) on Movima.

(33) Similar developments have been described for North Arawak languages of the Upper Rio Negro region in Aikhenvald (2000) and (2007b); for Palikur in Aikhenvald and Green (2011), and for Nanti in Michael (2008).

(34) Cultural contacts between some Arawak-speaking groups (e.g. Piro) and Panoan people have been mentioned in the anthropological work; little is known of their linguistic contacts. A high degree of language loss after the European Invasion in Amazonia, lack of information on ancient patterns of language contact, and limited comparative reconstruction create obstacles in ascertaining patterns of contact-induced change.

(35) Kakua and Nukak are also spoken within the area; their affiliation with the Makú languages is a matter of some controversy.

(36) Highly synthetic languages in southern Amazonia include Panoan, Arawá, Kawapanan, Harakmbet, Zaparoan, Tupí, and a number of isolates (e.g. Urarina, Movima, Itonama, and Kwaza). Within the Arawak family, highly synthetic languages in southern Amazonia include Piro, Apurinã, languages from the Campa subgroup, and South Arawak languages Mojo (or Ignaciano), Bauré, and Terêna.

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Imperatives and Commands (OUP, 2010), Languages of the Amazon (OUP, 2012), The Art of Grammar (OUP, 2014), and How gender shapes the world (OUP, 2016).

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Polysynthesis in Northern Australia

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Abstract and Keywords

This chapter surveys the polysynthetic languages of northern Australia, across four families in three non-contiguous regions: Gunwinyguan (Arnhem Land), Tiwi (Bathurst and Melville Islands), and Southern and Western Daly (Daly River). All are non-Pama-Nyungan. It contextualizes the more detailed treatments of Dalabon (Ch. 43), Southern and Western Daly (Ch. 44), and the acquisition of Murrinh-patha (Ch. 26) by bringing out the typological similarities and differences in polysynthetic languages, with a particular focus on pathways of change between more and less polysynthetic structures. Australian polysynthetic languages exhibit little morphological fusion, and all are basically templatic. However, there are significant differences in noun and verb incorporation, applicatives and other valency-changing operations, and the degree of subordinating morphology, illustrated by comparing the closely related Dalabon and Bininj Gun-wok. Perhaps the biggest difference is the presence of a bipartite structure in the Southern Daly languages. The chapter closes by surveying the main trajectories by which morphological complexity increases or diminishes in the languages of northern Australia.

Keywords: Bininj Gun-wok, incorporation, applicatives, Murrinh-Patha, complexity, non-Pama-Nyungan languages, Tiwi, Gunwinyguan, Southern Daly, Western Daly

16.1 Introduction

OF the 250 or so indigenous languages of Australia, around sixteen are clearly polysynthetic. All belong to the Non-Pama-Nyungan groups of northern Australia (Map 16.1). More precisely, polysynthetic languages are found in:

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(a) the Gunwinyguan family: Bininj Gun-wok, Dalabon, Jawoyn, Warray, Ngalakgan, Kunbarlang, Rembarrnga, Ngandi, Wubuy (aka Nunggubuyu), Enindhilyakwa (aka Anindilyakwa)[1]
(b) Tiwi, an isolate spoken on Bathurst and Melville Islands, and cut off from the mainland for > 6,000 yrs
(c) Murrinhpatha and Ngan'gityemerri (Southern Daly family)
(d) Marrithiyel, Marri Ngarr and Emmi (Western Daly family)

These four families fall into three geographical blocks, which are not in mutual contact: Arnhem Land (Gunwinyguan), Bathurst and Melville Islands (Tiwi), and the Daly River region (Southern and Western Daly family). The Southern and Western Daly families, though not related as far as we know, are in geographical contact (see Nordlinger this volume). All of these families are in turn surrounded by languages which, though strongly head marking, lack vital criterial characteristics of polysynthetic languages, particularly nominal and adverbial incorporation, and applicatives. Some of these (such as Iwaidjan) have features that suggest once-productive nominal incorporation has been frozen into non-productive compound stems at some point in the language's history, a point I return to in §16.4.7. Other languages, such as Batjamalh of the Anson Bay family, exhibit some polysynthetic traits (p. 313) (p. 314) but, at least on most definitions, not enough to qualify unambiguously as polysynthetic (Nordlinger, this volume).

Click to view larger

Map 16.1 Polysynthetic languages of Arnhem Land and their neighbours

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The structure of this chapter is as follows. In §16.2. I illustrate the differences in polysynthetic organization, both within and across these three groups. In §16.3 I look at the languages which surround the three polysynthetic groups, focussing on which features of polysynthesis they share and which they don't. In §16.4 I look at some of the key historical developments that have increased, maintained, or decreased morphological complexity within polysynthetic Australian languages, and in §16.5 I bring together some of the key problems posed by the typology and diachrony of these languages for the study of polysynthesis.

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16.2 Three Polysynthetic Families

Here I briefly sketch the main typological features of three of the four polysynthetic families found in Australia. For more details, see Chapter 36 on Dalabon (Gunwinyguan) and Chapter 37 (Southern and Western Daly), and Chapter 23 on the acquisition of Murrinhpatha.

16.2.1 Gunwinyguan

We exemplify Gunwinyguan with Bininj Gun-wok (BGW), one of the few polysynthetic Australian languages to be increasing its speaker population: around 2,000 speakers, including L2, across half-a-dozen dialects, including Mayali, Gun-djeihmi, Kunwinjku, and Kune. The polysynthetic nature of Bininj Gun-wok has been recognized since early grammars by Oates (1964 [1953]) and Carroll (1976). These focussed on the Kunwinjku dialect, the first to receive missionary attention and have an orthography developed.

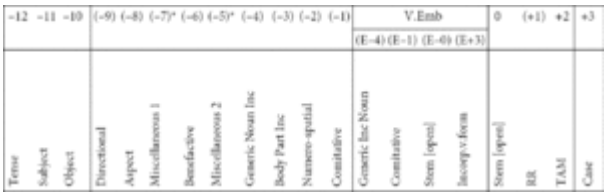

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Figure 16.1 Structural template of the verbal word in Bininj Gun-wok

Optional slots are shown in brackets. * Indicates that the slot can be filled more than once. Fused or potentially fused segments are shaded together. The order of subject and object can be reversed according to person and animacy values. V.emb represents the option of embedding one verb in another (Evans 2003a: 318); see Ch. 36, §36.6.3 for comparable Dalabon examples.

(p. 315) Bininj Gun-wok is a highly polysynthetic language with around twelve prefix slots on the verb and three suffix slots (Fig. 16.1), plus limited possibilities for incorporating one verb into another. For fuller discussion and exemplification see Evans (1996, 1997, 2002, 2003a).

Passing to an actual example, (1) illustrates the characteristic wrapping of inflectional material (in the outer prefixes and suffixes) around a lexical verb stem, itself extended to the left by a derivational prefix (the benefactive) and three further lexical stems: the incorporated nominal root *gaɲ* ‘meat’ and the incorporated adverbials *yawoy?* ‘again’ and *warga?* ‘wrongly-directed action’. Note that incorporated nominals are roots which, when appearing externally, typically appear with a noun-class prefix, for example *gun-gaɲ* ‘meat’; apart from the fact of removing the prefix, all incorporated nominals in Bininj Gun-wok—with one exception—are identical to the roots which occur externally. The exception is the word for ‘water’, which takes the form *bo-* when incorporated or compounded, but *kukku* when used independently.

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A-ban-yawoyʔ-wargaʔ-maɳe-gaɲ-giɲe-ŋ.
(1) 1SG.SUBJ-3PL.OBJ-again-wrong-BEN-meat-cook-PSTPF
'I cooked the wrong meat for them again.'

This could be expanded with other material in various ways. For example, the free pronoun *aye* 'I' could be added, before or after, to give emphasis (*I* cooked it), or the root for 'meat' could be doubled by an external nominal (*gun-gaɲ*), or modified by a demonstrative like *anekke* 'that (aforementioned)' or a quantifier like *naweɳ* 'lots of'. As argued elsewhere (Evans 2003a: 227–41), it is misleading to suggest an 'either/or' answer to the question of whether argument information is represented on the verb or in the external NP. Rather, the construction of referring expressions proceeds by unifying material from the verb with that from adjacent nouns. It is also important not to see 'pronominal prefixes' simply as pronouns which happen to be bound to the verb (Evans 2002), since unlike free pronouns they simply register the presence of an argument of some specified person and number, without its having to be anaphorically established. This means that a word like *ka-ban-du-ŋ* [3MIN.A-3AUG.O-scold-NPST] can mean either '(s)he scolds them' (referential interpretation) or '(s)he scolds people' (generic interpretation), the latter not an interpretation available with standard personal pronouns in most languages, but following from the partially specifying nature of the pronominal index.

A further feature of Bininj Gun-wok illustrated by this example is the way that pronominal prefixes (subject, indirect object) and incorporated nouns (object/theme) can combine to ensure that all three arguments of trivalent verbs are represented. If there are just two arguments, the object is potentially representable in two slots, the pronominal prefix and the incorporated noun. For example in *biyawŋuneŋ* '(s)he ate the child' the object is represented both by the pronominal prefix (*bi-* '3SG.SUBJ>3SG.humanOBJ:PST') and by the incorporated nominal *yaw* 'child'. In effect, however, overt double representation is rare, because (a) incorporated 'generic' nominals are almost all inanimate, with the exception of √*yaw* 'baby, child', (b) the third person singular objects are marked with zero unless they are human (cf *ka-* '3sg intransitive subject; 3SG subject > 3SG (non-human) object, but *kabi-*'3SG subject > 3SG human object').

(p. 316) If there are three arguments the pronominal prefix slot is linked to the indirect object (in a ditransitive or transitive with added benefactive), while the incorporated nominal slot is linked to the direct object, as shown in (1).[2] The way the complementarity of the two non-subject slots can be exploited to allow coding of all three arguments is further illustrated by what happens with ditransitive verbs like 'give': just in the case of ditransitive verbs and derived three-place predicates, a broader range of nominal roots may incorporate if they denote a human theme. Thus *daluk* 'woman', which does not normally incorporate with one- or two-place predicates, does incorporate with some three-place predicates, for example *a-ban-daluk-yi-waḻkka-ŋ* [1SG.SUBJ-3PL.OBJ-woman-

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COM-hide-PSTPF] ‘I hid the woman with them’, *an-beiwuḏ-yi-berebbo-m* [3SG.SUBJ>1SG.OBJ-child.of.male-COM-promise-PSTPF] ‘he promised me his daughter’.

Within the Gunwinyguan family, there are striking overall parallels in the organization of the polysynthetic morphology of its languages, so that Bininj Gun-wok is representative in many ways. Nonetheless, there are some interesting differences as well, which I discuss in the following subsections.

16.2.1.1 Thematic role of incorporated nominals

Within Bininj Gun-wok and Dalabon the rules are very strict: generic incorporated nominals must be absolutives, that is, either intransitive subjects or the objects of transitives, and incorporated body-part nominals must be linked to the absolutive argument, for example [I-hand-entered] for ‘I put my hand in’, that is, ‘I entered (as far as that part of me which is my hand is concerned)’[3] and ‘she-me-hand-touched’ for ‘she touched me on the hand’ (Evans 1996). The only exception is that arguments added by the comitative applicative may incorporate with some verbs (Evans 1997).

If we consider three further Gunwinyguan languages, however, we find other patterns.

In Warray (Harvey 1996), nominals incorporating destination or source can also be incorporated, for example *at-wik-lagi-ɲ anmewel* [1SG.SUBJ-toss-water-PP clothes] ‘I tossed the clothes in the water’, *ŋiri waŋ ban-nabat-nawa-m annebe-yaŋ* [dog meat 1SG.O-hand-take.out-PP hand-ABL] ‘the dog took the meat out of my hand’ (144).

In Rembarrnga (Saulwick 2003: 338–45), the range is even wider: in addition to absolutive arguments, it is possible to incorporate nominals denoting location (*baya-bak-di? -ler?ler?mə* [12A>3AUG.O-BEN-sand-REDUP-ignite.fire-PST.HAB] ‘we make a fire for it in the sand’), destination (*ga -juɭa -yuṯ* [3MIN.S-water-run(NPST)] ‘it runs into the water’), source (*ŋar- juɭa -ma-ŋara* [12M.A>3M.O-water-get-FUT] ‘we’ll take [the cycad nuts] from the water’, and means (e.g. *ø- laŋə -de?wa-nə* [3MIN.A>3MIN.O-hand-give-PST.HAB] ‘he would give him (a message stick) by hand’. The range of thematic roles is thus rather variable from language to language within the family.

(p. 317) Wubuy likewise, in addition to absolutive arguments, allows the incorporation of themes, locations, and instruments (Baker 2014).

It should be pointed out, however, that for each of these languages ‘noun–verb compounding’ exists alongside ‘syntactic noun incorporation’, and in the case of noun–verb compounding we find complex stems with a much wider range of thematic relations between the noun and the verb. For the tests used to distinguish them, most importantly the optionality of syntactic incorporation which results in synonymous pairs (with the relevant root inside or outside the verb), the ordering and mutual compatibility of nominal roots if they occupy different ‘incorporation slots’, and the possibility of conjoining incorporated and unincorporated nouns, see Evans (2003a: 323–35; Ch. 36, this vol.), and Baker (2014).

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However, the fact that individual N-V tokens are ambiguous without further information creates a latent possibility for reanalysis of N-V combinations with particular thematic roles as syntactic noun incorporation rather than compounding, which certain Gunwinyguan languages like Warray and Rembarrnga appear to have extended by analogy. Enindhilyakwa (Van Egmond 2012: Chapter 7) has taken N-V structures in a rather different direction, developing the generic incorporated nouns into what Mithun (1984b) called Classifying Noun Incorporation, with a corresponding shift to more abstract semantics for the incorporate, giving such morphemes as *rreku-*, ‘long and flexible’ (could apply e.g. to fishing lines), and *al-*, ‘long and thin’ (could apply to grass).

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16.2.1.2 Argument-changing morphology

Both prefixes and suffixes are used for argument-changing morphology throughout Gunwinyguan, with a regular partition of function by which prefixes function as applicatives while suffixes encode causative, reflexive, and reciprocal.

There is a general pattern, throughout Gunwinyguan, of coding inchoative/causative alternations through a choice between intransitive and transitive 'thematics' (see Chapter 36 on Dalabon), and of employing suffixes to the verb stem to derive reflexive/reciprocal readings. Proto-Gunwinyguan distinguished reflexive and reciprocal suffixes (Alpher et al. 2003: 342–3), a distinction maintained in Warray, Ngandi, and Nunggubuyu. But most languages have neutralized these by generalizing one form or the other to cover both functions, for example Bininj Gun-wok *kabene-na-n* [3UNIT.AUGSubj(>3MIN.OBJ)-see-NPST] 'they two see him/her/it', *kabene-na-re-n* [3UNIT.AUGSubj-see-RR-NPST] 'they two see themselves / each other'.

With regard to applicatives, there is substantial variation in their number and function across the Gunwinyguan family. Bininj Gun-wok has a benefactive *maɳe-* and a comitative *yi-*, and either or both may apply: cf. *bebmeŋ*, 'appear', *yi-bebmeŋ*, 'appear, arrive with', *maɳe-bebmeŋ*, 'appear to, ambush', *maɳe-yi-bebmeŋ*, 'appear with (e.g. food) for (recipient)'. The comitative in Bininj Gun-wok has a wide semantic range. Indeed, in some dialects, it can also be used to introduce instrument arguments. More interestingly, the possibility of applying its semantic scope both before and after a transaction means that with some verbs it can have a deprivative reading, for example *birbmeŋ* 'cleaned', *yi-birbmeŋ* 'cleaned out of (e.g. money, after taking someone's money)'. Dalabon (see Chapter 36) has tightened up the semantic specificity of this set by splitting its reflex of the comitative (*ye-* ~ *re-*) into distinct (p. 318) comitative and instrumental applicatives. Rembarrnga (Saulwick 2003) and Ngalakgan have developed an opposition between two comitative-like morphemes, *yi-* and *baɟːa*, in addition to a separate benefactive (*bak-*). There is a complex relation between the two comitative forms and the semantics they encode—as Merlan puts it for Ngalakgan, the precise meaning of *baɟːa* in any clause 'is largely conditioned by lexical meaning of the predicate' (1983: 95). But there is a tendency for *baɟːa* to have more deprivative semantics, for example *baɟːa-ma* 'take from', '*baɟːa-gepu* ,slip away, get away from'. As with applicatives in Bininj Gun-wok and Dalabon, the arguments introduced by the applicatives in Rembarrnga and Ngalakgan can be indexed by pronominal prefixes (e.g. Ngalakgan *ŋun-baɟːa-gepːo* 'it slipped away from me', where *ŋun-* is a two-place pronominal prefix indexing '3SG.SUBJ>1SG.OBJ'). However, there are also examples where *baɟːa-* does not produce any evidence of an added argument being registered on the pronominal prefix.

16.2.1.3 Extent of overt subordinating morphology

Lack of non-finite subordinate strategies is often assumed to be a core feature of polysynthetic languages, whether argued from a functionalist perspective (e.g. Mithun 1984) or, within the principles-and-parameters approach adopted by Baker (1996: 17), derived from a 'morphological visibility condition' which requires that all arguments be

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overtly present either through agreement or movement (which for Baker includes incorporation). However, within the Gunwinyguan family we find significant variation in the amount of overt subordination .

In Bininj Gun-wok virtually all clauses are finite: ‘I want to go’ is expressed as ‘I-want I-go’, ‘I saw him fall’ as ‘I saw him, he falls’ and so on. There are some requirements on sequence of tenses (so perception complements remain in the present even when the framing perception event is in the past), and perception complements generally go in the ‘immediate aspect’, but these can largely be motivated semantically and do not reduce the expressibility of arguments or in-principle availability of TAM contrasts. If we were just to include Bininj Gun-wok in our polysynthetic sample (as well as comparable languages, like Kunbarlang), Baker’s Morphological Visibility Condition would emerge unscathed.

However, consideration of a wider range of languages shows this typological correlation between polysynthesis and absence of subordinating strategies to be at best a statistical one. One counterexample is Dalabon (Chapter 36), which has a broad range of subordinating strategies. But perhaps the clearest case is Rembarrnga (Nordlinger and Saulwick 2002; Saulwick 2003), where verbs can take an infinitive suffix drawn from the same morphological slot as the finite TAM inflections, and which can additionally host a ‘complementizing case’ (Dench and Evans 1988) marking interclausal relationships such as purpose. Interestingly, verbs in the infinitive form can appear either with pronominal prefixes (2), or without them (3), showing that non-specification of TAM categories (through choosing the infinitive suffix) is independent of non-specification of argument positions (Saulwick 2003: 312).

(2)

ŋiɲ-waɻal?-miɲ	guwa	ŋiɲ-ɻo-ŋə	
1MIN.A>2MIN.O-ask-PP	PURP	2MIN.S-go-INF	

‘I asked you to go.’

(p. 319)

(3)

mala	galic	yar-nətti-ɲ	ma?gun	ma-ŋə-gan
all	other	1AUG.A>3MIN-keep-PCONT	again	get-INF-DAT

‘We used to keep the other half (of bullock coaches) again to get more.’

The fact that the availability of non-finite constructions is independent of degree of polysynthesis indicates that, to the extent that we find a correlation, it is at best a matter of stochastic system co-selection. In other words, a preference for regular overt representation of arguments on the verb reduces the need for languages to grammaticalize non-finite constructions, without however making it impossible for them to evolve. Particularly interesting for this interpretation is the fact that Dalabon and especially Rembarrnga, that is the Gunwinyguan languages which have developed clear subordinate structures, adjoin the dependent-marking Yolngu languages (Pama-Nyungan

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family), which have well-developed non-finite structures. This suggests that the non-finite structures have been diffused in from the Yolngu languages, and that there is no inherent incompatibility between these structures and a generally polysynthetic cast, but that such structures are perhaps more likely to arise initially in dependent-marking languages lacking verbal agreement with clausal arguments.

16.2.1.4 Degree of indexing of noun class/gender categories on the verb

Gunwinyguan languages range, in their number of genders, from one (Dalabon, Rembarrnga) through five (Ngandi, Enindhilyakwa) to six (Nunggubuyu), with four being most common (Jawoyn, Warray, Bininj Gun-wok, Ngalakgan), though deciding on the exact number depends on which agreement sites to take as decisive. Cognacy across the languages suggests that at least four (masculine, feminine, vegetable and neuter) are reconstructible to proto-Gunwinyguan.

In many languages, such as Bininj Gun-wok, gender agreement is confined to the noun phrase. As Heath (1986) argued for Nunggubuyu, the matching of gender across widely separated elements (say ‘big’ and ‘man’ at opposite ends of the clause) can play a key role in assembling referring expressions from discontinuous elements, one hallmark of non-configurationality. But there are also several Gunwinyguan languages where gender agreement extends to the arguments represented by pronominal prefixes on the verb, and this phenomenon provides an interesting angle on the long-running question of where the encoding of arguments is to be located. Ngalakgan is a particularly interesting example: it is a four-gender system, with both ‘vegetable’ and ‘neuter’ genders available for verbal agreement. Baker (2002) shows that there is systematic ‘disagreement’ between the choice of verbal pronominal prefixes and the corresponding external nominals, rather reminiscent of the way noun classifiers in many languages are varied to give different construals of a single entity. For example, the vegetable-gender noun *mu-jukgul* ‘acacia holosericea’ will be represented by a vegetable pronominal prefix on the verb when it is being construed as a source of fish poison or soap, but by a neuter-class prefix when it is being construed as a source of medicine, spears, or firewood, or simply as a tree. He concludes that, while first and second person prefixes may plausibly be regarded as the real arguments of the clause, third person prefixes present a more complex picture; he proposes the term ‘pronominal generic affix’ for the function of the third person non-human prefixes just discussed.

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(p. 320) ## 16.2.2 Tiwi

We now pass to Tiwi, an isolate spoken on Bathurst and Melville Islands north of Darwin across treacherous seas, and likely to have been separated from the languages of the adjoining mainland for over 6,000 years. The passage of so much time has eroded most traces of formal resemblance to the other Australian languages, to the point where it lies on the borderline of provable genetic connection.[4] But the typological resemblances to other Australian languages are striking—to Australian languages in general as regards its phonology, and to the Gunwinyguan family more particularly as regards its morphological typology. Unfortunately we know much less about Tiwi than we should—the grammar by Osborne (1974) was reasonable for its time but does not explore the many questions about polysynthesis one would like to be able to answer, and subsequent work by Lee (1987) focusses on the drastically simplified form used by younger people.

The structure of the Tiwi verb can be presented as in Figure 16.2.

Three sample sentences follow; (4) illustrates the possibility of incorporating both nominal (‘hand’) and verbal (‘dancing’); (5) illustrates the use of the comitative applicative (*mari-*) to introduce an object argument which is then incorporated (‘crab’). As (4) and (5) illustrate, Tiwi differs from the Gunwinyguan languages in not employing suffixes for the coding of TAM, but it does use them to encode reciprocal relations, as in (6). Tense categories are instead encoded by alternate forms of the pronominal prefix (cf *a-ɹə-kəɻimi* ‘he does it’, *yi-i-kəɻimi* ‘he did it’) and a special future prefix, as shown in (6).

(4)
yi-məni-marikuaŋəpə-kəɻi-ŋa
3SG.MIN.SUBJ-1SG.OBJ-dancing-hand-grab
‘He grabbed me by the hand while I was dancing’
(cf free expressions *yoi* ‘dance’, *yi.kaɻa* ‘hand’)

(5)
t̪i-nə-ɻi-mari-kiawələŋə-ramaɻnipa
3SG.F.SUBJ-LOC-LINK-with-crab-get.up
‘She got up and came with some crabs’
(Osborne 1974: 47)

(6)
w-u-ra-lu-at̪iri
3PL-CP-FUT-give-recip
‘They will have to give to one another’
(Osborne 1974: 45)

Compared to other polysynthetic languages of northern Australia, Tiwi has a much higher proportion of incorporated elements in a suppletive relation to free nouns or verbs. It also has many more incorporated nominals of a semantically specific nature, for example

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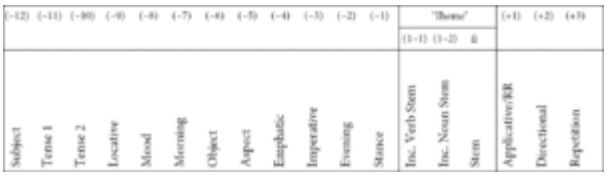
maratiŋa ‘live wallaby’, *ŋiliwaɳʈəŋə* ‘dead wallaby’, both of which would be denoted by *ʈəraka* (p. 321) as a free form). It lacks a benefactive applicative (found in all Gunwinyguan languages), but has a special indirect object pronominal prefix series which carries out some of the functions of introducing such arguments.



Click to view larger

Figure 16.2 The verbal template in Tiwi

Osborne (1974: 37–8)

As in the Gunwinyguan languages, noun and verb incorporation are optional; there are always alternative means of expressing the same concepts outside of the verb. Incorporated nouns function as (normally direct) object, and incorporated verbs as an adjunct. As in the Gunwinyguan languages, there are systematic distinctions between the incorporation of body parts and that of other nominals. From the ‘other’ category, forty-four items can be incorporated, and for only one of these is there a formal similarity between the incorporated and unincorporated form (the exact reverse of the situation with Bininj Gun-wok); similarly low proportions are found with incorporated verbs (2/25). With body-part incorporation, on the other hand, roughly half of the incorporated forms (17/33) are cognate with free forms.[5] The number of free forms is significantly larger than the number of incorporated forms across nouns and verbs. This is because incorporated forms are generally less specific than free forms (Osborne 1974: 48).

16.2.3 Southern Daly

Though comparable to the Gunwinyguan languages in their level of morphological complexity, the overall structure of the Southern Daly languages is rather different, and can be characterized as a double-headed sequence formed historically by the trapping of a range of material (body part nouns, adverbs, etc.) between the two elements of a bipartite verb (§16.4.2). This suggests that the Southern Daly languages have a distinct historical origin for polysynthesis from what is found in Gunwinyguan and Tiwi.

To make this clearer: throughout the Southern Daly region, and beyond, a ‘classifying verb construction’ prevails, in which verb lexemes have two parts, a prefixal complex element which agrees with up to two arguments and gives extensive TAM information, plus a lexical element with little or no inflectional material. The prefixal complexes appear to have originated as light verbs, which in many non-polysynthetic languages surrounding the South Daly form a large set encoding several dozen semantic values, classifying action (p. 322) types with respect to position (sit, stand, lie), movement (go, bring, carry, throw), contact type (flat/edge, compact/blunt, sharp/poke), manipulation (with hands, feet, mouth, etc.), contact (hit, touch), consumption (burn, ingest), perception/communication/cognition (say/do, think, see) and reciprocal/reflexive activity. See McGregor (2002) for a comprehensive survey of this phenomenon in northern

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Australia and Schultze-Berndt (2000) for a detailed analysis of the semantics of this type of construction in Jaminjung. The semantics of this system have been carried over into the polysynthetic complex even as the inflected light verbs grammaticized into verbal prefixes indexing two arguments. A crucial difference between the Southern Daly languages on the one hand, and Tiwi and the Gunwinyguan languages on the other, is that the latter have just a single set of prefixes that can be used for all verbs (more precisely, one for all one-place verbs and a second for all verbs with two or more arguments), whereas the former have a very large set of different pronominal prefix paradigms—often beyond three dozen. These vary with the verb root, partially on grounds attributable to verb semantics but partly (by now) in arbitrary ways. This makes the learning and using of Southern Daly languages into a process with many more mutual dependencies between separated morphological elements than is the case in Tiwi and the Gunwinyguan languages.

The template for the Murrinhpatha verb is shown in Figure 16.3, derived from Nordlinger (2010b: 326), Walsh (1996: 330) and Forshaw (2011). Optional slots are shown in brackets, and fused or potentially fused segments are shaded together. Finite verbs can further be suffixed with a ‘serial verb’, also originally an inflected main verb, indicating aspect and/or the orientation of the action of the verb.

A sample sequence of two verbs is shown in (7). Note that the capitalized gloss SLASH is intended to capture the original semantics of the ‘classifying verb’, which combines with a number of lexical verbs expressing impact.

(7)

ŋu-n̪i-bat-nu
1SG.S.SLASH(23).FUT-2SG.O-hit-FUT
ŋu-n̪i-ɻi-waraŋ-nukun
1SG.S.SLASH(23).FUTIRR-2SG.O-buttocks-smack-FUT.NEG
‘I’ll belt you, I might belt you on the bum.’

Prefixal complex		(−3)	(−2)	(−1)	0	+1	(+2)	(+3)	Serial Verb
−5	−4								(+4)
Subject	Tense	Subj No./Obj	RR	BP Inc/Applic	Verb Stem	Tense	Adverb Inc.	Subj No./Obj No.	Aspect Orientation
Action Class									

Click to view larger

Figure 16.3 Template for the verbal word in Murrinhpatha

(p. 323) ## 16.2.4 Typological comparison of the three groups

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We can summarize the differences and similarities between the three groups as follows. First, the similarities:

1. Basic element order is broadly similar, but the position of the reflexive/reciprocal marker is quite different as between Southern Daly (after pronominal prefixes) and the others (suffix to the verb root, near the end of the word)
2. Except for fusion of subject/object pronominal prefixes at the left edge, subject/object pronominal prefixes with verb-classifying elements in Southern Daly, and of verb stems with TAM marking at the right, there is little morphological fusion of elements
3. In many languages (e.g. BGW, Dalabon, Rembarrnga), each element in a prosodic word forms its own prosodic domain for stress assignment, and most morphemes align with syllable boundaries—making the elements readily segmentable, both phonologically and morphologically
4. All are fundamentally templatic rather than recursive, apart from limited incorporation of one verb into another in BGW and Dalabon.

Turning to the differences:

1. The degree of productivity of noun-incorporation varies widely, for example in Bininj Gun-wok any body-part plus around forty ‘generic’ NPs are incorporable, whereas in Murrinhpatha and Enindhilyakwa only body parts or ‘range nouns’ can incorporate
2. Thematic role of incorporates varies somewhat, even within a given language family (Gunwinyguan)—absolutives (or body parts linked to them) are the only possibility in most languages, but locations are allowed in Warray and locations, destinations, and instruments in Rembarrnga
3. The possibility of incorporating one verb stem into another is limited to BGW and Dalabon only, apart from the possibility of incorporating a few event-denoting expressions in Tiwi (but these latter lack corresponding forms able to serve as main verb stems)
4. The number of argument-structure building applicatives and their interaction with noun incorporation (Dalabon has four applicatives, BGW only two). For other languages (e.g. the Southern Daly languages) it appears that applicatives never create argument positions into which nouns can incorporate
5. Other incorporable lexical material, for example adverbials, form a rich set in most Gunwinyguan languages (BGW, Dalabon, Rembarrnga) as well as in Tiwi, but apparently not in the Southern Daly languages
6. Amount of subordinating morphology—this is most elaborate in Dalabon (special prefix series, plus use of case suffixes on verb), at the other extreme, languages such as Tiwi lack it altogether
7. The presence of a bipartite structure for event-denoting material, based on complex integration of material from the prefixal paradigm (originating as event-

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classifying light verbs) and the verb stem, is confined to the Southern Daly languages.

(p. 324) 16.3 Head-Marking Neighbours

The polysynthetic languages of northern Australia are surrounded by languages which have most of the features of polysynthetic languages, except incorporation of nouns and adverbials. For example, they typically have double-indexing pronominal prefixes on verbs, applicatives, and reflexive/reciprocal/causative suffixes.

Forms and structures of this level of complexity match so well across languages in different non-PN families that complexity of head marking (including double agreement) is reconstructable to a considerable time-depth. Consider the shared structural and formal similarities betwen Mawng (Iwaidjan; north coast of Arnhem Land) and Nunggubuyu (Gunwinyguan; east coast of Arnhem Land). So far these languages have never been claimed to be in the same non-Pama-Nyungan family, yet we see similar structures and forms like those shown in examples (8), (9). This extends to the actual form for 3SG.M.SUBJ>1SG.OBJ, which is *ŋani-* in both languages (though extended to the 3SG.F.SUBJ>1SG.OBJ form in Nunggubuyu), the use of a prefixal insert *–Npa-* to mark future tense, and the use of suffix *–ni* in one of the past tense series (effectively a past imperfective).

(8)

Mawng	Nunggubuyu	
‘he > me’		
ŋani-wuŋ	ŋanpani-wu	ŋani-wuni
ŋani-waŋ	ŋampani-wumama	ŋampani-wini
1OBJ.3MIN.SUBJ-hitP	1OBJ.FUT.3MIN.SUBJ-hitF	1OBJ.3MIN.SUBJ-hitP2
‘he hit me’	‘he will hit me’	‘he was hitting me’

(9)

Mawng	Nunggubuyu	
‘she>me’		
ŋanŋa-wuŋ	ŋanpaŋa-wu	ŋanŋa-wuni
ŋani-waŋ	ŋampaŋi-wumana	ŋampaŋi-wini
1OBJ.3F.SUBJ-hitP	1OBJ.FUT.3F.SUBJ-hitF	1OBJ.3F.SUBJ-hitP2
‘she hit me’	‘she will hit me’	‘she was hitting me’

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The reflexive and reciprocal suffixes found after the stem in most Gunwinyguan languages also appear reconstructable across a wider range of North Australian languages (Alpher et al. 2003: 341–2). The overall picture, then, is of reconstructable verb structures of the type S|O|Fut-Root-RR-TAM, and many attendant forms in each slot, right across the non-Pama-Nyungan languages (Evans 2003b). The pockets of polysynthesis that are found in northern Australia are flanked in almost every case by head-marking languages with verbal complexity comparable to Mawng. The only significant exception is in north-eastern Arnhem Land, where polysynthetic languages like Nunggubuyu, Ngandi, and Rembarrnga adjoin dependent-marking languages from the Yolngu branch of Pama-Nyungan. The presence of this Yolngu enclave appears to be a relatively recent intrusion, and it is likely that the (p. 325) polysynthetic characteristics of the Gunwinyguan languages we have discussed long predate the arrival of the Yolngu languages.[6]

The fact that all polysynthetic languages in Australia (see Map 16.1) are areally embedded in regions of consistent head-marking supports Johanna Nichols' proposal (this volume, Chapter 4) that polysynthesis arises from languages that are already strongly head-marking.

16.4 Dynamics of Complexity

The languages of northern Australia afford some fascinating examples of how polysynthetic languages increase, maintain, or reduce complexity, which are reviewed in this section.

16.4.1 Accretion from the outside

It is common for pronominal prefix combinations to undergo various forms of semantic neutralization, then followed by a type of periphrasis in which free pronouns cliticize and then affix to the verb to 'repair' the gaps in the paradigm. For example, all dialects of Bininj Gun-wok maintain a three-way number system with intransitive verbs, but only the Kunwinjku dialect maintains it with both subject and object of transitives. Compare Kunwinjku dialect *ŋabenbom* 'I hit them (>2)' with *ŋabenbenebom* 'I hit them two', but Kune dialect *ŋabinbom* 'I hit them (two or more)'. To make argument features more precise, the eastern dialect of Kune can cliticize dual oblique pronouns right after the verb, in which case they lose their oblique interpretation and are interpreted as objects (see Evans 2013 for details).

Dalabon provides another interesting example. At the left edge of the verb, two ongoing processes are building prefixal complexity: the grammaticalization of object pronouns as prefixes, and the integration of modal particles *wu* 'apprehensive' and *ku* 'purposive' into the prefixal paradigm. This has created a periphrastic paradigm, organized along the

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dimensions of subject x object x mood, in which some values are realized by pure prefixes, some by combinations of a prefix plus a free word or clitic, and some show variability and gradience between these two options. Exemplifying briefly here, (10–12) illustrate clear cases where object information, apprehensive mood, and purposive mood are shown by verbal prefix.

Djila-h-n-iyan.
(10) 1|3PL.A>2SG.O-R-see-fut
'We/they (more than two) will see you.'

Widji-na-n
(11) 3SG.A>2SG:APPR-see-pr
'(S)he might see you'. (cf *djah-nan* '(s)he sees you')

(p. 326)

(12)
Dja-h-dalû-barhdu-ngiyan kuku-yenjdjung.
3SG.A>2SG.O-R-mouth-rub-FUT 3SG.S:PURP-speak.PR
'He'll rub you with sweat, so that he (your brother-in-law) can talk.'

By contrast, in (13–14) the same general semantic dimensions (though with different feature values) are realized by free words (13) or proclitics (14) placed before the verb; note that in (14) the object proclitic gets repeated before each verb, as would be characteristic of an obligatory inflectional category, even though the reference of the object remains constant over four verbs in a row.

(13)
bulno ngey nga-h-nanhna-n, yala-h-ni wadda-kah,
3DU 1SG 1SG.S-R-look.after-PR 1PL.S-R-sit.PR country-LOC

nidjarra marrmo-njelng, mak kini-kah marrmo-kinikin-kah,
this.way clan-our not different-LOC clan-different-LOC

bulno mak nga-munkuyung
3DU not 1SG-send.PR
'I look after them two, even though we're sitting on our own land here, this is our clan land here, it doesn't belong to another clan, yet I don't send them away.'

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(14)

kanh bulno bula-h-lng … bulnu bula-h-lng-marnbu-ninj
DEM 3DU.O 3PL.A-R-SEQ- 3DU.O 3PL.A-R-SEQ-make-PI

bulnu bula-h-dadjka-nj kanh bala-h-lng-yerrkmi-nj
3DU.O 3PL.A-R-cut-PI DEM 3PL.S-R-SEQ-be.circumcised-PP

kenbo nunh wangirri
late DEM behind

bulnu bula-h-lng-dengû-kinj-injyi kah-djanihdjadj…
3DU.O 3PL.A-R-SEQ-foot-burn-PCUS 3-DEM

kardû kanihdja bulnu bula-h-dengû-kinji-nj
maybe there 3DU.O 3PL.A-R-foot-burn-PP
'They used to make them into men, they used to cut them so they would be circumcised, then afterwards, they would burn their feet (making the initiates walk on hot coals), they burned their feet.'

For many subject/object combinations, alternatives exist that span the whole gamut from free object pronoun separable by another word from the verb (e.g. by *ngey* 'I' in (15)), to phonologically full pronoun placed right before the verb but with its own stress, to a phonologically integrated version where the pronoun has effectively become part of the prefix system, as with *bul-nga* '1sgA>3plO' in (11). This latter could equally well be expressed by *bulu ngahdrebuykan*, with independent object pronoun *bulu*.

(p. 327)

(15)

kanh drebuy nga-h-yi-n bul-nga-h-drebuy-kan.
DEM drebuy 1SG.S-R-say-PR 3PL.O-1SG.A-R-drebuy-carry.PR
'that's what I say to refer politely to them in *drebuy* (a polite speech register)'.

These examples give a synchronic snapshot of a series of in-progress changes in Dalabon which are converting preverbal words into proclitics into formatives within a verbal prefix paradigm. It is interesting to note that the target structures these are leading to are prefixal paradigms cross-referencing both subject and object, and interweaving modal information within the prefixal series. As already discussed, these are both widespread and (for some values) of ancient issue within the Gunwinyguan languages, and for the non-Pama-Nyungan languages more generally. In this sense ongoing grammaticalization is restoring structures that for some reason—not yet well-understood—led to the jettisoning of most double-indexing pronominal prefixes somewhere between proto-Gunwinyguan and Dalabon.

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A further Dalabon example of accretion from the outside is the development of a verbal diminutive suffix by cliticization of the noun root *wurd* 'child' (Ponsonnet and Evans (2014)). This can express either diminutivity (16) or compassion (17).[7]

(16)

Kardu	ngorr	bula-h-kurlh-kurhka=wurd,	kardu
maybe	1PL.INCL	3PL.A>1O-R-INCEP-visit:PR=DIM	maybe
bala-h-men-yin	djehneng	kardu	
3PL-R-ideas-say:PR	looks.like	maybe	
ngungurru-kolhngu-n	wah.		
1PL.INCL>3O:APPR-drink-PR	liquid		

'It seems that [the police patrol] is coming to pay us a bit of a visit, maybe they think we might be drinking grog.'

(17)

Wa:h	ka-h-rakka-ng=wurd.	
INTERJ	3SG-R-fall-PP=DIM	
'Oh, he fell over poor fellow.'		

16.4.2 The sandwich

Reid (2003) describes a case of rapid morphosyntactic change in the language/dialect cluster known as Ngan'gityemerri / Ngen'gimerri / Ngan'giwumirri. In the case of this language, unusually for Australia, we have recordings for three time periods: the 1930s (recorded by (p. 328) Sapir's student Gerhard Laves), the 1960s and 1970s (recorded by Bill Hoddinott and Frances Kofod) and the 1980s and 1990s (recorded by Nick Reid). Within little over a half century, the order of the inflected verb (e.g. *beyinpi*) and co-verb have reversed, followed by their coalescence into a single polysynthetic word sandwiching the incorporated body part in the middle (cf. the Murrinhpatha structure discussed earlier).

Contemporary Ngan'gityemerri has a clearly polysynthetic structure (POKE in (18), and BASH in (19), are classificatory verb roots, the capitalized semantics is only tenuously related to the meanings they produce in composition):

(18)

wari-ngi=fi-mi-tyerr-tit=nyine-pe				
3SG.S.POKE.IR-1SG.O=CAUS-APPLIC-mouth-raise=FOC-FUT				
'He's about to teach it to me now' (Reid 2003: 102)				

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However, Laves' recordings from the 1930s reveal a less polysynthetic form where the equivalents to this would be spread across three words (19). Interestingly, when Reid read back the structures recorded by Laves, contemporary speakers insisted that this order was also normal, despite the fact that Reid had never heard it in hundreds of hours of collected texts and thousands of hours of conversation—see Reid (2003: 109).

(19)

lid beyinpi waninggi, du yeninj			(Laves recording)
beyin-pi=lit	wa-ninggi	yeninj=du	(Reid recording)
3SG.BASH.PF-head-cover	paperbark-INSTR	3SG.S.go.PF=sleep	
'He covered himself with paperbark and went to sleep.'			

Comparing the first word of (19), as recorded by Reid, reveals its structural isomorphism to the polysynthetic Murrinhpatha structures discussed in §16.2.3: first a combination of argument-indexing, verbal classification, and TAM (*beyin-*), then a body-part (*pi* 'head'), and finally the lexical root *lit* 'cover'. Though earlier classifications such as Tryon (1974) placed Murrinhpatha and Ngan'gityemerri in different families, it has since been demonstrated by Green (2003) that they are clearly related, largely on the basis of close cognacy between the paradigms of classifying light-verbs. Comparison of Murrinhpatha and Ngan'gityemerri indicates that their common ancestor (unlike Gunwinyguan) could not have been polysynthetic, and that they must have developed their current polysynthetic structures in parallel, with Murrinhpatha preceding (perhaps by many centuries or millennia), eventually to be followed by Ngan'gityemerri within the last century. It is fortunate for the study of polysynthetic trajectories that, thanks to the sixty-year time-lapse between the recordings made by Laves and Reid, it has been possible to observe the development of a polysynthetic structure in the latter language.

16.4.3 Analogical expansion from within the verbal word

Looking now at processes that develop complexity 'from the inside', Dalabon, Rembarrnga, and Bininj Gun-wok have increased the complexity of the verb by the following three processes.

(p. 329)

(a) Applicative prefixes 'surfing in' as suffixes to incorporated nouns and then being reanalysed as applicative prefixes to the verb stem.

In Rembarrnga, BGW, and Dalabon a nominal comitative/instrumental suffix *–yi* (with a more widespread distribution across North Australian languages) can be used on nominals (20), but is also the form of the comitative prefix on verbs (21), which may be preceded by an incorporated noun (22). It is likely the prefix arose by incorporation of the suffixed noun, with the suffix then reanalysed as a verbal prefix (23) (Carroll 1976: 74; McKay 1975: 171–2).

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bari-lar?ke-ŋ kun-waʈ:e-yi?
(20) 3PL.SUBJ>3SG.O-pound-PP IV-stone-COM
'They pounded it with a stone.'

A-ban-yi-bek:a-ŋ
(21) 1SG.SUBJ>3SG.OBJ-COM-hear-PP
'I heard them with him.'

a-ban-mac-yi-bawo-ŋ
(22) 1SG.SUBJ>3SG.OBJ-swag-COM-leave-PP
'I left the swag with them / I left them with the swag.'

(23) V N-yi(?) > [N-yi]-V > [N]-[yi-V] > ([N]-)yi-V

(b) A single original position being functionally split into two or more positionally defined slots, with a single form taking different functions in different positions. For examples of this process splitting the Dalabon comitative and instrumental, see Chapter 36, §36.5.
(c) Extra complexity being prefabricated in external elements through compounds, which can then be incorporated. In Bininj Gun-wok, for example, this can give rise to highly complex incorporates. Thus *an-koḻe* 'bamboo' + *an-baḏ* 'knee' > *an-koḻebaḏ* 'bamboo node', which can then be compounded with *kun-bolic* 'scar' to give *an-koḻebaḏbolic* 'mark of bamboo node', then stripped of its gender prefix *an-* and incorporated to give a verb like that in (24):

kaben-koḻe-baḏ-bolic-cudme-re-n
(24) 3SG.SUBJ>3PL.OBJ-bamboo-knee-scar-stick-RR-NPST
'Bamboo is held together by its nodal tissue.'

16.4.4 'Lost wax'

Heath (1997) points out that it is inaccurate to source all expansion and renewal of complexity in polysynthetic structures to the grammaticalization of erstwhile external stuctures (p. 330) gradually drawn into the verb. The process he names 'lost wax', drawing on the ancient bronze-casting technique, involves the formal renewal of a rich inflectional system threatened by phonetic erosion of a key relational morpheme, where 'a morpheme lounging on the margins of the original system was pressed into service, spreading into the position vacated by the outgoing relational morpheme.' (Heath 1997: 226). As an example, he gives the semanticization and paradigmatic spread in Enindhilyakwa of an old epenthetic morpheme *-ki-* as a morpheme originally coding

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potential mood, occupying the slot vacated by an eroded potential morpheme *-wan-* (still attested in Nunggubuyu and elsewhere).

16.4.5 Excorporation

Incorporation, described in §16.2.1 for Bininj Gun-wok and in Chapter 36, §36.6.1 for Dalabon, produces sequences N-V, where V is a verb stem. Given that many verb stems are complex (Prepound+Verb.Root), a more accurate characterization of the sequence they produce is N-Prepound-Verb.Root. Intriguingly, Dalabon, the Manyallalaluk Mayali dialect of Bininj Gun-wok, and Ngalakgan (Baker and Harvey 2003) also have a reverse process of 'excorporation', which pulls out either the prepound by itself, or a combination of the incorporated noun root plus the prepound, and places it in preverbal position. This process, primarily attested in narrative productions by master storytellers, produces a vivid effect, like an ideophone, and generally has a much greatly expanded pitch range around the excorporated element (Evans et al. 2008). The standard verb root with its prepound (*walkka* in (25)) may be left with just the thematic (*ka-* in 26), even though it would be meaningless or semantically shifted on its own (*ka-* means 'carry').

(25)
kah-dja-yurdm-inj kah-walkka-rr-inj
3SG.S:R-just-run-PP 3-hide-RR-PP
'He just ran and hid himself, he hid himself there.'

(26)
Yulyul walk kalng-ka-rr-inj
run.under.cover hide 3SG.S.SEQ-take-RR-PP
'Then he ran crouching along and hid himself.'

Alternatively, the excorporated version may be followed up by a fully formed verb replicating the excorporated material, like *ngurl-wirb! bûkah-ngurl-wirbme* in (27).

(27)
djirrh ngûrk bûka-h-yelûng-ngurl-dulubo-ng.
right heart 3SG.A>3SG.HUM.O-R-SEQ-heart-spear-PP

ngurl-wirb … bûka-h-ngurl-wirbme
heart-rip 3SG.A>3SG.HUM.O-R-heart-rip(PRES)

bûka-h-dja-lng-kom-dengkoHm-inj.
3SG.A>3SG.H.O-R-just-SEQ-neck-knock-PP
'And he speared him then, right in the heart. He ripped his heart out and knocked him in the back of the neck.'

(p. 331)

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In addition to excorporation, it is possible to reduplicate or retriplicate the prepound and give it an expanded intonation contour, with similar narrative effect, namely dramatizing the action (28).

(28)
ka-h-dja-berrûh-… berrûh-… berrûhm-inj
3SG.S-R-just-come.out-… come.out-… come.out-PP
'Then he edged out… out… out.' [Context: the protagonist is waiting for his *mimi* enemy to come far enough out of a rock crevice to spear him, but the *mimi* is only inching out bit by bit, depicted here by the repetition of theprepound.]

16.4.6 Reduction of complexity by prosodic splitting of the verbal word

In Dalabon, subject to the right prosodic conditions being met, pronominal prefixes (and sometimes incorporated roots as well) can be separated by a pause from the rest of the verbal word—and, if the reassigned unit is a closed monosyllable, it can reattach as an enclitic to a preceding monosyllabic word.

In the vast majority of cases, the verbal word, defined by the morphological template in Figure 36.1 of Chapter 36, coincides with a verbal word. However, under certain conditions, the word can be broken into smaller prosodic units separated by pauses. The (p. 332) requisite conditions for this to happen are that (a) any prefixes must end in a closed syllable and not split a morpheme, and (b) the residue must be at least two syllables ((29), Figure 16.4).

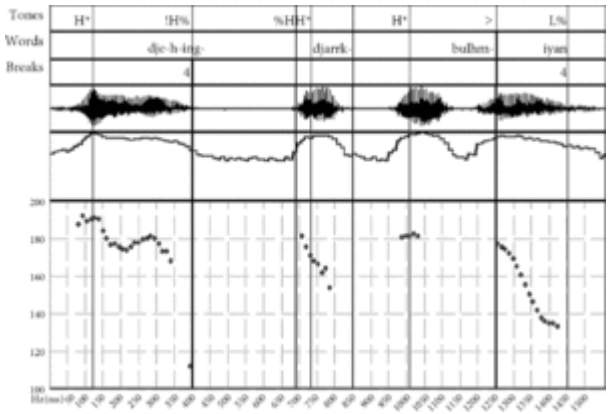

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Figure 16.4 RMS amplitude trace and F0 contour illustrating two word-internal pauses in the word *djehlngdjarrkbulhmiyan*

Evans et al. 2008

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	dje-h-lng…	djarrk-…	bulhm-iyan
(29)	12DIS.S-R-SEQ-	together-sit-FUT	
	'We (disharmonic) will turn up.'		

Prosodic restructuring may go even further. Prefixes, if closed syllables, may be reassigned to the prosodic unit of the preceding word, as if they were Wackernagel clitics (30).

	warhdu____ka-h	[215ms]	marnu-yenjdju-ng
(30)	devil	3SG.A>1SG.O-R	BEN-talk-PR
	'The devil, he will talk with me' (Tape5b20m38s)		

Prosodic splitting can even occur between speakers in co-constructed turns. In the following example, DL produces the proper prefix string but is groping for the proper lexical stem. After a short pause his interlocutor, MT, comes in with the appropriate stem plus suffixes. Shortly afterwards DL picks up on the supplied stem and suffix, and completes the sentence with a negative.

(31)

DL	mak	nga-h-lng-rawoyh…=	kolhngu-yan	kahke.
	NEG	1SGA>3SG.O-R-SEQ-again …	drink-FUT	nothing
MT		…=kolhngu-yan		
		drink-FUT		
DL	'I'll never … drink again, nothing.'			
MT	'……...drink'			

It must be emphasized that prosodic resegmentations like these occur in no more than 4 per cent of cases (Evans et al. 2008) and under rather specific phonotactic conditions. Nonetheless, this contrasts starkly with closely related Bininj Gun-wok, where nothing like this ever occurs. A Dalabon innovation that is likely to have been a key factor promoting this difference is the high incidence of the realis-marking glottal stop at the end of pronominal prefixes: by creating closed syllables, it renders them more likely to receive a degree of stress, which in turn promotes their prosodic independence.

16.4.7 Reduction of productivity by freezing of old incorporates

Just north of Gunwinyguan, languages of the Iwaidjan family have high morphological complexity of the verb, and a very 'verby' lexicon—about 40 per cent of the lexicon recorded so far and higher than that found in BGW (Evans 2012). But there is no evidence of noun (p. 333) incorporation or easy segmentability of entity-denoting roots. Consider Iwaidja. In (32) it is possible to identify *ŋa-* '1sgSubj' and *na-* FUT, leaving *l* ^{r}

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aɯarama ‘speak’, while in (33) we can isolate *ŋat-* ‘1st plural exclusive’, *pa-* ‘irrealis’, *-kpa* ‘dual’, *-ncil ʳ i-* ‘reciprocal’, and *-n* ‘non-past’, leaving *l ʳ akbuɭiwa* ‘have a yarn’.

(32) ŋanalʳaɯarama iwaca
‘I will speak Iwaidja’

(33) ŋatpalʳakpuɭiwakpancilʳin
‘We two are going to have a yarn’

The occurrence of the sequence *l ʳ a(k)* in two verbs of speaking suggests an etymological root *l ʳ a-* or *l ʳ ak-* ‘mouth’, ‘tongue’, or ‘language’ (cf. pGunwinyguan *√ḏaŋ* ‘mouth, tongue’). Unhelpfully, though, the free nominals are the unrelated *ŋaɽalk* ‘tongue’ and *iɲman* ‘language’, though there is a noun *l ʳ akbiɽic* for ‘mouth; lips’.

But fuller consideration reveals that Iwaidja verbs do indeed have a range of specific body-part prefixes. Although speakers are not metalinguistically aware of them (unlike in BGW), and there is usually no connection with free nominals, there are many recurrent forms denoting body-parts (e.g. *aŋkad ~ daŋkad* ‘arm’, *ambud-* ‘chest’; see Teo 2007 for a full list). Examples of verbs taking such prefixes include:

(a) wearing verbs, e.g. *daŋkaɽakbuŋ* ‘wear on arm or wrist’
(b) washing verbs, e.g. *wudbiɲbun* ‘wash face’, *ɟicbalwiɲbukbun* ‘wash hands’, *aŋkadbiɲbun* ‘wash arms’, *l ʳ akbalwiɲbun* ‘wash lips’
(c) tying verbs, e.g. *aŋkadbuɻaŋ* ‘tie (turtle) up by front fin’
(d) pain verbs, e.g. *ambudbuɲa* ‘have a burning pain in one’s chest’, *ambudbarki* ‘have a sharp pain in one’s chest’, *ambudbanbun* ‘have a biting pain in one’s chest’
(e) painting verbs, e.g. *wudbirawukbun* ‘paint face’, *amburaɖbaɲin* ‘paint chest’

This suggests that Iwaidja and Mawng were once polysynthetic but froze the productivity of incorporation, leaving just fossilized compounds often obscured by morphophonemics.

16.5 Conclusions

The range of languages considered in this chapter suggests that the typological traits associated with polysynthesis are not strongly linked. Complexity may increase or decrease, between closely related languages, on multiple dimensions, and pulling in opposite directions at the same time, for example in Dalabon where there is complexification in some aspects of verbal morphology and simultaneous processes of reducing it by prosodic resegmentation and excorporation. Likewise, structural features like the absence vs. elaboration of subordination (and non-finite clauses) reflect areal influence rather than systemic interdependencies between polysynthetic traits.

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(p. 334) How many independent evolutions of polysynthesis are represented in northern Australia? There is clear evidence for at least two—the Southern Daly and Gunwinyguan polysynthetic groups have separate origins, separate structures, and aren't in geographical contact. In the case of the Western and Southern Daly families, their geographical contiguity certainly makes one cautious of asserting that polysynthesis developed independently in these two families, but on the other hand their independence from the other polysynthetic foci in Australia is clear, both from geographical discontinuity and from typological disparity. The situation with Tiwi is unclear—it may represent a distant line of descent from a very ancient polysynthetic structure shared with the Gunwinyguan languages (and possibly once found also in the Iwaidjan family), but until we have more solid evidence for its genetic relatedness this is simply a hypothesis.

Diachronic shifts also make it clear that complexity may grow through elaborating material inside the verb, not merely through more normal processes of grammaticalization at the word edge or the fusing together of several independent words.

Regarding rates of change, on the one hand there is evidence that polysynthesis may develop very rapidly (as in the Ngan'gityemerri case discussed in §16.4.2), while on the other the striking similarities of templatic structure between polysynthetic structures (e.g. 2,500 years of separation between Enindhilyakwa and other Gunwinyguan languages) suggest it may remain stable over long periods.

Non-Obvious Abbreviations

A
transitive subject
APPR
apprehensive
AUG
augmented number
COM
comitative
DIS
disharmonic
HUM
human object
MIN
minimal number
O
Object
R

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Realis
S
intransitive subject
UAUG
unit augmented number

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Notes:

(1) For Enindhilyakwa, compelling evidence for including it in the Gunwinyguan family had to wait for the recent demonstration by Van Egmond (2012); for evidence regarding the unity of other Gunwinyguan languages see Alpher et al. (2003).

(2) In fact the situation is more complicated, since when the third argument is added by the comitative applicative the linkage depends on prototypical animacy for that particular verb lexeme—see Evans (1997) for examples.

(3) The semantic recasting of predicates involving body parts in this way is found right across Australia, whether the language is polysynthetic or not, and in other languages such as Warlpiri takes the form of the body part agreeing in case with the NP denoting the 'whole'. See Hale (1981) for a seminal discussion of this phenomenon.

(4) Though see Evans (2003b:19, 21) for some intriguing similarities in the pronominal prefix and nominal prefix paradigms.

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(5) Van Egmond (2012: 252) gives a figure of 40% suppletion for incorporated and free body-part terms in Enindhilyakwa.

(6) One obvious argument in favour of this position is the significant isomorphism found in the verb across all Gunwinyguan languages, whether or not they adjoin the Yolngu enclave.

(7) Some other Gunwinyguan languages of the region have a special ‘compassion prefix’ marking the speaker’s empathy for the absolutive argument of the verb (e.g. Ngalakan (Merlan 1983: 66).

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Polysynthesis in New Guinea

William Foley

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Abstract and Keywords

The New Guinea region is linguistically the most complex on earth: as many languages as in the Americas are spoken there. The typological diversity of Papuan languages is also great, though underestimated because of a tendency to survey data from languages of the Trans New Guinea family, the largest and most widespread. Its languages have provided a misleading picture of a 'typical' Papuan language, including the typological category of polysynthesis. Due to the generally low to moderately agglutinating structure of Trans New Guinea languages, the degree and range of polysynthesis in New Guinea has been under-recognized. By taking four parameters, head marking, verbal pronominal agreement affixes (polypersonalism), incorporation, and clause linkage by parataxis as diagnostic of polysynthesis, this chapter explores its range and degree across several Papuan language families. It argues that polysynthesis is a cluster of features a language can have to a greater or lesser degree.

Keywords: head marking, incorporation, parataxis, New Guinea, Papuan languages, typological diversity

THOUGH it only comprises about 2 percent of its land area, the New Guinea region contains about 20 percent of the world's languages, approximately one thousand languages or about the equivalent of the indigenous languages of the Americas. The degree of linguistic diversity is also very high, something on the order of forty distinct language families, and even within established families internal diversity is often greater than in many language families of the Americas. Most language families of the New Guinea region are small, with under twenty members, with only a handful larger, and even they are limited to forty to fifty members. There is nothing equivalent to the vast families of Africa and Asia like Indo-European, Afroasiatic, Bantu, Sino-Tibetan, or Austronesian,[1] with one exception: the Trans New Guinea family. This is a language family of some two hundred members, spread out along the central cordillera of the

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island of New Guinea and occasionally spilling down into adjacent lowlands in the north and south.

Not surprisingly, the typological diversity of Papuan languages is also great, though this is usually underestimated in much typological work that samples Papuan languages, because of an understandable tendency to draw data from the best described languages, and these on the whole belong to the Trans New Guinea family, which are spoken in the most accessible areas for foreign researchers. Languages of this family therefore have provided the picture for many of what is 'typical' Papuan language, but this picture is misleading, as many other languages of the region diverge quite widely in their typology from the well-described Trans New Guinea languages.

The typological category of polysynthesis is one area in which this is relevant. Papuan languages not unexpectedly exhibit a huge range in their morphological profiles from isolating or nearly isolating languages like Kimaghama or Rao to highly polysynthetic ones like Yimas and Alamblak, sometimes even in the same family. Trans New Guinea languages fall somewhere midway along this continuum, as they are generally low to moderately agglutinating languages, with a low to moderate degree of fusion. As a result of their being (p. 337) taken as standards for Papuan languages, the degree and extent of possible polysynthesis has been under-recognized. The goal of this chapter is to remedy this. Still, in spite of all the linguistic diversity in New Guinea, true polysynthesis as I will define it is surprisingly uncommon in New Guinea and seems largely restricted to the Sepik region (with one possible exception), although these span at least three distinct language families. This is unexpected. One would at least have imagined, given the diversity of Papuan languages, to have turned up more examples (and perhaps more will be found, especially in the very poorly documented languages of the northern lowlands of Papua), maybe not on a par with North America, but perhaps South America. But this is not what we find. Although the bulk of Papuan languages are morphologically complex, some extremely so, few in the terms of this chapter actually merit the label of being fully polysynthetic, at least under the definition I will employ here.

So we will need at least a provisional definition of what polysynthesis is to get us going. Let me start with the classic definition of Boas (1911: 74): 'a large number of distinct ideas are amalgamated by grammatical processes and form a single word, without any morphological distinction between the formal elements in the sentence and the contents of the sentence'. Such a definition obviously stipulates that we have a clear idea of what a word is, and, unfortunately, that is a very complex notion, requiring distinctions at least between phonological word, morphological word, and syntactic word (DiSciullo and Williams 1987; Dixon and Aikhenvald 2002a), none of which need coincide in any given language, and, particularly in polysynthetic languages, often do not (see, for instance the discussion of the contrast between the phonological word and the morphological word in Yimas in Foley (1991: 80–7)). But this issue need not detain us unduly here. Polysynthesis is a category for the morphological typological classification of languages, though it may have syntactic ramifications (Baker 1996), and as long we can confidently delimit what is a morphological word in a language, we can go ahead to assess the language for its

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membership in the class of polysynthetic languages. So, assuming we know what a morphological word looks like in a language, how do we identify it as an exemplar of polysynthesis? What would count as a large number of distinct ideas amalgamated into a single morphological word (henceforth, just word) by grammatical processes? Here obviously there will be great differences of opinion; what is enough to count as 'a large number'? Is extensive polypersonalism enough, namely the head marking (Nichols 1986) indication of core grammatical relations like subject and object, by bound pronominal agreement affixes on the verb? Such verbs can certainly stand by themselves as complete sentences in many languages. Consider Muniwara, a Torricelli language of the Marienberg Hills sub-family, which marks subject by a pronominal prefix, and object by a suffix (there is no other verbal morphology), so that *w-e-r* 3SG.F.SUBJ-hit-1SG.OBJ meaning 'she hit me', is a perfectly good sentence on its own. Would anyone consider a verb, consisting of a root plus only pronominal marking for subject and object as an exemplar of polysynthesis? I doubt it. Let's up the ante and consider Southern Arapesh (Conrad and Wogiga 1991), another Torricelli language, which also marks the indirect object by polypersonalism: *m-a-ʔipa-apa-ef* 3PL.M.SUBJ-R-tell-1PL.INCL.OBJ-III.SG.OBJ (the Roman numerals are used to indicate noun classes) 'they (M) told it (talk/gossip) to us (INCL)'; Southern Arapesh also possesses an applicative to permit erstwhile oblique NPs to accede to core status and thereby be realized by polypersonal agreement: *n-a-ndaʔ-m-e aeʔ-alifi* 3SG.M.SUBJ-R-do-APPL-1SG.OBJ 1SG-III.PL 'he fixed mine (teeth) for me'. Is this enough to cross the line and put Southern Arapesh in the polysynthesis camp? I think not, for to **(p. 338)** admit Southern Arapesh would entail admitting Bantu languages like Swahili, which very few linguists would be happy to call polysynthetic.

But, I would argue, both extensive head marking and polypersonalism are part of the profile for polysynthesis; they are necessary conditions for clear and full polysynthesis, but not sufficient conditions. More is needed along the lines of Boas's 'amalgamated distinct ideas'. Re-dressing Boas's idea of amalgamation in more modern clothes as incorporation, we are searching for more extensive incorporation than just polypersonal indication of core grammatical relations by head marking on verbs. Nor are applicative affixes sufficient, because their typical function in head marking polypersonal languages is to simply allow otherwise oblique constituents to be indicated by pronominal affixes, so they are just another indication of the preference for polypersonalism in operation. Only if there are multiple and contrastive applicative affixes with quite specific adverbial type meanings, as in Barupu, a Sko family language, to be discussed further on, could applicatives possibly be taken as evidence for some polysynthesis. I define incorporation as a necessary condition for polysynthesis, understanding incorporation as a formal process of dependent-head synthesis (Mattissen 2003), but incorporation of what? The type of incorporation found in canonical polysynthetic languages like Mohawk (Mithun 1984a) and typically taken as a diagnostic property of polysynthesis is the incorporation of nominal dependents, such as the O argument of a normally transitive verb, but I want to extend this notion to the incorporation of adjuncts, such as adverbials, locations, and instruments. Again, there are myriad grounds for disagreement, but, crucially, I am excluding by this criterion anything that is a normal cross-linguistically common

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derivational suffix like a causative or desiderative in languages that are demonstrably not polysynthetic on these other grounds, though such suffixes have sometimes been analyzed as examples of incorporation (Baker 1988). Note also by this definition I am excluding languages which are head marking and polypersonal, but whose other morphological complexity comes from an exuberance of tense-aspect-mood marking, such as some Papuan languages of southern New Guinea like Nen (Evans 2015) or Marind (Drabbe 1955). I do not regard tense-aspect-mood marking, no matter how elaborate, as a type of incorporation, as these are categories that all languages express, either as affixes or close satellites to the verb, although other analysts may disagree.

I regard head marking as one of the defining features of polysynthesis. Even if a language does have incorporation, but is predominantly dependent marking, I would not regard it as a polysynthetic language. While such languages may not be common, they do occur. Abau, a language of the Upper Sepik sub-family of the Sepik family, is one such example. This language is extensively dependent marking; NPs are marked for case by overt markers portmanteau for gender, number, and case:

(1)

(a)	han-o	sa	ko	orih	hiy-kwe	kuey	me	lowk
	1SG-POSS	woman	F.POSS	father	M-TOP	grub	PL.ACC	cut.out
	'my wife's father cut out the sago grubs'							
(b)	hiy-o	wayh	hiy-kwe	hiy-e	kuey-seik	se	nakyay-kow-a	
	3SG.M-POSS	friend	3SG.M-TOP	3SG.M-ACC	grub-dried	M.ACC	put-give-eat	
	'his friend gave him dried grubs to eat'							

(p. 339) Polypersonalism is only extremely vestigial in Abau, simply the indication of dual number of the subject, nothing more: *hoh-kwe**nen**-(r)e* 2/3DL-TOP DL-come 'you/they (two) came'. But there is quite a reasonable degree of incorporation of adjuncts in Abau, both before and after verb roots:

(2)

(a)	kior	hok	hu	mon	am-saw-nak-owr
	frog	3SG.F	water	LOC	nearby-quickly-COM-step
	'the frog quickly jumped from nearby into the water with (it)'				
(b)	ho(k)-kwe	woyo-hne	ka-mon	ke	ma-rorowh-riok
	3SG.F-TOP	bird-nest	II-one	F.ACC	again-dig-in.vain
	'she tried to dig out a bird's nest in vain'				

Temporal adverbials are incorporated:

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(3)

huok	soho-kwe	arawh	rei-a-nayr
pig	that-TOP	night	cut-eat-night

'as for that pig, it was slaughtered and eaten during the night'

Note that the form of the free word for 'night' and the incorporated one are quite different; such results are not uncommon in processes of incorporation. And verbs of some complexity can be built up by incorporation in Abau:

(4)

(a)

hiy-kwe	ma-kiy-nuw-nak-weyrweyr
3SG.M-TOP	again-really-with.cause-COM-scream

'he really screamed again with good reason with that (fear)

(b)

ho(k)-kwe	han-o	a	mon	hakan-ne-nayr-riòk
3SG.F-TOP	1SG-POSS	house	LOC	flee-toward-night-in.vain.PERF

'she fled toward my house during the night in vain'

But in spite of this I would not classify Abau as a polysynthetic language. Other than incorporation it lacks any head marking, and its typology is obviously dependent marking in all other features. And any evidence of polypersonalism is marginal. I would regard Abau as a language with quite extensive incorporation, but not a polysynthetic one. It possesses one of the defining properties of polysynthesis, incorporation, but essentially lacks the other two, head marking and polypersonalism.

The typological profile of Abau is not unusual in the Sepik family. Consider two more languages of that family, Namie (Feldpausch and Feldpausch 1992), of the Yellow River sub-family, and Awtuw (Feldman 1986), of the Ram sub-family. Both of these languages have more extensive incorporation of adjuncts than Abau. Namie verbs are quite complex with up to six prefix positions and nine suffix positions, although none are obligatory, and a verb can consist of just a root, in which case it signals imperative mood. The prefixes mark valence and applicative derivations, elevationals/directionals, some aspectual notions, modality, and relative tense like simultaneous or sequential. The suffixes express, moving rightward (p. 340) from the verb root, number marking, aspectuals, directionals, incorporated adverbials, and mood. Examples of complex verbs with extensive incorporation are:

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(5)

(a) p-la-m-ninaki-peina-rar-e
SEQ-downriver-there-wait-uselessly-briefly-R
'then briefly and uselessly waited down there'

(b) p-arpa-naka-la-m-ka-ni-re
SEQ-again-COM-downriver-there-TR-sit-R
'then again sat down there with others'

Note the cognate comitative applicative prefix *nak- ~ naka-* with Abau *naka-.* But Namie, while perhaps not as heavily dependent marking as Abau, seems to favor that pattern over head marking. Again, besides incorporation there is no clear head marking, but there are dependent markers, like a general possessive/oblique suffix –*ka* and an accusative suffix –*ma*:

(6)

awapli-**ka**	aya	ona-**ma**	iki-**ma**	p-na-we
2DL-POSS	father	1SG-ACC	canoe-ACC	SEQ-give.SG-R

'then your father gives me a canoe'

And polypersonalism is again vestigial, merely plural marking for the O argument by a suffix –*pa,* though this is not obligatory:

(7)

am	ara	pe-ijal-**pa**-wa	ema
2SG	now	PERF-pull-PL-FUT	1PL.EXCL

'you will pull us now'

Awtuw is similar. Its verbs have eight prefixal positions and six suffixal positions. An example of such a complex verb is:

(8)

ka-d-ma-tae-owra-t-akla-kow-kay-e
NEG-R-away-yet-again-DL-dig-BEN-PERF-PAST
'two had not gone and dug for someone yet'

There is a large array of adverbial adjuncts which can be incorporated:

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(9)

(a) rey æye rokr(a)-imya/tawa/omkur-e
3SG.M food cook-quickly/incompletely/for.a.long.time-PAST
'he cooked the food quickly/incompletely/for a long time'

(b) də-kə-pama-worka-m-e
R-get-together-all-PL-PAST
'they got them all together'

(c) rey də-k-æy-iypap/porya/wuley-e
3SG.M R-IMPERF-go-wrongly/properly/badly-IMPERF
'he's going astray/the right way/limping'

(p. 341)

But like Abau and Namie, Awtuw lacks polypersonalism, employing dependent marking via case to signal grammatical relations, an accusative suffix *–re*, with many allomorphs, an intrumental/comitative and a locative *–k* and a possessive marker *–(k)e ~ -(k)o ~ (k)ə*:

(10)

(a) tey tale-**re** yen-**ke** piyren d-æl-i
3SG.F woman-ACC 2SG-POSS dog R-bite-PAST
'your dog bit the woman'

(b) yæn-wom-**o** rom yaw də-kow-o
child-PL-ACC 3PL pig R-give-PAST
'they gave pork to the child'

(c) rey taw yekne-re-k tiwle-ke d-ukw-o
3SG tree axe-ACC-INST mountain-LOC R-fell-PAST
'he felled a tree with an axe on the mountain'

Polypersonalism is slightly more elaborate than in Abau and Namie, but only very slightly; for subjects, there is a dual number marking prefix, *gale pə-t-nak* fish HORT-DL-hold 'let us both grab some fish', and an optional plural number marking suffix, *rom w-æy-ka-m-re* 3PL IRR-go-PL-FUT 'they wll go'. But these data belie the term polypersonalism in any case, for there is no marking of person in these verbs, only for number, and only for subject, or in the case of Namie, for object (hardly personal and hardly poly-!!!) So, I do not regard this in any way as true polypersonalism such as found in languages with rich agreement, and therefore both languages, like Abau, fail the polypersonalist criterion for polysynthesis. They are also both clearly mainly dependent-marking languages, the feature of incorporation being the only head marking characteristic they possess, so they

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also fail to exhibit robust head marking, another defining characteristic for polysynthesis. Again, like Abau, I classify Namie and Awtuw as languages with extensive incorporation, but not polysynthetic.

But perhaps, I am being unduly restrictive. One feature all three languages do share, and share with other robustly polysynthetic languages of the Sepik region, both related in the Sepik family, Alamblak, and unrelated, Yimas, is verb incorporation. There is a more extensive discussion of verb incorporation in Yimas in Foley (this volume). Verb incorporation is when more than one verb root is incorporated into the complex verb, and other verbal morphology such as applicatives or incorporated adjuncts flank this complex derived verb. What inflection such a verb takes, it takes as a whole, not tied to any one verb root in the complex. In Abau, for instance, up to four verb roots can be found in such an incorporating complex (see also (1b)). Consider these examples:

(11)

(a) Abau

hiy	han-e	ma-me-sor-kow	ey
3SG	1SG-ACC	again-speak-tell-BEN	IN

'he will tell me again'

(b) Namie

pira	lommo-ma	ema	p-ra-nwa-e
fish	3PL-TOP	1Pl.EXCL	SEQ-eat-sleep-R

'then about the fish, we ate them and slept'

(c) Awtuw

tey	yilmæt	d-il-prik-e
3SG.F	string	R-twist-throw-PAST

'she twisted the string and threw it'

(p. 342) Such verb incorporation structures are the probable source of the sets of incorporated adverbials in these languages, as the independent verb roots were lost, and the incorporated roots were reanalyzed with adverbial-like meanings. This process has gone quite far in Awtuw, so there is comparatively little incorporation of true verb roots in this way in that language, but in Abau and Namie incorporation of full and otherwise independent verb roots is quite rich, on a par with Yimas, even though there has been a prior reanalysis of some into incorporated adjuncts, again like Yimas. Very interestingly, this type of verb incorporation is tied to another feature of these three languages, one that Baker (1996), at least, has taken as diagnostic of polysynthesis. These languages lack true dependent verb forms and clause-chaining constructions, otherwise pervasive features of Papuan languages across many families, though not all, and other languages of the Sepik family in particular, a feature cross-linguistically correlated with their right-headed typology. Clause-chaining structures are those in which dependent clauses with

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morphologically stripped down verbs, the so-called dependent verbs, are coordinated together with a final independent clause whose verb carries the full range of inflections (Foley 1986). The dependent clauses take their specifications for grammatical features like tense and mood from the independent clause. But these three languages, quite surprisingly given their heritage, lack these; all verbs are fully inflected, like independent verbs in clause-chaining languages, so interclausal linking is basically by coordinating clauses headed by fully inflected tensed verbs. This is a property Baker (1996) takes as diagnostic of polysynthesis, and whether it is or not (Evans and Sasse 2002; Fortescue 2008), it is certainly widely distributed among well-established canonical polysynthetic languages. Examples from each of the three languages are now given (although with so little inflectional morphology in Abau, it is hard to tell and more about this follows):

(12)

(a) Abau

ha	ayo	se	ma-me-sopok	nok
1SG	father	M.DAT	again-speak-ask	and.then
po	hiy	han-e	ma-me-sor-kow	ey
PERF	3SG.M	1SG.ACC	again-speak-tell-BEN	INT

'I will ask father and then he will tell me again'

(b) Namie

lomko	na	p-weir-e	ica	na	olli	p-lala-walir-e
3PL	sago	SEQ-work-R	and	sago	thing	SEQ-hand-put-R

'they made sago and picked up their sago tools'

(c) Awtuw

ræw	kiw	t-iwya-re	nalək	t-em-re
3DL	pitpit	DL-cut-FUT	abika	DL-pick-FUT

'they (two) will cut pitpit and pick abika' (two local vegetables)

(p. 343)

So the jury may still be out, on balance, for these three Sepik family languages. My own view is that they are not really polysynthetic, but languages with incorporation. The lack of a head-marking typology and polypersonalism is for me decisive, though others may judge differently. When these two features are added to languages with a typological profile like these three, as in related Alamblak and unrelated Yimas, then we have unquestionable polysynthetic languages. For me that is the Rubicon that must be crossed, but, I agree, this is an arbitrary line I am drawing. The fact of clause linkage without nonfinite verbs is to me an orthogonal matter, although a very interesting one. Contact may have something to do with it. Namie and Awtuw border Torricelli languages, with whose speakers they have long-standing cultural links. These Torricelli languages are left-headed unlike the more common right-headed typology among Papuan languages and

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hence lack clause-chaining constructions. It seems likely this has diffused from Torricelli languages into Namie and Awtuw. Evidence for such diffusion is found in the presence of a first person inclusive–exclusive distinction in Namie, not a feature associated with Sepik family languages, but found in the Torricelli family. A contact explanation, it must be admitted, is not at present forthcoming for Abau, but, given its lack of inflection, it is hard to be sure about the presence or absence of clause chaining in any case; there is a scrap of evidence that a very marginal form of clause chaining may be found in that language, given the scope domain of speech act final particles (12a) and also aspect indicated by sentence final tone:

(13)

ha-kwe	yier	mon	ma-rey	nok	nwoh	me
1SG-TOP	village	LOC	again-go	SEQ	dog	PL.DAT

huonok	nok	hiy-nâw
call	SEQ	CAUS-roam.IMPERF

'I went back to the village and then got the dogs and then began roaming with them'

The verbs of non-final clauses marked by *nok* 'and then' could, admittedly at a stretch, be considered as dependent, as they have fewer inflectional possibilities than final verbs. In particular, they cannot be marked by tone for aspect; that is only possible on the verb of the final clause, indicated by the falling tone (ˆ) in (13).

Even though I am proposing a fairly restrictive definition of polysynthesis, namely a head-marking language with extensive polypersonalism and incorporation, a definition like this still leaves open a wide range for languages to be classified under the rubric of polysynthesis, from a lesser to a greater extent, and I will now illustrate this range with Papuan languages drawn from a range of families. I have already excluded the presence of simple applicatives such as found in Southern Arapesh as a sufficient degree of incorporation to qualify for polysynthesis. But consider the situation in many typical Trans New Guinea languages. These languages exhibit polypersonalism for both their subject and object core arguments and indicate this by head marking on the verb. In addition they add extra arguments, most (p. 344) typically the recipient or beneficiary of a ditransitive verb by incorporating a support verb such as 'give' or 'put' into the complex verb, and it bears the person-number marking for the added argument. This is essentially incorporation via verb incorporation which licenses the additional argument: This is illustrated here by two languages from the Eastern Highlands sub-family of the Trans New Guinea family:

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(14)

(a) Fore (Scott 1978)
pu-na-**ʔta**-i-e
do-1SG.O-put-3.SG.A-DECL
'he did it for me'

(b) Tairora (Vincent 1973)
rumpa-ti-**mi**-te-ro
tie-1SG.O-give-PERF-3SG.A.PAST
'he tied it for me'

In other Trans New Guinea languages such as Lower Grand Valley Dani (Bromley 1981) of the Dani sub-family, this system is greatly extended, with a number of different verb roots incorporated, each indicating a slightly different semantics. In Lower Grand Valley Dani, only a small handful of verbs with very irregular conjugations can inflect transitively directly, that is host a person-number affix for the O argument; most require incorporation with one of these supporting verbs to do so:

(15)

(a) he- 'put' supplies a depositional meaning
wekki wa?-n-**akeik**-h-e
charcoal hit-1SG.O-put-R-3SG.A
'he put charcoal on me'

(b) ha- 'see' provides a locational or directional meaning
sek tumu?-n-**eeik**-h-e
spear thrust-1SG.O-see-R-3SG.A
'he thrust a spear at me'

(c) et- 'give' specifies a transfer of some object
wam ku-n-**et**-h-e
pig foster-1SG.O-give-R-3SG.A
'he raised a pig for me' (to give to me)

(d) ap- 'do for' indicates an action generally done for the benefit of someone
sukkwe wo?-n-**ap**-h-e
baggage take-1SG.O-do.for-R-3SG.A
'he carried the baggage for me'

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Does this qualify as polysynthesis? For Fore and Tairora, I think not: the system is too limited, the range of verbs and the type of added arguments too restricted, to qualify as a rich enough system of verb and adjunct incorporation to exemplify polysynthesis. For Lower (p. 345) Grand Valley Dani, the situation is more equivocal. The number of verbs and the range of adjunct types, location, goal, recipient, and beneficiary, are more extensive. Still, for the vast majority of verbs in the language, verb incorporation with one of these roots is compulsory in order to inflect transitively, that is to exhibit full polypersonalism. This is a far cry from the free and unconstrained verb incorporation of obviously polysynthetic Papuan languages like Alamblak or Yimas. Furthermore, the lack of any other type of incorporation beyond this quite restricted type of verb incorporation is problematic. So I think Lower Grand Valley Dani must remain a borderline case, but probably on balance does not fall into the polysynthetic category.

But the case for Barupu (Corris 2005), a language of the Sko family, is stronger. This language is strictly head marking, like Sko languages generally, and has extensive polypersonalism, indicating the person, number, and gender of both subject and object by bound pronominal affixes. The indication of person, number, and gender of the subject is particularly complex and often realized by multiple separate morphemic exponents that need to be unified to determine its full specification (see examples in (16)). All transitive verbs freely inflect for both subject and object, unlike in Lower Grand Valley Dani. The language also has far and away the richest system of applicative morphemes of any known Papuan language, and perhaps any language anywhere. There are some thirteen of these, indicating the whole gamut of semantic roles of adjuncts, and for locational adjuncts there are some quite nuanced distinctions, such as the participant that surrounds something. These applicative morphemes were clearly derived earlier from verbs in incorporating constructions, although most are no longer independent verbs. In addition to the applicatives, the language has a small inventory of incorporated adverbials, locationals, and directionals, also common hallmarks of polysynthesis.

The incorporated adverbials are three, *-eri/-ari* to indicate separation, *–ro/o* ‘to be short’ (of time or distance), and *–ro* ‘hidden’ (mostly obligatorily combined with the directionals:

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(16)

(a) ênо pôn k-en-toko-n-**eri**
hand only R-1SG.F.A -break-1SG.A-separate
'I broke it off by hand'

(b) k-en-aro-n-**o** raka
R-1SG.F.S-go.along-1SG.A-short river
'I'm just going a short distance to the river'

(c) k-a-rói-**ro**-wo-r-e âi ku
R-3SG.M.S-stand-hidden-down-3.A-down tree root
'he stood hidden behind the tree roots'

The directionals contrast *–koe* 'up' versus *–(w)oo* 'down', and *–káe* 'toward' versus *–kíe* 'away':

(17)

(a) n-en-túra-mu-**ko**-n-**e**
IRR-1SG.F.A-push-2SG.F.O-up-1SG.A-up
'I'll push you up'

(b) k-ar-ârái-**ki**-r-**e**
(p. 346) R-3SG.M.A-throw-away-3.A-away
'he threw it away (from himself)'

There are many applicatives, and I cannot exemplify them all, but here is a sample of four. For full details, see Corris (2005: 248–88):

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(18)

(a) *-ta* location on

k-a-kéi-**tá**-Ø âi niau
R-3SG.M.A-sit-on-3SG.F.O tree log
'he is sitting on a log'

(b) *-ya* location near

k-en-úte k-e(n)-noni-**ya**-mu
R-1SG.F.S-walk R-1SG.F.A-go.along.1SG-near-2SG.F
'I walked past you'

(c) *-bo* without something

mônrai n-opu-tîtí-**bo**-na
ritual.dance IRR-2PL.M.A-dance-without-1SG.M.O
'you all carrying on dancing without me'

(d) *-ô* because of someone or something, in regard to something

k-en-kéní-n-**ô**-wa
R-1SG.F.A-sit.1SG.F.A-1SG.A-because-3SG.M.O
'I'm staying behind because of him'

And multiple occurences of applicative affixes are possible:

(19)

(a) aro n-en-râivi-**tá**-u-n-**o**-a åm
greens IRR-1SG.F.A-cook-on-3SG.F.O-1SG.A-BEN-3SG.M.O husband
'I'll cook greens with them for (my) husband'

(b) k-en-úte-**nâ**-ka-n-**î**-mu
R-1SG.F.A-walk-APPL-3SG.M.O-1SG.A-with-2SG.F.O
'I'm bringing him back to you'

Barupu is exclusively head marking, exhibits extensive polypersonalism, and has a very rich system of applicatives. But do these applicatives count as cases of incorporation, specifically adjunct incorporation? Note that the Barupu system is very different from what we find with applicatives in more familiar examples, such as Bantu languages. Quite specific locational meanings are expressed, like 'near' or 'on'. This is quite different from the common range of meanings of applicatives cross-linguistically such as 'for' or 'with'. Phrases expressing locations are typical adjuncts in languages, and the fact that these are expressed in Barupu by bound verbal affixes, that is, applicatives, strongly suggests

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that these affixes should be analyzed as examples of adjunct incorporation. Hence, these Barupu data strike me as justifying (p. 347) the label 'polysynthetic' for this language, although this typological profile is probably of recent development by reanalysis of verb incorporation, as is the case for other clear examples of polysynthetic Papuan languages. Barupu, though, does show one notable feature of older, entrenched polysynthesis that these other languages, Yimas and Alamblak, do not: it completely lacks any subordinate, nonfinite or nominalized structures. It can only combine clauses by parataxis, by coordinating clauses headed by fully inflected tensed verbs. Whether this is a retention from Proto-Sko or an innovation in Barupu remains to be determined, but it is fully in keeping with it being a full-blown polysynthetic language and largely in line with Baker's (1996) profile of canonical polysynthetic languages. Compare in particular the following Barupu examples with similar ones in the chapter on Yimas (Chapter 38, this volume):

(20)

(a) nění k-en-á k-a-noi uka
1SG R-1SG.F.A-want R-3SG.M.A-go.along bush
'I made him go to the bush'

(b) bó ópu tare k-o-tere-r-o-Ø bó
3SG.F female.grand.kin new R-3SG.F.A-ask-3.A-to-3SG.F.O 3SG.F

n-o-nou-r-ô-Ø ke arâpe
IRR-3SG.F.A-go-because-3SG.F.O for what

n-erep-á
IRR-3DL.A-do
'The granddaughter asked her why she was going there with them both'

(c) rumâiro k-en-yărá-Ø
bird.of.paradise 1SG.F.A-see-3SG.F.

k-o-kéi-tá-Ø âi páko
R-3SG.F.A-sit-on-3SG.F.O tree big
'I saw a bird of paradise sitting on a big tree'

Example (20a) illustrates a complement construction, in which the second clause functions as the object of the first verb. But note there is no marking of embedding or non-finiteness, and this second clause can function fully as an independent sentence. Similar considerations hold for (20b). The verb *tere-* 'ask' is ditransitive and the clause following it functions as its theme, the what is being asked, but again it is neither formally embedded nor nonfinite and can stand on its own as an independent question. Finally, in (20c), the second clause functions as a modifier of the act of seeing the bird of

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paradise, rather like a nonfinite participle in English. Yet again the clause in fully finite and independent.

Less rich than Barupu is Warembori, a small language of some obscurity regarding its genetic classification, spoken at the mouth of the Mamberamo River on the north coast of Papua Province. With its only other relative, Yoke, spoken to the east, it forms the Lower Mamberamo family. Warembori shares some features typical of the Austronesian languages of New Guinea, as well as some core Austronesian vocabulary, but whether this is due to inheritance from a common genetic ancestor or due to contact is not clear. Contact (p. 348) with Austronesian languages would have been extensive given the prominent coastal location of Warembori, so the question of any wider genetic affiliation remains unresolved. All that we have is a short grammar sketch of the language (Donohue 1999) that leaves many questions unanswered and unfortunately suffers from a number of inconsistencies, but enough is there to identify the language as a possible case of polysynthesis. Like typical Austronesian languages of the New Guinea region, Warembori is head marking and exhibits extensive polypersonalism, with prefixes for subjects and suffixes for objects, although the object suffixes are strictly anaphoric (Bresnan and Mchombo 1987), that is can only be used if the object NP is topical; third person singular subjects for some verb classes are realized as zero:

(21)

(a) e-tir(e)-awi
1SG.A-see-2SG.O
'I saw you'

(b) ane-na ti-tir(e)-eo
crocodile-PL 3Pl.A-see-1SG.O
'the crocodiles saw me'

There is a range of applicatives in Warembori, and the functions and even allomorphic forms of each are not clear from the sparse data available, but they appear to include at least: *-ta* for incorporating adjuncts with a destination meaning, *-tane* for those with a source meaning, and the more general *–na,* with locative, causal, or instrumental adjuncts:

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(22)

(a) iwi (e)-avori-**na** ane
1SG 1SG-A-scared-APPL crocodiles
'I'm scared of crocodiles'

(b) e-keoi-**na** anta ina kee-ro
1SG.A-fish-APPL fish INST fish.hook-IND
'I fish for fish with a fish hook'

(c) e-per-i-**ta**-e
1SG.A-throw-3SG.O-to-3SG.O
'I threw it into it' (fish into the water)

(d) e-ra-mo-**tane** Teba
1SG.A-go-toward-APPL PN
'I came from Teba'

These applicatives combine with directional and aspectual markers to build verbs of some complexity:

(23)

ane-pa-yave ya-te-**na**-wi-mo-ta-o
crocodile-big-DEF 3SG.A-approach-APPL-1SG.O-toward-PERF-IND
'the big crocodile had already approached up toward me'

(p. 349) In a feature in which it diverges from Barupu, but shares with many Austronesian languages of New Guinea and the Pacific, Warembori has noun incorporation, both preverbal and postverbal. Postverbal incorporation only applies to O arguments, basic or derived, of erstwhile transitive verbs:

(24)

(a) te-bayane-ta-o ane-ro
3PL.A-search.for-PERF-IND crocodiles-IND
'they were looking for crocodiles'

(b) te-bayane-ane-ta-o
3PL.A-search.for-crocodile-PERF-IND
'they were searching for crocodiles'

Nominal adjuncts made O arguments by applicatives are also subject to incorporation:

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e-tir(e)-awi-na-a'nerere-ta-o
(25) 1SG.A-see-2SG.O-APPL-jungle-PERF-IND
'I saw you in the jungle'

Nor is nominal incorporation restricted to bare nouns, since modified, expanded NPs can be incorporated, a feature Warembori shares with many Oceanic languages:

(26)

(a) ki-kambi-[pue-pa]-o
1PL.INCL.A-hunt-[pig-big]-IND
'we're hunting big pigs'

(b) ti-ban-[e-me]-ta-o
3PL.A-make-[1SG.POSS-house]-PERF-IND
'they are building my house'

(c) suan y-am-[baisa-vo]-ro
cassowary 3SG.A-eat-[what-fruit]-IND
'what kind of fruit do cassowaries eat?'

One last feature distinguishes postverbal incorporations from preverbal ones. Nominals incorporated before the verb root must be bare nouns and the verb must be unspecified for tense and aspect and construed as generic statements, features cross-linguistically prominent for true noun incorporation:

e-pue-kambi
(27) 1SG.A-pig-hunt
'I hunt pigs'

Preverbal incorporation, unlike the postverbal type, is not restricted to the O arguments of intransitive verbs. The S argument of unaccusative verbs is also subject to incorporation:

(p. 350)

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(28)

(a) nu-pereyo
person-die
'people die'

(b) wa-rapaa-ro
canoe-not.exist-IND
'there aren't any canoes left'

Both preverbal and postverbal incorporation are possible on the same verb, with the postverbally incorporated noun arising from adjunct incorporation via an applicative. The semantics of the overall construction is that of preverbal incorporations:

(29)

ami-mena-vo-(n)a-suan-do
1PL.EX.A-dog-use.to.hunt-APPL-cassowary-IND
'we use dogs to hunt for cassowaries'

A final feature that Warembori shares with Barupu and other canonical polysynthetic languages cross-linguistically is the lack of any true subordinate or nonfinite structures of any kind. Like Barupu and these others, clause linkage is by parataxis, coordinating clauses headed by fully inflected verbs together. Even serial verb constructions, or verb incorporation, so pervasive in other languages of New Guinea, are uncommon in Warembori; it strongly favors coordination of full clauses. This is fully consonant with its status as a polysynthetic language. On the other hand, it should be pointed out that this trait is also a typological feature of quite unpolysynthetic Austronesian languages, so if Warembori turns out ultimately to be Austronesian, this could just reflect inheritance, or, failing that, it could be due to intensive contact with Austronesian languages:

(30)

(a) w-or-i i-nan-do
2SG.A-give-3SG.O 3SG.S-sleep-IND
'you put her to sleep'

(b) iti ya-pav(a)-awi a-ra-va
who 3SG.A-order-2SG.O 2SG.S-go-then
'who told you to go then'

(c) e-paingge ya-ra-yo
1SG.S-think 3SG.S-go-IND
'I think she went'

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Perhaps the most obvious and clearest cases of polysynthesis in New Guinea are two unrelated, but adjoining languages in the Karawari River region of the Sepik basin, Alamblak of the Sepik Hill sub-family of the Sepik family and Yimas of the Lower Sepik sub-family of the Lower Sepik-Ramu family. They both are far and away the most polysynthetic languages in their respective families and probably the only true polysynthetic languages in their families. Their closest relatives are morphologically complex, in the case of the Lower Sepik languages (p. 351) highly so, but they fail to pass muster as polysynthetic because they lack extensive incorporation. The development of polysynthesis in these two languages is undoubtedly the result of contact, but it is impossible to assign cause to one or the other. Most likely the two languages have egged each other on in building up their polysynthetic structure, as speakers of the two languages have longstanding trade and intermarriage arrangements. Because Yimas is treated in depth in Foley (this volume), I will restrict my remarks here to Alamblak (Bruce 1984).

Like Yimas, Alamblak is an agglutinative polysynthetic language with only minor features of fusion. This distinguishes it from many of the polysynthetic languages of North America, such as those of the Caddoan or Iroquoian families, but is comparable to Australian languages like Tiwi, Bininj Gun-wok, and Dalabon (see Evans' chapters 16 and 36, this volume). It is a head-marking language with polypersonalism for core arguments of the verb, but adjunct NPs are indicated by a number of case suffixes. These case markers for adjuncts can be quite specific semantically, adessive, path, allative, locations, instruments, etc, but there is also a general suffix *–pnë* that covers a very wide range, commonly overlapping with the more specific ones. NPs are also usually marked for number—singular, dual, and plural—and in the singular, for gender (masculine versus feminine). This is a much simpler system than the ten plus noun classes of Yimas. Verbs are marked with suffixes indicating the person, number, and, (if third person singular) the gender of both their subjects and objects, in that order:

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(31)

(a) nhai wom-m-pnë wikna-r-më-an-r
NEG other-PL-OBL buy-IRR-RM.PAST-1SG.A-3SG.M.O
'I didn't buy it from anyone'

(b) yuf-toa-e gëbrërna-më-an-r
tree-leaf-INST rub-RM.PAST-1SG.A-3SG.M.O
'I rubbed him with a leaf'

(c) yima-r met-t fëh-m hay-më-r-t
man-M woman-F pig-PL give-RM.PAST-1SG.A3SG.F.O
'a man gave the woman pigs'

(d) yën-r-pnë hɨna-më-nën-r nungwa-r
child-M-OBL bring-RM.PAST-1DL.A-3SG.M.O bird-M
'we both brought the bird to/from/with the child'

Note from (31c) that, unlike Yimas, Alamblak is not a triple agreement language; with ditransitive verbs, only the recipient is indicated by a pronominal affix, and the theme fails to do so, although it remains a bare NP without any case marking. But there is a regular process of argument structure to the re-alignment of grammatical relations, which is not a feature of Yimas:

(32)

(a) yima-r kahpa-m nan-ho met-t-n hëta-më-r-**m**
man-M oil-PL 1SG-POSS woman-F-OBL put-RM.PAST-3SG.M.A-3PL.O
'the man put oil on my wife'

(b) yima-r nan-ho met-t kahpa-m hëta-më-r-**t**
man-M 1SG-POSS woman-F oil-M put-RM.PAST-3SG.M.A-3SG.F.O
'the man anointed my wife with oil'

(p. 352)

Note the differences in case marking and verb agreement and their correlation with meaning. In (32a), *nan-ho met-t* 'my wife' is marked as oblique with the locative case suffix *–n.* Hence it cannot be cross-referenced by a verbal pronominal affix; the object agreement slot goes to *kahpa-m* 'oil', the theme. This sentence just describes an act of applying oil to the surface, the skin, of a woman, but with no effect on her. But in (32b) *nan-ho met-t* 'my wife' is a core argument with no case marking, and it assumes the verbal suffixal slot for object cross-referencing and thereby usurps *kahpa-m* 'oil'. This clause now describes an act where the woman is affected by the spreading of the oil on her skin, maybe she got better from a disease. This alternation is similar to what we find in English *she rubbed oil on my skin* versus *she rubbed my skin with oil.* Such alternations

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are completely absent in Yimas; where all verbs have only one possible mapping from argument structure to grammatical relations. Alamblak in this feature is much more like English.

Alamblak has very rich and productive systems of incorporation. First consider verb incorporation. Verbs can be incorporated into a string of up to three roots, as long as the verb roots involved can be viewed as semantically integrated in some sense (Bruce 1986). The time between the events denoted by the verb roots in an incorporating construction can be either simultaneous (33a) or sequential (33b,c):

(33)

(a) yën-r hoe-toweh-r-t nan-ho kuñ-t
child-M sleep-dream-3SG.M.A-3SG.F.O 1SG-POSS house-F
'the child slept, dreaming in my house

(note the lack of case, but the cross-referencing for the location, *kuñ-t* 'house'. It is the O argument. Both verb roots in this complex verb are intransitive, but Alamblak commonly permits intransitive verbs to inflect transitively by indexing an adjunct argument)

(b) yawy-r tat-noh-an-r
dog-M hit-die-1SG.A-3SG.M.O
'I hit a dog and it died'

(c) rit-m muh-hambray-an-m mɨy-t-n
insect-PL climb-search-1SG.A-3Pl.O tree-F-OBL
'I climb a tree and looked for insects'

Both the simultaneous (33a) and the sequential (33b) verb incorporating structures have parallels in clause-chaining structures in which the dependent verb takes *–hat(ë)* DEP:

(34)

(a) nikë hingna-më-hat hɨti-më-an-kë
2PL work-RM.PAST-DEP see-RM.PAST-1SG.A-2PL.O
'while you all worked, I saw you all'

(b) rëm kmithëf-m yi-hat këmbru-r skunët-më-r-r
3PL villager-PL go-DEP possum-M singe-RM.PAST-3SG.M.A-3SG.F.O
'the villagers went and then they singed the possum'

(p. 353)

There is, however, a semantic difference between the incorporating structures of (33) and the clause-chaining constructions of (34). The incorporating structures require a semantic coherence that the clause-chaining structures do not: we dream naturally while we sleep—it is an expected part of sleeping; we caused the death of the dog by hitting it and we intended that cause–effect relationship; we climbed the tree with the expressed

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purpose of looking for insects, not to get fruit, for instance. But there is no such intended relationship in (34), between working and being seen (this was almost certainly unintended) or leaving and singeing the possum (they could have singed it right there).

Some verb roots when incorporated have specialized uses, again as in Yimas. There is a range of causative constructions in the language, but two of them involve verb incorporation, one with *kak-* 'get' (35a) and the other with *hay-* 'get' (35b):

(35)

(a) yarmu-tha-t kak-kkah-më-t-a
tree.sp-skin-F CAUS-hot-RM.PAST-3SG.F.A-1SG.O
'the yarma bark blanket made me hot'

(b) hɨnu-t doh-t hay-ni-më-t-t
high.water-F canoe-F CAUS-go-RM.PAST-3SG.F.A-3SG.F.O
'the high water took a canoe away'

These verb roots can also be used in their literal meaning in verb incorporation constructions with a causative meaning, where the cause-effect is supplied simply by the incorporating construction itself:

(36) yima-r hay-noh-më-r-a
person-M give-die-RM.PAST-3SG.M.A-1SG.O
'a man gave me something that made me unconscious'

The verb root *hay-* 'give' has also been grammaticalized when incorporated after the head verb to function as an applicative, promoting a beneficiary adjunct to an O argument. There are two beneficiary applicatives in Alamblak:

(37)

(a) kuñ-t hinga-nho-më-m-r
house-F work-BEN-RM.PAST-3PL.A-3SG.M.O
They built a house for him'

(b) këfra-t tu-hay-më-r-r
spear-F throw-BEN-RM.PAST-3SG.M.A-3SG.M.O
'he threw the spear to him' (for his benefit)

(p. 354) The *–nho* beneficiary applicative is much more restrictive semantically than *–hay*. It requires a good effect on the beneficiary, that the actor performs the beneficial act deliberately, and that the actor and the beneficiary are at the same place at the same time

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and are both involved in the same event. None of these conditions need hold for *–hay* and in particular the event may have a bad effect, that is, a malefactive:

(38)
noh-hay-më-r-m
die-BEN-RM.PAST-3SG.M.A-3PL.O
'he died on them' (to their sorrow)

Adverbial incorporation is very extensive in Alamblak. The language has over thirty manner and temporal adverbials that only exist as incorporated forms. Some examples are:

(39)

(a) yën-r nur-hasë-më-r
child-M cry-ongoing-RM.PAST-3SG.M.S
'the child cried for some time'

(b) yën-r muh-tita-më-r-t
child-M climb-in.vain-RM.PAST-3SG.M.A-3SG.F.O
'the child tried unsuccessfully to climb it'

(c) yën-r nur-nheh-më-r
child-M cry-pretending -RM.PAST-3SG.M.S
'the child cried crocodile tears'

And, of course, multiple incorporations of these are possible:

(40)
pɨtha-rhti-yahiyah-fora-më-r
talk-deceivingly-noisily-pointlessly-RM.PAST-3SG.M.S
'he talked deceivingly and noisily to no point'

Alamblak also has bound elevationals; these occur in two sets, prefixes and suffixes, and both may occur on the same verb with different scope effects (41b):

(41)

(a) u-hɨtit-wë-r-m
up.away-see-IMPERF-3SG.M.A-3PL.O
'he is looking up at them' (away from deictic center)

(b) yua-muh-wë-r-we
up.toward-climb-IMPERF-3SG.M.S-down
'he is climbing up (something) toward us down there' (below where we are)

Temporal adverbs are also incorporated, as in Abau:

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(p. 355)

(42)

yaw-krif-më-r
walk-afternoon-RM.PAST-3SG.M.S
'he walked until afternoon'

Alamblak does contrast markedly with its neighbor Yimas in one feature: it has productive noun incorporation. In Yimas (Foley this volume) this is largely restricted to nonfinite nominalized verbs only, but in Alamblak finite fully inflected independent verbs incorporate nouns, though this is almost always found with nouns denoting body parts. Note the semantic difference between an unincorporated noun (43a) and its incorporated counterpart (43b), as indicated by the differing English translations:

(43)

(a) nan-ho wura-t fufr-an-t
1SG-POSS foot-F cut-1SG.A-3SG.F.O
'I cut my foot'

(b) na wura-fufr-a
1SG foot-cut-1SG.S
'I cut myself on the foot'

Incorporation is clearly indicated by the fact that the noun loses its gender–number marker, otherwise mandatory for independent NPs. Here are a few more examples:

(44)

(a) yën-r ñungram-kɨna-më-r
child-M throat-dry-RM.PAST-3SG.M.S
'the child is thirsty'

(b) wa-yufa-yuta-n-r
IMP-name-call-2SG.A-3SG.M.O
'call (his) name'

Like Yimas, and unlike other Papuan languages, Alamblak makes extensive use of nominalizations, particularly nonfinite ones, as a favored device for linking clauses together. This may be cross-linguistically unusual as well for polysynthetic languages (Baker 1996) (though see Evans (2006, this volume) on Dalabon and Cruickshanks (2011) on Pawnee for other exceptions), but nonetheless this is the situation in both Yimas (Foley this volume) and Alamblak. Clause-chaining constructions are found in Alamblak, as in Yimas, but the preponderance of nominalizations is striking. Nonfinite nominalizations in Alamblak are very similar to those of Yimas (Foley this volume), with a few wrinkles. There are three types of nonfinite construction: those with *–nef* NFN, *-kfët* INF, and *–yuk* PURP. All nonfinite verbs lack cross-referencing suffixes for subject and object

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arguments. The normal tense suffix of the independent verb is replaced by one of these nonfinite markers, and, in the case of verbs derived with *–nef* NFN, they appear nominalized and as such are further suffixed with the feminine (p. 356) singular marker *–t*, the unmarked gender. In other regards, the syntax of all three types is much the same. With intransitive single argument verbs, subjects are commonly realized as possessor phrases (45a), but if there is a lower ranked constituent like an oblique, that can be instead (45b):

(45)

(a) yifem-r pitha-won-më-an-r [nan-ho yi-nef-t]
father-M talk-try-RM.PAST-1SG.A-3SG.M.O 1SG-POSS go-NFN-F
'I tried talking to father about my going'

(b) Yamkopin-t-ho nayay-kfët nayay-rhw-a
Amongabi-F-POSS come-INF come-FUT-1SG.S
'I will come to Amongabi'

But with transitive verbs, there is a three-way choice: we can incorporate the O argument (note the loss of the otherwise mandatory gender–number markers), and the A argument is realized as a possessor phrase (46a,b); we can mark the O argument as a possessor phrase and leave the A argument unmarked (46c,d,e); or we can mark the A argument as a possessor phrase and leave the O argument unmarked. This last option is typically selected if the O argument is highly referential (46f):

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(46)

(a) nan-ho kuñ-hingna-nef-t
1SG-POSS house-work-NFN-F
'my house-building'

(b) fëh-tufinah-yuk ña-m
pig-shot-PURP arrow-PL
'arrows for shooting pigs'

(c) yima-m bupa-r-oh wak-nef-t
person-PL water-M-POSS get-NFN-F
'the people's getting of water'

(d) nëm rmëntemb-t-ho wikna-yuk maroha-m
1PL shotgun-F-POSS buy-PURP money-PL
'money for us to buy a shotgun with'

(e) rëm met-m wuska-r-oh wikna-hay-kfët
3PL women stuff-M-POSS buy-BEN-INF
'for them to buy things for women'

(f) yifem-r pitha-won-më-an-r [rër-ho yi-nef-t na]
father-M talk-try-RM.PAST-1SG.A-3SG.M.O 3SG.M-POSS go-NFN-F 1SG
'I tried talking to father about his taking me'

With ditransitive verbs, the theme argument can be incorporated and the beneficiary occurs as the possessor phrase (47a) or the theme argument is the possessor phrase and the beneficiary is unmarked (47b):

(p. 357)

(47)

(a) yën-r-ho yemrë-wikna-hay-yuk yima-r
child-M-POSS meat-buy-BEN-PURP person-M
'a man to buy meat for a child'

(b) yën-r yemrë-r-oh wikna-hay-yuk yima-r
child-M meat-M-POSS buy-BEN-PURPperson-M
'a man to buy meat for a child'

As with Yimas (Foley 1991, this volume), simultaneous events are commonly expressed with these nonfinite nominalizations, case marked by the general oblique suffix *–pnë* (Edmiston 1997):

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(48)

thu-hani-nef-t-pnë	mar-r	yoni-hani-më-r
fish-CONT-NFN-F-OBL	sun-M	go.down-CONT-RM.PAST-3SG.M.S

'while (they were) fishing, the sun set'

Finite nominalizations in Alamblak, like those of Yimas, are relative clauses. But unlike Yimas, they are normally embedded (49a, b), though they can also be adjoined (49c) (Hale 1976). The verb of a relative clause has normal tense marking like an independent verb, but lacks pronominal cross-referencing suffixes:

(49)

(a) [maroha-m a-yak-r-fë] yima-r
money-PL HORT-get-IRR-IM.PAST person-M
'the man who should have gotten money'

(b) [na kuñ-t hingna-më] mɨrëkɨfef-t
1SG house-3SG.F work-RM.PAST gossip-F
'gossip that I built a house'

(c) ɨnd hanhi kmi-t [na ɨnd kfë-më-t]
DIST small place-F 1SG DIST speak-RM.PAST-F
'the small place, that which I spoke about'

But quite surprisingly, finite nominalizations, such as relative clauses, allow noun incorporation, provided the nouns have indefinite reference, not only of the O argument (50a), but with ditransitive verbs, the beneficiary argument as well (50b). In this they are much less restrictive than independent clauses:

(a) [thi-was-më] yima-r
turtle-spear-RM.PAST person-M
'the man who speared turtles'

(50)

(b) [met-maroha-hay-më] yima-r
woman-money-give-RM.PAST person-M
'the man who gave money to women'

(p. 358) This survey of Papuan languages makes it very clear that polysynthesis is not an all or nothing affair, but rather languages are polysynthetic-like to a greater or lesser extent. Table 17.1 summarizes the data for the languages mentioned or exemplified in this chapter according to the four diagnostic properties of polysynthesis: 1. head marking (or

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at least double marking, as in Nen (Evans 2015)); 2. polypersonalism; 3. incorporation, divided by three types: verb, adjunct, and noun incorporation; and 4. favored clause linkage by parataxis with fully finite clauses, that is, lack of nonfinite subordinate constructions.

Note that only Warembori meets all four criteria, but not fully, as it does not exhibit all three types of incorporation, lacking productive verb incorporation (Donohue 1999). Alamblak comes next in meeting fully three, falling down on the parataxis with finite clauses parameter. Yimas falls down in lacking both productive noun incorporation and clause linkage only by parataxis with finite clauses. In terms of the definition that I have proposed, head marking, polypersonalism and incorporation, I drawn the line for polysynthesis between Lower Grand Valley Dani and Barupu, as all the languages above Barupu in Table 17.1 lack incorporation. Others with a less or more restrictive definition will draw it elsewhere, but this definition does appear to me to capture what Boas (1911) was getting at in his own. Again, including Barupu itself depends on how one regards its rich system of applicatives. In my view that just gets into qualifying as adjunct incorporation, but others may disagree, and place Barupu out of the class of polysynthetic languages. Interestingly, the only feature in Table 17.1 that distinguishes Barupu from Marind is adjunct incorporation, but Marind also has a system of applicatives, although not as rich as Barupu's and not incorporating locational notions like Barupu, so **(p. 359)** I have excluded it. Again others may disagree and include Marind in the class of polysynthetic languages. Further, given its staggering complexity in the domain of tense-aspect-mood inflection, if one were to regard that as a type of adjunct incorporation, then Marind would definitely be classified as a polysynthetic language. The point is: there is no simple yes or no answer to the question, is this language polysynthetic? Like many categories of linguistic typology, it is a vague notion. While what is included in it depends on the criteria employed and those are matters of contention, there will always be borderline or hazy cases. That is the lesson to be drawn from this survey of polysynthesis in Papuan languages.

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Table 17.1 Diagnostic properties of polysynthesis across Papuan languages

	Head marking	Polypersonalism	Incorporation			Finite Parataxis
			V	ADJ	N	
Muniwara	+	+	–	–	–	+
So. Arapesh	+	+	–	–	–	+
Marind	+	+	–	–	–	+
Nen	+	+	–	–	–	–
Abau	–	–	+	+		+
Namie	–	–	+	+	–	+
Awtuw	–	–	+	+	–	+
Fore	+	+	–	–	–	–
Tairora	+	+	–	–	–	–
LGV Dani	+	+	–	–	–	–

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Barupu	+	+	–	+	–	+
Warembori	+	+	–	+	+	+
Yimas	+	+	+	+	–	–
Alamblak	+	+	+	+	+	–

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Abbreviations

1
first person
2
second person
3
third person
I-X
noun classes
A
transitive subject
ACC
accusative
ALL
allative
APPL
applicative
BEN
benefactive
CAUS
causative
COM
comitative
CONT
continuative
COP
copula
DAT
dative
DEF
definite
DIST
distal
DL
dual
DUR
durative
ERG
ergative
EXCL

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exclusive
F
feminine
FR.DIST
far distal
FR.PAST
far past
FUT
future
HAB
habitual
HORT
hortative
IMP
imperative
IM.PAST
immediate past
IMPERF
imperfective
INCL
inclusive
IND
indicative
INF
infinitive
INST
instrumental
INT
intend
IRR
irrealis
LOC
locative
M
masculine
NEG
negative
NFN
nonfinite
NOM
nominative
NR.DIST
near distal

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NR.PAST
near past
O
transitive object
OBJ
object
OBL
oblique
PC
paucal
PERF
perfective
PL
plural
PN
proper name
POSS
possessor
POT
potential
PRES
present
PRO
pronoun
PROX
proximate
PURP
purposive
R
realis
RCP
reciprocal
RED
reduplication
RM.FUT
remote future
RM.PAST
remote past
S
intransitive subject
SEQ
sequential
SG

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singular
SIM
simultaneous
SUBJ
subject
TOP
topic
TR
transitive
VIS
visual

(p. 360)

Notes:

(1) I am excluding Austronesian here as a New Guinea language family, being only concerned with the non-Austronesian or Papuan languages.

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Patterns of Innovation and Retention in Templatic Polysynthesis

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Abstract and Keywords

Polysynthetic verb morphology can be extraordinarily complex, with interacting subsystems arranged in phonological and morphological layers, some of which are more readily transparent on the synchronic level. Historical-linguistic comparisons demonstrate that this type of structure can be surprisingly persistent across time, with slow phonological attrition being one of the primary causal agents. Metathesis and reanalysis of morphemes and morpheme positions was also noted as an important agent of change. This chapter examines what is known about the historical layering of two distinct, but possibly genealogically related prefixing verb morphologies: Yeniseian and Athabaskan, both of which have developed different strategies of expressing agreement with subjects and objects, layering these grammatical markers between lexical morphemes and markers of tense–mood–aspect. Phonological fusing of certain sets of adjacent markers renders the pre-root portions of both morphological templates particularly challenging for assigning morpheme glosses. Historical reasons for this evolution are identified and assessed.

Keywords: prefixing verb morphology, morphological template, metathesis, reanalysis, agreement

18.1 Introduction

THIS chapter traces the evolution of templatic verb structure in two families that appear to be distantly related: Yeniseian in central Siberia and Athabaskan-Eyak-Tlingit (Na-Dene) in northwestern North America. The template in these languages shows evidence of great persistence over time. Phonological attrition has rarely eliminated morpheme classes completely, and newer affixes reintroduce functions once expressed by older layers.

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Yeniseian **tɨg* ‘down’ has reduced to thematic *t-* in Ket verbs meaning ‘fall’, ‘drop’, but retains its form where later incorporated in stems meaning ‘travel downriver’; similarly, Yeniseian **tan* ‘path’ has reduced to *t-* in Ket verbs meaning ‘track an animal’ and ‘find a trail’ but better retains its shape in ‘take aim’ (Ket *tan-qo*, Kott *ta-uŋ* < **tan-qoŋ* ‘path-view’), where it occupies the incorporate slot. The modern form of Proto-Athabaskan **–(nə-)neˑnʼ* ‘face’ shows up as an incorporated root in some northern Athabaskan languages, but apparently survives from much earlier as a prefix *nə-* used to qualify round objects (Leer 2009: 14).

New prefix positions steadily accrued in both families as head-final syntax and prefixing morphology led to the incorporation of formerly independent pre-verbal predicate complements. The most striking changes, however, arose from metathesis and reanalysis, which affected even the most ancient morphological layers. Because these processes rearranged and reinterpreted inherited morphemes without eliminating them or adding anything completely new, archaic features of Dene-Yeniseian verb structure have persisted through millennia of divergent evolution. The template evolved differently in each branch of the two families, but the kinds of change were surprisingly repetitive.

The analysis proceeds as follows. Section 18.2 describes Proto-Yeniseian verb structure by comparing Ket and Kott, which represent the two best-attested primary branches. Section 18.3 discusses Yeniseian incorporation of pre-verbal predicate elements, with reference to the more detailed treatment in Chapter 42. Section 18.4 discusses how language contact realigned the Yeniseian verb’s inherited prefixing structure to resemble the suffixal agglutination (p. 364) of neighboring languages. Section 18.5 describes how Ket, but not Kott, underwent metathesis of adjacent labial and non-labial segments, which led to the rightward movement of the inanimate-class marker and certain thematic consonants. Metathesis also shifted object markers into the subject slot in some stems, and subject markers into the object slot in others, greatly complicating the Modern Ket system of agreement marking. Section 18.6 describes analogical changes such as reanalysis of morphological material from one template position to another. Section 18.7 compares the verb morphologies of Tlingit, Eyak, and Proto-Athabaskan. Just as in Yeniseian, metathesis of inherited position classes prevailed over position loss in the history of each branch. Section 18.8 proposes a hypothesis regarding the ancestral structure of the Dene-Yeniseian verb, describing how metathesis and reanalysis caused divergence in the templates later inherited into Proto-Na-Dene and Proto-Yeniseian. The conclusion in Section 18.9 returns to the idea that templatic polysynthesis, at least in the two families examined, tends to evolve by reinterpreting inherited material rather than by deleting it entirely.

18.2 Yeniseian Verb Templates

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Yeniseian contains the critically endangered Ket and several extinct languages. Kott, which belonged to a different primary branch, was documented well enough before vanishing in the 1840s (Cástren 1858) to permit an informed reconstruction of the Proto-Yeniseian verb system (Starostin 1995). Yugh, a close relative of Ket, was extensively described (Werner 1997b) before losing its last speaker in the 1970s. The next three subsections describe the Kott and Ket-Yugh templates, followed by a reconstruction of Proto-Yeniseian verb structure.

18.2.1 The Kott template

Kott preserved the Proto-Yeniseian template largely intact, adding a new subject agreement suffix in P-3, which is shaded in Table 18.1.

The P-2 suffix inherited from Proto-Yeniseian already marked plural animate-class subject agreement, so the new Kott P-3 agreement suffix resulted in multi-site plural marking for 1st and 2nd plural subjects.

The Kott examples in (1) are glossed according to Table 18.1:

(1)

a. b^{4}-a^{3}-puj^{O}-aŋ$^{-3}$
3INAN.OBJ^{4}-PRES^{3}-stretch^{O}-1SG.SBJ^{-3}
'I stretch it.'

b. b^{4}-a^{3}-l^{2}-a:^{1}-ki:t^{O}
3INAN.SBJ^{4}-PAST$^{3/2}$-RESULT^{1}-rub^{O}
'It had been rubbed.' ('It was in a state of having been rubbed.')

c. hiči:n^{7}-a:^{6}-t^{h5}-a^{3}-ak^{O}-ŋ$^{-3}$
hurrying^{7}-3MASC.SG.SBJ^{6}-TC^{5}-PRES^{3}-make^{O}-1SG.SBJ^{-3}
'I hurry him.'

(p. 365)

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Table 18.1 The Kott verb template

P7	P6	P5	P4	P3	P2	P1	P0	P-1	P-2	P-3
incor-porate	obj agr	them atic con-sonan t(s)	3 agr	conj mark er (tens e mood)	tense mood aspec t	sbj agr or intran s prefix	verb root	stativ e or pvf suffix	anim pl sbj agr	sbj agr

(abbreviations in Tables 1-3: sbj = subject, obj = object, pl = plural, agr = agreement, intrans = intransitive, pfv = perfective, anim = animate-class, inan = inanimate-class, conj = conjugation marker)

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Suffix position P-1 remained productive in Kott to express a state resulting from a prior action—the so-called ‘stative-resultative’ or ‘perfective-stative’ (2a). The original perfective (i.e. change-of-state) marker in this position survived in the plural forms of a few anticausatives (2b):

(2)

a. $t^{h}apil^{7}$-$a\text{ː}^{6}$-t^{h5}-o^{3}-l^{2}-$a\text{ː}^{1}$-’uk^{0}-i^{-1}
overtake^{7}-3MASC.SG.SBJ^{6}-TC^{5}-PAST$^{4/2}$-RESULT^{1}-make^{0}-STATE^{-1}
‘He was overtaken.’

b. a^{3}-l^{2}-on^{1}-$te\text{ː}n^{0}$-$aŋ^{-1}$-an^{-2}-$toŋ^{-3}$
PAST$^{3/2}$-1PL.SBJ^{1}-lie.down^{0}-PL (< PFV)$^{-1}$-ANIM.PL.SBJ^{-2}-1PL.SBJ^{-3}
‘We lay down.’

The irregular form in (2b) contains what appears to be quadruple marking of animate plural subject agreement. The nasal elements in P1 and P-1 were originally change-of-state markers in pre-Proto-Yeniseian. After becoming moribund in their original function, they were reanalyzed as plural affixes based on homonymy with the high-frequency nominal plural suffix *-ŋ* (as in Kott *op* ‘father’, *opaŋ* ‘fathers’; Ket *bū* ‘he, she’, *bū-ŋ* ‘they’), then spread by analogy to all plural subject forms in the stems where they had survived.

18.2.2 The Ket-Yugh template

The Ket-Yugh template underwent three main changes, shaded in Table 18.2. First, a new subject agreement prefix was added in P8, since the original P1 subject series had eroded in most forms. Second, vestiges of the original perfective–stative aspect suffixes coalesced with the verb root into a portmanteau “base”, whose allomorphy signals transitivity or lexical aspect categories such as resultant state, single-action, or pluractionality. Third, metathesis of adjacent labial and non-labial segments disrupted the template’s linearity, particularly the locus of subject and object pronominals (Section 18.5). The slots affected by the first two changes are lightly shaded in Table 18.2. (p. 366)

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Table 18.2 The Modern Ket (and Yugh) verb template

P8	P7	P6	P5	P4	P3	P2	P1	P0	P-1
sbj person agr	incor-porate	obj or sbj agr	thematic con-sonant(s)	3 anim agr + tense/ mood portma nteau	3 inan agr	tense mood aspect	1, 2 sbj or obj agr or intrans prefix	**BASE** verb root + aspect suffix	anim pl sbj agr

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The Ket verbs in (3) are largely cognate to the Kott forms given above in (1) and (2b):

(3)

a. di^{8}-b^{3}-bək^{o}
1SBJ^{8}-3INAN.OBJ^{3}-stretch^{o}
'I stretch it.'

b. Ø^{6}-t^{5}-a^{4}-l^{2}-a^{1}-kit^{o}
3INAN.SBJ^{6}-surface^{5}-PAST$^{4/2}$-RESULT^{1}-rub^{o}
'It is (in a state of having been) smeared (onto something).'

c. d^{8}=qəksin^{7}-o^{6}-k^{5}-a^{1}-bed^{o}
1SBJ^{8}=hurry^{7}-3MASC.SG.SBJ^{6}-TC^{5}-PRES^{4}-make^{o}
'I hurry him.'

d. d^{8}=t^{5}-o^{4}-l^{2}-daŋ^{1}-ten^{o}
1SBJ^{8}=down^{5}-PAST$^{4/2}$-1PL.SBJ^{1}-lie^{o}
'We lay down.'

In Ket, the P8 subject markers became special clitics (marked by an equal sign) in most environments, while in Yugh they usually remained prefixes. Before consonant-initial verb forms, the P8 markers elide unless they can encliticize to the final open syllable of a preceding word (Vajda 2004: 74). This allowed the P7 incorporate root to appear phonological-verb initially, as part of the language's contact-induced shift toward suffixing morphology.

The nominalizing suffix *-s* (pluralized as *-s-in*) could conceivably be designated as P-2 in the Ket template, though in previous work on Ket, template positions were restricted to the finite verb morphology:

(4)

dujaŋdoqŋsin
du^{8}-j^{4}-aŋ^{1}-doq-ŋ^{o} + s-in^{-2}
3SBJ^{8}-PRES^{4}-3PL.SBJ^{1}-fly-PL(<PFV)^{o} + NMLZ-PL^{-2}
'the ones who fly' ~ 'those who fly'

Athabaskan languages also use post-verb root nominalizers. Koyukon nominalizes finite verbs by adding the enclitics *=(y)ee* 'the thing that', *=(n)enh* 'the person who' and *=ne* 'the people who' (Jetté and Jones 2000: 428).

(p. 367)

18.2.3 The Proto-Yeniseian verb template

As has been discussed, the only slots innovated by Ket-Yugh and Kott express subject agreement. The otherwise cognate forms, shown in the examples that follow, contrast the innovative Ket subject prefixes (5) and Kott subject suffixes (6). Also highlighted is the

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animate-class subject plural suffix inherited into both languages from Proto-Yeniseian, and sporadic traces of the original pre-root subject prefix in Ket second-person forms (5c) – (5d):

(5)

Ket

a. d^{8}=b^{3}-il^{2}-bed^{o}
1SBJ^{8}=INAN.OBJ^{3}-PAST^{2}-make^{o}
'I made it.'

b. d^{8}=b^{3}-il^{2}-bed^{o}-n^{-1}
1SBJ^{8}=INAN.OBJ^{3}-PAST^{2} -make^{o}-PL^{-1}
'We made it.'

c. k^{8}=b^{3}-il^{2}-ged^{o}
2SBJ^{8}=INAN.OBJ^{3}-PAST^{2}-make^{o}
'You (sg.) made it.'

d. k^{8}=b^{3}-il^{2}-ged^{o}-n^{-1}
2SBJ^{8}=INAN.OBJ^{3}-PAST^{2}-make^{o}-PL^{-1}
'You (pl.) made it.'

(6) Kott

a. b^{4}-a^{3}-la^{2}-paj^{o}-$aŋ^{-3}$
INAN.OBJ^{4}-PAST$^{3/2}$-make^{o}-1SG.SBJ^{-3}
'I made it.'

b. b^{4}-a^{3}-la^{2}-pe^{o}-n^{-2}-$toŋ^{-3}$
INAN.OBJ^{4}-PAST$^{3/2}$-make^{o}-SBJ.PL^{-2}-1PL.S
'We made it.'

c. b^{4}-a^{3}-la^{2}-pa^{o}-u^{-3}
INAN.OBJ^{4}-PAST$^{3/2}$-make^{o}-2SG.SBJ^{-3}
'You (sg.) made it.'

d. b^{4}-a^{3}-la^{2}-pet^{o}-n^{-2}-$oŋ^{-3}$
INAN.OBJ^{4}-PAST$^{3/2}$-make^{o}-SBJ.PL^{-2}-2PL.S
'You (pl.) made it.'

(6)

Ket

a. d^{8}=b^{3}-il^{2}-bed^{o}
1SBJ^{8}=INAN.OBJ^{3}-PAST^{2}-make^{o}
'I made it.'

b. d^{8}=b^{3}-il^{2}-bed^{o}-n^{-1}
1SBJ^{8}=INAN.OBJ^{3}-PAST^{2} -make^{o}-PL^{-1}
'We made it.'

c. k^{8}=b^{3}-il^{2}-ged^{o}
2SBJ^{8}=INAN.OBJ^{3}-PAST^{2}-make^{o}
'You (sg.) made it.'

d. k^{8}=b^{3}-il^{2}-ged^{o}-n^{-1}
2SBJ^{8}=INAN.OBJ^{3}-PAST^{2}-make^{o}-PL^{-1}
'You (pl.) made it.'

(6) Kott

a. b^{4}-a^{3}-la^{2}-paj^{o}-$aŋ^{-3}$
INAN.OBJ^{4}-PAST$^{3/2}$-make^{o}-1SG.SBJ^{-3}
'I made it.'

b. b^{4}-a^{3}-la^{2}-pe^{o}-n^{-2}-$toŋ^{-3}$
INAN.OBJ^{4}-PAST$^{3/2}$-make^{o}-SBJ.PL^{-2}-1PL.S
'We made it.'

c. b^{4}-a^{3}-la^{2}-pa^{o}-u^{-3}
INAN.OBJ^{4}-PAST$^{3/2}$-make^{o}-2SG.SBJ^{-3}
'You (sg.) made it.'

d. b^{4}-a^{3}-la^{2}-pet^{o}-n^{-2}-$oŋ^{-3}$
INAN.OBJ^{4}-PAST$^{3/2}$-make^{o}-SBJ.PL^{-2}-2PL.S
'You (pl.) made it.'

The P1 subject markers survived occasionally in transitive or active intransitive stems with incorporated objects, providing further evidence that P1 was the original locus of

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subject agreement in Yeniseian. These retentions occur mainly before labial or uvular verb root anlauts, which may have somehow preserved these morphemes from erosion:

(7)

a. d^{8}-u^{6}-k^{5}-**daŋ**^{1}-qa^{O} (Ket)
1SBJ^{8}-3INAN.OBJ^{6}-with^{5}-1PL.SBJ^{1}-trade^{O}
'We sell it.'

b. d^{8}=ti^{7}-l^{2}-**daŋ**^{1}-qo^{O} (Ket)
1SBJ^{8}=bowstring^{7}-PAST^{2}-1PL.SBJ^{1}-fill^{O}
'We loaded a gun.' (originally, 'set arrow to bowstring')

c. di^{8}-$χədʲiŋ^{7}$-k^{5}-ir^{2}-**daŋ**^{1}-$fən^{O}$ (Yugh)
1SBJ^{8}-trade.items^{7}-upright^{5}-PAST^{2}-1PL.SBJ^{1}-set^{O}
'We made a trade.'

d. hi^{7}-l^{2}-**oŋ**^{1}-pen^{O}-$toŋ^{-3}$ (Kott)
trade.item^{7}-PAST^{2}-1PL.SBJ^{1}-set^{O}-1PL.SBJ^{-3}
'We made a trade.'

(p. 368)

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Table 18.3 The Proto-Yeniseian template

P7	**P6**	**P5**	**P4**	**P3**	**P2**	**P1**		**P0**	**P-1**	**P-2**
						a	**b**			
incor-porate	obj agr	thematic consonant(s)	3 agr	conjugation marker	aspect *l*-impv *n*-pfv	sbj agr	stative	verb root	pfv + stative	anim pl sbj agr

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Taking into account vestigial features such as circum-root perfective–stative morphology and pre-root subject marking, the comparison between Kott and Ket-Yugh supports the position class model of Proto-Yeniseian verb structure given in Table 18.3.

The aspectual markers in the shaded slots P1 and P-1 were already becoming moribund in Proto-Yeniseian. As shown in Sections 18.2.1 and 18.2.2, the nasal perfective suffix survived sporadically in anticausatives such as ‘he lay down’. Their only productive function was to build statives expressing the result of a prior action, such as ‘it is broken’, which remained productive in Kott.

18.3 Incorporation of Pre-Verbal Predicate Complements

Positions P7, P6, and P5 contain formerly independent syntactic elements incorporated into the verb as prefixes. These slots were already present in the Proto-Yeniseian template, and though they show rough homologies with corresponding slots in Na-Dene, the similarity is probably due to parallel development in these two head-final, prefixing families. Some of the incorporated material was likely present in the original Dene-Yeniseian verb phrase, however. Individual morphemes, including directionals (Vajda 2013b) and body part terms (Vajda 2010), show cognacy across the two families, appearing in certain branches as incorporated prefixes while remaining separate syntactic elements in others.

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18.3.1 Thematic consonants (P5)

The P5 prefixes, often called ‘determiners’ after Krejnovič (1968: 29), may have cognates among the Athabaskan “qualifiers” occupying roughly the same template zone (Vajda 2010: 53–5). In both families these prefixes derive from a variety of sources and represent several layers, rather than a single class. Some unproductive Ket stem types contain up to three distinct thematic consonants, though in all such cases one of these consonants has metathesized into P3:

(8) Ket verb form with three thematic consonants
d^{8}-əla^{7}-u^{6}-k/d^{5}-a^{4}-b^{3}-taŋ^{o}-n^{-1}
1SBJ^{8}-outside^{7}-3INAN.OBJ^{6}-TC^{5}-PRES^{4}-TC^{3}-drag^{o}-ANIM.PL.SBJ^{-1}
‘We drag it outside.’

(p. 369) In Modern Ket, most thematic consonants are semantically opaque and best glossed simply as TC. In productive stem types they cannot be substituted to alter the verb’s meaning. Thematic consonant alternations in unproductive stem types, however, reveal more about their earlier functions and origins. Some are incorporated relational morphemes denoting trajectory or location, such as Modern Ket *k*- ‘away’, *k*- ‘upright’, *d*- ‘through, across, transition’, *q*- ‘inside’. Others denote shape: *n*- ‘round, around’, *d*- ‘long, along’, *h*- ~ *b*- (< **p*-) ‘area, surface’. Still others, such as *k*- ‘with’, *k*- ‘toward’, and *k*- ‘from’ are postpositions incorporated with a preceding possessive pronominal that became the verb’s object marker. Examples (9)–(11) etymologize some of these prefixes:

(9) Ket verb forms with three thematic consonants
d^{8}=bo^{6}-k/d^{5}-a^{4}-b^{3}-taŋ^{o}-n^{-1}
1SBJ^{8}=1SG.OBJ^{6}-away/though^{5}-PRES^{4}-area^{3}-drag^{o}-PL^{-1}
‘They drag me away.’

The P5/3 consonants in (9) are glossed with their probable original meanings **k*- ‘away’, **d^{j}*- ‘through, across’, and **p*- ‘area’, rather than generically as TC (thematic consonant). Concatenated P5 consonants sometimes merge into a single segment, as Yugh P5 *č*- in (10a), which derives from **k*- away + **d^{j}*- ‘iterative’. Non-concatenated thematic *k*- ‘away’ appears in (10b):

(10)
a. di^{8}=č^{5}-aj^{4}-do:^{ħ}χ^{o} (Yugh)
3SBJ^{8}-away.ITER^{5}-PRES^{4}-fly^{o}
‘He (anim.-class bird) flies away (multiple actions).’

b. di^{8}-k^{5}-aj^{4}-do:^{ħ}χ^{o} (Yugh)
3SBJ^{8}-away^{5}-PRES^{4}-fly^{o}
‘He (anim.-class bird) flies away (once).’

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Some instances of Ket P5 *t-* derive from **tan* ‘path’ (found in the Ket-Yugh postposition *-tan* ‘in the direction of’ and the Ket action nominal *tan-qo* ‘aiming’ < ‘path-view’). The original shape is more clearly seen in Kott (11b)–(11c), which preserves the root vowel /a/ before conjugation marker *č-* (< **si*):

(11)

a. d^{8}-a^{6}-t^{5}-si^{4}-bil^{o} (Ket)
1SBJ^{8}-3MASC.SG.OBJ^{6}-TC^{5}-PRES^{4}-cover.distance^{o}
‘I overtake him.’ (etymologically, ‘I cover the distance of his trail.’)

b. t^{h}a^{7}-ča^{4}-pi:l^{o}-aŋ$^{-3}$ (Kott)
path^{7}-PRES^{4}-cover.distance^{o}-1SG.SBJ^{-3}
‘I reach a place.’

c. t^{h}a^{7}-č^{4}-uŋ^{o}-aŋ$^{-3}$ (Kott)
path^{7}-PRES^{4}-view^{o}-1SG.SBJ^{-3}
‘I take aim.’

(p. 370) Finally, some instances of Ket P5 *n-* and all P5 *ŋ-* are reanalyzed coda consonants from P7 incorporates (Section 18.6).

The P5 prefixes are non-syllabic in Modern Ket, though their phonological interaction with the following conjugation markers suggests some may have originally contained a following vowel that was later reanalyzed as the tense/mood marker itself. For example *h-, n-, d-*, as well as *k-* meaning ‘away, out’, always appear before the P4 *a/o* conjugation marker, while *k-* ‘with’ appears before conjugation marker *s/i*.

18.3.2 Verb-internal object pronominals (P6)

Object pronominals were incorporated into the Yeniseian verb form either as single morphemes or in a postpositional construction. In the latter case, the object pronominal came to occupy P6 and the postposition P5, as shown in the examples in 3.2. In stems where object markers were incorporated without a postposition, the 1st and 2nd object pronominals usually came to occupy the old P1 subject slot by analogy, as in these Ket examples:

(12)

a. di^{8}-ku^{1}-s^{o}
1SBJ^{8}-2SG.OBJ^{1}-dress^{o}
‘I dress you (sg.).’

b. k^{8}-aŋ^{4}-s^{o}
2SBJ^{8}-3PL.OBJ^{4}-dress^{o}
‘You (sg.) dress them.’

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For a discussion of how metathesis with P5 thematic consonants affected the position of object pronominals, see Section 18.5.3.

Postpositional constructions originally consisted of possessive pronominal + nasal connector + relational morpheme (Vajda 2013b). In such cases, the postposition became a P5 thematic consonant, while the nasal connector *-*ŋ*^{w}- either elided or was reanalyzed as a plural marker -*ŋ*- in object slot P6. Prefixed to the possessive nasal *-*ŋ*^{w}-, the Ket-Yugh 1st singular pronominal took the allomorph *ba*- (labialized to *bo*- before P5 *k*- 'from' or *k*- 'with'). When not followed by possessive *-*ŋ*^{w}-, the 1sg allomorph is *d*-. This explains the *b*- ~ *d*- alternation in Ket and Yugh 1st person singular verb-internal pronominals, and also why the verb-external possessive prefix 'my' is *b*- rather than *d*-. Kott reanalyzed possessive *-*ŋ*^{w}- as the 1sg marker in possessive constructions and verb-internal object marking.

18.3.3 Nominal incorporation (P7)

Chapter 42 of the present volume provides an example-rich discussion of Modern Ket incorporation patterns involving directionals, object nouns, instrument nouns, predicate adjectives, and several other types of nominals. More relevant for tracing diachronic layering are cases where the same relational morpheme was incorporated more than once during successive periods of Yeniseian prehistory. The root **qāp* > Ket *qā·*, Yugh *χā·p* means 'inside (an enclosed space)', '(lying) face down', or 'closed (said of a container lid)', and also appears (p. 371) in the anatomical noun *qobad* 'back (of human, animal or object)'. It occurs verb externally in adverbials such as Ket *qā-ka*, Yugh *χā·p-kej* 'at home' (< *-*kej* 'locative'), Ket *qā-du*, Yugh *χā·b-du'* 'he is at home' (< *-*du'* 3masc. sg. predicate agreement suffix). This root was incorporated in Ket as a directional (13a), and as a sort of anatomical prefix in (13b)–(13c):

(13)

a. d^{8}=qa^{7}-s^{4}-aq^{0}
3SBJ^{8}=inside^{7}-PRES^{4}-go^{0}
'He goes inside' ~ 'He enters (a tent or room)'.

b. d^{8}=qab^{7}-b^{3}-it^{0}
3SBJ^{8}=face.down^{7}-3INAN.OBJ^{3}-put.once^{0}
'He closed it (said of a box)'.

c. d^{8}=qa^{7}-n^{2}-d-it^{0}
3SBJ^{8}=face.down^{7}-PAST^{2}-1SG.OBJ^{1}-put.once^{0}
'He lay me face down'.

The same root was incorporated earlier in Proto-Ket-Yugh as P5 **q*- 'in, into, inside':

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(14)

a. d^{8}=q^{5}-il^{2}-di^{1}-dil^{0}
3SBJ^{8}-inside^{5}-PAST^{2}-1SG.OBJ^{1}-put^{0}
'He put me inside (a sled harness)'.

b. d^{8}=q^{5}-i^{4}-b^{3}-dil^{0}
3SBJ^{8}=inside^{5}-PRES^{4}-3INAN.OBJ^{3}-put^{0}
'He threads it (puts thread through a needle)' ~ 'He skewers it (meat)'

c. bu sujad d^{8}=ba^{6}-q^{5}-i^{4}-b^{3}-dil^{0}
he shirt
3SBJ^{8}=1SG.OBJ^{6}-into^{5}-PRES^{4}-area^{3}-put^{0}
'He clothes me in a shirt.' (< 'he inserts my area into a shirt').

d. sujad ba^{6}-q^{5}-i^{4}-b^{3}-a^{1}-dil^{0}
shirt 1SG.SBJ^{6}-inside^{5}-PRES^{4}-area^{3}-RESULT^{1}-put^{0}
'I am dressed in a shirt.'

A similar situation can be seen with Ket *had*, Yugh *fad*^{j} 'outfacing surface, broadside'. This root appears in P7 in verbs denoting violent force applied perpendicularly to a rigid object:

(15)

a. d^{8}=had^{7}-o^{4}-n^{2}-do^{0} (Ket)
3SBJ^{8}=broadside^{7}-3MASC.SG.OBJ^{4}-PAST^{2}-chop^{0}
'He chopped him (a masc.-class tree) down'.

b. d^{8}=had^{7}-o^{4}-n^{2}-ted^{0} (Ket)
3SBJ^{8}=broadside^{7}-3MASC.SG.OBJ/PAST^{4}-PAST^{2}-hit.endwise^{0}
'He broke him (a masc.-class pole) in half'.

What may have been the same morpheme was incorporated much earlier as the P5 thematic consonant *p > Ket *h*-, Yugh *f*-, Kott *f*-, meaning 'area':

(p. 372)

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(16)

a. d^{8}=h^{5}-a^{4}-b^{3}-to^{o} (Ket)
3SBJ^{8}=area^{5}-PRES^{4}-3INAN.OBJ^{3}-arrange^{o}
'He erects it (a tent).'

b. di^{8}-f^{5}-ā^{4}-b^{3}-ted^{jo} (Yugh)
3SBJ^{8}-area^{5}-PRES^{4}-3INAN.SBJ^{3}-prick^{o}
'It (a tent) is set up.'

c. f^{5}-u^{4}-i^{3}-tek^{o}-ŋ$^{-3}$ (Kott)
area^{5}-3INAN.OBJ^{4}-PAST^{3}-throw^{o}-1SG.SBJ^{-3}
'I shot at it.'

A final example of the same morpheme incorporated in successive chronological layers is Ket P7 *əl* 'out, outside' and P5 *ɣ ~ Ø* meaning 'out, off'. Both derive from PY **kel* 'out of, outside, from, off'. The same morpheme appears as a root in Kott *hili* 'outside' and as the ablative case formant in Ket *-əl* and Yugh *-ə:r*. The Ket verbs in (20a)–(20b) contain **kel* incorporated earlier and phonologically reduced to P5 thematic *ɣ ~ Ø*, while those in (17c–d) contain the same morpheme in less reduced form as a P7 incorporate:

(17)

a. di^{8}-ɣ^{5}-a^{4}-aq^{o}
1SBJ^{8}-out^{5}-PRES^{4}-go^{o}
'I go out.'

b. d^{8}-Ø^{5}-o^{4}-l^{2}-aq^{o}
1SBJ^{8}-out^{5}-PAST$^{4/2}$-go^{o}
'I went out.'

c. d^{8}-əl^{7}-s^{4}-doq^{o}
1SBJ^{8}-out^{7}-PRES^{4}-jump^{o}
'I jump out.'

d. əl^{7}-a^{4}-qan^{o}
out^{7}-PRES^{4}-flow^{o}
'It flows out (said of water in a river).'

Single-action verbs with P5 thematic *ɣ ~ Ø* 'out, off' have the P2 past tense affix *l-* (17b) rather than the expected perfective *n*; the lateral element may have been reanalyzed from the original coda of **kel* 'out'. Like other thematic consonants, the forms of 'out' in P5 were grammaticalized as derivational prefixes, while the P7 forms remain recognizable as incorporated roots.

Ket unproductive discontinuous stems of the type P7-P0 or P5-P0 have tended to become bipartite in terms of the idiosyncratic, functional unity of their component halves. For example, *əl ^{7} -a ^{4} -qan ^{0}* 'it flows out' refers to bodies of water, while *u ^{6} -k ^{5} -a ^{4} -qan ^{0}* 'it

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leaks' (containing a different P5 *k-*, meaning 'away') refers to water escaping from (or into) a contained space. The combination *had* ^{7} 'broadside' + *do* ^{0} 'chop' refers specifically to felling a tree, while *had* ^{7} 'broadside' + *ted* ^{0} 'hit' refers to breaking something in half; and *h* ^{5} 'area' + *to* ^{0} 'arrange' (p. 373) refers to erecting a structure (especially a tent). Setting down a smaller object would be described using *uj* ^{7} 'at rest' + *it* ^{0} 'put'.

Layering of distinct prefixal elements can be seen inside the P7 slot, as well. In productive (and semi-productive) Ket patterns, this position incorporates a single noun, adjective, or directional stem such as *had* 'surface', *əla* 'motion outside', *udge(ŋ)* 'long', *suul* 'snowsled' (or its plural form *solaŋ*). However, a few Ket verbs concatenate two distinct lexical elements in P7, indicating that this part of the template could have expanded into multiple thematic prefix slots. The incorporated morphemes *us-* '(unusually large or small) quantity' and *el-* ~ *al-* 'fully, completely' (< **bɨl* 'all') may occupy P7, either alone or in combination with a following spatial or anatomical morpheme:

(18)

a. ād ki' d^{8}-is^{7}-k^{5}-a^{4}-b^{3}-hil^{o}
I yarn 1SBJ^{8}-spiral^{7}-up^{5}-PRES^{4}-3INAN.OBJ^{3}-turn^{o}
'I wind up the yarn.'

b. ād ki' d^{8}-el-is^{7}-k^{5}-a^{4}-b^{3}-hil^{o}
I yarn 1SBJ^{8}-all-spiral^{7}-up^{5}-PRES^{4}-3INAN.OBJ^{3}-turn^{o}
'I wind up all the yarn.'

c. ād hojoks d^{8}=had^{7}-aj^{4}-do^{o}
I fir.tree 1SBJ^{8}=broadside^{7}-3MASC.SG.OBJ/PRES^{4}-chop^{o}
'I chop down a (masc.-class) fir tree.'

d. ād ə:n d^{8}-us-had^{7}-s^{4}-do^{o}
I branches 1SBJ^{8}-some-broadside^{7}-PRES^{4}-chop^{o}
'I chop off some branches.'

e. d^{8}-el-had^{7}-a^{4}-d^{1}-do^{o} (pronounced daldaddo, reinterpreted d^{8}al^{7}d^{5}a^{4}d^{3}do^{o})3SBJ^{8}-all-broadside^{7}-PRES^{4}-1SG.OBJ^{1}-chop^{o}
'He beats me severely.'

Similarly, the morphemes *ūl* 'water' and *at* 'down onto a surface' incorporate separately or in combination:

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(19)

a. ūl d^{8}-at^{7}-b^{3}-aq^{o}
water 1SBJ^{8}-down.onto.surface^{7}-3INAN.OBJ^{3}-drop^{o}
'I pour the water.'

b. d^{8}-ul-at^{7}-s^{4}-aq^{o}
1SBJ^{8}-water-down.onto.surface^{7}-PRES^{4}-drop^{o}
'I pour water.'

Adding a derivational prefix expressing quantity or shape to another denoting location or trajectory is atypical of Modern Ket, probably due to the language's realignment toward suffixing, which disfavored derivational prefixes.

(p. 374) 18.4 Contact-Induced Realignment of the Yeniseian Template

Speakers of suffixal-agglutinating Uralic, Turkic, and Tungusic languages surrounded the Ket and other Yeniseian-speaking tribes when Russians arrived in the area in the early seventeenth century. Vajda (2009) identified no non-native morphemes in the Yeniseian verb aside from incorporated nominals in P7, but found clear evidence of contact-induced structural realignment of the template, as inherited prefixing patterns evolved toward suffixal agglutination. The shift toward suffixing is evident in Kott as well, but can be traced in greatest detail in the better-described Ket-Yugh branch.

Most basic Ket verbs are root-final. The simplest have no lexical morpheme other than the verb root in P0. Modern Ket has only about seventy simple root-final stems, many of which seem to have cognates in Na-Dene (Vajda 2010).

(20)

a. d^{8}=b^{3}-il^{2}-tiŋ^{o}
1SBJ^{8}=3INAN.OBJ^{3}-PAST^{2}-spin^{o}
'I spun ~ twirled it.'

b. d^{8}=b^{3}-in^{2}-ted^{o}
1SBJ^{8}=3INAN.OBJ^{3}-PAST^{2}-hit.endwise^{o}
'I pounded it.' ~ 'I crushed it (by pounding)'

Some root-final verbs add a thematic consonant in P5:

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(21)

a. d^{8}=k^{5}-b^{3}-il^{2}-$tiŋ^{0}$ (Ket)
1SBJ^{8}=away^{5}-3INAN.OBJ^{3}-PAST^{2}-spin^{0}
'I rolled it away.'

b. d^{8}=k^{5}-o^{4}-b^{3}-il^{2}-ted^{0} (Ket)
1SBJ^{8}=off^{5}-PAST^{4}-3INAN.OBJ^{3}-PAST^{2}-act.crosswise^{0}
'I scraped it off.'

Such patterns are likewise completely unproductive.

The only productive Ket patterns that retain a heavy root in P0 are incorporating verbs that place a clearly recognizable lexical noun or adjective stem in P7. Four examples appear here, and others are discussed in Chapter 42.

(22)

a. d^{8}=nan^{7}-si^{4}-bed^{0}
3SBJ^{8}=bread^{7}-PRES^{4}-make^{0}
'He is making bread.'

b. d^{8}=nan^{7}-u^{6}-k^{5}-si^{4}-bed^{0}
1SBJ^{8}=bread^{7}-3INAN.OBJ^{6}-with^{5}-PRES^{4}-make^{0}
'I make bread with it.'

c. d^{8}=$talin^{7}$-$Ø^{6}$-t^{5}-a^{4}-kit^{0}
3SBJ^{8}=flour^{7}-3INAN.OBJ^{6}-TC^{5}-PRES^{4}-rub^{0}
'He rubs it with flour.'

(p. 375)

d. d^{8}=nan^{7}-s^{4}-a^{0}-n^{-1}
3SBJ^{8}=bread^{7}-PRES^{4}-eat^{0}-PL^{-1}
'They eat bread.'

P7 incorporates no longer easily recognizable as lexical stems are unproductive. Stem types with heavy verb roots in P0 but no incorporate in P7 are also unproductive and tend to be restricted to basic vocabulary.

(23)

a. tet^{7}-bo^{6}-k^{5}-s^{4}-$uqud^{0}$ (Ket)
across(?)^{7}-1SG.SBJ^{6}-TC^{5}-PRES^{4}-be.put^{0}
'I am sad.'

b. tu^{7}-t^{5}-o^{4}-b^{3}-in^{2}-a^{1}-qoj^{0} (Ket)
water^{7}-TC^{5}-PAST^{4}-3INAN.SBJ^{3}-PAST^{2}-RESULT^{1}-dry^{0}
'It dried.'

Verbs with bound incorporates have a bipartite structure that can be challenging to etymologize. The incorporate in (23a) is probably *tet* 'across', a bound form found in adverbs such as *tetka* 'crosswise', while the portmanteau base *-uqud* derives from the

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verb root *-daq* ‘put’ metathesized in combination with the perfective–stative circumfix: **jə*^{1} *-daq* ^{0} *-əŋ*^{w} $^{-1}$. The bound root *to ~ tu* ‘water’ in (23b) is only found in a few other combinations, such as *tōj* ‘stream’ and *tajlop* ‘spring’, having been replaced elsewhere by *ūl* ‘water’. The base *-qoj* ‘dry’ in (23b) was deformed by merger with a change-of-state suffix, so that it formally differs from the adjective root in *qol-iŋ* ‘dry’. The structure of action nominals derived from them is equally opaque to native speakers: *toqojiŋ* ‘drying, to dry’ < **to* ‘water’ + **qoj* ‘dry’ + **əŋ*^{w} ‘action nominal suffix’.

Areal contact disfavored root-final stems with initial derivational prefixes or bound roots like (23a)–(23b), which probably blocked their productivity. The native languages of wives inducted into Ket society from adjacent tribes would have contained verbs built exclusively by suffixing grammatical concepts onto a stem-initial “heavy” lexical root. Ket-incorporating patterns such as P7 *na’n* ‘bread’ + P0 *bed* ‘make’ contain a recognizable lexical form in the verb’s initial syllable. Of all the original Ket verb stem patterns, they alone retain productivity.

18.4.1 Action nominal stem verbs

In addition to the noun or adjective-incorporating patterns described in Chapter 42, Modern Ket has about twenty other productive patterns based upon action nominal incorporation in the P7 slot. Yeniseian verbs normally have a corresponding action nominal, often called the “infinitive”, which can be translated as ‘VERBing’ or ‘to VERB’. It is formed from the finite verb’s lexical elements (P7-P5-P0) without the (p. 376) intervening agreement and tense/mood markers. Originally, action nominal derivation required the suffix *-əŋ* < **-ŋ*^{w}, possibly the same suffix that derived adjectives in ancient Yeniseian.

In finite verb stems with incorporated action nominals, unlike true polysynthetic incorporation, P7 contains the stem’s only heavy lexical form. The original verb root in P0 has become semantically bleached, merging with remnants of the perfective–stative affixes to marker lexical aspect categories such as transitivity, iterativity, and stativity. The causatives and anticausative inceptives in (24) represent four of these productive patterns. Each developed in Ket-Yugh from combinations of P5 thematic **q-* ‘inside’ and P0 root **daq* ‘put’ reduced through merger with aspectual affixes.

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(24)

a. d[8]=toqoj-iŋ[7]-q[5]-aj[4]-it[o]
3SBJ[8]=dry-ing[7]-TC[5]-3MASC.SG.OBJ/PRES[4]-INCEPT.CAUS.MOM[o]
'He starts drying him off (once)' (< 'He puts him into drying once.')

b. d[8]=toqoj-iŋ[7]-q[5]-aj[4]-da[o]
3SBJ[8]=dry-ing[7]-TC[5]-3MASC.SG.OBJ/PRES[4]-INCEPT.CAUS.ITER[o]
'He starts drying off (once)' (< 'He puts him into drying many times.')

c. d[8]=toqoj-iŋ[7]-q[5]-is[4]-a[1]-tn[o]
3SBJ[8]=dry-ing[7]-TC[5]- PRES[4]-3SG.SBJ[1]-INCEPT.ANTICAUS.MOM[o]
'He keeps starting to drying off' (< 'He gets put into drying once.')

d. d[8]=toqoj-iŋ[7]-q[5]-aj[4]-a[1]-dij[o]
3SBJ[8]=dry-ing[7]-TC[5]-PRES[4]-3SG.SBJ[1]-INCEPT.ANTICAUS.ITER[o]
'He keeps starting to dry off' (< 'He gets put into drying many times.')

Three action-nominal incorporating patterns were attested in Kott, where they appear to have been highly productive, given the large number of recorded forms:

(25)

a. hič-i:n[7]-o[3]-l[2]-ok[o]-u[-3]
hurry-ing[7]-PAST[3/2]-make[o]-2SG.SBJ[-3]
'You (sg.) hurried.'

b. hič-i:n[7]-a:[6]-t[h5]-o[3]-l[2]-ok[o]-u[-3]
hurry-ing[7]-3MASC.SG.OBJ[6]-TC[5]-PAST[4/2]-make[o]-2SG.SBJ[-3]
'You (sg.) hurried him.'

c. hič-i:n[7]-a:[6]-t[h5]-o[3]-l[2]-a:[1]-'uk[o]-i[-1](< *jə[1]-wək[o]-ej[-1])
hurry-ing[7]-3MASC.SG.SBJ[6]-TC[5]-PAST[4/2]-RESULT[1]-make[o]-STATE[1]
'He had been hurried.' ('He was in a state of having been hurried.')

Ket has nearly identical action-nominal incorporating stems made with the base **bed*[j] ~ **wed*[j] 'make'. These generate hundreds of stems expressing repeated activity (26a) or repeated action on an object (26b):

(p. 377)

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(26)

(26) a. d^{8}=bagd-eŋ^{7}-a^{4}-bed^{o}
1SBJ^{8}=pull-ing^{7}-3INAN.OBJ^{6}-TC^{5}-PRES^{4}-ITER (< 'make, do')^{o}
'I pull (regularly)' (< 'I do pulling.')

b. d^{8}=bagd-eŋ^{7}-u^{6}-k^{5}-a^{4}-bed^{o}
1SBJ^{8}=pull-ing^{7}-3INAN.OBJ^{6}-TC (< with)^{5}-PRES^{4}-ITER (< 'make, do')^{o}
'I pull it (regularly)' (etymologically, 'I do pulling with it.')

Action-nominal stem patterns shared by Kott and Ket shows that the shift to suffixation began in Proto-Yeniseian. Stems resembling the suffixing verbs of Uralic and Turkic languages account for more than half the Modern Ket verbal lexicon. Root-final verbs that incorporate a recognizable noun or adjective stem account for another 25 percent. Unproductive simple and bipartite stems make up the remainder, though these include most items of basic vocabulary. Areal influence explains the prevalence in Modern Ket of root-initial verb forms and suffix-like bases, as well as the paucity of verb-final heavy lexical roots.

18.5 Metathesis in Ket

Metathesis has affected many features of the Ket-Yugh template. These innovations are evident through comparison with Kott, where the metathesis did not occur. Ket metathesis typically involved labial and non-labial segments changing places, though the phonological trigger is not fully clear.

18.5.1 The rightward metathesis of inanimate-class markers and thematic consonants

Table 18.3 showed that the Proto-Yeniseian 3rd person agreement slot was P4, which was preserved in Kott. In Ket and Yugh, inanimate-class **b-* metathesized rightward, ahead of the conjugation marker, which originally occupied P3. In Ket past-tense forms, the intrusion of the inanimate-class marker separated the two tense–mood morphemes (originally occupying P3 and P2), as seen in examples (28b), (28d):

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(27)

(27) Kott (no metathesis)

a. b^{4}-a^{3}-kit^{o}-aŋ$^{-3}$
3INAN.OBJ^{4}-PRES^{3}-rub^{o}-1SG.SBJ^{-3}
'I rub it.'

b. b^{4}-a^{3}-la^{2}-kit^{o}-aŋ$^{-3}$
3INAN.OBJ^{4}-past$^{3/2}$-rub^{o}-1SG.SBJ^{-3}
'I rubbed it.'

(28) Ket (metathesis)

a. d^{8}=t^{5}-a^{4}-b^{3}-kit^{o}
1SBJ^{8}-TC^{5}-PRES^{4}-3INAN.OBJ^{3}-rub^{o}
'I rub it.'

b. d^{8}=t^{5}-o^{4}-b^{3}-il^{2}-kit^{o}
1SBJ^{8}-TC^{5}-past$^{4/2}$-3INAN.OBJ^{3}-rub
'I rubbed it.'

(28)

(27) Kott (no metathesis)

a. b^{4}-a^{3}-kit^{o}-aŋ$^{-3}$
3INAN.OBJ^{4}-PRES^{3}-rub^{o}-1SG.SBJ^{-3}
'I rub it.'

b. b^{4}-a^{3}-la^{2}-kit^{o}-aŋ$^{-3}$
3INAN.OBJ^{4}-past$^{3/2}$-rub^{o}-1SG.SBJ^{-3}
'I rubbed it.'

c. b^{4}-a^{3}-pi^{o}
3INAN.SBJ^{4}-PRES^{3}-ripen^{o}
'It ripens.'

d. m^{4}-a^{3}-na^{2}-pi^{o}
3INAN.SBJ^{4}-past$^{3/2}$-ripen^{o}
'It ripened.'

(28) Ket (metathesis)

a. d^{8}=t^{5}-a^{4}-b^{3}-kit^{o}
1SBJ^{8}-TC^{5}-PRES^{4}-3INAN.OBJ^{3}-rub^{o}
'I rub it.'

b. d^{8}=t^{5}-o^{4}-b^{3}-il^{2}-kit^{o}
1SBJ^{8}-TC^{5}-past$^{4/2}$-3INAN.OBJ^{3}-rub
'I rubbed it.'

c. a^{4}-b^{3}-qod^{o}
PRES^{4}-3INAN.SBJ^{3}-die^{o}
'It ends, expires.'

d. o^{4}-b^{3}-il^{2}-qod^{o}
past$^{4/2}$-3INAN.SBJ^{3}-die^{o}
'It ended, expired.'

(p. 378) Labial metathesis also affected the P5 area prefix *p- in Ket-Yugh when it occurred in combination with other thematic consonants. This morpheme became voiced when it metathesized forward ahead of the conjugation marker into P3, becoming homonymous with inanimate-class agreement b-. The presence of object pronominals in P6 show that P3 b- is not an agreement marker:

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(29)

(29) a. d^{8}-u^{6}-k/d^{5}-o^{4}-b^{3}-il^{2}-$taŋ^{o}$
1SBJ^{8}-3INAN.OBJ^{6}-away/across^{5}-PAST$^{4/2}$-area^{3}-drag^{o}
'I dragged it away.'

b. d^{8}-$oŋ^{6}$-k/d^{5}-o^{4}-b^{3}-il^{2}-$taŋ^{o}$
1SBJ^{8}-3ANIM-PL.OBJ^{6}-away/across^{5}-PAST$^{4/2}$-area^{3}-drag^{o}
'I dragged them away.'

Metathesized thematic *b-* remains in all forms of the conjugated verb and has nothing to do with agreement or valency, contrary to Vajda (2004: 66–8), where it was mis-analyzed as an applicative affix involved in the agreement system. The straightjacket logic of the template occasionally causes even native speakers to reanalyze the metathesized area prefix as an agreement marker. In (30a)–(30b), cited by Krejnovič (1968: 91), this prefix alternates with animate-class object markers through false analogy with the homonymous P3 inanimate-class marker. Because the animate-class object is indexed in the correct position P6, this leads to multi-site object marking:

(30)

(30) a. d^{8}-o^{6}-k/d^{5}-aj^{4}-$taŋ^{o}$ (instead of canonical d^{8}-o^{6}-k/d^{5}-a^{4}-b^{3}-$taŋ^{o}$)
1SBJ^{8}-3MASC.SG.OBJ^{6}-TC^{5}-3MASC.SG.OBJ/PRES^{4}-drag^{o}
'I drag him away.'

b. d^{8}-u^{6}-k/d^{5}-id^{4}-il^{2}-$taŋ^{o}$ (instead of canonical d^{8}-u^{6}-k/d^{5}-o^{4}-b^{3}-il^{2}-$taŋ^{o}$)
1SBJ^{8}-3FEM.SG.OBJ^{6}-TC^{5}-3FEM.SG.OBJ^{4}-PAST^{2}-drag^{o}
'I dragged her away.'

Native speakers occasionally produce such forms then correct themselves, so the original pattern with P3 *b-* in all forms can be considered canonical. Analogical changes that have permanently altered Ket verb structure will be discussed in Section 18.6.

18.5.2 Metathesis of the verb root anlaut

Not all instances in Ket of non-agreement *b-* in P3 arose from metathesized P5 thematic consonants. Any base anlaut *b-* from PY **w-* metathesizes backward into slot P3 across the P2 aspect marker:

(p. 379)

(31)

a. d^{8}=ku^{6}-t^{5}-bi^{o}
1SBJ^{8}=2SG.OBJ^{6}-TC^{5}-ask^{o}
'I ask you (sg.).'

b. d^{8}=ku^{6}-t^{5}-b^{3}-il^{2}-i^{o}
1SBJ^{8}=2SG.OBJ^{6}-TC^{5}-PAST^{2}-ask$^{3/o}$
'I asked you (sg.).'

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The action nominal *tibi* ‘asking, to ask’ shows that *b* is part of the stem and not a grammatical marker. The same metathesis affected bases *-bi* ‘ask’, *-bet* ‘understand, feel, sense’, and *-bes* ‘draw on a surface’:

(32)

a. d^{8}=ku^{6}-t^{5}-a^{4}-bet^{o}
1SBJ^{8}=2SG.OBJ^{6}-TC^{5}-PRES^{4}-sense^{o}
‘I understand you (sg.).’

b. d^{8}=ku^{6}-t^{5}-o^{4}-m^{3}-n^{2}-et^{o}
1SBJ^{8}=2SG.OBJ^{6}-TC^{5}-PAST^{2}-sense$^{3/o}$
‘I understood you (sg.).’

c. k^{8}=ba^{6}-t^{5}-i^{4}-bes^{o}
2SBJ^{8}=1SG.OBJ^{6}-TC^{5}-PRES^{4}-draw^{o}
‘I draw you (sg.).’

d. k^{8}=ba^{6}-t^{5}-b^{3}-in^{2}-es^{o}
2SBJ^{8}=1SG.OBJ^{6}-TC^{5}-PAST^{2}-draw$^{3/o}$
‘I drew you (sg.).’

The metathesis did not affect base anlaut *b-* derived from **b-* rather than **w-*:

(33)

a. d^{8}-ik^{7}-si^{4}-bes^{o}
1SBJ^{8}-into.open.space^{7}-PRES^{4}-pass^{o}
‘I arrive.’

b. d^{8}-ik^{7}-in^{2}-bes^{o}
1SBJ^{8}-into.open.space^{7}-PAST^{2}-pass^{o}
‘I arrived.’

18.5.3 Metathesis of subject or object pronominals

Metathesis also introduced significant complications into the Ket-Yugh agreement system. As shown in Table 18.3, Proto-Yeniseian originally marked 1st and 2nd person subject agreement in P1, and 3rd person agreement in P4. There were also transimpersonal verbs, with semantic motivation for using the P6 object slot for subject marking. The following transimpersonal stem was inherited from Proto-Yeniseian:

(34)

a. en^{6}-bo^{6}-n^{2}-suk^{o} (Ket)

b. en^{6}-boː^{ħ6}-n^{2}-suk^{o} (Yugh)

c. en^{6}-uŋ^{6}-u^{3}-i^{2}-še^{o} (Kott)
thought (mind?)^{7}=1SG.SBJ (< OBJ)^{6}-PAST$^{(3)/2}$-move.back^{o}
‘I forgot.’ (? < ‘Thought moves back to me.’)

The P6 slot here contains an incorporated possessive construction. The agreement markers Ket *bo-*, Yugh *boː^{ħ}-*, and Kott *uŋ-* derive from a pronominal (1st singular *x^{w}-* + possessive **-ŋ^{w}-* + postposition **-xa* ‘toward’). The nasal possessive marker was reanalyzed as the Kott 1st singular and also as a plural marker in P6, eliding by false analogy in the other singular forms.

(p. 380) Ket has other transimpersonal verbs that use the P6 object slot for subject marking:

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(35)

a. həgdaŋ^{7}-bo^{6}-k^{5}-si^{4}-bej^{o} (Ket)
blizzard^{7}-1SG.SBJ (< OBJ)^{6}-TC^{5}-PRES^{4}-blow^{o}
'I get covered over in blowing snow.' (< 'A snowstorm blows with me.')

b. bed^{7}-ba^{6}-k^{5}-o^{4}-n^{2}-ta^{o} (Ket)
snow^{7}-1SG.SBJ (< OBJ)^{6}-TC^{5}-PAST$^{4/2}$-fall^{o}
'I got snowed on.' (< 'Snow fell on me.')

Not all Ket and Yugh intransitives with P6 subject marking are transimpersonal constructions, however. Some arose from metathesis of P1 subject markers into the P6 object slot across an originally labialized thematic consonant in P5:

(36)

a. dəŋ^{6}-k^{5}-o^{4}-n^{2}-den^{o} (Ket)
1PL.SBJ^{6}-away^{5}-PAST$^{4/2}$-go^{o}
'We went.'

b. dəŋ^{6}-k^{5}-oːʰ^{4}-r^{2}-de^{o} (Yugh)
1PL.SBJ^{6}-away^{5}-PAST$^{4/2}$-go^{o}
'We went.'

The cognate stem in Kott, where the metathesis did not occur, shows the subject marker in its original position (P1):

(37)

a^{3}-l^{2}-oŋ^{1}-in^{o}-toŋ$^{-3}$ (Kott)
PAST$^{3/2}$-1PL.SBJ^{1}-go^{o}-1PL.SBJ^{-3}
'We went.'

A different type of metathesis, triggered by analogy, affected the object markers in Ket and Yugh. The object markers in Modern Ket normally occupy P6 in stems where P5 derives from a postposition, such as *k*- 'with' (38a) and *k*- 'toward' (38b), as well as *t*- deriving from **tɨg*- 'down' (38c):

(38)

a. d^{8}=ba^{6}-k^{5}-a^{4}-do^{o}
3SBJ^{8}=1SG.OBJ^{6}-toward^{5}-PRES^{4}-look^{o}
'He looks at me.'

b. d^{8}-ik^{7}-bo^{6}-k^{5}-si^{4}-bes^{o}
3SBJ^{8}-into.open.space^{7}-1SG.OBJ^{6}-with^{5}-PRES^{4}-pass^{o}
'He brings me.' (etymologically, 'He passes into open space with me.')

c. t^{5}-a^{4}-b^{4}-ə^{1}-daq^{o}
down^{5}-PRES^{4}-3INAN.SBJ^{3}-INTRANS^{1}-drop^{o}
'It falls down.'

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(p. 381) Each of these etymologically distinct P5 prefixes interacts with the surrounding affixes in characteristic ways. Postposition *k*- 'toward' (38a) does not labialize the preceding vowel and is followed by present-tense *a*-. Postposition *k* 'with' (38b) labializes the preceding object pronominal vowel and is followed by present-tense *s*-. P5 *t*- from **tɨg* 'down' (38c) is followed by present-tense *a*-.

In transitive stems without incorporated postpositions, the 3rd person markers originally occupied P4 regardless of whether they marked a subject or object. The 1st and 2nd person object markers in such stems by analogy metathesized into the P1 subject slot. Once again, this occurred in Ket and Yugh, but not in Kott, which never uses P1 for object marking. The Ket-Yugh metathesis normally affected stems containing non-postpositional P5 thematic consonants denoting shape or trajectory: *n*- 'around, round', *d*- 'long, along, across, through', *q*- 'in', *k*- 'up', and *k*- 'away':

(39)

a. $d^{8}=n^{5}$-a^{4}-di^{1}-dij^{o}
3SBJ^{8}=around^{5}-PRES^{4}-1SG.OBJ^{1}-touch^{o}
'He shakes me.'

b. d^{8}-ul^{7}-d^{5}-a^{4}-di^{1}-ken^{o}
3SBJ^{8}-water^{7}-through^{5}-PRES^{4}-1SG.OBJ^{1}-wring(?)^{o}
'He washes me.'

c. $d^{8}=q^{5}$-i^{4}-di^{1}-dil^{o}
3SBJ^{8}=in^{5}-PRES^{4}-1SG.OBJ^{1}-put^{o}
'He puts me in (a sled harness).'

d. $d^{8}=k^{5}$-a^{4}-di^{1}-tan^{o}
3SBJ^{8}=up^{5}-PRES^{4}-1SG.OBJ^{1}-drag^{o}
'He drags me uphill.'

Only the 1st and 2nd person markers moved rightward into the old subject position. The 3rd person animate-class markers in non-postpositional transitives retain their original position in P4, except that inanimate-class *b*- metathesized into P3:

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(40)

a. d^{8}=d^{5}-a^{4}-b^{3}-do^{o}
3SBJ^{8}=long^{5}-PRES^{4}-3INAN.OBJ^{3}-chop^{o}
'He fashions it by hewing (a long object, such as a canoe).'

b. d^{8}=t^{5}-a^{4}-b^{3}-do^{o}
3SBJ^{8}=surface^{5}-PRES^{4}-3INAN.OBJ^{3}-chop^{o}
'He cuts it (rough-hews an object's surface).'

c. d^{8}=k^{5}-a^{4}-b^{3}-do^{o}
3SBJ^{8}=away^{5}-PRES^{4}-3INAN.OBJ^{3}-chop^{o}
'He clears it (makes a trail by cutting away underbrush).'

In stems built with the area prefix **p-*, all object markers appear in P6, including the 3rd person markers, which have metathesized with this labial consonant. This is true of stems with (p. 382) no thematic consonant other than the area prefix (41a), and stems where the area prefix has metathesized into P3 (41b) – (41d):

(41)

a. d^{8}=don^{7}-a^{6}-h^{5}-a^{4}-ted^{o}
1SBJ^{8}=knife^{7}-3MASC.SG.OBJ^{6}-area^{5}-PRES^{4}-hit.endwise^{o}
'I stab him (once).'

b. d^{8}=don^{7}-a^{6}-t^{5}-a^{4}-b^{3}-ted^{o}
1SBJ^{8}=knife^{7}-3MASC.SG.OBJ^{6}-ITER^{5}-PRES^{4}-area^{3}-hit.endwise^{o}
'I stab him (repeatedly).'

c. d^{8}-a^{6}-k^{5}-i^{4}-b^{3}-daq^{o}
3SBJ^{8}-3MASC.SG.OBJ^{6}-toward^{5}-PRES^{4}-area^{3}-propel.once^{o}
'I shoot at him (once).'

The only exceptions are transitive stems that contain only inanimate-class objects; it appears that P3 *b-* did not undergo metathesis in the absence of analogy with animate-class object markers.

(42)

d^{8}=h^{5}-a^{4}-b^{3}-to^{o}
3SBJ^{8}=area^{5}-PRES^{4}-3INAN.OBJ^{3}-arrange^{o}
'He erects it (a tent).'

Labial metathesis of P5 thematic consonants and pronominals, sometimes analogically extended to morphemes not originally affected by it, has complicated the Ket agreement system. The key point is that the template positions used for object and subject agreement in Ket and Yugh were mostly determined by idiosyncratic changes having nothing to do with valency-related semantic categories.

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18.6 Reanalysis and Other Analogical Changes in the Ket Template

Several analogical changes that affected Yeniseian verb structure were discussed earlier. The perfective–stative affixes were reanalyzed as plural agreement (Section 18.2.3). The possessive nasal was reanalyzed as plural agreement in object markers (Section 18.5.3). Both innovations must have occurred before Proto-Yeniseian. Later changes affecting only Kott include reanalysis of the possessive nasal as the 1st person singular object pronominal and verb-external possessive prefix (Section 18.5.3, also Vajda 2013b). Analogical changes affecting only Ket-Yugh include reanalysis of adjective-deriving *-eŋ* as a plural marker (Vajda 2013a):

(43)

a. da^{8}=ugd^{7}-t^{5}-o^{4}-b^{3}-il^{2}-sin^{o}
3FEM.SBJ^{8}=long^{7}-CAUS^{5}-3INAN.OBJ^{3}-PAST$^{4/2}$-change^{o}
'She lengthened it.'

da^{8}=ugdeŋ^{7}-t^{5}-o^{4}-b^{3}-il^{2}-sin^{o}
(p. 383) 3FEM.SBJ^{8}=long.PL (< ADJ.SUFF)^{7}-CAUS^{5}-3INAN.OBJ^{3}-PAST$^{4/2}$-change^{o}
'She lengthened them (several inanimate-class objects).'

Reanalysis of adjectival *-eŋ* as a plural marker based on its homonymy with the nominal plural suffix *-eŋ* led to its loss in verb forms with singular objects. This alternation probably arose only in adjective forms with free variation between eroded and retained adjective-deriving *-eŋ*. In most adjectives, the suffix had elided or conditioned tonal ablaut on the adjective root vowel, so no reanalysis took place.

A similar change involved the action nominal suffix *-əŋ*, which was reanalyzed as a pluractional marker in stems where the P7 action nominal had become the verb's semantic head (Section 18.4). No longer productive in Modern Ket, this suffix varies between *-eŋ* and tonal ablaut on the preceding vowel, producing doublets like Ket *bed-eŋ* ~ *bèd* 'making'. In cases where the suffix survived, it is typically reanalyzed as a pluractional marker: *suul-bed* 'making sleds' ~ *suulbedeŋ* 'making sleds frequently':

(44)

a. d^{8}=qos^{7}-q^{5}-oŋ^{4}-on^{2}-a^{o}
3SBJ^{8}=frighten^{7}-CAUS^{5}-3PL.OBJ^{4}-PAST^{2}-TRANS.MOM^{o}
'He frightened him (once).'

b. d^{8}=qos-aŋ^{7}-q^{5}-oŋ^{4}-ol^{2}-da^{o}
3SBJ^{8}=frighten.ITER (<ANOM.SUFF)^{7}-CAUS^{5}-3PL.OBJ^{4}-PAST^{2}-TRANS.ITER^{o}
'She frightened them (many times).'

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The same pattern can be observed in Ket free-standing action nominals, where the suffixed form *bedeŋ* ‘making’ is often used to mean ‘making many times’, in contrast to *bèd* ‘making’, where the suffix has innovatively merged with the root, causing falling tone.

A completely different type of analogical change affected several unproductive Ket-Yugh incorporates: *buŋ* (< **ba’ŋ* ‘place’ labialized before **qoŋ* ‘view, look for’; cf. *utbaŋ* ‘blind’ < **ūt-baŋ-qoŋ* ‘failed-seeing’), *buŋtə* ‘lump’, *but* ‘compact mass’, etc. These syllables were reanalyzed as the 3rd person reflexive subject marker *bu-* (normally occupying P6) followed by P5 thematic *t-, n-*, or *ŋ-*. The corresponding action nominals contain the original incorporate, demonstrating that *bu-* was part of the lexical stem and not an agreement marker: *buŋqo* ‘looking, seeing, searching’, *butij* ‘pulling out’, *buŋdop* ‘swallowing, gulping’. Example sets (45)–(47) show the original structure in (a), its reanalysis in (b) and the analogical insertion of another subject marker in (c):

(45)

a. ād bū-esaŋ d^{8}=baŋ^{7}-su^{4}-qo^{o}
I he-to.be 1SBJ^{8}=place^{7}-PRES^{4}-view^{o}
‘I look for him.’ (etymologically, ‘I look for the place where he is.’)

b. d^{8}=ba^{6}-ŋ^{5}-su^{4}-qo^{o}
1SBJ^{8}=1SG.SBJ^{6}-TC^{5}-PRES^{4}-look^{o}
‘I look.’

c. k^{8}=ku^{6}-ŋ^{5}-su^{4}-qo^{o}
(p. 384) 2SBJ^{8}=2SG.SBJ^{6}-TC^{5}-PRES^{4}-look^{o}
‘You (sg.) look.’

(46)

a. bū hə’ŋ d^{8}=bɨd^{7}-k^{5}-a^{4}-b^{3}-daq^{o} (*bɨd^{7}-k^{5} > Ket *but*, Yugh *buč*)
he net 3SBJ^{8}=compact.mass^{7}-out^{5}-PRES^{4}-3INAN.OBJ^{3}-displace^{o}
‘He pulls a net out (of the water).’

b. d^{8}=bu^{6}-t^{5}-a^{4}-b^{3}-daq^{o}
3SBJ^{8}=3REFL.SBJ^{6}-TC^{5}-PRES^{4}-3INAN.OBJ^{3}-displace^{o}
‘He pulls it out.’

c. k^{8}=ku^{6}-t^{5}-a^{4}-b^{3}-daq^{o}
2SBJ^{8}=2SG.SBJ^{6}-TC^{5}-PRES^{4}-3INAN.OBJ^{3}-displace^{o}
‘You (sg.) pull it out.’

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(47)

a. d[8]=buŋt[7]-i[4]-b[3]-dop[o]
3SBJ[8]=lump[7]-PRES[4]-3INAN.OBJ[3]-injest[o]
'He swallows it (originally said of a bird eating in one quick gulp).'

b. d[8]=bu[6]-ŋt[5]-i[4]-b[3]-dop[o]
3SBJ[8]=3REFL.SBJ[6]-TC[5]-PRES[4]-3INAN.OBJ[3]-injest[o]
'He swallows it.'

c. d[8]=ba[6]-ŋt[5]-i[4]-b[3]-dop[o]
1SBJ[8]=1SG.SBJ[6]-TC[5]-PRES[4]-3INAN.OBJ[3]-injest[o]
'I swallow it.'

Every case of multi-site subject marking in P8 + P6 not logically connected with expressions of reflexivity probably arose in this way. All instances of Ket-Yugh P5 thematic *ŋ-* arose in the same way, which shows that P5 thematic prefixes in Modern Ket need not have a discernible semantic function.

Suffice it to say that metathesis and reanalysis operating in the rigid confines of an ancient inherited template created the organized chaos that is Ket verb morphology today.

18.7 Na-Dene Verb Templates

This section compares innovations in the Tlingit, Eyak, and Athabaskan verb templates, the core of which has changed very little, a fact evident from casual inspection. Like early Yeniseian, Na-Dene has a rigidly templatic, strongly prefixing polysynthetic verb with discontinuous stems that typically incorporate argument pronominals. A reconstruction of the Proto-Athabaskan template, appears in Table 18.4, followed by Eyak and Tlingit in 18.5 and 18.6. (p. 385)

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Table 18.4 Generalized Proto-Athabaskan template

disjunct zone (newer derivational or thematic prefixes)	oldest prefix positions						**verb stem** (root + TAM suffix)	en-clitics
	deictic or object pronominal prefixes	lexical "qualifier" prefixes	tense mood aspect **s(ə)-, *ɢə-, *nə-*	1st, 2nd person subject agr	pfv-stative prefix *ñi-*	class-ifier *Ø, d-ɬ-, l-*		

Vajda 2010: 38

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Table 18.5 Eyak template, based on Krauss

derivational or thematic prefixes of various sorts	oldest prefix positions						**verb stem** (root + TAM suffix)	en-clitics
	deictic or objects pro-nominal prefixes	shape or anatomical prefixes, and other elements	tense, mood, aspect *ɢə*	1sg, 2sg, 2pl subject agr	tense mood *s(ə)-*	classifier *ɬ- ~ Ø* *ɬə- ~ ɬi-* *də- ~ di-* (*i* < stative prefix)		

Krauss (1965a: 171)

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Table 18.6 Tlingit template

deriv-ational or thematic prefixes of various sorts	oldest prefix positions					**verb stem** (root + TAM suffix)	suffixes and enclitics
	deictic or object pro-nominal prefixes	incor-porates	tense mood aspect *ɢa-* *ÿu-* pfv	subject agr. (1 or 2 p)	classifier (*i* < stative prefix) *ɬa-* ~ *ɬi-* *da-* ~ *di-* *sa-* ~ *si-*, etc.		

Based on Leer (1991: 147–9, 159)

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The shaded areas mark position classes innovated separately in each template. The left edge contains more loosely bound derivational prefixes or proclitics, while new positions after the verb stem contain aspectual, form-class changing, or clause-related suffixes and enclitics. The disjunct prefix zone in Witsuwit'en, as in several other northern Athabaskan languages, contains both thematic and productive incorporation of nouns (Hargus 2007: 427–31). There is variation in the relative order of disjunct prefixes across different languages (Hargus 2013: 41). Variation sometimes occurs in the same language, as in these two (p. 386) Ahtna examples (Kari 1990: 40), where the iterative and distributive prefixes assume different relative positions (glosses follow Rice 2000: 101):

(48)

a da-na-n-ku-ghii-ɬ-tl'u'
PREVERB-ITER-DISTR-3PL.OBJ-ASPECT-1SG.SBJ/VALENCE-STEM
'I tied them up again.'

b. ts'i-ta-n-na-xii-ghe-ɬ-tses
PREVERB-PREVERB-DISTR-ITER-PRONOUN-ASPECT-VALENCE-STEM
'He ironed them again.'

Rice (2000: 101–2) argues that such differences in morpheme ordering are functionally motivated by scopal relations; the distributive relates to the participants and the iterative to the event itself, with neither prefix having scope over the other. Some positional variations not caused by phonological metathesis can be accounted for in this way.

The shared layers of the Na-Dene template, however, are more idiosyncratic from a functional perspective, and appear to derive their structure from ancient inheritance. Although Tlingit and Athabaskan-Eyak probably diverged more than 4,000 years ago, virtually all prefix classes from object to classifier are shared in recognizably cognate form. The verb stem, a portmanteau of ancient verb root and tense/mood/aspect suffix, shows intricate cognate allomorphy across the three templates (Leer 1979). Tense/aspect/mood is expressed by stem allomorphs interacting with conjugation prefixes (originally **si-* and **ɢa-*) and with the I-classifier component prefixed directly before the verb stem. This technique of expressing TAM categories on both sides of the ancient verb root is a hallmark of Na-Dene verb morphology.

Another hallmark is the set of valence-increase or decrease prefixes known as the "classifier", located directly before the root. Krauss (1969) shows that Na-Dene classifiers derive from three distinct components that are cognate across the family: a D-component (valence decrease), Ł-component (valence increase), and I-component, which is an ancient stative marker that still interacts with the tense/mood system. Tlingit also has an *s*-classifier and *š*-classifier, which are mutually exclusive with the *ɬ*-classifier, so that Leer (1991: 94–103) groups the three morphemes together in the system as the 'series component'. Leer (2014) shows that the *š*-classifier developed in pre-Tlingit through palatalization of the *s*-classifier before a verb root containing a palatal consonant, as in **O-s-ciːtɬ'* > **O-š-ciːtɬ'* 'make ash out of O'. When Tlingit palatals later merged with the velars, producing Modern Tlingit *O-š-keːtɬ'*, the conditioning environment for **s-* > **š-* was

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lost. Because some verbs with palatalized *š-* expressed pejorative actions such as ‘taking a misstep’, it is reasonable to suggest, building on Leer’s discovery, that the *š*-classifier acquired this meaning and later spread by analogy to other themes to convey a negative state or action, such as *tɬéɬ qu-S-š-téːn* ‘S can’t see ~ S is blind’; cf. non-pejorative *qu-S-Ø-téːn* ‘S can see ~ S has sight’, with zero instead of *š*-classifier (examples adapted from Edwards 2009: 243).

Metathesis and reanalysis affected the conjugation prefixes differently in Tlingit, Eyak, and Athabaskan. Leer (2009) describes instances where the Athabaskan **nə-* conjugation prefix (not present in Eyak or Tlingit) arose through reanalysis of the coda consonant of an incorporated anatomical noun. The **si-* conjugation prefix remained in its original slot in Athabaskan, while in Eyak it metathesized ahead of the 1st and 2nd person subject (p. 387) markers. Krauss’s (1965: 24) original comparison of Na-Dene templates suggested that the **si-* conjugation prefix metathesized even farther rightward in Tlingit, giving rise to the *s*-classifier. Leer (2008: 26–9), however, identified the Tlingit *s*-classifier as a completely different morpheme inherited from Proto-Na-Dene as an original member of the classifier complex, regarding the Athabaskan-Eyak conjugation prefix **si-* as cognate to the Tlingit perfective prefix *ÿu-*. However, such a sound correspondence is not attested elsewhere. Contrary to Vajda (2010: 40–7), where I followed Leer’s interpretation, I will argue here that the *s*-classifier derives from the metathesized conjugation prefix **si-* and that the Tlingit perfective prefix *ÿu-* is cognate instead with the nasal element found in perfective forms of Athabaskan verbs, and cognate also with Proto-Yeniseian perfective **ŋʷ-*. If this identification is valid, it supports the reconstruction of the Proto-Na-Dene template in Table 18.7.

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Table 18.7 Hypothetical reconstruction of the Proto-Na-Dene verb template

object marking and various thematic prefixes	oldest prefix positions					**verb root**	aspect suffix *ɬ- impfv *ŋʲi- pfv, etc.
	deictic or object pronominal prefixes	tense mood prefix *si- *ɢa-	pfv prefix *ŋʷ-	1, 2 subject agr.	classifier ɬ- ~ ɬi- d- ~ di- (i < stative prefix *ji-)		

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The general trend in Na-Dene is for tense/mood/aspect prefixes to metathesize rightward, though the precise phonological motivation for this is unclear. Classifier elements identifiable as former tense/mood/aspect markers on the basis of Na-Dene internal evidence include the stative prefix (I-component) in all three templates, and the S-component in Tlingit.

18.7 The Origins of Dene-Yeniseian Verb Structure

External comparison with the Proto-Yeniseian template suggests an explanation for the origins of the D- and Ł-components of the classifier, as well as for multi-site aspect marking on both sides of the verb root in both families. Table 18.8 proposes how a template ancestral to Na-Dene and Yeniseian could have arisen from an earlier, more analytical sequence of light and heavy verb, each with its own agreement prefixes and TAM suffixes.

This model explains why aspect is expressed on both sides of the verb root in both families, and why subject agreement, particularly plural marking, is prefixed before the conjugation markers as well as before the verb root. If this model is correct, then the template that evolved into Proto-Yeniseian lost its verb-final continuative suffix *-*ɬ*. The hypothesis would be strengthened if Yeniseian verb bases could be shown to contain a vestigial suffix *-*ɬ*, instead of only perfective *-*ŋ*^{w} and stative *-*ej*, which are amply attested. Na-Dene verb stem allomorphs show clear vestiges of all three (Leer 1979). **(p. 388)**

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Table 18.8 Hypothetical genesis of Dene-Yeniseian templatic morphology

subject agreement prefix	**light verb**	**aspect suffix**	**subject agreement prefix**	**heavy verb**	**aspect suffix**
↓	↓	↓	↓	↓	↓
3 inan. **w-* 3 anim. or plural **d-*	conjugation prefix **si-* **ɢa-*	aspect prefix continuative **ɬ-* completive **ŋʷ-* stative **j-*	1, 2 subject agr prefix, 3 anim. or plural **d-*	**verb root**	aspect suffix continuative **-ɬ* completive **-ŋʷ* stative **-j*

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The Ł-component of the Na-Dene classifier would represent a metathesis rightward of continuative *-ɬ. In its new position after the subject markers, it resembled the homonymous instrumental prefix and was reanalyzed as a valence-increase marker. This occurred only in the language ancestral to Na-Dene, and provides one piece of evidence that Athabaskan-Eyak-Tlingit is a unified taxon that can be related to Yeniseian only at considerable time depth. Vestiges of the original aspect-related function of *-ɬ can be seen in Athabaskan stative verbs such as Modern Navajo *ɬi-zhin* 'it is black', *ɬi-kan* 'it tastes good', identified as homologous with the ɬ-classifier by Krauss (1969: 57–8). There are other Na-Dene verbs where the ɬ-classifier is present without performing any valence-increase function, a fact that likewise suggests the Ł-component of the Na-Dene classifier originated from a morpheme with a function other than valence increase.

The possibility that the D-component of the Na-Dene classifier originated from a 3rd person agreement prefix was first suggested by Krauss (1969: 67), who noted that the Tlingit generalized subject prefix *du-* 'someone, people' is in complementary distribution with the *d*-classifier. Vestiges of it survive in both families as a plural, distributive, or pluractional marker prefixed either before the conjugation markers or verb root—distribution that becomes understandable in light of the ancestral bipartite structure proposed in Table 18.7. In both Yeniseian and Na-Dene, pronominal *d-* is involved in 1st person plural subject marking, as well as in expressions of a more generic animate-class plural. Vestiges of its distributive plural marking function survive in Yeniseian before a few vowel-initial bases (or bases with original anlaut *w-*):

(49)

a. di^{8}-b^{3}-il^{o}
1SBJ^{8}-3INAN.OBJ^{3}-sing^{o}
'I sing it.'

b. di^{8}-b^{3}-d^{1}-il-eŋ^{o}-en^{-1}
1SBJ^{8}-3INAN.OBJ^{3}-sing-PL(<PFV)^{o}-PL^{-1}
'We sing it.'

c. ku^{8}-b^{3}-il^{o}
1SBJ^{8}-3INAN.OBJ^{3}-sing^{o}
'You (sg.) sing it.'

d. ku^{8}-b^{3}-d^{1}-il-eŋ^{o}-en^{-1}
2SBJ^{8}-3INAN.OBJ^{3}-PL^{1}-sing-PL(<PFV)^{o}-PL^{-1}
'You (pl.) sing it.'

The Ket forms in (49b) and (49d) appeared in Castrén (1858: 79). The same structures were elicited over a century later by Krejnovič (1968: 168), who noted that forms without (p. 389) *d-* were also acceptable. The bases of these verbs also contain vestiges of the old perfective suffix, preserved through reanalysis as a plural marker. The rise of a new animate-class subject plural suffix *-n* in the language ancestral to Yeniseian probably followed the loss in productivity of pre-root plural *d-*.

More examples of the probable Yeniseian cognate to the D-component of the Na-Dene classifier can be found in Krejnovič (1968: 173), where it has metathesized with base anlaut *b-* < **w-*:

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(50)

a. d^{8}-əta^{7}-bis^{o}
1SBJ^{8}-to.shore^{7}-travel.on.water^{o}
'I sail to shore.'

b. d^{8}-əta^{7}-b^{3}-d^{1}-is^{o}-n^{-1}
1SBJ^{8}-to.shore^{7}-PL^{1}-travel.on.water$^{3/o}$-PL^{-1}
'We sail to shore.'

Na-Dene reanalyzed the *d*-pronominal as a valence-decrease prefix, probably based on its non-focal subject usage in verb forms like 'someone takes it' ~ 'it gets taken'. In Yeniseian, pre-root pronominal *d*- atrophied and did not become a valence-decrease marker.

External comparison with Na-Dene explains otherwise inexplicable irregularities in Modern Ket, Yugh, and Kott verb structure. The irregular Yugh transitive in (51), the full paradigm of which appears in Werner (1997: 194–5), not only contains the original P-1 perfective aspect suffix, but also the original tense/mood alternation between conjugation markers **si-* and **ga-*, which remained in P3 position rather than merging with the preceding object pronominals in P4:

(51)

a. k^{8}-aŋ^{4}-ɨs^{3}-ej^{o}
2SBJ^{8}-3ANIM.PL.OBJ^{4}-PRES^{3}-kill^{o}
'you (sg.) killed them'

b. k^{8}-aŋ^{4}-χ^{3}-ej^{o}-aŋ$^{-1}$-ɨn^{-2}
2SBJ^{8}-3ANIM.PL.OBJ^{4}-PAST^{3}-kill^{o}-PFV^{-1}-PL^{-2}
'you (pl.) kill them'

c. d^{8}-aŋ^{4}-ɨs^{3}-ej^{o}
3SBJ^{8}-3ANIM.PL.OBJ^{4}-PRES^{3}-kill^{o}
'he kills them'

d. d^{8}-aŋ^{4}-χ^{3}-ej^{o}-aŋ$^{-1}$-ɨn^{-2}
3SBJ^{8}-3ANIM.PL.OBJ^{4}-PAST^{3}-kill^{o}-PFV^{-1}-PL^{-2}
'they killed them'

If a Proto-Dene-Yeniseian template existed as hypothesized here, then the morpheme classes in its inherited core underwent different instances of reduction, metathesis, and reanalysis in each family. These processes created the Na-Dene classifier system—an innovation not shared by Yeniseian, though each classifier component has a recognizable cognate in the Modern Ket verb complex.

(p. 390) 18.9 Summary and Conclusion

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Leaving aside the issue of Dene-Yeniseian genealogical relatedness, the internal evidence from each family shows that templatic stem morphology can persist for millennia, adding new layers that sometimes duplicate the original meaning of earlier layers. Metathesis and reanalysis followed by analogical change can reinterpret even the most ancient, inherited material. Innovation in templatic stem structure is not limited to new positions arising on the periphery, and morpheme class reduction by phonological attrition is rarely absolute. This suggests that metathesis and reanalysis, generally regarded as marginal irregularities in concatenative morphology, may be more typical of templatic morphology.

New positions added by prefixal incorporation developed separately in each family, though following typologically familiar pathways. Adverbials, object pronominals, and other predicate complements were probably integrated into the verb template only after Na-Dene and Yeniseian began evolving separately. When each of these prefixing, head-final families elaborated a string of positions on the left edge of their inherited template, the new prefix slots came to include cognate roots and homologous structures.

Areal pressure from North Asia's suffixing languages significantly reshaped Yeniseian polysynthesis by favoring patterns with a clearly recognizable lexical root in the verb's initial syllable. Contact with North Asia's suffixal-agglutinating languages led to a functional "suffixation" of the Ket verb, while leaving the inherited morpheme positions unchanged. The template remained firmly in place despite strong areal pressure to utilize its inherited position classes in semantically novel ways. This shows how functional patterns evolve more rapidly than position class structure itself.

Because the two families appear to share an inherited core, comparing them provides an opportunity to assess how templatic stem morphology can arise and later accrue complexity. Although the likelihood that these families are genealogically related diminishes their value for general typology, the comparison provides a useful case study of how this unusual morphological type continued to evolve differently in each family while undergoing the same basic techniques of change again and again. Diachronic studies of other templatic polysynthetic languages should be undertaken to ascertain the degree to which metathesis, reanalysis, and related analogical changes are typical for this type of morphology.

Abbreviations

ADJ
: adjective

ANIM
: animate-class

ANOM
: action nominal

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ANTICAUS
anticausative
CAUS
causative
DISTR
distributive
FEM
feminine-class
IMPFV
imperfective aspect
INCEPT
inceptive
INAN
inanimate-class
INTRANS
intransitive
ITER
iterative
MASC
masculine-class
MOM
single action
NMLZ
nominalizer
OBJ
object (p. 391)
PAST
past tense
PFV
perfective aspect
PL
plural
PRES
present tense
RESULT
resultative
SBJ
subject
SG
singular
SUFF
suffix
TC

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thematic consonant

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Is Polysynthesis a Valid Theoretical Notion?: The diachrony of complex verbs in Ute

Tom Givón

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Abstract and Keywords

While Ute (Numic, Uto-Aztecan) currently has “free” word-order, most of its morphology conforms to a historical OV syntax, with postpositions pronouns, pre-nominal genitive modifiers, and predominantly suffixal verbal morphology,with most exceptions to the latter easily attributed to pre-verbal incorporation of object, instrument, adjective, or adverb stems. Ute also displays an extensive array of complex verbal stems, most commonly two-verb combinations. Of the two combined verbal stems, the second usually loses its original valence, exhibits semantic bleaching, and otherwise bears the traditional marks of grammaticalization. While the process of complex-verb creation is extensive, long-standing, and still ongoing, its diachrony is far from clear. This chapter describes Ute complex verbs, then reviews the potential candidates for the diachronic source-constructions that gave rise to these complex lexemes. While an unambiguous identification of “the” source-construction is not yet possible, the phenomenon as a whole represents a clear trend from syntax to lexis.

Keywords: Ute, complex verbs, diachrony, grammaticalization, polysynthesis

19.1 Introduction

19.1.1 The diachrony orientation

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THIS chapter deals with what light grammaticalization may shed on the theoretical status of polysynthesis. That is, inevitably, what light diachrony may shed on synchronic typology. I will illustrate my argument with data from Ute (Numic, No. Uto-Aztecan), a language whose complex morphology is transparently driven by an erstwhile SOV syntax —in spite of its current flexible word order. Around the Ute verb, most bound morphology is suffixal, arising primarily from erstwhile main verbs governing nominalized verbal complements. But a prefixal position is also well established, following the pattern of object, instrument and adverb incorporation. While the discussion of polysynthesis most commonly focuses on verbal morphology, my Ute data come primarily from the study of complex verb stems, that is *co-lexicalization.*

What is most striking about the diachrony of complex verbs in Ute is how well it conforms to the general accounts of grammaticalization; that is, how well the second verbs in V-V compounds conform to the predictable clustering of semantic, morpho-syntactic, and phonological properties in grammaticalization (e.g. Heine et al. 1991; Traugott and Heine 1991; Heine and Kuteva 2002):

(1) Properties of co-lexicalized verbs in Ute:

Semantic/functional properties

a. shift of functional load from lexical to grammatical

b. semantic bleaching or classificatory meaning

c. increasing, less-constrained polysemy

d. multiple directions of grammaticalization

Morpho-syntactic properties

e. cliticization

(p. 393) f. non-initial position in the V-V compound

Phonological properties

g. loss of lexical stress

h. phonological shortening/bleaching

i. increased morpho-phonemic irregularity

What challenges the traditional notion of polysynthesis from the very start are two well-known facts about grammaticalization:

- Most of the diachronic changes subsumed under grammaticalization are gradual.[1]
- These diachronic changes apply independently, with independent temporal dynamics, to the various components of complex words.

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The conflation of these two facts suggests that polysynthesis is seldom if ever a stable feature of the synchronic typology of a language. At best, it is a transitional diachronic phase of individual constructions.

To illustrate briefly the gradual transition from vigorous lexical verbs to bleached grammatical morphemes, consider the two motion verbs in Ute, *tugwa-* 'go to' (inanimate target) and *chugwa-* 'go to' (animate target). Both are bi-syllabic stems that carry lexical stress; both exhibit a concrete sense of motion, as well as regular verbal morpho-syntactic properties. They grammaticalize first as concrete motion postpositions. Their further grammaticalization as directional postpositions involves increased abstraction and polyfunctionality.

(2)

lexical verb	motion post-position	direction post-positions
tugwa-	tukh-	tʉ-
chugwa-	chukh-	chʉ-

The lexical use of these verbs, as well as the first stage of their grammaticalization, may be seen in (3), where both lexical verbs must be augmented by the more grammaticalized verb 'go' *-kwa-*.

(3)

a. kani-vee-tukh tugwa-kwa-pʉga
house/OBJ-at-to go-go-REM
'(S/he) went to the house.'

b. mamachi-vee-chukh chugwa-kwa-pʉga
(p. 394) woman/OBJ-at-to go-go-REM
'(S/he) went to the woman.'

The more abstract directional sense of the further-grammaticalized third stage may be seen in (4).

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a. kani-vee-tʉ pʉni?ni
house/OBJ-at-DIR look/IMM
'(S/he) is looking at/toward the house.'

b. mamachi-vee-chʉ pʉni?ni
woman/OBJ-at-DIR look/IMM
'(S/he) is looking at/toward the woman.'

(4)

c. kani-vee-tʉ ʔapagha-y
house/OBJ-at-DIR talk-IMM
'(S/he) is talking about the house.'

d. mamachi-vee-chʉ ʔapagha-y
woman/OBJ-at-DIR talk-IMM
'(S/he) is talking about the woman.'

19.1.2 Complex verbs and complex verb phrases

Complex lexical verbs arise most commonly through two main diachronic pathways (Givón 2009: ch. 4; 2011b).

(5)
Diachronic pathways to complex verbs:
a. Embedding of less-finite complements into verb phrases headed by a finite main verb
b. Condensation of chained clauses into *serial-verb* clauses

Either diachronic pathway can yield semantically similar complex verbs, and both exhibit similar grammaticalization patterns, whereby one of the two verbs in the compound is de-semanticized and becomes either grammaticalized or co-lexicalized.[2] Of the two pathways, embedding (5a) is more likely to lead to full *clause-union*, and thus proceed to co-lexicalization and yield complex verbs. In contrast, the clause-chaining route to verbal complexity (5b), commonly found in Southeast Asia, West Africa, and New Guinea, tends to yield less-than-full clause union, thus less frequent co-lexicalization and fewer complex (p. 395) verbs. But the diachronic trajectory of complex verbs in both types still spans the familiar three stages of linguistic complexity (Givón 1979, 2009):

(6) parataxis > syntaxis > lexis

19.1.3 Control of valence as a test for grammaticalization or co-lexicalization

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The valence of a verb refers, traditionally, to the set of *participant roles* that are typically associated with the verb in event clauses. When two lexical verbs with different valences are combined into a complex verb phrase or complex verb, what is the contribution each verb makes to the valence of the complex verb? The valence of complex verbs in Ute suggests that the grammaticalized second (or last) verb in the V-V compound almost invariably cedes the control of valence to the semantically vigorous first verb. Control of valence of the complex verb may thus be used as a test for grammaticalization and de-semanticization.

19.2 Complex Verb Phrases in Ute

Ute is a typical embedding–nominalizing language (5a), where all non-main clauses show at least some degree of reduced finiteness (Givón 2011a). Two complementation types are of particular interest for our discussion here.

Complement-taking verbs:

(7) a. Equi-subject (modal-aspectual) verbs
b. Switch-subject (manipulation) verbs

In each type, non-implicative main verbs take ‘free’ embedded complements, while implicative verbs become co-lexicalized with their complement verbs. As an illustration of the two patterns with modality verbs (7a), contrast the non-implicative ‘want’ with the implicative ‘finish’.

Equi-subject modality verb complementation:

(8) a. Non-implicative

(i) mamachi tɨkuavi tɨka-vaa-chi ʔásti-ka
woman/S meat/OBJ eat-IRR-NOM want-ANT
‘The woman wanted to eat the meat.’

(ii) máamachi-u tɨkuavi tɨka-qha-paa-chi ʔásti-kya-qha
women-PL meat/OBJ eat-PL-IRR-NOM want-PL-ANT
‘The women wanted to eat the meat.’

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. Implicative

(i) mamachi̲ tɨkuavi tɨka-maku-kwa
woman/SUBJ meat/OBJ eat-finish-ANT
'The woman finished eating the meat.'

(ii) máama̲chi-u tɨkuavi tɨka-maku-kwa-qha
women-PL meat/OBJ eat-finish-PL-ANT
'The women finished eating the meat.'

(p. 396) The implicative complementation pattern in (8b) differs from the non-implicative pattern in (8a) in two closely related ways:

- The two verbs are co-lexicalized into a single verbal word.
- The complement verb loses its subject-controlled plural agreement.

However, the valence of the complex verb in the co-lexicalized (8b) remains the same as that of the original complement verb—just like in the 'free' complementation pattern (8a). Co-lexicalized or not, the main verb does not seem to override the case-role frame of its complement.

Let us turn now to the complementation pattern of switch-subject (manipulation) verbs (7b), contrasting the complementation pattern of the non-implicative 'tell' with that of the implicative 'make'.

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(9)

Switch-subject manipulation verb complementation:

a. Non-implicative

(i) mamachi ʔáapachi tɨkuavi tɨka-vaa-ku máy-kya
woman/SUBJ boy/OBJ meat/OBJ eat-IRR-NOM tell-ANT
'The woman told the boy to eat the meat.'

(ii) mamchi ʔáa'apachi-u tɨkuavi tɨka-qha-paa-ku máy-kya
women-PL boys-PL meat/OBJ eat-PL-IRR-NOM want-ANT
'The woman told the boys to eat the meat.'

b. Implicative

(i) mamachi ʔaapachi tɨkuavi tɨka-ti-kya
woman/SUBJ boy/OBJ meat/OBJ eat-make-ANT
'The woman made the boy eat the meat.'

(ii) máamachi-u ʔáa'apachi-u tɨkuavi tɨka-ti-kya-qha
women-PL boys-PL meat/OBJ eat-make-PL-ANT
'The women made the boys eat the meat.'

As in the equi-subject complementation pattern in (7b), co-lexicalization of the two verbs in (9b) is accompanied by loss of plural subject agreement in the complement verb. But unlike equi-subject complex verbs, the co-lexicalized verb 'make-eat' in (9b) has undergone (p. 397) an increase in valence vis-à-vis the transitive complement verb 'eat', becoming a *bi-transitive* verb with a dative object (of 'make') and a patient object (of 'eat').

19.3 Complex Verbs in Ute Narrative Texts

To study the distribution and valence of complex verbs in Ute, I took three narrative texts from Givón (2013) and extracted all examples of complex verbs. All the complex verbs found in the texts, other than the causative construction itself (9b), display an equi-subject pattern. For reasons that will become clearer soon, classifying the co-lexicalized verbs as 'main' or 'complement' is not tenable. Rather, I will refer to them as 'first' vs. 'second' (or 'third') verb. Further, the vast majority of the examples involve a locative verb—of either position or motion—as the second verb. And it is that second verb that, invariably, becomes de-semanticized and/or grammaticalized, thus the light verb (Wilson 1999).

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What becomes clear from the very start, I think, is that the semantic and syntactic patterns of the various types of complex verbs in Ute transcend the relatively limited semantic patterns of the two verb complementation types (7).

19.3.1 The co-lexicalized *-kwa-* 'go' augmenting motion verbs

The verb *-kwa-* 'go' can never appear by itself, but only as the second constituent of the V-V compound. Most commonly, it augments other motion verbs, as in (10).

(10)

a. … ʔi-vaa-nʉmʉ ʔani-kh pʊrʊ-kwa-y nagukwi-ta-miya-gha
here-at-1p do-IMM go/PL- go-IMM fight-PASS-HAB-PAR
'… Here we are going through because there is going to be fighting…'

b. … máa-pa kwáa pʉaa-u-vaa-chugwa-av payu-khwa!…
there-DIR run/IMP kin-PL-at-go-OWN return-go/IMP…
'… Run and go back to your own kin! …'

c. … kh-ʔura-ʔuru kani-vaa-tugwa-khwa-pʉga…
then-be-that house-at-go-go-REM
'… then they went home…'

d. … ʔáa-gha nukwi-kwa-pʉga kani-vaa-tugwa-av…
quiet-PAR run-go-REM house-at-go-OWN
'… stealthily he ran towards home…'

e. … miya-khwa-u-paa-s-ʔura…
go.far-go-INC-IRR-C-be
'… let's go far away…'

f. … pichʉ-khwa-pʉga…
arrive-go-REM
'… and indeed arrived there…'

g. … pʊʊ-pa paghay-kwa-pʉga…
road-DIR walk-go-REM
'… he was walking along the road…'

(p. 398)

h. … pʊ ʔnay-kwa-vachi,
canter-go-BG
'… it cantered…'

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The exact semantic contribution of *-kwa-* vis-à-vis the first verb by itself is hard to define, and the complex verb has the same valence as the first verb by itself. Such complex verbs may indeed be on their way to full co-lexicalization, that is, becoming distinct lexical verbs.

19.3.2 Grammaticalization of *-kwa-* 'go' to derive active senses from stative verbs

The verbs *karʉ-* 'be sitting', wʉnʉ- 'be standing', *ʔavi-* 'be lying', or *naghami-* 'be sick' are stative verbs in Ute. The verb *-kwa* is used to convert them into change-of-state verbs, as in *karʉ-kwa-* 'sit down', wʉnʉ-*kwa-* 'stand up', *ʔavi-kwa-* 'lie down', or *naghami-kwa-* 'become sick', respectively. Examples from our texts are in (11).

(11)

a. … naghami-kwa-pʉay-agha, nava-kway-pʉga-ʔuru;
sick-go-REM-CONC just-go-REM-that
'… he fell ill, just like that…'

b. … ʔi-vaa-ʔuru karʉ-khwa-pachi kukwi-vachi…
here-at-that sit-go-BG shoot-BG
'… then he sat down right there and started shooting…'

c. … ʔichay tʉkua-y-ʔu má-naagha wʉnʉ-kwa-vachi….
this/OBJ flesh-OBJ-3SG there-in stand-go-BG
'… then lodging (standing up) there in his flesh…'.

The semantic change from state to change-of-state involves no change in valence. And *-kwa-* here is fully de-semanticized and grammaticalized.

19.3.3 Fully co-lexicalized use of *-kwa-*

The verbs *paqha-* 'kill', *yaʔay-* 'die', *qopoqhi-* 'break' (intr.), and others are seldom found in texts by themselves. Rather, they are most often augmented with *kwa-*, which is then fully de-semanticized and co-lexicalized. Examples from texts are:

(12)

a. … ʔumʉs-ʔura ʔi-vaa-chʉ nóʊghwa-tʉ pa-paqha-khwa- pʉga…
3p/S-be here-at-DIR pregnant-NOM/O RED-kill-go-REM
'… And indeed they killed a pregnant woman there…'

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b. …yuʔu-ʔu qopoqhi-kwa-pʉga…
leg-3s break-go-REM
'… his leg broke…'

c. … kh-ʔura-ʔuru pina-khwa yaʔay-kwa-pʉga…
then-be-that follow-go die-go-REM
'… and later he died …'

d. …ʔumʉs-nukwa-ʔura-ʔuru suwa-kwáa-khwa-pʉay-aghay-ʔu ʔuwayas Sinawavi...
3p/SU-TOP-be-that almost-win.over-go-REM-CL-3SG 3SG/O Sinawav/O
'… And to start with, they almost beat Sinawav (in the race)…'

The semantic contribution of *-kwa-* to the compound is not obvious, and again it has no discernible effect on the valence of the first verb. Thus, the transitive *paqha-* 'kill' and *kwáa-* 'beat', 'win over', retain their nominal or pronominal object.

19.3.4 The grammaticalized 'go' to as an imperfective aspectual marker

Several motion verbs with the general meaning 'go', such as *kwa-*, *pagha-*, *pərə-* or *miya-*, seem to be on their way to grammaticalizing as imperfective—durative or repetitive—aspectual markers, as in:

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(13)

a. … ʔumʉ -aa pʉ-paay-amʉ ya-yagha-kway-pʉ …
3p-G REL-DIR-3p RED-cry-go-NOM
'… where they were crying as they were passing above …'

b. … cha̲quura-y-u ʔumʉ yagha-kway-miya-ku̲-amʉ...
crane-G-PL 3p/G cry-go-go/PL-SUB-3p
'… as the cranes kept going on crying…'

c. …ʔuwas paʔa-ʔuwa-vʉrʉ-khu̲-ʔuru…
3SG/SUBJ complete-jump-go-SUB-that
'… so while he kept/was jumping vigorously up and down…'

d. … kh-ʔura ʔú ʔáapachi̲ ʔu pini-vʉni-paghay-kya…
the-be that/S boy/SUBJ the/S back-look-go-ANT..
'… Now his boy kept looking back…'

e. … ʔuwas-ʔuru pʉnikya-vʉrʉ-na-pʉga-vachi̲ ʔáapachi̲ ʔu...
3SG/SUBJ-that see-go-HAB-REM-BG boy/SUBJ the/SUBJ
'… In the mean time the boy kept looking around…'

f. … ʔíi-pa kh-ʔura ʔuwas wachʉ-vʉrʉ-na-pʉga-vachi̲ ʔavatʉ-kway ʔina-pa̲agha̲…
here-DIR then-be 3SG/SUBJ put-go-HAB-REM-BG big/O-MOD here-over
'… he used to throw that big thing (gesture) over (his shoulder)…'

g. … tʉpʉy-gwa-tukhwa̲ kukwi-miya-kway
rock-go-go shoot-go/PL-MOD
'… they kept on shooting at the rock-cliff…'

(p. 400)

h. … "tʉvʉ-sigipʉ" ʔáy-pagha- pʉga ʔuwas;
earth-crumble say-go-REM 3s/S
'… "Crumbling-Shale" he kept saying…'

19.3.5 The use of *kwa-* 'go' in 'go-V-ing' constructions

In this pattern, an activity verb, either transitive or intransitive,[3] is compounded with *-kwa-* 'go', yielding the general meaning of 'go (and) V-ing'. As an example from our texts, consider:

(14) … kh-ʔura ʔuwas tʉna-khwa-pʉga …
then-be 3SG/SUBJ hunt-go-REM
'… Then one day he went hunting…'

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While they are not found in this text, one can easily imagine combinations such as *ʔʉa-kwa-* ‘go trapping’, *nhka-kwa-* ‘go dancing’, *nagukwi-kwa-* ‘go fighting’, *kapi-ʔivi-kwa-* ‘go drinking coffee’, *ʔivi-kwa-* ‘go drinking (booze)’, or *mama-pʉsagay-kwa-* ‘go looking for a woman’. While the syntactic pattern here is that of complementation and is compatible, the strong preference for OV order in Ute means that the semantic pattern is just as consonant with clause chaining. A similar chaining-like pattern may also be seen with fully telic transitive verbs, as in:

(15)

… ʔʉvʉs-ʔu	chika-ghwa…	
end-3s	fetch-go/IMP	

‘… Alright, (you) go (and) take him with you …’

19.3.6 The use of the positional verbs as second verbs

A variety of intransitive activity verbs can be compounded with the positional verbs *karʉ-* ‘be sitting’, *wʉnʉ* ‘be standing’ or *ʔavi-* ‘be lying’, to yield the meaning ‘acting while standing/sitting/lying’, as in:

(16)

a. ʔu-vwaa nʉka-kar(ʉ)-i ‘(s/he) is sitting and listening there’

b. ma-vaa pʉni-wʉn(ʉ)-i ‘(s/he) is standing and watching right there’

c. yagha-ʔavi(y) ‘(s/he) is lying & crying’

(p. 401)

d. tʉgʉy-wʉn(ʉ)-i- ‘(s/he) stand hungry ` (Sundancing)’

One example in our texts (17a), suggests that the order of the two verbs in the compound can be reversed without changing the meaning pattern. Thus, contrast (17a) with the more common order in (17b). In addition, (17a) also illustrates the fact that the core verb of the construction—whether preceding or following the positional verb—retains its original valence, in this case as a transitive verb. The same is also true in (17c).

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(17)

a. … ʔuwas-ʔura ʔavi-pʉni-gya… ʔumʉ chakuraʔa-y-u
3SG/SUBJ-be lie-watch-PAR 3p/OBJ crane- OBJ-PL
'… and he was lying there watching … those cranes…'

b. … kh-ʔura-ʔuru naghami-ʔavi-na-pʉga...
then-be-that sick-lie-HAB-REM
'… so he was lying there (being) sick…'

c. … wiichi-[m]av mani-kyarʉ-pʉga...
knife/O-with OWN do.like-sit-REM
'…with his knife he sat there doing like this…'

d. … kh-ʔura kukwachi̲ ʔu nʉka-gharʉ-pʉga … [ʔumʉ-vaa-chʉ]
then-be Mexican/S the/SUBJ hear-sit -REM 3PL/OBJ-at-DIR
'… Well the Mexican was sitting and listening [to them]…'

e. … ʔi-vaa-amʉ-ʔura yugwi-pʉga, pʉni-yugwi-pʉga ʔumʉ-vaa-chʉ
here-at-3PL-be sit/PL-REM look-sit/PL-REM 3p/O-at-DIR
'… so they were sitting there, sitting and watching them (the Cheyenne)…'

The construction in (17a), with the participial *-ga* suffix, also hints at the possible diachronic source of this—and perhaps most other types of compound verbs—in Ute *clause chaining* (verb serialization) rather than complementation.

19.3.7 Compounding of two transitive verbs

The single example of this pattern found in our three texts is nonetheless instructive, stringing together two transitive verbs with *both* equi-subjects and equi-objects, a pattern wholly unattested in syntactic complementation in Ute. Thus:

(18)

a. … kh-ʔura kwavi-ʔaa-gha-amʉ tu-tuvʉ-chaʔa-pʉgay-ku ʔumʉs…
then-be lie/PL-??-PAR-3PL RED-pluck-catch-REM-it 3PL/SUBJ
'… so then when they all lay asleep, they plucked them (the feathers) off…'

Unattested as a complementation pattern, this example is fully consonant with a clause-chaining source of compound verbs.

(p. 402) 19.4 Discussion

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19.4.1 Valence and de-semanticization of complex verbs

As can be seen from the discussion in Sections 19.2 and 19.3, both the semantic and syntactic patterns of complex verbs in Ute are variable to the point where they almost seem unconstrained. Nevertheless, a number of trends seem to emerge. To wit:

- The 'core' lexical verb in the compound, almost always coming first, retains both its original semantic values and its original valence, two closely associated features.
- It is almost always the second verb that undergoes de-semanticization, then either grammaticalization or co-lexicalization.
- The de-semanticized second verb invariably conforms to the equi-subject pattern.
- Only one possible (but rare) exception is found in texts–the grammaticalized causative construction with the suffix *-ti-*, clearly not a lexical verb any more.
- The diachronic pathway most compatible with all our text-attested examples is that of clause chaining (6b) rather than embedding (6a). This is in spite of the fact that Ute is a quintessential embedding–nominalizing language.
- Overwhelmingly, the second verb in the compound is either a motion or position verb.

Table 19.1 Frequency distribution of second verbs in complex verbs in the texts examined, summarizing the frequency distribution of second verbs in complex verbs in our three-texts.

2nd verb	**gloss**	**#**	**%**
=======	==========	======	=========
-kwa-	'go'	54	66.6
pagha(y)-	'go'/'walk'	5	6.1
pɐrɵ-	'go' (PL)	8	9.8
miya-	'go' (far)	2	2.4

TOTAL 'GO'		69	84.9%
ʔuwa-	'come'	1	1.2

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nukwi-	‘run’	1	1.2
chipi-	‘go up’	1	1.2

TOTAL MOTION:		72	88.8%
=======	========	=======	========
karʉ/yugwi-	‘sit’/PL	4	4.9
wʉni-	‘stand’	1	1.2
ʔavi-	‘lie’	2	2.4

TOTAL POSITIONAL:		7	8.5%
TOTAL LOCATIVE:		79	97.5%
chaʔa-	‘catch’	2	2.4
==========			
Total:		81	100.0

(p. 403) This distribution is rather striking. In 66.6 percent of the cases, the second verb in the compound is the morphologically defective, often de-semanticized verb *-kwa-* ‘go’. This verb never appears by itself, and never appears as the first verb in the compound. Its usage spans multiple patterns along the cline between gramaticalization and co-lexicalization.

Next, 84.9 percent of second verbs in V-V compounds are motion verbs with the meaning ‘go’. All motion verbs together comprise 88.8 percent of the sample of second verbs. And all locative (motion plus position) verbs comprise 97.5 percent of the sample.

Coming back now to our original question in (1), the Ute data show that de-semanticized second verbs in V-V compounds do not affect the valence of the preceding ‘core’ lexical verb. The valence of the compound as a whole remains the original valence of its ‘core’ first verb. This is partly because the second verbs invariably conform to the *equi-subject*

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pattern, and partly because they are *de-semanticized* and/or *grammaticalized*. Both of these purported explanations are most likely universal.

Whether the distribution of complex verbs in other languages resembles that found in Ute remains to be investigated. The intransitive locative verbs most common as second verbs in Ute V-V compounds certainly figure prominently in languages that co-lexicalize high-frequency, semantically bleached 'light' verbs with low-frequency 'heavy' verbs, under a variety of syntactic patterns.[4]

19.4.2 Diachronic source of complex verbs

> My cow has gone missing!
>
> 'The Wizard of Id', 21-5-12

Complex verbs are initially the product of clause union, whereby the erstwhile separate argument-sets of two clauses have merged. The diachronic source of such merged clauses with complex verbs is presumably some syntactic configuration of two clauses, be they (p. 404) chained or hierarchized.[5] The syntactic configuration that gave rise to complex verbs in Ute is still to be ascertained. I will consider briefly three possible candidates.

(a) Equi-subject complements

Of the two complementation patterns discussed in Section 19.2, equi-subject complementation (7a) is more compatible with the syntactic *and* semantic pattern of complex verbs. However, it is still semantically too restricted to account for the variety of configurations found in Ute complex verbs, confined as it is to aspectual or modal relations.

A closely related construction is that of *purpose clauses*, as in (19).

	kani-naagha-tukhwa	tɨka-vaa-chi	yʉga-qha
(19)	house-in-to	eat-IRR-NOM	enter-ANT
	'(S/he) went into the house in order to eat.'		

The attractive thing about the purpose-clause construction as a source for complex verbs is that it is not as semantically restricted as modal-aspectual complements. The main-verb slot in this construction can certainly accommodate the motion and location verbs so typical of Ute complex verbs. However, the mechanism through which the purpose-clause verb loses its inflections and becomes affixed to the main verb is yet to be elucidated. What is more, Ute, while having flexible word-order, still favors the pre-verbal OV position for purpose clauses, as in (19). But it is the *second* verb in V-V compounds that becomes de-semanticized—and also that carries the finite inflections; the purpose-clause verb is nominalized.

(b) The participial clause

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One syntactic construction in Ute that captures rather closely the clause-chaining semantic flavor of complex verbs, as well as the equi-subject syntactic configuration, is the participial clause, marked with the suffix *-ga*, as in (20).

(20)

a. … ʔumʉ -aa pʉ-paay-amʉ ya-yagha-kway-pʉ ʔuwas-ʔura ʔavi-pʉni-gya...
3PL-G REL-DIR-3PL RED-cry-go-NOM 3SG/SUBJ-be lie-watch-PAR
'… where they were crying as they were passing above … as he was lying watching…'

b. … ʔi-vaa-nʉmʉ ʔani-kh pərə-kwa-y nagukwi-ta-miya-gha …
here-at-1PL do-IMM go/PL-go-IMM fight-PASS-HAB-PAR
'… here we are going through as there is going to be fighting…'

c. … ʔuru ʔivichi… ʔavi-gya máy-pʉga,
that/OBJ stick/OBJ lie-PAR say-REM
'… that stick as it was lying there it said…'
… kh-ʔura míyh-tʉ-aa-s tavi-ʔwa-gha ʔáy-pʉga …
then-be far-NOM-PART-C step-??-PAR say-REM
'… then being still far away he said …'

… máy-pagha-pʉga ʔuwas pichʉ-ʔwa-gha …
say-go-REM 3SG/SUBJ arrive-??-PAR
'… he kept calling as he was approaching…'

(p. 405) This construction, however, is rather infrequent in texts as compared with the much more frequent complex verbs. Thus, in our first story, there are only five instances of the participial clause as against forty-nine instances of complex verbs. If the participial clause is the diachronic source of complex verbs in Ute, the mechanism through which one gave rise to the other remains to be elucidated.

The correlation between the morpho-syntactic pattern of complex verbs and their semantics remains an issue here. In Ute, it is the second verb in the V-V compound that, almost invariably, becomes de-sematicized and grammaticalized,[6] a pattern consonant with the diachronic typology of OV languages. But as can be seen in (20), participial clauses in Ute may either follow (20a, b, e) or precede (20c, d), their main clauses.

One pattern of complex predicates in English may have some bearing on the discussion here, with a de-semanticized ('light') motion verb carrying the finite verbal inflection, as in:

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(21)

a. My cow has gone missing!

b. It went kapow!

c. He turned bright red

d. He fell apart

e. She ran wild

f. Don't jump to conclusion.

Both this VO English pattern and the Ute OV pattern contrast morphologically with the Ute participial construction in (20), where the de-semanticized verb is non-finite.

(c) Pre-verbal incorporation

Ute makes copious use of pre-verbal incorporation of nominal, adjectival, and verbal stems. Thus consider:

(p. 406)

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(22)
Pre-verbal incorporation:

	simple	incorporated
a. Noun (obj)	núuchi ʔátʉ-ʔapagha-rʉ Ute/O well-speak-HAB '(s/he) speaks Ute well'	**núu**-ʔapaghrʉ **Ute**-speak HAB '(s/he) is a Ute-speaker'
b. Noun (instr)	wiichi-m tʉka-qhay-aqh knife/OBJ-INS eat-ANT-3s '(s/he) ate it with a knife'	**wií**-tʉka-y-aqh **knife**-eat-IMM-it '(s/he) knife-ate it'
c. Noun (adv)	mamachi-pani paghay-mi woman/OBJ-like walk-HAB '(he) walks like a woman'	**mama**-paghay-mi **woman**-walk-HAB '(he) woman-walks'
d. Verb (adv)	sakʉ-ga paghay-mi limp-PAR walk-HAB '(s/he) is walks limping'	sakʉ-paghay-mi **limp**-walk-HAB '(s/he) limp-walks'
e. Adjective (adv)	ʔapagha-y speak-IMM '(s/he) is talking'	**pia**-ʔapagha-y **sweet**-talk-IMM '(s/he) is sweet-talking'

The attraction of this construction as a diachronic source for complex verbs is that it requires no special provision for shaving off the inflections of the first verb in the compound, something already found in the source construction. The drawback is that pre-verbal incorporation tends to lead to de-semanticization of the incorporated—first—stem in the compound, rather than of the main verb. But second-verb de-semanticization is the normal case in Ute complex verbs.

19.4.3 What of polysynthesis?

If the Ute complex-verb situation points anywhere, it is that grammaticalization is a gradual process, with multiple intermediate stages between lexis and degraded inflection. For each construction or morpheme, this process is independent, following its own temporal dynamics. If polysynthesis has any theoretical validity, it may best be viewed as an intermediate stage in the diachronic trajectory of individual constructions or morphemes. Thus, one should not expect it to apply to a language in its entirety, unless it is a recently grammaticalized post-pidgin Creole, where all grammatical constructions are roughly at the same diachronic phase.

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(p. 407) Abbreviations

1SG
1st person singular
1PL
1st person plural
2SG
2nd person singular
2PL
2nd person plural
3SG
3rd person singular
3PL
3rd person plural
AN
animate
ANT
anterior
BG
background
CAUS
causative
CL
closure
DIM
diminutive
DIR
directional
FUT
future
G
genitive
HAB
habitual
IMM
immediate
IMPER
imperative
INC
inchoative
INCEP

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inceptive
IRR
irrealis
LOC
locative
MASS
mass
MOD
modal particle
NEG
negative
NOM
nominalizer
OBJ
object
OWN
possessive reflexive
PAR
participle
PASS
passive
PL
plural
POSS
possessed
PR
predicate
Q
yes/no question
REC
reciprocal
RED
reduplication
REFL
reflexive
REM
remote
SUBJ
subject
SUB
subordinator
TOP
topic

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WH
WH question word

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Notes:

(1) The position of the more grammaticalized verb in Ute V-V compounds (1f) is the obvious exception here, being a discrete property.

(2) Givón (2001: ch. 3, sec. 3.5). My use here of the term co-lexicalization is ambiguous. In a purely structural sense, it means that two verbal stems have become a single word. In a semantic sense, it means that one of the two verbs in a compound has been fully de-semanticized, having neither lexical nor grammatical value.

(3) While technically ‘eat’, ‘drink’, and ‘search’ are transitive verbs, in this pattern they are more likely to incorporate their oft-generic object in an antipassive pattern, thus becoming to all intents and purposes intransitive.

(4) See discussion in Givón (2001, Ch. 3, Sec. 3.5).

(5) Clause union is taken here as a diachronic process; see discussion in Givón (2009).

(6) We have seen only one example in our three texts that violates this generalization:

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Polysynthesis and Language Contact

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Abstract and Keywords

Polysynthetic languages have been involved in a variety of language contact situations. In cases of occasional contacts, polysynthetic languages have been simplified, both by learners (approximate varieties) and native speakers (foreigner talk). Such simplified versions can be the source also of a number of pidgins based on polysynthetic languages. Those pidgins did not inherit the morphological complexity of the source languages, but instead use pronouns for person marking and largely analytic structures. Sometimes unanalyzed complex verbs are used, where the original meaning of the affixes does not play a role. The widespread idea that polysynthetic languages do not display lexical borrowings, but use internal word-building devices instead, should be qualified: loanwords are quite common in polysynthetic languages. In codeswitching, verbs stems rarely combine with foreign elements. Borrowing of pattern is more common than borrowing of matter, and areal diffusion of grammatical traits may lead to the proliferation of polysynthesis.

Keywords: pidgins, foreigner talk, language contact, polysynthesis, loanwords, borrowing, areal diffusion

20.1 Introduction

THIS chapter deals with language contact phenomena involving polysynthetic languages. We take the definition formulated by the editors as a point of departure. First, four sections deal with processes of simplification (2–5). After that we discuss addition of material to polysynthetic languages, in the form of lexical borrowing (6), codeswitching (7), and morphological borrowing (8). Finally, we discuss possible scenarios for the

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genesis of polysynthesis as a result of contact, through diffusion (9) until we conclude the chapter (10).

We focus on three processes of *simplification:*

foreigner talk, that is, speakers of a polysynthetic language simplify their own language on purpose when communicating with people who have only a rudimentary or no understanding of their language;

approximative varieties, typically trader varieties, spoken by people who have some knowledge of the polysynthetic language, but who use it in a very simplified form, hence simplification by the learners, or non-native users. Acquisition of polysynthetic languages is dealt with in Part IV of this volume;

pidgins, simplified varieties used by at least two parties, one of whom may be the speakers of the polysynthetic language. Pidgins differ from *jargons*, in that jargons are individual and unstable, whereas pidgins have norms, and have to be learned (Bakker 2008). Terminology may be confusing, because most North American pidgins are known under the label Jargon X or X Jargon, for example Eskimo Jargon.

A fourth process, *obsolescence*, concerns the process of simplification through loss in the final stages of a moribund language. Although also relevant here, this will be dealt with in a separate chapter by Gruzdeva and Vakhtin (this volume, Chapter 21).

Foreigner talk and approximative varieties are only used by one party in a contact situation, with one lexical source. Pidgins can be based on a compromise between both peoples' native languages and other languages.

Polysynthetic languages may not only be simplified, they may also use material from other languages. Borrowed words and structures can be identified. We discuss what happens in (p. 409) codeswitching and lexical borrowing involving polysynthetic languages. Whether polysynthetic languages can develop in languages through contact-induced language change, convergent processes, or grammatical borrowing, has been a matter of debate for more than a century.

20.2 Simplification Processes in Polysynthetic Languages: Foreigner Talk and Trader Varieties

In some cases of language contact, speakers of polysynthetic languages have deliberately simplified their language in communication with neighboring groups or (especially) with visitors from other parts of the world.

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As polysynthetic languages differ from other languages in that the verbs tend to be complex, and the morphological combination of roots and affixes tend to involve morphophonemic processes, we will focus on what happens with polysynthetic verbs in the simplification process.

20.2.1 Simplified Heiltsuk (Wakashan, Northwestcoast, North America)

In 1844 John Dunn, a former employee of the Hudson's Bay Company working in Oregon and British Columbia on the Northwest coast, published an account of the history of the region, including the indigenous populations, seven years after his return to Britain. He provided some linguistic data in an appendix "A few specimens of the language of the Millbank and Chinook tribes". The Millbank language is known as Heiltsuk (Wakashan family). On one page he presents some sixty words and six sentences in the language of the "Bell Bellas", as in example (1):

(1a)	Howmithlem	pooquialla	Iltsouk
	'Do you understand our language?'		(Dunn 1844: 358)

(1a) These three words are literally:

(1b)	húmíɬm̩	pḵválá	hílzaq
	Hear	talk	Indian

In Heiltsuk proper, however, one would say something like (1c) or (1d):

	Híḵímás-as	hílzaqvl̩a
(1c)	able-2SG.INTERROG	Indian
	'Do you know Indian (language)?'	

(p. 410)

	'Híḵímás-as	pḵválá	qn̩txv	pválásaẍ
(1d)	able-2SG.INTERROG	speak	our	language
	'Can you speak our (excl.) language/dialect'			

Dunn's other sentences are all simplified in the same manner. However, it is unsure whether it was the Heiltsuk speakers who addressed him in such a language, or whether Dunn used a partially acquired version of Heiltsuk, or whether the European and Heiltsuk traders had created a compromise language.

One can observe the following phenomena in the six sentences written down by Dunn:

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– morphological endings are dropped, e.g. –*saǩ* in “language”;

– verbs and nouns are not distinguished morphologically. The verb meaning “to speak” is used for “language”;

– verb forms such as imperatives or stems are used rather than properly inflected forms;

– pronouns derived from emphatic forms are used rather than inflected forms with person marking

– words are used with meanings that deviate from the original meanings, in that the new meanings are more general or inclusive.

Similar examples of simplified language can be found in other early sources. This may be a simplified version introduced by the Heiltsuk speakers. The fact that the sentences refer to “our language” suggests that the Heiltsuks themselves used it to address foreigners, and hence the foreigners learned this form of reduced Heiltsuk rather than Heiltsuk proper. Whatever it appears to be ultimately, the processes of simplification are interesting.

It is sometimes suggested that speakers of complex languages have a facility to simplify their speech, for instance De Reuse (1996: 48), who wrote that “there is historical evidence that the Chukchi had special language simplifying skills”, and such skills may be especially honed in traditions of contact.

20.2.2 Trader language: Hudson’s Bay Company Cree (Algonquian, North America)

An example of a simplified traders’ language used by European traders is the Cree language (Algonquian, subarctic North America) as documented in some pre-1850 sources, for instance in the writings of James Isham and Andrew Graham, who were traders working for the Hudson’s Bay Company in Northern Ontario. Pentland (1979: 54, 1985: 158) called Isham’s speech “pidginized”, by which he probably meant that it was simplified and thus incorrect from the point of view of the norms of Cree. Bakker (1996c) studied the historical material in more detail and concluded that it was probably not a pidgin, but indeed an imperfectly acquired form of Cree. It was probably not used by both parties in contact, but only by traders such as James Isham and Andrew Graham. Some of the characteristics of these materials produced by traders are:

– the use of analytic constructions instead of synthetic ones, e.g. the use of a verb “make” and noun “fire”, rather than the simplex verb stem meaning “make.fire” (<*wishitat* *(p. 411)* *scuti*> for **wii-osiihtaa-t iskoteew* (FUT-make.INAN-3 fire) “light a fire”; correct Cree stem *poona* “make a fire”);

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– verbs are not inflected, or they display incorrect inflections: <*ecco wetha nepaha*> translated “don’t kill me” for **eekaawitha nipaha* meaning “don’t kill him”, rather than *eekaawitha nipahin*;

– Cree has three different negative particles, Isham just uses two of them, and he sometimes chooses the wrong one: <*numane commute*> (**namoona kimoti*) “don’t steal”, rather than *eekaawina kimoti*, i.e. the negative form for statements in a command, which requires a different form;

– a lack of a connecting element in noun–noun compounds, which are otherwise obligatory in Cree (<*mistic-nappew*> for *mistiko-naapeew* “carpenter”, lit. “wood-man”);

– a mix of forms from different dialects, e.g. Swampy Cree (with /n/) and Woods Cree (with /ð/).

Quite a few words in the texts (even disregarding orthography) are morphologically complex, for example verbs containing locative suffixes, verbal inflections, including verbs with correct inflection, for example in:

(2)

Ka-qui-kâ-pa-tum-mon		
(*Keekway*	*kaa-peeht-am-aan*)	
what	COMP-hear.INAN-OBJ-1SG	
‘What do I hear?’		

Inflections may be lacking altogether, even though obligatory in Cree, or, when used, some of the inflections are used rather arbitrarily. Personal pronouns, normally used for emphasis only in Cree, may be used. We find arbitrary plural marking, confusion around transitivity and animacy (central concepts in Algonquian verbal morphology) and other deviant structures. Clearly Graham and Isham did not master Cree.

Another example of a trader variety is Trader Navaho, only used by traders in the 1950s, not by the Navahos, who speak an Athabaskan language. Werner (1963; Mithun 1999: 323) notes that while traders could pick up the jargon “in three or four months”, its syntax is in no way “reminiscent of English” except in the most abstract sense of morphological reduction and resulting word order (1963: 143). Verbs appeared in invariant forms, or, if seemingly inflected forms were used, pronouns were used for indicating person, as the actual form of the verb is “random” (1963: 109, 11). Tense was often indicated by time phrases rather than verbal morphology (1963: 116). The classificatory elements in verbs, relating to shape of objects, were not used (1963: 132). The four speakers developed individual versions, but Werner observes surprising uniformity and stability (1963: 130).

20.3 Pidgins Based on Polysynthetic Lexifiers

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When both native speakers and newcomers use a simplified variety, and norms emerge, a pidgin may develop. A number of pidgins have been documented based on polysynthetic (p. 412) North American languages (see also Campbell 1997 and Mithun 1999: 311–25). Fairly well documented are some of the pidgins based on *Algonquian languages: Delaware* Jargon was used between Europeans and Indians (*Unami*-based, Eastern North America, 1600s and 1700s; Thomason 1980, Goddard 1997), Broken Ogghibbeway (Nichols 1995, based on a manuscript by Edwin James from the 1820s in Wisconsin), which was a pidginized *Ojibwe* (also called Chippewa, Saulteaux, Ojibway) spoken in interethnic communication by different language groups (mostly Algonquian language speakers) around the Great Lakes. The fairly extensive "Chippeway" materials in Long (1791) also deal with an Ojibwe-based pidgin (see Section 20.3.3 and Bakker 1994 for an analysis). Several varieties of *Eskimo* Pidgin have been documented (see Section 20.3.1), notably the one spoken at Herschel Island in Alaska (Stefánsson 1909, van der Voort 1994, 1997, 2013), but also from other regions across the Arctic, including Greenland (van der Voort 1996). The documentation of *Wakashan*-based pidgins, or simplified varieties, is much scarcer. There must have been a pidginized form of *Nootka* (Samarin 1988), which formed the core of the well-documented Chinook Pidgin in which several high-frequency words derive from Nootka (Clark 2001). A simplified form of *Heiltsuk*, perhaps a pidgin, was documented in Dunn (1844; see Section 20.2.1). Two pidgins are known to have existed based on Northern *Athabaskan* languages, Broken Slavey (Bakker 1996b, Mishler 2008) and Jargon Loucheux (Bakker 1996b). Trader Navaho, though not a pidgin, must be mentioned here as well (Werner 1963). There was also a pidgin with *Haida*, an isolate, as a lexifier (Grant ms.). The polysynthetic nature of Haida is contested, however (Hori 2014). In the southeast, a pidgin based on *Muskogean* languages developed, called *Mobilian* (Jargon), described by Drechsel (1997).

In South America, the little-known Nambikwara Telegraph Line Pidgin mentioned by Lévi-Strauss (1955: 311, 318) was in use between the Nambikwara Indians and Brazilian government personnel working on the telegraph stations along the famous telegraph line from Cuiabá to Porto Velho, Brazil, which was built through previously unexplored territory by the Rondon Commission between 1907 and 1915. Only a few scraps were documented and almost nothing is known about the structure of this pidgin, which was based on the local *Nambikwara* languages (see Wetzels and Telles, this volume) and *Portuguese*. Further westward, in the state of Rondônia, Brazil, remnant groups of *Kanoê* (isolate with polysynthetic traits) and *Akuntsun* (Tuparí, Tupí) speakers, who were traditional enemies, are presently forced to live in each other's vicinity in islands of rainforest amidst the pastures of extremely hostile landowners in the Omeré region. The pidgin that developed in their mutual contacts during the last two decades, has hardly been documented.

Outside of the Americas, we may mention some scarcely documented Chukchi pidgins in Siberia, including one that developed between the crew of a stranded Swedish ship and local *Chukchis* (Nordenskiöld 1881: 472–3, De Reuse 1994a, 1996). Several pidgins based

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on polysynthetic *Papuan* languages are known in New Guinea, where a Yimas-Arafundi Pidgin is the best-described (Foley 2006, 2013; see also Williams 1993, 2000).

A systematic study of early sources may reveal additional simplified languages, because, until recently, the phenomenon has not received sufficient attention. If scholars have consulted early sources, they may not have found the distorted versions in those sources worthy of study. We will provide sketches of three examples of pidgins.

(p. 413) 20.3.1 Eskimo Pidgin (Eskimo-Aleut, Arctic region, Russia, USA, Canada, Greenland)

Various interethnic pidgins used in contacts involving the Inuit were spoken in the Arctic region from Greenland to Siberia from the sixteenth to the twentieth centuries. These pidgins are characterized by an eclectic lexicon that is dominated by the main lexifier Eskimo, but that also includes items from all the other languages involved in the interethnic contact traditions. The phonology seems to consist of units that are shared by all languages in contact and the grammar is typically pidgin. None of these pidgins are spoken today and unfortunately very little systematic documentation exists. Scholars working on the Eskimo languages did not pay much attention to the Eskimo-based pidgins, and the scraps of pidginized Eskimo found in travel journals and other documents by laymen tend to be rather impressionistic. This makes it difficult to tell Eskimo-based pidgins from jargons in the documentation. There are several lexical "shibboleths", however, by which Eskimo pidgins can be recognized. Furthermore, the more complex phrases that were documented also show similar patterns across Eskimo pidgins.

There is only one primary published source dedicated to pidginized Eskimo. Stefánsson's 1909 article in *American Anthropologist* documents the Herschel Island Trade Jargon of the Beaufort Sea coast (Alaska and Canada) in a relatively systematic manner. It consists of a useful sociolinguistic introduction and a vocabulary with many illustrative phrases and sentences. This article formed the main basis for a systematic sketch of Eskimo Pidgin by van der Voort (2013). Grammatical properties similar to those of the Herschel Island Trade Jargon also transpire from the (contemporary) fragmentary documentation of Hudson Bay area Eskimo pidgins and from sparse seventeenth- and eighteenth-century documentation of West Greenlandic Pidgin (van der Voort 1996, 1997).

The polysynthetic nature of Eskimo languages is evidenced by their highly productive and recursive derivational morphology and extensive inflectional systems that mark possessors and arguments. Furthermore, Eskimo languages are characterized by basic SOV and noun-attribute word orders, ergative alignment patterns, complex, be it relatively regular, morphophonological processes, use of inflectional markers for person, no adjectives, and no compounding.

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The Eskimo-based pidgins differ systematically in all these respects from their main lexifier languages. Eskimo pidgins are highly analytic, lacking productive morphology, depending on overt nouns and personal pronouns for argument and possessor reference, and on adverbials for functions that would otherwise in Eskimo be expressed by derivational morphology. Eskimo pidgins have adjectives and compounding. The following characteristic properties of Eskimo Pidgin can be highlighted:

– Word classes are not distinguishable on the basis of morphology and lexical items can be ambiguous with regard to their grammatical class. Thus, Herschel Island *kaukau* (ultimately from Hawai'i Pidgin English) means both 'to eat' and 'food'.

– Attributive possession is expressed by nominal juxtaposition in a possessor-possessum order, as the following contrastive examples (3–5) show:

(p. 414)

(3a)

(3a) Pidgin Greenlandic (Resen 1687)
Uvanga Nulia
I wife[1]
'my wife'

(3b) West Greenlandic
nulia-ra
wife-1SG.POSS
'my wife'

(4a) Point Barrow (Ray 1885: 58)
Ĭ'ttûb sávĭk
Ittu knife
'Ittû's knife'

(4b) West Greenlandic
Ittu-p savi-a
Ittu-ERG knife-3SG.POS
'Ittu's knife'

(5a) Hudson Bay pidgin (Hanbury 1904: 299)
tuktu nekki
deer meat
'meat of deer'

(5b) West Greenlandic
tuttu-p neqa-a
deer-ERG meat-3SG.POS
'deer's meat'

1

– Attributive modification of nouns involves adjectives in both adjective-noun and noun-adjective orders, as shown by examples (6) and (7):

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Herschel Island (Stefánsson 1909: 228)
tipi ŏktcûk
stink oil
'kerosene'

(6)

Herschel Island (Stefánsson 1909: 223)
akkīa añaninni picū'ktu pītcûk
price big want not
'I don't want to pay a big price.' or 'He does not ask a big price.'

Herschel Island (Stefánsson 1909: 228)
tipi ŏktcûk
stink oil
'kerosene'

(7)

Herschel Island (Stefánsson 1909: 223)
akkīa añaninni picū'ktu pītcûk
price big want not
'I don't want to pay a big price.' or 'He does not ask a big price.'

– Distinctions of tense, mood and aspect are expressed by verbs and adverbs. For example, Herschel Island *picūktū* 'to want' can also have a habitual interpretation.

– SOV word order is predominant, although other orders are also documented. In the Herschel Island pidgin examples, OVS is observed when the subject is expressed by a pronoun, although that may be in extraposition for disambiguation purposes.

(p. 415)

Herschel Island (Stefánsson 1909: 226)

(8)

kaukau	pītcūk	owoxña
eat/food	not	I

'I have no food.' or 'I have not eaten.'

Those morphological elements that can be recognized as originating from Eskimo are fossilizations, for example Herschel Island pidgin *at'ka* 'name' would mean 'his name' in the local Iñupiaq lexifier language, containing the third person singular inflection *-a*. The following pidgin examples from various locations contain fossilized inflections:

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(9a)

Hudson Bay pidgin (Hanbury 1904: 311)

awonga	igbik	ukaktūk
I	you	talk
'I told you.'		

(9b) West Greenlandic

*uanga	illit	oqar-poq
I	you	talk-3SG.IND
?'I, you, he talked'		

(9c) oqaluttuup-pakkit
tell-1SG.2SG.IND
'I told you'

Point Barrow (Ray 1885: 57)

wû'ñä	adĭgátka
I	hands
'my hands'	

(10b) West Greenlandic

*uanga	assak-ka
I	hand-1SG. POSS.PL
?'I, my hands'	

(10c) assak-ka
hand-1SG. POSS.PL
'my hands'

The occurrence of inflections would not represent grammatical usage in the Inuit lexifier languages, but they are used as unanalyzable chunks, as in other pidgins with a polysynthetic base, such as Cree and Ojibwe.

– Typical lexical items. The most characteristic item is *kona* 'woman, wife'. It originates from a Scandinavian word, possibly Old Icelandic *kona* 'wife', and it is found all over the Arctic in Eskimo pidgins, from the seventeenth-century Atlantic to the twentieth-century Pacific whaling eras. It is not used in any of the local Eskimo languages. Furthermore, general nautical pidgin terms such as *picaninnee* 'small' are found in various Eskimo pidgins. Finally, the Eskimo pidgins have adopted words from all the languages that happened to participate in the contacts: Herschel Island pidgin contains a number of items of Hawai'ian pidgin, some of which are also found in Siberian Chukchi Pidgin (De Reuse 1994a, 1996).

All in all, it is striking how similar the structures of the Eskimo-based pidgins are. This is in part due to the fact that they are all analytic and highly simplified renderings of (p. 416) polysynthetic languages, hence probably determined by both the typological characteristics of the base language and universal tendencies of pidginization. But certainly the specific sociolinguistic context, involving multilingual trading, mobile crews on ships, and whaling encounters with Inuit, contributed significantly to the consolidation of the similarities.

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20.3.2 Yimas-Arafundi Pidgin (Papuan; Sepik district, Papua New Guinea)

In the part of the Sepik region where the Yimas and Arafundi villages are located, trading rights are inherited through clans. The fact that there was a trading pidgin between the Karawaris and Yimas, two closely related, and largely mutually intelligible, languages, confirms the conventionalized nature of the pidgins in the region. Yimas and Arafundi inhabit neighboring villages, speaking unrelated and hence mutually unintelligible languages. At least three distinct pidgins existed in the Yimas community of a few hundred people (Williams 1993, 2000). The information in this section relates to the best documented one, and is based on Yimas-Arafundi Pidgin (Foley 2006, 2013). The Yimas-Arafundi Pidgin has never been spoken by more than a handful of males in both groups. There is, apart from some phonological differences, no notable difference between the pidgin as spoken by Yimas and by Arafundi speakers in contacts with each other. The Yimas are the socially dominant group in this trade.

Roughly 80 percent of the documented lexicon is from Yimas, the remainder from other sources, including unknown ones. The morphology of Yimas is highly simplified, and also Arafundi morphology is severely reduced for the Arafundi elements.

The pidgin has no overt marking of case, gender, or number on nouns, but lexical elements meaning ‘man’, ‘woman’, and ‘two’, and ‘many’ may be used to indicate biological gender or number respectively. Case (marginal in Yimas; Foley 1991) is altogether lost. Yimas has a rich verbal and adjectival agreement system, but adjectives in the pidgin show no agreement.

There are no definite articles, but a third person deictic is sometimes used with established referents. Dual and plural may be indicated with pronouns, through separate words meaning ‘two’ or ‘many’, but this is only done if necessary. In contrast, in Yimas, dual and plural number are expressed in verbal inflection and in the optional personal pronouns (Foley 1991: 111, 200 and passim). Possessive pronouns are formed by adding the suffix *-akan*. In the pidgin the third person singular marker of Yimas is generalized to all persons in plural: *kapa kundamwin man-(n)akan tam* [1DU two 3SG-POSS dog] ‘our (DU) dog’, lit. ‘we two his dog’. Verbs in the pidgin are obligatorily inflected for tense, either future or non-future, where the future suffix is combined with an uninflected auxiliary/copula. The pidgin also has an imperfective prefix and a perfective/completive prefix.

In short, despite the presence of a small set of bound morphemes, Yimas-Arafundi Pidgin is clearly analytic and not polysynthetic like its lexifier. Pidgins have been reported to inherit morphology from the lexifiers (Bakker 2003, Roberts and Bresnan 2008), but the quantity of bound morphemes will always be reduced or eliminated altogether.

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(p. 417) 20.3.3 Pidginized Ojibwe (Algonquian, North America)

John Long was a trader working for the Hudson's Bay Company in Canada, and, according to the cover of his book, an interpreter. Long's Ojibwe (1791) is simplified, and probably a pidgin (Bakker, 1994). Long provided a fair quantity of language material that is characterized by the following deviations from the lexifier:

– compounds are created by juxtaposing two nouns, without the required connecting element *-i-* in Ojibwe;

– some stems can be used as different parts of speech, e.g. *pimmethy* 'fat' as an adjective, whereas this root is only a noun in Ojibwe;

– the pidgin seems to have a class of (uninflected) adjectives based on verbs with a comparable meaning, whereas this semantic category is expressed with pre-nominal prefixes or inflected verbs in Ojibwe;

– there are some calques from English, e.g. in the use of the numeral 'one' in expressions like 'the big one';

– the possessive prefixes are not used, except the one for third person prefix *o-*. The third person prefix is generalized to the other persons as well, e.g. *keen O, mentimoyey* 'your wife', lit. 'you his wife'.

Constituent order is roughly as in Ojibwe (where word order is relatively free), but with some exceptions.

The following morphological categories from Ojibwe are not found in the pidgin: locative endings on nouns, possessive affixes on nouns, subject and object markers, plural suffixes on verbs and nouns, the whole conjunct order paradigm (mostly used in subordinate clauses in Ojibwe proper), the negative inflectional paradigms, the preterit paradigms, the dubitative paradigms, the distinction between animate and inanimate in verb stems and inflection, the inclusive/exclusive distinction, and the formal distinction between transitive and intransitive verbs. In short, all the essential elements of polysynthetic structures of Ojibwe have been dropped in the pidgin.

For polysynthetic languages, it is most interesting to see what happens with the verbs. Verbs in Algonquian languages are highly complex, with up to twenty morpheme slots. Stems are bipartite, consisting of at least two elements, traditionally called initials and finals, which may be supplemented with medials, which is nominal material, either classificatory, or incorporating. All verbs must be inflected according to one of two main paradigms, and there are also a number of derivational affixes for voice and valency.

In Long's Ojibwe, called Chippeway by him, the verbs rarely have the form they would have in Ojibwe. We encounter verb forms stripped of their inflectional elements or on third person singular forms (*arta'wway* 'to trade', from *adawee-* 'to buy'), sometimes based on an imperative *poossin* 'embark!' (*boozi* 'embark'). Sometimes there are

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remnants of inflection, as in *dependan* ‘to own’, from *dipendaan* ‘(s)he owns it’, stem *dipe-,* inanimate stem *dipend-*.

In a number of cases, the person reference is left out, and found neither in the inflection nor in the form of independent pronouns: (p. 418)

(11)

Ca’wween, omar ojey appay; warbunk boossin.
No here future be.home tomorrow embark
‘No, I shall stay till to-morrow, and then embark’ (Long 1791: 294–5)
(Ojibwe: *gaawiin* ‘no’, *ji-* ‘in order that’ (verbal prefix), *abi* ‘he is at home’, *waaban* ‘tomorrow’, *boozi* ‘(s)he embarks’, *boozin* ‘embark!’)

We can observe a number of Ojibwe affixes used as particles in the pidgin: the future marker *ojey* must derive from the future conjunct prefix *ji-* (see example 11), and the plural marker *-woke*, occasionally used as a plural marker for both animate and inanimate nouns, derived from the Ojibwe animate plural marker *-ag* (with six allomorphs: *-g, -ag, -wag, -yag, -oog, -iig*). In Long’s description: “*woke* is the general word for the plural number, though not always used” (Long 1791: ix).

In many creoles and some pidgins, a modified form of the numeral “one” is used as a definite article. That is also the case in Ojibwe Pidgin according to Long (1791: ix): “The numeral *payshik*, or one, is frequently used to express the articles *a* and *the*.” However, in his texts this form is quite rare.

Another and possibly related pidgin was documented in the early 1800s and partially described in Nichols (1995). In this pidgin, verbs were inflected for subject but not for object.

All three pidgins share severe reduction, or often complete elimination, of verbal morphology, and feature analytic structures with overt pronouns. Sources for the invariant verbs can be etymologically inflected forms, imperatives, or bare stems.

20.4 Simplification Processes: Some Concluding Observations

The simplification processes are surprisingly similar in trader varieties, foreigner talk, and pidgins: a reduced lexicon, elimination of verbal morphology, invariant forms of verbs or random inflected verbs, the use of circumlocutions, and the use of overt pronouns.

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When only written documentation is available, and the available materials appear to display a watered-down version of a polysynthetic language, it is not always easy to distinguish between the three processes of simplification mentioned in the introduction (20.1). Usually when Europeans wrote down some phrases in an indigenous language, it is today almost impossible to establish whether it was they who simplified the language (an approximative variety), or whether they acquired the simplified version from their communication partners (foreigner talk), or a pidgin.

Trader Navaho was only used by the traders. The Navahos addressed the traders in Navaho proper (Werner 1963: 138), and could not even be stimulated to imitate Trader Navaho. Despite this, very few misunderstandings occurred. Still, traders needed Navaho interpreters in complex negotiations, and Navahos could speak Navaho proper to each other without being understood by the traders. It is not likely that Trader Navaho would develop into a pidgin used by both parties, and it is not clear under which circumstances it would.

(p. 419) If one can generalize from this fairly well documented case, it is more likely that a pidgin emerges when the speakers of the polysynthetic languages themselves initiate the simplification process.

20.5 Obsolescence

Obsolescence and death of a language is one of the possible outcomes of contact between speakers of different languages. It usually involves loss of vocabulary and simplification of grammar. Such changes may be accompanied by—and sometimes difficult to distinguish from—other contact-induced changes, which are discussed in the present chapter. Even though endangered languages may be spoken fluently by the very last speakers, a range of obsolescence phenomena affecting polysynthetic languages have been described in the literature. For details, we refer to Vakhtin and Gruzdeva (this volume), who deal with the linguistic effects of obsolescence.

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20.6 Lexical Borrowing

The idea that polysynthetic languages are less prone to lexical borrowing is widespread. Thomason (2001: 236), for instance, observed that bilingual speakers of Flathead Salish and English never mixed the two languages. Sapir (1921: 209) observed that the "Athabaskan languages of America are spoken by peoples that have had astonishingly varied cultural contacts, yet nowhere do we find that an Athabaskan dialect has borrowed at all freely from a neighboring language. These languages have always found it easier to create new words by compounding afresh elements ready to hand." Similarly, Boas (1911: 50) contrasts European languages that borrowed many words for new concepts from other languages (e.g. tobacco), with North American languages: "American natives, on the other hand, do not commonly adopt words in this manner, but much more frequently invent descriptive words by which the new object is designated. Thus the Tsimshian of British Columbia designate rice by a term meaning *looking like maggots*. The Kwakiutl call a steamboat *fire on its back moving on the water*." This claim of limited lexical borrowing in polysynthetic languages, has also been maintained in modern times, for instance Field (2002) claimed that polysynthetic languages are less prone to lexical copying than agglutinative, fusional/inflectional or isolating languages. Field (2002) discussed the possibilities of codeswitching and copying based on the nature of affixes, rather than across holistic language types. He concluded that affixes with a low degree of fusion are easier to borrow, and affixes with much fusion can only be copied into languages with fusional affixes. He does not discuss polysynthetic languages per se, and his case study on contact between Nahuatl and Spanish is treated as one between an agglutinative language and a fusional language.

The existence of constraints on borrowing in highly synthetic languages is highly exaggerated. We do find frequent lexical loans, also in polysynthetic languages, including those considered more or less immune to copying as those that have been mentioned. Brown (1999) investigated the nature of seventy-seven meanings that were unknown to indigenous **(p. 420)** North Americans. He lists the following mean loanword percentages based on the names of imported objects or concepts: Salishan 28, Eskimo 17, others (mostly isolates) 15, Athabaskan 12, Algonquian 12, Iroquoian 9, Siouan 3. Brown (1999: 91) concludes that "if language structure factors affect lexical borrowing, they do so only minimally". Bakker and Papen's (2008) overview of French loanwords into the languages of North America confirms this. They surveyed the French loanwords in North American languages, most of them polysynthetic. The Algonquian language Mik'maq has some eighty integrated loans, most of them nouns, some greetings, and some verbs (Bakker and Papen 2008: 250–1). Algonquian Montagnais had over 130 integrated French loans in one community, all of them nouns (Drapeau 1980). Among younger speakers, the number of loans is almost without a limit if one includes codeswitching (Drapeau 1994, 1995). As for Athabaskan languages, over a hundred French borrowings have been identified, notably in Slavey (almost all of them nouns) and Carrier (many Catholic religious terms). Even though only few English words have been reported as borrowings in Athabaskan

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languages, Russian words abound in Alaskan Athabaskan. Tanaina (Alaska) may be the most extreme example, with twenty borrowings from Eskimo and as many as 300 from Russian, including some verbs (Krauss 1983, 1996), and less than a handful from French. As we will show, in codeswitching involving Navaho (Athabaskan), both nouns and verbs are frequent in mixed discourse. Although Eskimo languages may create lexicalized morpheme combinations as new stems for objects and concepts introduced from outside, they also are reported to borrow lexical material from other languages (Petersen 1976). In this way the lexicon has significantly increased, without a noticeable decrease in morphological productivity (Fortescue 2002: 272–3).

Most of the reported French borrowings in Algonquian languages are nouns rather than verbs. Nouns from French are sometimes borrowed with agglutinated definite articles, for example *nasaump, lasob*, and variants from *la soupe* in Eastern Algonquian languages (Geary 1945, Bakker and Papen 2008), already documented in the 1600s. For verbs, several different strategies have been reported. Bersimis Montagnais speakers use helping verbs meaning “to do” in order to integrate loanwords. This strategy is globally widespread and the prevalent strategy for Turkic, Iranian, and Indic languages between Southeastern Europe and India (Matras 2007: 47). This strategy is thus not limited to polysynthetic languages (Wohlgemuth 2009). Another strategy, as used by Mik’maq, is the integration of loan verbs into Mik’maq, as in *sàsèwit <changer* ‘exchange, swap’, *ganièwit < gagner* ‘win, earn’, *maliewit < (se) marier* ‘to marry’. A few are verbs derived from nouns: *salitèwit <charité* ‘ask for charity, beg’, *gmenièwit < communion* ‘receive Holy Communion’. The *-ewit* ending is probably a combination of the class-changing suffix

-ew (Inglis 1988) with the third person intransitive suffix *-it*. A final strategy is taking over the complete polysynthetic verbal or nominal forms from the donor language. This is quite rare in North America, but has been reported for agglutinative verb structures in varieties of Romani. Turkish verbs have been borrowed with inflection in Romani varieties spoken in Kosovo, Albania, Macedonia, Greece, Turkey, and Bulgaria, as well as from Tatar in the Crimea (Friedman 2013). Finnish verbs have also been borrowed wholesale into Romani (Adamou and Granqvist 2015). We may mention here also the Michif language, which consists of Cree verbs, with all their complexities, and French nouns (see 20.8). However, it is difficult to interpret this as the result of a process of verbal borrowing into French.

Haspelmath and Tadmor (2009) provide a systematic survey of loanwords in a global sample of forty-one languages, including languages considered polysynthetic such as Ket **(p. 421)** (isolate, Siberia), Mapudungun (isolate, Chile, Argentina), and Hup (Nadahup, Amazonia), of which the verbs display a tendency towards polysynthesis. Yaqui (Uto-Aztecan, Mexico and USA) has complex verbs, but no bound pronominals. Strikingly, North American languages are almost completely lacking in the sample. It would be interesting to look at the proportion of borrowed verbs, and the way they are copied, in these languages vis-à-vis the languages of other types, and the proportion of borrowing in general. Table 20.1 lists the number of loanwords as a percentage of the total lexicon investigated for each language. It must be said that a predefined set of some 1,200

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meanings, both basic and cultural, were sought in the languages, and the authors of the chapters identified which ones were loanwords. All polysynthetic languages but one score under the average of 24,2 percent, but in Tadmor's groupings (2009: 57) most of them score "average" (i.e. a rate of 10–25%; "very high" is over 50%, "high" 25–50%, "low" under 10%.) It is clear that the range (9,7 to 16,5%) is quite broad. However, no polysynthetic languages are found in the highest 40 percent of listed languages, and Yaqui, the highest scoring language, lacks bound pronominals and is thus not strictly polysynthetic. Tadmor concludes that "it is relatively difficult to borrow verbs as such into polysynthetic languages, but quite easy to do so into isolating languages. However, whether speakers of a particular language actually do borrow verbs depends on social rather than linguistic factors" (p. 63).

In the proportion of noun to verb ratio, the polysynthetic languages behave not that differently from languages of other holistic types (Table 20.1). Overall the number of borrowed verbs is lower than the nouns in the other languages (14% for all languages against 3,6 to 10,1% for the polysynthetic languages in the sample).

Even though it is clear that borrowing is not blocked into polysynthetic languages, there are some observations to be made. In the first place, there is a rather uneven distribution of loans from the different parts of speech. Some languages borrow (almost) exclusively nouns, and among those languages that borrowed verbs, the proportion of nouns is greater—even if we take into consideration that nouns are cross-linguistically more prone to borrowing (Haugen 1950, Van Hout and Muysken 1994, Field 2002, Matras 2009). An obvious explanation for this discrepancy is the morphological simplicity of the noun in most polysynthetic languages, whereas the verbs are always complex, with several derivational and inflectional markers, often submitted to morphophonological processes. The other observation is that (p. 422) the quantity of loans differs dramatically, even in languages that have very similar typological properties, or even in dialects of the same language. Plains Cree, for example, has been almost immune for borrowing. Pentland (1982) identified a total of one dozen loans from French altogether in Western Cree dialects, including Plains Cree. In the Northern Plains Cree dialect of Ile-a-la-Crosse, Northern Saskatchewan, however, some 350 borrowed French loans have been identified (Ahenekew 1997). In other words, there is nothing inherent in polysynthetic languages that inhibits borrowing.

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Table 20.1 Percentages of loanwords in five polysynthetic languages

Languages	***Loanwords as % of total***	***Ranking 1–41 and grouping***	***Loan nouns/loan verbs***	***Loan noun to loan verb ratio/ Position N of 41***
Hup	11.5 % of 993	34, average	13.8 / 8.3 %	1.7 / 31
Ket	9.7 % of 1,030	38, low	13.6/ 4.0 %	3.4 /19
Mapudungun	22.2 % of 1,236	22, average	31.3/ 10.1 %	3.1 / 22
Yaqui	26.5 of 1,379	17, high	37.3/ 10.1 %	3.7 / 14
Average all 41 languages	24.2 % of 57,517	22, average	31.2/ 14.0 %	2.2 / 20

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There may be culturally determined limits on lexical borrowing, as in the multilingual Vaupes region of the Amazon, where various polysynthetic languages are spoken (Aikhenvald 2002b, Epps 2006, Sorensen 1967, Stenzel 2013). The tradition of linguistic exogamy among the Eastern Tucanoan and the Tariana (Arawakan) peoples of this region prohibit marriage between speakers of the same language. Consequently, people tend to speak more than one language fluently. Since there is furthermore a traditional ban on 'mixing' the languages, lexical borrowing and code-mixing is avoided. However, lexicon being a relatively conspicuous feature of language, grammatical borrowing went unnoticed, which led to areal diffusion of grammatical traits among the predominantly polysynthetic languages of the region.

Comrie (1996) reports on borrowed particles from Russian into polysynthetic Siberian languages Itelmen and Chukchi. There is no reason to suspect polysynthetic languages to behave differently from others in this respect (see Matras 2009 for an overview).

In short, it seems that the borrowing of particles and nouns is hardly less common in polysynthetic languages than in other types of languages, but borrowing of verbs from or to them is more difficult. The fact that the verbs are the locus of complexity is probably an explanatory factor. Another factor could be the fact that nouns are easily borrowed with the introduced objects they refer to, whereas verbs have a less transferrable referent.

20.7 Polysynthetic Languages and Codemixing

Bilinguals may mix languages in a conversation, a sentence, and even within a word. Polysynthetic languages may involve special challenges in that verbs are quite complex, and therefore less prone to mixing within the word. When agglutinative languages are involved in codeswitching, shifts within words are common, as in the verb *i-ta-ni-affect* (CL9-FUT-1SG.OBJ-affect) 'it will affect me' in Swahili-English codemixing (Myers-Scotton and Jake 2013: 10).

There are a few studies on codeswitching involving polysynthetic languages. Schaengold's (2004) study of Navaho-English codeswitching shows a different picture. In the nominal domain, word-internal shift is used (*bi-face* [3SG-face] 'his face'; *casino-ji* [casino-LOC] 'at the casino'. Sometimes bound morphemes are combined with complex noun phrases, as in: *Áádóó from the time of Christ-góó….* 'And from the time of Christ on . . .'. Of course not all nouns or noun phrases are followed by Navaho affixes, as here: *graphs, dóó, áádóó nda łahdó' formulas* 'graphs, and then also some formulas'.

(p. 423) In verbs, however, English verb stems are used with a separate Navaho inflected auxiliary from the verb meaning 'to make' (*change íí-lééh*, change 1.DU-make 'we two change'), as in

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	Nancy	bich'i	*show*	anileek
(13)	Nancy	3.to	show	2.make
	'Show it to Nancy.' (Canfield 1980)			

In polysynthetic languages, but also in other types, borrowed verbs are often used with an auxiliary meaning 'to be', 'to do', which is apparently the source for the borrowing constructions we have discussed.

20.8 Morphological Borrowing in Polysynthetic Languages

If a language has polysynthetic verbs, is it possible to undergo influence from other languages, leading to contact-induced changes? The borrowing of affixes from one polysynthetic verb complex into another is sparingly attested in the Amazon region (borrowing of matter), but there are no reports that polysynthetic languages changed the order of affixes under the influence of other languages. Cases where semantic categories were replicated from neighboring languages into innovated structures are more common (borrowing of pattern).

Polysynthetic languages have a complex verbal morphology in common, but they are otherwise quite diverse, from languages with one root and sequences of derivational and inflectional affixes (e.g. suffixing Eskimoan and prefixing Haida), to languages which combine several roots and stems with affixes (Salish, Algonquian). Some languages seem to be based on sentential elements that have merged into one unit, whereas others seem to have accumulated affixes sequentially by the edges of the words (Fortescue 1994, Rice 2011, Mattissen this volume).

Given such diversity, what can be said about morphological borrowing in polysynthetic languages? One should distinguish between different types of morphological borrowing: (a) the borrowing of concrete derivational or inflectional morphemes with the original functions into a language, for example the borrowing of *–able* from French into English, or a nominative plural affix into Romani dialects from Slavic or Rumanian (borrowing of matter); (b) the replicating of patterns from one language into another, for example "possessor-AFFIX possessed" from "possessor possessed" (see many examples in Heine and Kuteva 2005); this type may include semantic extension of existing structures; here, the affix developed from resources in the native language (borrowing of pattern) (c) the borrowing of a morphological category, for example ergativity in nominal case marking, or instrumental marking in the verb, but without any formal or positional similarity (borrowing of categories). Seifart (2014) investigated the borrowing of affixes, and concluded that this process was independent of typological similarity between the donor

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and recipient languages. However, strikingly few polysynthetic languages are found among his seventy-eight language pairs.

(p. 424) Matras observed contact-induced typological changes from polysynthetic to less polysynthetic structuring in Nahuatl and Imbabura Quichua, Otomi, and Guaraní (2007: 40). Nahuatl is in a "process of drifting towards a less polysynthetic structure due to Spanish influence" (Canger and Jensen 2007: 414), through increasing use of analytic structures. Borrowing, either direct or through areal diffusion, of morphological material into polysynthetic verbs from unrelated languages is reported in Amazonia, but only rarely affecting verbs. Seifart (2011) has reported on direct morphological borrowing of Bora (Witotan) material into Resigaro (Arawakan), almost exclusively in the nominal domain (number, classifiers), including some bound roots. Van der Voort (2005, forthcoming) has discussed areal diffusion, not only of morphological patterns, but also of actual forms in languages of the Southwestern Amazon, such as the widespread applicative morpheme—*ta-/-tia-* (van der Voort 2005). And as mentioned in Section 20.6, the traditional ban on lexical borrowing among the predominantly polysynthetic languages in the Vaupés region has not impeded grammatical borrowing. This has led to areal diffusion of grammatical traits, and may in some cases have led to the proliferation of polysynthesis across genetic-linguistic boundaries (see Aikhenvald 2002b, Epps 2006).

Morphological borrowing has also been observed between more or less closely related polysynthetic languages. Mithun (2013: 243) discusses "(e)xtensive copying of forms (…), not only whole words, but also bound stems, roots, and affixes. Functional features of bound forms were copied as well, including semantic extension". She studied borrowing from Northern Iroquoian into the southern outlier Tuscarora after the latter joined the Iroquois confederation some 200 years ago. Similar copying has also been observed to a lesser scale in Algonquian languages, where several languages have used the same morphemes to form new words, for example 'gun' or 'whiskey', suggesting that both morpheme borrowing and calquing occurred between closely related languages.

Changes in affix ordering have been observed occasionally, but these do not seem to have been induced by contact. Such changes seem to have been provoked by phonotactic constraints or by semantic scope patterns (e.g. derivational affixes moving closer to the stem than inflectional ones), and they are always local (Haspelmath 1993a, Mithun 1995, Harris 2005, Jacques 2013). No affix order changes have been reported for polysynthetic languages, except for a movement of negative morphemes to the periphery in some Iroquoian languages (Mithun 1995a).

Marianne Mithun has investigated a number of cases, and concluded that, when rhetorical strategies are borrowed from neighboring languages, native materials may be used to introduce new grammatical structures. The bound morphemes themselves are not (or rarely) borrowed, but "(b)ilinguals more often create categories in one language on the model of another, out of native material" (Mithun 2012a: 32). These new categories include an unusual system of argument marking, diffused between Wakashan and Tsimshian: these indicate the grammatical status of one argument on a different

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constituent (Mithun 2007. Also specific systems of case in pronouns must have diffused between several language families and isolates in Northern California (Mithun 2012a), and hierarchical marking of argument structure in Northern California and the Northwest Coast (Mithun 2012b). These changes reflect “latent tendencies present in all languages, to have been stimulated by language contact, then to have been shaped by common language-internal processes of grammatical change” (Mithun 2012b: 258).

(p. 425) In the most extreme cases of language contact, the result of processes of contact-induced change can be mixed languages which combine a full foreign lexicon into a different grammatical frame (called intertwining; see Bakker and Muysken 1994), or a language that is a morphosyntactic copy of another language, without sharing morphemes with the same form (metatypy; Ross 1996). Neither intertwining proper nor metatypy, however, has been observed involving polysynthetic languages, which suggests that these processes are constrained or blocked by the verbal complex in these languages.

There are two cases of mixed languages with a polysynthetic base. One of them is Michif, a Cree-French mixed language spoken by a dwindling number of Métis in Canada and the USA (Bakker 1997, 2013). Bakker (1997) argued that the polysynthetic nature of the Cree verb made the borrowing of French verbal roots into a Cree frame impossible, which is why verbs are from Cree. Nouns are from French as they are lexical and their roots are isolatable. As nominal affixes are almost inexistent and not prominent in Cree, in Michif they are either in use (e.g. the obviative suffixes) or replicated (the locative marker). However, there are a handful of French and English verbal roots used with Cree prefixes and suffixes. The other mixed language with a polysynthetic base is Mednyj Aleut. This is a variety of Aleut with borrowings of nouns, particles, and more from Russian, but also the entire finite verbal inflection was directly borrowed from Russian into Aleut (Golovko and Vakhtin 1990, Golovko 1996, Thomason 1997). It is not clear to what extent this result is a consequence of the polysynthetic nature of the language (see also Bakker 2017).

In short, morphological borrowing between polysynthetic languages is reported. Pattern borrowing is much more common than matter borrowing, but complex verbs are very rarely affected.

20.9 The Genesis of Polysynthesis

Polysynthetic languages provide a dilemma that seems as yet unsolvable. They appear in regional clusters, notably North America, Amazonia, Northern Australia, parts of Papua New Guinea, the Caucasus, and the Himalaya. In most of these areas, many but by no means all languages display morphological complexity, including polysynthesis.

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In the Americas, close to 200 different language families and isolates have been identified. As it is unlikely that 200 different invasions of the Americas have taken place, it is probably the case that most of the language families are in fact related, even though this cannot be demonstrated. In fact, Greenberg (1987) proposed three rather than some 200 language families for the Americas, but this idea is highly controversial.

On the other hand, the diversity is enormous, from exclusively prefixing languages like Athabaskan, to mixed prefixing and suffixing languages like Salishan, to exclusively suffixing languages like Eskimoan languages. The diversity suggests that no concrete polysynthetic proto-system could ever be reconstructed: a wholesale contact-induced change from prefixing to suffixing through convergence is hard to imagine. Such radical diffusion is also unlikely because morphological templates of the verb tend to be quite conservative (Hymes 1955a) and stable (Dediu and Cysouw 2013). In short, polysynthesis as a typological profile is unlikely to be inherited and unlikely to be diffused. This has already been observed by Sapir (p. 426) who knew of "no really convincing examples of profound morphological influence by diffusion" (1921: 206). This is true for affix order (pattern), but there are a few intriguing proposals for borrowed affixes (matter) and suggestive cases for diffusion of categories.

Several scholars of Central and South American languages have argued that polysynthetic structures have been diffused. In this volume, Aikhenvald (ch. 15) argues for the diffusion of polysynthetic structures from one family into languages of another: incorporation from Mixe-Zoquean and Uto-Aztecan into some Mayan languages, and polysynthetic structures from other families into some Arawakan languages. Furthermore, the verbal component of Hup displays a stronger tendency to polysynthesis than that of its sister languages, and the work of Epps (2006, 2008) suggests that this profile has emerged under the areal influence of Eastern Tucanoan. Also, the similarity of several polysynthetic structures in various unrelated languages in the Guaporé-Mamoré region in the Southwestern Amazon may be due to areal diffusion (van der Voort 2005, Crevels and van der Voort 2008).

Outside of the Americas, Chirikba (2008: 51–2) has observed that the autochtonous Caucasian languages are all "characterized by a high degree of synthesis (polysynthetism)", and furthermore that certain fusional characteristics of Indo-European languages in the region, Armenian and Ossetic, were replaced by agglutinating characteristics under the influence of Caucasian and Turkish.

Furthermore, as discussed in detail in Vajda's chapter (this volume, Chapter 18), the suffixing tendency of Ket (Dene-Yeniseian) polysynthesis is a result of reanalyses of prefixing only proto-Yeniseian, under the areal influence of North Asia's suffixal-agglutinating languages.

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20.10 Conclusions

Polysynthetic languages can borrow words, especially nouns, more easily than often assumed, but verbs seem to be much more immune to borrowing. Both in codeswitching and borrowing, verbs are integrated with auxiliaries, or left unaffected.

Both speakers, learners, and forgetters of languages may simplify polysynthetic verbs to one invariant form, as can be observed in pidgins, foreigner talk, and fossilized language learning.

The issue of areal spread of polysynthesis has not yet been entirely resolved.

Abbreviations

1
first person
2
second person
3
third person
CL9
noun class 9
COMP
complementizer
DU
dual number
ERG
ergative
FUT
future
INAN
inanimate
IND
indicative
INTERROG
interrogative
LOC
locative
OBJ
object

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PL
plural
POSS
possessive
SG
singular

(p. 427) # Acknowledgements

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Notes:

(1) Note that *Nulia* is ambiguous. It may either represent Greenlandic *nuliaq* ‘wife’ with an unexploded final /q/, or it may represent Greenlandic *nulia* ‘his wife’, a third person form reinterpreted in the pidgin. This type of construction 1sg his/wife for ‘my wife’ is also known from other pidgins based on polysynthetic languages, such as Yimas-Arafundi Pidgin and Pidgin Ojibwe.

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Peter Bakker

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Language Obsolescence in Polysynthetic Languages

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Abstract and Keywords

This chapter describes what happens at the structural level to polysynthetic languages during language obsolescence, attrition, and loss. The changes that take place in decaying polysynthetic languages should be distinguished from (a) those occurring in all obsolescent languages regardless of their type, and (b) changes in “healthy” polysynthetic languages. It is shown that the consequences of polysynthetic language decay are primarily manifested in the collapse of morphological complexity, involving the loss of morphological ‘slots’, the reduction in the number of bound morphemes and their substitution by free ones, the ‘fossilization’ of markers and their reanalysis, the deprivation of word formation productivity, the destruction of noun incorporation, and reduction of allomorphy.

Keywords: language obsolescence, language attrition, language loss, morphological complexity, productivity, noun incorporation, allomorphy

21.1 Introduction

THIS chapter deals with structural changes in those polysynthetic languages that find themselves in the situation of language shift. The principal question here is: what happens, at different linguistic levels, to a polysynthetic language when it falls out of use, becomes obsolescent, and is gradually replaced by a dominant language.

We start with definitions and discussions of key concepts of language obsolescence and the linguistic changes it leads to, and the terminology used here. Next, we discuss how the changes that take place in decaying polysynthetic languages can be distinguished from (a) those changes that occur in all obsolescent languages regardless of their type,

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and (b) changes in ‘healthy’ polysynthetic languages. In the main part of the chapter, we examine in detail obsolescence-induced structural changes in polysynthetic languages.

21.2 Key Concepts

21.2.1 Polysynthetic languages and polysynthetic features

Fortescue (1994, 2008) distinguishes several features which a language should have to be called ‘polysynthetic’:[1]

(a) complex morphological structure: polysynthetic word forms are characterized by numerous morphological ‘slots’ and a large inventory of bound morphemes (p. 429)
(b) head-marking (or double marking) type of inflection:
(i) nominal forms usually bear possessive marking
(ii) verbal forms typically contain pronominal markers, as well as various integrated adverbial elements; these features allow verbal forms to be used as sentence equivalents

(c) incorporation: adjectives are incorporated into nominal forms and nouns are incorporated into verbal forms

One more rather common property of a polysynthetic language is feature (d).

(d) productive morphophonemics and complex allomorphy of bound and free morphemes.

It is important to note that in this chapter we describe the attrition of polysynthetic *features* rather than attrition of polysynthetic *languages*. We assume that similar polysynthetic features behave in a similar way regardless of whether other subsystems of the language in question are polysynthetic. In other words, we consider a piece of data relevant for our topic even if the language that an example comes from does not have *all* the characteristics of a polysynthetic language: a language may, for example, lack incorporation but still be a relevant source of data for our analysis if it shows morphological complexity.

As Polinsky (1995: 119) mentions, in addressing language attrition and loss it is important to distinguish three types of problem: (a) is there a particular set of linguistic characteristics that are consistently lost across languages? (b) what new linguistic characteristics arise in languages to compensate for the lost features? and (c) is there a particular set of linguistic characteristics that is consistently retained across languages? This approach provides a convenient pattern also for the analysis of attrition in polysynthetic languages.

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21.2.2 Language obsolescence and language attrition

Language obsolescence [2] refers to the process in which a bilingual speech community starts using their second language[3] more often, to the extent that it becomes 'dominant', while their first ('recessive') language gradually loses its functional domains and may eventually be abandoned, first by the younger generation and later by almost the whole community (see Dorian 1981, 1982; Sasse 2001; Dwyer 2011; Aikhenvald 2012b). It is hardly possible to give here an exhaustive analysis of the relevant literature: we refer the reader to Tsunoda (2005), especially to Chapter 8 'Structural changes in language endangerment' (76–116) where one can find a detailed discussion of the issue (see also Siemund 2008).

Language shift takes place in various political, socioeconomic and cultural contexts (Dorian 1982: 44–8) and can vary in duration from one or two generations (so-called 'catastrophic shift') to several centuries. It should be noted that in its earlier stages language (p. 430) obsolescence is not easy to diagnose: interpretation of a language situation as language shift often has to rely on the researcher's prognostications and extrapolations (Viktorova 2007).[4]

The most typical case of language loss is 'gradual death' that goes through several stages. One of the intermediate stages is a well-balanced bilingualism in which the dominant language comes to be employed by an ever-increasing number of speakers in a growing number of contexts where the recessive language was formerly used (Campbell and Muntzel 1989: 185).

At the *earliest stage* of language decay, a recessive language undergoes natural contact changes,[5] such as (i) convergence or 'negative borrowing', when non-congruent forms disappear from contact languages, and (ii) interference or 'positive borrowing', when new forms and rules are introduced into the language under the influence of another language (Romaine 1995: 72–6; Sasse 1992: 65). 'Positive borrowing' may be further divided into (a) borrowing of substance (transfer of overt markers) and (b) borrowing of patterns (imitation of structural make-up) (Sasse 2001: 1670). As pointed out in (Dorian 1981: 151), 'dying languages, to judge by [East Sutherland Gaelic], show [at this early stage.—E.G., N.V.] much the same sorts of change we are familiar with from perfectly ordinary change in "healthy" languages'. Theoretically, this earlier stage of language obsolescence can last for a very long time; language attrition is therefore a possible but not inevitable contact phenomenon.

The *terminal stage* of language obsolescence is characterized by a radical reduction and total disintegration of the recessive language to the extent that it cannot be used anymore in its communicative function. This terminal stage is not particularly interesting from a purely linguistic point of view, although it is fascinating sociolinguistically. Even a 'broken' language can still bear a symbolic function, so that the speakers who only retain

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a rudimentary knowledge of it may still claim to be speaking it by using individual words or phrases, thus marking their distinctive identities (see, for example, Evans 2001; Vakhtin 2006).

The focus of this chapter is on the *middle stage* of language obsolescence, which is characterized by various structural changes in the recessive language that go beyond 'normal' contact-induced changes. It is important to bear in mind that the process of language loss applies to individual speakers, and many speech communities experiencing language shift exhibit a proficiency continuum scale ranging from (nearly) fully competent speakers down to semi-speakers, and further to 'rememberers' (Dorian 1981: 117ff; Dressler 1981: 6–7; Campbell and Muntzel 1989: 181; Vakhtin 2001: 113–14). The continuum scale typically correlates with the age of the speakers: the younger generation usually demonstrates lower proficiency in a recessive language than the older one. According to Sasse (1992: 61), the locus of language decay is the semi-speaker. Semi-speakers themselves form a continuum, since their command of a language is characterized by various degrees of language attrition (see, e.g. Gruzdeva 2007: 25–6). All this makes the recessive language highly variable. Variability in this case, unlike in "normal" situations, does not necessarily bear a sociolinguistic function: variants of forms and structures used by other semi-speakers are not necessarily regarded as positive or negative (Palosaari and Campbell 2011: 111), and may not be registered as deviations at all.

From the generational point of view, *language attrition* pertains to a decrease in language proficiency (Gardner 1982: 24) that manifests itself in various kinds of reductive phenomena. (p. 431) The younger the speakers are, the more sporadic changes they make in their use of a recessive language; these mistakes are noted and often commented upon by older speakers (Aikhenvald 2012: 77).

In trying to explain the rise of attrition, researchers turn to two different cognitive processes: (a) the attrition of the first language as a result of *insufficient communication* and disuse of the language by adult speakers, leading to the forgetting of a language and its gradual loss and (b) an *incomplete acquisition* of the recessive language by younger speakers due to the break in linguistic tradition (see Andersen 1982: 91; Trudgill 1983: 124–6; Sasse 2001: 1669; Tsunoda 2005: 99). Both processes involve insufficient access to language input (Polinsky 1995: 88) and produce similar outputs.

21.2.3 Structural features of language attrition

Analysing the development of language attrition, researchers pay attention to the quality, quantity, and speed of changes that take place in a recessive language.

Language decay typically results in a general *simplification* and *reduction* of the recessive language's grammar and lexicon (Trudgill 1983: 124–6; Sasse 1992: 60). These changes especially affect the linguistic features that are not shared by the recessive and dominant

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languages. As Aikhenvald (2012: 80) points out, ‘the categories absent from the dominant language are particularly endangered’.

Simplification is the elimination of competing structures or their reanalysis as a result of which the language becomes more regular (Romaine 1995). For instance, if the language has three devices for expressing a category, two of them may become redundant. However, such changes just modify the language system and do not influence the speakers’ ability to express themselves in this language. Therefore, simplification may be a necessary, but not sufficient, condition for postulating language attrition.

One simplification process that is widely attested in recessive languages and similar to analogical leveling is the regularization of morphophonemics and morphology (Seliger and Vago 1991: 10–11; Sasse 2001: 1671). For instance, in her works on East Sutherland Gaelic, Dorian (1973, 1981, *inter alia*), reports that semi-speakers tend to use only one allomorph of the plural marker (-*ən*) and correspondingly only one allomorph for deriving a gerund (-*al*).

Conversely, *reduction* is characterized by the loss of structural elements without their compensation by other elements from a recessive language (Mühlhäusler 1974). Expressibility may be preserved in the obsolescent language community, but only by partial shift of language functions from the recessive to the dominant language (Trudgill 1974; Dorian 1981: 153ff, 1982: 44; Dressler 1982: 325f, 2011: 89; Giacalone-Ramat 1983: 38).

Describing the (then) young speakers’ variety of Dyirbal, an Australian Aboriginal language of northeast Queensland, Schmidt (1985: 213–14) notes that ‘another distinctive difference between language death and change in healthy languages is that reduction in the dying language is not always compensated for by structural expansion elsewhere in the language system <…> [the speakers] rely on English linguistic resources to fill these gaps’.[6]

Following Dressler (1991: 107) and Schmidt (1991: 119), we argue that reduction is one of the essential features and specific signs of attrition, since along with the structural elements (p. 432) the language loses some of its functions which start being performed by the dominant language. Obviously, the processes of reduction and transition to another language can be regarded as interdependent and representing a self-regulating system.

Reductive phenomena may be observed at different levels and involve various kinds of ‘losses’ pertaining to vocabulary, phonological contrasts, productive word-formation, morphological categories, syntactic structures, styles, and registers (Trudgill 1974; Andersen 1982; Campbell and Muntzel 1989; Sasse 2001).

Thus, Central Pomo (Pomoan; Northern California), whose traditional form boasts an elaborate system of verbal markers for specifying various kinds of temporal, causal, and referential relationships between clauses (e.g. switch-reference), exhibits a whole range of morphosyntactic reduction in language obsolescence. Mithun (1990: 13–14) notes that

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'the density of these enclitics appears to correlate with the fluency of speakers. The least fluent speaker clearly experienced difficulty in some situations where such markers would normally be used. Furthermore, … speakers less fluent in Central Pomo do not control the intricacies of case, number, defocus, and clause combining'.

The destruction of grammatical categories and total disintegration of morphological system is impressively described by Sasse (1992: 70–72) for Arvanitika (an Albanian variety spoken in Greece). In the speech of less competent speakers, the categories of tense, aspect, and mood are totally mixed, the particles of future tense and conditional mood are used in confusion, the system of tenses has reduced to the present tense and aorist, the plural forms of nouns are not used any more, and the cases are mixed. When deriving inflectional forms the speakers improvise, sometimes even inventing new morphemes.

Besides simplification and reduction, language attrition in its advanced phase is characterized also by the overgeneralization or undergeneralization of certain features, the tendency to analytism, agrammatism, and a drastic increase in phonological and grammatical variability (Sasse 2001: 1671; Palosaari and Campbell 2011). Thus, Campbell and Muntzel (1989: 186) show that less competent speakers tend to overgeneralize marked phonological features in Teotepeque Pipil (Uto-Aztecan language of Central America). Modern speakers use unvoiced [l̥] not only at the end of the word, as was typical of 'healthy' language, but also in other positions, where it was never used before. In general, overgeneralization, attested in many languages, may be considered as an attempt at supporting social identity (Romaine 1989: 378–9). A further example of obsolescence-induced change is found in Tlahuica (also called Matlatzinca or Ocuiltec, an Oto-Manguean language of Mexico), where the rule of voicing stops after nasals fails to apply in the speech of semi-speakers, producing free variation, for example between *nd* and *nt* (Campbell and Muntzel 1989: 189).

In the course of attrition, complex synthetic constructions are often replaced by analytic constructions (Sasse 2001: 1671). This phenomenon is also typical of polysynthetic languages (§21.3). Furthermore, the contrast between language change in 'healthy' and decaying languages is often seen not only in the kinds of change that take place in a recessive language, but also in the quantity of change, and in the speed with which it occurs (Aikhenvald 2002d: 243–64). Thus, the rate of contact-induced changes and the changes that are otherwise considered natural can be accelerated in an obsolescent language compared with a 'healthy' one (Palosaari and Campbell 2011: 111). As a result, 'an obsolescent language may tend to rapidly become structurally similar to the dominant one' (Aikhenvald 2012b: 96) or may undergo other fast, not necessarily reductive, changes. For instance, in the endangered Ottawa language (an Algonquian language spoken on Walpole Island, Canada) 'the person (p. 433) prefix system exhibits variability and loss which was not known in the language as recently as twenty years ago, and which can be attributed to a natural process of vowel syncope' (Fox 2005: 57, cit. by Palosaari and Campbell 2011: 111).

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The same phenomena are reported for Young People's Dyirbal:

> While the type of change in Young Dyirbal is not unusual, the quantity of change certainly is […] vast amounts of change are compressed into a short timespan of about 25 years […] changes occurring in this short period are certainly widespread, affecting: the nominal case system; verb tense; some derivational affixes; conjugation membership and the irregular verb *yanu*; the pronoun paradigm; noun markers and interrogative members; constituent agreement in the NP and verb complex; word order; and the S-O pivot clause linkage device.
>
> (Schmidt 1985: 213)

21.3 Obsolescence-Induced Changes in Polysynthetic Languages

As shown in the previous section, syntactic attrition will cause similar results in languages of different types: parataxis, loss of markers of dependent clauses, reduction of the number of markers with an accompanying broadening of functions of those that are preserved, etc. A semi-speaker typically uses a smaller number of syntactic devices than a fully competent speaker of the same language. A semi-speaker preserves and overuses syntactic constructions that more transparently reflect the underlying semantic and syntactic relations. When there is more than one possible surface structure for a given underlying relation, a semi-speaker tends to collapse the different surface structures into one (Andersen 1982).

The most specific feature of a polysynthetic language is that here these changes will be accompanied by the changes in the morphological structure of verbs, because for a polysynthetic language verbal morphology is, by definition, the core of its grammar, cf. §21.2.1.

In the following sections §§21.3.1–21.3.4, we concentrate on polysynthetic language morphology and describe mostly those obsolescence-induced changes that are connected with polysynthetic morphosyntax and morphophonemics.

21.3.1 Changes in complex morphological structure

One of the most prominent signs of polysynthetic language attrition is the loss of its complex morphological structure, with effects on verbal and sometimes also on nominal morphology. Inflectional morphology seems to be more stable both for contact-induced and obsolescence-induced changes. As Comrie (2008: 15) points out, 'inflectional

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morphology is generally, and I believe correctly, held to be one of the least borrowable parts of a language's structure'.

On the contrary, derivational morphology, whose richness is one of the most prominent features of a polysynthetic language (Fortescue 1994, 2008), turns out to be more modifiable than inflectional, in particular in the language decay situation.

(p. 434) As Myers-Scotton (2002: 195–223) formulates, semantic (= derivational—E.G., N.V.) morphemes are not only the first to arrive in language acquisition and in contact situations, but they are also the first to depart in language attrition. In all probability, this is explained by the fact that they are easier to replace: in reduced speech, bound derivational morphemes are often substituted with lexical items, that is, adjectives, adverbs, particles, etc.

The following sections §§21.3.1.1–21.3.1.2 discuss attrition in verbal and nominal inflectional and derivational morphology.

21.3.1.1 Attrition in verbal morphology of polysynthetic languages.

With respect to attrition, verbal morphology is the most vulnerable domain of polysynthetic languages. Non-fluent speakers tend to reduce complex verb structures and get rid of some morphological 'slots', especially when the same category is double-marked.

In Tlahuica, imperfect speakers often eliminate the plural and dual suffixes from the polysynthetic verb forms (indicated in example (1) in parentheses). Note that, in the traditional language, number is marked both by prefixes and suffixes:

(1) Tlahuica (Campbell and Muntzel 1989: 191–2)

a. kiat-kwe-p-tyɨɨ(-nkwe(-βi))
FUT-1PL-EXCL-SG(-DU-(EXCL))
'We (two, but not you) will sing.'

b. kiat-kwe-p-tyɨɨ(-hñə-βi))
FUT-1PL-EXCL-SG(-PL-(EXCL))
'We (all, but not you) will sing.'

The following subsections §§21.3.1.1.1–21.3.1.1.2 consider the changes in verbal inflectional and derivational morphology in more detail.

21.3.1.1.1 Verbal inflectional morphology

Language attrition affects the basic verbal inflectional categories, such as person, number, tense, aspect, and mood somewhat differently.

Person and number

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Person and number turn out to be the most stable morphological categories in language loss situations.

This observation may be illustrated by examples from Ainu,[7] an isolate language of the northern Japanese island of Hokkaido. Here many verbs have different (suppletive) stems for singular and plural numbers: *arpa-* <go.SG>,*paye-* <go.PL>. As is typical for verbal number, the suppletion targets the absolutive argument: for intransitive verbs it is the number of the subject that counts, *paye* <go.SUBJ.PL> 'many (people) went', while for transitives it is the number of the object: *rayke* <kill.OBJ.SG> 'killed one (bear)', *ronnu* <kill.OBJ.PL> 'killed many (bears)'.

Semi-speakers of Ainu will first lose verbal number marking, but the inflectional marking for subject and object is much more resilient. In other words, instead of the correct *eci-paye* (p. 435) <2PL.SUBJ-go.PL> 'you.PL went', semi-speakers will say *eci-arpa* <2PL.SUBJ-go.SG> for 'you.PL went'. However, they will hardly say just *arpa*, because this would be automatically interpreted as 's/he went', third person singular marker being a zero.

Furthermore, the distinction between transitive and intransitive verbs is also retained to the bitter end. In Ainu, these two classes of verbs partly differ in their person/number paradigms: for example, first person plural markers for the subject of the intransitive verb (S) and the subject of the transitive verb (A) are *-as* (1PL.S.INC) and *ci-* (1PL.A.INC) respectively. Even the least knowledgeable speakers never say **ci-paye* (1PL.A.INC-go) instead of *paye-as* (go-1PL.S.INC) 'we (inclusive) go'. Cf. the following examples, which exemplify the use of A forms:

(2) Ainu (Bugaeva, p.c.)

a. ci-rayke
1PL.A.INC-kill.OBJ.SG
'We (inclusive) killed (a bear).'

b. ci-ronnu
1PL.A.INC-kill.OBJ.PL
'We (inclusive) killed many (bears).'

This stability can be explained as follows. In non-polysynthetic languages that allow/require overt NPs, verbal personal marking is an agreement feature. When this agreement is lost, it is a simplification, that is, loss of redundant complexity. In contrast, in 'healthy' polysynthetic languages, person/number marking on the verb is the only place where the NPs are marked: these bound morphemes *are* the arguments of the verb. Therefore, the loss of personal marking in a polysynthetic language would be a reduction, that is, loss of an essential structural feature, so the marking is much more tenacious.[8]

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However, even when the person/number marking is retained, the structure of an obsolescent polysynthetic language may change rather radically. In traditional Kabardian (Northwest Caucasian language of North Caucasus republics of Russia), subject, direct object, and indirect object are marked with bound pronominal affixes. As a result, verb forms like in (3a) may function as full clauses. Speakers of reduced Kabardian do not accept such forms as correct full clauses and restore overt pronouns or full NPs, as in (3b):

(3)

Kabardian (Polinsky 1995: 97)

a. Ø-q°ə-să-yə-t+a-ś
3SG.OBJ-to-1SG-3SG.SUBJ-give+PRF-DECL
'S/he gave me that/it.'

b.

abə	să	q°ə	mər	Ø-zə-yə-t+a-ś
3SG:ERG	1SG	to/for	it	3SG.OBJ-1SG-3SG.SUBJ-give+PRF-DECL

'S/he gave that to me.'

(p. 436) Another possible scenario is that pronominal markers are retained but they are 'fossilized', that is, lose their meaning. In Maa (a Nilotic language of Kenya and Tanzania), the category of person/number is expressed by means of different prefixes. In a corpus of material collected by Dimmendaal (1992) from different types of speakers, one non-full speaker of Kore (a Kenyan variety of Maa) generalized the third person singular imperfective tense form with the prefix *ɛ-/e-*. This prefix no longer functions as a person/number marker, compare (4a) and (4b):

(4)

Kore (Dimmendaal 1992: 123)

a.

aná-lbàyán	k-é-ðà	ŋgólòŋ
this-man	S-3SG-be	sun/hunger

'This man is hungry.'

b.

k-é-ðà	ŋgólòŋ
S-3SG-be	sun/hunger

'I am hungry.'

In general, examples of loss of personal markers in recessive polysynthetic languages are rare.

Tense, aspect, mood

The loss of morphological complexity may also result in changes of TAM marking. Here, as in other instances, there is a clear tendency towards analytism. The following examples demonstrate how in Pipil (a Uto-Aztecan language of El Salvador), the

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traditional synthetic verbal form with the future suffix has been replaced by an analytical one with the verb ‘go’:

(5) Pipil (Campbell and Muntzel 1989: 192–4)

	Traditional form	Newer form:	
a.	ni-panu-s	ni-yu	ni-panu
	I-pass-FUT	I-go	I-pass
	‘I will pass.’	‘I will pass.’ (lit. ‘I am going to pass.’)	
b.	ti-panu-ske-t	ti-yawi-t	ti-panu-t
	we-pass-FUT-PL	we-go-PL	we-pass-PL
	‘We will pass.’	‘We will pass.’ (lit. ‘We are going to pass.’)	

Another relevant example is found in Mohegan-Pequot (Rees-Miller 1998). Compared to the speech of the speakers of other Eastern Algonquian dialects, the syntax of the last productive Mohegan-Pequot speaker (1827–1908) was highly analytical. The verbal morphology was extremely uncomplicated with potential, negative, and temporal notions expressed periphrastically by means of particles. This can be seen in particular by comparing the last speaker’s version of the Lord’s Prayer with the examples recorded in the seventeenth and eighteenth centuries. Thus, in the old versions of the sentence ‘Give us this day our daily bread’, a synthetic imperative form (*mesunnan* ‘give us’) containing an ending indicating that the verb is animate transitive with second person actor and first person goal is used, while in a more modern version of the text the main verb *mi:zam* with the same meaning ‘give us’ (p. 437) is used without an ending. In another case, imperatives are expressed periphrastically with *tcantci:* ‘must’ before the main verb (Rees-Miller 1998: 552–4).

The loss of complexity and productivity in word formation, for example the reluctance to combine morphemes within single words, may be further illustrated by a well-known example from Cayuga (an Iroquoian language of Ontario, Canada, and Oklahoma, USA). In the full Ontario variety, cf. (6a), repetitive aspect is marked by a prefix, whereas in the reduced Oklahoma variety, cf. (6b), the same meaning is conveyed by a separate word *é:ʔ* ‘again’:

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(6)

Cayuga (Mithun 1989b: 248–9)

a. Ontario Cayuga
tǫsasatkahaté:nih
DU.repetitive-2SG-SEMI.
REFLEXIVE-turn.around
'turn back around, re-turn'

b. Oklahoma Cayuga

teskąa:té:ni	é:ʔ
DU-2SG.A-SEMI.REFLEXIVE-turn.around	again
'turn around again'	

21.3.1.1.2 Verbal derivational morphology

As a result of attrition, less frequent derivational bound morphemes are sometimes lost and their meanings are expressed analytically by adverbs or particles, in many cases borrowed.

This can be illustrated by Siberian Yupik (an Eskimo-Aleut language of Chukotka), a highly endangered, if not moribund language (Krauss 1992), where many adverbs were borrowed from the neighboring Chukchi language. In the speech of modern speakers, these borrowed adverbs are used to simplify the verbal structure. In (7a), taken from a folklore text, the meaning 'it is only [small, humble] me' is expressed by a morphologically complex verb form, whereas in (7b), said by a young speaker, the equivalent meaning is marked by the Yupik adverb *wetku* that comes back to Chukchi *vetku*:

(7)

Siberian Yupik (adapted from Vakhtin, field notes, and Rodionova 2012)

a. aa whanga-ngina-ghhaag-lleq-u-nga
yes me-only-DIM-FUT-INTR-1SG.SUBJ
'Yes, I will be all alone'

b. wetku unami tagi-lleq-u-q
only tomorrow come-FUT-INTR-3SG.SUBJ
'He will only come tomorrow.'

The extended use of borrowed adverbs to substitute bound morphemes, in both full and reduced speech, is found in both nouns and verbs. In some cases, the corresponding sentences sound quite normal to full speakers; in others they give a distinct feeling of reduced speech. For instance, instead of the full form (8a) one can hear (8b) that sounds quite correct (p. 438) to full speakers, and, in contrast, instead of (9a) one can hear (9b) that full speakers would hardly accept as correct:

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(8) Siberian Yupik (Menovščikov 1967: 63–4)

a. ukini-inagh-aq-u-q
sew-only-CONT-INTR-3SG
'She only sews'

b. wetku ukinigh-aq-u-q
just sew-CONT-INTR-3SG
'She only sews'

An even more complex example can be found in de Reuse (1994a) in traditional Siberian Yupik there existed many internally complex derivational suffixes, such as the combination of the productive *-(i/u)ma-* 'past tense' and productive *-(ng)inagh-* 'to only V' that resulted in the equally productive, though not semantically transparent *-(i/u)manginagh-* 'to V continuously, all the time', as in (9) (= de Reuse's (16)) (Bobaljik 1995: 424):

(9) Siberian Yupik: (de Reuse 1994: 81)
iknaqughsaamanginaghnaaghii
iknaqugh-sagh-(i/u)manginagh-naagh-ii
become.stronger-CAUS-V.continuously-FUTURE-3S/3P
'He will keep them stronger continuously'

Sentences like (9) would be impossible in post-contact Yupik.

In the course of polysynthetic language attrition, the number of morphological derivational 'slots' can also be reduced. For example, in Bare (a North Arawak language of Venezuela and Brazil) verb forms attested in an earlier corpus contain up to five suffixes, whereas later speakers never used more than one suffix on the verb (Aikhenvald 2012: 85).

In obsolescent Oklahoma Cayuga, the best speaker could use all of the verbal affixes individually, but would hesitate to combine several affixes within a single verb form. When the latter was supposed to contain just one other prepronominal prefix, she would use both the repetitive prefix *s-* and the particle *é:ʔ* 'again'.

(10) Oklahoma Cayuga (Mithun 1989b: 248)

a. aǫtatiʔtanyúʔuh 'she beat her up'
b. saǫtatiʔtanyúʔ é:ʔ 'she beat her up again'

But when the number of prepronominal prefixes increased further, the best speaker relied on the separate particle alone to carry the meaning 'again'. An Ontario fluent speaker would have simply combined several prefixes in that context (Mithun 1989b: 248–9), see (6a).

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A well-described example of changes in verbal morphological structure is represented by Tiwi, a North Australian isolate (cf. ch. 27). Lee (1987) compared traditional Tiwi, as described by Osborne (1974), and its modern variety. At the time of her study, older Tiwi (p. 439) adults were fluent in both Tiwi and English. Tiwi children were growing up with Modern Tiwi and learning it as their first language. In addition, they learn English at school.

The main change that distinguishes traditional Tiwi from Modern Tiwi is the level of morphological complexity of the verb. Traditional Tiwi used to be a prototypical polysynthetic language, while Modern Tiwi exhibits much less inflection and no adverbial affixation on the verb. Younger people (age 35 and younger) have lost many postbases and substituted them with analytical forms—adverbs and particles (Lee 1987: 2–10).

Example (11), from Lee (1987: 2), compares a Traditional and Modern Tiwi version of the same sentence, meaning 'She (the sun) is shining over there in the morning', lit. 'She (the sun) is walking over there in the morning with a light'. The traditional Tiwi form (11a) renders this with a single polysynthetic word, which includes subject agreement, a tense prefix *mpi-*, locative and time of day adverbial prefix, a durative prefix, a comitative applicative (*ma-*) and incorporated noun, a verb stem, and an associated motion suffix. Modern Tiwi (11b), while retaining limited aspects of the traditional verbal morphology (subject agreement, tense, and durative marking) has shifted the rest of the material out into independent words, as shown, including the elements expressing time of day, motion, location, and the comitative NP.

(11)

a. a-mpi-ni-watu-wuciŋi-ma-cirakiɳiŋi-yaŋu[imay-ami.
she-NPST-LOC-morn-DUR-COM-light-walk-MOVEMENT
'She (the sun) is shining over there in the morning.'

b.

capinar	wokapat / mup	a-mpi-ciki-mi	kutawa	with	layt
morning	walk / move	she-NPST-DUR-do	there	with	light

'She (the sun) is shining over there in the morning.'

As can be seen from Table 21.1, some 'slots' in the verbal structure (6, 7, 9, 12, 13, 18) were completely eliminated, two 'slots' (1, 2) were merged into one, and for some 'slots' (4, 8, 15), the number of possible functions was reduced.

The loss of morphological elements may be compensated for by borrowing patterns from the dominant language. A striking example of such a development is attested in Tariana, a Northern Arawak language of Brazil. This is a highly endangered language in contact with dominant but genetically unrelated Eastern Tucano languages, particularly Tucano. Tariana loses its verbal prefixes and their corresponding 'slots' following the general tendency to eliminate grammatical categories not found in Tucano and to conform to a

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general suffixing tendency of the Tucano type. This process is part of a more general convergence of Tariana towards East-Tucano structures (Aikhenvald 2002d: 147).

On the other hand, verb compounding in Tariana appears to be *expanding* through a mechanism of grammatical calquing (loan translations). Tariana verb roots are reinterpreted as affixes and get spontaneously used as the second components of verb compounds where they follow the fully inflected verb. An example of such a process is the way the verbal stem *-yena* 'little by little' is spontaneously used as a loan translation of the Tucano suffix *-tiha* 'do little by little' in (12b). After this enclitic was used once, it was picked up by other Tariana speakers, and started being used in a way completely parallel to Tucano *-tiha* in (12a). Here, the process of language loss has led to the 'speeding up' of calquing and thus the creation of 'new morphemes' (Aikhenvald 2002d: 149). (p. 440)

Table 21.1 Morphological 'slots' in traditional and modern Tiwi

Traditional Tiwi	**Modern Tiwi**
1 – subject	1+2 – subject-tense
2 – tense (non-past / past)	
3 – locative	3 – locative
4 – mood 1 – (subjunctive, frustrative, obligational)	4 – mood 1 (subjunctive, frustrative)
5 – mood 2 – (irrealis)	5 – mood 2 (irrealis or negative)
6 – temp 1 (in the morning)	
7 – direct object/indirect object	
8 – aspect (durative, non-past, inceptive)	8 – aspect (durative)
9 – stance (away from camp, distant in time)	
10 – emphatic	10 – emphatic
11 – connective	11 – connective
12 – temp 2 (in the evening)	
13 – concomitative	

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14 – nucleus (stem + incorporated forms)	14 – nucleus (no incorporation)
15 – voice (causative, completive, reflexive, reciprocal)	15 – voice (reciprocal)
16 – aspect 2 (movement)	16 – aspect 2 (durative or beginning)
17 – aspect 3 (repetitive, habitual)	17 – aspect 3 (past habitual or repetitive)
18 – locative (same as 1, but with imperatives)	

Adapted from Lee 1987: 152–4)

(Aikhenvald 2002d: 148)

(12)

a. Tucano
ba'ã-tiha-mi
eat-do.little.by.little-3SG.MASC.PRES.VIS
'(The child) is eating little by little.'

b. Tariana
emite di-hɲa-yena-naka
child 3SG.NF-eat-little.by.little-PRES.VIS
'The child is eating little by little.'

3.1.2 Attrition in nominal morphology of polysynthetic languages

The obsolescence-induced changes that affect nominal morphology are attested in particular in head-marked possessor constructions and derivational morphology.

(p. 441) 21.3.1.2.1 Head-marked possessor constructions

In the speech of non-fluent speakers the marking of possession on the head noun is often lost, either partly or completely. This can be illustrated by the following examples.

Formerly, kinship terms in NIvkh (a Paleosiberian isolate spoken in the Russian Far East) were construed with obligatory grammatical indication of the possessor. If the latter referred to a singular person, it could be coded by a reduced form of the corresponding personal pronoun, which functions as a prefix, cf. *ɲ-ətk* 'my father', *ţ'-əmk* 'your.SG mother'. If the possessor was dual or plural, a full form of the corresponding personal pronoun in preposition to the noun was used: cf. *ţ'in+aqi* [9] 'your.PL elder brother', *in+asq* 'their junior brother'. In modern Nivkh, the marking of possessor on kinship terms is

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gradually vanishing, which may be explained by the strong influence of Russian, where the indication to the possessor in these terms is necessary only in the conditions of reference conflict (Gruzdeva 2000: 124).

The last productive speaker of Mohegan-Pequot (an Algonquian language of southern New England, USA), Mrs. Fidelia Fielding, seems to have lost the full range of possessive forms, as reported by Rees-Miller (1998: 552–4).

21.3.1.2.2 Nominal derivational morphology

As has been noted in §21.2.3, bound derivational morphemes tend to be substituted by lexical items. Whether a morpheme will be still used in reduced speech or not is often a question of frequency. For instance, highly frequent words with evaluative morphemes will continue to be used even by semi-speakers. Thus, in Siberian Yupik, the high-frequency magnifying postbase *-ghllaq* is retained, as in (13a), although some speakers may also say (13b):

(13)

Siberian Yupik (Vakhtin, field notes)

a. ama-ghllaq
wolf-MAGN
'big wolf'

b. ane-lghi ama
big-PART wolf
'big wolf'

On the other hand, the less frequent postbase *-lluk* 'old, shabby, worn out' will in all probability be substituted by an adjective, cf. (14a) and (14b):[10]

(p. 442)

(14)

Siberian Yupik (Vakhtin, field notes)

a. kamə-lluk
shoe-old
'worn-out shoes'

b. utuka-k kamək
old-DU shoe-DU
'worn-out shoes'

21.3.2 Changes in noun incorporation

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As has already been noted, polysynthetic languages may represent, in a single verbal form, an entire multi-word clause. This may be achieved by using pronominal affixes for some arguments, and incorporated nouns for others (Baker 1996: 19; Evans and Sasse 2002: 2). Noun incorporation, that is, 'the morphological construction where a nominal lexical element is added to a verbal lexical element; the resulting construction being a verb and a single word' (de Reuse 1994a: 2,842), is a central feature of polysynthetic languages, although on many definitions polysynthesis does not require incorporation (Mithun 2009). Chukchi (a Chukotko-Kamchatkan language of the Russian Far East) is a classic incorporating language: cf. (15a) with unincorporated direct object *jəkərgə-n* 'my mouth' and (15b), where it is incorporated into the verb:

(15)

Chukchi (Muravieva 2004: 116)

a. gəm-nan jəkərgə-n tə-lwə-g?e
I-1SG.ERG mouth-NOM.SG 1SG. SUBJ-burn-PAST.3SG.OBJ
'I burned my mouth.'

b. gəm tə-jəkərgə-lwə-g?ek
I:NOM 1SG.SUBJ-mouth-burn-PAST.1SG.SUBJ
'I burned my mouth.'

In cases of polysynthetic language obsolescence, noun incorporation seems to be one of the early victims. The destruction of incorporation starts with the loss of its discourse function (= backgrounding of verbal arguments), followed by the decline of a generic function; 'frozen' (lexicalized) incorporated nouns survive longest of all (Mithun 1984; analyzed in Hill and Hill 1986: 258).

The process has been attested in various recessive polysynthetic languages. For example, Comrie (1981: 250) describes this tendency in Chukchi: 'With respect to incorporation … it should be noted that while this syntactic device is very common in traditional tales, it is much less frequent in current writing, and virtually absent in translations from Russian, i.e. incorporation seems to be on the wane in the modern language.' Mithun (1984a: 880–1) echoes: 'Younger speakers incorporate nouns much less than older speakers; in fact, whenever it is optional, younger speakers usually do not incorporate.'

Comparing full (Ontario) and reduced (Oklahoma) varieties of Cayuga, Mithun (1989b: 249–50) points out that the speakers of the former easily form complex and rare (p. 443) constructions of the noun incorporation type, while the speakers of the latter use only the frequent ones:

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(16)

Cayuga (Mithun 1989b: 250)

a. Ontario Cayuga
ko-ʔnǫhs-owanę
F.SG.PAT-onion-large.STATIVE
'She has a big onion.'

b. Oklahoma Cayuga
k-uwane ʔnǫhs-aʔ
N-big.STATIVE onion-NOMINAL.SUFFIX
'The onion is big.'

The decay of noun incorporation appears to proceed as follows. At a certain point, speakers incorporate fewer new combinations. At first, they may still use noun incorporation frequently in order to background arguments in discourse, but they combine only those nouns and verbs that they have already heard combined. As time goes by, and lexical items are replaced, the repertoire of incorporable nouns and incorporating verbs shrinks, until fewer and fewer noun incorporations are used stylistically in discourse (Mithun 1984a: 880).

The obsolescence-induced scenario clearly differs from a 'normal' noun incorporation development. The latter was described in (Mithun 2009): the author suggested that at least in some languages, it evolved into what she called 'a noun-suffix construction' (compare Yupik examples (18a) and (18b)): 'Over time, the unstressed second members of such constructions, verb roots, lost their individual salience and began to erode further in form. Morphemes which occurred particularly often as second members came to be reinterpreted as suffixes' (Mithun 2009: 13).[11] These Eskimo (and Aleut) noun-suffix constructions apparently recently descended from noun incorporation and 'have all of the same attributes and functions of Iroquoian incorporation' (Mithun 2009: 15).

One phenomenon that is ambivalent in terms of its association with attrition is the incorporation of loan words from the dominant language. The pressure of the dominant language may result in incorporating of new borrowed noun stems, as happens, for example, in Mexicano under the influence of Spanish. In (17), the Spanish noun *cena* 'dinner' is incorporated into the Mexicano verb:

(17)

Mexicano (Hill and Hill 1986: 169)
ni-quin-cēnah-maca
I-them-dinner-give
'I give them dinner.'

The same is true for borrowed noun stems in Siberian Yupik that are used to form 'root-suffix combinations' (Mithun 2009). In (18), the complex verb is formed by the suffix -

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ng(e)- ‘get, (p. 444) acquire N’ with a more general and abstract meaning than the specific ‘buy’ in the sentences without incorporation. Compare (18a) with a Yupik root and (18b) with a borrowed Russian root *hlivuq* < *хлеб* [hleb] ‘bread’:

(18)
Siberian Yupik (Vakhtin, field notes)

a.	amiraq	tukfi-ima-a	→	amira-ng-uma-q
	hide	buy-PAST-3SG.AG.3SG.OBJ		hide-ACQUIRE-PAST-3SG.SUBJ
	‘He bought a hide.’			‘He acquired a hide.’

b.	tukfi-lgha-ten	hlivu-q	→	hlive-nge-lgha-ten
	buy-OPT-2SG	bread-ABS		bread-ACQUIRE-OPT-2SG
	‘Buy bread!’			‘Buy (get) bread!’

In fact, these processes may be interpreted rather as the absence of attrition, since the possibility of incorporating new lexical items proves that the noun incorporation mechanism remains productive.

21.3.3 Changes in the allomorphy of bound and free morphemes

Polysynthetic languages are often characterized by productive morphophonemic processes resulting in several allomorphs (phonological shapes) for both lexical stems and bound morphemes (Fortescue 1994: 2,601; Mithun 1988: 442). Obsolescence-induced allomorphic reduction can affect the nature of polysynthesis.

A pertinent example comes from Nivkh, where regular consonant alternations take place both at morpheme and word boundaries. The initial consonant of a morpheme/word alternates depending on the final segment of the preceding morpheme/word. For instance, initial consonants of the dative suffix alternate as follows:

(19)
Nivkh (Krejnovič 1937)

ʈax-toχ	‘to a top’
tu-roχ	‘into a lake’
murŋ-doχ	‘to a horse’

One of the basic principles of Nivkh syntax is a special type of ‘dependent-head synthesis’ that resembles incorporation (Mattissen 2003). The resultant morphosyntactic complexes are subject to morphonological alternations: a modifier brings about alternation in the following head nominal beginning with a plosive (see (20a)), whereas a primary object triggers an alternation in the following verb beginning with a fricative (cf. (20b)):

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(20) Nivkh (Krejnovič 1937)

a. ves+ṭoŋř ‘raven’s head’
kəkək+zoŋř ‘swan’s head’
ṭ‘amŋ+ḍoŋř ‘eagle’s head’

laq+zosq- ‘break a ski’
luvř+ṭosq- ‘break a spoon’
ŋirŋ+ḍosq- ‘break a cup’

(p. 445)

In modern Nivkh, the system of morphonological alternations has been maintained at the boundaries of morphemes and has partly collapsed at the boundaries of words, especially in phrases with a modifier and head nominal. In the speech of contemporary speakers, initial consonants of head nominals and verbs either do not alternate at all or alternate in a disorderly way and unsystematically. Frequently, the speakers use the free (non-alternating) form in environments where another variant would have been the alternating norm. Thus, modern speakers tend to translate the example ‘fish soup’ as *ţ‘o pəŋx*, instead of *ţ‘o + vəŋx*, while the phrase ‘drink water’ is rendered as *ţ‘aχ ra-*, instead of *ţ‘aχ + ta-*. In other cases, the speakers may use both an alternating and a non-alternating variant (i.e. *ţ‘o pəŋx ~ ţ‘o + vəŋx*) or otherwise indicated indifference with respect to the quality of the potentially alternating consonant. The language displays a mixed and unregulated pattern of alternations, which leads to the loss of a crucial device for marking polysynthetic complexes (Gruzdeva 2002: 94–5).

21.4 Conclusions

In this chapter, we have presented a variety of data illustrating the process of attrition of polysynthetic features in recessive languages. We set ourselves the task of demonstrating what linguistic features tend to be lost, how these lost features are compensated for, and what features are retained across the languages in question.

It has been shown that polysynthetic language attrition is primarily manifested in the collapse of complex morphological structure—the most prominent feature of polysynthetic languages. The consequences of polysynthetic language decay involve the loss of morphological ‘slots’, the reduction in the number of bound morphemes and their substitution by free ones, the ‘fossilization’ of markers and their reanalysis, the deprivation of word formation productivity, the destruction of noun incorporation, and reduction in allomorphy. In the speech of non-fluent speakers, complex verb forms are often no longer considered as sufficient for clause formation and are expanded by overt pronouns or full NPs. In general, there is a clear tendency towards the use of analytical forms instead of (poly)synthetic ones.

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The data presented in this chapter generally confirm the following hypothesis: ‘structural properties which very much belong to the core of the grammatical system are less susceptible to influence through language contact than more peripheral grammatical domains’ (Siemund 2008: 8–9). As we have demonstrated, inflectional morphology pertaining to such basic categories as person and number tends to be more stable than derivational morphology.

Interestingly enough, according to Fortescue (1992b: 245, fn. 5), several polysynthetic language families show evidence of having remained polysynthetic over a long period of time despite typological pressure from other languages. As Mithun (1989b: 257) emphasizes, ‘in the end, however, what is most striking about the Oklahoma speakers is not the minor ways in which they differ from Ontario speakers; it is, instead, their nearly complete retention of (p. 446) an amazingly complex morphological and phonological system, under such limited opportunities to use it’.[12]

Analyzing the changes that have taken place in obsolescent polysynthetic languages, one should probably agree with O’Shannessy (2011: 97) who points out that any change in a language system should be seen ‘as halting or delaying a shift’. We regard this idea as important: any language, including a polysynthetic language, strives to survive, and all changes that occur in its structure can be interpreted as means of resistance. The closer a recessive polysynthetic language becomes to the dominant language (in many cases analytical) the more chance it has of survival: the speakers do not have to retain/acquire two largely different morphological (and phonological, and syntactic) systems and can use both languages with a similar grammatical structure. In this way the ‘life’ of a polysynthetic language may be significantly prolonged in a new, less polysynthetic, or even non-polysynthetic, hypostasis.

Abbreviations

ABS
absolutive
AG
agent
CAUS
causative
CVB
converb
DAT
dative
DEC
declarative mood
DIM

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diminutive
DU
dual
ERG
ergative
EVID
evidentialis
EXCL
exclusive (plural)
F
feminine gender
FIN
finite
FUT
future tense
HABIT
habitual (actionsart)
INC
inclusive
IND
indicative
INTR
intransitive
LOC
locative
MAGN
magnifying affix
MASC
masculine
MED
medial voice
MOD
modal suffix
N
noun class??
NEG
negative
NF
non-future
NOM
nominative
NP
noun phrase

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OBJ
object
OLD
suffix meaning ‘bad’, ‘shabby’
OPT
optative
PART
participle marker, participial
PAST
past tense
PAT
patientive
PL
plural
POSS
possessive
PP
past participle
PRES
present tense
PRF
perfect
PRTCP
participle
REFL
reflexive
REP
repetitive
SG
singular
SUBJ
subject
TAM
tense, aspect, mood
TRNS
transitive
VIAL
vialis (case)
VIS
visual
VRBLZR
verbalizer

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Notes:

(1) Some of these features are universal, others are more like statistical universals, or tendencies. Feature (d), for example, is not typical of all polysynthetic languages,e.g. the Australian languages Bininj Gun-wok (Evans 2003a) and Dalabon (Evans et al. 2008).

(2) Terminological inconsistencies are abundant here: the process is also called *language loss, shift, death, decay, attrition, decline, contraction, deacquisition* (see Craig 1997: 258).

(3) In this chapter, we use the terminology suggested in (Sasse 2001: 1669–70): we use *first* and *second* language with respect to order of acquisition; which may or may not correlate with the *dominant* vs *recessive* opposition.

(4) For a comprehensive review of assessment tools for language endangerment, starting from Joshua Fishman's 1991 Graded Intergenerational Disruption Scale (GIDS) to the 2010 Extended GIDS suggested by Paul Lewis and Gary Simons, see (Dwyer 2011).

(5) Contact-induced changes of polysynthetic language (that are also typical of all languages in a contact situation) are examined in Chapter 20.

(6) Dyirbal in its simplified version (and even in its full version) can hardly be called a polysynthetic language; we mention it here and following as a general example of attrition in a recessive language.

(7) The examples have been kindly provided to us by Anna Bugaeva.

(8) However, not all polysynthetic languages behave like Ainu. For example, semi-fluent speakers of Dalabon (a northern Australian language) typically conflate the intransitive and transitive (third person singular object) prefix sets, most likely under the influence of Bining Gun-wok, a neighbouring language, where prefixes do not reflect transitivity in these contexts (Evans, p.c.).

(9) In Nivkh, a modifier and a modified form a morphosyntactic complex. The border between lexical items entering into the complex is marked by plus.

(10) Note that sentences like (13b) or (14b) sound ungrammatical because in Siberian Yupik all sentences (with very few exceptions) must contain a verb; the latter can be formed with literally any class of stem, cf. the following example adapted from (Rodionova 2012):

(11) Cf., however, the opposite example from Japhug (a Sino-Tibetan language of Eastern Tibet), where an incorporation-like construction is interpreted as the intermediate stage of development from denominal derivation to incorporation (see Jacques 2012).

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(12) Quite similarly, in Choctaw, contrary to expectations, switch-reference markers (with one exception) appeared to be used correctly within discourse units by younger speakers without any leveling. As Williams (1999: 68) notes, “[t]he fact that no such leveling occurred attests to the centrality of switch reference to Choctaw grammar”.

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Polysynthesis in the Acquisition of Inuit Languages

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Abstract and Keywords

In this chapter, I begin by briefly outlining the structure of Inuit (Eskimo) languages and the challenges they present for child language development. In the bulk of the chapter, I review the existing literature on the first language, impaired, and bilingual acquisition of Inuit languages (i.e. Inuktitut and West Greenlandic) from ages 1 through 16 years. Structures covered include nursery vocabulary, word-internal derivational morphology, verbal and nominal inflectional morphology, other complex morphology, noun incorporation, passive, causative, valency alternations, argument realization, and tense and aspect. I also briefly cover aspects of language socialization, narrative acquisition, and the effects on Inuit language acquisition of increasing use of majority languages. I conclude with a summary of our knowledge so far and directions for further research.

Keywords: language acquisition, language development, inflectional morphology, derivational morphology, passive, causative, noun incorporation, complex morphology, Eskimo, Inuit

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22.1 Introduction

ONE of the main goals of the field of language acquisition is to determine which patterns and mechanisms in acquisition are universal to all children, and which are specific to individual languages or language typologies. To achieve this goal, we need research on the acquisition of languages of a variety of typologies since each type of language presents different acquisition challenges and thus provides different insights into the overall process. The majority of research to date has focused on the acquisition of analytic languages (e.g. English, German, Japanese), with a relatively small but growing amount of research on the acquisition of synthetic languages (e.g. Turkish, Hebrew, Hungarian). However, comparatively few studies of language acquisition focus on the acquisition of polysynthetic languages (Kelly, Wigglesworth, Nordlinger, and Blythe 2014). In the present chapter we take a step towards ameliorating this situation by bringing together the relevant research literature on the acquisition of Inuit languages, often cited as a quintessential example of polysynthesis.

Polysynthetic languages are “languages with complex morphologies capable of packing into a single word many morphemes that in more analytic languages would be independent words” (Fortescue 1994: 2600). Not surprisingly, they typically have a high number of morphemes per word; Greenberg (1960) calculates that Eskimo (i.e. Inuit) has 3.72 morphemes per word while English has only 1.68. This morphological complexity derives from a number of features, including the incorporation of the noun stem within the verbal complex, derivational processes that enable the shifting from noun to verb and back within a single word, a large inventory of bound morphemes including a variety of adverbial elements, and pronominal marking of subjects and objects (as well as other core arguments) on verbal forms as well as possessors on nominal forms (Fortescue 1994: 2601). Evans and Sasse (2002: 3) summarize this as follows:

(p. 450)

> A prototypical polysynthetic language is one in which it is possible, in a single word, to use processes of morphological composition to encode information about both the predicate and all its arguments, for all major clause types (i.e. one-, two- and three-place predicates, basic and derived), to a level of specificity allowing this word to serve alone as a free-standing utterance without reliance on context.

This polysynthetic structure presents numerous challenges for language acquisition. How do children break into the language system and identify individual morphemes given the sheer length of typical words? How do children master the complexity of verbal and nominal morphology? How do children navigate argument structure, given that subjects and objects are realized in cross-referencing affixes on the verb, and overt noun phrases realizing arguments are optional? How do children learn structures like noun incorporation and nominalization where they must shift grammatical classes productively within the word? How do children negotiate syntactic structures like passive and

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causative that change valency, given that the relevant morphology is word-internal? Many of these challenges are not present in languages of other structures, and thus understanding how children acquire polysynthetic languages is crucially important to understanding what is universal and language-specific in the process of acquisition.

One polysynthetic language family for which there is a reasonable acquisition literature is the Inuit languages—particularly Eastern Canadian Inuktitut (e.g. Wilman 1988; Allen 1996; Crago and Allen 1998; Parkinson 1999; Swift 2004) and West Greenlandic (e.g. Fortescue 1984; Fortescue and Lennert Olsen, 1992). This literature covers a variety of topics from language socialization to morphosyntax to narrative to argument structure. However, a substantial portion of the literature focuses on the acquisition of structures relevant to polysynthesis, which is the focus of the present chapter.

The chapter is structured as follows. Section 22.2 briefly presents the structure of Inuit languages, concentrating on features relevant to polysynthesis. Section 22.3 introduces the existing literature on the acquisition of Inuit languages. Sections 22.4–22.6 overview the general trajectory of acquisition of morphosyntax during the preschool years, covering the one-morpheme stage (Section 22.4), the two-morpheme stage (Section 22.5), and the stages beyond two morphemes (Section 22.6). Sections 22.7–22.9 focus in more detail on the acquisition of three structures involving valency alternation: noun incorporation (Section 22.7), causative (Section 22.8), and passive (Section 22.9). Sections 22.10–22.11 highlight particularly complex structures produced by young children including those with multiple valency alternations within one word (Section 22.10) and multiple changes of word class within one word (Section 22.11). Finally, Section 22.12 concludes the chapter with a summary of ways in which the acquisition of a polysynthetic language informs our understanding of language acquisition in general.

22.2 Inuit Languages

Inuit languages are part of the Eskimo-Aleut language family, and are spoken by some 140,000 people across Alaska, northern Canada, and Greenland (Dorais 2010). Inuit languages are typically divided into four groups: Alaskan Inupiaq, Western Canadian Inuktun, (p. 451) Eastern Canadian Inuktitut, and Greenlandic Kalaallisut. Each of these is itself divided into dialects and subdialects, for a total of sixteen different dialects and numerous subdialects.

Although most speakers of Inuit languages in Alaska and western Canada are older adults, children still learn Inuit languages from birth in most areas of eastern Canada and Greenland. Most Inuit in these regions are native and fluent speakers of the language, using it as their main language at home and often at work as well. In addition, children typically learn an Inuit language at home as their native language. Some children are also

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simultaneous bilinguals, learning both an Inuit language and either English or French (Eastern Canada) or Danish (Greenland) from birth (Allen 2007).

Several structural characteristics of Inuit languages are particularly relevant with regard to polysynthesis (Dorais 2010; Fortescue 1994; Mithun 2009). First, they use morphology to express in one word what would be a complete sentence in a language like English. Words fall into three classes: verbs, nouns (including pronouns and demonstratives), and uninflected particles. The former two require a root and an inflection, and then allow up to eight or more derivational morphemes in between, affixed in order of accumulating semantic scope from left to right. A typical example is shown in (1).

(1)
Illujuaraalummuulaursimannginamalittauq.
illu-juaq-aluk-mut-uq-lauq-sima-nngit-nama-li-ttauq
house-big-EMPH-ALL.SG-go-PAST-PERF-NEG-CTG.1sS-but-also
'But also, because I never went to the really big house.' (Dorais 1988: 8)

Second, Inuit languages have some 400 word-internal derivational suffixes. These suffixes represent categories that are often morphemes in other languages such as tense, aspect, emphasis, and the like. More relevant for polysynthesis, these morphemes also represent categories that have a syntactic function including adjectival or adverbial modification, negation, changing word classes, and changing valency. Typically each suffix realizes one unit of meaning (e.g. negation, distant past tense, causation). Several of these derivational morphemes are evident in the example in (1): *-juaq* 'big', *-aluk* 'EMPH', *-uq-* 'go', *-lauq-* 'PAST',

-sima- 'PERF', and *-nngit-* 'NEG'.

Third, Inuit languages have a very rich inflectional system. In Eastern Canadian languages, more than 900 portmanteau verbal inflections mark verbal modality as well as person and number of subject and object. In addition, more than 300 portmanteau nominal inflections mark case and number as well as person and number of possessor if applicable. Greenlandic has only about 300 verbal and nominal inflections in total, since Greenlandic differentiates only singular and plural numbers but not dual as in Eastern Canadian Inuit languages. The sentence in (2) highlights this inflectional complexity. It contains six words, all but one of which have an inflection.

(2)
Ullarutuarmat taanna surusi pillitajuuminik takusarasuarsuni pitaqanngijialik.

ullaq-guq-tuaq-mmat	ta-an-na	surusi-Ø
morning-become-as.soon.as-CTG.3sS	PRE-this.one-ABS.SG	boy-ABS.SG
pillitajuuq-minik	taku-saq-gasuaq-tsuni	pi-taq-qaq-nngit-jialik.
frog-MOD.4Ssg	see-really-try-CTM.4sS	thing-possession-have-NEG-PART

'When it became morning the boy tried to look at his frog but there was nothing.'
(Allen, Crago, and Pesco 2006: 585)

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(p. 452) As a result of the extensive verbal inflection system, ellipsis of both subjects and objects is very common in Inuit languages (Allen 2000). This is evident in both preceding examples where most subjects are omitted—that is, ‘I’ in (1), pleonastic ‘it’ in (2), and ‘there’ in (2).

Finally, Inuit languages exhibit a structure virtually identical to classic noun incorporation. In Inuit languages, the noun root incorporates into a bound verb root instead of incorporating into an independent verb root as in classic noun incorporation (Mithun 2009; Fortescue 1994). The preceding examples reveal three instances of noun incorporation (or quasi-incorporation)—that is, *illu* ‘house’ in (1), *ulla* ‘morning’ in (2), and *pi-* ‘thing’ in (2).

22.3 Research on the Acquisition of Inuit Languages

The available research on the acquisition of polysynthesis in Inuit languages derives from four (sets of) studies. Each attests to the fluent acquisition of Inuit languages by preschool and early school-aged children, the age group that is the focus of this chapter. The first set of studies comprises spontaneous speech data from children aged 1; 0–5; 1 (age in years;months) learning *Tarramiut*, spoken along Hudson Strait in Nunavik, the northernmost region of Quebec, Canada. Crago (1988) reports on longitudinal data from four children aged 1;0-1;9 at outset, videotaped at four-month intervals for a total of four sessions per child. Allen (1996) reports on similar data from four children aged 2;0-2;10 at outset, videotaped monthly for nine months. Finally, Crago and Allen (2001) report on data from one five-year-old child with specific language impairment and a typically-developing child of the same age. Data in all of these studies were collected in the homes of the children, and comprise natural everyday interactions between the children and their families and friends. These studies have resulted in numerous publications related to the acquisition of polysynthesis (e.g., Allen 1996, 1998, 2000, 2013; Allen and Crago 1996; Allen and Dench 2015; Crago and Allen 1998, 2001; Skarabela 2007; Swift 2004).

The second set of studies comprises spontaneous speech data from children aged 2;2-5;2 learning *West Greenlandic*, spoken along the western coast of Greenland. Fortescue (1985) analyzes naturalistic spontaneous speech samples from one child age 2;3, while Fortescue and Lennert Olsen (1992) analyze similar data from five children aged 2;2, 3;1, 3;4, 4;7, and 5;2. Data in both these studies were collected by audiotape in the homes of the children, and comprise natural everyday interactions between the children and their families and friends. Several aspects of the acquisition of polysynthesis are covered in these two publications.

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The third study comprises narrative and spontaneous speech data from 23 six-year-old children learning *Tununirmiut*, spoken along the northern coast of Baffin Island in Nunavut, the Inuit territory of Canada. Wilman (1988) collected three types of data from each of the children: descriptions of three pictures of scenes familiar to the children, narration of a wordless story book, and spontaneous speech in small group free play activities. These data were analyzed to determine the children's mean frequency of use of roots, affixes, and combinations of affixes, which then could be used to inform curriculum development for primary school children. Information from this study about the overall complexity of utterances and the frequency of use of certain affixes is relevant to the acquisition of polysynthesis.

(p. 453) The fourth study, the only experimental study of Inuit languages reported to date, was conducted with children aged 4 to 6 years (30 per experiment) learning *Kivalliq*, spoken in the coastal and inland areas west of Hudson Bay, in Nunavut, the Inuit territory of Canada. Parkinson (1999) conducted two experiments focused on children's knowledge of noun incorporation—one in which children imitated sentences spoken to them by an adult, and a second in which children selected a picture from an array of pictures that best matched the sentence they heard. The study revealed that children at this age can interpret and process complex sentences containing noun incorporation, and are aware of their underlying syntactic structure.

Several additional studies in Eastern Canada and Greenland cover aspects of the acquisition of Inuit languages that are not reviewed in this chapter. Numerous studies assess the language abilities of older school-aged children (e.g., Allen 2007; Allen et al. 2006; Crago, Annahatak, Doehring and Allen 1991; Dorais 1989; Dorais and Sammons 2002; Langgaard 2001; Taylor and Wright 2003; Wright, Taylor, and Macarthur 2000). Further studies focus on aspects of acquisition of Inuit languages that do not particularly relate to polysynthesis including narratives (e.g. Engberg-Pedersen and Trondhjem 2004), language socialization (e.g. Crago 1990; Crago, Annahatak, and Ningiuruvik 1993), and language use in schools (e.g. Crago 1992; Eriks-Brophy and Crago 1993, 1994, 2003; Spada and Lightbown 2002). Finally, one study analyzes the simultaneous acquisition of Inuit languages and English by six bilingual preschool children in the South Baffin region of Canada, highlighting their code-mixing patterns (Allen, Genesee, Fish, and Crago 2002) and their realization of subjects in the two languages (Zwanziger, Allen, and Genesee 2005), and showing how they are sensitive to the differences between polysynthetic (Inuit) and analytic (English) language structure.

We turn now to a review of the language acquisition data with a focus on stages and structures relevant to polysynthesis. The next three sections cover stages in the trajectory of development from the earliest utterances through the preschool years. The subsequent sections focus on structures of particular importance for polysynthesis.

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22.4 One-Morpheme Stage

The most obvious challenge facing children learning a polysynthetic language is breaking into the complex morphology of the language. Children must segment words in the language they hear around them into their component morphemes, and then must learn to use those morphemes to build words in their own utterances.

As in other languages, Inuit children's first utterances typically comprise one word, which is also one morpheme (Crago and Allen 1998). This can be an uninflected particle that can freely stand alone (3a), a single noun (3b), or a verb root that appears without inflection (4, 7b).

(3)

a. *Auka.*
'No.' (Tumasi 1;9; Crago and Allen 1998: 262)

b. *Piipi.*
'Baby.' (Sarah 1;4; Crago and Allen 1998: 262)

(p. 454) Many of these early words are baby words—a nursery vocabulary that is used by and to children up to about age 3 (Crago, Allen, and Pesco 1998). The example in (4) shows a baby word verb as compared to its adult equivalent utterance.

(4)

Apaapa.	[adult:	Niri-guma-junga.]	
food/eat	[	eat-want-PAR.1sS]	
'Food/eat.'	[	'I want to eat.']	(Jini 1;0; Crago and Allen 1998: 262)

Importantly, these early productions are all identifiable morphemes. Note that noun and verb roots rarely appear in caregiver speech without affixation: Crago and Allen (1997) report that 90 percent of verb roots and 70 percent of noun roots are followed by at least one affix (mean 1.8 affixes for verb roots and 1.2 affixes for noun roots) in speech directed by four different mothers to their children aged 1;8-2;1. Thus, children's early production of isolated morphemes shows that they are not simply repeating memorized forms but rather have been able to isolate individual morphemes from the input and can use them productively.

A first stage of producing individual morphemes is also found in other morphologically complex languages including Navajo, Quechua, and Tzeltal (Kelly et al. 2014)—all languages with relatively little fusion across morpheme boundaries in the adult language. In contrast, the first productions in morphologically complex languages with more fusion between morphemes (e.g. Mohawk, K'iche' Mayan) tend to comprise the most prominent syllable of a word, whether or not it is a complete morpheme. This difference in patterning indicates that not only morphological complexity but also morphophonological

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patterns allowing identification of morphemes play a crucial role in early acquisition in polysynthetic languages.

22.5 Two-Morpheme Stage

By around two years of age, Inuit children start producing an average of two morphemes per utterance. At this point, their utterances begin to differ substantially from those of children speaking more analytic languages, revealing their early sensitivity to language-specific patterns.

Children in the two-morpheme stage who are learning analytic languages (e.g. English, German) typically produce two separate words per utterance, and thus this is commonly known as the 'two-word stage' (Brown 1973). These children use very few grammatical morphemes reliably or productively, with most appearing only several months later. English-speaking children at this stage typically use only two inflectional affixes: present progressive *–ing* and plural *–s* (Brown 1973).

Children learning Inuit languages, in contrast, start adding grammatical morphemes to verb and noun roots during this stage (and earlier as well), so that many of their utterances are comprised of a root and an affix rather than two separate words. Thus, it makes more sense to refer to this as the 'two-morpheme stage' for polysynthetic languages. This acquisition pattern is similar to that for children learning agglutinative languages such as Turkish (Aksu-Koç and Slobin 1985) and Hungarian (MacWhinney 1985), who also produce many root + morpheme units at this stage. However, the variety of inflectional and derivational (p. 455) affixes used productively is likely higher for Inuit languages compared to agglutinative languages given the much higher number of such affixes regularly used in Inuit languages.

Data at this stage is available for both West Greenlandic and Tarramiut. For example, Fortescue and Lennert Olsen (1992) report that one West Greenlandic-speaking child aged 2;2 used ten verbal inflections, three nominal inflections, and eight derivational suffixes more or less productively in a data session comprising ten typed pages of transcription, and that his longest word contained four morphemes. Fortescue (1985) reports that another West Greenlandic-speaking child aged 2;3 used twenty-five verbal inflections, fifteen nominal inflections, and twenty-four derivational suffixes more or less productively in one half-hour session, and his longest word contained five morphemes. Exact figures are not available for Tarramiut, but the pattern is very similar (Allen, Dench, and Isakson, submitted). It is clear from these examples that children are already productively producing many derivational and inflectional morphemes at the two-morpheme stage.

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Typical utterances comprising two morphemes include either a verb root or a noun root plus an affix. The utterances in (5) illustrate a verb root plus an inflection. The utterances in (6) illustrate a noun root plus an adjective (6a), instrumental case marker (6b), possessive marker (6c), conjunction (6d), and demonstrative enclitic (6e).

(5)

a. Qai-git.
come-IMP.2sS
'(You) come here.' (Jini 1;8; Crago and Allen 1998: 263)

b. Aamar-poq.
open-IND.3sS
'It opens.' (L 2;2; Fortescue and Lennert Olsen 1992: 141)

a. Qimmi-aluk.
dog-bad
'Bad dog.' (Lucasi 2;8; Crago and Allen 1998: 263)

b. Timmisartu-mik.
airplane-MOD.SG
'With an airplane.' (L 2;2; Fortescue and Lennert Olsen, 1992 : 143)

c. Ataata-ga.
father-ABS.1Ssg
'My father.' (Aqissiaq 2;3; Fortescue 1985: 108)

d. AnneMarie-lu.
AnneMarie-and
'And AnneMarie.' (Aqissiaq 2;3; Fortescue 1985: 108)

e. Suna-ana.
what-that
'What is that?' (Aqissiaq 2;3; Fortescue 1985: 108)

Utterances at this stage may also contain two separate words of one morpheme each, as in (7a). It is rare to find a two-word utterance composed of a verb root plus a subject or object (p. 456) as in (7b), even though this is one of the more typical utterance types at the two-morpheme stage in English.

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(7)

a. Auka Siasi.
no Jessie
'No, Jessie.' (Sarah 1;11; Crago and Allen 1998: 262)

b. Iqaluk uvaa-.
fish bleed
'The fish is bleeding.' (Tumasi 2;1; Crago and Allen 1998: 264)

Finally, some utterances appear to be two morphemes in length but are more likely memorized fixed forms. The examples in (8), in which the verbal inflection is missing, are frequent expressions in both child and adult Tarramiut (but not West Greenlandic). Since both the verb stem and the verbal inflection may be omitted in constrained contexts in Tarramiut (but not West Greenlandic) adult colloquial speech, these utterances cannot be considered ungrammatical (Swift and Allen 2002a, 2002b).

(8)

a. Su-nngit. [= Su-nngi-tunga.]
do-NEG [do-NEG-PAR.1sS]
'(I'm) not doing anything.' (Tumasi 2;1; Crago and Allen 2001: 80)

b. Tii-tuq. [= Tii-tu-ruma-gama]
tea-consume [tea-consume-want-CTG.1sS]
'(I want to) have some tea.' (Sarah 1;11; Crago and Allen, 2001: 81)

It is difficult to determine whether a given morpheme combination at this stage is used productively or reproduced as a fixed form. Fortescue (1985) and Allen and Crago (1996) discuss several criteria for determining productivity, some of which are discussed in later sections of this chapter.

In contrast with more analytic languages like English, the two-morpheme stage in Inuit languages is not considered telegraphic. This is the case for three reasons. First, subject and object ellipsis are common in the adult language, so omitting subject and object in child language is not seen as non-target-like. Second, Inuit languages do not have many of the function words typically omitted in early child English such as articles and auxiliaries. Third, Inuit-speaking children master verbal inflections (agreement) and nominal inflections (plural, possessive) very early compared to English-speaking children.

22.6 Beyond the Two-Morpheme Stage

The trend of more separate words in analytic languages like English, and more morphemes within one word in Inuit languages, continues beyond the two-morpheme stage and into adulthood. One representative study of English-speaking children showed that three-year-olds had an average mean length of utterance (MLU) in words of 3.25,

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while (p. 457) their average MLU in morphemes was 3.58, yielding an average of 1.1 morphemes per word (Rice, Redmond, and Hoffman 2006: 798). In contrast, Allen and Dench (2015) found that Tarramiut-speaking three-year-olds had an average MLU in words of 1.22 (range 1.10–1.38), while their average MLU in morphemes was 2.63 (range 1.88–3.26), yielding an average of 2.15 morphemes per word (range 1.69–2.44)—twice as many as in English. The mean length of the longest word in morphemes at age 3 in Tarramiut was 6.29 (range 4–7), while the mean length of the longest utterance in morphemes was 8.57 (range 5–13).

The same pattern holds for slightly older children. Rice et al. (2006: 798) found that English-speaking five-year-olds had an average MLU in words of 4.06, while their average MLU in morphemes was 4.51, again yielding an average of 1.1 morphemes per word. In contrast, Wilman (1988: 92–7) found that Tununirmiut-speaking six-year-olds had an average MLU in words of 1.64 (range 1.14–2.67), and an average MLU in morphemes of 3.91 (range 2.89–5.39), yielding an average of 2.39 morphemes per word (range 2.16–2.92)—again twice as many as in English. The mean length of the longest utterance in morphemes at age 6 in Tununirmiut was 22.30 (range 10–39); data on longest words is not provided.

This pattern indicates considerably more complexity within words in Inuit languages as compared to English. Beyond the two-morpheme stage, Inuit children gradually produce more morphemes per word in their utterances. Fortescue and Lennert Olsen (1992) reported that the youngest children in their study (age 2;2, 2;3, and 3;1) used at most one derivational affix between the verb root and the inflection (for a total of three morphemes in the word). The child aged 3;4 produced 16 utterances with two derivational affixes between the root and the inflection, as well as one utterance with three derivational affixes. The child aged 4;7 used 45 utterances with two derivational affixes and 11 with three derivational affixes between the root and the inflection. This pattern is consistent with findings for Tarramiut as well (Allen, Dench, and Isakson, submitted). Some ordering in the emergence of different types of affixes is also apparent across children (Allen, Dench, and Isakson, submitted; Fortescue 1985; Fortescue and Lennert Olsen 1992), with remarkable similarity in the patterns across Tarramiut and West Greenlandic. This is covered in the following subsections.

22.6.1 Verbal inflectional and derivational affixes

Verbal inflections are produced among the first two-morpheme utterances, and are rarely omitted except in contexts where adults would also omit inflections in colloquial speech (Crago and Allen 2001; Swift and Allen 2002b). Imperative (e.g. -git ‘IMP.2sS’) and indicative (e.g.

-juq ‘PAR.3sS’) inflections denoting singular subjects appear first. Inflections in the contingent (e.g. -gama ‘CTG.1sS’) and interrogative (e.g. -vit ‘INT.2sS’) moods appear next, followed later by the more complex contemporative (e.g. -tsuni ‘CTM.4sS’) and

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incontemporative (e.g.,-lunga ‘ICM.1sS’) moods that are used only in subordinate clauses. (The contemporative inflection expresses that the action in the subordinate clause verb is happening or has already happened at the same time as the action in the main clause verb; the incontemporative inflection expresses that the action in the subordinate clause verb could in principle happen at the same time as the action in the main clause verb but has not yet.) In addition, the range of persons and numbers denoted by the inflections gradually becomes more broad. The earliest inflections denote only subjects apart from one imperative inflection marking (p. 458) both subject and object (-*guk* ‘IMP.2sS.1sO’). However, more inflections marking both subject and object emerge as linguistic ability develops. Fortescue and colleagues report ten different productive verbal inflections for the child at age 2;2, around twenty-five different verbal inflections for each of the children aged 2;3–3;4, and then thirty-five to forty different inflections for each of the children aged 4;7 and 5;2.

The prevalence of verbal inflections denoting both subject and object in Inuit languages means that speakers can express a full sentence within one word, and adults very often do so. This holds for children as well: they express the subject only through verbal inflection (i.e. with no independent noun phrase or demonstrative) in about 85 percent of instances, and express the object only through verbal inflection in about 70 percent of instances (Allen 1997). Importantly, children are not random in how they express arguments. They use only verbal inflection when the identity of the intended subject or object is accessible to the interlocutor, such as through prior mention in the discourse or joint attention in the physical context. In contrast, they use an independent noun phrase or demonstrative when the identity of the intended subject or object is not accessible, such as when it is newly introduced in the discourse or not present in the physical context (Allen 2000; Skarabela 2007).

Interestingly, verbal inflections are identified as a difficult aspect of acquisition in the only study of specific language impairment (SLI) in Inuit languages (Crago and Allen 2001). The five-year-old Tarramiut-speaking girl with SLI in this study used verbal inflections on only 60 percent of her verb stems (n=50) in one half-hour play session. This is in stark contrast to typically developing peers matched for age or language who used inflections on 98–100 percent of their verb stems (all figures not including situations where omission of inflection is permitted in colloquial speech, as discussed in section 22.5). The child with SLI omitted mention of the referent completely in a quarter of the instances (9a), used an overt first or second person pronoun to realize the subject in another quarter of the instances (9b), and substituted a nonce inflection

–*mi* in place of the target inflection in the remaining half of the instances (9c). None of these options are grammatical in adult speech, nor are they found in the speech of typically developing children.

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(9)

a. Aaa qai-si. [= Aaa qai-si-juq]
yes come-PRSP [= yes come-PRSP-PAR.3sS]
'Yes, is coming.' [= 'Yes, he/she/it is coming.']
(5SLI; 5;4; Crago and Allen 2001: 93)

b. Anaana annuraa-MI uvanga. [= Anaana annuraa-si-junga.]
mother dress-MI I/me/my/mine [= mother dress-PRSP-PAR.1sS]
'Mom, dress I.' [= Mom, I'm about to get dressed.']
(5SLI; 5;4; Crago and Allen 2001: 95)

c. Ah umia-mi ah sini-MI. [= Sini-nngua-luk umiar-mi.]
um boat-LOC.SG um sleep-MI [= sleep-pretend-IMP.1dS boat-LOC.SG]
'Um on the boat, um sleep.' [= Let's pretend to sleep on the boat.']
(5SLI; 5;4; Crago and Allen 2001: 94–5)

Overall, this child with SLI does not use the morphosyntactic devices of her language appropriately, which leads to utterances that seem more analytic than polysynthetic.

(p. 459) We turn now to verbal derivational affixes in typically developing children. Tense and aspect markers are among the first derivational affixes to appear. Future markers appear first, used as early as 2;0. These include the near future *-langa-* and *–niaq-* as well as prospective aspect

-si- in Tarramiut, and the future *-ssa-* and inceptive aspect *-ler-* in West Greenlandic. Past-oriented aspect comes about the same time or slightly later in Tarramiut, with the affixes perfective *-sima-* and the terminative *-jariiq-* in Tarramiut, and *-reer-* 'already' and *-nikuu-* 'have done' in West Greenlandic. Past tense then emerges somewhat later, first appearing between 2;6 and 3;0, with the earliest affixes being recent past *-kainnaq-* and yesterday past *-lauq-* in Tarramiut. Swift (2004) provides a detailed overview of the acquisition of tense and aspect morphology in Tarramiut.

Also among the first verbal derivational affixes to appear are the negation marker *-nngit-* (for both languages), the politeness affix used to soften imperatives (*-lauq-* in Tarramiut, *-niar-* in West Greenlandic), and two deverbal affixes in Tarramiut (*-uti* 'thing used for V', *-juq* 'that which'). Next to emerge, sometime between 2;0 and 2;6, are affixes that change the valency of the verb – specifically the causative *-tit-* and several denominalizing affixes (e.g. *-u-* 'be' and *-liaq-* 'go to' in Tarramiut, *-u-* 'be' and *-nngor-* 'become' in West Greenlandic), as well as the passive *-jau-* in Tarramiut (but not West Greenlandic). Around 2;6–3;0, affixes that translate as complement-taking verbs in English start to come in. These include *-guma-* 'want to' and *-nnguaq-* 'pretend to' in Tarramiut, and *-ruma-* 'want to' and *-sinnaa-* 'can' in West Greenlandic. The habitual affix *-sar-* and the passive participle *-saq-* also appear around this stage in West Greenlandic.

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Until around 3;0-3;6, development in verbal derivational affixes is most noticeable in the addition of new categories of affixes, as we have just seen. Beyond this point, development focuses on adding more affixes in each category to cover a wider range of meanings and functions. Fortescue and colleagues report five to fifteen different productive verbal derivational affixes for the children 2;2–3;1, and twenty-five to thurty-five for the children aged 3;4–5;2.

22.6.2 Nominal inflectional and derivational affixes

The first nominal inflections to appear around age 2;0 are the ergative *-up* / *-p* (primarily used at this age to mark possession in Tarramiut but to mark transitive subjects in West Greenlandic), the modalis *-mik* (used at this age to mark direct objects in Tarramiut, but instrumental case in West Greenlandic), and the first person singular (*-ga*) and plural (*-kka*) possessives. This is followed soon after by nominal inflections marking the other cases: locative (*-mi*), allative (*-mut*), ablative (*-mit*), equative

(*-titut*), and vialis (*-kkut*). (Note that the absolutive singular morpheme is null, as is common in ergative languages, so its emergence is not visible.) While the first nominal inflections mark singular nouns and first person possessors, plurals and other possessors gradually appear as well. Fortescue and colleagues report three different productive nominal inflections for the child at age 2;2, and between ten and fifteen for the older children. It is not surprising that there are fewer nominal than verbal inflections used at this age given that there are many fewer nominal than verbal inflections in the language.

Nominal derivational affixes are also not particularly diverse. Children begin with adjectival markers such as ‘big, bad’ (*-aluk* in Tarramiut, *-suaq* in West Greenlandic) and ‘little’ (*-apik* in Tarramiut,

-araq in West Greenlandic), as well as the affix *-kkut* ‘X and family’ in (p. 460) both languages. At later ages, a more varied range of adjectival markers emerges. Fortescue and colleagues report two to four different productive nominal derivational affixes for the children aged 2;2–3;1, and eight to ten affixes for the children aged 3;4–5;2.

The enclitics *-lu* ‘and’, question marker *-li* ‘where’, and reportative *-guuq* ‘it is said’ also appear early in both languages, the former two mostly on nouns and the latter mostly on verbs. These remain consistent throughout the ages covered in this chapter.

22.6.3 Relationship between words

The relationships between words in Inuit languages are less important than in English, largely because much of the syntactic ‘action’ happens within words. By age 3, however, children are beginning to produce some utterances with both main and subordinate clauses showing syntactic relationships. Some examples are in (10).

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(10)

a. U-na aniir-til-lunga
this.one-ABS.SG be.outside-DS-ICM.1sS
atjiliu-ri-ni-kainna-mi-ju-kualuk ilai?
film-TR-ATP-PAST-also-PAR.3sS-pitiful TAGQ
'When I was outside this pitiful person filmed me, right?'
(Elijah 2;9; Allen et al., submitted)

b. Illa-ngaar-mat qia-voq.
laugh-much-CTG.3sS cry-IND.3sS
'She is crying because he is laughing so much.'
(N 3;1; Fortescue and Lennert Olsen 1992: 160)

c. Aalisagar-su-u(p) kee-qina-vaanga uunga-pallap-punga
fish-big-ERG.SG bite-so.as.not.to-IND.3sS.1sO come.here-hurriedly-IND.1sS
'I'm hurrying over here so the big fish won't bite me.'
(K 3;4; Fortescue and Lennert Olsen 1992: 171)

d. Uanga taakkortai mikisuu-llunga neri-sar-nikuu-akka ilaa Nuka?
I these.things be.small-CTM.1sS eat-HAB-PERF-IND.1sS.3sO TAGQ Nuka
'When I was little I used to eat these, didn't I, Nuka?
(A 4;7; Fortescue and Lennert Olsen 1992: 18)

These structures require not only a good mastery of morphosyntactic features such as subordinate clause inflections, but also a relatively sophisticated level of cognition in order to understand and appeal to the conceptual and contingent relationships between clauses.

To this point, we have focused on the overall picture of children's increasing facility with the morphological complexity of Inuit languages. We turn now to a more detailed view of three structures that reflect syntax involving valency changing within the word: noun incorporation, causative, and passive. We then highlight particularly complex utterances in which two or three of these structures appear within one word, and in which the word class changes at least twice within the word. The main goal in these sections is to show children's adeptness with these complex morphosyntactic manipulations at a very young age.

(p. 461) 22.7 Noun Incorporation

Noun incorporation (NI) is one of the most diagnostic structures of polysynthesis since it allows one word to contain both a verb and an object argument. In most polysynthetic languages, the verb can serve either as an independent root or as the host for an incorporated noun. In Inuit languages, however, verbs that allow incorporation are bound

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suffixes (Fortescue 1994; Mithun 2009). For some authors, this difference means that Inuit languages do not have true noun incorporation (e.g. Baker 1996). However, we will refer to this structure as noun incorporation for the purposes of the present chapter.

Inuit-speaking children begin producing NI structures as early as two years of age, as exemplified in (11).

(11)

a. Qaqquujar-tu-rumalli-paa!
cracker-consume-yearn.for-oh.how.I
'I yearn for munching crackers!' (Elijah 2;9; Allen, 1996: 167)

b. Tuttu-siu-laa-qinuk?
caribou-look.for-FUT-INT.1dS
'Will we go look for caribou?' (Paul 2;11; Allen, 1996: 167)

c. Quli-nngor-pa?
ten-become-INT.3sS
'Is it ten (o'clock)?' (L 2;2; Fortescue and Lennert Olsen 1992: 145)

Allen (1996) reports that an average of 12 percent of children's verbal clauses in Tarramiut contain NI structures between the ages of 2;0 and 3;6. The four children in her study use a total of seventeen different incorporating verb affixes, of which *-u-* 'be', *-qaq-* 'have', *-gi-* 'have as', *-liaq-* 'go to', *-tuq-* 'consume', *-taaq-* 'acquire', and *-siuq-* 'look for' are the most frequent. Fortescue and Lennert Olsen (1992) report that the five children in their study of West Greenlandic, aged 2;2-5;2, used nine different incorporating verb affixes including the first four just listed for Tarramiut. Wilman (1988) reports that twenty-three different incorporating verb affixes are used by the 6-year-olds in his study.

These NI structures are not simply memorized and reproduced as unanalyzed units by the children, but rather are used productively (Allen 1996). This productivity is evidenced by children's use in the same session either of one incorporating verb affix with two different incorporated nouns, or of a noun root both in an NI structure and in another structure with different morphology (e.g. case marking, adjectival marker). Productivity is also evidenced by children's overuse and overgeneralization of NI in structures where adults would not use it, as in (12).

(12)

a. U-na sini-tu-alu-u-nngi-tuq.
this.one-ABS.SG sleep-NOM-EMPH-be-NEG-PAR.3sS
'This one isn't sleeping.' [lit. this one is not one who is sleeping]
(Louisa 3;2; Allen 1996: 169)

b. Una sini-nngi-tu-aluk.
this.one-ABS.SG sleep- NEG-PAR.3sS-EMPH
'This one isn't sleeping.' (target utterance; Allen, 1996: 169)

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(p. 462) By age 3, children are producing more complex NI structures. One type is double NI as shown in (13a), where a noun is incorporated into an incorporating verb affix (*-qaq-* 'have'), which is then nominalized, and then this nominalized form is incorporated into another incorporating verb affix (*-u-* 'be'). Another complex form is modifier stranding, where an incorporated noun (*savik* 'knife') is modified by a numeral or adjective outside the verbal word (*imaaittunik* 'ones like those'), as shown in (13b). Fortescue and Lennert Olsen (1992) show stranding structures in the speech of only the oldest child in their study, as shown in (13c). Here the modifier *allanik* 'other' modifies the noun root *ini* 'place'.

(13)

a. Nanur-nik piara-qar-suu-ngu-mmata.
polar.bear-MOD.PL baby-have-HAB-be-CTG.3pS
'They have polar bear babies,' [lit. they are ones who have polar bear babies]
(Paul 3;3; Allen, 1996: 171)

b. Maasiu-kkut imaa-it-tu-nik savi-qar-qut.
Matthew-group thus-be-NOM-MOD.PL knife-have-IND.3pS
'Matthew and his friends have knives like that.' (Elijah 2;9; Allen, 1996: 172)

c. Taava qimmi-t toqu-gunik alla-nik
then dog-ABS.PL die-CND.4pS other-MOD.PL
ini-ssa-qa-nngin-namikkit.
place-FUT-have-NEG-CTG.4pS.3pO
'So when dogs die, since they don't have any other place for them …'
(P 5;2; Fortescue and Lennert Olsen 1992: 205)

Parkinson (1999) conducted two experimental studies to test whether Kivalliq-speaking children understand the underlying syntax of NI or if they are simply attending to the linear order of elements within the word. In the first study, he asked children to repeat sentences that contained NI with modifier stranding, as in (14). In the second study, he asked children to select a picture from an array of three pictures to match sentences that contained NI with modifier stranding, as in (15), as well as similarly complex sentences without noun incorporation.

(14)

Jessica piggu-jur-mik qimmi-qaq-tur-mik
Jessica.ABS.SG strong-NOM-MOD.SG dog-have-NOM-MOD.SG
tautu-liq-tuq.
look.at-start-PAR.3sS
'Jessica starts to look at one who has a strong dog / … at a strong one who has a dog.'
(Parkinson 1999: 136)

(15)

Qimmir-mik naha-qaq-tur-mik aupaktu-mik tikkua-rit.
dog-MOD.SG hat-have-NOM-MOD.SG pink-MOD.SG point.to-IMP.2sS
'Point to the dog with the pink hat / Point to the pink dog with the hat.'
(Parkinson, 1999: 168)

(p. 463) The NI sentences in both studies were constructed such that the modifier could be construed as modifying either the incorporated noun or the entire sentence. Several types of NI structures were used including ones where differences in number marking,

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plausibility of the adjective as a modifier, or difference in placement of the adjective forced only one of the two interpretations.

Children found the repetition task difficult and often simplified the sentences in their repetitions by either changing the word order or deleting words. However, they did not have more difficulty with NI sentences than with other complex sentences. Further, their differential behavior across the different types of NI structures showed that they have knowledge of the syntactic nature of NI and are not simply attending to the linear order of elements within the word. On the picture selection task, children selected the correct picture in 50 percent to 90 percent of instances depending on the child (chance is 33% or 66% depending on the condition). Children performed slightly better on the NI sentences than on the non-NI sentences, suggesting that they had no problem interpreting the NI structures. Further, children’s performance improved significantly with age, especially on the more complex structures. Overall, Parkinson’s results indicate that children aged 4–6 years understand even difficult NI structures and interpret them syntactically.

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22.8 Causative

Inuit languages have two types of causatives: a lexical causative and a morphological causative. In the lexical causative, exemplified in (16a), the causative meaning is inherent in the meaning of the verb. Lexical causative verbs often can also be expressed in the intransitive form without the causative meaning—termed the causative–inchoative alternation—as in *Annie melted the ice* vs. *The ice melted*. In the morphological causative, exemplified in (16b), the causative meaning is expressed by the causative morpheme *-tit-* 'CAUS'. This morpheme is suffixed to the verb stem and adds a valency of one to the verbal structure.

(16)

a. Una naavi-lagu?
this.one empty-IMP.1sS.3sO
'Shall I empty this one?' (Tumasi 2;1; Allen 1998: 645)

b. Panik itsiva-ti-tait.
daughter sit-CAUS-PAR.2sS.3sO
'Daughter, you made it sit.' (Paul 3;3; Allen 1998: 661)

We focus here on the morphological causative since it is of particular interest regarding polysynthesis.

Allen (1996) reports that an average of 2 percent of children's verbal clauses in Tarramiut contain morphological causative structures between the ages of 2;0 and 3;6. The first morphological causatives first appear sometime between 2;0 and 2;10 (Allen 1998). These first instances are typically imperative commands or optative first person suggestions, and often (p. 464) are missing either a verb root or an inflection. Example (17a) is a command missing the verbal inflection *-guk* 'IMP.2sS.3sO', example (17b) is an optative first person suggestion missing the verb root, and example (17c) has both root and inflection.

(17)

a. Tii-tur-ti-lauq.
tea-consume-CAUS-POL
'Let (her) have tea.' (Sarah 2;0; Allen 1998: 648)

b. Ti-lau-lagit?
CAUS-POL-IMP.1sS.2sO
'Shall I make you do X?' (Lizzie 2;7; Allen 1998: 650)

c. Sikituur-ti-lau-nnga.
ride.skidoo-CAUS-POL-IMP.2sS.3sO
'Let me ride the skidoo.' (Elijah 2;0; Allen 1998: 655)

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Structures without verb roots such as in (17b) occur at this age in contexts where the verb in a complete structure would take either a lexical causative or a morphological causative. This suggests that children at this age have mastered the concept of causation but are not yet sure which verb root requires which type of causative form. Although Tarramiut-speaking adults occasionally produce these rootless causatives, they are much more predominant among children. There is also some evidence that children are producing fixed forms rather than using the causative morpheme productively at early ages. For example, eleven of Elijah's thirteen causative productions at 2;0 use several different verbs with the same causative + inflection combination (*-tilaunnga* 'IMP.2sS.3sO'), as in (17c).

Since all the morphological causatives used at this stage are either commands or first person optatives, this suggests that children may first assume that the causative morpheme is a required part of the form to be used in commands. Some evidence for this comes from the errors in one of the children studied by Allen (1998). This child correctly uses the causative morpheme *-tit-* in commands, but fails to use the causative morpheme in declaratives and questions that require it. An example of the latter is in (18a), with the target utterance in (18b).

(18)

a. Ijukka-si-jara.
fall-PRES-PAR.1sS.3sO
'I'll fall it.' (Louisa 3;2; Allen 1998: 670)

b. Ijukka-ti-tara.
fall-CAUS-PAR.1sS.3sO
'I'll make it fall.' (target utterance; Allen 1998: 670)

Around age 3;0, children begin to use morphological causatives in a more adult-like fashion. This is signaled by children's use of this structure with a wider variety of verb roots that are more consistently present in the utterances, as well as with inflections other than imperatives, such as indicative and interrogative, as exemplified in (19b). Children also begin to show signs of productivity. In particular, there are several examples of use of a given verb (p. 465) with the causative morpheme in a causative context, and without the causative morpheme in an inchoative context, indicating that the child understands the use of the causative morpheme. In the example in (19), Louisa is afraid that she has banged the head of one of her dolls. She asks her cousins the two questions in (19), appropriately using an intransitive inflection for the inchoative (19a) and a transitive inflection for the causative (19b).

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(19)

a. Niarqua-va?
bump.head-INT.3sS
'Did it bump its head?' (Louisa 3;6; Allen 1998: 662)

b. Niarqua-ti-tara?
bump.head-CAUS-PAR.1sS.3sO
'Did I make it bump its head?' (Louisa 3;6; Allen 1998: 662)

Less detail has been published about the acquisition of morphological causatives in West Greenlandic. No data is available on their frequency of use. However, several examples of this structure are present in the published data starting at 2;3; none are present for the data at 2;2. Further, the morphological causative is reported to be productive at each of the reported ages from 2;3 to 5;2 (Fortescue 1985; Fortescue and Lennert Olsen 1992). Interestingly, there is no evidence from the data available that children learning West Greenlandic go through the same early phase of fixed forms and restriction of the causative to command form as do children learning Tarramiut. This may be related to the fact that the causative morpheme cannot appear alone without a verb root in West Greenlandic as it can in Tarramiut (cf. (17b)). Examples at the youngest ages in West Greenlandic are with declaratives, as in (20).

(20)

a. Uppi-ti-le-qa-akkit!
fall-CAUS-begin-INTENS-IND.1sS.2sO
'I'm going to make you fall!' (Aqissiaq 2;3; Fortescue 1985: 108)

Not surprisingly, all twenty-three of the children in Wilman's (1988) study are also using the causative morpheme *-tit-* productively, with a total of 194 uses in 12,341 utterances.

22.9 Passive

The passive in Tarramiut is formed by affixing the passive morpheme *-jau-* to a transitive verb stem, which reduces the valency of the verb by one. Agents are expressed using allative case. As in many other languages, expression of the agent is optional.

Allen and Crago (1996) report that an average of 3 percent of children's verbal clauses in *Tarramiut* contain passive structures between the ages of 2;0 and 3;6. The first passives appear as early as 2;0 (Allen and Crago, 1996). About 80 percent of the total number of passives in the data are short passives, as shown in (21a), where the agent is not expressed. The remaining 20 percent are full passives with overt agents, as in (21b). Most of the full passives are produced by the most precocious child in their study.

(p. 466)

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(21)

a. Kali-jau-guma-junga.
pull-PASS-want-PAR.1sS
'I want to be pulled.' (Elijah 2;9; Allen and Crago 1996: 142)

b. Itsu-munga ai-jau-gavit.
that.one-ALL.SG get-PASS-CTG.2sS
'You will be brought by that one.' (Louisa 2;10; Allen and Crago 1996: 144)

The passive occurs with more than thirty different verb roots in the data reported by Allen and Crago (1996), showing that it is not restricted to a few fixed forms. Several examples explicitly illustrate the productivity of this structure. In example (22), for instance, Lizzie overgeneralizes the passive in an intransitive construction, which does not allow the passive. She utters (22) just as she slips on the polished wooden base of a bed frame. Since there is no agent of sliding, but rather the sliding occurs unintentionally, the passive cannot be used.

(22)

*Siaqri-tau-vuq.
slide-PASS-IND.3sS
'It was slidden.' (Lizzie 3;3; Allen and Crago 1996: 140)

In example (23), Elijah alternates between a passive (23a) and a transitive (23b) use of the same verb root within the same conversation, illustrating his understanding of the difference between the two forms. In (23a) he reports to his mother that he will be filmed, while in (23b) he commands the photographer to film him.

(23)

a. Anaana atjiliur-tau-si-gama.
mother film-PASS-PRES-CTG.1sS
'Mom, I'm going to be filmed.' (Elijah 2;5; Allen and Crago 1996: 142)

b. Aulla-laa-ravit atjiliu-lau-nnga.
leave-FUT-CTG.2sS film-POL-IMP.2sS.1sO
'Film me since you will leave.' (Elijah 2;5; Allen and Crago, 1996: 142)

It is striking that the passive is used so early and so frequently in Tarramiut. In languages like English, German, and Hebrew, the passive does not typically appear until around age 4, and even then is used infrequently. The early acquisition of the passive in Tarramiut is linked to three factors. First, it is more frequent in the input in Tarramiut (7.8 times per hour) than in English (1.1 times per hour; Allen and Crago 1996). Second, the structure of the passive is not uncommon in Tarramiut; several other morphemes occur in the language with similar morphological properties and syntactic repercussions. However, the structure of the passive is relatively uncommon in English, and thus learning the structural aspects presents a particular challenge to children. Interestingly, the passive is

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also used early and frequently in other morphologically complex languages where the passive occurs frequently in the input, such as Sesotho (Demuth 1990) and K'iche' Mayan (Pye and Quixtan Poz 1988). Finally, Tarramiut relies heavily on valency reducing structures—passive, antipassive, and noun incorporation—as part of its trend away from using ergative structures (Allen 2013). In (p. 467) Allen's (2013: 94) analysis of children's utterances with bivalent propositions (i.e. two implicit arguments) and third person subjects, the passive was used in 37 percent of cases and the ergative-absolutive structure in only 7 percent (antipassive was used in 22 percent, and noun incorporation in the remaining 34 percent).

In West Greenlandic, neither the actional passive with *-neqar-* nor the stative passive with *-saa-* appear in the child data until at least age 5;2. This is somewhat surprising in comparison with the early and relatively frequent use in Tarramiut. This may be because of the emergence of a pseudo-passive in West Greenlandic, which employs the causative morpheme *-tit-* used reflexively (Fortescue and Lennert Olsen 1992: 156). This pseudo-passive appears in several utterances in the published data, including those shown in the conversation in (24).

(24)

a. Pitu sul-luni-una toqu-soq-maa?
Peter how-CTM.4sS-this.one die-PART-I.wonder
'How was it now Pitu died?' (Mother; Fortescue and Lennert Olsen 1992: 155)

b. Billi-nut apor-til-luni.
car-ALL.SG run.over-CAUS-CTM.4sS
'By being run over by a car.' (P 5;2; Fortescue and Lennert Olsen 1992: 155)

c. Igit-sil-luni.
throw-CAUS-CTM.4sS
'By being thrown out.' (N 3;1; Fortescue and Lennert Olsen 1992: 155)

Wilman (1988) reports that the passive morpheme is used productively by all 23 children in his study, with a total of 413 uses in 12,341 utterances.

22.10 Combining Valency Alternating Forms

Until this point we have seen examples of the use of individual morphemes with syntactic function. However, even young children are adept at combining these morphemes and functions within one word. This shows that they are able to manipulate multiple syntactic functions within one word, and understand how these functions interact. We offer three different types of examples here.

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Example (25) shows two utterances including noun incorporation combined with the causative—a simple noun in (25a) and a locative in (25b).

(25)

a. Kutsu-taar-ti-lau-nnga.
gum-acquire-CAUS-POL-IMP.2sS.1sO
'Give me gum.' [lit. make me acquire gum] (Lizzie 2;10; Allen 1996: 118)

b. Ata-ngagu-ur-ti-tara.
under-VIA.3Ssg-go-CAUS-PAR.1sS.3sO
'I made it go through underneath.' (Paul 3;3; Allen, 1996: 108)

(p. 468) Some instances of the causative and passive within the same word also occur. However, it appears that this combination *-titau-* is an unanalyzed unit for at least some children at early stages (Allen 1996). This unit is also often used without either a verb root or inflection, as in (26).

(26)

Aani-Ø-lu	ti-tau-lau-juguk	ilai?
Annie-ABS.SG-and	CAUS-PASS-PAST-PAR.1dS	TAGQ

'Annie and I were made to, right?' (Lizzie 3;3; Allen 1996: 106)

There is some evidence that linguistically more advanced children are able to control scope effects of these two morphemes by strategically using morpheme ordering, as shown in (27). In (27a), Elijah uses the passive within the scope of the causative to show that a passive action is caused. In (27b), in contrast, he uses the passive outside the scope of the causative to show that the causation itself is passivized.

(27)

a. Nasa-nga piir-tau-til-lugu.
hat-ABS.3Ssg remove-PASS-CAUS-ICM.XxS.3sO
'Someone/thing caused his hat to be removed.' (Elijah 2;0; Allen 1996: 116)

b. Allanguar-ti-tau-junga.
draw-CAUS-PASS-PAR.1sS
'Someone is letting me draw.' [lit. I am being made to draw]
(Elijah 2;1; Allen, 1996: 116)

Combinations of noun incorporation and passive are also found, as in (28). Since the patient argument has already been incorporated into the verb, the benefactive argument is the only one available to be passivized.

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(28)

a. Nilat-ta-tau-kainna-qita anaana kina-kku-nnut
ice-fetch-PASS-PAST-INT.1pS mother who-group-ALL.PL
'Who were we fetched ice by, mother?' (Elijah 2;9; Allen and Crago 1996: 146)

b. Nasa-liur-tau-nngi-tunga.
hat-make-PASS-NEG-PAR.1sS
'I am not being made a hat for.' (Elijah 2;5; Allen and Crago 1996: 146)

In only one utterance in the Tarramiut data does a child attempt to use all three of these valency-alternating operations within one word. The example is in (29a), with the target form in (29b).

(29)

a. Anaana kiinaujar-tau-ti-niar-qunga … u-munga … atjiliuruti-mut.
mother money-PASS-CAUS-FUT-IND.1sS this.one-ALL.SG camera-ALL.SG
'Mom, I cause to be monied … by this one … by the camera (operator).'
(Elijah 2;9; Allen 1996: 119)

(p. 469)

… kiinaujar-taar-ti-tau-niar-qunga …
money-acquire- CAUS-PASS- FUT-IND.1sS
'… I will be given [= made to acquire] some money…'
(target utterance; Allen 1996: 120)

Here Elijah is trying to passivize a noun directly, instead of first incorporating it into a verb. He also mixes up the order of the passive and causative morphemes relative to the meaning he is trying to achieve.

The utterances presented in this section show that children at a relatively young age not only master individual valency changing processes, but also can coordinate two different processes within one word. This level of complex morphosyntactic manipulations at this age is very striking in comparison with the relatively less complex productions of similar-aged children learning an analytic language.

22.11 Changing Word Class within the Word

Another feature of polysynthesis as realized in Inuit languages is that a word can change class two or more times within the word. In Section 22.7 we saw several examples of noun incorporation, where a word that begins as a noun changes into a verb. It is also very common for a verb to change to a noun, as in (30).

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(30)

a. Mamar-tu-nik.
taste.good-INTR.PART-MOD.PL
'Things that taste good.' (K 3;4; Fortescue and Lennert Olsen 1992: 166)

b. Toqu-nikor-suaq.
die-one.that-big
'Big one that has died.' (K 3;4; Fortescue and Lennert Olsen 1992: 175)

Much more striking from the point of view of polysynthesis, however, is when the word class changes more than once. Although no focused research on this has yet been reported, several examples are found in the data. The examples in (31) show words that change from verb to noun to verb. The verbal stem in (31a) is changed to a noun using the habitual suffix *-suuq-*, then back to a verb using the copula *-u-* (here in the allomorph *-ngu-*). The verbal stem in (31b) is changed to a noun using the nominalizing suffix *-juq-* (here in the allomorph *-tu-*), and then back to a verb using the copula *-u-*.

(31)

a. Atjiliuriji-alu-ga
photographer-EMPH-ABS.1Ssg
nitja-a-ti-tsi-suu-ngu-nngi-tu-aluk!
make.sound-RPT-CAUS-ATP-HAB-be-NEG-PAR.3sS-EMPH
'My photographer isn't one who puts the (TV's) volume on.'
[lit. makes the TV make sound] (Elijah 2;9; Allen 1996: 120)

(p. 470)

Aanni-nar-tu-alu-u-mmat.
hurt-CAUS-that.which-EMPH-be-CTG.3sS
'It is painful.' [lit. it is a thing that causes hurt] (Paul 2;11; Allen et al., submitted)

Example (32) shows a word that changes from a noun to a verb to a noun to a verb. The nominal stem is changed to a verb using the copula *-u-*, then back to a noun using the nominalizing suffix *-juq-*, and finally back to a verb using the copula *-u-*.

(32)

Napa-u-nirar-tau-ju-vini-u-jutit Taamisa-mut.
Napa-be-say-PASS-NOM-former-be-PAR.2sS Taamisa-ALL.SG
'You were called Napa by Taamisa.' (Elijah 2;5; Allen and Crago 1996: 144)

These types of utterances illustrate the flexibility that Inuit children display with morphosyntax at a relatively young age. They can not only change valency within one word as shown in the previous section, but can also change word class one, two, or even three times within a word.

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22.12 Concluding Remarks

Learning a polysynthetic language poses significant challenges, many of them different from those encountered with other language types that are more commonly studied. Children must extract individual morphemes including noun and verb roots from a stream of speech in which morphemes rarely appear as separate words. Indeed, most words contain at least two morphemes and may contain as many as ten morphemes. Children must use the surrounding syntactic information to identify the significance of the morphemes that are extracted, and manipulate word class changes and valency changes as many as three times within one word. And they must master hundreds of derivational and inflectional affixes along with their syntactic ramifications. This leads to a different trajectory of development than is the case for other language types, at least in the case of morphosyntax.

Children learning Inuit languages begin by producing one recognizable morpheme per utterance, usually somewhere between 1;0 and 1;6. From that point, their development is far more focused on morphology within words than on individual words. Inuit children between ages 2 and 6 years produce an average of 2.2 morphemes per word. Much of that complexity is focused on verbs, which start with two morphemes (root plus inflection), but gradually contain more derivational affixes between the root and inflection as the children's language abilities increase. These affixes very often have syntactic functions including changing valency and taking verbal complements. Children become competent with this complex morphosyntax at an early age, producing productive causatives, passives, and noun incorporation structures as early as age two. Further, although they produce some overgeneralizations of morphophonological forms and syntactic patterns, they do not produce anything like the characteristic overgeneralization patterns found in English (e.g. of past tense *-ed* as in *goed*, or of plural *-s* as in *foots*). This presents a striking contrast to children learning English, who are still struggling with basic morphology at the same age. As Parkinson (p. 471) (1999: 108) notes, "there appears to be a principle whereby the more complex the morphological system of a language, the earlier it will be learned."

One of the main goals of the field of language acquisition is to determine which patterns and mechanisms in language acquisition are universal to all children, and which are specific to individual languages or language typologies. Our findings show that children learning Inuit languages, and likely all polysynthetic languages, are focused on rapidly acquiring complex morphosyntax in a way that is not universal across all language types. This underlines the importance of studying the acquisition of languages of very different structures.

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Abbreviations

Nominal Case

ABS
absolutive
ALL
allative
ERG
ergative
LOC
locative
MOD
modalis
VIA
vialis

Verbal modality

CND
conditional
CTG
contingent
CTM
contemporative
DS
different subject (for subordinate clauses)
ICM
incontemporative
IMP
imperative
IND
indicative
INT
interrogative
PAR
participial (functionally equivalent to indicative in Tarramiut)

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Word-internal morphology

ATP
antipassive
CAUS
causative
EMPH
emphatic
FUT
future
HAB
habitual
INTENS
intensifier
INTR
intransitive
NEG
negative
NOM
nominalizer
PART
participial
PASS
passive
PAST
past
PERF
perfective aspect
POL
politeness (preceding imperative)
PRE
prefix
PRES
present
PRSP
prospective aspect
RPT
repetitive
TAGQ
tag question
TR

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transitivizer

Verbal inflection (e.g. PAR.3sS)

1
first person
2
second person
3
third person
4
fourth person
X
any person (i.e. 1, 2, 3, or 4)
s
singular
d
dual
p
plural
x
any number (i.e., singular, dual, or plural)
S
subject
O
object

(p. 472) Nominal inflection (e.g. ABS.SG)

SG
singular
DU
dual
PL
plural

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Possessed nominal inflection (e.g. ERG.3Ssg)

1
first person possessor
2
second person possessor
3
third person possessor
4
fourth person possessor
S
singular possessor
D
dual possessor
P
plural possessor
X
any number (i.e., singular, dual, or plural)
sg
singular possessum
du
dual possessum
pl
plural possessum

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The Acquisition of Murrinhpatha (Northern Australia)

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Edited by Michael Fortescue, Marianne Mithun, and Nicholas Evans

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Abstract and Keywords

This chapter reports on initial findings of an ongoing large-scale research project into the acquisition of Murrinhpatha, a polysynthetic language of the Daly River region of the Northern Territory of Australia with complex morphology. The complex verbal structures in Murrinhpatha, which can contain a large number of morphemes and bipartite stem morphology discontinuously distributed throughout the verbal template, raise a multitude of questions for acquisition. In this chapter we focus particularly on the acquisition of the complex predicate system in the verb, and the acquisition of subject-marking categories and tense/aspect/mood. Our findings are based on the language development of five Murrinhpatha acquiring children aged from 2;7–4;11 years.

Keywords: acquisition, polysynthesis, bipartite stem, complex verbs, language development

23.1 Introduction

THIS chapter presents initial findings of an ongoing research project into the acquisition of Murrinhpatha (Northern Territory, Australia) across various ages and stages of development, beginning with children's early multi-morphemic utterances through to complex utterances within relatively complex narrative structures. We focus in particular on the acquisition of the complex predicate verbal system and the extent to which children between the ages of 2 and 5 acquire the full morphological complexity of the Murrinhpatha verb.

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Much of the focus on the acquisition of morphology has been on languages that fall towards the isolating end of the continuum, such as English. Comparatively little work has examined the process by which children learn synthetic, especially polysynthetic, languages (Kelly, Wigglesworth, Nordlinger, and Blythe 2014).[1] This is problematic given that we may hypothesize that the morphological learning task is substantially more challenging, or at least substantially different for polysynthetic languages. Clearly we cannot hope to have a complete picture of language acquisition until we understand the process across all linguistic types (Kelly et al. 2014; Evans and Levinson 2009); and the opportunities to investigate the acquisition of polysynthetic languages are rapidly diminishing as increasingly these languages are not being acquired by children (Mithun 1989a).

(p. 474) Understanding acquisition processes across typologically different languages may challenge some of our widely held beliefs about how children learn language. As Brown (1998) argues, children learning Indo-European languages tend to demonstrate noun dominance. However, research into a variety of non-Indo-European languages shows that this noun bias is not universal, and that in some languages there is in fact a verb bias, as observed for Mandarin Chinese (Tardif 1996; Tardif, Shatz, and Naigles 1997), Tzeltal (Brown 1998), and Tzotzil (de León 1999).

Turning to polysynthetic languages, Peters (1997) asks how children acquire the highly polysynthetic West Greenlandic at all, given its morphological complexity which includes over 300 inflectional affixes, and 4–500 derivational affixes in the verbal word. However Fortescue and Lennert Olsen (1992), using data from children aged 2;2–5;2, show that children learning West Greenlandic begin to process the complexity very early on. Indeed, some research has indicated that greater morphological richness may facilitate morphological acquisition (see studies by Xanthos et al. 2001; Demuth 1992), suggesting that a more relevant factor for ease of acquisition may be the regularity and frequency of morphological contrasts rather than lack of morphological richness.

Within this context, we focus here on the acquisition of aspects of the Murrinhpatha verb by children between the ages of 2;7 and 4;11. One question that arises in polysynthetic languages is how children identify and acquire the verbal stem if it only ever appears surrounded by complex morphological material (e.g. Courtney and Saville-Troike 2002). In Murrinhpatha this question is made more complex by the fact that most verbs consist of bipartite stems, forming complex predicates that are often discontinuous in the verbal word. In §23.4 we suggest that children make use of classifier stem productivity, the salience of lexical stems, and the presence of object marking in between the two stems to acquire this system.

23.2 Murrinhpatha Language and Context

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Murrinhpatha is spoken by approximately 2,500–3,000 people in and around Wadeye (Port Keats) in the Daly River region of the Northern Territory of Australia. It is one of only eighteen traditional Australian languages still being acquired by children (AIATSIS 2005: 3) and until they encounter English at school most children in Wadeye grow up as monolingual Murrinhpatha speakers (Kelly, Nordlinger, and Wigglesworth 2010). The geographic isolation of Wadeye[2] and Murrinhpatha's status as the 'official' language of the community (Wadeye is located on Murrinhpatha land) have favoured its persistence to the relative detriment of the other traditional languages of the region which today are rarely, if ever, spoken fluently (see Nordlinger this volume for further discussion of languages in this region).

Murrinhpatha has received considerable linguistic attention over the last forty years. The complex verbal morphosyntax has been described from synchronic perspectives (Blythe (p. 475) 2009; Nordlinger 2010a, 2010b; Nordlinger and Caudal 2012; Street 1987; Walsh 1976, 1987, 1996), as well as diachronic and variationist perspectives (Blythe 2013, 2010; Green 2003; Mansfield 2014). Furthermore, the polysynthetic nature of Murrinhpatha is discussed in more detail in other chapters in this volume (see Chapter 16 by Evans, and Chapter 37 by Nordlinger). In this section we introduce only those aspects of the Murrinhpatha verb that are relevant to the acquisition data we discuss in §23.4.

23.2.1 Verbal morphosyntax

Verbs in Murrinhpatha exhibit a highly templatic morphological structure (Blythe 2009; Nordlinger 2010b), as shown in Table 23.1.[3] The two shaded categories (classifier stem in slot 1 and lexical stem in slot 5 and the two parts of the complex predicate, are discussed further in §23.2.2.

This templatic structure exhibits substantial multiple exponence, lack of a single structural head, and semantic dependencies between discontinuous morphological slots (Nordlinger 2010b). Thus in (1) the number of the subject is jointly marked as dual by the interaction between slots 1 and 2 (note that 3rd singular objects, as in this example, are unmarked). In (2), the object marker *-ngi-* appears in slot 2 which requires the subject number marker to appear in slot 8 instead. Thus in (2), the subject number is jointly marked as dual by the interaction between slots 1 and 8. The two parts of the predicate are shown in bold. Note that the presence of subject number markers or object/indirect markers results in the predicate being discontinuous.[4]

(1)
bam-ngintha-**ngkardu**
3SG.S.SEE(13).NFUT-DU.F.NSIB-see
1 2 5
'The two non-siblings (either ♀♀ or ♀♂) saw him/her.'

(Nordlinger 2010b: 334)

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(2)
bam-ngi-**ngkardu**-ngintha
3SG.S.SEE(13).NFUT-1SG.O-see-DU.F.NSIB
1 2 5 8
'The two non-siblings (either ♀♀ or ♀♂) saw me.'

(Nordlinger 2010b: 334)

These examples also illustrate kinship marking in Murrinhpatha verbs. As well as person, number, and gender contrasts, Murrinhpatha verbs mark a distinction between (p. 476) (classificatory) siblings and non-siblings for subjects and objects. Thus for dual and paucal number, male non-brothers (as in (3)) are distinguished from 'feminine' non-siblings (comprised of at least one female), as in (4), which are further distinguished from siblings (brothers and/or sisters), as in (5). These contrasts allow Murrinhpatha verbs to distinguish up to twenty-five person/number/gender/siblinghood combinations (Blythe 2013: 893). Examples (3)–(5) also serve as an illustration of other aspects of the verbal word, including the tense/aspect/mood markers (here *-dha*) in slot 6 and the incorporated adverbial *-dharra*.

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Table 23.1 Murrinhpatha verbal template

1	2	3	4	5	6	7	8	9
Classifier stem (portmanteau with SUBJ person/ number and TAM)	SUBJ Number / OBJ marker/ Indirect OBJ marker	Reflexive-reciprocal	Incorporated body part / APPLicative	Lexical Stem	Tense/ aspect/ mood (TAM)	Incorporated adverbial	Number (SUBJ or OBJ) Incorporated adverbial	Incorporated adverbial

Nordlinger 2010b

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(3)
dani-nintha-**riwak**-dha-dharra
3SG.SUBJ.POKE(19).PST:IPFV-DU.M.NSIB-follow-PST:IPFV-moving
'The two male non-brothers were following.'
(JBFieldNotebook 2007-1:35)

(4)
dani-ngintha-**riwak**-dha-dharra
3SG.SUBJ.POKE(19).PST:IPFV-DU.F.NSIB-follow-PST:IPFV-moving
'The two non-siblings (female or mixed group) were following.'
(JBFieldNotebook2007-1:35)

(5)
parrane-**riwak**-dha-dharra
3DU.SUBJ.POKE(19).PST:IPFV-follow-PST:IPFV-moving
'The two siblings were following.'
(JBFieldNotebook2007-1:35)

23.2.2 Complex predicates

Most Murrinhpatha verbs are complex predicates composed of two parts: a portmanteau classifier stem in slot 1 (also marking the subject and tense/aspect/mood categories) and a lexical stem in slot 5. There are approximately thirty-eight classifier stem paradigms that combine with (p. 477) a closed, but large, set of lexical stems. A subset of these classifier stems (11 of the 38) may also appear alone as 'simple verbs', without combining with a lexical stem. An example of a classifier stem paradigm is given in Table 23.2.

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Table 23.2 Paradigm for classifier stem BE(4)

		NFUT	PIMP	FUT	FUT:IRR	PST:IRR	EXIST
SG	**1**	*nganam*	*ngardi*	*ngani*	*ngani*	*ngani*	
	2	*thanam*	*thardi*	*thani*	*thani*	*thani*	
	3	*kanam*	*kardi*	*pani*	*kani*	*karni*	*kanam*
1 INCL		*thanam*	*thardi*	*pani*	*pani*	*thani*	
DU	**1**	*ngarnamka*	*ngarde*	*ngarne*	*ngarne*	*ngarne*	
	2	*narnamka*	*narde*	*narne*	*narne*	*narne*	
	3	*parnamka*	*parde*	*parne*	*karne*	*parne* *karne*	*karnamka*
PL	**1**	*ngarnam*	*ngardi*	*ngarni*	*ngarni*	*ngarni*	
	2	*narnam*	*nardi*	*narni*	*narni*	*narni*	
	3	*parnam*	*pardi*	*parni*	*karni*	*parni* *karni*	*karnam*

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Whilst for a number of northern Australian languages the two predicative elements are independent, syntactically combined words (McGregor 2002; Schultze-Berndt 2000), in Murrinhpatha they are tightly bound units within a single morphological word. Each contributes to the lexical semantics, although the sense of the classifier is more generic. Typical classifier semantics involves motion, manipulation, posture, or orientation toward the ground (McGregor 2002). Classifiers also convey valency-changing operations (e.g. reflexive/reciprocal; see Nordlinger: Chapter 37 this volume). In other cases the semantic contribution of the classifier stem towards classifying the lexical stem can be quite opaque. In (6)–(8), we see that the semantics of the complex predicate changes when we vary the classifier stem. In these cases, the modification relates to the manner or trajectory of the scratching.

(6)
mam-kurrk
1SG.SUBJ.HANDS(8).NFUT-scratch
'I scratched (something) with my hand, or a stick.'
(RN 20070608-002:038)

(7)
ngunungam-kurrk
1SG.SUBJ.FEET(7).NFUT-scratch
'I scratched (something) with my foot.'
(RN 20070608-002:038)

(p. 478)

(8)
pan-kurrk
1SG.SUBJ.SLASH(23).NFUT-scratch
'I dug in the ground with a stick (e.g. for crabs).'
(RN 20070608-002:038)

We can think of the productivity of the classifiers in terms of how readily they combine with lexical stems to form complex predicates. The most productive classifier, "HANDS(8)" has been attested with 171 lexical stems, while the reciprocal classifier (38) has been attested with only two lexical stems. Of the thirty-eight classifier paradigms, all appear within complex predicates except for the high frequency "SAY/DO(34)" which never combines with lexical stems in polysynthetic verbs.[5] One important question for the acquisition of Murrinhpatha is the stage at which children identify this system as a productive system rather than learning each classifier-lexical stem combination as a fixed item. We discuss this issue further in §23.4.2.

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23.3 Data and Methodology

The data discussed here have been collected by the Language Acquisition Murrinhpatha (LAMP) project for which we are constructing a corpus of spontaneous Murrinhpatha child interaction. Project data collection began in 2012 and continued to 2016. The overall project data collection is centred around thirteen focus children aged between 1;9 and 5;6 at the commencement of the project. Data are collected on regular field trips by the first and second authors who visit Wadeye twice per year for between two to three months and record the focus children in a variety of contexts. The data are transcribed in the community with the assistance of local Murrinhpatha-speaking research assistants and other team members (see Kelly, Forshaw, Nordlinger, and Wigglesworth 2015 for further discussion).

This chapter focuses on a subset of the data being collected for the LAMP corpus. Thirty minutes of consecutive data for five focus children, aged between 2;7 and 4;11, were selected for analysis, in order to provide language production data in similar contexts across a wide variety of ages. Table 23.3 provides an overview of the participants and the amount of data analysed. The video-recorded interactions for each child were transcribed in ELAN (http://tla.mpi.nl/tools/tla-tools/elan/; Sloetjes and Wittenberg 2008).

Each recording involves two children and a single adult caregiver who is one of the children’s mothers. In recordings I and III there are also other speakers present, but they do not participate in the transcribed sections of the recording.

Each session was recorded with two Sony HXR-NX30P video cameras fitted with wide-angle conversion lenses. Audio for the sessions was recorded via two Sennheiser EW 112-p G3-B portable wireless microphone systems worn by the children in small custom-made backpacks. These microphone signals were captured in stereo by one of the video cameras with one microphone recorded to the left channel and the other to the right. This method of recording helped identify which child was speaking during transcription as this was clearly indicated by the strength of the audio signal in either the left or right channel. Surrounding (p. 479) speech was also adequately captured by this set-up. The in-built microphone of the secondary camera recorded a secondary audio track.

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Table 23.3 Overview of participant data

Child	Age (Y;M)	Sex	Recording Session	Session Code	Length (mm:ss)
Acacia	2;7	Female	LAMP_20130502_WF_01_V1 00:09:05 – 00:39:13	I	30:08
Emily	3;1	Female	LAMP_20130502_WF_01_V1 00:09:05 – 00:39:13	I	30:08
Nathan	3;7	Male	LAMP_20120830_WF_01_V1 00:00:00 – 00:34:17	II	34:17
Molly	4;5	Female	LAMP_20120830_WF_01_V1 00:00:00 – 00:34:17	II	34:17
Mavis	4;11	Female	LAMP_20131025_WF_01_V1	III	33:57

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			00:00:31 – 00:34:28		

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These semi-naturalistic recordings involved the children and adult having a picnic somewhere in the bushland surrounding Wadeye. This scenario attempted to emulate weekend family trips in the local country, which often involve fishing, making damper (bread), preparing and drinking tea, burning off grass, collecting bush foods, and swimming. Participants were provided with some food and the items to make tea on a fire, which helped animate people and allowed them to relax in a familiar environment.

In order to provide an indicative comparison between the children's speech and that of adults' in Section 23.4.1, we draw on a subset of the adult data analysed in Forshaw, Nordlinger, and Blythe's (2012) frequency study of Murrinhpatha verb use. This data consists of three 10-minute extracts from three separate multi-party conversations (30 minutes in total). In two of the conversations, most participants were over 50 years of age and were affiliated to Murrinhpatha clans. In the third conversation the participants were young males (20–30 years old) who were not affiliated to Murrinhpatha clans. As these samples capture some of the variation in the community, they provide a representative account of adult verb use in Murrinhpatha and the range of input Murrinhpatha children receive.

23.4 Verb Acquisition

In this section we focus on four different aspects of the acquisition of the verbal word. In §23.4.2 we consider productivity in the combination of classifier and lexical stems. We show that productivity is limited in the youngest children, and that the number of productive classifier and lexical stem combinations increases with age, but remains limited to a subset of classifier stems even by the oldest child in this data set (4;11). Then, in §23.4.3, we examine which categories (subject person/number, tense/aspect/mood) children are encoding with (p. 480) classifier stems. We find that children in this data set predominantly use only a small section of the paradigms, with the vast number of categories and forms unattested. Thirdly (§23.4.4) we consider the overall complexity of children's verb usage in terms of the number of template slots children are utilising. Finally (§4.5) a number of errors made by each of the children are analysed in terms of how they may relate to the potential developmental pathways identified in the previous sections.

23.4.1 Data summary

All verbs in the data set were coded in terms of their morphological composition in SPSS Version 20.0. Multiple repetitions of a verb within an utterance (where an utterance is a stretch of speech under a single intonation contour) were treated as a single instance, as in the following example.[6]

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(9)

Emily: mama na-nga na-nga
Mum 2SG.SUBJ.HANDS(8).FUT-1SG.IO 2SG.SUBJ.HANDS(8).FUT-1SG.IO
'Mum do it for me, do it for me.'
(LAMP_20130502_WF_01_V1 00:15:28)

Verbs produced by children as the result of prompting by either an adult or another child were not excluded, as prompting was not found to be a predictor of whether or not a child would produce a correct form. The younger children in particular produced both correct and erroneous forms in response to prompts.

Table 23.4 presents raw numbers of verbs coded for each child. In addition to type and token counts, the table includes the number of distinct classifier and lexical stem combinations found in a child's corpus. We refer to these as 'stem combination types'. Where a classifier stem occurs without a lexical stem this is also considered a stem combination type, as the absence of a lexical stem in this instance contrasts with the presence of a lexical stem in another. Error token counts are also included. These are categorized as either errors of omission (morphological material is missing) or errors of commission (additional erroneous or incorrect morphological material is present), and are discussed in §23.4.5. The same counts are included for the adult conversation corpus.

Unsurprisingly the number of verbs coded varied greatly per participant. The two youngest children, Acacia (2;7) and Emily (3;1), used very few verbs in the sampled half hour of interaction, whereas Nathan (3;7), Molly (4;5), and Mavis (4;11) all produced over sixty verb tokens during their respective sessions, and produced more verb types. Interestingly, however, there was not a similar increase in the number of stem combination types produced according to age, with the notable exception of Mavis. Table 23.4 also shows that younger children produce errors of omission more frequently.

The variation in sample size between participants raises issues for the comparability of data across participants. This is a common issue for acquisition studies, particularly for lesser-known languages where building an extensive corpus is often difficult (Kelly et al. (p. 481) 2015). This issue has been addressed recently in a number of different ways in order to aid statistical analyses (e.g. Stoll et al. 2012; Xanthos and Gillis 2010). Our aim, however, is not to provide a description or premature argument based on statistical analysis. Rather, we provide here a largely descriptive and qualitative analysis which concretely presents children's use of Murrinhpatha's complex verbal structures.

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Table 23.4 Verb tokens, types, stem combination types and errors

Participant	Age	Tokens (Total)	Tokens (Correct)	Types	Stem Combination Types	Errors	Omission	Commission
Acacia	2;7	16	8	7	6	8	7	1
Emily	3;1	35	23	13	11	12	11	1
Nathan	3;7	66	54	25	14	12	11	1
Molly	4;5	86	78	53	18	8	3	5
Mavis	4;11	72	70	53	31	2	1	1
Adult		145	145	122	63	—	—	—

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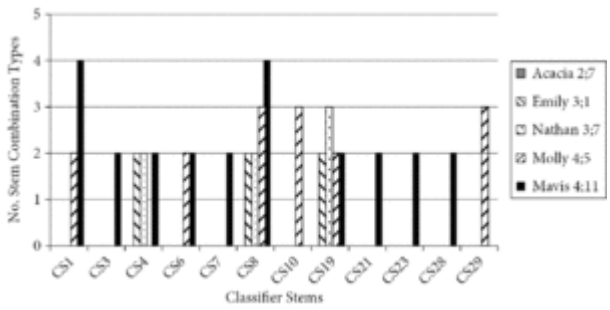
23.4.2 Classifier stem productivity

One of the major challenges facing a Murrinhpatha-speaking child is uncovering the complex predicate system in which the verbal stem is composed of a classifier stem and a lexical stem, which may be discontinuous. As outlined in §23.2 (see also Nordlinger: Chapter 37 this volume), these two elements combine productively in a variety of combinations, although some classifier and lexical stems are much more productive than others.

The children varied greatly in the number of stem combination types they produced. Acacia (2;7) produced six stem combination types, Emily (3;1), Nathan (3;7), and Molly (4;5) produced between eleven and eighteen, and Mavis (4;11) produced thirty-one. For each child, individual lexical stems only co-occurred in a single stem combination type. This suggests that the children have not yet acquired the full productivity of the system; they do not yet treat the lexical stem as an element that can be productively combined with different classifier stems to generate new verbal meanings (cf. examples (6)–(8)). At this stage verb semantics are likely to be associated closely with the fixed form of lexical stems rather than being compositional, with classifier stems only encoding subject person/number and tense/aspect/mood.

By contrast, classifier stems were found to co-occur with more than one lexical stem in all children's data with the exception of the youngest, Acacia. Figure 23.1 shows the classifier stems used by each child and the number of stem combination types in which they occurred. We have excluded here classifier stems only found in a single stem combination in order to more clearly represent the data. (p. 482)



Click to view larger

Figure 23.1 Stem combination types by classifier stem

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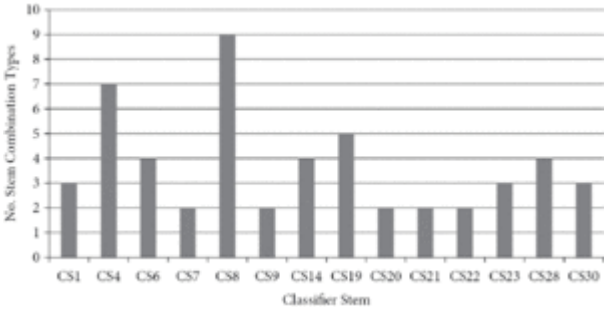

Click to view larger

Figure 23.2 Adult stem combination types by classifier stem

A number of observations can be made. Firstly it is apparent that some classifier stems (e.g. SIT(1) and HANDS(8)) are more productive than others in the children's data. Secondly, classifier stems that are productive are often productive for more than one child; most notably the classifier stem HANDS(8) is used in multiple combinations by almost all the children. Mavis uses it in four different combinations, Molly in three, and Nathan and Emily in two each. Two other productive classifier stems are SIT(1) in Mavis's data, and POKE(19), which is found to occur in various combinations in four of the children's data. The classifier stems which show the earliest signs of productivity (i.e. in Emily's data) are BE(4), HANDS(8), and POKE(19).

It is likely that various factors contribute to this classifier stem usage. The first is the relative frequency and productivity of classifier stems in the language overall. Figure 23.2 shows the number of different stem combination types for classifier stems in the adult data (excluding classifiers that only occurred in one stem combination).

(p. 483) As with the children's data, some classifier stems in the adult data are considerably more productive than others. Interestingly, the most productive classifier stems in the children's data also tend to be the most productive in the adult data, (except for BE(4), which is more productive in the adult data). It is likely that because these classifiers are frequently contrasted by adults they are acquired earlier by children. This link between input productivity and acquisition is most clearly indicated by the fact that the most productive classifier stems in the adult data (HANDS(8), BE(4), and POKE(19)) are the earliest to display productivity in the children's data.

Further support for this analysis would be if children overgeneralized more productive classifiers to inappropriate contexts. Although erroneous stem combinations do occur later in development (see Forshaw, 2016), they are rare and not found in the corpus for this study. We note however that there does not seem to be any clear association between the high productivity of classifier stem SIT(1) in Mavis's data and the adult data usage, at least for this small sample.

Although the data suggests a link between the productivity type frequency in input and the acquisition of verbs, it is also the case that the distribution of classifier stems in the child data broadly reflects the distribution in adult usage. That is, the more productive classifier stems in adult usage are also more productive in children's language use. Thus,

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the relationship between the children's data and the adult data in this respect may simply reflect frequency facts in the language overall, rather than the process of acquisition.

In both the child and adult data many classifier stems were either unattested or confined to a single combination. In the children's data eight classifier stems were used in only one stem combination type, and seventeen were unattested, whereas in the adult corpus nine classifier stems were used in only one stem combination type and fifteen were unattested. Eleven classifier stems were not attested in either data set. This lack of productivity for many stem combinations suggests that children may initially acquire classifier and lexical stem combinations as unanalysed chunks rather than as distinct elements which are combined online. This is further supported by the early predominance of particular classifier stem categories (see §23.4.3), and the paucity of non-stem morphology which causes stems to be discontinuous (see §23.4.4).

Children appear to use more productive classifier stems as 'pathbreaking' forms. This small subset of frequently used and contrasted classifier stems (e.g. BE(4), HANDS(8), and POKE(19)) are one key to unlocking the bipartite verb system, providing children with the clearest evidence that classifier and lexical stems are distinct elements that combine to encode verb semantics and argument structure.

Another factor influencing the early productivity of some classifier stems over others is pragmatic. Table 23.5 shows all the meanings of the verbs using the most productive classifier, HANDS(8), in the children's data. This classifier often contributes a general meaning of 'do with hands'—useful for children who are often talking about their immediate physical environment and making requests of others to do particular things. All these examples relate to concrete physical actions in the surrounding context and often come in the form of requests.

As is commonly reported cross-linguistically for the acquisition of the broader lexicon, the classifiers most commonly found in the children's speech have relatively general semantic meanings related to activities taking place in the here and now (Clark 1993). These classifiers are the most useful in achieving the sorts of tasks children need to perform. This suggests (p. 484) the classifiers that children use are not only motivated by their productivity and frequency in adult use, but also by the functions that they perform.[7]

Table 23.5 Stem combinations with classifier stem HANDS(8)

Lexical Verb Stem	Free Translation	Participant
—	do/say	*Emily, Nathan, Molly, Mavis*
-watha	make	*Nathan, Molly*
-rara	peel (fruit)	*Molly*

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-yit	hold	*Mavis*
-derdi	hide	*Mavis*
-bath	take/bring	*Mavis*
-dharl	open	*Emily*

23.4.3 Morphology of classifier stems

Turning to classifier stems, these semantically dense portmanteau morphs encode categorial information such as subject person/number, and tense/aspect/mood, in addition to their lexical meaning. However, children do not begin to encode all these categories at once and instead begin by using just a small subset of the available categories.

As shown in Table 23.6, the least diversity across categories is seen from the two youngest children, Acacia (2;7) and Emily (3;1).

Acacia and Emily use only singular subject classifiers, and their verb productions are dominated by future and existential tense/aspect/mood forms. We argue that the high proportion of these categories is due to the functions that they perform. Existential forms are commonly used to refer to the location of people and objects in the recording space, a common function of children's early verbs in Murrinhpatha as shown in (10). In addition to being pragmatically useful these forms are also morphologically relatively simple, usually being monomorphemic and only one to two syllables long.

(10)

1 Adult: ngarra ku=yu?
where clf:animate=ctc
'Where's the animal?'

2 Acacia: kem pangu-gathu
3SG.SUBJ.SIT(1).EXIST DIST-hither
'It's over that way.'

(LAMP_20130502_WF_01_V1 00:23:07)

(p. 485)

Table 23.6 Percentage of classifier stem category per participant

		Participant	
TAM	Subject Person	*Acacia (2;7)*	*Emily (3;1)*

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Future	1.SG	—	25
	2.SG	42.9	50
	3.SG	—	8.3
Non-Future	1.SG	14.3	—
Existential	3.SG	42.9	16.7
Total		100	100

The other regularly used classifier stem category is 2nd singular future, used in Murrinhpatha to construct imperative forms. Both Acacia and Emily use a number of imperative forms in their speech. These forms typically consist of two to three morphs and are used to make requests of others as in line 6 of example (11), and in (12).

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(11)

1	Emily:	kura	nhinhi=ka	kanhi	kura	ngay
		CLF:WATER	2SG=TOP	PROX	CLF:WATER	1SG
		'Your drink, this is my drink.'				
2	Acacia:	kura nukun?				
	target:	kura	nangkal-nukun?			
		CLF:WATER	who-POSS			
		'Whose drink?'				
3	Emily:	kura	ngay			
		CLF:WATER	1SG			
		'My drink.'				
4	Acacia:	kura	ngay			
		CLF:WATER	1SG			
		'My drink.'				
5	Emily:	kura	ngay	kanhi		
		CLF:WATER	1SG	PROX		
		'That's my drink.'				
6	Acacia:	nart			ne	
		na -art			ne	
		2SG.SUBJ.SNATCH(9).FUT-get			TAG	
		'You get that one, alright?' (points to another cup)				
					(LAMP_20130502_WF_01_V1 00:30:10)	

(p. 486)

(12)

1	Emily:	kura	nangart,
		kura	na-nga-art
		CLF:WATER	2SG.SUBJ.SNATCH(9).FUT-1SG.IO-get
		mama kura	nangart
		mama kura	na-nga-art
		Mum CLF:WATER	2SG.SUBJ.SNATCH(9).FUT-1SG.IO-get
		'Get me a drink, Mum get me a drink.'	
			(LAMP_20130502_WF_01_V1 00:15:47)

We know that in other languages (e.g. Swahili (Deen 2005)), children are frequently exposed to imperative forms, and preliminary observations suggest this is also the case in Murrinhpatha. The usefulness of these forms, partnered with their high frequency in input and their relatively simple morphology, means that children acquire these types of

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structures early. However, the predominance of these forms means that children do not often contrast classifier and lexical stem forms; this supports the initial production of verbs as unanalysed imperative chunks rather than a composition of productive stems.

The three older children, Nathan (3;7), Molly (4;5), and Mavis (4;11), use a much greater variety of subject and tense/aspect/mood categories in their sessions, although their use is still limited to a subset of categories, as shown in Tables 23.7 and 23.8. Classifier stems still predominantly encode singular subjects and future tense but there is a substantial increase in use of the non-future category by these three children, largely absent from the younger children's speech. There is also a much more even distribution in the encoding of subject person. The classifier stems of the eldest child, Mavis, employ the greatest number of categories, including past imperfective tense/aspect/mood, as well as dual subject number.

The continued predominance of classifier stems encoding singular subjects is not surprising as the adult corpus shows that the majority of classifier stems encode singular subjects. The child data does, however, show that children's early verbs encode *only* singular subjects. Only the older children in this corpus begin to use 1st person inclusive subjects (p. 487) (Nathan, Molly, and Mavis), dual non-sibling subjects (Molly and Mavis), dual sibling subjects (Mavis) and paucal non-sibling subjects (Molly and Mavis). None of the children use a classifier stem which encodes a paucal sibling/plural subject.

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Table 23.7 Percentage of classifier stem subject person categories

	Subject Person Categories			
Participant	1st	2nd	3rd	1st Inclusive
Nathan	30.4	21.7	43.5	4.3
Molly	29.8	17.0	38.3	14.9
Mavis	32.7	25.0	34.6	7.7
Adult	17.7	21.0	58.1	3.2

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Table 23.8 Percentage of classifier tense/aspect/mood categories

	Tense/Aspect/Mood Categories				
Participant	Non-Future	Future	Past Imperfective	Past Irrealis	Existential
Nathan	30.4	56.5	—	—	13.0
Molly	25.5	65.9	2.1	—	6.4
Mavis	26.9	46.2	17.3	—	9.6
Adult	40.2	28.7	23.0	4.1	4.1

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The classifier stems used by Nathan, Molly, and Mavis predominantly encode future tense, although to a lesser extent than for Acacia and Emily. In contrast to the two younger children there is a lesser proportion of 2nd person imperative constructions. Nathan, Molly, and Mavis produce a variety of 1st, 2nd and 1st inclusive subject future forms, as in (13)–(15). These verbs are typically used by the children to encode actions by animate entities in the surrounding recording environment that have not yet occurred. Third person subject future forms continue to be rare.

(13)

Nathan:	awu	**buy-bat-nukun**
	no	**1SG.SUBJ.(18).FUT-fall-FUT:IRR**
	'Don't, I might fall.'	

(LAMP_20120830_WF_01_V1 00:33:50)

(14)

Molly:	kay=ya	**pani-ngkala -nu**
	let's_go=CTC	**1INCL.S.BE(4).FUT-climb_onto-FUT**
	'Come on we'll climb up.'	

(LAMP_20120830_WF_01_V1 00:13:11)

(15)

Mavis:	kagawu	**ngu-nhi-bat-nu**
	come_here	**1SG.SUBJ.SLASH(23).FUT-2SG.OBJ-hit-FUT**
	'Come here, I will give you a smack.'	

(LAMP_20131025_WF_01_V1 00:10:23)

Another key difference between Acacia and Emily, compared with Nathan, Molly, and Mavis, is that the older children use a variety of classifier stems which encode non-future tense/aspect/mood. These are used primarily to describe actions by animate entities that are currently underway (16). They are also used by Molly and Mavis in circumstances where the subject is not animate (17)–(18).

(p. 488)

(16)

Nathan:	**dannhiriwak-kanam**	
	dam-nhi-riwak=kanam	
	3SG.SUBJ.POKE(19). NFUT-1DU.INCL.O-follow=3SG.SUBJ.BE(4).NFUT	
	'He's still following us.'	

(LAMP_20120830_WF_01_V1 00:07:01)

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(17)

Molly: **mentharl**
mem-dharl=pirrim
3SG.SUBJ.HANDS:RR(10).NFUT-open=3SG.SUBJ.STAND(3).NFUT
ne-birl
2.SG.SUBJ.HANDS(10):RR.FUT-turn_to_look
'It's opening itself, look.'
(LAMP_20120830_WF_01_V1 00:02:16)

(18)

Mavis: **dem-pek-warda**
3SG.SUBJ.POKE(21):RR.NFUT-burn-now
'It's burning.'
(LAMP_20131025_WF_01_V1 00:14:32)

Only Molly (4;5) and Mavis (4;11) use classifier stems with past imperfective tense/aspect/mood. Mavis in particular uses a variety of past imperfective verbs when she tells a story about a previous visit to the recording location, such as in utterance 1 of (19).

(19)

1 Mavis: ngay Katherine nganaka=ya
1SG woman's_name you_know?=CTC
ngarde-ngime-dha
1DU.SUBJ.BE(4).PST:PFV-PAUC.F.NSIB-PST:PFV
'Me and Katherine, our group were there.'

2 Adult: ngarra-ngu ne-dha-ngime?
where-way 2DU.S.BE(4).PST:IPFV-PST:IPFV-PC.F.NSIB
'Where were you mob?'

3 Mavis: kanhi-matha palyirr wakal
PROX-INTS hill little
'Right here, the little hill.'
(LAMP_20131025_WF_01_V1 00:11:11)

Thus, children initially only use a small subset of the categories that can be encoded by classifier stems. With age, they begin to use a greater variety of classifier stem categories and their usage becomes more adult like. The types of classifier stem categories that children use early in their development can be explained in terms of the function that these verbs perform. In the early stages of verb use there are high proportions of 2nd singular subject future verbs, as children are largely using verbs as imperatives to make requests and demands of others. (p. 489) Children also use 3rd singular existential verbs to direct attention to people and objects around them. As their verb use gets more sophisticated, the diversity of categories encoded also increases. This is seen in the use of verbs with 1st person singular and 1st person inclusive subjects (by 3;7), as well as the

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use of the non-future tense to describe observable current events. The use of categories such as past imperfective relies on children talking about past events which appears to occur only in older children's speech (by 4;5).

Categories not found in a child's speech are absent because they are not functionally necessary. For example Acacia (2;7), Emily (3;1), and Nathan (3;7) do not use past imperfective forms as they do not refer to past events. Nor do they refer to dual sibling subjects. Interestingly a number of these classifier stem categories are also rarely attested in the adult data, raising questions as to how children acquire these rarely attested forms. Answering this question requires experimental methods to test children's knowledge of these rarer forms, see Forshaw (2014) for one such study.

23.4.4 Morphological complexity

Murrinhpatha verbs have the potential to be long multi-morphemic strings which fill a number of verb template slots.[8] In this section we consider the morphological complexity of children's verbs in terms of the number of morphological slots filled in the verbs they produce. Figure 23.3 shows each of the children's mean morph slot counts over all verb tokens, excluding errors. The same count is included for the adult corpus.

As expected children's verbs are on average morphologically simpler than adult forms, with adult verbs containing on average one additional non-stem affix. In contrast, Acacia (2;7) utilizes almost no non-stem morphology, whereas Emily (3;1), Nathan (3;7), and Molly (4;5) show a mean of 0.5 non-stem affixes per verb. This discrepancy in complexity cannot be explained by the omission of morphs, as the averages exclude errors made by children. Rather this difference is largely a consequence of the types of verbs children produce. Our analysis in previous sections shows that children use high proportions of morphologically relatively simple verb structures such as existential and imperative constructions, particularly Acacia and Emily. Nathan and Molly's data showed an increase in the use of future and non-future forms; future forms often have additional tense marking in slot 6. Mavis's use of past imperfective forms requires the past tense morph *-dha* in slot 6. Furthermore, her use of non-sibling subjects requires the use of *-ngintha-/-nintha-* or *-ngime-/-neme-* (slots 2 and 8). This probably contributed to her higher than average morphological complexity. Also contributing to the children's lower morphological complexity is that they use relatively few optional adverbials. In the adult corpus optional adverbials were used in 17.3 per cent of all verbs, whereas in the child data they were used with less than 10 per cent of all verbs (Acacia 0.0%, Emily 9.5%, Nathan 5.5%, Molly 3.5%, and Mavis 7.0%).[9] (p. 490)

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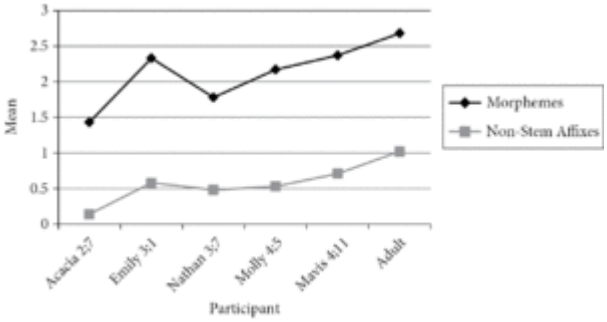

Click to view larger

Figure 23.3 Mean template slots and non-stem slots by participant

We understand why children's verb forms tend to be morphologically less complex than adults', however children are still using some non-stem morphology. The earliest non-stem morphology in the children's data is typically either the additional future marker *-nu* (slot 6) or the use of indirect objects (slot 2). The future marker *-nu* is found in the speech of all children except for the youngest, Acacia. Example (20) is produced by Emily (3;1).

(20)

Emily:	ngay=ka	kura	ti	kura	ti
	1SG=TOP	CLF:WATER	tea	CLF:WATER	tea

ba-gurduk-nu
1SG.S.SEE(13).FUT-drink-FUT
'My tea, tea, I will drink it.'

(LAMP_20130502_WF_01_V1 00:21:41)

While indirect objects (slot 2) are used from an early age, only a small subset of forms are used—the singular indirect objects *-nga-* (1SG.IO), *-mpa-* (2SG.IO), *-nge-* (3SG.IO.F), and *-na-* (3SG.IO.M). The early use of these indirect object markers is central to children's learning of Murrinhpatha's bipartite verb structure, since they occur between the classifier stem and lexical stem, providing evidence that these stems are distinct morphological elements. Emily (3;1) is the youngest child to use an indirect object marker with a bipartite stem verb.

(21)

Emily: na-nga-dharl-nu
2SG.SUBJ.SNATCH(9).FUT-1SG.IO-open-FUT
'You will open it for me'

(LAMP_20130502_WF_01_V1 00:21:05)

The indirect object *-nga-* in this example separates the classifier stem *na-* from the lexical stem *-dharl* suggesting that children may recognize, at least for some bipartite stem verbs, (p. 491) that classifier and lexical stems are independent from an early age. The use of this stem-intervening slot is another key step in acquiring verbs in Murrinhpatha.

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23.4.5 Errors

Children's productions that deviate from adult forms have been used by proponents of various theoretical perspectives to support their analyses of children's language development. We now consider the errors identified in this corpus in relation to the findings we have discussed, firstly addressing errors of omission and then errors of commission.

23.4.5.1 Errors of Omission

All children made errors of omission, omitting obligatory parts of verbs on at least one occasion. Acacia (2;11), Emily (3;1), and Nathan (3;7), who accounted for the majority of omission errors, typically omitted material from the beginning of the verb, either by omitting the entire classifier stem, as in (22) and (23), or producing an underspecified variant filler syllable in place of the classifier stem (24) (the primary stress is marked with ' in these examples). In all these examples the remaining verb elements, including the lexical stem, are correctly produced, suggesting that the ends of verbs, and the lexical stem in particular, are highly salient for children acquiring Murrinhpatha. Peters (1985) argues that the ends of words are especially prominent for children and this also has been shown to be a factor in the acquisition of some Mayan languages with morphologically complex verbs (Pye, Pfeiler, de León, Brown, and Mateo 2007).

(22)

Acacia:	**lalenu**	*Mavis*
target:	**ba-'lele-nu**	Mavis
	3SG.SUBJ.BASH(14).FUT-**bite**-FUT	woman's_name

'It will bite Mavis.'

(LAMP_20130502_WF_01_V1 00:27:14)

(23)

Nathan:	ngay-ka	**nhiriwak**
target:	ngay=ka	**nga-'nhi-riwak**
	1SG=TOP	1SG.SUBJ.POKE(19).FUT-2SG.O-follow

Molly	ne-birl
woman's_name	2SG.SUBJ.HANDS(10):RR.FUT-turn_to_look

'I will follow you, Molly look'

(LAMP_20120830_WF_01_V1 00:06:48)

(24)

1	Adult:	Acacia	thi-'kaykay	thama
		woman's_name	2SG.SUBJ.SIT(1).FUT-call_out	2SG.SUBJ.SAY(34).FUT

'Say 'you call out, Acacia."

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2	Emily:	Acacia	yuwakay
	target:	Acacia	thi-'kaykay
		woman's_name	2SG.SUBJ.SIT(1).FUT-call_out
		'You call out, Acacia.'	
3	Acacia:	diyakay	
	target:	thi-'kaykay	
		2SG.SUBJ.SIT(1).FUT-call_out	
		'You call out.'	

(LAMP_20130502_WF_01_V1 00:18:38)

(p. 492) In the cross-linguistic literature concerning the acquisition of morphology, a central question is what predicts errors of omission. There are two broad, regularly adopted approaches. The first focuses on the role of morphology where omission of elements is sensitive to morphological boundaries. This analysis is attractive for languages where children initially produce bare verb roots, as in Navajo and Quechua (Courtney and Saville-Troike 2002), and Tzeltal Mayan (Brown 1997). The second approach argues that errors of omission can largely be explained by the prosodic patterns of the language being acquired, with non-stressed unfooted elements more likely to be omitted (Demuth 1996, 2014; Demuth and McCullough 2009; Gerken 1996; Lleó 2006).

The examples of omission that we have given are predicted by a stress-based account with elements prior to the primary lexical stress of the verb (shown with ') being either omitted or filled with variant forms. However, a morphological account would also be plausible as it is the classifier stem in all instances which is either omitted or underspecified.

Examples (22–24) all involve the omission or underspecification of monosyllabic classifier stems. The situation, however, becomes more complex when we consider examples of omission in bipartite verbs with disyllabic classifier stems. For example in (25), Molly (4;5) omits the initial *nga-* segment of the classifier stem *ngani-*, omitting part of a classifier stem in contrast to the entire stem. This presents problems for a purely morphological account as the omission neither coincides with morphological boundaries nor with the primary lexical stress of the bipartite verb, with Molly producing a well-formed preceding syllable.

(25)

Molly:	ngay-ka	ning'kalanu
target:	ngay=ka	ngani-ngkala-nu
	1SG=TOP	1SG.SUBJ.BE(4).FUT-climb_onto-FUT
	'I will climb onto it'	

(LAMP_20120830_WF_01_V1 00:10:31)

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It is therefore unclear what exactly is driving errors of omission in Murrinhpatha bipartite verbs but it is likely that both prosodic and morphological accounts have some role to play (as discussed by Forshaw et al. 2014). What is clear, however, is the importance and salience of the ends of verbs and, in particular, lexical stems.[10] In all of these examples the lexical stem is well formed; it is not subject to omission of any type.

(p. 493) These patterns of omission suggest that for children acquiring bipartite verbs, the lexical stem is the 'true' stem element. It is a fixed form that often occurs in a salient word final position and often attracts primary lexical stress. In contrast, classifier stems, which undergo omission, are paradigms of up to fifty forms which do not typically attract primary stress in bipartite verbs. In the earlier stages of development the lexical stem may be treated more as a 'true' stem and the classifier stem more as an affix. The 'stemhood' of the lexical stem is also supported by the finding that lexical stems do not occur with a variety of classifier stems in the child data (see §23.4.2), further indicating that this is the key semantic element for children at this stage of verb-learning.

23.4.5.2 Errors of Commission

In contrast to errors of omission, errors of commission involve the use of a morphological form in an inappropriate context. Best known are errors in English past-tense morphology where children overgeneralize the past morph *-ed* to irregular verbs, resulting in forms such as *goed* (Cazden 1968). In the Murrinhpatha children's data it is again classifier stems that are typically impacted by errors of commission.

Our focus on children's combinations of classifier and lexical stems has shown that some classifiers are much more productive and frequent than others (§23.4.2). We therefore might expect children to overgeneralize and combine some of the more frequent classifier stems with incompatible lexical stems. However, no examples of this type of overgeneralization were found in the data set.[11]

Instead, children's errors of commission typically involve the overgeneralization of a particular inflected form within a classifier paradigm, constructing erroneous forms based on other forms of the same paradigm which they have already acquired. In many classifier stem paradigms non-future forms have a final *m*. For a number of paradigms this is all that distinguishes non-future from future forms. In example (26) Molly (4;5) should produce the 1st inclusive non-future form of classifier SIT(1), *thim*. Instead of the anticipated initial *th-*, Molly produces an initial *p-*. When we look within the classifier paradigm SIT(1) we notice that the 1st inclusive future form is *pi-*. Since children initially use more future classifier stem forms it appears that Molly has constructed the non-future form based on the future form by adding an *–m* which would produce the correct form for many paradigms.

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(26)

Molly:	*pimngime
target:	thim-ngime
	1PL.INCL.SUBJ.SIT(1).NFUT-PC.F.NSIB
	'We are here.'

(LAMP_20120830_WF_01_V1 00:30:50)

This explanation is supported by the findings in §23.4.3 that children initially use predominantly future forms and only later begin to use more varied tense/aspect/mood categories. These future forms provide clues as to what the non-future and other forms will be, but the (p. 494) patterns are not entirely systematic, varying across classifier stem paradigms, resulting in errors of commission as in (26). Such errors are overgeneralizations based on characteristics of earlier acquired forms.

23.4.6 Summary and conclusions

Our findings show that across this data set, all children were able to produce bipartite stem verbs, although lexical stems were only found to co-occur in a single stem combination type. By looking beyond the verbal complexity and examining productivity in use and morphological regularity, we have shown that productivity is limited across the data set, and although there is development with age, productivity is still limited for children aged nearly five years. For all the children, the number of classifier and lexical stem combinations is restricted to a small subset of classifiers in the children's production, with the majority of categories and forms unattested. In addition to the low level of productivity, children utilize only a small number of morphological slots in their verb productions. This, together with our brief discussion of children's errors, suggests that a relevant factor for the acquisition of Murrinhpatha may not be just morphological complexity, but morphological regularity and frequency and the extent to which these intersect.

Abbreviations

CLF
noun classifier
CTC
clitic
DIST
distal marker
DU
dual

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EXIST
existential
F
female
FUT
future tense
INCL
inclusive
INTS
intensifier
IO
indirect object
IPFV
imperfective
IRR
irrealis
M
male
NFUT
non-future tense
NSIB
non-sibling
OBJ
object
PIMP
past imperfective
PC
paucal
PFV
perfective
PL
plural
POSS
possessive
PROX
proximate
PST
past
RR
reflexive/reciprocal
SG
singular
SUBJ

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subject
TEMP
temporal adverbial
TOP
topic

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Notes:

(1) Though there has been some excellent work on the acquisition of a few polysynthetic languages, including Inuktitut (e.g. Allen 1996, Allen this volume), Chintang (e.g. Stoll, Bickel, Lieven, Paudyal, Banjade, Bhatta, and Gaenszle 2012; Lieven and Stoll 2013, Stoll this volume), Cree (Rose and Brittain 2011), Navajo (e.g. Courtney and Saville-Troike 2002), Mohawk (Mithun 1989a), and West Greenlandic (Fortescue 1985; Fortescue and Lennert Olsen 1992).

(2) Although only 260 km from Darwin, Wadeye is surrounded by three major rivers, a flood plain, and the coast. For many months of the year road access is very limited.

(3) In fact, this template varies in detail across Murrinhpatha speakers, due to generational change in progress. Such change accounts for the differences between Blythe's (2009, 2013) and Nordlinger's (2010b; 2011a) templates representing the speech of middle-aged and older speakers. Mansfield (2014) reports further differences in the varieties spoken by young men. These differences do not impact upon the issues discussed in this chapter.

(4) The semantics of the classifier system is not well understood. In this chapter, all classifier stem paradigms are numbered as per Blythe, Nordlinger, and Reid (2007), for consistency with earlier research. If it is possible to identify the generic sense of the classifier then the generic sense is also given as an indicative gloss (e.g. the classifier stem that classifies events prototypically done with the hands is glossed HANDS(8)).

(5) It does however combine with coverbs in phrasal verb constructions (Mansfield 2014).

(6) In all child data examples the relevant verbs are bolded.

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(7) It is possible that the predominance of some stem combination types and classifier stems is linked to the similar contexts in which the data was collected. Evaluating this factor is beyond the scope of this study as it would require varied contexts of interaction. We leave this for further research.

(8) See Forshaw et al. (2012) who show that in adult-to-adult spontaneous speech, Murrinhpatha verbs have only one non-stem affix on average.

(9) Mansfield (2014) reports an almost complete abandonment of incorporated adverbials in young men's Murrinhpatha. It is unclear, however, whether this represents a change in the language, limitations of the corpus, or is a feature of this particular sociolect.

(10) Forshaw et al. (2012) showed that lexical stems occurred word finally 41 per cent of the time in a corpus of adult-to-adult spontaneous speech.

(11) The larger LAMP corpus reveals a small number of such examples, as discussed by Forshaw (2016). However, examples of this type are strikingly infrequent in the children's speech.

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The Acquisition of Polysynthetic Verb Forms in Chintang

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Abstract and Keywords

In first language acquisition research so far little is known about the affordances involved in children's acquisition of morphologies of different complexities. This chapter discusses the acquisition of Chintang verbal morphology. Chintang is a Sino-Tibetan (Kiranti) polysynthetic language spoken in a small village in Eastern Nepal by approximately 6,000 speakers. The most complex part of Chintang morphology is verbal inflection. A large number of affixes, verb compounding, and freedom in prefix ordering results in over 1,800 verb forms of single stem verbs and more than 4,000 forms if a secondary stem is involved. In this chapter we assess the challenges of learning such a complex system, and we describe in detail what this acquisition process looks like. For this we analyze a large longitudinal acquisition corpus of Chintang.

Keywords: first language acquisition, longitudinal acquisition corpus, verbal morphology, Chintang, Sino-Tibetan

24.1 Introduction

ONE of the first challenges of the language-learning child is to extract and determine the number of relevant units and categories of their language(s) from a continuous speech stream. This process requires a substantial amount of pattern matching and begins very early in development, long before language production starts. At six months of age children begin to learn the phonological categories of their language (Kuhl et al. 1992), between six and nine months they know the phonotactic rules of their language (Jusczyk et al. 1993, 1994), and by nine months they know quite a bit about the sequencing of

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speech sounds in their language, relying on the probabilities of phonotactic patterns in the ambient language (Jusczyk et al. 1994).

The extraction of such patterns is made possible by statistical learning abilities that are already present in prelinguistic children and allow the identification of repetitive elements in a continuous speech stream (Jusczyk and Aslin 1995, Saffran et al. 1996, 1997), at least in laboratory settings and highly controlled contexts. Further, there is evidence that children can remember frequent words and store them in long-term memory as early as eight months (Jusczyk and Hohne 1997). However, children can even extract words from an unfamiliar language as shown in an experiment with eight-months old English-learning children who were exposed to Italian in an experimental setting and were successful in tracing transitional probabilities even in an unfamiliar language (Pelucchi et al. 2009). This all happens before the child has even uttered her first word. A recent artifical language-learning experiment with a large lexicon has shown that these mechanisms of statistical learning are still at work in adults with long-term retention rates (Frank et al. 2013).

A key challenge in these processes is the fact that some elements form tight units with others (e.g. form 'words' in some sense), whereas other units can be more freely combined. This (p. 496) has a direct impact on the ease with which children can detect which elements are repetitions of each other and therefore likely to be independent meaning-bearing lexical elements. For example, an English verb stem regularly co-occurs with only a handful of other morphemes.[1] Most of these are optional and are not always directly adjacent (auxiliaries, nouns, and the noun phrases they project, etc.), and this makes detection and extraction of the stem as a repeated unit with a relatively constant meaning straightforward. Stems like *want* or *ask* show up in exactly the same form in many different referential contexts and syntactic environments. There are only very few morphemes in English that are always adjacent to a stem (conventionally called 'affixes', that is, items like *-s, -ed, -en*, etc.), but even these are relatively straightforward to identify because the combinations show only very limited variation.

Stem identification is substantially more challenging (i) when stems combine with more units that are strictly required by the stem and have adjacency constraints ('affixes'), and/or (ii) when the combinations vary across the same units because of inflectional classes and other sorts of allomorphy and complex patterns of exponence. Some languages go very far in the first dimension, which corresponds to what is commonly meant by such labels as high degree of synthesis or polysynthesis. Extreme degrees in the second dimension are exemplified by such systems as German, where a simple category like the plural comes in no less than seven different shapes distributed over sixteen (surface) inflectional classes (Carstairs 1987). An even more extreme case is the Nilotic language Dinka (spoken in South Sudan), where virtually each stem has its own way of expressing number (Ladd et al. 2009).

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These two variables of complexity—variation in number and variation in expression—capture key dimensions of the traditional notions of 'morphology' and 'word form' (see Bickel and Zúñiga, this volume, for other dimensions). While the variables can vary independently, they can also reinforce each other, yielding impressive degrees of morphological complexity. A case in point is Chintang, a Sino-Tibetan language spoken in the Himalayas (Kiranti group): in this language, a verb stem combines with a large number of other morphemes that have an adjacency requirement and range from grammatical affixes to other verb stems, and the expression of these combinations shows considerable variation in exponence. These morphemes express various notions of person, number, tense, aspect, polarity, and many derivational and lexical meanings, resulting in a count of over 1,800 forms in our corpus (Stoll et al. 2012). Many of these morphemes take on different shapes, depending on other morphemes in the same string. For example, the expression of the third person singular category of an agent, which is an obligatory component of every transitive verb, is *u-* when this agent acts on a first person singular patient (*u-tubehẽ* 's/he met me'), *na-* if the agent acts on a second person patient (*na-tube* 's/he met you'), and zero when the agent acts on a third person (*tube* 's/he met him/her'); and there are still more variants in the non-singular.

Such combinations bring with them yet another challenge: while morphemes like English third person *-s* on a verb stem are compatible with a very large number of contexts (basically any event involving a third person referent in the role of an agent or the sole argument of an intransitive verb), its equivalents in Chintang are far more specific, tailored to specific configurations of the participants in an event. And since apart from person many other categories are expressed as well, each string is extremely specific to a particular context. This (p. 497) inevitably lowers the chances of finding repeated occurrences of the same string, and thus increases the challenges for the learner even more.

Until now, there have been no quantitative assessments of these kinds of challenges and how they contrast with the challenges posed by languages with less morphological complexity. In this chapter we aim to fill this gap and then describe how Chintang children manage to overcome the challenges posed by their mother tongue.[2] We begin by presenting some background facts about Chintang and its speakers and then give a short overview of our data. After presenting an analysis of the distribution of verb forms in Chintang speech surrounding children, we contrast the results with an English corpus matched in type and size to illustrate the different challenges children face. We then present and discuss the results of some analyses of how and over which time spans children learn morphology. We conclude with a discussion of the results and future perspectives.

Our goal in this chapter is exploratory only, and we refrain from statistical model testing throughout. For a more detailed statistical analysis of Chintang verb morphology, see Stoll et al. (2012).

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24.2 Chintang

24.2.1 The language and its people

There are approximately 5,000–6,000 Chintang speakers, all of whom are bilingual in Nepali, the Indo-European *lingua franca* of the area. According to the criteria provided by the UNESCO classification scheme of endangered languages (UNESCO Ad Hoc Expert Group on Endangered Languages 2003), Chintang is considered endangered with an average vitality rate of 3 out of a range from 0-5, where 0 stands for 'extinct' and 5 for 'not endangered'. So far, Chintang is still spoken in a large variety of contexts of daily life. The language is still transmitted to most children as their first language, but children also learn Nepali early on. Nepali has been gaining more ground over the past few decades, but the amount of code-mixing has remained relatively constant across generations (Stoll et al. 2015).

Chintang is also the name of the village where the speakers live. The village is located in the the lower foothills of the Himalayas (Dhankuṭā district, Nepal) and stretches over a relatively steep hill range. Most Chintang people are farmers, and they live in scattered houses surrounded by fields and gardens. The climate in Chintang is warm and, except during heavy rainfall in the monsoon, most life takes place outside. The society is relatively egalitarian, but women take over most household chores in addition to working in the fields. This also implies that men look after the children if necessary.

Children play in large groups and move around freely in the neighborhood from early on. Older children take care of the younger ones in addition to helping adults with daily chores. Starting from around six to eight months, younger children are carried around by their older siblings and spend most of their time with other children. Surrounding adults also always keep an eye on the children and are mostly co-present.

(p. 498) 24.2.2 Verb structure

Chintang verb structure is built on a mono-syllabic CV(C) root. Roots can be followed by a mono-consonantal augment that is mostly semantically opaque but shows distinctive phonological behavior (unlike root final consonants, for example, augments are only realized before vowels). Stems (consisting of a root or a root and an augment) can be further expanded by preverbs which go back to independent lexical items but now form single bipartite stems, optionally interrupted by prefixed inflections (e.g. *ya-cept-* 'call', *ya-a-cept-e* 'you called' with *a-*'2' and *-e* 'PST'). Beyond this, the verbal lexicon can be expanded by idiom formation with nouns or by loanwords which are marked as such and need a native auxiliary to be used in Chintang (Stoll et al. 2015).

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Verb stems can be recursively expanded by other verb stems, which we call V2 stems (following the descriptive tradition of the area). V2 stems have the same shape and phonological behavior as regular verb stems. Their meanings range from completely grammaticalized notions like imperfective aspect or benefactive derivation to concrete lexical meanings entirely on a par with regular verb stems. What makes V2 stems special is that they select (require) a regular verb stem as their host, with specific constraints on the valency and Aktionsart of the host. In addition, V2 require their host to be inflected to the extent that it complies with a two-syllable template. These constraints are discussed in more detail in Bickel et al. (2007) and in Bickel and Zúñiga (this volume), but the following examples illustrate the basic pattern (with V2 stems in boldface):[3]

(1)

a. yo=go=i=yă luŋghek thitta
DEM.ACROSS=NMLZ=LOC=ABL stone one

kob-u-**thapt**-o-**kh**-o!
pick.up-3O-V2:move.across.TR-3O-V2:see[IMP.2sA]-3[s]O
'Bring over one stone from there!' [CLLDCh4R02S02b.412]

b. phaŋ mo taĩ-na-**thap** kina ani-mik=be
(ideophone) CIT [3sS-]jump-NA-V2:go.across.INTR[-SBJV] SEQ 1piPOSS-eye=LOC

khat-no=kha=lo na.
[3sS]go-IND.NPST=NMLZ=SURP INSIST
'It may bounce over here "whoom", and then it will go into our eyes!' (warning children who throw small stones around) [CLLDCh4R04S06.0445]

(p. 499) The V2 stem *thapt-* requires a bivalent host (*kop-* 'pick up' in 1a), while *thap-* requires a monovalent stem (*tan-* 'jump' in 1b). In all cases, the V2 is added after a two-syllable template consisting of a regular verb stem plus inflectional material (*kob-u* in 1a), or, if there is no suitable material, an epenthetic syllable /na/ (*taĩ-na* in 1b).

While the meaning of *thapt-* 'move across' is fairly literal in (1a), usage is often expanded depending on the specific combination with other verb stems, for example metaphorically:

(2)

abo Parama hott-u-thapt-o-ŋs-e.
now Parama [3sA-]tire-3O-V2:move.across.TR-3[s]O-PRF-IND.PST
'Now it has tired out Parama' (after she had been active for a long time)
[CLLDCh4R10S08.619]

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Similarly, the V2 *khag-* ‘see’ that appears in (1a) as an additional element (shortened to *kh-* for morphophonological reasons) often combines with imperatives to suggest that the addressee should put in a little extra effort to comply with the speaker’s request, not unlike the English idiom *see that you do this!*

V2 stems are often, but not always, related to verbs that can be used independently. The V2 *thapt-*, for example, is related to an independently occurring regular verb stem:

	cuwa	thapt-a-kh-a	kanchi!
(3)	water	move.across-IMP-V2:see-IMP[2sS]	youngest.daughter

‘Kanchi, bring some water over here!’ [CLDLCh3R02S06.061]

Whether or not speakers have acquired a generalized representation covering all such usages is an open issue. From the point of view of language acquisition, it seems clear that children encounter verbs first in their specific contexts. Detecting links and building associations across these contexts is a slow process over time. Therefore, it is safest to assume that any generalization is a secondary development in the way the lexicon is organized, and it is very likely that there is substantial variation between individuals and usage situations.

As the examples in (1)–(3) also illustrate, Chintang verb stems and verb stem sequences are inflected by a considerable number of categories. These categories are expressed by affixes in the narrow sense of the term. The verb obligatorily inflects for agreement with up to two arguments (in three persons, three numbers, and in clusivity), as well as for tense, aspect, mood, and polarity. The markers are distributed over four prefix and eleven suffix positions (not counting V2 stems). With these possibilities, inflectional paradigms are very complex and define a large number of forms. The number of possible forms is, furthermore, heavily increased by the fact that prefixes are not fixed in their relative position but can be freely permutated without any effect on meaning, and that prefixes can also occur before a V2 stem instead of a regular verb stem (Bickel et al. 2007; Bickel and Zúñiga, this volume). We explore the resulting range of verb forms in corpus data in the following section.

(p. 500) 24.3 Data

Our analysis is based on a longitudinal acquisition corpus that covers children’s speech and all speech that surrounds them or was used when addressing them.[4] The corpus includes data of six children we systematically tracked in the recordings. Two children were six months, two children two years and two children three years old at the beginning of the recordings. Recordings were done by a Nepali research assistant in cooperation with a local assistant who was familiar with the children.

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The recordings took place over a period of eighteen months during one-week periods every month (always choosing the same week in each month). Monthly recordings amounted to approximately four hours with several recordings within these one-week periods. The criterion for individual recording sessions was that the child was alert and interacting with other people. Thus, the length of individual recording sessions varied substantially, and up to fourteen recordings were conducted per one-week period.

The number of people surrounding the child was not controlled for, neither were the recording contexts specified or controlled. Our goal was for the recordings to be as natural as possible. As a result, a large number of people who are part of the daily lives of these children were in the recordings as well. Some of them appeared only once and shortly, others more often or even regularly and for longer periods.

The recordings were transcribed, translated into English and Nepali, and morphologically glossed. The transcriptions and translations were conducted by trained native speakers in Nepal, and the glossing was done by linguistics students at the Universities of Leipzig and Zurich.

For present purposes we use the glossed part of the corpus, focusing on pure Chintang words (for a study on code-switching and language mixing, see Stoll et al. 2015). This includes a total of 315,816 orthographic words (see footnote 3). For the analysis of child-surrounding speech (adult input), we focused on speakers older than twelve years, which amounts to 148,935 words, spoken by 119 different speakers.

In order to contrast the Chintang patterns with those in English, we extracted a longitudinal corpus of English from the Manchester corpus (Theakston et al. 2001) available in CHILDES (MacWhinney 2000). In order to match the corpora in length, we cut down the English corpus to the same number of verbs as encountered in the Chintang corpus (by taking a random subsample).

24.4 Challenges for the Learner

24.4.1 Verb forms in Chintang vs. English input

In order to understand the differences in learning challenges across different types of morphology, we compare the number and combinations of elements in Chintang and English (p. 501) verb forms and assess the amount of repetition of these forms in the two corpora. But what is a verb form? As already noted in the introduction, from an acquisition point of view, the most relevant concept here is that of a string of morphemes that regularly co-occur with each other, are subject to some adjacency requirement, and show some variation dependent on this co-occurrence. This corresponds to an intuitive

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notion of a 'word', but given the elusive status of this notion, we use Bickel and Zúñiga's (this volume) framework for defining our unit of interest more precisely:

(4)
A verb form (for our purposes) is a verb stem together with all morphemes that:
a. selects verb stems or is required by verb inflection
b. coheres with the verb stem in so far as it cannot be displaced independently by general syntactic mechanisms

Criterion (4a) includes all grammatical affixes and V2 stems in Chintang, but it excludes all particles and clitics that are not limited to (do not select) verb stems, for example focus clitics or nominalizers in Chintang or cliticized pronouns in English. These elements vary in what they occur with to such an extent that children need to learn them as separate units. Criterion (4b) excludes the auxiliary and modal verb elements in English periphrastic constructions, and also particles in English verb–particle combinations (e.g. *look up sth*.). These elements select, that is, require, verb stems (or a participial form in the case of auxiliaries), but they do not need to be linearly adjacent to a verb stem (cf. [*is*] *he really* [*working*]? or *she* [*looked*] *the answer* [*up*]). Note that the relevant issue here is not that we can have other expressions (non-selecting, 'free' units like *he, really, the answer*) between auxiliary/particle and verb. This is a possibility that is perfectly compatible with a word form—indeed, many might take it as definitional of incorporation in polysynthesis. What is crucial from an acquisitional point of view is that the absence of free-ranging syntactic displacement ensures that the elements constantly recur together and in adjacency to each other.

To be sure, Chintang inflectional prefixes can very rarely appear in a different position than directly attached to the verb stem that they select, for example on the infinitive rather than the main verb in a raising construction. However, this is the result of a special morphological spreading rule which still obeys a strict adjacency condition between the landing and launching places of the prefix (Bickel and Zúñiga, this volume).

In the following we apply the definition in (4) to the Chintang and English corpora and examine the distribution of verb forms in the speech surrounding children.

24.4.2 Distributions of verb forms in Chintang and English

One way to compare child-surrounding speech in the two languages is in terms of the unique elements that occur with a verb stem. In Chintang we find 148 such elements in the corpus (120 grammatical markers and 28 V2 stems), forming 4,745 unique combinations among themselves. In terms of verb forms, this amounts to 1,840 different synthetic verb forms per verb. In English, there are only three affixes (*-s, -ed, -en*), plus a number of irregular (p. 502) processes,[5] but they all fill the same slot and cannot combine

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with each other. This already makes it clear that children face very different challenges in the two languages.

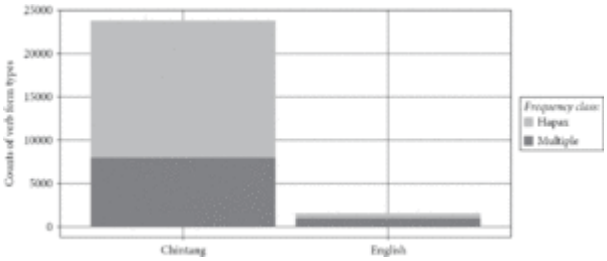

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Figure 24.1 Counts of verb form types in normalized Chintang and English input corpora (*N* = 93,516 verb forms)

A verb form type is the unique combination of a specific lexical verb stem and any morpheme that requires this stem and/or is required by it and that coheres with the stem (as per the definition in 4).

A more interesting way of comparison is in terms of the actual verb forms that occur in child-surrounding speech. For this, we extracted the same number of verb forms produced by adults in the Chintang and English corpus. The Chintang corpus is smaller, and so we used all verb forms from the Chintang corpus and randomly sampled the equivalent number of verb tokens from the English corpus. This leaves us with 93,516 verb forms per corpus (verb tokens).

Figure 24.1 plots the number of verb form types in the two languages (including stems, so *work, works, think, thought* … are all different verb forms). The differences are indeed striking. Whereas English children encounter merely 1,559 unique verb forms, Chintang children hear 15.3 times more unique verb forms, which amounts to 23,811 different forms out of our corpus of 93,516. Thus, it becomes evident that Chintang children need to process and learn many more different verb forms than English children. This difference in the input is also reflected in a considerable difference in the type/token ratios, 0.017 in English vs. 0.256 in Chintang. This difference has severe consequences for the repetitions of forms that children hear: English children hear the same few forms over and over again, and can match them with associated situations relatively easily. Chintang children, by contrast, have to match many different forms with low repetition rates to their situations.

Figure 24.1 also shows that the frequency distributions of verb form types are very different in the languages. In English about 34 percent of verb form types (537 out of 1,559) occur only once in the whole corpus, that is, are *hapax legomena*. In Chintang, it is over 66 percent of the verb form types (15,821 out of 23,811) that are *hapax legomena*. In terms of tokens the difference in numbers of *hapax legomena* is even more extreme. In English (p. 503) merely 0.57 percent of the verb tokens are *hapax legomena* compared to 16.9 percent in Chintang.

These numbers show not only that Chintang children encounter a truly gigantic number of verb forms in their input, but that they encounter a very large number of these forms very rarely. Note that for the counts in Figure 24.1 we pooled all child-surrounding

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speech, across many speakers and situations. This means that not every child in our corpus encounters each form we found in this sample corpus.

To explore the differences between Chintang and English further, it is worth taking a Zipfian perspective, that is, looking at the distribution of verb form frequencies (Zipf 1932, 1935). Zipf's Law posits a correlation between complexity as measured by word length and frequency of occurrence. The more complex and the longer a unit, the rarer its occurrence. More precisely, the law predicts a slope $s = 1$ in log-log regressions of frequency and frequency rank,[6] representing an ideal compromise between information density, which favors more types with lower frequency, and learnability, which favors less types with higher frequency. Empirical data can and do deviate from this ideal, and this gives us a measure of the extent to which languages put pressure on learners. More types with high frequencies implies more repetition and better learnability. In this case, a log-log regression will have a coefficient $s < 1$, that is, the frequencies of types decrease at a higher rate. The challenge for learners is harder if the the log-log regression has a cofficient $s > 1$, since then the frequencies are more evenly distributed among types, and fewer types come with high repetition rates.

Figure 24.2 plots the log-log data in the verb forms of child-surrounding speech in Chintang and English. The higher x-intercept of Chintang shows that Chintang has a higher number of types (as we have already seen in Figure 24.1). The lower y-intercept shows that the most frequent types in Chintang are less frequent than the most frequent types in English. To compare the distributions of word forms in the two samples, we added two lines with a slope of -1 and intercept at the logarithmic frequency value of the most frequent word. They represent the theoretical expectations under Zipf's Law. English has a steeper-than-expected slope, which implies a smaller inventory of types with higher rates of repetition and better learnability. Chintang has a flatter-than-expected slope, which implies a more diverse inventory of types and lower rates of repetition.

In terms of information theory this means that in a language with more types, like Chintang, the predictability of occurence for a given form is much lower than in English, and hence the language is presumably more difficult to learn. Further, in Chintang, the graph suggests that the lower ranked word forms (starting near a logarithmic rank of 5) match the theoretical Zipfian distribution (solid black line), while the higher ranked forms occur far less often than predicted by Zipf's Law. In English, by contrast, the curve is much steeper and there are fewer forms which are repeated infrequently. This implies that there are more distinct forms with far fewer repetitions in Chintang than in English.

These measures give us an overview of the repetitions of individual forms English and Chintang children encounter in their environment. In the following we explore how Chintang children learn verb forms and how their performance compares to the behavior of adults around them over time. (p. 504)

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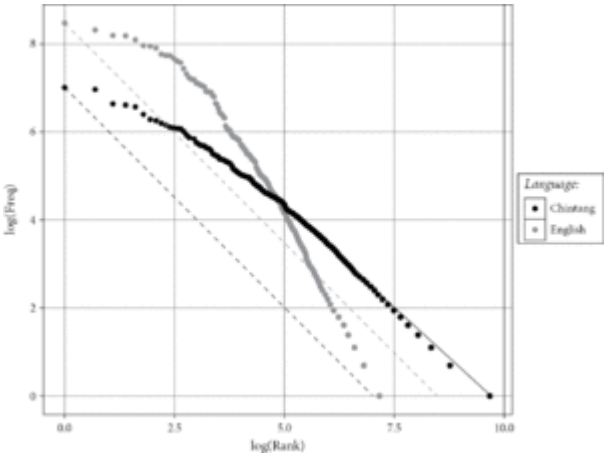

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Figure 24.2 Frequency of verb form types ordered by frequency ranks on a logarithmic scale

The dashed lines represent the expected distribution under Zipf's Law with a slope $s = 1$. The solid black line shows the expected distribution under Zipf's Law for Chintang word forms starting with log(Rank)=5.

24.5 Developmental Patterns

24.5.1 The first verbs in Chintang child language

The youngest two target children in our Chintang corpus were six months old at the beginning of recording. Table 24.1 lists the first ten verb forms uttered by these children. There are several observations that can be made about the forms encountered.

First, there is variation as to when the first verbs show up. Child 1 starts to use the first verbs at the age of eleven months, that is, 5 months earlier than Child 2. Interestingly, at the onset of the first verbs, Child 1 suddenly uses seven different verb forms at once. We cannot exclude that the child has used some verbs before, but in the previous recording, at ten months of age, the child has not uttered any verbs at all. The first verb forms in Child 2 occur at age 1;4. The later start corresponds to the observation that Child 2 also uses fewer verb forms overall during this period.

Second, there is hardly any overlap in verb forms used by the two children. There is none in terms of full forms and only one in these first ten terms of stems (*khat-* 'go'). This speaks against a particular order of acquisition. There are both lexically very wide-ranging stems like *khat-* 'go' and highly specialized stems like *tha-* ~ *thi-* 'come down'. In terms of categories, there is also substantial (p. 505) variation: while imperatives occur several times, there are just as many subjunctives ('SBJV') and indicative forms. Agreement forms also cover a large portion of the possibilities: there are intransitive forms (agreeing with S; in the third person singular with regular zero exponence),

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ambiguous forms (regularly allowing both an S or A reading) and transitives forms (with agreement both with A and O). The forms also include a negative form (***mai****khat****t****e*** ‘s/he didn’t go’, with both a prefix and a suffix), and even V2 stems: apart from the grammaticalized V2 stem *-(ya)k(t)* ‘imperfective’ (*cekta****k****e* ‘s/he was speaking’), we note once an intransitive-selecting V2 stem *-d* (a regular shortening of *-hat* between vowels) in *thiya****d****e* ‘she went all the way down’ (Child 1), and once a transitive-selecting V2 stem *-hatt* in *ca****hatt****uŋ* ‘I (may/will) eat it up’ (Child 2).

Table 24.1 The first ten verb form types used by the youngest children in the Chintang corpus. Meaning elements in square brackets have zero exponence also in the adult paradigm.

Age	***Form***	***Gloss***	***Translation***
(a) Child 1			
0;11	*yuŋ-n-ei*	[3sS-]stay[-SBJV]-OPT-ATTN	let him stay!
0;11	*mai-khat-t-e*	NEG-[3sS-]go-NEG-IND.PST	s/he didn’t go
0;11	*thiy-a-d-e*	[3sS-]go.down-PST-V2:complete.INTR-IND.PST	s/he went all the way down
0;11	*thi-e*	[3sS-]go.down-IND.PST	s/he went down
0;11	*ti-c-o*	put.into[-SBJV]-[1]d[iA]-3[s]O	let’s (dual) put it in
0;11	*cekt-a-k-e*	[3sS-]speak-PST-V2:IPFV-IND.PST	s/he was speaking
0;11	*kekt-u-ŋ*	carry[SBJV]-3[s]O-1sA I	(will/may) carry it
1;0	*toʔt-a*	scratch-IMP[-2sS]	scratch!
1;3	*lim-noʔ*	[3sS-]taste.good-IND.NPST	it tastes good
1;3	*tiy-a*	come-IMP[-2sS]	come!
(b) Child 2			
1;4	*lab-e*	[3sS/A-]catch-IND.PST	s/he caught (it)
1;4	*khatt-a*	take.away-IMP[-2sS]	take away!

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1;5	*kob-a*	pick.up-IMP[-2sS]	pick up!
1;5	*pind-e*	[3sS]run-IND.PST	s/he ran
1;5	*khatt-o-k-o*	[3sA-]take-3[s]O-IND.NPST	s/he takes it
1;5	*lon-c-o*	take.out[-SBJV]-[1]d[iA]-3[s]O	let's (dual) take it out
1;5	*khad-e*	[3sS-]go-IND.PST	s/he went
1;5	*ca-hatt-u-ŋ*	eat[-SBJV]-V2:complete-3[s]O-1sA	I (will/may) eat it up
1;5	*ca*	[3sS-]eat[-SBJV]	s/he might eat
1;5	*tad-e*	[3sS/A-]bring-IND.PST	s/he brought it/ something

Third, both children use different verb forms for at least one verb stem each, that is, they already display variation on the same stem. Child 1 uses the indicative past-tense verb forms (p. 506) *thiyade* and *thie* based the same stem *tha-* ~ *thi-* 'go down'. Child 2 uses two forms of the stem *khatt-*'take', namely the imperative *khatta* and the indicative non-past form *khattoko*, and also two forms of the stem *ca-* 'eat', once (*ca*) as a subjunctive (which always has zero exponence in Chintang), and once as a non-past indicative form (*cahattuŋ*).[7] Thus, the first verb forms detected in our two youngest children show intriguing variation on all levels.

24.5.2 Number of verb forms used

Table 24.2 presents the number of unique verb forms produced by children and recorded in their environment, summarizing the entire recording periods of eighteen months each.

Across all data, there is no obvious relationship between the number of verb forms produced and the number of forms encountered in the input. This is particularly striking in the two oldest children, where Child 5 produces more full verb forms than Child 6 (3,326 vs. 3,051) while s/he has heard many fewer forms (6,420 vs. 9,305). Another general observation is that all children hear only a fraction of the total set of 23,811 different full verb forms that we recorded in the entire corpus (as has already been noted).

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Apart from this, there is considerable variation in the number of verb forms produced by the children of the same age. The two youngest children especially show strong variation, confirming the qualitative conclusions we can draw from Table 24.1. Whereas Child 1 produces 131 unique verb forms over a period of eighteen months, Child 2 produces only fifty-seven unique verb forms. Child 1 already uses sixty-two different stems in contrast to only thirty-six produced by Child 2. The difference between the two children is also pronounced in the number of combinations of affixes and V2 stems: Child 1 uses twice as many affix/V2 combinations as Child 2. Similar variation can be observed between the older children of the same age range.

Finally, we note that the number of verb forms in the surrounding environment of the two youngest children is much smaller than the number of forms encountered by the four older children. But this is most certainly an artifact of the amount of data analyzed. As shown in Table 24.2 the amount of the analyzed hours in the two youngest children is not even half the size of the data of the older children.

The number of full forms produced during the recording period is a good preliminary estimator of the size of the verb inventory of the children at the end of their respective recording period. While these summary tables give an overall impression of the degree to which children produce a rich variety of verb forms from very early on, they do not specify how this performance develops over time. This is the question we address next.

24.5.3 Growth rates of verb forms in children’s productions

The findings so far suggest that children begin with a considerable but variable range of verb forms (Table 24.1), yet that the total number of unique verb forms are modest and remain so when compared to what children hear (Table 24.2). In order to locate any actual (p. 507) development in more detail we analyzed growth rates, that is, we counted the number of unique verb forms that appeared for the first time in each monthly recording.

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Table 24.2 Cumulative number of verb forms for each target child in relation to the input. The verb form types are broken down into the counts of unique stems alone, affix and V2 combinations, and full forms.

Target child	Recording period	Hours analyzed	*N*(unique)					
			produced			heard in total		
			stems	affix/V2 comb.	full forms	stems	affix/V2 comb.	full forms
1	0;6-2;0	18	62	40	131	421	814	3854
2	0;6-2;0	18	36	21	57	382	775	3475
3	2;1-3;6	42	286	326	1896	485	1376	7126
4	2;1-3;5	45	297	275	1706	463	1161	5768
5	3;0-4;5	47.5	359	618	3326	462	1279	6420
6	2;11-4;3	48	353	521	3051	540	1680	9305

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At around age two, the rate of acquisition of new forms speeds up greatly, with an average of approximately 100 observed new unique verb forms per monthly recording in the two-year-olds and around 200 new unique forms per month in the three-year-olds. In one session, Child 5 even produced 400 forms that s/he had never uttered before in any of the recording cycles.

To understand the development of new forms in more detail, we separate the development of non-selecting and selecting elements, that is, between stems on the one hand and affixes or V2 elements on the other hand. Selecting elements require a host and thus show grammatical dependencies that pose a different acquisition challenge than non-selecting morphemes, which are simple lexical units. Figure 24.3 plots the results of this separation.[8] The graphs show that in the two youngest children (Child 1 and Child 2), there is a slow increase of both stems and affix/V2 combinations. While the two growth lines nearly coincide, which suggests item-specific behavior, they go slightly apart towards the end of the recordings, with the number of stems slightly outnumbering the number of affix/V2 combinations in both children. This weak trend is continued in the earliest recordings of the two-year-old children.

Around age 2;6, the trend reverses and children add more affix/V2 combinations than regular verb stems. This trend still holds for the three-year-olds. At the same time, Child 5 (p. 508) (p. 509) and Child 6 add more affix/V2 combinations per recording cycle than the two-year-old children. For stems, we do not detect much difference between these two age groups.

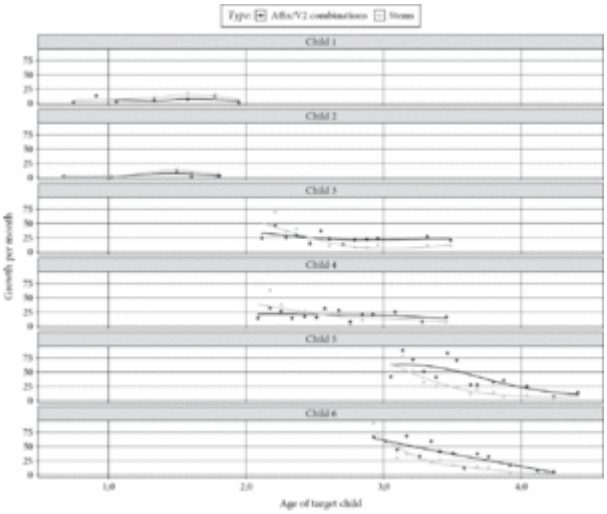

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Figure 24.3 Counts of new regular verb stems vs. new unique affix/V2 combinations in the recorded productions per month, with LOESS regression lines estimating the overall trends

Thus, it appears that both stems and affixes/V2s are responsible for the increase in the inventory of verb forms of the children, each taking the lead at different points in time.

24.5.4 Morphological productivity in Chintang children compared to adults

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The growth rate analysis suggests that children show a strong increase in their inventory of verb form types between the ages of two and four. Figure 24.3 suggests that the growth rate of verb forms is due to a joint effort of lexicon and grammar learning, with grammar taking the lead from age 2;6 onward. The trend lines tend to converge in the latest stages of recorded development and this suggests that not much development is going on and fewer new stems or affix combinations are recorded.

However the growth rates in Figure 24.3 do not sufficiently separate between genuine growth and the effects of cumulative sampling over time. Better resolution can be gained by comparing how children's command of forms develops over time. As a measure of this command we use Shannon entropy estimates (Stoll et al. 2011).

Shannon entropy characterizes the balance in the probability of using specific forms in a paradigm and is based on the range of forms and their frequency distributions at a specific recording time (Moscoso del Prado Martín et al. 2004). The entropy is high when a child uses many different forms with similar frequencies, and thus the choice of a form is less predictable and the entropy is low when s/he uses only a few forms and uses some of them much more frequently than others. Since the use of forms depends on context and content (e.g. the use of dual forms requires content with two referents), we do not estimate absolute values, but compare the morphological entropy of the recorded child with the entropy of adult speech in the same context, that is, in the same recording session. This is obviously not perfect, since being in the same context does not fully guarantee the comparability of the content of speech, but this is the best approximation we have for now. In the absence of more sensitive instruments, we take for now the recording session as our unit for context. [9]

In a first step, we analyze the development of the entropy of full forms. This gives us an idea of how children relate to adults in their overall use of verb forms. In a second step, we test whether the growth in verb forms is mainly driven by lexical or grammatical expansion, that is, in terms of the entropy of stems only vs. the entropy of affix/V2 combinations without stems. In all analyses, we examine the ratio of the adults' to the children's entropy (relative entropy), so that a value smaller than 1 means that children have less variation in their use than adults. Ratios around 1 suggest that children's performance is no longer distinguishable from the adults' performance with respect to entropy.

Figure 24.4 shows the development of relative entropy of full forms. The developmental curve shows that children become adult-like in their use of full verb forms between the ages of 3;6 and 3;8. Figure 24.5 compares the development of stems with the development (p. 510) (p. 511) (p. 512) of affix/V2 combinations using entropy measurements. Consistent with the observation in Figure 24.3, children reach adult performance earlier in stems than in affix/V2 combinations: overall, the older children's performance is closer to the adults' performance and/or the ratio line reaches 1 (equal performance) earlier.

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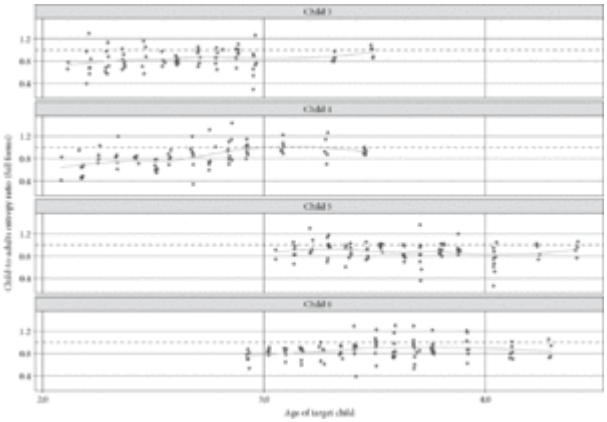

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Figure 24.4 Children's entropy of full verb form usage relative to that of the adults around them, with LOESS regression lines estimating the overall trends

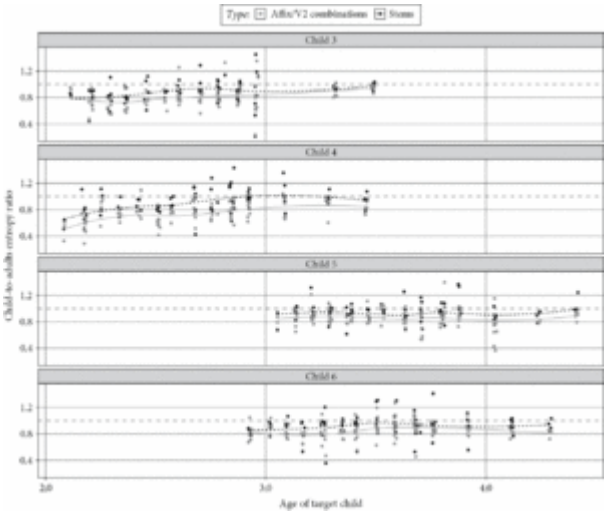

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Figure 24.5 Children's entropy of stems vs. affix/V2 combinations relative to that of the adults around them, with LOESS regression lines estimating the overall trends

In summary, these analyses show that the development of the verbal system is gradual. The development is first mainly driven by lexical learning and than by grammatical learning, but both need to be integrated to reach adult performance level.

24.6 Discussion

In this chapter we were interested in how children acquire a complex polysynthetic system. Our quantitative comparison of Chintang and English confirms the impressionistic claims that polysynthetic systems pose radically different challenges for the learner than languages with limited morphology. The frequency distributions of verb forms encountered by English children vary strongly from those encountered by Chintang children. Overall, Chintang children have to learn many more verb forms than English children. A larger number of forms results in fewer repetitions of individual types, and, since frequency is known to have an impact on learning, we might expect that learning morphology in Chintang will take considerably more time. However, this would

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presuppose that morphological acquisition is almost entirely based on simply matching adult usage patterns. Given the substantial diversity that we observed in the frequency distributions of verb forms in the surrounding adult speech (Figure 24.1), such a scenario is unlikely.

An alternative proposal is that children recognize the challenges of the language very early and, if they detect rich morphology (based for example on observing low repetitions of frequent forms, as in Figure 24.2), they direct their focus of attention and learning efforts on morphology relatively early (Dressler 2007). Our results lend tentative support for such a scenario. Even the two youngest children in our corpus (below age 2) display impressive amounts of morphological variation, producing between twenty-two and forty different affix/V2 combinations (Table 24.2). These results are in accord with the relatively high number of affix combinations found in a study of another polysynthetic language, West Greenlandic, based on a half-hour recording of a single child at age 2;3 (Fortescue 1985). This child is reported to have used twenty-four derivational and 40 inflectional affixes within this one short recording. A study by Fortescue and Olsen (1992) based on a much larger set of five children basically found the same pattern.

This scenario is also consistent with the observation that there is a period where the growth rate of affix/V2 combinations outpaces that of the verb stem lexicon: children appear to concentrate on morphology between about two and a half and four years of age (Figure 24.3). Anecdotal support for an acquisition focus on morphology comes from the observation that Chintang children occasionally produce affix-only strings (Stoll et al. 2012), a phenomenon unheard of in the acquisition of non-polysynthetic languages (for a potentionally similar phenomenon in Inuktitut, see Swift and Allen 2002a). For example, at age 2;2 one child is recorded as producing the suffix combination *-ŋa-ʔã* (1sS-IND.NPST) in response to a fourteen-year-old prompting *ca-ŋa-ʔã mo luducana* ‘tell them *I’ll eat*’ (eat-1sS-IND.NPST, CLLDCh1R02S03a.071). At age 3;3 the same child produces the indicative (p. 513) nonpast marker *noʔ* in isolation, again prompted by *ca-noʔ mo ludaʔna* ‘say *she eats*!’ (eat-IND.NPST, CLLDCh1R02S01.1192). At age 3;2, another child spontaneously produces *mai-yokt-e* (NEG-NEG-PST), intending (we think) *mai-khaʔ-yokt-e* ‘s/he didn’t go’ with the stem *khat-* ‘go’ (CLLDCh4R04S04.1631). Truncations like these are unlikely to be prosodically motivated because all these affix strings are unstressed and indeed cannot carry independent stress (Bickel et al. 2007 and Bickel and Zúñiga, this volume).

The acquisition of affix/V2 combination and verb stems comes together after about three and a half years, where children start to show usage of full verb forms as flexibly as adults (Figure 24.4).

24.7 Conclusions

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As illustrated by the contrast in overall frequency distributions and differences in numbers of unique elements in the Chintang and English corpora, children face radically different challenges when acquiring different languages. Learning a polysynthetic language means that the individual forms are not repeated as frequently as in morphology-poor languages. Nonetheless, the children in our corpus showed a tremendous growth in distinct verb forms relatively early. Comparison of the regular verb lexicon and grammatical affix/V2 combinations suggests that the learning process is first driven by lexicon expansion and later by grammar expansion.

Chintang shows one specific type of polysynthesis and does not have, for example, noun or adverb incorporation. Therefore, it is an urgent task for future research to explore acquisition patterns under other polysynthetic conditions. Further, many languages have extensive sets of periphrastic constructions and it is an open issue how such constructions play together with synthetic forms during acquisition. Here, we have excluded periphrasis because the syntactic independence of auxiliaries defines different acquisition challenges than affixes and V2 stems which are not syntactically independent units. However, there are many languages, especially verb-final languages, where auxiliaries are just as fixed and dependent on verb stems as affixes, and this needs to be explored.

Also, while we have compared the acquisitional challenges across two languages (Chintang and English), it is clear that a full assessment of language aquisition processes requires a more global comparison, both with regard to these challenges and the pathways of acquisition. So far we know very little about the repercussions of grammar on the distributions in the input. An analysis of the combinatorial realizations of grammatical and lexical features of a language is the first step to assessing the range and nature of statistical learning mechanisms that children can apply when learning the language.

In this chapter we have restricted ourselves to describing the distributions of forms found in the input and the speech of the children. The obvious next step is to understand how children actually learn these forms. For this we need to address the use of the individual forms and test whether children imitate these forms and when they start to use them spontaneously. (For a first quantitative assessment of these processes in noun morphology, see Stoll and Bickel 2013).

For any such analysis to work, we need large longitudinal corpora, with extensive time coding of each utterance. This is the only way we can ever hope to understand how children (p. 514) cope with the radically different systems they encounter. Unfortunately, there are not many corpora of this kind available at present and one of the most pressing tasks now is to change this situation.

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Notes:

(1) Throughout this chapter we use the term 'morpheme' in the abstract sense of a meaning-bearing unit, including units that are realized by a rule or a supra-imposed pattern, e.g. an ablaut, rather than a linear string.

(2) All quantitative analyses were conducted in R (R Development Core Team 2016).

(3) Orthographic word boundaries are based here on whether or not an element can receive independent stress. '-' separates morphemes that select a host morpheme; '=' separates morphemes that do not select another morpheme ('clitics' in one sense of the term) or that select entire phrases ('clitics' in another sense of the term). Glossing follows the Leipzig Glossing Rules, with the following additions: CIT 'citation', NA 'epenthetic syllable *na*', INSIST 'insistive', and SURP 'surprise'.

(4) For more detailed and up-to-date information on our entire corpus of Chintang, see http://www.clrp.uzh.ch. (accessed 9 February 2017).

(5) There are roughly 200 commonly used irregular verbs in English. In the sample used for this chapter, we counted 76 irregular past-tense forms.

(6) Zipf's Law states that the frequency of item i is the inverse of its rank r starting at the highest frequency h. This corresponds to a power-law distribution with exponent s near 1: $F(i_r|h) = h\frac{1}{r^s}$, hence $\log(Fi_r|h) = \log(h)\ s\log(r)$.

(7) *Ca* could also be interpreted as an intransitive imperative form with contraction of *ca-a* > *ca*. This is not the case in the other subjunctive forms in Table 24.1.

(8) Isolating affix/V2 combinations from stems is straightforward in Chintang because there are no conjugation classes and virtually no other item-specific effects that would blur the stem-affix/V2 boundary. The few effects there are are vowel mergers and other

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contractions which can easily be resolved in the sense that the stem part and the affix part can be assigned to distinct segments. See Stoll et al. (2012) for further discussion.

(9) For the actual entropy estimates, we use the Chao-Shen estimator which accounts for the fact that our samples underestimate the number of low-frequency types (Chao and Shen 2003). We thank Damian Blasi for suggesting this.

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Western Apache, a Southern Athabaskan Language

Willem J. de Reuse

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Edited by Michael Fortescue, Marianne Mithun, and Nicholas Evans

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Abstract and Keywords

Western Apache belongs to the Southern or Apachean branch of the Athabaskan language family, (Nadene phylum) and is spoken by ca. 6,000 people in central and eastern Arizona, USA. Since there are very few children acquiring the language, it is endangered. The Western Apache noun word is morphologically simple, but the verb word is unusually complex. It can be characterized morphologically by what Sapir called “interrupted synthesis”, that is, a complex interdigitation of functionally diverse prefixal elements: inflectional prefixes, derivational prefixes, and thematic prefixes. Furthermore, the Athabaskan polysynthetic word is also characterized by extensive fusion or contraction of short prefix elements, prefix slippage, and haplology. As a result, the Athabaskan verb word is often between two and four syllables long, which is quite short when compared to words in more “orthodox” polysynthetic language families (Woodbury, Chapter 30, this volume) such as Eskimo-Aleut, Chukotko-Kamchatkan, and Wakashan.

Keywords: Western Apache, Athabaskan, interrupted synthesis, prefix slippage, diverse prefixal elementa

25.1 Introduction

THERE is a general and often unspoken consensus among linguists that Athabaskan languages (of which Western Apache is an exemplar) are “hard”. When asked to elaborate, the Athabaskanist will generally mention their polysynthetic complexity. This chapter will explain in some detail what Athabaskanists actually mean when they talk about polysynthesis. After a presentation of the language (Section 25.2), and a brief typological morphosyntactic profile (Section 25.3), I will focus on the verb word, where almost all the complexity seems to lie. In section 25.4, the emphasis will be on the

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templatic nature of the verb word, and its prefixing nature. Section 25.5 will provide illustrations with a few paradigms, and some necessary discussion of typical morphophonemic processes. After this introductory background, I turn to the cross-linguistically more unusual features of Athabaskan polysynthesis, such as “interrupted synthesis”, and attendant prefixal interdependencies (Section 25.6), and the “principle of templatic attraction” (Section 25.7). The conclusion (Section 25.8) will emphasize that, while the language can pack a lot of information into one word, morphophonological and morphological processes conspire to make the word quite short, a feature quite contrary to “morphologically orthodox polysynthesis”, as defined by Woodbury (Chapter 26, this volume).

25.2 Western Apache

Western Apache (henceforth WA) is a Southern Athabaskan (or Apachean) language mostly spoken on and near the San Carlos and White Mountain Apache Reservations in central eastern Arizona. There exist much smaller communities of speakers at Payson, Arizona (p. 518) (Tonto-Apache), at Camp Verde, Arizona (Yavapai-Apache) (including Yavapai (Yuman) speakers), and at Ft. McDowell, Arizona (Mohave-Apache) (including Yavapai speakers). WA is closely related to its original Athabaskan neighbor to the northwest, Navajo, and to its original Athabaskan neighbor to the southeast, Chiricahua Apache, but there is very marginal mutual intelligibility between WA and these Athabaskan neighbors.

The ethnic population of all WA groups must be about 25,000. The number of speakers of WA (including semi-speakers) can presently be estimated at 5,000–6,000, that is, the third largest community of Athabaskan language speakers after the Navajo language, which has over 100,000 speakers (Young 1983: 400), and the Dene Sųłiné (formerly called Chipewyan) language which is said to have about 15,000 speakers (Cook 2004: xiii), but 10,000 speakers is probably a more accurate estimate (Holden 2013: 18).

The traditional division of WA into dialects, accepted by most linguists, originates in Grenville Goodwin’s ethnographic work (1935, 1942). Goodwin distinguished five groups: Northern Tonto, Southern Tonto, Cibecue, San Carlos, and White Mountain. My own research on all “dialects”, focusing on phonological differences and lexical data, has come to two conclusions (de Reuse 2004). First, clan exogamy requirements stimulate marriages between people of different groups, resulting in considerable dialect mixture. Second, it is still possible to identify three geographic groups of WA dialects, which cross-cut reservation boundaries: (1) a Northern group, covering Goodwin’s Northern and Southern Tonto (de Reuse 2002), (2) a Central group, roughly corresponding to Goodwin’s San Carlos and Cibecue, and (3) an Eastern group, covering Goodwin’s White Mountain group, as well as the Coyotero of the Bylas area of the San Carlos Reservation.

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All three dialect groups of WA are endangered to various degrees. The dialects of the Northern group (nowadays called Dilzhe’e) are especially endangered, with fewer than twenty speakers, all elderly, while the White Mountain group has probably over 3,000 speakers, and the San Carlos group has probably over 2,000 speakers. Very few children, fewer than 1 percent entering kindergarten, are speaking the language. The discussion that follows is valid for all three dialect groups, but unless otherwise stated, the examples are from morphologically conservative speakers from the San Carlos dialect group.

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25.3 Typological Profile

A brief typological profile of WA is provided here. Word classes which can take pronominal inflection are the following: Nouns (open class), Verbs (open class), and Postpositions (closed class). Uninflected word classes are the following: Pronouns, Demonstratives, Quantifiers, Numerals, Qualifiers (similar to adjectives, but a closed class), Adverbs, Clausal and sentential particles (tense, aspect, modal, evidential, mirative (de Reuse 2003), and discourse-pragmatic such as focus, topic, and specificity), Ideophones, and Interjections. Some postpositions and particles are phonological words, others are clitics.

The language is head-marking. There is no morphological case-marking.

Most clauses are AV, SV, or OV. In colloquial speech, VA and VS are quite common as well; with two arguments both AOV and OAV are possible, and the human or animate argument normally comes before the non-human or inanimate argument; in the OAV order **(p. 519)** there is an inverse marking 3rd person object prefix on the verb that indicates that the order is OA. WA has a passive as well, and reflexive and reciprocal marking is quite developed.

There is some non-verbal predication with Noun (S) plus Noun (Predicate) or Noun (S) and Postposition (Predicate) (de Reuse 1995, de Reuse 2006c: 92–6, de Reuse 2008).

The distinction between coordination and subordination is rather weakly developed; conjunctional elements typically tend to be adverbs, or postpositions, or are not clearly distinguished from focus marking clitics. Similarly, nominalization and relativization are weakly developed, and their markers are not clearly distinguished from topic or specificity marking clitics (de Reuse 2001b).

As far as the morphology is concerned, nouns are inflected for possession only, and postpositional stems for their postpositional object only. There is some compounding, but no noun incorporation. Verbs, however, are quite complex morphologically, in terms of numbers of elements involved (more than 200), the order of combination, various non-contiguous prefixal interdependencies, and morphophonemics fusing it all together. All bound concatenative morphology is prefixal, and there is no productive suffixation. The verb stem itself varies in complex nonconcatenative ways depending on the inflectional categories of Mode and Aktionsart (Section 25.3) (Hardy 1979, Leer 1979). The formal processes affecting the verb stem remind us of Ablaut in Indo-European and of the root and pattern morphology of Semitic languages. However, the verb stem variation of Athabaskan, although a challenge for theories of morphology, is not a unique property of polysynthetic languages, and therefore I will not discuss it in this chapter.

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Because of the complexity of the verb word, and hence its interest for issues of polysynthesis, the remaining sections of this chapter will concentrate on the morphology of the verb word.

25.4 The Western Apache Verb Word and the Template

The WA verb word, as in all Athabaskan languages, can be analyzed by the following very abstract word-formation rules, given in (1):

(1)

VERB WORD	-->	Inflectional prefixes + BASE
BASE	-->	Derivational (including Quasi-Inflectional) prefixes + THEME
THEME	-->	Thematic prefixes + STEM
STEM	-->	ROOT + suffix(es)
ROOT		(unanalyzable)

The word-formation rules given under (1) would naturally lead one to postulate phrase structure rules implying that the order of prefixes in a WA verb word is, from left to right: Inflectional-Derivational-Thematic. But in reality, there is no such order. The prefixes are plugged in various position slots that have no direct or obvious relation to the order implied by the word-formation rules. This templatic (or slot and filler) system is described in detail in the classic accounts by Hoijer (1945, 1946a, 1946b), and Young and Morgan (1987, 1992), and elaborated on by Kari (1976, 1989).

(p. 520) From a formal theoretical point of view this templatic system is not satisfactory, as positions are basically stipulated and do not seem to be motivated by any general principles or rules of universal grammar.

From a typological–functional theoretical point of view, the templatic system is not satisfactory either. A functionalist theory would expect the prefixes farther from the stem to be added (or have become grammaticalized) later diachronically, and the prefixes closest to the stem to be the earliest morphology (Givón 2000). This is certainly the case for some prefixation, but since there seems to be a fair amount of old morphology far away from the stem, the assumptions do not hold well. Also problematic for a functional approach is the fact that it is emphatically not the case that the inflectional prefixes occur closest to the stem and that the derivational prefixes occur farthest from the stem.

Finally, in descriptive terms, the templatic approach is not elegant, since typically, many positions remain unfilled, and zero positions are postulated in the traditional approach. One might be tempted to simply list the possible strings of prefixes, as was done in the

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grammar of Navajo by Reichard (1951), or to skirt the issue by building smaller, easier to remember strings, ignoring the positions hardly ever used, as is done in the pedagogical grammar of the Navajo verb by Faltz (1998), or the pedagogical grammar of WA by de Reuse (2006c), and the sketch of Dene Sųłiné in Holden (2013: 441–514).

There have been three attempts to account for prefix order in Athabaskan without using the template, all in formal frameworks.

For McDonough (1990, 2000), the verb word of Navajo is bipartite: there are two stems, the first being a fused complex of subject inflection and mode inflection, and the second one the traditional stem. In this approach, the compound structure of the verb is made on phonological rather than on morphological grounds. For Fountain (1998), some of Navajo prefixation can be accounted for in an Optimality Theoretic framework. The problem with both of these approaches is that they account for some but in no way for all of the properties of Athabaskan prefix ordering. The broadest and most ambitious attempt is an explanation in terms of semantic scope by Rice (2000), which is also similar to some shorter accounts using scope by Hale (2001). However, even in the work by Rice, there are some ordering facts that remain unaccounted for.

As a result of this situation, it is best to stick with the slot and filler (or templatic) approach as a presentational device. Table 25.1 lists the position slots, in the actual order from the leftmost prefix to the stem, with an indication of the type of prefix, and of the approximate meanings. No meanings are given for Thematic prefixes, since their main function is to distinguish themes from one another. They function somewhat like the items *cran-* and *boysen-* in *cranberry* and *boysenberry*. The term “Quasi-Inflectional”, refers to a type of derivation that is totally productive, but does not have all the characteristics of inflection, in that it is not obligatory. The first Athabakanist to use the term Quasi-Inflectional was Holden (2013: 472–6). My view of what is Quasi-Inflectional is slightly different from Holden’s in that I am not sure indefinite 3rd person (3iOBJ), fourth person (3aOBJ), and areal 3rd person (3sOBJ) prefixes are Quasi-Inflectional, and in that I do consider the Reversionary and the Semeliterative of position 2 to be Quasi-Inflectional. My use of the term Quasi-Inflectional is synonymous with what I have called Productive Noninflectional Concatenation (PNC) in my account of Siberian Yupik Eskimo polysynthesis (de Reuse 2009). Obviously, more research on the Quasi-Inflectional status of some prefixes is needed. **(p. 521)**

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Table 25.1 The Western Apache verb template

Position slot number according to Young and Morgan (1992)	Position slot number used in this chapter	Type of prefix	Approximate meaning or function	WA examples, and abbreviations, as shown in analyses and examples
O	P-	Inflectional	Object of postposition	see text for list
Ia	1	Inflectional	Null postposition	
Ib	1	Derivational/Thematic	Adverbial or incorporated (noun plus) postposition/None	many prefixes, see text for a partial list
Ic	1	Inflectional	Reflexive	‘i+REFL
Id	2	Derivational (Quasi-Inflectional)	Reversionary	ná2+ REV
Ie	2	Derivational (Quasi-Inflectional)	Semeliterative	ná2+ SEMELIT
II	2	Inflectional	Iterative mode	ná2+ IT
III	3	Derivational (Quasi-Inflectional)	Distributive plural	da3+ PL

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IV	4	Inflectional/Thematic	Direct object pronoun/ None	see text for list
V	5	Inflectional/Thematic	Deictic subject pronoun/None	ch’5+‘3aSubj’, ʔ5 + ‘3i SUBJ’ etc.
VIa	6	Derivational/Thematic	Inceptive, Seriative or Directive/None	d6+ INC, h6+ SER, n6+TH, o6 DIR, etc.
VIb	6	Derivational/Thematic	Terminative/None	n6+ TERM, etc.
VIc	6	Derivational/Thematic	Transitional or Semelfactive	
VII	7	Inflectional	Mode	H7+, n7+, s7+, Ø7+
VIII	8	Inflectional	Subject pronoun	
IX	9	Derivational/Thematic	Transitivity indicator/ None	ɬ9+, l9+, d9+, Ø9+
X	10	Verb stem	many lexical meanings	-STEM, see discussion in text

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(p. 522) For the sake of easy comparison with Navajo and other Apachean languages, it is convenient, in the first column of Table 25.1, to mention Young and Morgan's (1992: 846–54) Navajo positions with Roman numerals. In the second column of Table 25.1, I use a simplified system with Arabic numerals, which reflects WA better. By convention, all prefix forms mentioned in this chapter will be followed by their position number and by the plus (+) sign, so one is never in doubt as to their position number or their status as prefixes.

In Table 25.1, position P is the position farthest from the Stem, and 10 would be the Stem itself. There are thus ten (P through 9) position slots in front of the Stem. But as can be seen in Table 25.1, there are more positions than that, since in some cases, there can be "sub-positions", that is, more than one prefix in one position. I choose not to number the subpositions, because their relative order is not always clear.

In the following paragraphs, I provide additional information or examples for several positions, as indicated in the last column of Table 25.1.

Position P contains postpositional object pronoun prefixes, such as: *shi*+ '1OBJ'; *ni*+ '2OBJ'; *yi*+ '3oOBJ, when the subject is 3rd person'; *bi*+ '3Obj when the subject is not 3rd person'; *go*+ '3sObj'; 'i+ > *'i*+ '3iObj'; *nohwi*+ '1dObj' or '2dObj', which occur when a postpositional stem is fused to the beginning of a verb in position 1.

Position 1 contains many adverbial prefixes, including the following, which are typically found with classificatory handling verbs (to be discussed in Section 25.5): *ch'a'o1*+ 'away, lost, hidden'; *ch'í1*+ 'out horizontally'; *da1*+ 'covering, closing', *dé1*+*'in fire'; ná1*+ 'upward'; *ha1*+ 'out vertically'; *ha'á1*+ 'into, horizontally'; *łé1*+ 'around in a circle'; *na1*+ 'down'; *'o1*+ 'into, out of sight', *té1*+ 'into water'; and *yó'o1*+ 'away, discarded'. Position 1 can also contain some thematic elements such as *ná1*+ 'thematic'.

Position 4 contains the object pronoun prefixes, including: *sh4*+ '1Obj'; *n4*+ '2Obj'; *y4*+ '3oObj, when the subject is 3rd person'; *b4*+ '3Obj when the subject is 3rd person'; *go4*+ '3sObj'; *'4*+ '3iObj'; *nohw4*+ '1dObj' or '2dOBJ'; *ø4*+ '3Obj, when the subject is not 3rd person'.

Position 5, traditionally called the "Deictic Subject", contains a number of 3rd person subject pronouns, none of which are phonologically unrealized.

Position 6 can contain a rather disparate array of prefixes, usually aspectual or thematic. This position is sometimes called Qualifier (Jette and Jones 2000: 759, Rice 2000), but as far as WA is concerned, I do not see them as qualifying anything.

Position 7, traditionally called Mode, is one of the more elusive ones. The Athabaskan inflectional category of Mode is a particularly confusing one since it covers aspectual distinctions such as imperfective versus perfective, and a progressive, but also the optative, a mood, and the future, a tense. A common Perfective Mode marker in this position is *H7*+, a convention meaning: "put a high tone on the preceding vowel or syllabic nasal". The preferred label for important portions of this position is "Conjugation

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Marker", because they can mark different (mostly Perfective) conjugations in addition to just Mode (Rice and Hargus 1989). What marks Mode is really a combination of the shape of the stem, the conjugation marker (itself conditioned by other prefixes), and the allomorphs of the subject pronoun prefix, (conditioned by the Classifier). This conditioning of one prefix by another will be discussed further in Section 25.4. Note that the Perfective Mode marker is *H7+*.

Position 8 contains the subject pronoun prefixes, which are: *sh8+* '1Subj'; *n8+* '2Subj'; *H8+* '2Subj' (an unpredictable variant); *id8+* '1dsubj'; *oh8+* '2dSubj'; and *ø8+* '3Subj'.

Position 9 contains the four prefixes traditionally called "Classifiers". These actually do not classify anything. They can be thematic, or they can be transitivity, valence or voice (p. 523) indicators. So *ɬ9+* typically increases valence by deriving causatives, and *l9+* and *d9+* decrease valence by deriving passives, or decrease transitivity since they are found in reflexives and reciprocals.

Position 10 is the Stem. There are ca. 320 different verb stems in WA, often of very general meaning. The verb stem is almost always monosyllabic. The verb stem itself can vary in complex ways regarding vowel quality, length, tone, and final consonant, to indicate Mode (i.e. perfective, imperfective, progressive aspects, optative mood, and future tense), crosscutting with a system of Aktionsart (such as momentaneous, continuous, semelfactive, durative, repetitive, and conclusive).

The best way to explain this variation is to postulate that the verb stem itself is composite, and built of a Root, with one or more Mode or Aktionart suffixes as indicated in (1). Such a Root is an extremely abstract construction, since (with the possible exception of a suffix *-ɬ* which follows many Stems in the Future or Progressive Mode), it is impossible to analyze Stems as combinations of Roots and suffix(es) without recourse to complex diachronic phonological processes (Hardy 1979; Leer 1979). Native speakers have no access to such processes, and the non-Athabaskanist linguist cannot be expected to have them in mind in order to look up an entry. These diachronic processes lead to aspect and mode conditioned verb stem variation that is very complex, often bordering on suppletion, but, as mentioned in Section 25.2, no more relevant to polysynthesis than Indo-European Ablaut alternations would be.

One will note in Table 25.1 the complex interdigitation of three types of prefixes: Inflectional, Derivational (or Quasi-Inflectional), and Thematic. Indeed, positions 1 and 9 are generally Derivational, but sometimes Thematic; position 6 is often Thematic, but sometimes Derivational, and Inflectional when it contributes to marking future tense (cf. example 8); position 7 is sometimes Inflectional, marking aspect when progressive, or mood, when it marks optative, and sometimes Derivational, providing a 'conjugation marker' as discussed in the previous section; positions 5 and 8 mark subject (Inflectional, but occasionally Thematic); position 4 marks object of transitive verb (Inflectional, but occasionally Thematic); position 3 is the distributive plural Derivational (or Quasi-

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Inflectional); and position 2 is iterative aspect (Inflectional), but can also contain Derivational (or Quasi-Inflectional) distinctions.

25.5 The Western Apache Verb Word: Initial Presentation

A complex Table like Table 25.1 is not only quite daunting to non-linguists, but hard to follow for linguists as well. How to best illustrate what Table 25.1 really stands for? There is definitely a presentational problem with any illustration of the Athabaskan verb word.

The traditional presentation, as done in Young and Morgan's (1987, 1992) dictionaries of Navajo, has been to provide dauntingly large numbers of paradigms, so that the linguist tends not to see the forest for the trees. Other presentations, such as that in the Koyukon dictionary by Jette and Jones (2000), give lists of prefix strings, and shorter lists of paradigms, in which case it is hard to see which string is derived from which, and it is hard to match a string to the appropriate paradigm.

(p. 524) A helpful approach to the presentational problem is to postulate Verb Theme Categories, as first suggested by Kari (1979) for Ahtna, and elaborated by Rice (1989) for Slave, and by Slate (1989) for Navajo. The idea is to classify verb themes by their derivational potential (i.e. what sorts of prefixes they can take, particularly in positions 1, 6, and 7), and the resulting classes tell one something about the semantics of VTCs as well. While the approach has not been completely worked out for any Athabaskan language, it is certainly promising. The first division that needs to be made is between Neuter VTCs and Active VTCs.

Neuter VTCs are either inherently Imperfective or inherently Perfective, and do not distinguish Mode. Neuter VTCs can be further subclassified as: Dimensional, Positional, Stative, and Descriptive.

Active VTCs can be fully inflected for all Modes. The Active VTC names provided by Kari (1979) are somewhat arcane, and following Rice (2000: 251–53), we have replaced them by the labels of event situation types identified by Vendler (1967), adding Semelfactives as per Smith (1997). As a result, the Active VTCs can be subclassified as Accomplishment, Achievement, Activity, and Semelfactive. Some of the VTCs will be illustrated in this and in sections 25.6 through 25.7. It should be noted that the Active versus Neuter distinction has nothing to do with transitivity; both Neuter and Active VTCs come in intransitive and transitive flavors.

In this chapter, I opt for a discussion of the WA verb word which is relatively informal and user-friendly to the non-Athabaskanist typologist, and combines some of the insights of paradigm-focused, prefix string-focused, and VTC-focused presentations.

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In this section we start a presentation of the WA verb word with a discussion and morphological and morphophonological analysis of some simple (and partial) paradigms. These discussions and analyses will lay the necessary foundation for the discussion of more complex and interesting forms in sections 25.6 and 25.7.

Example (2) is the paradigm of the verb 'to be big'. Since it is a Neuter (Dimensional) VTC, it has one inherent Mode, which here happens to be the Imperfective.

(2)

	Forms:	Morphological analysis:	Glosses:
a.	nshchaa	n6+Ø7+sh8+Ø9+-chaa	'I am big'
b.	ńchaa	n6+Ø7+H8+Ø9+-chaa	'you (sg.) are big'
c.	nchaa	n6+Ø7+Ø8+Ø9+-chaa	's/he is big'
d	ch'inchaa	ch'5+n6+Ø7+Ø9+-chaa	's/he (fourth person) is big'
e.	nnchaa	n6+Ø7+id8+Ø9+-chaa	'we (2) are big'
f.	nohchaa	n6+Ø7+oh8+Ø9+-chaa	'you (2) are big'
g.	dannchaa	da3+n6+Ø7+id8+Ø9+-chaa	'we (more than 2) are big'
h.	danohchaa	da3+n6+Ø7+oh8+Ø9+-chaa	'you (more than 2) are big'
i.	danchaa	da3+n6+Ø7+Ø8+Ø9+-chaa	'they are big'
j.	dach'inchaa	da3+ch'5+n6+Ø7+Ø9+-chaa	'they (fourth person) are big'

In the next paragraphs, I present a position by position commentary on this paradigm.

(p. 525) Dimensional VTC verbs typically do not have many prefixes in positions 1 and 2, which is why I start the presentation with this example.

The prefix *da3+* changes dual 1st person and 2nd person subject forms into the corresponding plural subject forms. Compare (2e–f) with (2g–h). In the 3rd and 4th person (which is a type of polite 3rd person) there is no dual, so *da3+* simply changes the singular into a (distributive) plural. Compare (2c–d) with (2i–j).

Since this verb is intransitive, there cannot be an object pronoun prefix in position 4.

The subject pronoun prefix *ch'5+* labeled 'fourth person' (a type of polite third person, used for example to talk about one's mother-in law) occurs in position 5, as seen in (2d) and (2j). A phonological rule must be introduced here. In positions 4 through 7 (and only in these positions), an epenthetic vowel /i/ is inserted if the prefix is one consonant long (other than a syllabic n), and the next prefix begins with a consonant, following Wright (1984), Speas (1986), and McDonough (1990). This phonological rule applies regarding *ch'5+* in (2d) and (2j), and will be referred to later as "i-insertion".

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Also to be noted at this point is that there might be cases of mutually exclusive positions. It is assumed that if there is subject marking in position 5, as in (2d) and (2j), there is not going to be any position 8. This is, however, a point of interpretation, because, since the 3rd subject pronoun in position 8 is always *Ø8+* and since the subject marking in position 5 is always a kind of 3rd person, it is impossible to tell whether ø8+ is actually gone when position 5 is filled.

The prefix *n6+* is a Thematic prefix, common with Dimensional VTC verbs.
The prefix *ø7+* is the Conjugation Marker, common for the Imperfective Mode.

The prefixes of position 8 are the subject pronouns. It should be noted that the subject pronoun of the 2nd person singular is usually *n8+*. Here we have the allomorph *H8+* which means: “put a high tone on the preceding syllable”. The [n] of *n6+* is a syllabic nasal, so this is the preceding syllable which carries the high tone. We will encounter such high tone prefixes later as well. Alternatively, it is possible to write a rule saying that the sequence *n6+n8+* becomes *ń+*. The point to remember is that one cannot write a rule saying that any sequence of *n+n+* automatically becomes *ń+*. It is a particular prefix, here *n6+*, which conditions this allomorph.

Special mention needs to be made of the 1st person non-singular subject forms in (2e) and (2g). One would expect, by the rules we have seen so far, something like (2e) **nidchaa* and (2g) **danidchaa*. A phonological rule converts the sequence *n6+id8+* into *nnd+*, that is. a sequence with a long syllabic nasal. Furthermore, there is good evidence that *id8+* really ends in a consonant *d* (phonetically [t]), but by a phonological rule preventing the sequence stop-stop or stop-affricate inside a word, the final *d* is deleted, so *nnd+* turns up as *nn+*.

As will be noted throughout the forms of (2), by convention, positions 7 through 9 have to be filled for every verb (except that possibly position 5 precludes position 8, as mentioned, and that one type of position 2 precludes position 7, as will be discussed under example (4)). This means that many forms will have several zero (*Ø+*) positions. In (2) position 9 has a zero classifier, that is, *Ø9+*. Note that in the forms (2c) and (2i), one has three zero positions in a row, that is, *Ø7+Ø8+Ø9+*. It is useful to assume that positions 7 through 9 are present in every verb theme, but it is also good to remember that this is a convenient fiction, which has (p. 526) the disadvantage of making many WA verbs forms more complex, and hence more polysynthetic, than they actually are.

Finally, *-chaa* is the stem ‘to be big’, in its Neuter Imperfective shape.

The next example (3), is the verb ‘to braid it’. This verb is an Active verb and it belongs to the Accomplishment VTC. It happens to be transitive, and in (3), only the forms with 3rd person object pronoun will be provided, glossed throughout as ‘it’. Since it is an Active verb, it can be conjugated in all Modes. Only the Imperfective Mode is provided in (3).

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(3)

	Forms:	Morphological analysis:	Glosses:
a.	hishbizh	h-Ø4+Ø7+sh8+ł9+-bizh	'I am braiding it'
b.	nłbizh	Ø4+Ø7+n8+ł9+-bizh	'you (sg.) are braiding it'
c.	yiłbizh and biłbizh	y4+Ø7+Ø8+ł9+-bizh and b4+Ø7+Ø8+ł9+-bizh	's/he is braiding it'
d.	ch'iłbizh	ø4+ch'5+Ø7+ł9+-bizh	's/he (fourth person) is braiding it'
e.	hilbizh	h-Ø4+Ø7+id8+ł9+-bizh	'we (2) are braiding it'
f.	hołbizh	h-Ø4+Ø7+Øh8+ł9+-bizh	'you (2) are braiding it'
g.	dahilbizh	da3+h-Ø4+Ø7+id8+ł9+-bizh	'we (more than 2) are braiding it'
h.	dahołbizh	da3+h-Ø4+Ø7+oh8+ł9+-bizh	'you (more than 2) are braiding it'
i.	dayiłbizh and dabiłbizh	da3+y4+Ø7+Ø8+ł9+-bizh and da3+b4+ø7+ø8+ł9+-bizh	'they are braiding it'
j.	dach'iłbizh	da3+Ø4+ch'5+Ø7+ł9+-bizh	'they (4th person) are braiding it'

Verbs of the Accomplishment VTC are somewhat simpler than verbs of other Active VTCs, because they do not have much derivational potential in position 1. They can add prefixes of position 2, which I will not illustrate here. Most often, Accomplishment VTC verbs do not have any prefixes at all before position 7.

Comparing example (3) with example (2), the first thing that is striking is the presence of the prefixal element *h-* which has not been discussed in connection with Table 25.1. The reason for the presence of this element is purely phonological. This element, which I will call the peg, gets inserted in front of verb words to prevent them from being monosyllabic, and to prevent them from starting with a vowel, since there are constraints against monosyllabic verb words and vowel-initial verb words in WA. It is needed in (3a) to prevent the monosyllabic form **shbizh*. After *h-* is inserted, the rule of i-insertion provides the vowel *i*. In (3b), no peg is required, because the *n8+* is syllabic, and thus (3b) is dissyllabic. In (3e) and (3f), the peg is inserted to prevent the word from being vowel-initial, so no i-insertion need apply. However, the peg also appears to be present in (3g) and (3h), and here it is clearly not needed to prevent the word from being monosyllabic, nor to prevent the word from being vowel-initial. The presence of the peg in (3g) and (3h) marks a phonological boundary, called the Disjunct/Conjunct boundary (Kari 1976). The positions 1 through 3 are said to be Disjunct, and positions 4 through 9 are said to be Conjunct. Under certain conditions, typically in the absence of phonologically realized prefixes in positions 4 through 7, the peg acts as a file divider (p. 527) between the disjunct prefixes and the rest of the verb word. Interestingly, even though this boundary has been extensively discussed in the literature on Athabaskan languages other than WA,

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there is not much evidence for this boundary in WA. In the closely related Navajo language, one of the indicators of the boundary is vowel lengthening of Disjunct prefixes, but this does not generally happen in WA. Prefixes in WA, with a few exceptions in positions 1 and 2, tend to have short vowels only. Since the evidence for the Disjunct/ Conjunct boundary in WA is rather slim, although it does exist, I will not further discuss it, the more so that I am not convinced that such phonological boundaries are typical of polysynthetic languages.

Since the verb in (3) is transitive, I assume a position 4, where the object pronoun can get plugged in. It will be noted that the 3rd person object pronoun is always zero when the subject is in the 1st or 2nd person, but that when the subject is in the 3rd person (not fourth person), the 3rd person object is either *y4+* (also glossed 3oObj) or *b4+*(also glossed 3Obj) (3c and 3i). There are syntactic and discourse parameters conditioning the occurrence of *y4+* versus *b4+*, which I will not describe here, since again, they are not typical of polysynthetic languages.

Another difference between (2) and (3) is that (3) contains the classifier *ɬ9+* in position 9. There is a battery of phonological rules applying to a phonologically realized classifier, and Kari (1976) remains the best account of these rules. A summary account of the rules relevant to (3) is given here. The classifier *ɬ9+* is deleted when it is expected to occur between *sh8+* and the stem consonant, as seen in (3a); *id8+* and *ɬ9+* fuse into *il+*, as seen in (3e) and (3g); and *oh8+* and *ɬ9+* fuse into *oɬ+*, as seen in (3f) and (3h).

Since I have mentioned that *ɬ9+* can be a transitivity indicator, it might be tempting to assume that in (3) it marks the verb as transitive, maybe as a causative. This is however, not the case, since the zero classifier (*ø9+*) can also occur in the Dilzhe'e variety and in some San Carlos varieties. In these varieties we can have the forms with *ø9+*, for example *hishbizh, nbizh, yibizh* and *bibizh, ch'ibizh, hibizh* (<*h-id+bizh*), *hohbizh*, etc., which have exactly the same meaning as the corresponding forms in (3). Such variation in classifiers is common in WA, and seems to predate modern-day phenomena of language attrition.

Finally, *-bizh* is the stem 'to braid', in its Imperfective shape.

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25.6 “Interrupted Synthesis” and Prefixal Interdependencies

The relatively short examples we have seen so far are useful for familiarizing the non-Athabaskanist typologist with the main features of WA verb prefix morphology and related phonology, but do not clearly illustrate what Sapir, in his lectures on Athabaskan, called “interrupted synthesis” (Whorf 1932). The term “interrupted synthesis”, which one can consider an unusual type of polysynthesis, means that the language has combinations of prefixes in noncontiguous positions which appear to function together, as well as combinations of prefixes in positions far from the stem, and stems which appear to function together. In other words, there are prefixal interdependencies, and interdependencies between prefixes (p. 528) and the stem. This view is implicit in Table 25.1 since it shows thematic prefixes far removed from the stem, but obviously in a dependency relationship with that stem.

For illustrations of this, I now turn to longer examples of verb forms, and do not provide paradigms. Discussions of prefixal interdependencies in other Athabaskan languages can be found in Kari (1990), Jette and Jones (2000), and Rice (2000).

Consider the verb word in (4), which is a form of the verb ‘to plant’, an Active verb of the morphologically complex Achievement VTC. It is also transitive, and it is also part of a system of classificatory handling verbs (de Reuse 2001a, de Reuse 2006c: 149–66), which crosscuts VTCs. The stem used in the verb ‘to plant’ refers to things that are slender and flexible (abbreviated as SFO, Slender Flexible Object), which makes sense since plants are typically slender and flexible objects.

(4)

k’enádadihidléh

k’e1+	ná2+	da3+	Ø4+	d6+	(h-)	id8+	d9+	-léh
TH	IT	PL	3OBJ	TH	PEG?	1dSUBJ	CL	SFO.IT

‘we (more than two) plant it usually’

In (4), *k’e1+* is Thematic; *ná2+* marks the Iterative Mode, often translated as ‘usually’; *da3+* is the plural (already seen in (2) and (3)); *Ø4+* is the 3rd person object pronoun (already seen in (3)); *d6+* is Thematic; it is assumed that position 7 is not present if there is Mode marking in position 2. This is then another example of a mutually exclusive position.

The position of peg element *h-* is somewhat puzzling since one expects, as discussed under example (3), this peg to occur at the Disjunct–Conjunct boundary, and not between positions 7 and 8. This is then a potential case of a peg position which does not seem to have anything to do with the Disjunct–Conjunct boundary, unless, of course, there is an unidentified prefix *h7+* in here.

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The prefix *id8+* is the 1st person non-singular subject pronoun (already seen in (2) and (3)); the classifier *d9+* is Thematic, and *-léh* is the stem, in the appropriate shape for the Iterative Mode. Phonological processes result in the fusion of *d9+*with *-léh* into a final syllable *-dléh* in the surface form.

From the point of view of our discussion of interrupted synthesis and prefixal interdependency, the interesting thing is that the theme meaning 'to plant' is really the interrupted sequence: *k'e1+ … d6+* … plus the SFO verb stem, that is, two prefixes and one stem, all separated from each other by various other prefixes, but conspiring together to provide the meaning 'to plant'.

There is another prefixal interdependency going on in this verb, since the position 2 prefix *ná2+* causes the classifier in position 9 to change from *ø9+* to *d9+*. In other words, the Iterative Mode is not just marked by *ná2+*, but actually by the interdependent sequence *ná2+ … d9+*, to which one must add the Iterative shape of the stem. For the sake of comparison, the form 'I am planting it' in the Imperfective Mode is (5), which does not have the *d9+* classifier:

(5)

k'edishłēē						
k'e1+	ø4+	d6+	ø7+	sh8+	ø9+	-lēē
TH	3OBJ	TH	C.M.	1SUBJ	CL	SFO.IMPERF

'I am planting it'

(p. 529) The reader should be able to recognize everything in (5), except for the stem *-lēē*, which is in the Imperfective shape, and the fact that *sh8+* causes the voiced initial *l* of the stem to devoice to *ł*, by a phonological rule of voicing assimilation.

Another interesting case of interdependency takes place in the Perfective Mode of 'to plant'. To prepare for this, let us first consider the Perfective equivalent of (5), that is, (6):

(6)

k'edílāā						
k'e1+	ø4+	d6+	H7+	ø8+	ø9+	-lāā
TH	3OBJ	TH	C.M.	1SUBJ	CL	SFO.PERF

'I planted it'

Here the Perfective stem *-lāā* is used; the classifier is the same as for the Imperfective. One unexpected thing here is that the first person singular pronoun *sh8+* is replaced by a zero allomorph *ø8+*. This happens in the Perfective every time the classifier is *ø9+* or *ł9+*, and is yet another case of a prefixal interdependency. The Conjugation Marker *H7+* is one that commonly indicates the Perfective, and like *H8+* (already seen in (2b)), is manifested by a high tone on the previous syllable. Now, let us consider what happens when the prefix *da3+* is inserted in a Perfective form such as (7).

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(7)

k'edashich'idizlāā

k'e1+	da3+	sh4+	ch'5+	d6+	s7+	Ø9+	-lāā
TH	PL	1OBJ	3aSUBJ	TH	C.M.	CL	SFO.PERF

'they (fourth person) planted me (a seed of corn speaking)' (from a story)

In (7), the *H7+* Conjugation Marker is replaced by the *s7+* Conjugation Marker, which is conditioned by *da3+*. There is a prefixal interdependency *da3+ … s7+* here, which in the technical literature is called "Da-shift" (Kari 1976). No one has ever come up with a good explanation for this Da-shift. Note also that *sh4+*, *ch'5+*, and *d6+* all undergo i-insertion. The Conjugation Marker *s7+* is phonologically special in that it voices into *z+* when positioned right in front of a verb stem.

Another example of interrupted synthesis can be found in example (8), an Achievement VTC verb word chosen because it has an unusually long sequence of phonologically realized prefixes.

(8)

hasdánádashich'idołtēēł

hasdá1+	ná2+	da3+	sh4+	ch'5+	d6+	o7+	ł9+	-tēēł
ADV	REV	PL	1OBJ	3aSUBJ	INC	PROG	CL	ANO.FUT

'they will get me back to safety, or 'they will save me'

This form contains the Derivational adverbial *hasdá1+* 'to safety', and the Derivational (Quasi-Inflectional) *ná2+* 'Reversionary', often glossed as 'back, in return'. The combination of a *d6+* Inceptive prefix and the *o7+* Progressive prefix provides the meaning 'Future tense'. This is yet another sort of prefixal interdependency, although in this case there is no interruption by other prefixes. In (8), unlike the situation of example (3), the classifier *ł9+* can be (p. 530) interpreted as a transitivity indicator, since it is always present in transitive themes of this verb stem, and never present in intransitive themes of this verb stem. The stem *-tēēł* is the classificatory handling verb stem for an animate being, in its Future or Progressive shape. A case of interrupted synthesis to be illustrated here is the sequence: *hasdá1+ … ł9+* plus the ANO verb stem, to be glossed as 'to get to safety, to save'.

One last example of interrupted synthesis and prefixal interdependency is in (9).

(9)

nanāānádagoch'ilzéh

na1+	ná2+	ná2+	da3+	go4+	ch'5+	l9+	-léh
TH	SEMELIT	IT	PL	3sOBJ	3aSUBJ	CL	do.IT

'they usually play again'

Example (9) begins with a Thematic prefix *na1+* and a Derivational (Quasi-Inflectional) Semeliterative prefix *ná2+* often glossed 'again, one more time'. Whereas WA prefixes typically only contain short vowels, it appears that the Semeliterative in this form has a long vowel. I have not yet figured out the motivation for this, but suspect it is a prosodic

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one, and that the Semeliterative, when in certain positions in the word, can be stressed and that vowel lengthening is a byproduct of the stress. The verb word in (9) also contains an areal or space object pronoun prefix *go4+*, and a classifier *l9+*. When the classifier *l9+* precedes this verb stem, a phonological rule of dissimilation take place, and the underlying sequence *… ll …* dissimilates to *… lz …* The stem *-léh* is the Iterative shape of a fairly irregular verb stem of vague meaning, having to do with 'doing'. The reader is familiar with the other prefixes. The sequence actually meaning 'to play' is actually *na1+ … go4+ … l9+* plus the verb stem 'do'. This sequence is a nice illustration of a theme built by interrupted synthesis, and also shows that the meaning of a theme typically cannot be deduced from the sum of its parts. It should be noted that *go4+*, formally an object pronoun prefix, is actually thematic here, and does not refer to anything. It is similar to expletive 'it' in an English sentence such as: 'are you going to make it to the party?' The WA verb 'to play' is thus formally transitive, but semantically intransitive.

So far we have discussed prefixal interdependencies, or interdependencies between prefixes and stems. Also recognized by Athabaskanists, but little discussed in the literature, are the interdependencies between (1) preverbal postpositions and verbs with prefixes only in positions 7, 8, and 9, (2) between preverbal postpositions and verb prefixes, and (3) between preverbal adverbs and verb prefixes.

For lack of space I will illustrate only the case of preverbal postpositions and verbs with prefixes only in positions 7, 8, and 9. These are cases of verbs, typically of the Achievement VTC, that normally must contain at least one prefix in positions 1, 2, or 6, but can occur without such prefixes only when preceded by a postpositional stem. The examples that follow are both transitive classificatory handling verbs of the Achievement VTC. Example (10) contains the first three forms of the paradigm of a verb meaning 'to pour it (liquid matter) into it'. The postpositional stem *P-ee* here means 'into P'. The rest of the analysis column should be clear.

(10)

a.	bee hisīid	b-ee h-Ø4+Ø7+sh8+Ø9+-zīid	'I am pouring it (LM) into it'
b.	bee nzīid	b-ee Ø4+Ø7+n8+Ø9+-zīid	'you (sg.) are pouring it (LM) into it'
c.	yee yizīid	y-ee y4+ø7+ø8+ø9+-zīid	's/he is pouring it (LM) into it'

(p. 531) What is notable here is that *hisīid, nzīid, yizīid* by themselves are ungrammatical and thus require this (or some other) postpositional stem in front of it.

Example (11) contains the first three forms of the paradigm of a verb meaning 'to put them (plural objects) apart'. The postpositional stem *P-ch'ą́'* means 'apart from P', which, when inflected with reciprocal *ił-*, results in *iłch'ą́'* 'apart from each other'.

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(11)

(Dilzhe'e variety)

a.	ił-ch'ą' hishn̲íił	ił-ch'ą' h-Ø4+Ø7+sh8+Ø9+-n̲íił	'I am putting them (PLO) apart; I am separating them (PLO)'
b.	ił-ch'ą' nn̲íił	ił-ch'ą' Ø4+Ø7+n8+Ø9+-n̲íił	'you (sg.) are putting them (PLO) apart; you (sg.) are separating the (PLO)'
c.	ił-ch'ą' yin̲íił	ił-ch'ą' y4+Ø7+Ø8+Ø9+-n̲íił	's/he is putting them (PLO) apart; s/he is separating them (PLO)'

Again, what is notable is that *hishn̲íił*, *nn̲íił*, *yin̲íił* by themselves are ungrammatical and thus require this (or some other) postpositional stem in front of them.

Such forms can be compared to a verb like English 'to put', which also requires a prepositional or adverbial modifier. The difference is that interdependencies or complementary distribution between adverbial modification within verb morphology and adverbial modification outside the verb is much more common in WA, and I suggest that such interdependencies are also typical of polysynthetic languages in general.

25.7 Prefix Slippage, and the "Principle of Templatic Attraction"

Another characteristic of the WA verb prefix system, this time not predicted by Table 25.1, is prefix slippage, that is, the movement of a prefix from one position to another. Such prefix slippage has been recognized for quite some time as a diachronic fact (Krauss 1969), but it has been relatively little discussed in the synchronic literature on Athabaskan. Examples (12a) and (12b) are potential WA examples of synchronic prefix slippage. Both (12a) and (12b) were recorded from the same speaker, but on different occasions; (12b) was recorded from another speaker as well.

(12a)

yońłhazh						
y4+	o6+	n6+	H7+	ø8+	ł9+	-ghazh
3oOBJ	DIR	TH	C.M.	3SUBJ	CL	bite.PERF

's/he took a bite out of it'

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(12b)

hoyińłhazh							
h-	o?+	y4+	n6+	H7+	ø8+	ł9+	-ghazh
PEG	DIR	3oOBJ	TH	C.M.	3SUBJ	CL	bite.PERF

's/he took a bite out of it'

(p. 532) The expected prefix order is (12a), as shown by the position class numbers. The prefix *o6+* is the Directive, marking the fact that the object is only partially affected. Semantically, this is the difference between Directive 'to take a bite out of it' and non-Directive 'to (completely) bite it off'. The prefix *n6+* is Thematic, apparently conditioned by the presence of *o6+*. The stem is *-ghazh* 'to bite', in its Perfective shape.

In (12b), *y4+* and *o6+* have switched places, so that it is no longer clear which position *o6+* belongs to. Because the *o+* in (12b) causes the word to be vowel-initial, the peg *h-* needs to be inserted in front of it.

The motivation for such slippage is not clear. Rice (2000) suggests that prefixal slippage might be due to the lack of a scopal relationship between two prefixes, but this explanation does not seem to help here, as I expect *y4+* to have scope over *o6+*. I suggest that there is a principle that disfavors the presence of vowels in position 6, since the large majority of prefixes in position 6 are consonants. However, since there are prefixes with vowels in position 1, including prefixes of the shape *'o1+, o6+* was moved to position 1.

The question is then, what sort of principle can cause this slippage? Jeff Leer has independently proposed a "principle of templatic attraction whereby prefixes of the same or similar form are attracted to adjacent positions or merge" [p.c. to Hargus 2002], mentioned in Hargus and Tuttle (2003). Michael Krauss, (p.c., 2015) is also convinced such a principle must operative.

I have tried to formalize such a principle, with a tentative account in de Reuse (2005), and a revised account in de Reuse (2011). The basic idea is that positions do not need to be numbered, and there tends to be a sequence, in the WA verb word, of partially phonologically defined positions, approaching, but not attaining, a syllabic structure, or a series of syllabic structures. Such a pseudo-phonological template is quite tentative and therefore will not be described as an alternative to the template positions in Table 25.1, but it might well be considered an improvement over numbered arbitrary template positions.

Consequences of the principle worthy of further exploration are the idea that certain prefixes cover more than one phonological position, as already suggested by Kari (1989), and are expected to prevent other prefixes from occurring, as well as the idea that two prefixes might compete for the same phonological position, and in this case one will win out, and be realized, and the other one will disappear. A subcase of the "principle of templatic attraction" is probably prefix haplology, also quite common in Athabaskan

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morphology, and documented in detail by Hargus (2007: 595–600). Of course, in haplology the phonological identity of the two prefixes involved is complete (by definition), and not partial.

One example of a possible “musical chair” effect will be given in (13) and (14). (13) is a partial singular paradigm of the Neuter Positional VTC verb ‘to be seated, be sitting down’, inherently in the Perfective mode; (14) is a partial singular paradigm of the Achievement VTC verb, ‘to be going’, also in the Perfective mode. One will note that these verbs are actually quite similar in their morphological make-up: both are Perfective, have the same subject pronoun marking, and have the same *H7+* Conjugation Marker in their 1st and 2nd person forms. In the traditional accounts, they are both called “S-Perfectives”, which is a way of saying that they both contain an *s7+* Conjugation Marker. The difference between (13) and (14) (p. 533) is, however, that there is not all that much evidence for an *s7+* in (14), and that (14) has a *d6+* prefix, marking Inceptive aspect. Also, from (14), one might conclude that *H7+* and *s7+* are in complementary distribution within a paradigm, but example (13) shows that that is in fact not the case.

(13)

a.	sídāā	s7+H7+Ø8+Ø9+-dāā	‘I am sitting down’
b.	síndāā	s7+H7+n8+Ø9+-dāā	‘you (sg.) are sitting down’
c.	sidāā	s7+Ø8+Ø9+-dāā	‘s/he is sitting down’

(14)

a.	díyāā	d6+H7+Ø8+Ø9+-yāā	‘I am going’
b.	dínyāā	d6+H7+n8+Ø9+-yāā	‘you (sg.) are going’
c.	dizyāā	d6+s7+Ø8+Ø9+-yāā	‘s/he is going’

What I am suggesting is that *s7+* in (13) and *d6+* in (14) are actually in the same phonological position, which I will tentatively call CORONAL OBSTRUENT. In (13), *s7+* can comfortably stay in this position, and thus shows up in all three forms, that is (13a)–(13c). However, there is only one CORONAL OBSTRUENT position available preceding *H7+* in (13) and (14). In (14), *d6+* needs to be in the CORONAL OBSTRUENT position, already occupied by (underlying) *s7+*. In (14a)–(14b), this results in a “musical chair”-type conflict between (underlying) *s7+* and *d6+*. Adopting some sort of hierarchy of strength among prefixes, I assume that *d6+* is the strongest and kicks out the (underlying) *s7+*, hence (14a) *díyāā*, and not **síyāā*, and (14b) *dínyāā*, and not **sínyāā*. Recall that in (13) and (14), the vowel *i-* is due to the rule of i-insertion.

A different story will have to be told for (14c). In this form, there is no *H7+* position to prevent the *s7+* from slipping away, and *s7+* slips rightwards, landing in what we could call the pre-stem VOICED FRICATIVE position, where it gets realized as *z+*.

It should be noted that the formal theory of Distributed Morphology also has a mechanism to resolve conflicts between morphemes that need to move to the same

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position (Bobaljik [2011], Harley and Noyer 1999). The difference is, however, that Distributed Morphology is dealing with allomorphs of the same morpheme, whereas in this case, we are dealing with different morphemes altogether.

25.8 Conclusions: What is Unusual about Athabaskan Polysynthesis

If one defines polysynthesis as prolific holophrasis (i.e. a lot of information packed into one longish word), Athabaskan languages would be more polysynthetic than, say, Siouan, but quite a bit less so than Inuit or Yupik (Chapters 22 and 26cvc, this volume), or Wakashan (p. 534) (Chapter 26, this volume). Indeed, prolific holophrasis (or "morphologically orthodox polysynthesis", as defined by Woodbury, Chapter 26, this volume), is not a characteristic of Athabaskan polysynthesis, and as a result Athabaskan verb words tend to be quite short, typically between four and two syllables long.

Rather, Athabaskan polysynthesis is characterized by the following four features, which were considered in Sections 25.5 through 25.7, and which are cross-linguistically rather uncommon:

(1) "interrupted synthesis";
(2) without or without concurrent "interrupted synthesis", complex and multiple arrays of prefixal interdependencies, but also interdependencies between prefixes and postpositions, and between prefixes and adverbs;
(3) prefix slippage; some scopally motivated (Rice 2000), some phonologically motivated;
(4) tentatively, a "principle of templatic attraction", which might help explain some bizarre or arbitrary looking facts of prefix ordering, slippage, and haplology.

Abbreviations and Conventions

1dSUBJ
1st person dual subject
1OBJ
1st person singular object
1SUBJ
1st person singular subject
1dSUBJ
1st person non-singular subject
2SUBJ

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2nd person singular subject
2dSUBJ
2nd person non-singular subject
2OBJ
2nd person object
3iOBJ
3rd person indefinite object
3oOBJ
3rd person object, used only when the subject is 3rd person
3sOBJ
3rd person space or areal object
3OBJ
3rd person object
3SUBJ
3rd person subject
3aSUBJ
4th person subject (a type of polite 3rd person)
A
subject of a transitive clause, in constituent order statements
ANO
classificatory handling verb stem for animate objects
CL
classifier
C.M.
conjugation marker
DIR
directive, object is only partially affected by the action
H
put a high tone on the preceding syllable
IMPERF
imperfective aspect (called Mode by Athabaskanists)
INC
inceptive subaspect
IT
iterative aspect (called Mode by Athabaskanists)
LM
classificatory handling verb stem for liquid matter objects
OBJ
object of a transitive clause, in constituent order statements
PERF
perfective aspect (called Mode by Athabaskanists)
P
placeholder for the prefix of a postpositional stem

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PL
plural (subject or object)
PLO
classificatory handling verb stem for plural objects
PROG
progressive aspect (called Mode by Athabaskanists)
REFL
reflexive
REV
reversionary superaspect, “back, returning” (p. 535)
S
subject of an intransitive clause, in constituent order statements
SFO
classificatory handling verb stem for slender flexible objects
SEMELIT
semeliterative superaspect, “one more time”
SER
seriative subaspect
TERM
terminative subaspect
TH
thematic prefix
VTC
Verb Theme Category
WA
Western Apache

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Central Alaskan Yupik (Eskimo-Aleut): A sketch of morphologically orthodox polysynthesis

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Abstract and Keywords

This is a sketch of polysynthesis in Central Alaskan Yupik (CAY) based on the Cup’ik dialect of Chevak, Alaska. CAY has well-defined words whose content is often holophrastic and whose parts are often word-like. Holophrasis is achieved by a combination of rich inflectional suffixation and by a derivational morphology in which several hundred productive suffixes bearing different lexical and grammatical meanings and functions may be added, recursively, to a lexical base. Each suffix selects the category of its base, over which it normally has scope, and determines the category of the resultant base. This simple but prolific suffixation-based system, termed ‘morphological orthodoxy’, yields long, polysynthetic words. Three cases are then discussed where suffixal elements govern constructions that in one way or another stretch CAY’s orthodox morphology, motivating them by showing parallel constructions governed by elements with similar grammatical and semantic content in languages with more heterodox morphology and syntax.

Keywords: polysynthesis, word, productivity, suffixation, Eskimo-Aleut, Central Alaskan Yupik, Cup’ik

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26.1 Introduction

HISTORICALLY the term ‘polysynthetic’ has been used to characterize languages (or constructions) that are prolifically holophrastic, that is, where a single word expresses what in more analytic languages would appear as a whole phrase (Duponceau 1819; see also Boas 1911; Fortescue 1994; and Mithun 2009, who cites Lieber 1853 as the source of ‘holophrasis’). Users of the term ‘polysynthesis’ have at times emphasized different parts of this idea: Sapir (1921) saw it as the high end of a purely quantitative scale that had ‘analytic’ at the low end and ‘synthetic’ in the middle, while Baker (1996) bases polysynthesis entirely on the presence of a particular notion of head-to-head incorporation. Taking a different tack, Mattissen (2004c, 2006) surveys languages that have been called ‘polysynthetic’ and finds in them a cluster of properties: they include multiple elements within a single word unit carrying lexical meaning; and these elements encode such categories as ‘event or participant classification and quantification, setting (e.g. “in the night”), location or direction, motion, instrument (e.g. “by hand”)’ and many others. While ‘polysynthetic’ may be fuzzy, holophrasis is right at the center of it. Likewise, ‘polysynthesis’ entails a theoretically and empirically stable notion of the ‘word’; yet ‘word’ itself has been both strongly defended (Dixon and Aikhenvald 2002a) and strongly challenged (Haspelmath 2011).

In this chapter I present a sketch describing the word structure of Central Alaskan Yupik (CAY), an Eskimo-Aleut language of Southwestern Alaska. I will show that CAY is exuberantly polysynthetic, with well-defined words whose content is often holophrastic and whose parts in some respects are word-like. I wish to show this in light of the larger question, How do the forms, patterns, and processes within words encode meaning and grammar, and enable the composition of larger semantic units?

(p. 537) CAY offers particularly interesting answers to this question. After giving background on the language (26.2), I discuss inflectional morphology (26.3), enclitics (26.4), and base formation (26.5), in each case with an eye to its contribution to holophrasis. I then demonstrate (26.6) that the CAY word so-far assumed is in fact well defined in grammatical, lexical, semantic, and phonological terms, concluding that evidence at all these levels converges on a notion of the word that is internally and cross-linguistically conventional; but I also suggest that component bases and suffixes, rather than whole words, are the lexemes of CAY and that word grammar is open-endedly productive. I show (26.7) that in this grammar, recursive suffixation is nearly the only means of word formation, labeling it as ‘morphological orthodoxy’ and suggesting that CAY is typologically extreme because of this orthodoxy and its heavy reliance on polysynthesis. Finally, I present three cases (26.8) where suffixal elements govern constructions that stretch CAY’s orthodox morphology and show parallels to constructions governed by elements with similar content in languages with more heterodox morphology and syntax. On one level these cases present theoretical challenges, and provide an opening to discuss some of the major ideas and debates that

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have arisen about Yupik-Inuit polysynthesis in a remarkable literature that spans more than two centuries, many nations, and many theoretical perspectives. On another level, they permit a demonstration and appreciation of how CAY speakers and their ancestors managed to frame so much of natural language within an orthodox, elegant system of recursive, productive holophrastic word formation, and what accommodations were made.

26.2 Central Alaskan Yupik

CAY, encompassing at least five varieties (Jacobson 1998), is spoken by about 10,000 people (Krauss 2007) along the coast and rivers of southwestern Alaska. Together with Alutiiq to the south, Central Siberian Yup’ik on Saint Lawrence Island and in Russia, and Naukanski in Russia, it is a member of the Yupik branch of Yupik-Inuit (or Eskimo). CAY has been the subject of steady work initiated in the 1960s by Michael Krauss, Irene Reed, and colleagues at the Alaska Native Language Center, University of Alaska, Fairbanks. Modern descriptions include a pedagogical grammar (Jacobson 1995), a massive academic grammar (Miyaoka 2012), a two-volume dictionary (Jacobson 2012), a dialect atlas (Jacobson 1998), a dictionary of Cup’ig, the dialect of Nunivak Island (Amos and Amos 2003), and a phonological and morphological description of Cup’ik, the dialect spoken in Chevak, Alaska (Woodbury 1981).

Except as noted, forms cited in this chapter are Cup’ik. However, only certain phonological variations and morphological and lexical choices distinguish Cup’ik from the other CAY varieties. Forms are given in the standard CAY orthography, whose symbols have their IPA phonetic values except: vv = [f]; ll = [ɬ]; ss = [s]; g = [ɣ], gg = [x]; r = [ʁ], rr = [χ]; c = [tʃ]; ng =[ŋ]; y = [j]; e = [ə]; and C’ = geminate consonant. Also, voiced continuant symbols represent their voiceless counterparts in clusters with other voiceless sounds, hence in *maligtellruanga* [malixtəɬχuaŋa] ‘he followed me’, the symbols ‘g’ and ‘r’ represent [x] and [χ], respectively.

(p. 538) 26.3 Word Classes and their Inflection

Grammars of Yupik-Inuit languages since Kleinschmidt (1851) are in near-total agreement on what constitutes derivation vs. inflection. This division is in keeping with the contemporary view (Anderson 1982) that inflection involves morphological categories made obligatory or otherwise relevant at the phrasal level, whereas derivation does not. Inflection distinguishes three main word classes: NOMINALS; VERBS; and PARTICLES, which are uninflected.

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26.3.1 Nominals and their inflection

The term 'nominal' generically refers to names, common nouns, independent pronouns, demonstrative pronouns, quantifiers, and numerals. Nominal inflection is marked by a suffix that follows the Nominal base and marks inflectional categories. Schematically:

(1) Nominal word = Nominal base + Nominal inflection

Bases are sometimes simple lexemes and sometimes complexes of a lexeme plus one or more productive derivational suffixes called *postbases* (for more on bases and postbases see Section 26.5).

Common noun bases are inflected, suffixally, for seven CASES indicating a range of NP argument and adjunct functions shown in (2); and for three NUMBERS: singular, dual, and plural:

(2)
Case categories
Absolutive (S or definite O), Relative (A or Possessor), Modalis (indefinite O or 'from N'), Terminalis ('to/for/by N'), Locative ('at N'), Vialis ('via, through N'), Equalis ('like N')

In addition, nouns are marked for the PERSON—first, second, third, and reflexive-third (3R)—AND NUMBER OF THEIR POSSESSOR (P), if any, set off with a '+' in the glosses in (3)–(5). The examples reveal a DOUBLE MARKING pattern: even though the possessed noun (head) is marked with the possessor's pronominal information, the (dependent) possessor, if present, is marked for its own number and Relative (possessor) case:

	(arna-m	tau-m)	eni-i
(3)	woman-REL.SG	that-REL.SG	house-ABS.SG+3SGP
	'that woman's/her house'		
	(wii)	en-ka	
(4)	me.REL.SG	house-ABS.SG+1SGP	
	'my house'		

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	(taluya-m)	quli-ini
(5)	trap-REL.SG	area.above-LOC.SG+3SGP
	above the trap/it	

Noun inflection shows considerable fusion: in (3), for example, the category complex ABS.SG+3SGP is represented by a single segment *-i*. Speakers then must learn the 273

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combinations implied by the inflectional system, made easier by some internal segmentability and some paradigm leveling.

As noted, nominals are a super-class that includes not only common nouns, but also demonstratives (3), independent pronouns (4), positional nouns (5), adjectival nouns, numerals, and quantifiers. Most nominal subclasses have specialized inflectional markers as well as category restrictions: for example, certain quantifiers are inflected on a nominative–accusative scheme (see Woodbury 1981: 229–82; Jacobson 2012: 917–30, 961–76). Despite such differences, any nominal subclass can function alone as a noun phrase (or oblique phrase if in an oblique case).

26.3.2 Verbs and their inflection

Like nominal inflection, verb inflection is marked by a suffix (or suffix cluster) following a verb base. Schematically:

(6) Verb word = Verb base + Verb inflection

All verb inflection includes marking for MOOD categories, which indicate illocutionary function for verbs heading main clauses and clause-linkage functions for verbs heading non-main clauses:

(7)
Mood categories
Indicative, Interrogative, Optative ('may it be that V'), Participle (exclamatory indicatives; verbal complements), Appositional (narrative indicative; 'V-ing'), Consequential ('when/because V'), Concessive ('although V'), Contingent ('whenever V'), and several more adverbial clause-marking moods)

In addition, inflection in most moods includes marking for the PERSON AND NUMBER OF THE SUBJECT OF INTRANSITIVES (S) AND OF THE OBJECT (O) AND SUBJECT (A) OF TRANSITIVES. Just as with noun inflection, this is a double-marking pattern because the pronominal markers on the verb (head) recapitulate the case marking and number of S, O, and A arguments (dependents), as 8–9 illustrate for intransitive clauses and 10–11 illustrate for transitives:

	(Arnaq)	qavar-tuq.
(8)	woman.ABS.SG	sleep.IND.3SGS
	'The woman/She is sleeping'.	

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(Wangkuta) qavar-tukut.
(9) we.ABS.PL sleep-IND.1PLS
'We are sleeping'.

(Arna-m) (kaugpii-t) tangrr-ai.
(10) woman-REL.SG walrus-ABS.PL see-IND.3SGA+3PLO
'The woman/She saw the walruses/them'.

(Kaugpii-m) (wii) tangrr-aanga.
(11) walrus-REL.SG me.ABS.SG see-IND.3SGA+1SGO
'The walrus/It saw me'.

As with noun inflection, each verbal inflectional suffix is formally semi-fusional and stands for a complex of categories. Each mood uses a different scheme—and different formatives—for marking person (although there is overlap): the Indicative mood has a predominantly ergative alignment, with one set of markers for S/O and another for A; the Interrogative, Optative and adverbial moods have a mainly accusative alignment, with one set of markers for A/S and another for O. Bergsland (1964) gives a historical account of how such a system developed, but it involved radical enough paradigm reanalysis that it is unlikely to be a part of speakers' synchronic grammars. In all, Jacobson (2012: 920–5) lists 456 suffixes, a number well within the reach of memory; moreover even those show repetition due to paradigm leveling.

26.3.3 Particles

Particles are the third and final word class, defined by their lack of inflection. They function mainly as adverbs (e.g. *keyianeng* 'always', *unuk* 'last night', *cali* 'more') and interjections *Kiiki!* 'Hurry!', *Uuminaqsaga!* 'Darn!').

26.3.4 The inflectional contribution to holophrasis

How does CAY inflection contribute to holophrasis? It's richness allows it to do 'work' accomplished by words and phrases in more analytic languages:

- Case inflection does the work of adpositions (absent from CAY);
- Possessor, S, O, and A marking do the work of separate pronouns, allowing an inflected nominal to be a self-sufficient possessed NP and an inflected verb to be a self-sufficient clause;
- Mood inflection does the work of illocutionary particles, certain modals, subordinating conjunctions, and complementizers, and of processes like English interrogative inversion, almost none of which are found in CAY; these too allow an inflected verb to be a self-sufficient clause.

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(p. 541) 26.4 Enclitics

A small subset of CAY particles are enclitics: they bind to words of any category to form a phonological clitic group, but they do so according to junctural processes that are partly different from those binding ordinary suffixes to their hosts (see Section 26.6.2):

(12) Phonological clitic group = Word + Enclitics

Enclitics are light, not more than a single vowel mora. Among their meanings are conjunction ('and', 'but, again'), propositional attitude ('(someone) says/said', 'I wonder', 'I wish', 'well… ', 'what about… ?'), and existential assertion ('there is… ', voilà!'). As (13) shows, enclitics may pertain semantically to the whole host phrase; the host word can be of any class, frequently the first in the host phrase; and when enclitics combine—rarely more than three—their order is fixed (Woodbury 1981: 292–4):

	Tayima=llu=ggur=am	pii-nani
(13)	elsewhere=and=say=again	absent-APPOS.3R.SGS
	'and it is said, again, he was absent, somewhere else'	

As described, CAY enclitics are typical clitics: particles that are phonologically bound but morphologically and syntactically independent (Woodbury 1996). While they are frequent in CAY and increase the phonological bulk of words, they do not contribute anything to holophrasis in the accepted morphological sense.

26.5 Bases and Base Formation

As described in Section 26.3 there are two kinds of bases: *nominal bases* taking nominal inflection, and *verb bases* taking verb inflection. Bases can be lexemes with typical word meanings and listed as lemmas in CAY dictionaries. But there also are derived bases, composed of a base and one of approximately 300 productive suffixes, termed *postbases*:

(14) Base = Base + Postbase

The process is recursive: to any derived base, a further postbase can be added. Like lexemic bases, postbases too are lexemes, often with typical word meanings; and dictionaries list them as lemmas as well. Grammatically, each postbase selects the category of its base, nominal (N) or verb (V), and specifies the category of the resultant base (N or V). Thus there are verb-selecting nominal postbases (VN), nominal-selecting nominal postbases (NN), nominal-selecting verbal postbases (NV), and verb-selecting verbal postbases (VV). There (p. 542) are also a few postbases that select particles, and a

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few postbases that select N or V but derive particles (requiring a variant of rule (14), Word = Base + Postbase).

Consider examples (15) – (16). Each postbase (in italics) successively introduced by rule (14) is boldfaced and its full citation is given after the gloss: (15) shows a sequence of category changing (NV or VN) postbases, allowing the building word to cycle back and forth from nominal to verb and back; (16) shows a sequence of VV postbases, yielding an ever-elaborating verbal complex:

(15)

ivruci-$_{N}$	'waterboot (N)'
ivruci-***li***-$_{V}$	'**make** waterboots (for)' (-*li*-NV 'make (for)')
ivruci-*li*-***ste***-$_{N}$	'**one who** makes waterboot (for)' (-*ste*- VN '(possessor's) one who does V (tr.)'
ivruci-*li*-*ste*-***ngerr***-$_{V}$	'**have** someone who makes (one) waterboots' (-*ngqerr*-NV 'have')
ivruci-*li*-*ste*-*ngqer*-***sugnaite***-$_{V}$	'**definitely not** have someone who makes (one) waterboots' (-*yugnaite*-VV 'definitely not')
ivruci-*li*-*ste*-*ngqer*-*sugnail*-***ngur***-$_{N}$	'**one that** definitely doesn't have someone who makes (his/her) waterboots' (-*ngur*- VN 'one who does V (intr.)')

(16)

quuyurni-$_{V}$	'be smiling'
quuyurni-***arte***-$_{V}$	'**suddenly** be smiling' (-*arte*- 'suddenly')
quuyurni-*arte*-***llru***-$_{V}$	'suddenly smile**d**' (-*llru*- VV 'in the past')
quuyurni-*arte*-*llru*-***yaaqe***-$_{V}$	'suddenly smiled, **but alas**' (-*yaaqe*- VV 'alas')
quuyurni-*arte*-*llru*-*yaaqe*-***llini***-$_{V}$	'**evidently** suddenly smiled, but alas' (-*llini*- VV 'evidently')

A second distinction partially cross-cuts the four-way postbase classification.[1] In the VN and the NV classes the postbase is the head of the construction since it specifies the reference, part of speech, and inflectional characteristics of the resultant base while governing the underlying base over which it has scope. We may term these HEAD classes. Thus VN postbases function as nominal heads of some kind, while NV postbases function as verb heads. In the VV and NN classes, the postbase is likewise clearly the head in some cases, for example the NN postbase *-lek* 'one having' joins *angyaq* 'boat' to give *angyalek* 'one having a boat', where it functions as a nominal head referring to the owner. But there are also NN and VV postbases which are not heads but MODIFIERS. They modify the underlying base without changing its basic reference or its inflectional or syntactic potential. For example, the NN postbase *-lleraq* 'shabby' combines with *angyaq* 'boat' to give *angyall'raq* 'shabby boat', functioning as a suffixal adjective that narrows

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the reference of the base. Likewise, the string of VV postbases in (16) function as suffixal adverbs that modify the verb ‘be smiling’.

(p. 543) There is a semantic corollary to the postbase selectional principles just described. All treatments of Yupik-Inuit morphology observe that each postbase normally has scope over the base it selects: not a part of that base, and not more than that base. This can be stated as follows:

(17) Corollary scope rule for postbases
A postbase has scope over exactly the base it selects.

This rule accounts for the semantic build-up in (15)–(16). It also predicts that changes in the ordering of two postbases will correlate with a difference in scope. For example, it correctly predicts that the complex base *an’e-ciq-ni-* $_V$ (go.out-in.future-say) should mean ‘say (someone) will go out’, whereas *an’-ni-ciqe-* $_V$ (go.out-say-in.future) should mean ‘will say (someone) goes/went out’. However, as will be discussed in Section 26.8.2, a few postbases have a fixed order with no clear scopal motivation: *-llini-* in (16) is an example, because it cannot be followed by *-yaaqe-* ‘alas’ or *-llru-* ‘in the past’.

26.5.1 A survey of postbase meanings and grammatical functions

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The classification just given is a starting point from which postbase meanings can be surveyed. This survey is synoptic rather than exhaustive and excludes many postbase meanings; and my semantic groupings are somewhat arbitrary since many postbases are multidimensional. Nevertheless, it suggests how postbases contribute to holophrasis. (For exhaustive postbase documentation the reader can refer to Miyaoka 2012, whose classification has the same starting point; Woodbury 1981: Chapter 7, treating NV postbases; and Jacobson 2012, in dictionary format.)

NN, postbase-as-head (noun-selecting nominal).

(i) nominals designating a referent and specifying its relationship to the base nominal: ‘thing pertaining/belonging to N’, ‘product/traces of N’, ‘inhabitant of N’, ‘(possessor’s) place for N’, ‘one related as (kin) N’, ‘one who is similar to N’, ‘one having N’, ‘one sharing N with possessor, ‘the smaller of N’, ‘area in the direction of (demonstrative)’, ‘one who is far off in the area of (demonstrative)’, ‘toward (demonstrative)’; (ii) specifiers of quantity or measure: ‘abundant’, ‘bit of’, ‘a few lousy’, ‘supply of’, ‘just/only’, ‘(numeral) times’.

VN, postbase-as-head (verb-selecting nominal).

(i) nominals designating a referent and specifying its relationship to the thematic role of an argument of the base verb: ‘one who has been V-ing’, ‘what will be V’ed (by possessor)’, ‘what has been V-ed’, ‘one who does V (tr.)’, ‘one who does V (intr.)’, ‘possessor’s fellow V-er’; (ii) nominals designating a referent and specifying its relationship to thematic role of an adjunct of the base verb: ‘device for V-ing’, ‘(possessor’s) place for V-ing’, ‘(possessor’s) time of V-ing’, ‘the extent of possessor’s V-ing’; (iii) the nominal head of an action nominalization: ‘possessor’s completed act of V-ing’, ‘possessor’s future act of V-ing’, ‘(possessor’s) activity or process of V-ing’.

NN, postbase-as-modifier (adjective).

(i) specification of goodness, age, size, shape, authenticity, and time of realization: ‘new’, ‘good’, ‘old’, ‘large’, ‘small’, ‘genuine’, ‘seeming’, (p. 544) ‘poor substitute for’, ‘cute’, ‘dear’, ‘shabby/scrawny’, ‘darned’, ‘former’, ‘future’; (ii) modification of demonstrative adverbs and time expressions (some of which are particle words, not nominal stems), with adverbial rather than adjectival meaning: ‘right at’, ‘toward’, ‘early’, ‘throughout (time)’.

NV, postbase-as-head (nominal-selecting verb).

(i) adjective- or noun-complement taking copulas or verbs: ‘be’, ‘get’; (ii) certain relatively concrete but common transitive verbs: ‘have,’ ‘lack’, ‘run out of’, ‘eat’, ‘hunt’, ‘make/construct’, ‘hit (direct object) in N (body part)’, ‘suffer from’, and ‘smell strongly of’; (iii) oblique complement-taking verbs including verbs of motion or position: ‘go to N’, ‘be at N’, ‘go to the N of (direct object); ‘be the same as’, ‘go in the direction of

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(demonstrative)’; (iv) an anomalous postinflectional postbase that can be added to a single-word utterance, meaning ‘to say X (to O)’.

VV, postbase-as-head (verb-selecting verb).

(i) causative and other transitive, complement-taking, argument-structure-affecting verbs (Section. 26.8.2 further characterizes this class, called *double transitives*): ‘let’, ‘ask/tell to’, ‘say that’, ‘think that’, ‘wait for’; (ii) other argument structure-affecting verbs, auxiliaries, or voice markers: ‘to do V-tr. (to)’ (antipassive, suppresses O or makes it oblique), ‘to do V in place of’, ‘to do V on account of’ (applicative), ‘for S (pl.) to do V to each other’, ‘tend to cause V (intr.)’, ‘be time (for O or S) to V or be V-ed’, ‘will/should V or be V-ed’, ‘be more V (stative) than (oblique)’, ‘test how V (stative) O is’; (iii) verbs of ability: ‘be able to’, ‘be ready to’, ‘not any longer be able to’; ‘be able to do V proficiently’; (iv) verbs of desire, propensity, purpose, or modality: ‘want to’, ‘want O to’, ‘tend to’, ‘no longer care to’, ‘be ready to’, ‘be ready at any moment to’, ‘in order to’, ‘be about to’, ‘plan to’, ‘must/should’; (v) verbs of endeavor: ‘try to’, ‘try unsuccessfully to’; (vi) verbs indicating phases of accomplishment: ‘begin to’, ‘be about to’, ‘set out to’, ‘go and V’, ‘be in a state of V-ing’, ‘to become V (stative)’, ‘to reach a state of V (stative)’, ‘stop V-ing’.

VV, postbase-as-modifier (adverb).

(i) manner adverbs: ‘poorly’, ‘happily’, ‘well’, ‘easily’, ‘roughly’, ‘quickly’; (ii) adverbs of degree, speed, and intensity: ‘more and more’, ‘excessively’, ‘intensely’, ‘really’, ‘suddenly,’ ‘barely’, ‘a lot’, ‘a little’, ‘just, only’, ‘almost’; (iii) affective epithets: (Section 26.8.3 further characterizes this class, which usually modify verbal actants): ‘poor’, ‘darned’, ‘young’, ‘dear’; (iv) relators to other events: ‘first’, ‘also’, ‘again’, ‘never again’, ‘finally’, ‘earlier’, ‘later’; (v) aspect-related adverbs: ‘do V to O (pl)) one after another in succession’, ‘continuously’, ‘now and again’, ‘habitually’, ‘customarily’, ‘always’, ‘first’, ‘repeatedly V and un-V’; (vi) negators: ‘not’, ‘will not’, ‘not yet’, ‘don’t V!’ (vii) tense markers: ‘in the past’, ‘in the future’, ‘not, in the future’; (viii) markers of propositional attitude: ‘evidently’, ‘contrary to expectation’, ‘authentically,’ ‘probably’, ‘but alas’, ‘maybe’, ‘seemingly, perhaps’, ‘probably’, ‘definitely not’; (Section 26.8.2 discusses special ordering properties of some of v–viii).

In addition to these, a few postbases derive particles from N or V stems, for example ‘hey you at (demonstrative)’ forms vocatives from demonstrative stems; and several postbases derive exclamations from stative verbs, for example ‘My, how V (stative)!’.

In summary, this survey shows a large, rich inventory of postbase meanings and functions. These range from concrete meanings and functions usually associated with lexical nouns, adjectives, verbs, and adverbs, to grammatical functions associated in other languages with function words or affixes, including relativizers and markers of voice, aspect, negation, and modality.

(p. 545) 26.5.2 The productivity of base formation

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As noted, CAY dictionaries list bases and postbases as lemmas; and postbases were described as ‘productive’. But not all base lexemes are unanalyzable: many are made up of a root followed by one or more suffixes. Such suffixes are less than fully morphologically or semantically productive. For example, while *quuyurni-* ‘to smile’ in (16) appears to be an unanalyzable root, *ivruci(r)-* ‘water boot’ in (15) is analyzable as *ivr-ucir-* ‘wade-device’. Although both these parts are normally productive, *ivrucir-* refers only to water boots, not just any contrivance for wading. Furthermore, as discussed by Fortescue (1980) for Kalaallisut, productive postbases may also be composed of simpler suffixes in nonproductive, idiomatic arrangements. For example in (15), -s*ugnait-* ‘definitely don’t V’ is analyzable as ‘lack (*-(ng)it-*) the probability of (+*yugnar(qe)-*) doing V’. Since both bases and postbases can be lexemes with internal parts, we must acknowledge a ‘morphology of the morphology’.

In practice, it may seem difficult to draw the line between fully-productive and less-than-fully productive base formation in a Yupik-Inuit language. One useful test—and demonstration—of productivity and lexemic status is provided by the question-word base *ca-*, which functions as a noun base meaning ‘what?’ or as a verb base meaning ‘do what?’ In question-answer sets, *ca-* should only be followed by productive postbases, and only elicit a lexemic base as a substitute in the response:

(18)

Ca-*ngqer*-cit?	Ivr-*uci*-*ngqer*-tua.
what-have-INT.2SGS	wade-device-have-IND.1SGS
What do you have?	I have waterboots.

(19)

Ca-*qatar*-cit?	Qanr-*ute*-*qatar*-tanka
do.what-gonna-INT.2SGS	talk-to-gonna-IND.1SGA.3PLO
What are you gonna do?	I’m gonna talk to them.

In (18), the lexeme *ivrucir-* ‘waterboot’ (from ‘wading device’) is embedded in the response, suggesting that both it, and the postbase that follows it, are productive elements. In (19), *qanrute-* ‘speak to’, a derivative of *qaner-* ‘speak’ with the semantically somewhat irregular applicative *-(u)te-* ‘to’, is embedded in the response, again suggesting that both *qanrute-* and the postbase that follows are productive. However, if we try to formulate questions in which the two less-than-productive postbases *-(u)cir-* ‘device’ and *-(u)te-* ‘to’ follow the question-word *ca-*, we end up with ill-formed questions:

(20)

*Ca-*ci*-*ngqer*-cit?
do.what-device-have-INT.2SGS
For doing what do you have a device?

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*Ca-*t'-qatar*-ciki?
(21) do.what-to-gonna-INT.2SGA.3PLO
What are you going to do to them?

(p. 546) A second test of the productivity of base derivation is offered by the dummy base *pi-*, which functions as a noun base meaning 'entity; thing' and as a verb base meaning 'do'. Like *ca-, pi-* serves as a stand-in for regular bases, which in certain cases can be paraphrased in an independent nominal or verb word in an appropriate case or mood that stands in apposition to *pi-*. In effect, it allows for the splitting up of a well-formed base-postbase sequence, as (22) – (23) show, respectively, for the sequences in (18) – (19). But as (24) – (25) show, the process does not allow the break-up of a lexeme or the isolation of less-than-fully-productive suffixal elements (see also Miyaoka 2012: 136–8):

Ivr-*uci*-neng pi-*ngqer*-tua.
(22) wade-device-MOD.PL thing-have-IND.1SG
I have a thing, water boots = I have waterboots.

Qanr-*u*-lluki pi-*qatar*-tanka.
(23) talk-to-APPOS.3PLO do-gonna-IND.1SGA.3PLO
Talking to them, I'm gonna do that to them.

*Iver-lua pi-*ci-ngqer*-tua.
(24) wade-APPOS.1SGS do-device-have-IND.1SG
Wading, I have a device that does it.

*Qaner-luni pi-*t'-qatar*-tanka.
(25) speak-APPOS.1SGS do-to-gonna-IND.2SGA.3PLO
Speaking, I'm gonna do that to them.

By methods like these as well as by general observation, it is possible to demonstrate the productivity of several hundred postbases.

26.5.3 The prolific character of base formation

Not only are postbases numerous and productive, they may be used prolifically. According to Jacobson (2012: 729), a CAY word may have up to six postbases (rarely more); Miyaoka (2012) has spectacular examples with ten or more.[2] In my transcription of a four-hour conversation among elders recorded in Chevak's traditional men's house in 1978, there are 3,489 words. Of these, 1 has seven postbases, 3 have six postbases, 14 have five, 63 have four, 225 have three, 585 have two, 1,369 have one, and 2,120 have none. Of those

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with none, many are particles (833) or demonstratives (547); but even excluding those, the postbase-to-word ratio is modest—below 1. Yet the potential for elaboration is high.

(p. 547) 26.5.4 Bases, postbases, and holophrasis

We have seen the following features in base formation:

- Base lexemes with a full range of lexical functions;
- Several hundred postbase lexemes having lexical functions associated with nouns, adjectives, verbs, and adverbs and grammatical functions associated with function words or affixes;
- A recursive base formation rule (14) that can be used liberally
- A postbase grammar where postbases select the category of the base to which they apply and determine the category of the resultant base;
- A postbase semantics based on the corollary scope rule (17), according to which each postbase has scope over the base that it selects

Taken together, these characteristics add up to significant holophrasis: there are lexical elements, grammatical selection rules for combining them, and a principle of semantic composition for building meanings. Moreover it specifies a set of possible bases that is for all practical purposes infinite, not listable in a dictionary. In this way, it mirrors syntax.

Willem de Reuse (2009), writing about Central Siberian Yupik, calls attention to this characteristic and labels it ‘productive noninflectional concatenation’ (PNC). He argues that it is a hallmark of polysynthesis, and that it is especially elaborate in Yupik-Inuit languages, for which it offers a specific mechanism for the vaguer notion ‘holophasis’. In his article, de Reuse also argues that PNC—unlike derivational morphology—‘interacts with syntax’ in a way that would violate the corollary scope rule (17). We will return to that topic in Section 26.8.1.

26.6 Wordhood

Up to this point, we have described the CAY word without examining in what sense it actually *is* a word—either internal to CAY or cross-linguistically. Yet ‘polysynthesis’ presupposes a notion of ‘word’. In this section I argue that within CAY, grammatical and phonological criteria converge on the ‘word’ assumed here and in all writings on Yupik-Inuit languages; and that this ‘word’ fits most (but not all) commonly proposed cross-linguistic word characteristics.

26.6.1 The grammatical word

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The account given so far is based on these rules:

(26)
Nominal word = Nominal base + Nominal inflection
Verb word = Verb base + Verb inflection
Particle (uninflected word)
Base = Base + Postbase (and a minor rule Word = Base + Postbase)

How do we know that the 'word' described by these rules constitutes a grammatical word in a general sense? Many cross-linguistic criteria for grammatical wordhood have been (p. 548) discussed (see Dixon and Aikhenvald (2002a) and Haspelmath (2011)). Here are several key criteria it meets (elaborated further in Woodbury (2002)):

(27)

a. The layered organization, base - base derivation - inflection, is typical of many languages (Anderson 1992);
b. CAY words—but not postbases or inflectional endings—can stand alone as utterances (in proper contexts);
c. CAY words are uninterruptable: medial pauses do not occur, and when a speech error occurs toward the end of a long word, speakers cycle all the way back to the beginning and start again;
d. CAY has relatively free ordering of words for stylistic effect; but (almost) none among postbases and inflection, except as required by the corollary scope rule (17);
e. The corollary scope rule follows the lexicalist assumption (DiSciullo and Williams 1987) that (at least) derivational morphology pertains semantically and grammatically to the word that it is a part of and has no relevance beyond that word. (But Section 26.8 explores violations of the scope rule.)

There is, however, one frequently cited cross-linguistic word-characteristic that does not hold for CAY, namely that words are listable in the lexicon and are minimally subject to fully productive derivational processes (described by Dixon and Aikhenvald 2002a: 19 as 'conventionalised coherence and meaning'). Rather, CAY base lexemes and productive postbases *themselves* have 'conventionalised coherence and meaning' which enter into larger compositional wholes. It is exactly this mismatch that defines holophrasis.

26.6.2 The phonological word

Bases, postbases, and inflectional suffixes join to form phonological words that match the morphological words just discussed. Within that word domain, these elements show complex morphophonological alternations, morpholexical selection, and suppletion. The alternations depend for the most part on the segments ending the stem and beginning the adjoining suffix, but sometimes on the lexical identity or class of the stem or suffix.[3] In addition, the whole word is the domain of left-to-right quantity-sensitive stress rules. Relatively complete accounts of these processes can be found in Reed et al. 1977,

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Woodbury 1981, Miyaoka 2012, and Jacobson 2012. In these accounts, bases and suffixes are represented at an abstract morphophonological level that includes diacritical markers to trigger non-phonologically conditioned alternations; and rules are given that derive surface forms.

Enclitics are bound to the word by a partially different set of segmental and prosodic rules, forming the phonological clitic group, a domain that is superordinate to the word (see Miyaoka 1985 and Woodbury 2002 for discussion).

In summary, phonological patterns confirm the morphological word as a unit and conform well to cross-linguistic expectations for the phonological word. The only complication (p. 549) in the morphology–phonology mapping is posed by enclitics, which require a level of phonological structure superordinate to the phonological word, the phonological clitic group. Nevertheless, this comports well with the cross-linguistic definition of clitics as elements that are external to morphology but still internal to phonology.

26.7 The Formal Orthodoxy of the CAY Word

Typologically, the structure of CAY words is surprisingly simple, narrow, and elegant: suffixation is virtually the only morphological mechanism. I will call this its MORPHOLOGICAL ORTHODOXY. Moreover, this orthodoxy has been stable and persistent throughout the history of Eskimo-Aleut. In this section, I establish the extent of this orthodoxy and in the next (26.8), explore some of its consequences.

26.7.1 Suffiation is (virtually) the only morphological mechanism

There are only a few exceptions to this throughout the family. For example, CAY forms vocative by final vowel-lengthening, for example *ukut* ‘this here’ and *anngaqliq* ‘eldest brother’ become *Ukuut!* ‘You here!’ and *Anngaqliiq!* ‘Eldest brother!’ (Woodbury 1987: 726–8). There is also one apparent prefix, *ta-*, marking demonstratives as distal: in Cup’ik it occurs as a relic in one demonstrative base but in Eastern Inuit (Sadock 2003: 67–8), it is somewhat more productive.

Meanwhile CAY has no ablaut or consonant mutation at all. And most surprisingly, given the concatenative cast of Yupik-Inuit morphology, it has no compounding,[4] except in very limited cases. In the Cup’ik and Cup’ig dialects of CAY, there is a verb base *ete-* ‘to be (at)’:

	Ene-m	aki-ani	et-ut.
(28)	house-REL.SG	opposite-LOC.SG+3SGP	be.at-IND.3SGS
	They are at the opposite side of the house.		

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But it is also possible to compound the already-inflected head of the associated locative phrase with *ete-*, which is then subject to further suffixation:

	Ene-m	aki-an-et-ut.
(29)	house-REL.SG	opposite-LOC.SG+3SGP-be.at-IND.3PLS
	They are at the opposite side of the house.	

(p. 550) Thus, Cup'ik and Cup'ig show limited compounding. Meanwhile, all other dialects allow (29) but not (28). For them *-ete-* functions as a post-inflectional postbase, leaving compounding as only a relic.

26.7.2 Suffixation has been stable and persistent in Eskimo-Aleut

The Yupik-Inuit (or Eskimo) protolanguage is estimated at roughly several thousand years old; proto-Eskimo-Aleut at perhaps one or two thousand more (Woodbury 1984; Fortescue et al. 1994; Bergsland 1987). The orthodox profile given here for CAY holds for all modern Yupik-Inuit languages and (except for some postlexical verb-auxiliary verb compounding) Aleut as well. Likewise the number, person, and case categories are the same throughout Yupik-Inuit, marked with cognate formatives; the mood categories are also very similar (though not always directly cognate: see Bergsland 1987).

The clearest indicator of historical stability is that suffixes are almost never reanalyses (or 'grammaticalizations') of historical bases that compounded with other bases (*ete-* 'be at' in (28) is a rare exception). Thus in Fortescue et al. (1994)'s extensive comparative dictionary of Eskimo, modern bases in the daughter languages are reconstructed as bases (or bases plus suffixes) in Proto-Eskimo; while modern suffixes are reconstructed as suffixes (or suffix clusters), not as bases. This even extends to proto-Eskimo-Aleut, with just a few exceptions.[5]

If Eskimo-Aleut, with its pervasive suffixation, is at one typological extreme of morphological orthodoxy, then we might count Chinese—with liberal compounding but nearly no affixation—as being at another. Furthermore, both extremes stand in contrast to morphologically heterodox families like Indo-European or Algonkian, which partake liberally of compounding, of affixation, and of nonconcatenative morphological processes.

26.8 The Typological Consequences and Expressive Limits of CAY's Morphological Orthodoxy

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CAY's inflectional richness and its morphologically orthodox holophrasis—characterized by recursion, productivity, and a wide range of postbase meanings and functions—ensure that extraordinary linguistic 'work' gets done in a single word, work which in other languages is accomplished in phrases. How can so much grammar and meaning be fit inside a word? CAY's morphological orthodoxy sharpens the question because of the constraints (p. 551) it imposes: since each suffix should have scope only over the base it selects, one wonders whether binary left-branching structures are sufficient for the linguistic 'work' at hand—or even perhaps too much?

This section explores these questions by presenting three sets of postbases posing notable exceptions and qualifications to the orthodox principles of CAY base formation—especially the corollary scope rule. They have also posed exceptions to general theoretical expectations about morphology and word structure, leading at times to controversy. For each case, I will argue the following:

(30)
Anomalies, exceptions, and other 'stretching' of the principles of CAY base formation—especially the corollary scope rule (17)—can be referred to the grammatical or semantic content of individual postbases, in keeping with the behavior associated with that content in less synthetic languages or in languages with more heterodox morphology.

Each case offers a demonstration and an appreciation of how CAY speakers and their ancestors managed to frame so much of natural language within an orthodox, elegant system of recursive, productive holophrastic word formation, and of what accommodations were made when that system posed formal limitations.

26.8.1 Nominal-selecting verbal postbases with noun incorporation properties

As noted in Section 26.6, CAY (and all Yupik-Inuit) has NV postbases which do the 'work' of nominal complement-taking verbs: (31) lists six of the eighty-five or so productive NV postbases in Cup'ik (see Woodbury 1981: 349–485; Jacobson 2012), illustrated in (32):

(31)
-ngqerr- 'have', *-ngite-* 'lack', *-tur-* 'eat, use', *-lngu-* 'be tired of', *-li-* 'make', *-cugninarqe-* 'smell like'.

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(32)

qaya-*ngqer*-tua	'I **have** a kayak' (IND.1SGS)
pilugupi-*it*-ua	'I **don't have** any seal boots' (IND.1SGS)
taryaqvag-*tur*-tua	'I'**m eating** king salmon' (IND.1SGS)
citegta-*lngu*-unga	'I'**m tired of** tomcods' (IND.1SGS)
en-*li*-unga	'I'**m building** a house' (IND.1SGS)
puyur-*cugninarq*-uq	'It **smells like** smoke' (IND.3SGS)

These suffixes enter into a construction that presents a class of systematic anomalies for the corollary scope rule (17):

Ene-*ngqer*-tua.
(33) house-have-IND.1SGS
I have a house/houses.

(p. 552)

Ciku-meng atauci-meng ene-*ngqer*-tua.
(34) ice-MOD.SG one- MOD.SG house-have-IND.1SGS
I have one house made of ice.

Semantically, the base *ene*- 'house' is construed as the head of an NP that is modified by two entirely independent inflected nouns in the modalis case, that is, 'one house made of ice'. Moreover, the modalis case is an appropriate case for syntactically independent indefinite direct objects and other verbal complements, as shown in (35), where *ene*- 'house', with its coconstituents *ciku*- 'ice' and *ataucir*- 'one', is the indefinite direct object of the inflected verb base *tangerr*- 'see':

En-meng ciku-meng atauci-meng tanger-tua.
(35) house- MOD.SG ice- MOD.SG one- MOD.SG see- IND.1SGS
I see one house made of ice.

The corollary scope rules appears to be violated in (34) because while *-ngqerr*- 'have' has scope over the base it selects, *ene*- 'house', it necessarily also has scope over the external modifiers of that base, namely *ciku*- 'ice' and *ataucir*- 'one', despite their syntactic independence as inflected words. Likewise violated is the Lexicalist Hypothesis (DiSciullo and Williams 1987, *inter alia*), which requires that syntactic relations hold among whole words, not pieces of words.

Following (30), we can understand the violation in (34) as suggesting a clash between the orthodox morphology of *-ngqerr*- 'have', which requires it to select a noun base; and its syntactico-semantic propensity to select a whole phrase: Sadock 1985 gives such an analysis for this construction in Kalaallisut. He also notes a similar construction in

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Southern Tiwa, where the morphological mechanism is N+V compounding rather than suffixation, suggesting that the issue is the clash between morphology and syntax/semantics in general, independent of whether the incorporating verb is an affix or a stem. His point is that suffixes can act syntactically just like verbs.

But while (34) might suggest the syntax-like extraction or incorporation of the complement head *ene-* 'house' from a modalis case complement as in (35), the complement head in CAY (though not Kalaallisut) can occur doubly, both *in situ* and in incorporated position, as this text example shows:

(36)

Qalqapa-*paarrlug*-meng	qalqapa-*ngqe-llru-yaaq*-lua	taw';
axe-huge- MOD.SG	axe-have-PAST-alas!- APO.1SGS	then
eqiurr-*suute-pigar*-meng	uqama-*il-ngur*-meng.	
chop-device-true- MOD.SG	bearable.weight-lack-one.which- MOD.SG	

I did (alas!) once have an axe, a huge axe; a true chopper, a heavy one.

One of the three loosely slung modalis-case modifiers for *qalqapag-* 'axe'—the base selected by *-ngqerr-* 'have'—is *qalqapapaarrlugmeng* 'huge axe', and it contains *qalqapag-* 'axe', the very word it seems to modify.

It turns out such doubling is possible as long as the internal noun base is not more referentially specific than the external NP. Thus (37), like (36), is fine; but (38) is ruled out because the noun base *can'giirar-* 'blackfish' is more specific than *neqe-* 'fish':

(p. 553)

(37)

can'giira-neng	neqe-*ngqerr*-ameng.
blackfish- MOD.PL	fish-have-CNSQ.3R.PLS

when they have fish, blackfish

(38)

*neq-neng	can'giira-*ngqerr*-ameng.
fish-MOD.SG	blackfish-have- CNSQ.3R.PLS

when they have blackfish, fish. [elicited]

Such doubling is found in the N+V noun incorporation construction in Iroquoian languages (H. Woodbury 1975; Mithun 2009), where it is shown to place precisely the same requirements on the relative specificity of the internal and external noun copy, so that the internal copy functions as a classifier to which the external copy may add specificity.[6] This suggests a further affinity between compounding incorporation and suffixal incorporation. And it is evidence that even as CAY (and Kalaallisut) speakers

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maintained their orthodox, suffixal morphology, they arrived at some familiar solutions to the functional problems posed when noun-like and verb-like elements freely form verbal words.

26.8.2 Verbal postbases with templatic properties

Postbases normally select the category or subcategory of the bases with which they combine. This, along with the corollary scope rule, limits postbase ordering. Fortescue (1980), writing about Kalaallisut, argues that some postbase ordering is global or templatic and proposed a theoretically novel mixed model. No full theory of templatic ordering has been worked out for CAY, and most writers assume that scope and selection are more or less sufficient. Still, a small number of postbases occurs just before the inflection in verb bases, arranged in five sets whose ordering is always 1-2-3-4-5, and some set 5 postbases are also restricted with respect to the inflectional mood that follows:

(39)

1. HABITUAL: *-tu-* 'habitually', *-yuite-* 'never'
2. TENSE: *-llru-* 'in the past', *-ciqe-* 'in the future', *-ngaite-* 'not, in the future'
3. STATUS: *-nrite-* 'not'; *-yugnarqe-* 'may'; *-yugnaite-* 'definitely will not'
4. EVIDENTIAL: *-llini-* 'evidently'; *-lli-* 'perhaps'
5. TENSE-ASPECT: *-(g)aqe-* 'habitually in the past', *-lqe-* + Indicative 'in the past'(with transitive stems only), *-naur-* + Indicative 'habitually, over specified time period', *-ki-* + Optative 'may… in the future; in the past' (indicative force)

(p. 554) The following are examples (the mood is given after the gloss):

(40)

pi-***llru-lli-aqe***-kait (2-4-5)	'they would (past) maybe tell them' (Participle)
liica-***tu-llru-lli***-kiit (1-2-4)	'they *maybe used to* teach them' (Participle)
pi-***vaka-llru-nril***-keka (2-3)	'I didn't fully [obey] it' (Participle)
et'u-***nrit-lini***-luni (3-4)	'it *evidently not* being deep' (Appositional)
taring-***arte-llini-ki***-liki (4-5)	'*evidently* she suddenly understood them' (Optative)
melu-***llru-llini***-uq (2-4)	'*evidently s/he smoked*' (Indicative)
*melu-***llini-llru**-uq (*4-2)	

This pattern breaks CAY's morphological mold in that the ordering is not strongly motivated by the corollary scope rule; for example, it is hard to see how *–nrite-* 'not' (set 3) should in all cases necessarily have scope over a past tense base derived with *-llru-* (set 2). Furthermore, the interaction of some set 5 postbases with mood categories in verb inflection—so that together they form specializations of mood meanings—is atypical.

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Yet, the patterns here are reminiscent of what is common for markers of tense, status, evidentiality, and negation, categories often associated with outer layers of clause structure (Foley and Van Valin 1984: 208–24), and with inflectional morphology. Likewise the fixed ordering itself is reminiscent of templatic morphology: see Mithun (2000), who contrasts Mohawk's templatic ordering with the predominantly scope-based system of CAY.

Mithun also observes cases in CAY where historical postbase-mood interdependencies underlie the morphological composition of certain mood markers: for example -(g)aqe- 'habitually, in the past' from set 5 is a component in the contingent mood 'whenever…', for example *qavar-aqan* 'whenever s/he slept'. One might even say that the mood-interactive members of set 5 have already been reanalyzed as inflection. For example, -*lqe*- + Indicative in set 5 might simply be considered a 'past transitive indicative mood'.

Nevertheless, the templatic patterning just shown still obeys the corollary scope rule in key respects. A few VV postbases that express propositional attitude are 'wild cards'—they can occur either before set 2 or after set 3, and their interpretation depends on relative scope. These are shown in (41) and illustrated in (42) – (43), where 'y' and 'ng' indicate the position of the postbases in the ordering schemes that are given in parentheses:

(41) -*yaaqe*- '(but) alas, in vain, to no avail', -*ngate*- 'seem'

(42)
Textual examples:
niite-***tu-llru-yaaq***-aqa (1-2-y) 'I **alas used to** hear it' (i.e. overheard it or heard it imperfectly) (indicative)
anag-*vi-k-**tu-yaaq-aq***-ait (1-y-5) 'they **would, to no avail, always** have them as places for escape' (indicative)
pi-*vallu-ara-**llru-nric-aaqe-lli***-lriit (2-3-y-4) 'they **maybe alas didn't** kind of mostly (choose husbands for their daughters that way)' (participle)
ane-*ngnaq-**saaqe-llru-ngat-aq***-ua. (y-2-ng-5) 'I **would seem to have** tried, **to no avail**, to go out (indicative)'

(p. 555)

(43)
Examples from Leo Moses, all in the indicative mood:
naptar-*c-**aaqe-llru***-unga (y-2) 'I caught a whitefish but alas', e.g. it got away
naptar-*te-**llru-yaaq***-ua (2-y) 'I did alas get some whitefish (a veiled offer)'
pissur-***ngate-llru-uq*** (ng-2) 'It seemed like he was going hunting'
pissu-***llru-ngat***-uq (2-ng) 'it seems like he has gone hunting'

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Despite the scope effects, the 'wild card' postbases in (41) occur within the positional sequence but they do not restart it. For example, the following is not possible:

(44)
*pissu-*llru-ngat-ciq*-uq (2-ng-2) 'it will seem like he has gone hunting'

However, another set of complement-taking verb-like VV postbases, known since Kleinschchmidt 1851 as 'double transitive' postbases, does restart the final postbase template (see Woodbury and Sadock 1986 and Miyaoka 2012:1125-1172 for discussion). Example (45) illustrates this for the double transitive postbase *-ni-* 'say that': *-ciqe-* 'in the future' (Set 2) has scope over 'wait', yielding 'will wait'; *-ni-* 'say that' takes 'will wait' as its complement; and then *-llru-* 'in the past', also from Set 2, has scope over the entire 'say that' clause to give 'said that':

(45)

atanqe	*-ciq*	*-ni*	*-llru*	-ateng	ama-ni. (2-ni-2)
Wait.for	-future	-say	-past	-CNSQ.3SGA+3R.PLO	there-LOC

Because he said that (he) will wait for them there

In effect, *-ni-* (and other double transitives) embed verb bases that carry template suffixes; but can then 'restart' the template.

In conclusion, the CAY pattern of scope-based elaboration, while still largely maintained, is further constrained by a set of overlain templatic generalizations. The templatic tendencies seem to follow closely the meanings and functions of the suffixes that are involved, and are reminiscent of templatic patterning in polysynthetic languages of a different cast.

26.8.3 Epithet postbases with special scopal properties

Several adjectival NN postbases work as affective epithets (see Woodbury 1998, Miyaoka 2012: 680–700, Jacobson 2012). Those in (46) are common in Cup'ik, illustrated in (47):

(46)
-rurlur- 'dear, poor', -rrlugar- 'funky', -ksagar- 'darned', -yagar- 'immature, young'

(47)
nuna-*ruluu*-t 'poor dear village' (ABS.PL)
una-*ruluq* 'poor this one' (ABS.SG)
angute-*rrlugaq* 'funky man' (ABS.SG)
Qailla-*ksagaa*-m 'darned Qaillaq' (REL.SG)
civaya-*yagar*-neng 'baby gulls' (MOD.PL)

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(p. 556) What is special about these NN postbases is that they also work as VV postbases; but when they do, they seem to modify not the selected verb base—as the corollary scope rule (17) dictates—but instead a core argument of that verb: usually S (48) or A (49) but occasionally O (50):

(48)

a. cikmi-*urlu*-lun' tutgararulu-a
blind-poor-APPO.3RS grandson-AB.SG+3SGP
her **poor** grandson was blinded

b. inart-*urlur*-aqamta
lie.down-poor-CONTING.1PLS
whenever **poor us** would lie down

c. Yura-*rrlugar*-*ciq*-uten qa taw'?
dance-funky-in.future-IND.2SGS Y/N? then
Will you dance, **funky one**?

(49)

d. kumlane-*ngqe*-***ksaga***-ami tau-n[a]
frost-have-darned-CNSQ.3R.SG that-ABS.SG
because that **darned one** [a log] has permafrost

a. Yaaqsigiqaute-***ksagar***-luku=llu!
overshoots-darned-APPO.3SGO=and
And the **darned guy** overshoots it! (basketball)

b. Maqi-*curlag*-*cite*-***ksagar***-*ciq*-aakut=ll'=am!
firebath-failed-cause-darned-IND.3SGA.1PLO=and=but
but the **darned guy** will cause us a failed firebath

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(50)

a. tama-kut erita-*yagar*-luki
that-3PL.ABS pluck-immature-APPOS.3PL
(we) plucked those **baby** (gulls)

b. naklek-*qa*-*urlu*-*qaa*-*sqe*-lluni
pity-just-poor-just-ask-APO.3R.SGO$_i$
(them$_k$) asking (for him$_j$) to just pity the **poor guy**$_i$

c. ceńirte-*lkug*-aa
visit-darned-IND.3SGA+3SGO
'he is visiting him, the **darned one**'
(Jacobson 2012: 735, General Central Yup'ik dialect, which has -*lkug* - VV 'darned')

(p. 557) As the examples show, an independent NP representing the affected argument may be present ((48a), (48d), (50a)) but need not be; and the affected argument need not be overtly present in the inflectional ending, as in (49a), where the affected transitive subject is not marked overtly in the inflection. These tend to rule out that the postbase may be dependent on or displaced from an external NP or the inflection.

A better interpretation is that the postbase does still modify the verb base it selects, but that it implicates a core argument of that verb base by a pragmatic process. In my Cup'ik corpus this is usually the S or the A argument, as in (48) and (49), but there are examples where O is implicated, a fact which may be primed by the context ((50a) was about gathering baby birds) or the verb meaning ('to pity' in (50b)). Jacobson (2012: 735) considers the O argument as the one normally implicated when the base is transitive, as in (62c), but notes that (50c) might also mean 'he, darned him, is visiting him', implicating the A argument.[7] The flexibility noted by Jacobson fits the pragmatic view taken here.

Jacobson also observes of (50c) that it can mean 'he is visiting him in an irritating way'. This reading obeys the corollary scope rule in that the postbase adverbially modifies the whole verb base, rather than implicating just one of its arguments. It offers yet a further pragmatic interpretive choice, but I have not found evidence of similar leeway in the Cup'ik corpus for the postbases in (46).

The pragmatically driven scopal fluidity that has been described here for affective epithet postbases is reminiscent of similar phenomena in other languages. Sapir (1915) writes of Nuu-chah-nulth (Nootka) that 'in speaking to or about a child it is customary to add the regular diminutive suffix -'*is* to verb or other forms, even though the word so affected connotes nothing intrinsically diminutive; affection may also be denoted by it'. He cites *qwís-**'is-**tci*` 'do so, little one', which mirrors CAY; but in *waɬ-cí̱--**'is**- L a H* 'I am going home, little one', the addressee is implicated, rather than the first person subject, as in

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CAY. Thus, Nuu-chah-nulth linguistic forms are capable of indexing the addressee even when the addressee is not propositionally present or even implied. Other such modifications overtly mimic speech ascribed to the people evoked: cowards are ‘satirized by… speaking in a thin piping voice that suggests timidity’ when speaking to or about them. In effect, the modifications create lects evoking classes of people, rather than allowing the diminutives (or other forms) to function specifically as operators over their bases. The patterns in CAY may be a more constrained version of that mechanism.

A somewhat similarly constrained example of such a process may be observed in the use of the Spanish diminutive *-ito*, which adds a ‘warm tone’ (Butt and Benjamin 1995: 478) when placed on adjectives in utterances like (64). Likewise (65), in English, shows an similar pattern in English where an English affective adverb lowers its scope:

(51)

¿Un	café	calent-ito?
one	coffee	hot-DIM

A nice cup of hot coffee?

(p. 558)

(52)

It has come to our unfortunate attention that … (LulzSec, quoted in the *New Yorker* 8 September 2014: 55)

In summary, the somewhat anomalous scopal behavior of epithet postbases can be understood in terms of the patterning found for functionally similar elements in other languages.

26.8.4 Conclusion

In each of the three constructions examined, CAY’s recursive, productive, holophrastic, suffix-based, word-formational processes are stretched to accommodate the semantic content involved. Each situation challenges theoretical expectations about word structure, based on languages less polysynthetic or less orthodox in their word formational strategies. It may be preferable to regard the unique situation in CAY (and its relatives) as proof of the possibility that an elegant grammatical design can, through collective ingenuity over time, be adapted to a wide range of semantic and expressive complexities. The challenge to theory, then, is less to ‘constrain’ grammar and more to explore its rigidities and its creative possibilities.

26.9 Summary

In summary, CAY is highly polysynthetic, achieving holophrasis by the following means:

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- A system of inflectional suffixation expressing case, number, and possessor pronominals on nominals, and on verbs mood and pronominals for S, A, and O
- Base lexemes with a full range of lexical functions;
- Several hundred postbase lexemes having lexical functions associated with nouns, adjectives, verbs, and adverbs and grammatical functions associated with function words or affixes;
- A recursive base formation rule (14) that is used fairly liberally;
- A postbase grammar where postbases select the category of the base to which they apply and determine the category of the resultant base;
- A postbase semantics based on the corollary scope rule (17), according to which each postbase normally has scope over the base that it selects;
- 'Stretching' of the system, where:
  - Productive verb-like postbases govern not only the nouns they select, but independent appositions and modifiers to them;
  - Scope-based ordering is further constrained by templatic and semi-templatic ordering;
  - Affective epithets appearing as modifiers of verb bases implicate a pragmatically appropriate core argument of the verb base.

(p. 559) Abbreviations

3R
Third person reflexive
A
Transitive subject
ABS
Absolutive
APPO
Appositional
CNSQ
Consequential
CONCES
Concessive
CONTING
Contingent
DU
Dual
EQU

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Equalis
IMPER
Imperative
IND
Indicative
INT
Interrogative
LOC
Locative
MOD
Modalis
N
Nominal
O
Direct object
OPT
Optative
P
Possessor
PL
Plural
PRT
Participle
REL
Relative
S
Intransitive subject
SG
Singular
TERM
Terminalis
V
Verb
VIAL
Vialis
Y/N?
Yes-no question

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Notes:

(1) This distinction was first made by Kleinschmidt (1851), and has been used in many Inuit-Yupik grammars, e.g. Miyaoka 2012. Similarly, Sapir and Swadesh (1939) distinguish *incremental* vs. *governing* suffixes in Nootka. See discussion in Woodbury 1981: Chapter 6.

(2) Compare Central Siberian Yupik, with a lesser tendency toward suffixation than CAY (de Reuse 1994a: 53), and Kalaallisut, about which Fortescue (1984: 313) writes, 'up to ten or more affixes in succession before the inflectional ending is not particularly unusual —at least in the written language.'

(3) These alternations are evident throughout this chapter when the same formative is shown in different phonological contexts. For example,

-yaaqe- '(but) alas', cited in (41), appears in the examples of (42) variously as *–yaaq-*, *-saaqe-*, and *-aaqe-*.

(4) Lacking compounding, CAY normally coins new lexemic bases using bases and suffixes. However, to a modest degree it achieves the effect of noun–noun compounding with lexical idioms using the possessive construction, for example:

((i)) iralu-m qimugti-i (moon's its.dog) 'Sirius' (star)
((ii)) Lintaa-m Ati-i (Linda's her.father) 'Linda's Father' (deferential teknonym)

(5) Mithun (2009) suggests that more postbases may ultimately come from bases, but there are very few convincing etymologies despite the time-depth available for Eskimo-Aleut. What is striking is how conservatively bases, suffixes, and enclitics have maintained their status within and across the whole family, regardless of what their pre-Eskimo-Aleut origins might have been. This conservatism is the basis for the 'expressive limitations' explored in Section 26.8.

(6) Rosen (1989: 308) suggests that West Greenlandic constructions with stranding as in (34) are covert classifier-incorporation structures too, only with a null-headed external NP. While this is consistent with the facts in some cases, it isn't in all cases because a null-head reading is not always available. So, on this hypothesis (34) would mean

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something like ‘I house-made one [NULL-HEAD] made of ice’. However, if we test this in (35) by deleting *enmeng* ‘house-MOD.SG’, the result means ‘I see one piece of ice’ and not ‘I see one [NULL-HEAD] made of ice’ or ‘I see something made of ice.’ Therefore, ‘made of ice’ in (34) must be understood as an appositional modifier to the ‘incorporated’ head *ene-* ‘house’.

(7) On the other hand Miyaoka (2012: 680–700), also describing the General CAY dialect, gives examples ruling out readings where the O is implicated.

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Innu (Algonquian)

Lynn Drapeau

The Oxford Handbook of Polysynthesis
Edited by Michael Fortescue, Marianne Mithun, and Nicholas Evans

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Abstract and Keywords

This chapter is devoted to Innu (aka Montagnais), a member of the Algonquian language family, spoken by roughly 13,000 people in eleven communities scattered over Northeastern Québec and Labrador in Canada. The language forms part of the Cree-Innu-Naskapi dialect continuum (Quebec and Labrador) with ties to the other Cree dialects spoken west of Québec, all the way to the Rocky Mountains in Alberta.The chapter aims at providing a broad description of the main features of the language from a functional typological viewpoint with special emphasis on the aspects that are of interest to the study of polysynthesis (head-marking, word-formation processes including incorporation of nominals, identification of participants on the verb, and the referentiality of incorporated nominals).

Keywords: Innu, Montagnais, Algonquian, head marking, Cree, word-formation processes, incorporated nominals

THIS chapter is devoted to the study of polysynthesis in Innu, a member of the Algonquian family. Innu (a.k.a. *Innu-aimun* and *Montagnais*) is spoken by roughly 13,000 people in eleven communities scattered over Northeastern Quebec and Labrador in Canada. The language forms part of the Cree-Innu-Naskapi dialect continuum (spoken in Quebec and Labrador) with close ties to the other Cree dialects spoken west of Quebec and all the way to the Rocky Mountains in Alberta. Innu speakers in Quebec experience contact with French, while Cree/Naskapi speakers undergo contact with English. The data are drawn from extensive fieldwork in the community of Pessamit.

The chapter starts with a review of the key properties of polysynthesis in the language (§27.1). The rest of the chapter provides a grammatical sketch. After a description of the basic lexical and grammatical categories (§27.2), we offer an account of the morphological structures of the language (§27.3). A more substantial analysis of the morphological content of the verb is supplied in §27.4. Section 27.5 analyzes the different

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clause types and relations within the clause and, lastly, §27.6 examines the relation between clauses. The analysis provided here is inspired by Drapeau (2014), where more detailed information is to be found.

27.1 An Overview of Polysynthesis in Innu

The question of what constitutes a polysynthetic language is open to debate; I will therefore tackle the issue of polysynthesis in Innu by reviewing how the language measures up to the features that have been alleged to characterize polysynthesis. This overview can only be brief; the reader is referred to more precise analysis in the body of the paper.

27.1.1 Grammatical aspects of polysynthesis

Innu is a radical head-marking language (Nichols 1986) with no case-system. Only locative is marked by a suffix on the dependent noun. In possessed noun phrases, a suffix appears on (p. 561) the head noun (§27.5) and the possessor is indexed on the possessed noun through prefixes and suffixes. Verbs index their arguments through inflectional affixes (§27.5.1). Co-referring independent personal pronouns being extra-clausal, it follows that the verb can stand alone as a clause.

In transitive clauses, argument indexing is constrained by a hierarchy based on both ontological and grammatical properties. The choice of referent to be indexed does not depend on grammatical roles but on an indexicality hierarchy, as presented in (37). For this reason, the type of alignment is *hierarchical* as further discussed in §27.5.2. Further to this relative independence of indexicality with respect to hierarchically conceived semantic roles, Innu verbs may also index a third person (animate) referent that is not its semantic argument but one peripheral (but nevertheless related) to the action, such as a possessor (see §27.4.3.2).

Grammatical relations between the head and its arguments within the clause are not directly readable through word order. Word order does however convey pragmatic meaning about information structure (see §27.5.3). By contrast, verbless clauses (§27.6.1) have rigid word order, but again in line with the pragmatic requirement of presenting new information first.

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27.1.2 Morphological complexity

Polysynthesis is associated with the presence of several lexically heavy morphemes per word. As shown in §27.3, Innu exhibits the potential for building words (nouns, verbs, and adverbs) comprising more than one “lexically-heavy” part: full-fledged compounds, as well as stem + concrete suffix structures. Moreover, verb stems may have a tripartite structure: a lexical, possibly complex element (i.e. a simplex root or a complex stem), followed by a noun-like element and a final suffix. Some of the final suffixes carry clear lexical content, while others have more abstract meaning. In many instances, formerly compound structures have fused as the second member of the compound has been reduced phonologically (see §27.3.2).[1]

Word formation in Innu is not concatenative as defined by De Reuse (2009), but templatic, stem based, and without recursivity within templatic slots. The basic stem is built on the *primary* template, and all other mechanisms derive new stems from lexical stems by suffixation (referred to as *secondary* derivation), through *compounding* or *reduplication*.

The use of a complex word is often the only means for expressing a state of affairs in the language. For instance, the syntax of the language does not allow the coding of an inanimate agent (or FORCE) acting on an inanimate patient as a syntactic argument (§27.4.1), as in *the fire destroys the forest*. FORCE is encoded morphologically through concrete *final* suffixes on the verb stem (described in §27.3.3.2): it cannot be expressed analytically. Likewise, the verbal suffixes that encode manner of action cannot be expressed by using the name of the instrument in some kind of complement function. Moreover, if and when more analytic formulations are possible, it cannot be taken for granted that they are equivalent to the synthetic (p. 562) word-like structures. Indeed, an analytic paraphrase uses more semantically specific material and carries narrower content. By contrast, a synthetic construction has the broadest range of meanings and extensions due to the more polysemous nature of its building blocks, thus allowing for efficient packaging of a maximum of possibilities using only a minimal number of building pieces.

27.1.3 Incorporation and dependent-head synthesis

In Innu, the three major lexical categories may be complex and exhibit dependent-head synthesis (Mattissen 2003 and Mattissen, this volume). A common definition of noun incorporation (Gerdts 2001) describes it as a type of compounding of a verb stem and a noun stem yielding a complex verb. Innu does have NV compounds which are, however, not referred to as instances of noun incorporation within the Algonquian tradition. In NV compounds, the noun seldom refers to the semantic object but describes a manner of action (‘walks as an old man’, ‘sings in English’, ‘cooks the Indian way’, etc.). More details on compounding are presented in §27.3.1.

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There are two other types of verb-encapsulated nouns in Innu. Noun incorporation proper refers in Algonquian to the insertion of nouns (or other noun-like elements) in so-called *medial* position in a complex verb, as described in §27.3.4. Such incorporated nouns may substitute for verbal arguments (the 'subject' of an intransitive or the 'object' of a transitive verb), as well as characterize a manner of action ('to make noise with the dishes'), a path ('to carry something along in a muskeg'), a goal ('to go to one's snares'), a possession ('to have small shoes'), etc. Nouns may also serve as bases of *denominal verbs* derived through category-changing derivation (§27.3.3.1).

As in the case of bona fide compounds, an encapsulated noun cannot be pluralized nor carry inflectional marking. The nominal is always indefinite and non-specific, and none of the tests show evidence that it can be accessed by syntactic processes: it cannot be referred to anaphorically and, in subsequent reference, repetition of the noun is obligatory; it cannot have stranded modifiers nor be modified by a relative clause. The use of a verb-encapsulated noun only introduces pragmatic referentiality.

27.1.4 Parts of speech

Polysynthetic languages are often said to have fewer parts of speech. In Innu as in other Cree dialects, the different parts of speech have traditionally been distinguished on the basis of morphological criteria: nominals (nouns, demonstratives, pronouns) may inflect, verbs always inflect, and there is no infinitive, whereas the non-inflecting words were lumped into the category of "particles".[2] One conspicuous feature is the absence of a class of adjective. Innu also hosts a type of participle derived from a subordinator + verb stem structure and inflected as verbs, but which may also serve as base in possessive nominal constructions.

(p. 563) 27.1.5 Verbless clauses

Although polysynthesis is often associated with "verb-centeredness", in the absence of a verbal copula, Innu exhibits a substantial array of verbless clauses, with either a nominal or an adverbial nucleus as described in §27.6.1.

27.1.6 Subordination

Polysynthetic languages are also often coupled with a paucity of embedded clauses. Yet, Innu exhibits a wide variety of subordinate clauses (§27.6.3.3) and clefts (§27.6.1.1); their embedded status is associated with the use of a verbal conjugation referred to as the *conjunct set* (§27.4.4).

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27.2 Lexical and Grammatical Categories

27.2.1 Lexical categories

There are three major lexical categories: nouns, verbs, and adverbs. Only nouns and verbs may be inflected, and verbs always carry inflection. Nouns and adverbs may be indivisible roots, but verbs always have complex internal structure. All major lexical categories may exhibit complex internal structure as displayed in §27.3. There is no part-of-speech flexibility: nouns must be converted into verbs through a suffix, and conversely.

There is a closed set of independent personal pronouns (IPP) that only refer to animate entities and may also carry modal suffixes; their distribution is extra-clausal and their use contrastive or emphatic. The language also exhibits a substantial array of demonstratives, used both pronominally and adnominally, a focus pronoun and hesitation markers, all of which may carry inflection.

27.2.2 Grammatical categories

27.2.2.1 Gender

All nouns are assigned grammatical gender on the basis of animacy. All humans and animals are Animate[3], but some semantically inanimate entities are grammatically Animate (such as the sun, mittens, trousers, snowshoes, etc.). The remaining inanimate entities belong to the Inanimate class. The exponents of plurality and obviation (on nouns, verbs, pronouns, and demonstratives) differ depending on gender (AN.PL: *-at*; IN.PL: *-a*; OBV.AN: *-a*; OBV.IN.SG: *-ilu*).[4] (p. 564) The shape of the lexical verb stem varies depending on the gender of the subject for intransitives and the object for transitives (see §27.4.1).

27.2.2.2 Person

Verbs and possessed nouns are inflected for person through prefixes and suffixes. There are three distinct prefixes (1: *ni-*; 2: *ci-*; 3: *u-*). The third person is realized as a prefix on possessed nouns. It has zero realization on verbs. The values for person distinguish 1SG; 2SG; 3SG; 1PL.EXCL; 1PL.INCL; 2PL; 3PL. There are seven distinct independent personal pronouns (1SG: *ni:l* ; 2SG: *ci:l* ; 3SG: *wi:l*; 1PL.EXCL: *ni:la:n* ; 1PL.INCL: *ci:la:nu* ; 2PL: *ci:lwa:w* ; 3PL: *wi:lwa:w*).

27.2.2.3 Number

The category of Number has two values: singular or plural. Singular is unmarked; plural markers co-vary with gender.

27.2.2.4 Obviation

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The grammatical system distinguishes two different third person referents, labelled as Proximate and Obviative. The proximate referent is (normally) the focus of the predication while the obviative referent is the “other” non coreferential participant (as in *he* $_{PROX}$ *hit Paul* $_{OBV}$). The Proximate is unmarked as in (1) and the Obviative (OBV) is realized by inflectional suffixes on nouns, verbs, and demonstratives. Only an Animate 3rd person controller may trigger obviation as shown in (2); this type of control operates both clause-internally, and across clauses and sentences, as well as within discourse. In possessive constructions, a third person (animate) possessor triggers obviation on the Possessee. In addition, a possessed noun with an obviative possessor inflects for further obviation (FOBV) as in (3).

(1)

napeu nuapamau[5] ‘I see a man’

na:pe:w	ni-wa:pam-a:w
man	1-see.TA-1>3IDP

5

(2)

uapameu neȁua napeua ‘he sees that man’

wa:pam-e:w	ne-**lua**	na:pe:w-**a**
see.TA-3>3’IDP	DEM-OBV.A	man-OBV.A

(3)

Maȁi unapema uitsheuakanȁua ‘Mary’s husband’s friend’

ma:li:	u-na:pe:-m-a	u-wi:ce:wa:kan-**lu**-a
Mary	3-man.AN-POSS-OBV	3-friend.AN-FOBV-OBV

(p. 565) 27.3 Morphological Structures: Lexeme Formation

This section focuses on morphological structures in lexeme formation. Inflection and the use of grammatical formatives will be discussed in the section devoted to information packaging on the verb (§27.4).

Some nouns and adverbs exhibit a simplex root. Verbs, however, always have complex internal structure. These lexemic structures are templatic. Lexeme formation[6] in Innu is done through compounding (§27.3.1), derivation by suffixation (§27.3.3), and rightward reduplication (§27.3.5). The incorporation of a noun-like element (either one that refers to a specific entity or a more general *classifier*) within the verb stem is described in §27.3.4. The difference between compounding and derivation is blurred by the fact that several

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very common nouns and verbs have bound forms, that is, have developed into suffixes, as shown in §27.3.2 as well as in §27.3.4.

27.3.1 Compounding

Compounding is fully productive: the compound bears a single primary stress on the last syllable of the word, and inflectional material appears external to the compound.

The vast majority of compounds are endocentric. In endocentric compounds, a lexical element, be it a noun (4), a verb stem (5), an adverb or a root[7] (6), is added to the left of an already existing word (a noun, a verb, or an adverb) to modify it. These compounds are right-headed and have the binary structure: modifier/complement + head. The head defines the lexical category of the compound and its morphosyntactic properties.

(4)

nuiash-tepateminanat	'our meat pies'
ni-[u:ya:š-te:pa:te:]-m-ina:n-at	
1-[meat.IN-pie.AN]-POSS-1PL.EXCL-PL	

(5)

tshikatshinau[8]-mashinaitshetau	'you wrote a false document'
ci-[kacila:w-mašinay:ce:]-ta:w	
2-[lie.AI-write.AI]-2pl.pst	

8

(6)

natshe-ǹaǹeu	'a bit further on the shore'
[na:ce:-la:le:w]	
a_bit_further.ADV-on_the_shore	

(p. 566) A small number of nominal compounds, mostly animal body parts, have the reverse structure: their head is on the left and the complement/modifier is to the right (7). The head determines the morphosyntactic properties (e.g. gender) of the compound.

(7)

uiash-kukush	'pork meat'
u:ya:š-ku:ku:š	
[meat.IN-pork.AN].IN	

Well over a hundred roots that indicate direction/aspect/manner may freely be used as first member to yield innumerable transparent (mostly verbal) compounds (8).

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(8)

ninatau-nipa:n	'I am looking for [a dwelling where I may] sleep'
ni-**nataw**-nipa:-n	
1-**look_for**-sleep.AI-1IDP	

27.3.2 Pseudo-compounds

Pseudo-compounds are compound-like structures in which the right hand element is the bound alternant of an existing noun or verb; they are called *deverbal finals* in the Algonquian tradition.

Over seventy nouns have a bound alternant: mostly referring to body parts, animals, common objects, etc. The more common the word, the more likely it is to have developed a bound alternant, mostly through truncation of the initial consonant or syllable, or the addition of an initial vowel.

Over thirty of the most common verbs have a bound alternant. In (9) for instance, the final suffix *-nika:tay* is related to the verb stem *u:nika:tay* 'to carry an INANIMATE on one's shoulder'.

(9)

nupinikatain	'I lift something to carry it on my shoulder'
ni-upi-**nika:tay**-e:n	
1-lift-carry_on_shoulder.TI1-1IDP	

27.3.3 Derivation

At first blush, the complex morphemic structure of Algonquian words, especially of the verb, may appear as a succession of morphemes strung together as beads on a string. Yet, within the Bloomfieldian tradition, it has been shown to be highly structured. The templatic nature of the word formation processes imply fixed slots for distinct sets of affixes. The terms *initial, medial*, and *final* represent positions within the lexical stem and, metonymically, the classes of formatives that can fill these positions. Algonquianists recognize two types of derivation labelled *primary* and *secondary*. In primary derivation, the *initial* position may be filled by an (indivisible) root or any manner of complex stem. The *medial* position is specific to the (p. 567) verb and it may be left vacant. It may be filled by a noun-like element or by classifiers as detailed in (§27.3.4). Primary suffixes (i.e. *finals*) are described in the next section. The nature and types of secondary derivation are discussed in 27.3.3.2.

27.3.3.1 Primary suffixes

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Nouns and adverbs with *primary* suffixes have a bipartite structure, using the following template: *initial* + *final* suffix. Verbs in primary derivation form minimally bipartite or tripartite stems; the template is *initial* + (*medial*) +*final* suffix. Note that the initial may itself be complex which allows for multiple embeddings. Moreover, primary stems may then feed derivation by secondary suffixes or other compounding processes. In the remainder of this section I will present the *final* suffixes for the three major lexical categories. Only underived suffixes are taken into account, since derived (deverbal) final suffixes were presented as forming compound-like structures (§27.3.2).

For nouns, there are about a dozen underived "lexically heavy" finals (e.g. *-u:ya:n* 'skin', 'material'; *-a:puy* 'liquid'; *-ya:pi:* 'string', etc.), as in *mi:na:pwi:* 'jam' > *mi:n* 'fruit' +*-a:puy* 'liquid'; or *mu:šya:n* 'moose hide' > *mu:š* 'moose' + *-ya:n* 'hide'.

There are roughly thirty suffixes that may be found in final position in the adverbial template; they mostly refer to entities and allow the expression of measure (as in *ni:šwayt* 'twice' > *nišw* 'two' + *-ayt* 'times') and dependent-head synthesis (as in *e:na:wt* 'on top of the sand' > *e:n-* 'on top' + *-a:wt* 'sand, granulous object').

In the verbal template, the final position comprises a couple of hundred different suffixes. Some of them are fairly abstract (Denny 1984) but the bulk is fully concrete (i.e. "lexically-heavy").[9] Example (10) exhibits an instrumental final used in primary derivation (the initial is a root).

(10)

nitatshukutau	'I trim down an Animate with a crooked knife'
nit-acu:-**kut**-a:w	
1-decrease-**with_crooked_knife.**TA-1>3IDP	

Among intransitive verb finals we find several dozen[10] suffixes: of posture ('lying down', 'standing up', etc.), of movement ('running', 'walking', 'flowing', etc.), of undergoing or experiencing ('pain', 'feel', believe', etc.), of sensory perception ('hearing', 'tasting', 'smelling', 'looking', etc.), of natural forces ('wind', 'cold', 'heat', 'frost', 'action of water', 'action of the current', 'action of the waves', etc.). Likewise, the transitive final suffixes are numerous; they mostly express manner of action: manners of positioning an object in space (lying down, sitting, standing, etc.), manners of transporting objects (in one's arms, on one's back, by waterway, etc.), types of bodily action on an object (e.g. with hands, with whole body, with feet, by pulling, etc.), types of action with a tool (e.g. with a cutting object, with an axe, with a file, with a shovel, etc.), manner of indirect action (putting an object to the wind, to heat, to freeze, to smoke, to boil, etc.), manner of perception (by seeing, hearing, tasting, thinking, smelling, etc.).

(p. 568) The *final* suffixes discussed in this section carry lexical content, but some are polysemous. The final verbal suffix *-pali*, for instance, encompasses movement under water (as for fish), flying (birds, aeroplanes), involuntary or accidental movement, automatic movement (machines), non-caused change of state, etc. Several suffixes also

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have metaphoric extensions, thus offering a possibility of expansion within the system. More information on the properties of final suffixes and their role in morphosyntax is presented in §27.4.1.

27.3.3.2 Secondary derivation

Secondary derivation involves abstract suffixes that take a lexeme as their base. The *secondary suffixes* form a class of fairly abstract lexical suffixes (therefore not lexically heavy) that may be added to an existing lexeme. *Category-changing suffixes* turn verbs into nouns (three distinct suffixes) and nouns into verbs (seven distinct suffixes). *Gender-modifying suffixes* change the stem class of the verb (see §27.4.2.1). *Valency-changing suffixes* are described in §27.4.2 for verbs and §27.5 for nouns. *Evaluative suffixes* may be added to nouns (diminutive and pejorative suffixes), verbs (diminutive and pejorative suffixes), and adverbs (diminutive suffixes).

27.3.4 Classifiers and incorporated nouns

From the point of view of the verbal template, the medial position may be filled by a classifier or by a common medial.[11] There are about 200 *common medials* (see Drapeau 2014 for a full list). Common medials consist mostly of either a full noun as in (15) below, or the bound alternant of an independent noun as in (17), but a small number are bound morphemes unrelated to any noun in the contemporary language. *Common medials* include animals, body-parts, elements of the natural world, categories of humans, entities used for measuring space and time, food stuff, useful objects, etc.

Classifiers are the second element that may appear in medial position in a primary verb stem. Classifiers are abstract morphemes that categorize the arguments of a verb. Drapeau and Lambert-Brétière (2011) identify less than a dozen classifiers: stringlike object, sheetlike object, mineral object, unbound liquid, bound liquid, long and rigid object, etc.

In the remainder of this section, I examine the role and distribution of classifier medials as compared to those of common medials. I use the term *classify* when the element in medial position co-occurs with a pronominal argument on the verb and possibly with an external nominal in the clause. By contrast, *substitutes for* means that the element is the only reference to that entity within the clause: it does not co-occur with a (co-referential) pronominal element or with an external nominal. On comparing the roles of classifiers with those of the common medials, the difference lies essentially in the fact that classifiers co-occur with the object (primary or secondary) in a transitive clause, whereas common medials may substitute for it. It would seem to be a truism that classifiers categorize, but the Innu data show that a classifier often stands for a referent. In the remainder of this section, I briefly comment on each role.

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(p. 569) A *classifier* may classify (11) or substitute (12) for the Theme of a stative intransitive verb. A *common medial* may also classify (13) or substitute for the Theme (or logical subject) (14) of a stative verb. In substitutive instances, the verb is impersonal. In addition, a common medial may substitute for the complement in a stative intransitive verb (15).

(11)
iǹipeiapishkau assikuman — 'the piece of iron is tilted (at a slight angle)'
ilipe:-y-**a:pišk**-a:-w assikuma:n
at_angle-LK-**MIN**-FIN.II-3IDP iron.IN

(12)
iǹipeiapishkau netehe — 'there is a soft rocky slope there'
ilipe:-y-**a:pišk**-a:-w ne:te:-he:
at_angle-LK-**MIN**-FIN.II-3IDP there-EMPH

(13)
miǹumuakunatshishu ne kun — 'this snow is damp'
milumw-**a:kunac**-iš-u ne: ku:n
be_damp-**snow**-FIN.AI-3IDP DEM SNOW.AN

(14)
miǹumuakunakau — 'there is an expanse of damp snow'
milumw-**a:kunak**-a:-w
be_damp-**snow**-FIN.II-3IDP

(15)
uitshikapeueu ne ishkueu — 'this woman is a coffee addict'
wi:ci-**ka:pe:w**-e:-w ne iškwe:w
to_like-**coffee**-FIN.AI-3IDP DEM WOMAN.AI

When a transitive verb incorporates a *classifier*, the latter classifies the object of the verb (16); it cannot replace it. By contrast, a *common medial* in a morphosyntactically intransitive verb substitutes for the logical object (17). If a morphosyntactically transitive verb incorporates a *common medial*, that medial has a classificatory function (18).[12]

(16)
pituteiashkumutau ukutashkueua — 's/he connects the pipes inside'
pi:tute:-y-**a:šku**-muta:-w ukutaškwe:w-a
inside-LK-**long_rigid**-install.TI2-3IDP pipe.IN-PL

(17)
matinuemesheu nutaui — 'my father shares out the fish'
ma:tinwe:-**me:š**-e:-w n-uta:wi:
share_out.AI-**fish**-FIN.AI-3IDP 1-father

(p. 570)

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(18)
nutshinapeuateu ninapema 'she seduces my husband'
nu:ci-**na:pe:w**-a:t-e:w ni-na:pe:-m-a
harass-**man**-FIN.TA-3>3'IDP 1-man.AN-POSS-OBV

In ditransitive verbs, a classifier classifies the secondary object (19); a common medial substitutes for it (20).[13] Note that, as will be shown in §27.5.2, ditransitive verbs index only the primary object (the Recipient) and not their secondary object (the Theme).

(19)
uapikunapuȟu nishishupetshinau 'I rub him/her with Florida water'
wa:pikuna:pu:-lu ni-šišu-**pe:c**-in-a:w
Florida.water.IN-OBV 1-rub-**liquid**-by_hand.TA-1>3IDP

(20)
shishuȟushkuauatshineu upakakuanima 's/he rubs her chicken with flour'
šišu-**lu:škwa:wac**-in-e:w u-paka:kwa:n-im-a
rub-**flour**-by_hand.TA-3>3'IDP 3-chicken.AN-POSS-OBV

Both *classifiers* (21) and *common medials* (22) may substitute for an adverbial complement.[14]

(21)
nimitshimapishkain nitetapuakan 'I fasten my chair with a piece of metal'
ni-micim-**a:pišk**-ay-e:n ni-te:tapwa:kan
1-in_place-MIN-by_tool.TI1-1IDP 1-chair.IN

(22)
manitush mushkashkamitshiu 'an insect emerges from the ground'
manitu:š mu:šk-**aškamic**-i:-w
insect.AN emerge-**earth**-FIN.AI-3IDP

In Possessor/Possessed and Part/Whole relationships, a classifier may substitute for the Possessed/Part element of a Possessor/Whole subject (23) or object (24).

(23)
natuaiashkuan ushtashk^{u} 'the axe has a broken handle'
na:twa:-y-**a:škw**-an-Ø ušta:škw
split-LK-**long_rigid**-FIN.II-3IDP axe.IN

(24)
ninatuaiapishkaiti nushtashk^{u} 'I broke the blade of my axe'
ni-na:twa:-y-**a:pišk**-ay-e:tay n-ušta:škw
1-split-LK-MIN-by_blow.TI1-1PST.IDP 1-axe.IN

Likewise, a common medial may substitute for the Possessed/Part element of a Possessor/Whole subject (25) or object (26).

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(25)

pimipituneu ne auass			'the child has a crooked arm'
pi:mi-**pitun**-e:-w	ne:	awa:ss	
crooked-**arm**-FIN.AI-3IDP	DEM	child.AN	

(26)

nipimipitunepitau ne auass			'I vigorously twist the child's arm'
ni-pi:mi-**pitun**-e:-pit-a:w		ne:	awa:ss
1-crooked-**arm**-LK-by_vigorous_action.TA-1>3IDP		DEM	child.AN

In conclusion, classification and substitution are common to both types of *medial*. Classifiers not only classify entities, but, in some instances, completely replace a referent, thus allowing for maximal synthetic expression. Since they may be the sole reference to an entity, classifiers are more than just redundant material within the verb.

With respect to syntactic valence, the end result is that a *medial* does not count as an argument in the morphosyntactic valence of the verb. Either it has a *classifying* function, in which case the argument is also expressed as an external NP or as a pronominal element on the verb, or it has a *substitutive* function and the referent may not be expressed syntactically.

27.3.5 Reduplication

Reduplication encodes pluractionality (Conathan and Wood 2003; Garrett 2001) and affects all or part of the first syllable of a verb or adverb in Algic languages. There are basically two types of productive reduplication in Innu. In *heavy reduplication*, the reduplicant syllable copies the first consonant and introduces a long vowel, generally *a:*, but not exclusively.[15] *Light reduplication* copies the first consonant but the vowel of the reduplicant syllable is short *a*. The two processes may feed each other (*triplication*). Heavy reduplication (27) encodes event internal plurality (several repetitions within a single occasion) and collective plurality (28). Light reduplication (29) encodes event external plurality (repetition of an event construed as separate occasions).

(27)

papatshitinam^{u} shuṁiaṁu	
pa:~pacit-in-amw	šu:lya:-lu
RED~offer-by hand.TI1-3IDP	money.IN-OBV
'(on one occasion) he gives away money [to several people]'	

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(28)
mamakapu nitauassim
ma:~mak-a:pi-u nit-awa:ss-i:m
RED~big-by_eyesight.AI-3IDP 1-child.AN-POSS
'my child has big eyes'

(p. 572)

(29)
papunam^{u} nipiȕu
pa~pu:n-amw nipi:-lu
RED~to_pour.TI1-3IDP water.IN-OBV
'every now and then s/he pours water'

27.4 Information Packaging on the Verb

This section provides information on the more functional-grammatical aspects of the verb.

27.4.1 The morphosyntactic categories of the verb

Lexical verb stems come in different shapes that signal transitivity (transitive vs. intransitive stems) and the gender of the subject and the object. Since transitive verb stems always have an Animate subject, there are four main classes of verb stems (AI, II, TI, and TA). Note that the locus of the alternation between the classes is embodied in the *final* lexical morpheme of the stem, the nature of the alternation being mostly idiosyncratic to each *final*. This means that the "heavy content" morphemes in final position on the lexical stem also convey crucial morphosyntactic information about the number and the nature of the arguments in the clause. Animate intransitive verbs (AI) are intrantive and take an Animate subject as in (30).

(30)
shitishinuat auassat 'the children lie squeezed up tight'
ši:t-**išin**-u-at awa:ss-at
tight-**lay**.AI-3IDP-PL child.AN-PL

Inanimate intransitive verbs (II) are intransitive and take an Inanimate subject (31). Many II verbs are essentially impersonal (e.g. weather verbs) and other IIS may have an impersonal reading; in both cases the third person exponent is non-referential (Drapeau 2011).

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(31)

shititina mishtikua		'the sticks lie squeezed up tight'
ši:t-**itin**-Ø-a	mištikw-a	
tight-**lay**.II-3IDP-PL	stick.IN-PL	

Transitive Animate verb stems (TA) take an Animate object (32).

(32)

nishitishimauat auassat		'I lay the children squeezed up tight'
ni-ši:t-**išim**-a:w-at	awa:ss-at	
1-tight-**lay**.TA-1>3IDP-PL	child.AN-PL	

Transitive Inanimate (TI) stems take an Inanimate object. There are two kinds of TI verbs: TI1 (33) and TI2 (34).

(p. 573)

(33)

nishitishken nimatshunishima		'I wear tight clothes'
ni-ši:t-**išk**-e:n	ni-macuniš-im-a	
1-tight-**with_body**.TI1-1IDP	1-clothing.IN-POSS-PL	

(34)

nishitititan mishtikua		'I lay the sticks squeezed up tight'
ni-ši:t-**itita**:-n	mištikw-a	
1-tight-**lay**.TI2-1IDP	stick.IN-PL	

Although most verb stems fall into one of these four categories, there are a number of irregular cases: objectless TI stems, ambitransitive stems, and AI stems that require an object (as in the case of the instrumental applicative discussed in §27.4.3.2). Note that there can be no transitive clause in which both the subject and the object argument are Inanimates and there is therefore no morphosyntactic category that expresses the action of an Inanimate on another Inanimate. Moreover, it is useful to know that the classes of verbs also correspond to distinct conjugation classes (i.e. the AI conjugation, the TA conjugation, etc.).

27.4.2 Basic and derived voice

An array of voice processes allow the derivation of new stems from the basic morphosyntactic types presented in the previous section. I call *basic voice* the type of argument configuration that characterizes the basic verb types of Innu, as defined by the constraints on the gender of the subject and the nature of the object(s). Derived voice is formed using abstract (i.e. *secondary* as defined in §27.3.4.1) suffixes added to an existing lexemic base.[16]

27.4.2.1 Derived Inanimate actor forms

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A transitive verb requires an Animate Agent in basic voice. Inanimate actor forms are derived by adding the ***-iku*** suffix to a basic TA stem. The derived stem inflects for the Animate experiencer: *pu:ta:t-* ‘an Animate blows on an Animate’ > *pu:ta:t-**iku-*** ‘an Inanimate/Inanimates blow(s) on an Animate’.

Intransitive verbs with inherently Animate subjects (such as ‘to whistle’, ‘to die’, ‘to be born’, etc.) can be used with an Inanimate subject by adding the suffix ***–makan*** to the basic AI stem. The derived stem is II and inflects for its Inanimate subject (*le:le:-* ‘to breathe’ > *le:le:-**makan***- ‘an Inanimate breathes’).

27.4.2.2 Reflexives and reciprocals

Reflexives and reciprocals are derived from a basic TA stem by adding ***-ti:šu*** (reflexive) and ***-tu*** (reciprocal). The derived verb inflects as an intransitive: *nipay-* ‘to kill an Animate’ > *nipay-**ti:šu***- ‘to kill oneself’; *nipay-**tu***- ‘to kill each other’.

(p. 574)

27.4.2.3 Passives of transitives

Derived passive stems (Drapeau 2012) inflect for the Experiencer-Patient and the clause must remain Agentless. Passives with Animate Patients are derived from a TA stem: *ašam-* ‘to feed Animate’ > *ašam-**a:kani***- ‘Animate is fed’. Passives with Inanimate patients are derived from a TI stem: *pe:ta:* ‘to bring Inanimate’ > *pe:ta:-**kani-*** ‘Inanimate is brought’.

27.4.2.4 Passives of intransitives

The subject of an intransitive verb stem may be left unspecified by adding the *-na:niw* suffix to the basic intransitive stem. The derived stem is impersonal (*nikamu-* ‘to sing’ > *nikamu-**na:niw***- ‘there is singing’).

27.4.2.5 Antipassives

The object of a transitive verb stem may be left unspecified by deriving a new intransitive stem that inflects only for the Actor. There are two antipassive suffixes: one for TA stems (*nipay-* ‘to kill an Animate’ > *nipay-**we:-*** ‘an Animate is a killer’) and one for TI ones (*nipata:-* ‘to kill an Inanimate’ > *nipata:-**ce:-*** ‘to make a kill’).

27.4.2.6 Impersonal verbs

Basic Intransitive verbs with Inanimate subjects (II) alternate freely between a personal reading and an impersonal one (*taka:-* ‘an Inanimate is cold/there is cold’). The Theme of an intransitive verb may be incorporated to yield a derived impersonal verb (see §27.3.4).

27.4.3 Other valency-modifying processes

27.4.3.1 Causatives

The causative suffix *-y* derives a TA stem from an AI stem. It introduces an agent-like subject and the erstwhile subject becomes the derived object (*nikamu-* ‘to sing’ > *nikamu-**y***- ‘to make an Animate sing’).

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27.4.3.2 Applicatives

There are numerous types of applicatives derived through suffixation to a verb stem (transitive or intransitive). A *ditransitive* stem with a Beneficiary argument is derived by adding the *-aw* suffix to the monotransitive (TI) stem (*ci:ssam-* 'to cook an Inanimate' > *ci:ssam-**aw*** 'to cook an Inanimate for an Animate'). The derived stem is TA and inflects for the beneficiary argument and not with the Theme. *Instrumental* applicatives suffix *-wa:ce:* to an AI stem (*šašku:te:-* 'to walk with a cane' > *šašku:te:-wa:ce:-* 'to use something as a cane'). Although the derived verb requires an object, it falls into the AI conjugation class regardless of the gender of the applied object. *Comitative* (co-agentive) applicatives apply to an AI base by prefixing *wi:ci-* 'with' and suffixing the transitive Animate final *-im*, yielding a TA stem (*pi:twa:-* 'to smoke' > ***wi:ci**-pi:twa:-**m*** 'to smoke in the company of an Animate'). The applicative (p. 575) suffix *-štam*(TI)/*-štaw*(TA) signals physical orientation towards an object. It is attached to an intransitive base (AI) to form a derived transitive verb (*ni:pe:pi-* 'to spend the night sitting' > *ni:pe:pi:-**štaw*** 'to spend the night sitting at an Animate's side'). A "generalized applicative marker" *-ttam*(TI)/*-ttaw*(TA) attaches to AI bases to yield a transitive verb (either TA or TI). It introduces an object in a variety of roles: goal, location, etc. (*ne:mu-* 'to growl' > *ne:mu-**ttaw*** 'to growl at an Animate'), but also Patient or Theme (Drapeau, 2015).

Relational verb stems are derived by suffixing *-w* to an AI or a TI stem and *-im* to a TA stem to signal the presence of a third person participant, mostly Possessors but also other indirect participants. AI and TI relational verbs use a specific inflectional paradigm called *relational*.

Lastly, a number of so-called "relative roots" (see Rhodes 2010a), also referred to as relational preverbs, allow the introduction of oblique complements (such as manner or measure). Relative roots act as modifiers in compounds or as roots in primary derivation.

27.4.4 Tense, modality, and evidentiality

There are no non-finite verbs in the language, and disjoint sets of verbal inflection correspond roughly to different clause types. These inflectional sets are called *orders* in the Algonquian tradition. The *independent* (IDP) set is used in independent clauses, including affirmative main clauses. The *conjunct* (CJ) set is used in subordinate clauses, in WH-questions, as well as in main or independent clauses after the negator *apu*. However, whenever the speaker wishes to use a mode which is not available in the conjunct order, the *independent set* may be used in contexts which would otherwise warrant the use of the *conjunct set*. The *imperative* set is used for commands. Only the *independent* set uses pronominal prefixes as well as suffixes; the other two orders use only suffixes.

Modality is expressed on the verb through preverbs or suffixes. Modal preverbs are somewhat loosely attached to the verb, but, in the independent order, the pronominal prefixes attach to them, so they are clearly part of the verbal complex, forming loose compounds with the verb stem, as shown in (35). The preverb *pa:* expresses the

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conditional; *pa:ci:* expresses the speculative; *ka-* expresses the *irrealis*. These three preverbs are used only in the *independent order*. By contrast, the preverbs that express *necessity* (*wi:* 'want', 'must') and *potentiality* (*ci:* 'can') are used in the three orders of conjugation.

(35)

Tshipa tshi uiṅ miṅitin shuṅiau				'I could of course give you money'
ci-pa:	ci:	wi:l	mi:l-itin	šu:lya:w
2-COND	POT	EMPH	give.TA-1>2IDP	money.IN

Modal suffixes form modal paradigms and support an evidence-based epistemic system. The *independent* order conjugation distinguishes the *indicative* (unmarked); the *dubitative* for uncertain but probable information; the *indirect* for information obtained from an indirect source; and the *subjective* for information stemming from the speaker's perception: dreams, thoughts, reminiscences, etc. The indicative, the indirect, and the dubitative modes have different forms for the present and the past. The conjunct order set has two *realis* modes: the *indicative* and the *indirect* (for information obtained from an indirect source) and two *irrealis* ones: a *subjunctive* mode to express future actions and a *hypothetical* for (p. 576) speculative statements. Tense is not fused with modal suffixes in the conjunct; it is expressed through the subordinators described in §27.6.3.3.

27.5 Relations within the Clause

Clausal relations are marked on the head element. There is no case marking on nouns, but locatives are marked by a suffix. In a possessive noun phrase, the possessed noun carries a valence marker, as well as a pronominal prefix and suffix which jointly specify the possessor (36).

(36)

nitauassim uputam		'my child's bottle'
nit-awa:ss-i:m	u-pu:ta:-m-Ø	
1-child.AN-POSS	3-bottle.IN-POSS-OBV	

27.5.1 Argument indexing and the indexicality hierarchy

Verbs always carry finite inflection. Reference to grammatical arguments is established through the following means: a) the shape of the *final* morpheme of the lexical stem (§27.4.1 through §27.4.3) carries information about the number of arguments and their gender; b) person and number affixes on the verb index the relevant grammatical participant as determined by an indexicality hierarchy and irrespective of participant

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role; c) direction suffixes provide information about whether the indexed argument is the Actor or the Goal.

The indexing of grammatical arguments is achieved through both prefixes and suffixes (i.e. bound person forms). Intransitive verbs index their subject for person and number. Verbs with Inanimate objects (i.e. TI1 and TI2) index only their subject for person and number. Plurality of the object is not indexed, and its gender is distinguished through stem alternation, as mentioned in a) above. The inflectional system for TA verbs does not use separate sets of morphemes for the subject and the object. Arguments are indexed by means of an outer layer of person prefixes combined with post-stem direction-marking suffixes and an outer layer of person suffixes. The indexicality hierarchy[17] (37) plays a crucial role in this system.

(37) INDEXICALITY HIERARCHY: a) 2>1>3>3'>INANIMATE
b) POSSESSOR > POSSESSED

The hierarchy determines which person *prefix* will occur on the verb, as the higher ranked participant trumps the lower one. The choice of prefix thus does not depend on the role of (p. 577) the argument but on its rank on the hierarchy. The hierarchy also plays a role in the choice of *direction suffixes* inserted right after the TA stem (and before the pronominal suffixes and markers of plurality and obviation). These *directional suffixes* indicate whether the indexed argument is Actor or Goal. The *direct* set of suffixes specifies that the indexed argument is Actor. The *inverse* set of suffixes implies that the indexed argument is Goal. Contrast (38) where the directional suffix *-a:* signals direct action with (39) where *-ikw* signals the inverse direction.

(38)
nishatshiau — 'I love him/her'
ni-ša:cy-**a:**w
1-love.TA-1>3IDP

(39)
nishatshik^{u} — 's/he loves me'
ni-ša:ci:-**ikw**
1-love.TA-3>1IDP

These direction suffixes can be parsed easily in the Independent order of conjugation. The shape of the direction suffix provides information as to whether the participants are both speech act participants (*-i* 'direct', *-iti* 'inverse'), both 3rd persons (*-e:* 'direct', *-ikw* 'inverse'), or whether one is a SAP and the other 3rd (*-a:* 'direct', *-ikw* 'inverse'). In other words, the system of TA conjugation provides information about argument roles, but only as mediated through participant ranking. Note that in the conjunct set, the parsing between direction marker and person suffixes is less straightforward.

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27.5.2 Alignment

With respect to alignment (using the familiar A, O, and S as argument roles), for monotransitives, if O is Animate, the pattern is *hierarchical* (Nichols 1992). The system of syntactic relations does not reflect roles alone but, as has been described, it is mediated by the ranking of participants. If the A ranks higher on the hierarchy, the person prefix aligns with S (*nominative-accusative* alignment); if the A is lower, it indexes the O, and the A is unmarked (*ergative alignment*).

In ditransitives, the pattern of argument indexing is secundative, that is, the R (recipient) aligns with O as primary object and the T (theme) is the secondary object (Haspelmath 2005a; Rhodes 2010b) as was shown in (35).

27.5.3 Word order

The order of clausal arguments largely reflects information structure in accordance with the principle that new information comes first. If the sentence is *all focus* the basic order is SVO (40). Predicate focus constructions have VSO order (41) and argument focus constructions have OVS order (42). If the subject of the clause is the new information, it is cleft.

(p. 578)

(40)

ninapem unitau ushtashkᵘ			‘my husband lost his axe’
ni-na:pe:-m	u:nita:-w	u-ušta:škw-Ø	
1-man.AN-POSS	lose.TI2-3IDP	3-axe.IN-OBV	

(41)

unitau ninapem ushtashkᵘ			‘my husband **lost his axe**’
u:nita:-w	ni-na:pe:-m	u-ušta:škw-Ø	
lose.TI2-3IDP	1-man.AN-POSS	3-axe.IN-OBV	

(42)

ushtashkᵘ unitau ninapem			‘my husband lost **his axe**’
u-ušta:škw-Ø	u:nita:-w	ni-na:pe:-m	
3-axe.IN-OBV	lose.TI2-3IDP	1-man.AN-POSS	

27.6 Clause Types and Clausal Relations

In this section, we examine the different clause types and the mechanisms for clause linkage.

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27.6.1 Verbless clauses

Innu compensates for the absence of verbal copula with the widespread use of two types of verbless clauses: those with a nominal as nucleus and those with an adverbial nucleus.

27.6.1.1 Clauses with a nominal nucleus

Clauses with two nominals have a rigid structure in which the first nominal is the Complement, and the second is the Subject of the predication. There are three sub-types: *identificational clauses* assign the Subject to a category (43). *Equational clauses* equate a Subject to a specific individual (44). *Presentational clauses* use a demonstrative as nucleus (45). All types may be cleft when the Subject includes a relative clause.

(43)

pashpashtessat anat		'those [are] woodpeckers'
pa:špa:šte:ss-at	an-at	
wood_pecker.AN-PL	DEM.AN-PL	

(44)

uiṅ utshimau		'it is him [who is] the boss'
wi:l	ucima:w	
IPP.3	boss.AN	

(45)

naume akushiutapan		'there [comes/is] the ambulance'
na:wme:	a:kuši:wta:pa:n	
DEM.IN	ambulance.IN	

(p. 579) In some clauses a demonstrative-like element acts as copula: in affirmative form (*e:tuce:* 'must be', *e:šapan* 'turns out to have been'), in negative form (*namie:w* 'is not'), and in the form of a focus pronoun (*e:wkwan* 'here is').

27.6.1.2 Clauses with an adverbial nucleus

An adverbial nucleus precedes its Subject in the clause, as in (46).

(46)

apu tshimimiht, tipan kie uiṅuau

apu	ci:m-i:mit-it	tipa:n	kye:	wi:lwa:w
NEG	go_with_in_boat.TA-3>1PL.EXCL.CJ-PL	separate	too	3PL.IPP

'they do not accompany us (in our canoe), they too [are/travel] separately'

27.6.2 Clause types and verbal inflection

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We saw in §27.4.4 that the language has disjoint sets of verbal inflection (called *orders*) that correspond roughly to different clause types. It is customary to equate the use of the conjunct with subordination and hence to use it as diagnostic of embedded structure. However, since the independent order has many more modes than the conjunct, it is often used by default in embedded clauses when the speaker wishes to use a mode for which a conjunct equivalent is unavailable. In (47), independent order endings are used on the conditional verb of the subordinate clause while the main clause is in the conjunct (see §27.6.3.4 on co-subordination). For this reason, clause type cannot be inferred simply from the set of inflectional endings on the verb.

(47)

ekue uitamakut neȁnu natukuṅȁnu tshipa apashtau

e:kwe:	wi:tama:-ikut	ne:-lu	natukul-lu	ci-pa:	a:pašta:-w
COO	tell.TA-3'>3CJ	DEM-OBV	remedy.IN-OBV	3-COND	use.TI2-3IDP

'then he told him the remedy that he should use'

27.6.3 Clause linkage

Clauses may be coordinate, juxtaposed, subordinate, co-subordinate, or insubordinate.

27. 6.3.1 Coordination

A number of coordinators link two clauses (48), each containing verbs inflected with the *independent* set of endings.[18]

(p. 580)

(48)

nimishta-miṅueȁniten kie niṅ tanite nimiṅupinan

ni-mišta-milwe:lit-e:n	kye:	ni:l	**ta:nite:**	ni-milupi-na:n
1-very-like.TI1-1IDP	also	IPP.1	because	1-dwell_well.AI-1PL.EXCL.IDP

'I too am very content because we have a good dwelling'

This type of clause is rather infrequent in discourse due to the prevalence of co-subordinate structures (§27.6.3.4).

27.6.3.2 Juxtaposition

The language favours direct reported speech (speech, dreams, thoughts, or reminiscences). The quote comes first, followed by the complement clause in the form of an inflected transitive or intransitive verb. There may be multiple levels of reporting, and therefore, multiple juxtaposed clauses as in (49). The juxtaposed structure shows the independent order (IDP) inflection.

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(49)
“mauat”, iteuat, itakanuat, issishueu nikaui

ma:wa:t	it-e:w-at	it-a:kan-u-at	i:ssi:šwe:-w	ni-ka:wi:
No	say.TA-3>3'IDP-PL	say.TA-PAS-3IDP-PL	say.AI-3IDP	1-mother

‘my mother says that they (unspecified) are said to have told him/her (a third party) “no”’

27.6.3.3 Subordination

Subordinate clauses are of three types: adverbial, complement, and relative (both restrictive and non-restrictive). Subordinate clauses have a verb inflected with the conjunct set of endings (but see §27.6.2 for a caveat) and they are introduced by a subordinating element which may be either segmental, more specifically one of seven preverbs as in (50), or by a non-segmental process which modifies the first vowel of the verb (called *initial change*) as in (51). The choice of preverb, or of the changed form of the verb, indicates the relative time of the subordinate clause with respect to the main clause, perfective aspect or the logical link between the two clauses. A zero subordinator is used in adverbial clauses when the action of the subordinate clause is future and concomitant with a future tense main clause.

The grammatical preverbs have a somewhat loose connection to the verb and cannot be analyzed as prefixes; they are always in preverbal position, and other functional elements may be introduced between them and the verb.

(50)
ka nipauiat, nimishta-nekatshutan ‘when we got married, we were in great misery’

ka:	ni:paw-ya:t	ni-mišta-ne:ka:cu:-ta:n
SUB.PST	marry.AI-1PL.EXCL.CJ	1-very-be_in_misery.AI-1PL.EXCL.PST.IDP

(51)
nimishta-miṅukuamuti tepishkat ‘I slept very well last night’

ni-mišta-milukwa:mu-tay	te:piška:-t
1-very-sleep_well.AI-1PST.IDP	IC\be_night.II-3CJ

(p. 581) ### 27.6.3.4 Co-subordination

Sequences of events in narrations are conveyed through chains of co-subordinate clauses. In a co-subordinate clause, the verb inflects in the conjunct set of endings and is introduced by a subordinator (as in a typical subordinate clause) but there is no dependency on a main clause. Co-subordinate clauses are introduced by *e:kwe:* or *ce:*. The former fuses the coordinator *e:kw* ‘and’ with the subordinator *e*: (§27.6.3.3). It is used when the clause refers to an event in the present or the past (52). The preverb *ce:* is the future subordinator.

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(52)

katshi kapaian ekue utinahk ekue naikuhk ekue papitushuhk

ka:ci:	kapa:-ya:n	e:kwe:	utin-aka:w	e:kwe:	naykaw-aka:w
SUB.PST.PRF	land.AI-1CJ	COO	take.TA-1>3PL.CJ	COO	clean.TA-1>3PL.CJ
e:kwe:	pa:~pi:tušw-aka:w				
COO	RED~cut_up.TA-1>3PL.CJ				

'after landing, then I took them [the fish], then I cleaned them, then I cut each of them up'

27.6.3.5 Insubordination

I use the term «insubordination» (coined by Evans 2007) to describe a variety of main clauses that use the conjunct set of inflectional suffixes in lieu of the independent set. An insubordinate structure signals that the content of the clause is linked to previous discourse content shared by the speech act participants (Drapeau and Lambert-Brétière 2016) as evidenced in (53). This use of subordinate markers in independent clauses has also been reported by Mithun (2008b) as indicating discourse pragmatic dependency.

(53)

Ka ititan!

ka:	i:t-ita:n
SUB.PST	tell.TA-1>2.CJ

'I told you so!'

27.7 Conclusion

On the basis of this sketch, Innu emerges as a verb-centered polysynthetic language. Morphosyntactically, the language is radically head-marking and exhibits a type of alignment known as hierarchical in that the indexicality of the main arguments does not depend on their semantic role but on their relative ranking on a hierarchy of participants. As for lexeme formation of the three major word categories, a wide array of processes allows the synthesis within the word form of a head and its semantic dependents. This process is especially complex within the verbal lexeme which may incorporate, in *medial* position, material that refers to entities in a wide array of semantic roles, as well as a large variety of manner dependents incorporated as the *final* lexical morpheme of the stem. Adding to the four basic (p. 582) morphosyntactic types of verb stem (transitive or intransitive, with Animate or Inanimate subject or object), the language has a substantial array of suffixes that serve to modify the number or the gender of participants. Both lexeme formation and the order of grammatical affixes is templatic.

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In the absence of a verbal copula, several types of verbless clauses exist with somewhat rigid constituent order. By and large, the order of the major constituents in the language obeys a principle which orders new information before older information. Clauses are linked through coordination and juxtaposition, and most frequently by subordination. Subordinate constructions spill over into discourse and result in insubordination and clause-chaining through co-subordinate structures.

Abbreviations

AI
intransitive verb with an Animate subject
AN
Animate gender
CJ
conjunct conjugation
COO
coordinator
DIR
direct inflectional suffix
EMPH
emphatic particle
FIN
final suffix
FOBV
further-obviative suffix
IC
form of the verb with initial change
IDP
independent conjugation
II
intransitive verb with an Inanimate subject
IN
Inanimate gender
INV
inverse inflectional suffix
IPP
independent personal pronoun
LK
linker
MIN
mineral substance

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OBV
obviative suffix
SUB
subordinator
TA
transitive verb with an Animate object
TI
transitive verb with an Inanimate object
TI1
class1 TI verb
TI2
class 2 TI verb

Acknowledgements

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Notes:

(1) See also Mattissen (this volume) on the “burdock type” of evolution whereby two formerly adjacent independent words become bound.

(2) More recently, Oxford (2008) has distinguished different types of particles (adverbs, coordinators, etc.).

(3) Capitals refer to grammatical properties and lower script to semantic properties.

(4) In the Pessamit dialect, Proto-Algonquian *l is maintained, while it has merged with *n in the other dialects of the language. The standard orthography now uses $\grave{n}$ for historic *l, does not mark vowel length, and is in general fairly remote from the Pessamit pronunciation. For this reason, examples will be provided in phonemic transcription in the body of text as well as on the second line of the glossed examples.

(5) The first line of the glossed examples is in standard orthography and the second provides the equivalent in phonemic transcription in the Pessamit dialect. Note that in the Pessamit dialect, short /a/ and /i/ have merged to a centralized lax vowel; they are deleted in absolute word initial as well as in word final position. In the latter case, the vowel is replaced by a low tone on the vowel of the final syllable. Person indexes on transitive

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Animate verbs are glossed as follows: the person of the Agent, followed by > and the person of the Patient (e.g. I-you: 1>2). An obviative argument is glossed 3’.

(6) The basic word formation processes have been described for the Algonquian family by Bloomfield (1946) and a slightly different model has been proposed by Goddard (1990). In this chapter I broadly follow Goddard’s reanalysis.

(7) In this chapter, I use the term *root* to refer to the indivisible nucleus of a lexeme.

(8) When the first member of an endocentric compound ends in a vowel, a compounding *w* is inserted.

(9) The *final* suffixes discussed here are not the bound alternant of an existing stem. See the section on pseudo-compounds for a presentation of derived finals.

(10) Including the derived finals discussed in §27.3.2 would drive the number up over 120.

(11) Roughly the same type of element may be inserted in *final* position in a complex noun or adverb as described in §27.3.3.

(12) A functional explanation could be adduced to explain the difference between *classifiers* and *common medials* with respect to Objects: a *classifier* is not specific enough to allow the hearer to identify the precise object, and the referent must be specified by an external NP. By contrast, an intransitive verb incorporating a *common medial* is specific enough for the hearer to identify the right entity.

(13) When a common medial is used, further specification of the referent by an external NP is pleonastic.

(14) Common knowledge of the world allows the hearer to infer the correct type of referent involved without having to specify it in full.

(15) In some cases, the reduplicant involves the whole first syllable of the stem. More idiosyncratic changes may be found.

(16) In this section, the different examples of verbs are not inflected.

(17) This hierarchy is also referred to as the animacy hierarchy, the referential hierarchy, the person hierarchy, or the accessibility hierarchy (see Siewierska 2004).

(18) Unless of course the conjunct set is mandatory due to the use of the negator *apu*.

Lynn Drapeau

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Innu-French dictionary published in 1991 and a reference grammar of the language in 2014. She received her doctorate degree in linguistics from the University of Montreal, specializing in morphology and language contact, and is currently adjunct professor at the Linguistics Department of UQAM.

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Abstract and Keywords

Caddo is a member of the Caddoan language family, which includes also Wichita, Kitsai, Pawnee, and Arikara. Its verbs are typically polysynthetic, with a base composed of a variety of elements that include incorporated noun roots and various derivational prefixes and suffixes. This base is accompanied by pronominal prefixes expressing person and number and their role as agents, patients, or beneficiaries. Unusual is the division of these pronominal prefixes into realis and irrealis sets that have scope over an entire event or state. The base is followed by suffixes expressing tense and aspect. Caddo is not only polysynthetic but also highly fusional as a result of extensive sound changes that have obscured morpheme boundaries as well as resemblances between different parts of a paradigm. Morphological analysis requires the internal reconstruction of an earlier stage of the language when the composition of a verb was more transparent.

Keywords: incorporation, polysynthesis, derivational prefixes, derivational suffixes, pronominal prefixes, realis and irrealis, tense and aspect

CADDO is a Native American language belonging to the Caddoan language family, which includes also Wichita, Kitsai, Pawnee, and Arikara. Before the European invasion Caddo was spoken in numerous dialects across a huge area that is now occupied by eastern Texas, much of Louisiana, southern Arkansas, and southeastern Oklahoma. This large population was decimated in the eighteenth and nineteenth centuries, and survivors were eventually settled on a small reservation on the Brazos River in Texas. In 1859, under threat of annihilation by hostile neighbors, the remaining Caddos fled north into an area in the neighborhood of what is now Anadarko, Oklahoma (Na dá:kuh ‘place of the bumblebee’), where few if any speakers of the language remain. A brief sketch of Caddo structure is available in Chafe 1976: 55–82. Melnar 2004 provides a more complete description of the verb morphology, and much of the analysis and terminology used here

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is based on her work. Caddo texts can be found in Chafe (1976), and an analyzed text with commentary in Chafe (2005).

Caddo exhibits a number of properties that are traditionally associated with polysynthesis, as this chapter illustrates. Its complex morphology embraces a number of elements that languages of a different type would assign to separate words. Among them are, for example, marking referents with pronominal affixes, the frequent use of incorporation, and the inclusion of markers of posture (sitting, standing, and lying), these being just a few of the ways of modifying the nature of an event or state within the complex Caddo verb template.

Caddo is very much a verb-centered language. Although it has a substantial number of nouns, nominalized verbs are often used in their place. For example, a morphological verb with a nominalizing proclitic—**kah'isich'ah** 'that which is a hand'—is used more often to refer to a hand than the simpler noun **sichih**. Verbs have a templatic structure that was analyzed by Melnar in terms of the twenty-three position classes shown in Figure 28.1. In the course of this chapter this template will be mentioned repeatedly.

Caddo verbs are built on a base (position 0) that is preceded by a pronominal prefix (position 14) and followed by a tense-aspect suffix (position -7). Often the pronominal prefix is preceded by one of approximately 176 proclitics expressing tense, aspect, modality, and other inflectional categories (position 15). Every verb contains at least a base and a pronominal prefix, although 3rd person realis agents and patients are not overtly marked. Most verbs contain either a proclitic or a tense-aspect suffix or both, although an imperative verb may contain nothing more than a 2nd person pronominal prefix and a base. The base itself may consist of nothing more than a verb root, but many bases reach out to other parts of the (p. 584) template to create complex inflectional and derivational combinations. The basic verb structure is shown in Figure 28.2.

proclitics	15
pronominal prefixes	14
interrogative	13
number	12
durative	11
distributive	10
applicative	9
noun root	8
manner	7
number	6
distributive	5
locative	4
postural	3
continuative	2
transitivizer	1
base	0
causative	-1
andative	-2
middle	-3
cislocative	-4
iterative	-5
intentive	-6
tense-aspect-suffixes	-7

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Figure 28.1 Position classes within a Caddo verb

After Melnar

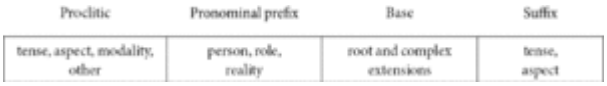

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Figure 28.2 Basic verb structure

After a brief illustration of this basic structure, this chapter will discuss the pronominal prefixes, the tense-aspect suffixes, and the numerous proclitics. It will then focus on the ways in which number and distribution are introduced into the template before examining a variety of other ways in which the base may be extended through the addition of other elements. The word in example (1) is built on the base *ka-dís* 'wash'.

(1)
háhtsikadíssa'
hák=tsi-ka-dís-sa'
IND-1.AGT-PREVB-wash-IMPFV
'I'm washing it'

The base is preceded by the pronominal prefix *tsi-* '1st person agent realis' and followed by the aspect suffix *-sa'* 'imperfective'. At the beginning of the word is the proclitic **hák=* 'indicative'. The base *ka-dís* consists of the preverb *ka-* followed by the root *-dís* 'wash'. The majority of Caddo bases have this bipartite form, where a preverb is arbitrarily selected by the root and contributes no further meaning of its own. Many of these preverbs may have originated as instrumental prefixes or incorporated noun roots, but in most cases their origin is unknown. The separation of a preverb from a verb root is illustrated by the base *ka-wa-dís* 'wash (animate plural)', where the animate plural marker *-wa-* intervenes between the preverb and the root as in example (2).

(2)
háhtsikawadíssa'
hák=tsi-ka-wa-dís-sa'
IND-1.AGT-PREVB-ANIM.PL-wash-IMPFV
'we (pl) are washing it'

(p. 585)

Caddo is not only typically polysynthetic but also highly fusional as the result of numerous sound changes that often obscured morpheme boundaries, sometimes even obscuring resemblances between different parts of a verbal paradigm. Morphological analysis is thus facilitated by the internal reconstruction of an earlier stage of the language that existed at a time when the composition of a verb was more tractable to analysis (cf. Chafe 1968). In examples (1) and (2) above, the reconstructed proclitic ****hák-*** 'indicative' was subject to a coda-softening process that changed the final *k* to *h*. The Appendix to this chapter illustrates the kinds of changes that convert reconstructed forms to the modern pronunciations.

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28.1 Pronominal Prefixes

28.1.1 Person and role

The pronominal prefixes distinguish four persons—1st, 2nd, 3rd, and defocusing (see following section), and three roles—agent, patient, and beneficiary. Their reconstructed forms are shown in Figures 28.3–28.8 (cf. Melnar 2004: 23–56). Somewhat unusual is the division of these prefixes into two distinct sets, realis and irrealis. Figures 28.3 and 28.4 show reconstructed realis and irrealis forms. As previously mentioned, verbs with 3rd person realis agents and patients lack an overt pronominal prefix, but such verbs occur very frequently. When a 1st or 2nd person is also present, 3rd person is never marked. Special forms are available for combinations of 1st and 2nd person, as shown in Figures 28.5 and 28.6.

(p. 586)

	1st person patient	1st person beneficiary	2nd person patient	2nd person beneficiary
1st person agent			*t'a-*	*t'a-*

	singular	dual	plural	animate	absolutive	distributive	individuative	varietive
ʔaw-/ʔa-	x				x			
wiih-		x						
-wa-			x	x				
hanʔ-/na-			x		x			
na-/ni-						x		
hala-							x	
hakʔ-								x

	Agent	Patient	Beneficiary
1st person	*t'a-*	*ba-*	*ba-*
2nd person	*sah'-*	*sa'a-*	*sa'u-*
3rd person	*sa-*	*sa-*	*'u-*
		'a'a-	*'a'u-*

tense, aspect, modality	15
person, role, reality	14
interrogative	13
dual	**12**
durative	11
individuative, varietive	**10**
applicative	9
noun root	8
manner	7
absolutive sg and pl	**6**
distributive	5
locative	4
postural	3
continuative	2
transitivizer	1
animate plural	**0**
causative	-1
andative	-2
middle	-3
cislocative	-4
iterative	-5
intentive	-6
tense, aspect	-7

r

is pronominal prefixes

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Figure 28.8 Positions of number and distributive markers

28.1.2 The defocusing prefix

In addition to 1st, 2nd, and 3rd persons, Caddo offers a fourth choice labeled ‘defocusing’ (Chafe 1990; in Chafe 1976 it was called ‘indefinite’). This prefix deflects attention from its referent(s), whose identity may be irrelevant, unknown, or defocused for some other reason. Four special uses were illustrated in Chafe (1990).

(a) reference to a nonprotagonist in a story.
(b) words that have been lexicalized to refer to certain objects, persons, or actions.
(c) addressing and referring to in-laws.
(d) with the addition of dual or plural marking, a way of expressing inclusive person.

(p. 587) Option (b) is exemplified in example 3.

(3)
nakikadis
nak=yi-ka-dís
INST=DEFOC.AGT-PREVB-wash
‘soap’, literally ‘that with which one washes’

Option (d) is exemplified in examples (4) (dual inclusive) and (5) (plural inclusive).

(4)
díwísbáwnah
yi-wiht-yi-bahw-nah
DEFOC.AGT-DU-PREVB-see-PERF
‘we (DU INC) have seen it’

(5)
dí:wabáwnah
yi-yi-wa-bahw-nah
DEFC.AGT-PREV-P.ANIM-see-PERF
‘we (PL INC) have seen it’

28.1.3 Realis and irrealis

The realis–irrealis distinction has scope over an entire event or state and not only the pronominal referent (Chafe 1995). The choice is governed by whether the event or state is judged to conform to the speaker’s conception of reality, as opposed to something that

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belongs, in whole or in part, to an imagined world whose reality is either questioned or denied.

In all its uses except yes–no questions an irrealis pronominal prefix is preceded by a proclitic that specifies the basis of the irreality (Melnar 2004: 49–55). These proclitics (or their absence) distinguish eight possibilities. The absence of a proclitic in the case of a yes–no question suggests that this was the earliest use of the irrealis forms. The proclitics, with their somewhat looser phonological attachment to what follows (indicated by =), probably originated as separate particles.

(a)	yes–no question	unmarked	The real and unreal are alternatives.
(b)	Negation	*kúy*=	The unreal is asserted.
(c)	prohibition	*kash*=	The listener is instructed not to perform the unreal.
(d)	obligation	*kas*=	The real is desirable against an unreal background.
(e)	condition	*hí*=	The real and the unreal are both options.
(f)	simulation	*dúy*=	The real resembles the unreal.
(g)	infrequency	*wás*=	The real is less common than the unreal.
(h)	mirativity	*hús*=	The real is a surprise.

Examples (6), (7), and (8) provide illustrations of options (a), (b), and (h).

(6)
Sáy'bah?
sah'-yi-bahw
2.AGT.IRR-PREVB-see
'Do you see it?'

(7)
Kúyt'áybah
kúy-t'a-yi-bahw
NEG-1.AGT.IRR-PREVB-see
'I don't see it.'

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(8)
Hússa:yáhsa’
hús-sa-’i- yáh-sa’
MIR-3.AGT.IRR-PREVB-eat-IMPFV
‘He’s eating it!’

(p. 588) 28.2 Tense–aspect Suffixes

The tense–aspect suffixes that occupy position -7 include the following.

(a)	imperfective	*-sa’*
(b)	perfect	*-ah/-nah/-dah*
(c)	future	*-’a’/-wa’*
(d)	habitual	*-hah*
(e)	translocative perfect	*-shiyah*
(f)	intentive andative	*-sat*

The imperfective is exemplified in (1), (2), and (8). The perfect is exemplified in (4) and (5). The future is exemplified in (9) as follows, the habitual in (10), and the translocative perfect in (11). We can return to (f), the intentive andative, at the end of this section.

(9)
basisih’a’
ba-sisih-’a’
PREVB-boil-FUT
‘it will boil’

(10)
hahnínhah
hah-nín-hah
PREVB-stop-HAB
‘he stops’

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(11)
hahní:shiyah
hah-nín-shiyah
PREVB-stop-TRANS.PERF
'he stopped over there'

The perfect suffix may signal the present relevance of a past event, but its meaning often overlaps with that of a simple past as otherwise expressed by the past proclitic (cf. the ambiguity of *wir haben es gesehen*). The translocative perfect adds a meaning 'over there' to the perfect. Position -6 is occupied only by the intentive suffix *-chah*, usually translated 'be going to' as opposed to 'will' (examples (12) and (13)). It is assigned to a separate position class because it is sometimes followed by a suffix from position -7, as in example (14).

(12)
tsi:yáh'a'
tsi-'i-yáh-'a'
1.AGT-PREVB-eat-FUT
'I'll eat it'

(13)
tsi:yáhchah
tsi-'i-yáh-chah
1.AGT-PREVB-eat-INTENT
'I'm going to eat it'

(14)
tsi:yáhchahsa'
tsi-'i-yáh-chah-sa'
1.AGT-PREVB-eat-INTENT-IMPFV
'I'm going to be eating it'

The andative suffix, which occurs in position -2, involves going somewhere to do something. It has the forms *-nih*/*-hih*/*-ih*.

(15)
hítsí:bah
hí=tsi-yi-bahw
HORT=1.AGT-PREVB-see
'let me see it'

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(16)
hítsí:báwnih
hí=tsi-yi-bahw-nih
HORT=1.AGT-PREVB-see-AND
'let me go and see it'

The 'intentive andative', the last of the suffixes occurring in position -7, combines the intentive and andative meanings. Its form is -**sat** (18).

(p. 589)

(17)
tsitáyyúhchah
tsi-t-háy-yúh-chah
1.AGT-BNFV-PREVB-tell-INT
'I'm going to tell him'

(18)
tsitáyyúhsat
tsi-t-háy-yúh-sat
1.AGT-BNFV-PREVB-tell-INTENT.AND
'I'm going to go and tell him'

28.3 Proclitics

For position 15 Melnar identified 176 proclitics expressing tense, aspect, and mood, as well as negation, subordination, deixis, and 'indiscrimination'. A selection is illustrated in the sections that follow. If most or all of these proclitics originated as separate particles, now they are attached phonologically to the following word, although in some respects the attachment is looser than that of the fully integrated prefixes.

28.3.1 Past tense

Melnar (2004: 64) lists twenty-four proclitics that include the meaning 'past'. Example (19) shows the semantically simplest of them, **hít=*, which carries only the past meaning. Example (20) shows the past hearsay **kín=*, and (21) the negative past desiderative **nikít=*.

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(19)
hítdibah
hít=yi-bahw
PAST=PREVB-see
'he saw it'

(20)
kínnibah
kín=yi-bahw
PAST.HEARSAY=PREVB-see
'it's said that he saw it'

(21)
nikítdibah
nikít=yi-bahw
NEG.PAST.DESID=PREVB-see
'I wish he hadn't seen it'

28.3.2 Aspect

Melnar (2004: 67–8) lists twenty-three proclitics that involve aspect. Examples (22)–(24) illustrate the kinds of differences that appear among these proclitics. (22) shows the continuative indicative, (23) shows the negative continuative, (24) shows the negative interrupted continuative, and (25) shows the future resultative.

(22)
há'ukíhnáy'áwsa'
há'ukík=náy-'áw-sa'
CONT.IND=PREVB-sing-IMPFV
'he's still singing'

(23)
t'a'uníhnáy'aw
t'a'uník=náy-'áw
NEG.CONT=PREVB-sing
'he doesn't sing anymore'

(24)
nust'áybah
nus=t'a-yi-bahw
NEG.INTERRUP.CONT=1.AGT.IRR--see
'I haven't seen him for a long time'

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(25)
kaytdibáwnah
kayt=yi-bahw-nah
FUT.RESULT=PREVB-SEE-PERF
'he will have seen him'

(p. 590) ## 28.3.3 Modality

Melnar (2004: 83–4) lists fifty-seven proclitics that involve modality. Examples (26)–(29) suggest the kinds of differences that appear among these proclitics. (26) shows belief, (27) shows possibility, (28) shows probability, and (29) shows hearsay.

(26)
sihnáy'áw:nah
sik=náy-'áw-nah
BELIEF=PREVB-sing-PERF
'I believe he sang'

(27)
táhtsi:yúnki'a'
ták=tsi-'i-yuniki-'a'
POSSIBILITY=1.AGT-PREVB-escape-FUT
'I might run off'

(28)
túh'adih'a'
túk='a-dih-'a'
PROBABILITY=PREVB-go-FUT
'probably he'll go'

(29)
kánsí:báw'a'
kán=si-yi-bahw-'a'
HEARSAY=2.PAT-PREVB-see-FUT
'they say he will see you'

28.3.4 Negation

There are twenty-one proclitics that express negation in some way. A simple negation is expressed by *kú=* or *kúy=*, differing by dialect (example (30)). The 'negative prioritive' *kúts'í=* conveys the orientation 'not yet'. Both take irrealis pronominal prefixes.

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Occurring with realis pronominal prefixes are the negative past hearsay *kínút*= (example (32)), and the 'past partial negative' *t'ín*= (example (33)).

(30)
kút'áybáw:nah
kú=t'a-yi-bahw-nah
NEG=1.AGT.IRR-PREVB-see-PERF
'I didn't see it'

(31)
kúts'ít'áybah
kúts'í=t'a-yi-bahw
NEG.PRIOR=1.AGT.IRR-PREVB-see
'I haven't seen it yet'

(32)
kínútdibah
kínút=yi-bahw
NEG.PAST.HEARSAY=PREVB.see
'they say he didn't'

(33)
ná:	t'íntsí:báw:nah
	t'ín=tsi-yi-bahw-nah
that	PAST.PARTIAL.NEG-1.AGT-PREVB-see-PERF

'I saw everything except that.'

28.3.5 Subordination

There are thirty-two proclitics that express some kind of subordination. Among them are the the temporal subordinator *nat*= (example (34)) and the spatial subordinator *kúk*= (example (35)). Examples (36) and (37) illustrate the ubiquitous nominalizing subordinator *kak*= in two of its usages: (36) showing a favorite way of referring to an object, and (37) showing a kind of infinitive function, used in this case to express purpose:

(p. 591)

(34)
nattsí:báw:nah
nat=tsi-yi-bahw-nah
TEMP.SUB=1.AGT-PREVB-see-PERF
'after I saw it'

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(35)
kúhtsí:báw:nah
kúk=tsi-yi-bahw-nah
SPAT.SUB-1.AGT-PREVB-see-PERF
'where I saw it'

(36)
kah'iskáy'ah
kak='i-sikah-ya'ah
NOM.SUB=PREVB.ear-BE
'that which is an ear'

(37)

kassah'yat	kakáy'bah
kas=sah'-'i-'a-d	kak=yah'-yi-bahw
OBLIG=2.AGT.IRR-PREVB-PREVB-go	NOM.SUB=2.AGT-PREVB-see
you should go	for you to see him

'you should go to see him'

28.3.6 Deixis

There are three proclitics that have a clearly deictic function. Example (38) shows the translocative proclitic *ták*=, and example (39) shows the past translocative proclitic *náyt*=.

(38)
táhnáy'áw:sa'
ták=náy-'áw-sa'
TRANS=PREVB-sing-IMPFV
'he's singing over there'

(39)
náyttsit'ímmah
náyt=tsi-t-'i-ni-wáhd
PAST.TRANS=1.AGT-BEN-dance-PREVB-bring
'I brought the dance from there'

28.3.7 Indiscriminate reference

There is a set of sixteen proclitics called by Melnar (2004: 98–9) indiscriminative. Example (40) shows the indiscriminate conditional *nawi*= 'if anybody'. Example (41) shows the indiscriminate subordinator *ni'ikáy*= 'whoever, whatever, whenever'.

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(40)
nawisáybáw:’a’
nawi=sa-yi-bahw-’a’
INDIS.COND=3.AGT.IRR-PREVB-see-FUT
‘if anyone will see it’

(41)
ni’ikáynusáw:tah
ni’ikáy=nu-t-ya-watak
INDIS.SUB=BEN-BNFV-PREVB-visit
‘whoever he visits’

28.4 Number and distribution

Whether a pronominal referent is singular, dual, plural, or distributive is not marked within the pronominal prefix itself but with prefixes (and one infix) that are positionally and semantically diverse, presumably having entered the language at different times and from different sources. The following ways of marking number were identified by Melnar (2004: 102–26). (p. 592)

(a)	dual	**wiht-*
(b)	animate plural	**-wa-*
(c)	absolutive singular	**’awi-/’a-*
(d)	absolutive plural	**hani-/na-*

In addition, there are several distributive markers which indicate that a collection of more than one entity is distributed across space, time, or distinct instances (Mithun 1999: 88–91).

Figure 28.7 summarizes the relations between these prefixes and their meanings, and Figure 28.8 shows their varied positions within the verb template. The 0 position is occupied by a base within which animate plural *-wa-* is inserted.

(a)	absolutive distributive	**na-/ni-*
(b)	individuative distributive	**haka-*

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(c)	varietive distributive	**kaki-*

28.4.1 Number markers

The simplest number marker is the dual prefix in position 12 with a form reconstructable as **wiht-*. Its simplicity as well as its position farthest from the base suggest that it is a recent addition to Caddo morphological structure.

(42)
pihchahin'na'
wiht-ka-hi'n-'a'
DU-PREVB-rinse-FUT
'they (du) will rinse it'

As illustrated in example (2), plurality (two or more) is marked by *-wa-*, which intervenes between a preverb and a verb root. Unlike the dual, however, this marker is restricted to animate plurals. Its position inside the base, but also the possibility of a cognate relation to an Iroquoian plural marker of the same shape, suggests that it has enjoyed a long history in the language. Example (43) shows its use in a word without prefixes.

(43)
kawahin'na'
ka-wa-hi'n-'a'
PREVB-ANIM.PL-rinse-FUT
'they (anim.pl) will rinse it'

A simple distinction between singular and plural (more than one) applies only to absolutive referents. An absolutive singular is marked by *'awi-* or *'a-* and an absolutive plural by *hani-* or *na-*. In examples (44) and (45) the intransitive absolutive referents are marked as singular and plural.

(p. 593)

(44)
'áwkahyún:'a'
'awi-kah-yuhn-'a'
ABS.SG-PREVB-help-FUT
'he or she will help'

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(45)
hánkahyún:ʾa'
hani-kah-yuhn-ʾa'
ABS.PL-PREFB-help-FUTt
'they will help'

Because plural includes two or more, it is quite possible for both dual and plural markers to occcur within the same word.

(46)
háhwíswá:yah
hák-wiht-yi-wá-yah
IND-DU-PREVB-ANIM.PL-go
'they (du) went'

While **wiht-* establishes the participants as dual, *-wa-* says that they were animate, so the two together narrow the choice to animate dual.

In example (47), the absolutive singular number expressed by **'awi-* applies to the second person beneficiary included within the prefix *t'u-*, which pairs a 1st person agent with a 2nd person beneficiary.

(47)
t'ut|'ikahyún:'a'[1]
t'u-t-'awi-kah-yuhn-'a'
1.AGT/2.BEN-APP-ABS.SG-PREVB-help-FUT
'I'll help you (sg)'

1

28.4.2 Distributive markers

The simple distributive ***na***- (position 5) is illustrated in example 48.

(48)
tabín:chah
na-bíhn-chah
DIST-carry-INTENT
'he's going to carry several things'

The individuative distributive **haka**- (position 10) emphasizes the independence of the distributed entities, as in example 49. The varietive distributive ***kaki***- (also position 10) emphasizes the distinct nature of the entities, as in example (50).

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(49)
dihkámmáw:dah
yi-haka-ni-wa-wid-ah
DEFOC-INDIVID-PORT-PL.ANIM-come-PERF
'they brought separate things'

(50)
kah'ukakí:'ah
kak='u-kaki-ya'ah
NOM.SUB=3.PAT-VAR-be
'all different kinds'

(p. 594)

28.5 Valence Changing Derivations

The position immediately adjacent to the verb base is occupied by derivational affixes that increase a verb's valence (Melnar 2004: 129–44). They include a causative suffix in position -1 and three prefixes in position 1: portative, motion causative, and benefactive.

28.5.1 The causative suffix

Examples (51) and (52) illustrate the causative suffix, which creates a derived transitive base that adds an agent. Its reconstructed shape is ***-i'ni-**.

(51)
háhbasisihsa'
hák-ba-sisih-sa'
IND-PREVB-boil-IMPV
'it's boiling'

(52)
tsiwsisih'nichah
tsi-ba-sisih-'ni-chah
1.AGT-PREVB-boil-CAUS-INTENT
'I'm going to boil it'

28.5.2 The portative prefix

The portative prefix combines with verbs of motion to indicate that the motion involves carrying something. Its form is **ni**-, as in example (54).

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(53)
tsi:dih'a'
tsi-'a-dih-'a'
1.AGT-PREVB-go-FUT
'I'll go'

(54)
tsín'adih'a'
tsi-ni-'a-dih-'a'
1.AGT-PORT-PREVB-go-FUT
'I'll take it (go carrying it)'

28.5.3 The motion causative prefix

The motion causative prefix (Melnar's 'mild causative') combines with verbs of motion to add an agent causer of the motion. Its form is **yán**-, as in example (56).

(55)
'adih'a'
'a-dih-'a'
PREVB-go-FUT
'he/she/it will go'

(56)
tsíyán'adih'a'
tsi-yán-'a-dih-'a'
1.AGT-MCAUS-PREVB-go-FUT
'I'll send it'

28.5.4 The benefactive prefix

The benefactive prefix (Melnar's 'dative applicative') adds a beneficiary. It occurs in several forms, including -**n**-, -**nt**-, and -**t**-.

(p. 595)

(57)
tí:nikah
ni-yunik-ah
PREVB-take.away-PERF
'he took it away'

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(58)
tunnún:kah
nu-n-ni-yunik-ah
3.BEN-BNFV-PREVB-take.away-PERF
'he took it away from him/he took his away'

28.5.5 Middle voice

Position -3 is occupied by a middle voice marker, whose varied functions resemble those of middle markers in other languages. Melnar 2004: 144–9 discusses a range of possibilities for Caddo. Its shape is usually either -**'u**- or -**u'**-.

(59)
háhtsikadíssa'
hák=tsi-ka-dís-sa' (k=t > ht)
IND-1.AGT-PREVB-wash-IMPFV
'I'm washing it'

(60)
háhtsikadís'usa'
hák=tsi-ka-dís-'u-sa'
IND-1.AGT-PREVB-wash-MID-IMPFV
'I'm washing (myself)'

A true reflexive, as opposed to a middle, uses the reflexive particle **wít**.

(61)
wít tsihnáh'yah
tsi-ki-náh'y-ah
self 1.AGT-PREVB-cut-PERF
'I cut myself (intentionally)'

28.6 Extensions of the Base

The base may be extended through the addition of various elements that appear in a variety of positions within the verb template. Mentioned here are incorporation, posturals, locatives, and manner of motion.

28.6.1 Incorporation

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Incorporation is common but is not productive. It is found especially with noun roots expressing body parts, which may appear in several different constructions. The noun root **ch'ah-* 'eye' provides examples. Within a morphological noun **chah-* can be followed by the simple noun suffix *-'uh*, which signals nothing more than the fact that the word is a noun as in example (62), or it may be followed by the locative noun suffix *-yih* as in example (63).

(62)
ch'ah'uh
ch'ah-'uh
eye-NSF
'eye'

(63)
ch'ahih
ch'ah-yih
eye-LOC
'in the eye'

(p. 596) Another option is a verb in which the noun root has been incorporated with the verb root *-*ya'ah* 'be' and the verb begins with the subordinating nominalizer proclitic **kak-*. When it is incorporated, the noun root may be preceded by an empty 'prenoun' (by analogy to 'preverb'), most often **'i-*. The word in example (68) can be translated literally as 'that which is an eye' (cf. example (36)).

(64)
kah'ich'áy'ah
kak-'i-ch'ah-ya'ah
NMLZ-PRENN-eye-be
'eye', literally 'that which is an eye'

The same verb may optionally add the defocusing patient prefix **'a-* to specify that the eye was possessed by somebody.

(65)
kah'a'ch'áy'ah
kak-'a-'i-ch'ah-ya'ah ('ich' > 'ch')
NMLZ-DEFOC.PAT-PRENN-eye-be
'one's eye', literally 'that which is one's eye'

Possession can be shown by incorporating a noun root with *-*ya'ah* and adding a beneficiary prefix (66), and optionally adding the subordinating nominalizer proclitic (67).

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(66)
kúmmiš'ah
ku-niwis-ya'ah
1.BEN-arm-be
'my arm'

(67)
kakkúmmiš'ah
kak-ku-niwis-ya'ah
NMLZ-1.BEN-arm-be
'my arm', literally 'that which is my arm'

The noun root may be followed by the distributive suffix **na-* (position 5).

(68)
kah'ich'ánna'ah
kak-'i-ch'ah-na-ya'ah (k' > h', ahnay > ánn)
NMLZ-PRENN-eye-DIST-be
'eyes', literally 'those which are eyes'

The meaning 'eye' is retained in other incorporating environments.

(69)
hak'ichahwa:ní:yah
haka-'i-ch'ah-wa'níy-ah
INDV-PRENN-eye-close-PERF
'they closed their eyes'

(70)
hákku'ch'ah'ísh'usa'
hák-ku-'i-ch'ah-'ísh-'u-sa'
IND-1.PAT-PRENN-eye-move-MID-IMPFV
'my eye is twitching'

Sometimes it may show a lexicalized meaning.

(p. 597)

(71)
kah'ich'án:'i'
kak-'i-ch'ah-na-'i'
NMLZ-PRENN-eye-DIST-be.present
'car', literally 'that which has eyes (headlights)'

And sometimes it may function as a classifier for small round objects.

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(72)

ch'ahka'ay' di'ch'ánníwáhdah.
yi-'i-ch'ah-na-ni-wáhd-ah
DEFOC-PRENN-eye-DIST-PORT-come-PERF
bone nettle they brought small round objects
'They brought bone nettles (a small round fruit).'

(73)

kassi' 'ich'ánchá:ni'chah.
'i-ch'ah-na-ká-'ni'-chah
PRENN-eye-DIST-PREVB-buy-INTENT
bead he's going to buy small round objects
'He's going to buy beads.'

In example (74) the noun root *k'ánt-* 'head' functions as a classifier for objects associated in some way with heads.

(74)

kakk'án'áy'ah
kak-k'ánt-na-ya'ah
NMLZ-head-DIST-be
'postage stamps'

28.6.1.1 Compounding of incorporated noun roots

The position of an incorporated noun root may be occupied by a lexicalized compounding of two noun roots.

(75)

kúh'ichahámman'na'
kúk-'i-chah-hámma-na-'a'
where-PRENN-eye-hole-DIST-be.there
'eye sockets'

(76)

kúhnisahnikuh'a'
kúk-nisah-nikuh-'a'
where-house-back-be.there
'the back of the house'

28.6.1.2 Compounding with a nominalized verb root

A verb root may be nominalized with a suffixed *-t-* and then incorporated with another verb as in example (77).

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(p. 598)

(77)
kaki:wist'ahay
kak-yi-'awis-t-'a-háy
NMLZ-DEFOC.AGT-sitting-NOM-PREVB-rise
'to rise from sitting'

28.6.2 Posturals

Prefix position 3 is occupied by three elements that specify whether an absolutive participant is sitting, standing, or lying. Sitting is indicated by ' *'awis*- (79), standing by *'anikis*- (80), and lying by *'ini*- (81).

(78)
hákku:nássa'
hák=ku-'a-nátd-sa'
IND=1.PAT-PREVB-be.cold-IMPFV
'I'm cold'

(79)
hákku:wis'nássa'
hák=ku-'awis-'a-nátd-sa'
IND=1.PAT-SITTING-PREVB-be.cold-IMPFV
'I'm cold sitting'

(80)
hákku:nikis'nássa'
hák=ku-'anikis-'a-nátd-sa'
IND=1.PAT-STANDING-PREVB-be.cold-IMPFV
'I'm cold standing'

(81)
hákku:ni:nássa'
hák=ku-'ini-'a-nátd-sa'
IND=1.PAT-LYING-PREVB-be.cold-IMPFV
'I'm cold lying'

28.6.3 Locatives

Position 4 is occupied by twenty-six elements that specify locations such as *hawat*- 'in liquid' (82) or *kid*- 'on an elevated surface' (83):

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(82)
háhawatti'a'
hák=hawat-'ini-'a'
IND=in.liquid-lying-be
'he's lying in the water'

(83)
tsínchippá'chah
tsi-na-kid-wá'-chah
1.agt-dist-elevated-assemble-intent
'I'm going to set the table'

or directions such as *'awi-* 'up' (84) or *náw-* 'down' (85):

(84)
'áw'á:nah
'awi-'án-ah
up-hold-PERF
'he held it up'

(85)
híttsínáwya'bin'
hít=tsi-náw-ya-'i-bi'n
past=1.AGT-down-PREVB-hit
'I threw him down'

or positions such as *da-* 'hanging' (86) or *dak-* 'sticking out' (87) (Melnar 2004: 160).

(p. 599)

(86)
híttsidaw'nah
hít=tsi-da-bi'n-ah
PAST=1.AGT-HANGING-hit-PERF
'I hit something hanging'

(87)
háh'iskahda:ni'a'
hák='i-sikah-dak-'ini-'a'
IND=PRENN-EAR-STICKING.OUT-LYING-be
'his ears are sticking up'

28.6.4 Manner of motion

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There are six prefixes that express the manner in which something moves. One of them, *yas-* 'walking' occupies position 7 and is shown in (88).

(88)
háhyaswí:ʾasuh
hák=yas-ʾawi-ya-ʾasuh
IND=WALKING-ABS.SG-PREVB-come
'he's walking toward me'

The remaining five manner prefixes span positions 1–5; that is, they occur between positions 0 and 6 and do not co-occur with other entries in positions 1–5 (Melnar 2004: 17). Example (89) shows *dakán-* 'loping'. Example (90) shows *yán-* 'jumping'.

(89)
háhʾáwdakánnaʾsuh
hák='awi-dakán-ya-ʾasuh
IND=ABS.SG-LOPING-PREVB-come
'he's loping this way'

(90)
ʾáwyánʾánkisá:yah
ʾawi-yán-ʾanikis-háy-ah
ABS.SG-JUMPING-STANDING-ACT-perf
'he jumped up'

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28.7 Identifying a Third Person

Polysynthetic languages include within a single word a variety of elements that other languages assign to separate words, relating them syntactically rather than morphologically, and typically distinguishing relations within clauses from relations between clauses. What, then, in a polysynthetic language constitutes a clause? If a clause is traditionally composed of a subject and predicate, what happens if those parts are inseparably integrated within a single word?

Several linguists have noticed that it is impossible to think of a particular event or state without including within it one or more particular entities. T. Givón noted that 'a verb-coded event … cannot be experienced … independently of its noun-coded participants' (Givón 2001: 53). Ronald Langacker pointed out that 'an event is conceptually dependent; it cannot be conceptualized without conceptualizing the participants who interact to constitute it,' whereas 'an object is conceptually autonomous, in the sense that we can conceptualize it independently of its participation in any event' (Langacker 2008: 1004). (p. 600) William Croft observed that 'one cannot conceive of an action such as running without the involvement of a runner, or of a property such as height without something that is tall. On the other hand, one can conceive of a chair or a dog without the involvement of another concept' (Croft 2001: 87). In short, ideas of events and states necessarily include within them ideas of people, objects, or abstractions that initiate, are affected by them, or otherwise participate in them.

Like many polysynthetic languages, Caddo reflects this constraint directly by packaging the event and its participant(s) within a single word. With 1st and 2nd person participants this strategy usually provides sufficient information regarding them: in Caddo their person, number, and perhaps their defocused and/or irrealis status. With 3rd persons, however, and especially with 3rd person agents and patients that are not overtly marked, the identity of a participant is known either from the fact that it is contextually accessible or from its overt expression in a separate word or phrase. It thus becomes of interest to examine how that separate word or phrase is introduced into the discourse. Is it, for example, within the same intonation unit as the verb, and if it is, does it precede or follow the verb? If it is in a separate intonation unit, does that intonation unit come before or after the intonation unit containing the verb?

In Caddo the choice of these strategies reflects subtle differences in the way speakers manage the flow of thought. Examples (86) and (87) have in common the fact that each was uttered at the beginning of a folktale. In each case the story began with a fixed formula (cf. English 'Once upon a time …') establishing the fact that what would follow would belong to a familiar folktale genre. In each case there was then a significant pause before the speaker focused on an event: either playing or stooping over. The polysynthetic verbs are underlined, and the question is how the listener would know the identity of the

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3rd person agent who was not marked in the verb. Who was playing, and who was stooping over?

In (91) it was some ducks who were playing, in (92) it was Wildcat who was stooping over, but the ducks were preposed directly to the verb in the same intonation unit and Wildcat was postposed in a separate intonation unit. The idea of the ducks was expressed with a common noun—it could have been any ducks—whereas *Wadu'* was a proper noun referring to a particular, familiar animal by that name. In fact, in another version of this story he was called *Tsa Wadu'*, or Mr. Wildcat. If there had been a way to incorporate the ducks within the following verb, its greater integration could have been captured in that way. But a proper noun like *Wadu'* can never be incorporated. In (92) *Wadu'* was added as an intonationally separated addition in order to clarify the agent of the stooping. This example illustrates just one of the ways in which the richly varied but nevertheless constrained information within a Caddo verb may be amplified by adding separate words.

(91)

Bah'nah	ahyá'	tiki:,	...k'án'	*háhutáywa:nihsa',*	nihdáhih.
hearsay	in the past	far	ducks	they were playing	at the river

'It is said that long ago, some ducks were playing at the river.'

(92)

Bah'nah	ahya'	tiki:,	...	*háh'áw'isdakánná:sa',*	Wadu'.
hearsay	in the past	far		he was stooping over,	Wildcat

'It is said that long ago, Wildcat was stooping over.'

(p. 601) Appendix A Brief Look at Caddo Phonology

Caddo has three vowels (*a, i, u*). There are three voiceless stops (*p, t, k*), two voiced stops (*b, d*), two ejective stops (*t', k'*), two sibilants (*s, sh*),[2] two affricates (*ts, tsh*), two ejective affricates (*ts', tsh'*), two nasals (*m, n*), two glides (*w, y*), and two laryngeals (*', h*). Vowels may be short (*a*) or long (*a:*), and may have low pitch (unmarked) or high pitch (*á, á:*). Long vowels may also have falling pitch (*à:*). High-pitched syllables ending in a vowel plus a nasal or glide may also be long (*án:, áw:*).

The kinds of changes that relate the reconstructed forms (line 2 of the interlinear representations) to the modern pronunciations (line 1) can be illustrated with three examples already given, the first two containing the dual marker **wiht-* and the third the portative marker *ni-*.

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(42)
pihchahin’na’
wiht-ka-hi’n-’a’
DU-PREVB-rinse-FUT
they (du) will rinse it

1)	initial *w* > *p*	*wihtkahi’n’a’* > *pihtkahi’n’a’*
2)	*tk* > *ch*	*pihtkahi’n’a’* > *pihchahi’n’a’*
3)	*‘n’* > *n’n*	*pihchahi’n’a’* > *pihchahin’na’*

(46)
háhwíswá:yah
hák-wiht-yi-wá-yah
FAC-DU-PREVB-ANIM.PL-go
they (du) went

1)	syllable-final *k* > *h*	*hákwihtyiwáyah* > *háhwihtyiwáyah*
2)	*VhCC* > *VCC*	*háhwihtyiwáyah* > *háhwítyiwáyah*
3)	*ty* > *ts*	*háhwítyiwáyah* > *háhwítsiwáyah*
4)	vowel syncope	*háhwítsiwáyah* > *háhwítswáyah*
5)	syllable-final *ts* > *s*	*háhwítswáyah* > *háhwíswáyah*
6)	penultimate length	*háhwíswáyah* > *háhwíswá:yah*

(49)
dihkámmáw:dah
yi-haka-ni-wa-wid-ah
DEFOC-INDIVID-PORT-PL.ANIM-come-PERF
they brought separate things

(p. 602)

1)	initial *y* > *d*	*yihakaniwawidah* > *dihakaniwawidah*
2)	vowel syncope	*dihakaniwawidah* > *dihkaniwawidah*

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3)	vowel syncope with compensatory accent	*dihkaniwawidah* > *dihkánwáwdah*
4)	*nw* > *mm*	*dihkánwáwdah* > *dihkámmáwdah*
5)	penultimate length	*dihkámmáwdah* > *dihkámmáw:dah*

Further details of these complexly related processes are available in Chafe 1968, 1976, 2005, and Melnar 2004.

Abbreviations

=
clitic boundary
abs
absolutive
agt
agent
and
andative
ben
beneficiary
bnfv
benefactive
defoc
defocusing
dist
distributive
du
dual
erg
ergative
ex
exclusive
fut
future
impv
imperfective
in
inclusive

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ind
indicative
indv
individuative
intent
intentive
intand
intentive andative
loc
locative noun suffix
mcaus
motion causative
mid
middle
nmlz
nominalizer
nsf
simple noun suffix
pat
patient
perf
perfect
pl
plural
prenn
prenoun
prevb
preverb
sg
singular
var
varietive

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(1) The vertical line | indicates that the **t** and **ʻ** are pronounced separately, not as an ejective **tʼ**. Compare **hít|ʼawat** ‘they went’ with **hítʼaːwat** ‘if we went’.

(2) The practical orthography used here is one that is in current use.

Wallace Chafe

He has also been concerned with ways in which language is shaped by thoughts. An early book Meaning and the Structure of Language (1970) emphasized the dominant role of meaning in structuring language. Discourse, Consciousness, and Time (1994) explored the role of conscious thought. More recently he has been concerned with distinguishing thought structure from the unique semantic structures of each language.

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Polysynthesis in Nuuchahnulth, a Wakashan Language

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Abstract and Keywords

Nuuchahnulth is a Southern Wakashan language spoken in British Columbia, Canada. It is a verb-initial head-marking language and is almost exclusively suffixing morphologically. The language exhibits polysynthesis involving holophrasis but does not allow compounding. Instead, it has numerous suffixes with heavy lexical content, traditionally termed ‘lexical suffixes’. This lexical suffixation serves as the central mechanism in Nuuchahnulth for bringing multiple lexically heavy morphemes into a word. The complexity of actual polysynthetic words in this language seems rather limited compared to what is reported to be possible in Eskimo languages. There are cases where similar semantic content can be expressed either synthetically using a polysynthetic word or analytically as separate words. When such an alternation is possible, discourse-pragmatic considerations, particularly discourse referentiality of the object of the predicate, play a major role in the choice of constructions.

Keywords: lexical suffixes, head marking, holophrasis, verb-initial language, British Columbia

29.1 Introduction

THE goal of this chapter is to provide an overview of the characteristics of polysynthetic word formation in Nuuchahnulth with special attention to the structural and semantic complexity allowed in polysynthetic words.

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Nuuchahnulth (formerly known as Nootka) is a Southern Wakashan language spoken on the west coast of Vancouver Island, British Columbia, Canada. The language is severely endangered; the number of fluent speakers is fewer than a hundred.

Nuuchahnulth is a head-marking language: the pronominal marker (only for the subject) is placed on the predicate; no case marking is found on the argument nominals; the possessive marker is placed on the possessed. The basic clause structure is predicate initial. When two lexical arguments are present within a clause, the subject argument tends to be placed before the object argument in sentences elicited out of context. However, alternative orders are also frequently observed in natural discourse.

In stark contrast to the word-internal structure, the structural complexity allowed within a clause is extremely limited in Nuuchahnulth. It is technically possible to associate up to three lexically expressed arguments with a predicate, but such clauses are extremely rare in natural discourse. The majority of clauses in discourse data have no overt arguments or occur with only one. Nuuchahnulth has derivational suffixes that expand the argument structure, but there is no syntactic means of introducing additional arguments in a way similar to prepositional phrases in English.

As is often mentioned in the literature, lexical classification (parts of speech distinction or lexical categories) in Nuuchahnulth is neither well developed nor clear-cut. It is rather difficult to classify words into neat structurally defined classes on the basis of morphosyntactic characteristics. Any lexical stem can be used predicatively regardless of its semantic content. This, however, does not mean that all words behave similarly. In general, words (p. 604) designating entities (noun-like words), those designating actions, events, or states (verb-like words), and those designating properties (adjective-like words) tend to behave differently, both morphologically and syntactically. For example, the range of aspects that words can take varies among the three different groups: verb-like words can take the widest variety of aspects, whereas noun-like and adjective-like words are much more restricted in that regard. Adjective-like words can occur as modifiers in front of noun-like words, whereas noun-like words and verb-like words generally cannot occur in that position. Therefore it is certainly conceivable to identify these groupings as lexical categories. However, the behavioral differences among these groups of words seem to be explicable semantically; it is thus difficult to see what we gain by characterizing them as ‘structural’ categories. In this chapter, I will use the terms ‘nominals’, ‘verbals’, and ‘adjectivals’ to refer to these behavioral-semantic classes without committing myself to the issue of whether they represent structurally definable lexical categories in Nuuchahnulth.

29.2 Basic Word Structure

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In Nuuchahnulth a word can contain only one root: that is, no compounding is allowed. Morphological complexity is attained solely on the basis of affixation of non-root bound morphemes. The basic structure of a word in Nuuchahnulth can be schematized as follows:

(1) stem – lexical suffix – aspect = clitic

29.2.1 Lexical suffixes

Lexical suffixes are derivational morphemes with unusually rich meanings. They are at the heart of polysynthetic word formation in Nuuchahnulth. Lexical suffixes are typologically rather unusual in that their characteristics are more in line with open-class roots: they are numerous (about 400~500 members) and express concrete lexical meanings. They are nonetheless morphologically dependent morphemes that must attach to a stem.

The range of meanings expressed by lexical suffixes is as wide as that of roots (see the following section for detailed discussion on encoding of various lexical meanings and grammatical functions). Lexical suffixes do not have corresponding root forms with one exception *wa:* 'say'— *-wa·*'say, speak'. It is theoretically quite possible that lexical suffixes developed historically from the second elements in compounds, but concrete evidence in support of such a scenario is not evident in the modern structure of the language. Therefore, it seems reasonable to say that the lexical suffix is a very old structural trait that goes back very far in the history of the language.

There are cases where stems derived with a lexical suffix can be further derived through the addition of another lexical suffix. This results in a multi-layered structure within the stem. For detailed discussion of the complex internal structure allowed in the stem, see Sections 29.4.1.2 and 29.4.3.

(p. 605) ## 29.2.2 Aspect suffixes

Lexical morphemes in Nuuchahnulth have inherent aspects. Aspectual suffixes are used to modify these inherent aspects. They are part of the inner layer of word structure (see Section 29.3 for the morphophonological evidence).

29.2.3 Clitics

Clitics are placed at the periphery of word formation both morphologically and phonologically. The inner-layer dependent morphemes (lexical suffixes and aspectual suffixes) and outer-layer dependent morphemes (clitics) differ in terms of the morphophonological changes they can trigger. Although both inner- and outer-layer morphemes include those that can trigger morphophonological changes, the type and degree of morphophonological changes are stronger in lexical and aspectual suffixes than

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in clitics. Specifically, glottalizing suffixes affect all obstruents (stops and fricatives), whereas glottalizing clitics only affect stops (but not fricatives). In addition, suffixes can trigger morphophonological processes that change the stem shape (e.g. reduplication, stem vowel lengthening), but clitics do not trigger processes that modify the form of the stem.

Most clitics are attached to predicative phrases. Those that are attached to nominal phrases include Definite and Possessive clitics.

Predicative clitics include derivational clitics (causative and passive–inverse clitics) and peripheral clitics (tense, mood, person, plural, habitual clitics). When multiple clitics occur within a predicate, they are strung together in a fixed order. The derivational clitics are placed closer to the stem than the peripheral clitics.

The peripheral clitics are functionally comparable to verbal inflectional affixes in other languages, but are mostly optional except for the person and mood clitics. The mood clitics are used relatively frequently, and many of them are formally fused with person clitics. The person clitics are mostly obligatory.

When the main predicate consists of multiple words, clitics are generally placed on the first word of a phrase. This is illustrated in the examples that follow: in (2) peripheral clitics *=ina·* FIRST PERSON PLURAL SUBJECT and *=ʔa:ɬ* HABITUAL are attached to the modifying word *ʔi·ḥʷ* ‘very’ that precedes the modified, semantically central word *qi:* ‘for a long time’. Similarly in (3), *=na·* FIRST PERSON SUBJECT clitic is attached to the modifying word *hi:kʷałmatakckʷi*.

(2)

ʔi:ḥinaʔa:ɬ	qi:	hiɬ	ʕaqwitis.
ʔi·ḥʷ=ina·=ʔa:ɬ	qi:	hiɬ	ʕaqwitis
very=1pl=HAB	for.long	there	Aqwitis

‘And we stayed in Aqwitis (place name) for a long time.’ [CLLS.030]

(3)

hi:kʷałmatakckʷina	ńuʔituk	hupaɬ	hiɬ.
hi:kʷał-matak-ckʷi·=na·	ńup-ʔit=uk	hupaɬ	hiɬ
nearly-probably-did=1pl	one-times=POSS	moon	there

‘We probably did [stay with her] for about one month.’ [CLLS.239]

(p. 606) It is not clear that this flexibility in clitic attachment patterns is a reflection of a property of the clitics or one of a phrase in Nuuchahnulth.

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29.3 Roots and Lexical Suffixes: Encoding of Semantic Categories

In Nuuchahnulth, lexical meanings are encoded not only in roots but also in lexical suffixes. This raises a question about kinds of meanings that are expressed in roots versus in lexical suffixes. The encoding pattern, that is, where different types of meaning are encoded, is summarized in (4).

(4)

Semantic encoding pattern

semantic categories		examples
Action	roots	ʕač- 'grab', ʕiḥ- 'cry', c̓u- 'wash', čat- 'push', qi- 'move away'
	lexical suffixes	-{č}i:ɬ 'make', -'i:ḥ 'gather', -i:p 'obtain'
State	roots	c̓a:ḥ- 'tough', čam- 'good', ḥamat 'visible, ḥan̓aḥ 'naked'
	lexical suffixes	-ḥtin 'made of', -ʔa·ta 'in need of', -čḥi 'married to'
Entity	roots	ʕaɬu: 'beaver', čims 'bear', hap- 'hair'
	lexical suffixes	-uɬ 'place for', -y̓akʷ 'instrument for', -tu·p 'thing, species', -maʕuk 'maker of'
Location	lexical suffixes	-n̓ukʷ 'at hand', -'is 'on the beach', -'aḥs 'in a container', -at 'move downstream', -sti·s 'move into the interior'
Manner	roots	c̓i:k- 'act fast', kaps- 'do suddenly', χu:ɬ- 'do slowly', ʕayaq- 'make extra effort in doing'
Setting	roots	ʔatḥ- 'night', kuʔaɬ 'morning', hu:ʔak 'early'
Quantity	roots	ʔaya 'many', ʔu:š 'some'
Degree	roots	ḥa- 'completely', ʔi·ḥʷ- 'greatly'
	lexical suffixes	-aq 'very', -ɬa·na 'slightly', -sa 'just, precisely'
Chronology	roots	ʔaʔim 'at first', huʔa- 'again', ʔiq- 'still'
Negation	roots	wik 'no, none'

There is a significant overlap between roots and lexical suffixes with respect to the encoding of actions and states. Lexical suffixes tend to denote routinized, customary actions and states. Entities are also expressed in both roots and suffixes, but those expressed by roots are more specific, while those expressed by suffixes are abstract, general classes of things.

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(p. 607) There is an interesting skewing with respect to the encoding of locative meanings. In Nuuchahnulth there are no roots that denote locations per se. Locative notions are expressed exclusively by lexical suffixes. The expression of location in discourse is typically found in predicates. In referring to a location itself, it is necessary to attach locative lexical suffixes to a semantically empty root, such as *ʔap* or *hił*.

(5)
hi:ỷapuła
hił-'apuła
there-underneath[L]
'underneath'

(6)
ʔa?apyimłʔat?i.
ʔap-yimł
LOC-on.the.shoulder [R]
'shoulder'

(7)
ʔapqu:ʔa
ʔap-qu:-'a·
LOC-at.a.point-on.the.rock
'rocky point'

29.4 Inside Nuuchahnulth Polysynthetic Words

In this section we will examine the internal structure of Nuuchahnulth polysynthetic words with respect to the range of structural complexity and semantic relations that can be contained in the word complex. As mentioned, polysynthesis in Nuuchahnulth is based exclusively on lexical suffixation; there is no other means of introducing lexical complexity into a word (e.g. compounding). Thus, the internal structure of Nuuchahnulth words is effectively determined by the range of combination of lexical suffixes allowable within a word. Polysynthetic word formation is more commonly found in verbal words than in nominal words.

29.4.1 Types of lexical suffixes and internal structure

Lexical suffixes can be classified into two major types, which have been called 'governing suffixes' and 'restrictive suffixes' in the traditional literature (Sapir and Swadesh 1939; Swadesh 1933, 1938, 1948; Rose 1981; Nakayama 2001; Davidson 2002). The central feature that distinguishes the two types has to do with whether the lexical suffix serves as

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the semantic head in the resulting complex word. The differences between the types are summarized in the following diagram. (p. 608)

	Governing lexical suffixes	**Restrictive lexical suffixes**
a. semantic head of the resulting word	lexical suffix	stem
b. internal structure	hierarchical	flat
c. meanings expressed by the suffixes	transitive action, state entity	intransitive action, state motion/direction location degree

29.4.1.1 Semantic headedness

Governing suffixes assume a central role in determining the general semantic characteristics of the resulting stem. In the examples that follow, lexical suffixes *-ʼi:ḥ* 'collecting' and *-yi:q* 'travel in' serve as the semantic heads of the resulting complex predicates.

(8)
čačа:ʔi:ḥ
čа-**ʼi:ḥ**
water-collecting[R]
'collecting water' [CLLS.084]

(9)
čapyi:q.
čap-**yi:q**
canoe-travel.in
'He traveled in a canoe.' [Wolf.035]

Restrictive suffixes add a notion that modifies or amplifies the underlying theme as exemplified in *-sti·s* 'move into the interior' and *-sumʓaqƛi* 'on the wall' in the following examples:

(10)
taksti:s
tak-**sti·s**
go-move.into.the.interior
'go into the interior' [2005-As.039]

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(11)
kʷi:kʷitxsumʔaqƛapʔaƛqu: ḥu: newspaper.
kʷitx-sumʔaqƛi=ʾap=ʾaƛ=qu: ḥu:
glued.on-on.the.wall[RL]=CAUS=EVENT=COND.3 over.there
'She would line the wall with newspaper.' [CLLS.041]

29.4.1.2 Internal structure

The two types of lexical suffixes affect the internal structures of the resulting words in different ways, reflecting the different semantic roles they play within the word. Governing (p. 609) suffixes dominate a layer of word-formation structure. When multiple governing suffixes occur within a word, each suffix adds an additional structural layer. In (12), the suffix *-{c}snaʕa:ɬ* 'playing with' is added to the root *čʔa* 'water' to create a complex word that is headed by the suffix: *čʔa:csnaʕa:ɬ* 'playing with water'. To this, another governing suffix *-kʷačiƛ* 'because of …' is added to produce a multi-layered structure: *-kʷačiƛ* serves the head of the whole word with the complex stem *čʔa:csnaʕa:ɬ* within its scope.

(12)
čʔa:csnaʕa:ɬkʷačiƛ
čʔa-{c}snaʕa:ɬ-kʷačiƛ
water-playing.with[L]-because.of
'because he was playing with water' [2002-07.003]

Similarly, in (13) the governing suffix *-maḥsa* 'desiring to' is added to the stem *wi:waːkʷa* 'being naughty' to create a complex structure with itself as the head, *wi:waːkʷamaḥsa* 'wanting to be naughty'. To this, another governing suffix *-naˑk* 'having …; there is someone who is …' is added to produce a multi-layered structure with the governing suffix *-naˑk* serving as the head of the whole word, and containing the complex stem *wi:waːkʷamaḥsa* under its scope.

(13)
wi:waːkʷamaḥsanakʔaƛqun
wi:waːkʷ-(y)a--maḥsa-naˑk=ʾaƛ=qʷin
naughty-CONT-desiring.to-having=EVENT=COND.1pl
'when one of us wanted to be naughty' [CLLS.180]

Example (14) illustrates the layering of a verbal governing suffix and a nominal governing suffix. The verbal suffix *-iːɬ* 'make' is added to the root *pikaʔuːq* 'basket' to create the stem *pikaʔuːqiːɬ* 'make a basket'. The nominal suffix *-ẏakʷ* 'instrument for' is then added to the complex stem to head the multilayered structure.

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(14)
pikaʔu:qi:ɬy̓ak
pikaʔu:q-i:ɬ-y̓akʷ
basket-make-instrument.for
'tools for making baskets' [Afterbirth.003)

The following set of examples illustrates an alternation of the semantic scope in response to alternative ordering of two governing lexical suffixes. In (15) the governing suffix *-ckʷi·* 'remains of' follows another governing suffix *-'is* 'eat' and consequently has *-'is* within its semantic scope. In (16), in contrast, the two governing suffixes are positioned in the opposite order and have an opposite scope relationship, that is, *-'is* contains *-ckʷi·* in its scope.

(15)
ƛuy̓i:sckʷi
ƛus-'is-ckʷi·
herring-eat-remains.of
'left-overs from eating herring' [Swadesh 1939: 86 (Tseshaht dialect)]

(p. 610)

(16)
ƛusckʷiʕis
ƛus-ckʷiq-'is
herring-remains.of-eat
'eating left-overs of herring' [Swadesh 1939: 86 (Tseshaht dialect)]

Restrictive suffixes, by contrast, do not dominate the word-formation layer. They are simply integrated into the existing layer as supporting elements. When multiple restrictive suffixes occur within a word, they are combined into a flat structure with a fixed order. Thus, in (17), three suffixes *-swi·q* 'go through', *-'aqƛ* 'inside', and *-n̓uk* 'in the hand' are added to the root *ʕupq* 'flow through', but the root remains the semantic head of the resulting complex word. Furthermore, the suffixes are combined to express the complex locative notion 'through the fingers (literally, 'through the inner side of the hand')', rather than forming a layered scope relationship.

(17)
ʕupqswi:ʕaqƛn̓uk.
ʕupq-swi·q-'aqƛ-n̓uk
flow.through-go.through-inside-in.hand
'[Sand] runs through the fingers' [DeerJigging.086]

The word shown in (18) is a similar example.

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(18)
hi:łtqya:p̓ał
hił-tqya·-a·p̓ał
there-behind[L]-on.the.back
'there on the back' [2005-Ap.028]

The following is a further illustration with multiple governing and restrictive suffixes combined in a word. In (19a) the governing suffix *-y̓ak*^{w} 'instrument for …' is added to the root *kuṯ̣* 'drumming' to create a complex word that is headed by the suffix: *kuṯ̣y̓ak* 'drum (drumming instrument)'. When the restrictive suffix *-c̓u·* 'in a container' is added, as in (19b), the stem *kuṯ̣y̓ak* remains the semantic head[1] with the suffix providing supplementary meaning. In (19c), the additional governing suffix *-y̓ak*^{w} 'instrument for…' takes over as head of the resulting word.

(19)
a. kuṯ̣y̓ak
kuṯ̣-y̓ak^{w}
drumming-instrument.for
'drum (lit. drumming instrument); there is a drum; it is a drum'

(p. 611)

b. kuṯ̣y̓akc̓u
kuṯ̣-y̓ak^{w}-c̓u·
drumming-instrument.for-in.a.container
'there is a drum inside (a container)' [2005-N.026]

c. kuṯ̣y̓akc̓uy̓ak
kuṯ̣-y̓ak^{w}-c̓u·-y̓ak^{w}
drumming-instrument.for-in.a.container-instrument.for
'drum bag (lit. instrument in which there is a drum)' [2005-N.027]

29.4.2 Semantic relations expressed within a polysynthetic word

It is true that the polysynthetic word formation in Nuuchahnulth makes it possible to pack unusually complex meanings into a word. However, the range of possibilities is nonetheless constrained. This section surveys the types of semantic relationships that can be expressed within a polysynthetic word in Nuuchahnulth.

29.4.2.1. Verbal polysynthetic words

29.4.2.1.1 Verbal words headed by verbal governing suffixes

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In polysynthetic words headed by a verbal governing suffix, the suffix denotes some action, event, or state, and the stem serves as a modifier or a complement.

a) Nominal stem + Verbal governing suffix

When a verbal governing suffix is combined with a nominal stem to form a verbal expression, the suffix serves semantically as a transitive predicate and the nominal stem as its object argument. The specific semantic role of the nominal stem in relation to the verbal governing suffix depends on the semantic characteristics of the suffix. Among polysynthetic verbal words of this type, those with a stem in a patient role in relation to the governing suffix seem to be most common.

Stem = Patient
ḥaẏumqi:ɬ
(20) ḥaẏumq-{č}i:ɬ
bailer-make[L]
'making a bailer' [2005-II.056]

Stem = Theme
ha?um?ataniš
(21) ha?um-?a·ta=ni·š
food-lacking=IND.1pl
'We are in need of food' [2005-As.047]

Stem = Beneficiary
?u:?atups
(22) ?u-'atup=s
it-do.for[L]=1sg
'I'm doing it for him.' [Muwaachmit.031]

(p. 612)

Stem = Cause
yaqẏi:ḥa?itq
(23) yaq^{w}-ẏi·ḥa=?i·tq
one.who-on.account.of=REL.3
'on account of whom' [Kingfisher.209]

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(24)
Stem = Goal
ʔapcačiƛ̓.
ʔap-ca-čiƛ̓
proper-go.to-MOM
'He took the right route; He got to the right place.' [91-07-05.046b]

Stem = Instrument
sa:čkḥẇaɬ
(25) sačk-ḥẇaɬ
sharp-using[L]
'using a sharp one' [2005-C.079]

It appears that verbal governing suffixes cannot be combined with a nominal stem that serves as a subject argument. Thus, in (25), the stem *sačk* 'sharp (one)' can be interpreted only as the object argument, that is, 'using a sharp one', rather than as the subject argument, that is, 'a sharp one is using'.

b) Verbal stem + Verbal governing suffix

When a verbal governing suffix is combined with a verbal stem, the verbal stem serves as a semantic modifier or complement to the governing suffix. In (26) to (28), the verbal stem describes a manner in which the action denoted by the verbal governing suffix is performed.

Stem = Manner of action

c̓u:skʷay̓i:ḥʔin
(26) c̓us-kʷay̓i:ḥ='in
dig-persuing[L]=IMP.1pl>3
'Let's dig after her.' [Pulled-Under.021]

n̓a:č̓ałuk
(27) n̓ač-'ałuk
look-putting.mind.on[L]
'watch' [CAROLINE.087]

(p. 613)

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(28)
yušusi:k
yušu-si:k
hasten-complete
'finish making … quickly' [91-07-05.032]

Examples (29) to (31) illustrate cases where an action expressed by the stem complements the meaning of a state or action expressed by the governing suffix.

Stem = Verbal complement

(29)
t̓i:ʕaƛ̓iɬ
t̓i-ʕaƛ̓-'iɬ
fall-sound.like-in.the.house
'sounding like something falling in the house' [93-07-08.032]

(30)
mamuʕaqƛ̓ukʷa:ʔick
mamu-ʕaqƛ̓=uk-'a:=ʔick
working-gifted.in=POSS-so.as.to=IND.2sg
'so that yours (=your child) will be a good worker (=basket-maker)' [2005-A.014]

(31)
ha:ɬaʕi:ḥ
hałaˑq-'i:ḥ
pay-trying.to.get[L]
'(he did that) trying to get paid' [2005-II.035]

29.4.2.1.2 Verbal words headed by verbal stems

In a verbal polysynthetic word composed of a verbal stem and restrictive suffixes, the stem serves as the semantic head denoting an action, state, or event, while the restrictive suffixes modify the meaning of the stem, typically supplementing information about a manner, a location, or a degree. There are no restrictive suffixes that denote entities, and consequently there are no complex verbs consisting of a verbal stem (serving as the head) and a suffix denoting a nominal complement of the verbal stem.

a) Verbal stem + Verbal restrictive lexical suffix

When a verbal restrictive lexical suffix is attached to a verbal stem, the suffix typically specifies a manner in which the action or event takes place.

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(32)
łaqaqtinup — łiḥiyasumʔakʔi.
łaqʷ-aqti-nup — łiḥiyasum=ʔa·k=ʔi·
throw.cloth-covering-MOMCAUS — cape=POSS=DEF
'She threw her cape over it.' [DogChildren.016]

(33)
k̓aḥkʷačiƛ̓ — c̓apac
k̓aḥ-kʷa-či(ƛ̓) — c̓apac
split-apart-MOM — canoe
'They broke canoes in half.' [Kingfisher.166]

(p. 614)

(34)
tu:kʷi:čsan̓ap̓aƛ̓.
tu:k-**i·č**-san̓ap=ʼaƛ̓
cover.with.sand-covering-on.the.beach.MOMCAUS=EVENT
'He covered it with sand on the beach.' [FoodThief.017]

(35)
tuʔałaʔap
tu-ʔałaʼap
scatter-attached.on=CAUS
'sprinkle them on' [Muwaachmit.022]

b) Verbal stem + Adverbial restrictive lexical suffix (degree)

There are restrictive suffixes that express adverb-like meanings such as degrees. These suffixes specify a degree or intensity of an action or state expressed by the stem.

(36)
ʔi:ẇaqstuƛ̓aʕaƛ̓
ʔi·ḥʷ-ʼaqstu(ƛ̓)-**aq**=ʼaƛ̓
greatly-worth.MOM-very=EVENT
'It was very expensive.' [CLLS.242]

(37)
ẅicšiƛ̓t̓anaʔi
ẅic-ši(ƛ̓)-**t̓a·na**=ʼi·
put.head.back-MOM-slightly=IMP
'Put the head further back.' [CryingGame.026]

c) Verbal stem + Locative restrictive lexical suffix

When locative restrictive lexical suffixes are attached to a verbal stem, the suffixes add location-related notions.

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Path-orientation (motion/direction)

(38)
takatis
tak-at-‘is
go-move.downstream-on.the.beach
‘go down the stream’ [2005-As.038]

(39)
taksti:s
tak-sti·s
go-move.into.the.interior
‘go inland’ [2005-As.039]

Location

(40)
tata:sn̓ukʷiƛ̓
tas-n̓ukʷ-iƛ̓
rub.on-at.hand[RL]-MOM
‘paste on the hand’ [2005-Kw.047]

(p. 615)

(41)
ʔinkʷaḥs
ʔinkʷ-’aḥs
fire-in.a.container
‘light bulb (lit. there is fire inside; it has fire inside)’ [2002-07.026]

The following examples illustrate cases where multiple locative restrictive suffixes are combined:

(42)
n̓ačqu:ʔa
n̓ač-qu:-’a·
look-at.a.point-on.the.rock
‘looking at the point; looking (something) at the point’ [2005-A.004]

(43)
t̓iqsči:ɬ,
t̓iqʷ-sči-‘iɬ
sit.down-along.with-in.the.house
‘sitting beside (him) in the house’ [CLLS.299]

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(44)
kuthy̓akʷaqƛn̓uk
kuth-y̓akʷ-ʾaqƛ-n̓uk
drum-instrument-inside-in.hand
‘drum in the hand’ [CLLS.273]

29.4.2.2 Nominal polysynthetic words

29.4.2.2.1 Nominal words headed by verbal governing suffix

In polysynthetic words headed by a nominal governing suffix, the governing suffix denotes a class or category of things, and the stem serves as a modifier or a complement.

a) Nominal stem + Nominal governing lexical suffix

When combined with nominal governing lexical suffixes, nominal stems complement the suffix by adding specifics about the general class denoted by the suffix.

(45)
č̓a:pacmaʕuk?i,
č̓apac-maʕuk=?i·
canoe-maker.of=DEF
‘the canoe maker’ [Canoe.015]

(46)
qʷayač̓i:kštaqumł.
qʷayač̓i:k-štaqumł
wolf-groups
‘wolf clan’ [DeerJigging.007]

(p. 616) b) Verbal stem + Nominal governing lexical suffix

When combined with verbal governing lexical suffixes, verbal stems modify the general class expressed by the suffix.

(47)
haṫ̓inquł
haṫ̓inq-uł
bathing-place.of
‘bathing place’ [JA-GL2.068]

(48)
ƛi:sy̓ak
ƛi:s-y̓akʷ
write-device.for
‘pen (writing instrument)’ [2005-C.080]

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29.4.2.2.2 Nominal words headed by nominal stems

A nominal complex word consisting of a nominal stem and a restrictive suffix expresses the existence of an entity with the suffix denoting a state or a location modifying the core predicate.

a) Nominal stem + Verbal restrictive lexical suffix

When verbal restrictive lexical suffixes are attached to nominal stems, the suffixes modify the existential predication expressed by the stem.

(49)
su:ḥpał
su:ḥʷ-pał
salmon-populated
'There are salmon around; Salmon is in season' [2005-P.002]

b) Nominal stem + Locative restrictive lexical suffix

When verbal locative restrictive suffixes are attached to nominal stems, the suffixes specify the location of the entity denoted by the stem.

(50)
čiːḥatiyasquːs
čiːḥat-iyas=quːs
arrow-on.the.shoulder=COND.1sg
'if I have an arrow on the shoulder' [Mink.121]

(51)
kuthy̓akc̓u
kuthy̓ak-c̓u·
drum-in.a.container
'there is a drum inside; it (e.g. a bag) has a drum inside' [2005-N.026]

29.4.3 Constraints on polysynthetic complexity

Lexical suffixation greatly extends the power of Nuuchahnulth morphology by allowing for the formation of semantically and structurally complex words consisting of elements with (p. 617) rich lexical content. The word-internal structure can be made progressively more complex by increasing the number of lexical suffixes contained in the word. Compared with Eskimoan languages, Nuuchahnulth polysynthetic words tend to contain fewer lexical morphemes. This may have to do with the fact that Nuuchahnulth lexical suffixes have much more concrete meanings than their Eskimoan equivalents.

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It is rather difficult to determine the definite upper limit of the number of lexical suffixes allowed within a single word: the number and combination seem to be constrained more by semantic compatibilities than by some predetermined structural limitation. In natural discourse data the degree of word-internal complexity is relatively limited. Within the dataset I examined, which consists largely of natural discourse data (predominantly narratives), single-layered polysynthetic words have the structure schematized in (53).

(52) Root + (up to 1 GS) + (up to 2 Verbal RS) + (up to 2 Locative RS)
*GS=governing lexical suffix; RS=restrictive lexical suffix

As for the layered structure that can be introduced by multiple governing lexical suffixes, it is very rare to find more than three layers (three governing lexical suffixes) in a word. Again, the expandability of the internal structure is affected significantly by the semantic compatibility and the inventory of lexical suffixes. For example, verbal governing suffixes that can be combined with a verbal stem are limited in number: e.g. *-maḥsa* 'wanting to …', *-či·p* 'doing for …'. This fact undoubtedly restricts the possibility of expanding verbal stems through addition of verbal governing suffixes.

(53)
ƫi:ʔa:qstiɬmaḥsapniš su:tiɬ.
ƫiqʷ-**'a·qsta-'iɬ**-maḥsa='ap=ni·š sut-'{č}iɬ
sit.down-among[L]-on.the.floor-desiring.to=CAUS=IND.1pl you-doing.to[L]
root Loc-RS Loc-RS V-GS :2 layers
'We want you to sit among us.' [DogChief.015]

ʔa:ƙuɬšmaḥsana
ʔaƙuɬ-š-maḥsa=na·
(54) borrow-asking.for[L]-desiring.to=1pl
root V-GS V-GS :2 layers
'we want to borrow…' [Deer&Wolf.071]

ma:ḥƚiqtaqčip
maḥƚiq-taq-či·p
(55) house-working.on[L]-doing.for
root V-GS V-GS :2 layers
'fixing (working on) the house for her' [2005-II.037]

In addition to the aforementioned constraint on the number of morphemes, a word of caution is in order in regard to combinatorial possibilities in polysynthetic word formation. It is certain that the large inventory of lexical suffixes allows a wide variety of (p. 618) lexical combination within words. However, the variety of polysynthetic combinations that is observed in natural discourse is much smaller than the maximal

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combinatorial potential. In actual language use, a large portion of polysynthetic expressions are formulaic to varying degrees. This, of course, does not mean that Nuuchahnulth polysynthetic word formation has lost productive power, but that its power should not be overestimated.

29.4.4 Collocational flexibility of lexical suffixes

Lexical suffixes generally have a rich and concrete semantic content, and this necessarily makes lexical suffixation a very selective derivational process. Interestingly, however, there is also a degree of flexibility in combinations of stems and lexical suffixes. Examples (56) to (58) illustrate the combinatorial range of a verbal governing lexical suffix,

-ayi· 'give'. This suffix can be combined with both nominal and verbal stems. When combined with a nominal stem, the suffix *-ayi·* calls for the patient argument of the action of giving. With a verbal stem, on the other hand, the suffix combines with an action stem and specifies the manner of performing the action of giving.

nominal stem (object)
su:ḥayis John.
(56) su:ḥ-ayi·=s
salmon-give=1sg
'I gave salmon to John.' [2005-II.068]

verbal stem (manner)
ɬaqʷayat
(57) ɬaqʷ-ayi·='at
throw.soft.yielding.mass-give=PASS
'they tossed it (dog hide) to him' [Dog.044]

verbal stem (manner)
ḥaʔuyi
(58) ḥaʔu:-ayi·
exchange-give
'exchange'

Examples (59) to (62) offer an additional illustration using a different lexical suffix *-na·k* 'having …'. This suffix can also be combined with nominal and verbal stems expressing different semantic relations. When combined with a nominal stem, the complex word expresses ownership, while the stem expressing the target of ownership is selected. With

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a verbal stem, however, the lexical suffix is interpreted to mean something like ‘there is someone who …’ and the stem is understood to express the action performed.

(p. 619)

nominal stem (object)
ʕiłčna:k
(59) ʕiłč-na·k
dog-having
‘have a dog’ [DogChief.001]

nominal stem (object)
mamumsnakšiƛ̓.
(60) mamuums-na·k-ši(ƛ̓)
job-having-MOM
‘He got a job.’ [CLLS.252]

(61)
verbal stem (higher predicate)
cika:qšiƛ̓nak
cika:q-šiƛ̓-na·k
chase.out-MOM-having
‘They have someone chase (him) out; One of them chased (him) out.’ [DogChief.004]

(62)
verbal stem
ciqšiƛ̓nakʔaɬ,
ciq-ši(ƛ̓)-na·k=ʔa·ɬ
speak-MOM-having=PL
‘They had someone speak up; One of them spoke up.’ [Crab.003]

Based on my findings thus far, it is difficult to determine whether this collocational flexibility is a characteristic of lexical combination or one of polysynthetic word formation in Nuuchahnulth.

29.5 How Polysynthesis Interacts with Syntax

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In Nuuchahnulth, thanks to the powerful polysynthetic morphology, it is possible to encode in a single word a complex meaning that can only be expressed as a clause or combined clauses in other languages. This does not necessarily mean that such a meaning is always expressed morphologically with a complex word: a similar meaning can be expressed differently, either morphologically with a polysynthetic word or syntactically with a more analytical construction. Where we see a systematic alternation between morphological and syntactic expression is in the encoding of an object argument in a transitive verbal predication, for example, the notion of *food* in the following set of examples. In (63) *haʔum* 'food' is expressed as a separate word from the predicate, whereas in (64) the same notion is expressed as part of the predicate.

(p. 620)

(63)
ʔuʔa:taniš haʔum
ʔu-ʔa·ta=ni·š haʔum
it-lacking=IND.1pl food
'We are in need of food.' [2005-As.046]

(64)
haʔumʔataniš
haʔum-ʔa·ta=ni·š
food-lacking=IND.1pl
'We are in need of food.' [2005-As.047]

The choice of encoding strategy is determined primarily by the discourse-pragmatic characteristics of the nominal stem. This is illustrated in example (65), which was produced in a narrative. Here the same predication of *drinking tea* is expressed first with the verbal predicate of *drinking* and the object argument *tea* as separate words (in the first line) and second with a single complex word *ti:ʔi:c* 'drinking tea' (in the second line). In this part of the story the main character was served tea, but not knowing what tea was, he thought that he was served tobacco mixed in water. On this the speaker comments as follows:

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(65)

ti:	ʔuʔi:c̓ap̓at̓c̓aʕaš	q^{w}a:.
ti:	ʔu-’i·c=’ap=’at=c̓a·ʕaš	q^{w}a:
tea	it-consume=CAUS=PASS=INFER.3	so
tea	he.was.probably.served	so

ti:ʔi:c.
ti:-’i·c
tea-consume
having.tea
‘It was probably tea that he was served. He had tea.’ [Kingfisher.212]

At the first mention of *tea*, that is, when *tea* is new information, it is expressed as a separate word (in the first line). On the other hand, the second mention of *tea*, in which *tea* is given information, it is expressed as part of a complex word (in the second line).

In the following set of examples, we again see the alternation between the syntactic (multi-word) expression and the morphological (complex-word) expression. The two utterances occur in the same narrative and express the same logical meaning, that is, *making a knife*. However, they occur in different discourse environments. The multi-word variety (66) occurs in the context where the *knife* was mentioned for the first time; the identity of the product is highlighted. The complex-word variety, *č̓i:maqi:ɬ* in (67), where the notion of *knife* is expressed as part of a word, occurs in a backgrounded predicate. Here, the knife is already given information, and the action of knife-making is mentioned as a generic activity to characterize the foregrounded action.

(p. 621)

	ʔu:k^{w}i:ɬʔaqƛ̓ʔick	č̓i:ma
	ʔu-{č}i:ɬ=’aqƛ̓=ʔick	č̓i:ma
(66)	it-make=FUT=IND.2sg	knife
	you.will.make.it	knife

‘You will make some knives.’ [Deer&Wolf.028]

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(67)

kʷi:ƛkʷi:yaqiɬʔaƛwaʔiš	ƛ̓učumckʷi
kʷi-yaq-‘iɬ=’aƛ=wa·ʔi·š	ƛ̓učum-ckʷi·
sharpening-REP[R]-on.the.floor=EVENT=QUOT.3	blue.mussel-remains.of
he.kept.sharpening.on.the.floor	mussel.shell

č̓i:maqi:ɬ
č̓i:maq-{č}i:ɬ
knife-make[L]
making.a.knife
‘He sat sharpening some mussel shells making knives.’ [DeerJigging.028]

In many widely studied languages, including English, the domains of morphology and syntax seem to be well separated both structurally and functionally. However, in Nuuchahnulth, as in other polysynthetic languages, there is significant overlap between what can be expressed morphologically and what must be expressed syntactically. Interestingly, these structural characteristics allow Nuuchahnulth speakers to utilize the difference in encoding styles (i.e. synthetic vs. analytical) for differentiation in discourse-pragmatic organization.

Languages like Nuuchahnulth provide a good reminder that languages can vary at a fundamental level of organization, and also that each language is good at maximizing the structural resources available.

Abbreviations and Symbols

1SG
First person singular
1PL
First person plural
2SG
Causative
COND
Conditional
CONT
Continuative aspect
DEF
Definite
EVENT
Event delimiter
FUT

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Future
HAB
Habitual
IMP
Imperative
IND
Indicative mood
INFER
Inferential mood
LOC
Semantically empty locative root
MOM
Momentaneous aspect
MOMCAUS
Momentaneous Cauative
PASS
Passive-inverse
PL
Plural
POSS
Possessive
REL
Relative mood
REP
Repetitive
QUOT
Quotative mood

(p. 622) Symbols for Morphophonological Processes Induced by Suffixes

[L]
lengthening of stem vowel
[R]
reduplication of stem vowel
[RL]
lengthening & reduplication
’
glottalization
‘

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lenition

Notes:

(1) Note that a nominal stem can be used as a predicate without undergoing any formal derivation. Thus, the nominal stem *kutḥy̓ak* in (19b) can be considered the head of the predication expressed by the whole word.

Toshihide Nakayama

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The Polysynthetic Nature of Salish

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Abstract and Keywords

The Salishan languages, spoken (or formally spoken) on the Northwest Coast of North America, are usually characterized as polysynthetic. Salish certainly shows many of the usual characteristics that cluster together in polysynthetic languages: it is head marking and agglutinating in word formation; and predicate morphology is rich and includes markers of aspect/tense, transitivity and valency alternating suffixes (including applicatives), pronominals, lexical affixes, and still others. However, the number of morphemes within a (morphological) word does not get as high as, for example, the Eskimoan languages. Nevertheless, it is argued that the following three traits observed justify characterizing Salish as polysynthetic: first, word forms are flexible; second, speakers can manipulate what goes into a predicate; and third, non-core arguments, that is, peripheral concepts, can be expressed in the predicate by means of lexical suffixes and applicatives.

Keywords: Salish, lexical affixes, applicative, head marking, valency alternating suffixes

30.1 Introduction

THE Salish language family is comprised of twenty-three languages that are spoken (or were formally spoken) in the Northwest region of North America. See Table 30.1.[1] Typologically, the Salishan languages are characterized as “polysynthetic”.

Although the definition of polysynthesis and its nature are elusive (e.g. Fortescue 1994, 2007; Evans and Sasse 2002; Mithun 2009), Fortescue (1994: 2,601) states that “… in practice linguists are rarely in doubt as to whether a particular language should be called

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'polysynthetic.' " In this context, it would be interesting to see what linguists, particularly those who have worked extensively on Salish, have said. The following are some passages by prominent Salishanists (the emphases are all mine–HW):

> Salishan languages are *highly polysynthetic*, employing numerous suffixes and reduplication patterns; prefixes and infixes are less numerous.
>
> (Thompson and Kinkade 1990: 33)
>
> A single word can thus incorporate a large number of semantically discrete ideas. […] This complex of factors justifies the label *polysynthetic*.
>
> (Thompson 1979: 700)
>
> Salish languages are well known for their *polysynthetic* properties.
>
> (Kiyosawa and Gerdts 2010: 1)
>
> Like all Salishan languages, Coeur d'Alene is *polysynthetic*, having complex words composed of isolable formatives, including some affixes with lexical content.
>
> (Doak 1997:1)
>
> Nxaʔamxcin [Columbian–HW] falls under the traditional label '*polysynthetic*' as words tend to be long and morphologically complex.
>
> (Willett 2003: 5)

(p. 624)

Table 30.1 Salish language family

Branch	Language
Bella Coola	Bella Coola
Central Salish	Sliammon/Comox, Sechelt, Pentlatch, Squamish, Halkomelem, Nooksack, Northern Straits, Klallam, Lushootseed, Twana
Tillamook	Tillamook
Tsamosan	Upper Chehalis, Cowlitz, Quinalt, Lower Chehalis
Interior Salish	Lillooet, Thompson, Shuswap, Okanagan, Kalispel, Coeur d'Alene, Columbian

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None of these authors, however, discuss further the reasons why the label “polysynthetic” is justifiable. On the other hand, there is no previous work, to my knowledge, in which it was argued that Salish is not polysynthetic.

In this chapter, I discuss the traits observed in the Salishan languages that could characterize them as polysynthetic. I draw examples mainly from Sliammon with which I have had first-hand experience, and I also refer to the sister Salishan languages. Sliammon is the northernmost language of the Central branch, and like many of the indigenous languages of North America, it is highly endangered.

Fortescue (1994, 2007) lists the following traits that “tend to cluster together to create the *appearance* of a distinct polysynthetic type” (Fortescue 2007: 2, emphasis original):

a. Noun/adjective incorporation
b. A large inventory of bound morphemes (but restricted number of stems)
c. The verb a minimal clause
d. Pronominal markers on verbs (subject/object) and nouns (possessor)
e. Adverbial elements integrated into verbs
f. Numerous morphological ‘slots’
g. Productive morphophonemics and resultant complex allomorphy of bound and free morphemes
h. Non-configurational syntax
i. Head-marking (or double marking) type of inflection

This chapter is structured as follows. First, I discuss the degree of synthesis in the word in Sliammon. In §30.2, I provide an outline of the morphological structure of the word. I discuss the need and means to distinguish clitics from affixes (§30.2.1); the former is inside the word domain and the latter outside. Then §30.2.2 describes the grammatical processes employed in word formation, and §30.2.3 describes the concepts expressed within the verbal predicate. In §30.3 morpheme-per-word count is conducted. A preliminary result shows that, in comparison with the languages cited in Greenberg (1960), Sliammon is rather low for a polysynthetic language. In §30.4, I discuss lexical affixation (§30.4.1) and applicatives (§30.4.2); they are both mechanisms that can be used optionally by speakers to express non-core arguments in the predicate word. Final remarks are given in §30.5. (p. 625)

30.2 Morphological Structure of the Word

Words in Sliammon can be quite simple, consisting of just one morpheme, as in the predicates of (1) and (2):

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hu =tθəm
(1) go =1SG.INDC.SBJ+FUT
'I will go.' (elicited)

səp' =čan
(2) club =1SG.INDC.SBJ
'I got clubbed.' (elicited)

The same roots can also be expanded with several morphemes, as in (3) and (4):

hu-st-umuɬ-as-uɬ sǰasuɬ
(3) go-CAU-1PL.OBJ-3ERG-PAST yesterday
'He took us (with him) yesterday.' (elicited)

saʔp'-iqʷan-ʔəm-θ =čxʷ
(4) club-top.of.head-IND-CTR+1SG.OBJ =2SG.INDC.SBJ
'Club him on the head for me!' (elicited)

The root is the only obligatory element. About 1,000 roots have been identified; around 450 of them are free forms and 550 are bound. Reduplication (RDPL) may be applied to roots. There are more than ten types of reduplicative processes in Sliammon (Watanabe 2003: 371–406), though further analysis may reveal that some of them are in allomorphemic relation to one another. Roots may be followed by lexical suffixes, as discussed in §30.4.1. Roots may also be expanded by applicative suffixes, as discussed in §30.4.2. There are two productive applicative suffixes. Verbs may be explicity marked as intransitive by one of the two productive intransitive suffixes: *-ʔəm* 'Active-intransitive', *-Vm* 'Middle'. Verbs may contain one of the three productive transitivizer suffixes: *-t* 'Control transitive', *-ng* 'Noncontrol transitive', *-stg* 'Causative'.

Figure 30.1 is a simplified schema of the verbal predicate in Sliammon.

Since the root is the only obligatory element in the word, a word can be monomorphemic and monosyllabic. This results in a very short and simple word. As we can observe in Figure 30.1, a word can also be fairly complex, resulting in a rather long multimorphemic and polysyllabic word.

$_4$CLT=$_3$ [$_2$[RDPL-$_1$[√ROOT]$_1$-RDPL-LS-APPL-TR/INTR]$_2$-OBJ-SBJ]$_3$=SBJ=CLT$_4$

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Figure 30.1 Sliammon verbal predicate

(p. 626) ## 30.2.1 Word, clitic, and affix

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In order to discuss the degree of synthesis, we need to be certain as to just what we are counting and within what domain. These are not simple matters, even in a language like Sliammon in which the boundaries of morphemes are fairly transparent.

Although a full discussion of what word, clitic, and affix are in Sliammon is beyond the scope of the present chapter, we need to have working definitions for them. (I refer interested readers to Watanabe 2003: 38–51.) It is most important to distinguish clitics from affixes, otherwise our observation on the degree of synthesis will be severely skewed.

Words in Sliammon can be uttered by themselves, whereas clitics and affixes cannot be.

Primary stress falls on the first vowel of the word, hence it acts as an indicator of word boundary. Secondary stress is marginally but importantly distinctive; it marks the Stative aspect with the Control transitives.[2]

Clitics display a certain mobility in terms of their positions, whereas affixes are restricted as to where they attach.[3]

Most of the clitics that attach to predicates are second position clitics; they attach to the first word of the clause. If there is an auxiliary preceding the predicate proper, the clitics attach to the auxiliary. Certain clitics can occur either preceding or following the host word; of course, there is no such independence in affixes.

Proclitics can be defined as clitics with the rhetorical filler *naʔa*. The filler cannot appear within a word; however, it can appear between a proclitic and a following host word. (For details and examples, see Watanabe 2003: 44–6, Watanabe 2010.)

Before we turn to the internal structure of the word, we need to be clear about what is *not* inside the word domain. As already mentioned in the previous section (Figure 30.1), predicates can be followed and/or preceded by clitics. Clitics are not considered to be inside the word boundaries. Some linguists distinguish “morphological word” and “phonological word” (e.g. Dixon 2010); it is with the former sense that I use the term “word” in this chapter. Since clitics are not inside the word domain, they do not increase the degree of synthesis of words.

Predicates can be followed by a clitic string of two (as in (5)) or three clitics (as in (6) and (7)). Predicates can also be preceded by clitics, as in (8). They can be preceded and followed by clitics at the same time, as in (9) (though this seems to be rather rare in Sliammon). All these clitics do not increase the synthesis of the host word.

(5)

xə̓pi	=čat	=qǰi	θu
return	=1PL.INDC.SBJ	=AGAIN	go
PRED	=CLT	=CLT	AUX

‘We go back.’ (text)

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(p. 627)

(6)

hu	=čx^{w}	=k’^{w}a	=ga	gaw’t’
go	=2SG.INDC.SBJ	=QUOT	=MTG	ROW
AUX	=CLT	=CLT	=CLT	PRED

‘(Then) you keep on rowing.’ (text)

(7)

k^{w}ən	=a	=št	=ga	ǰuʔ-am	ƛ̓’uq̓^{w}<i>t…
INTRR	=QN	=1PL.INDC.SBJ	=MTG	home-DSD	cry<STV>
AUX	=CLT	=CLT	=CLT	PRED	PRED

‘Did we get homesick and cry …?’ (text)

(8)

səm=	k^{w}i=	č’əq̓
FUT=	CLT=	cook/ripe
CLT=	CLT=	PRED

‘It must be ripe.’ (text)

(9)

č’a=	namus-θay-əm	=ga
CJR=	picture-CTR+1SG.OBJ-PASS	=MTG

‘They must have taken pictures of me.’ (text)

Morphophonemically inserted segments within the word domain are not morphemes, and therefore are not counted as elements that increase the degree of synthesis. For example, the link vowel (glossed as LV) that regularly appears before the Control transitivizer *-t* is not counted. An example is *-a-* in (10).[4]

(10)

ʔaq’-a-t-Ø-as
chase-LV-CTR-3OBJ-3ERG

‘He chased her.’ (elicited)

Epenthetic vowels (schwas) that are inserted to break up certain consonant clusters likewise do not contribute to the increase in synthesis.

Potentially more problematic is the linking formative element *-ʔaL* that sometimes appears between a root and a lexical suffix. It is generally realized as *-aɬ* or as its reduced variant *-əɬ* before a consonant, and as *-ay* before a vowel. In most cases, this suffix appears as a mere connecting element or “glue”, without any discernible semantic contribution. In such cases, this element is not a morpheme and therefore not considered in the morpheme-count of a word. Some examples are:

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(11)

a. giy'-gay-aɬ-tən 'He is asking all the time.' (gay-'ask', C_1əR'- Characteristic reduplication, -tən 'instrument')

(p. 628)

b. ti-th-aɬ-šən 'big feet' (tih 'big', C_1V- Plural reduplication, -šən 'foot')

c. p'ət'$^{\theta}$-ay-it'$^{\theta}$a-tən 'clothes pin' (p'ət'$^{\theta}$-'clip', -it'$^{\theta}$a 'clothes', -tən 'instrument')

d. ʔaǰ'-aɬ-k^{w}u 'clear water' (ʔəǰ' 'good', -k^{w}u 'water')

However, in a few cases, the same linking element appears to make some semantic contribution to the word. In (12) and (13), the (a) forms are without the element in question, and (b) are with it.

(12)

a. č'ət-šən 'get a cut on the top or on the side of foot' (č'ət 'cut', -šən 'foot')

b. č'ət-aɬ-šən 'get a cut on the sole of foot'

(13)

a. šam'-it'$^{\theta}$a 'Inside of coat is dry; it is dry inside.' (šəm'- 'dry', -it'$^{\theta}$a 'clothes')

b. šam'-ay-it'$^{\theta}$a 'dry clothes'

In these cases, the linking element seems to have a semantic content like any other morpheme, and therefore needs to be counted as one.

30.2.2 Grammatical processes used

Morpheme boundaries within the word in Sliammon are fairly clear. The word formation is agglutinating in nature in that fusion of concepts within a morpheme (as in, e.g. Latin) is generally not observed.

The two main grammatical processes employed in Sliammon word formation are reduplication and suffixation. There are twelve types of reduplicative process, conveying meanings of various types, such as plurality (*təq-təq* 'they closed', *təq* 'it closed'), diminutive (*wu-wt-u-t* 'bend it a little bit', *wut-u-t* 'bend it'), imperfective (*wu-wut-u-t* 'bending it'), inceptive (*pəs-əs* 'it got numb', *pəs* 'numb'), and still others like 'Characteristic', as in (11a). Some of their meanings are still unclear.

Suffixes are either grammatical or lexical. There are roughly fifty grammatical suffixes including pronominals (subjects, objects, possessives), valency-marking/changing (intransitives, transitivizers, applicatives, passives, reciprocals, reflexives), aspect (Stative), and others of abstract notions ('very', plural, past, desiderative, etc.).

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There are roughly eighty lexical suffixes, conveying concrete (lexical) notions, including about forty referring to body-parts (head, hair, nose, eye, mouth, teeth, throat, hand, foot, etc.) and the rest to various meanings (canoe, inside of container, house, water, etc.). They are discussed and exemplified further in §30.4.1.

Marginal processes include two infixes (*-i-* Stative, *-ʔVg-* Plural), ablaut indicating plurality, and secondary stress placement (indicates Stative aspect).

Although Salishan languages generally have some prefixes, there are none in Sliammon; what were prefixes historically were either reinterpreted as proclitics or lost. (p. 629)

Table 30.2 Grammatical processes used in Sliammon

Process	Number and Concepts Expressed
reduplication	12 types: plurality, diminutive, aspect (imperfective, inceptive), characteristic, susceptible, person
suffixation (grammatical)	about 50: pronominals (subject, object, possessive), valency (intransitive, transitive, applicative, passive, reflexive, reciprocal), aspect, abstract suffixes (‘very’, plural, past, etc.)
suffixation (lexical)	about 80
infixation	2: plural, aspect (Stative)
ablaut	1: plural
stress	marginally distinctive (secondary stress marks the Stative aspect in some forms)
prefixation	none in Sliammon (some in other Salish)
root compounding	none in Sliammon

There is no root or stem compounding in Sliammon. Functions comparable to those of root compounds in other languages are achieved by lexical suffixes. However, lexical suffixes are bound forms, most of which do not show formal resemblance to semantically corresponding independent words. This characteristic has an important consequence, namely that there is no noun incorporation.

The grammatical processes used in Sliammon are summarized in Table 30.2.

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30.2.3 Grammatical concepts expressed in the predicate

Various grammatical concepts are expressed in the Sliammon predicate by the grammatical processes outlined in §30.2.2. Major grammatical concepts include pronominals, valency(-changing) markers, aspect, plurality (optional for third person), and optionally, tense and diminutive. These are summarized in Table 30.3.

The predicate is marked with pronominal markers (though some are clitics and not suffixes). Hence, a predicate verb is a complete clause and sentence by itself, as in (14a). Third person objects can be optionally specified by coreferent NPs, as in (14b).

(14)

a. təq-t-Ø-as
close-CTR-3OBJ-3ERG
'He closed it.' (elicited)

b. təq-t-Ø-as tə= ʔimin
close-CTR-3OBJ-3ERG DET= door
'He closed the door.' (elicited)

(p. 630)

Table 30.3 Major grammatical concepts expressed in Sliammon predicate

Categories	Concepts
Pronominals	subject, object (=head-marking)
Valency	intransitives (Active-intransitive, Middle), transitives
	('Control', 'Noncontrol', 'Causative'), passive, applicative (Indirective, Relational, Malefactive, Dative)
Aspect	Imperfective, Inceptive, Stative
Tense (optional)	Past (Future is maked by a clitic)
Plurality	plurality of subject, object; also distributional; obligatory only with first and second person pronominals
Diminutive (optional)	'do X a little bit'

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Table 30.4 Valency changing		
Unsuffixed intransitive	k’^{w}əq	‘it splits’
Active-intransitive	k’^{w}əq-ʔəm	‘split (s.t.)’
Control transitive	k’^{w}əq-t-∅	‘split it’
Noncontrol transitive	k’^{w}əq-əx^{w}-∅	‘have split it’
A.Intr-Causative	k’^{w}əq-ʔəm-sx^{w}-∅	‘make him split (s.t.)’
Passive	k’^{w}əq-t-∅-əm	‘it is split’
Indirective (-CTr)	k’^{w}əq-ʔəm-t-∅	‘split (s.t.) for him’
Indirective (-NTr)	k’^{w}əq-ʔəm-əx^{w}-∅	‘have split (s.t.) for him’
{Passive-Causative	k’^{w}əq-t-∅-əm-sx^{w}	‘make it be split’}
{CTr-Causative	k’^{w}əq-t-sx^{w}	‘let him split it’}

Various suffixes either mark or change valency. Examples based on the root *k’^{w}əq* ‘split’ are given in Table 30.4. (Those in curly brackets are attested only in imperatives.)

Aspect is obligatorily marked on the predicate, whereas tense appears to be optional. There are three aspects, which are morphologically marked: Imperfective, marked by C_1V- reduplication (15); Inceptive, marked by -VC_2 (16); Stative, marked by *-it* (17) and its allomorphs, <*i*> (18) and a secondary accent on some stems.[5]

ʔa-ʔaq’-a-t-∅-as
(15) IMPF-chase-LV-CTR-3OBJ-3ERG
‘He is chasing her.’ (elicited)

(p. 631)

pəs-əs
(16) numb-INC
‘It got numb.’ (elicited)

ǰax̣^{w}-it
(17) melt-STV
‘It is melted.’ (elicited)

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ƛəp<i>xʷ
(18) break.in.two<STV>
'It is broken.' (elicited)

Past tense is optionally marked by the suffix *-ʔuL*, as in (19). (Future is marked by a clitic *səm*.[6])

ʔaq'-a-t-umuɬ-as-uɬ
(19) chase-LV-CTR-1PL.OBJ-3ERG-PAST
'He chased us.' (elicited)

Plurality of third person proniminal suffixes can be optionally marked by the affix *-ʔuL Vg*:

a. ʔa-ʔaq'-ag-a-t-∅-as
IMPF-chase-PL-LV-CTR-3OBJ-3ERG
'She is chasing them.' (elicited)

(20)

b. č'ət-t-∅-ig-as
cut-CTR-3OBJ-PL-3ERG
'They cut it.' (elicited)

Plurality can be indicated also by C_1əC_2- reduplication, which refers to the plurality of the subject of intransitives and the object of transitives:

a. təq-təq
PL-close
'All of them [e.g. doors] closed.' (elicited)

(21)

b. təq-təq-t-∅
PL-close-CTR-3OBJ
'close all of them.'

(p. 632) The same C_1əC_2- reduplication can indicate distributive plurality in either a temporal or a spatial sense:

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a. ʔəɬ-ʔuɬqʷu
PL-dig.clams
'He is always digging clams.' (elicited)

(22)

b. ʔəq'-ʔaq'-a-t-Ø-as
PL-chase-LV-CTR-3OBJ-3ERG
'He is chasing her all around.' (elicited)

Limited performance of an action can be expressed by the Diminutive reduplication, as in (23a). The same idea can be expressed analytically using the auxiliary *namaɬ* 'small amount, a little bit', as in (23b).

(23)

a. wu-wt-u-t-Ø =čxʷ =ʔut
DIM-bend-LV-CTR-3OBJ =2SG.INDC.SBJ =CLT
'(You) bend it a little bit.' (elicited) (√wut- 'bend')

b. namaɬ =tᶿəm =t kʷəɬ-t-Ø
a.little.bit =1SG.INDC.SBJ+FUT =CLT loosen-CTR-3obj
'I will loosen it a little bit.' (elicited)

30.3 Degree of Synthesis

Undoubtedly, the most evident reference point in classifying a language to be polysynthetic is the sheer number of morphemes per word. We see in this section that the morpheme-per-word count in Sliammon is not strikingly high.

Predicates with more than five morphemes do not occur so often in texts. At the same time, it is not difficult to find those with six morphemes ((24)–(28)):

(24)

qʷəl'	ǰu-st-aʔam-t-umuɬ-as	šə=	t'in-it	ǰanxʷ
come	home-CAU-IND-CTR-1PL.OBJ-3ERG	DET=	BQ.fish-STV	fish

'She brought us home a barbecued fish.' (text)

(25)

qʷ-as	kʷanač-əm-(m)i-t-umuɬ-as
come-3CNJ.SBJ	sit-MDL-RLT-CTR-1PL.OBJ-3ERG

'to come and sit down with us.' (text)

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huy q^{w}ə-q^{w}əl-st-aʔam-θ-as-iw
(26) then IMPF-come-CAU-IND-CTR+1SG.OBJ-3ERG-PL
'They were bringing them to me …' (text)

(p. 633)

(27)
paya? =štəm =t č'a-č'ah-əm-ʔəm-t-anapi
always =1PL.INDC.SBJ+FUT =CLT IMPF-pray-MDL-IND-CTR-2PL.OBJ
'We will always be praying for you two.' (text)

(28)
paya? x̣^{w}a-x̣^{w}ah-a-t-uw-am'-uɬ tə= ms=čəy-čuǰ'-uɬ
always IMPF-tell-LV-CTR-1PL.OBJ-PASS-PAST DET= 1PL.POSS=pl-child-PAST
'We were always told [to go and help them] when we were kids.' (text, conversation)

Although the upper limit is theoretically higher, the highest number of morphemes in a word within my corpus is seven, as in (29) and (30):

paya? =ʔut ti-tiwš-am-stu-mš-as-iw
(29) always =CLT IMPF-learn-MDL-CAU-1SG.OBJ-3ERG-PL
'They were always teaching me.' (text)

x^{w}u-x^{w}uǰ-um-us-t-∅-as tə= mamaɬa…
(30) IMPF-sell-MDL-DAT-CTR-3OBJ-3ERG DET= white.person
'She sold (used to be selling) it to the white people …' (text)

Words with more morphemes are attested in other Salish languages; for example, (31) from Thompson contains eleven morphemes:[7]

(31)
Thompson
ʔe xeʔ ɬ u ʔesk'əwk'èwtetwéw'x^{w}mtm
ʔe xeʔ ɬ u ʔes-k'əw-k'èw-t-e-t-wé<w'>x^{w}-m-t-m
INT NB EP TO ST-AUG-step.on-IM-DRV-TR-RCP<DIM>-RLT-TR-IDF
'that's from where they trampled over him.' (Egesdal et al. 2011: 27)

Rather than simply relying on impression, however, I conducted a preliminary survey counting the morphs per word following Greenberg (1960). For this purpose, I randomly selected one Sliammon text, a monologue in which the late Mrs. Mary George recounted how food was traditionally gathered. Mrs. George's first language was Sliammon. The text is 14 minutes 22 seconds in duration and roughly 200 lines long. For the goal of calculating the degree of synthesis, I excluded clitics from both the number of morphs

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and words. The total number of words was 785, and the total number of morphs was 1528. This gives us **1.946** morphs per word. See Table 30.5 in which I have added the Sliammon datum to the table in Greenberg (1960: 193). (p. 634)

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Table 30.5 Degree of synthesis

Sanscrit	Anglo-Saxon	Persian	English	Yakut	Swahili	Annamite	Eskimo	**Sliammon**
2.59	2.12	1.52	1.68	2.17	2.55	1.06	3.72	**1.94**

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This number, that is, the degree of synthesis in Sliammon, is fairly low, only slightly higher than English. One trait of Sliammon (and Salish more generally) that leads to this low number is the prevalent use of “auxiliaries”. Auxiliaries are full words that precede or follow the predicate proper, but unlike the latter, they do not attract most of the verbal morphology. For example, in (32), *ʔut* and *θu* are auxiliaries both of which are single-morph words. The predicate proper is the last word ‘to gather food’, which is comprised of three morphemes.

(32)

ʔut	=čx^{w}	=k^{w}a	θu	t’^{θ}aẋ-ɬaw-əm
if	=2SG.INDC.SBJ	=CLT	go	gather-LS:food-MDL
AUX	=CLT	=CLT	AUX	PRED

‘When (if) you go gathering food …’ (text)

Hence this clause contains three words, five morphs, and two clitics. This comes to 1.66 morphs per word.

The number of auxiliaries is limited. Those identified thus far for Sliammon are as follows: *ʔaw’θ* ‘suddenly’, *ʔut* ‘if’, *ʔuk’^{w}* ‘all’, *čaʔat* ‘now’, *hahays* ‘slowly’, *hihiw* ‘really’, *hiya* ‘quickly’, *θu / hu* ‘go’, *ǰaqaʔ* ‘might (?)’, *k^{w}ən* ‘interrogative (yes-no question)’, *ƛ’iʔ* ‘fast’, *miya* ‘even’, *namaɬ* ‘a little, short time, small amount’, *niš* ‘be here, stay here’, *payaʔ* ‘always’, *qəǰi* ‘still’, *q^{w}əl’* ‘come’, *taʔat* ‘used to’, *χ̣^{w}it* ‘really’, *χ̣^{w}uχ̣^{w}* ‘long time’.[8]

Alternatively, if we consider only the degree of synthesis of predicates proper, disregarding auxiliaries, the number becomes considerably higher. In the same Sliammon text, there are 317 predicates proper, which contain altogether 943 morphs. The degree of synthesis here is **2.97**. This ranks Sliammon second to Eskimo.

30.4 That Polysynthetic ‘Feel’

The result of the morpheme-per-word count for Sliammon in the last section is not impressive for a language that is supposedly polysynthetic. In this section, I discuss the two characteristics of Sliammon that appear to contribute to that “feeling of polysynthesis”, namely lexical suffixes and applicatives. They have two traits in common; the use of lexical suffixes and applicatives are both mechanisms that morphologically include concepts that are not (p. 635) subcategorized as the core arguments of the verb. More plainly stated, they both bring in “alien” elements into the verb.

Moreover, it is important to point out that speakers have the choice whether to use these mechanisms or to express semantically similar ideas analytically. This means that a predicate word is not fixed in its size (length), but rather, it is flexible, and can accomodate the needs and intention of the speaker.

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30.4.1 Lexical affixes

“Lexical affixes” (aka “field affixes”) are a group of affixes with concrete meanings, which in Salish are often nominal. Over eighty such suffixes have been identified for Sliammon. Some of the Salishan languages have well over 100 or even 200 lexical suffixes (e.g. van Eijk 1997 identifies 126 in Lillooet, and Kinkade 1991 identifies 298 in Upper Chehalis). The process of lexical affixation is comparable to that of noun incorporation. However, lexical affixation is fundamentally different from noun incorporation in two respects. First, lexical affixes are bound forms, which cannot occur independently, unlike the roots or stems used in compounding. Second, many lexical affixes are different in form from semantically corresponding independent words.[9] For example, compare *-ʔay* and *ǰaǰ̓a*, both meaning ‘tree’; *-awʼtxʷ* and *ʔayaʔ* ‘house’; *-ǰan* and *pʼaʔačʼ* ‘fish net’; *-kʷu* and *qayʼa* ‘water’. By definition, then, lexical affixation is not noun incorporation (Sapir 1911). Moreover, since compounding of roots (or stems) is not observed in Sliammon, except for some marginal cases, there is no noun incorporation.

In many other cases, the independent forms appear to be comprised of a root, otherwise unattested in the language, and the semantically corresponding lexical suffix; for example, *-inas* and *ʔiy-inas* ‘chest’; *-ičən* and *ʔiy-ičən* ‘back’; *-igs* and *giʔiws* ‘body’.

About half of the lexical suffixes in Sliammon refer to body parts; the other half are heterogeneous in meaning. An exhaustive list follows:

Somatic lexical suffixes:

> *-aʔamčis* ‘shoulder’, *-aʔana* ‘ear’, *-agtʼᶿ* ‘throat’, *-agʼič* ‘back’, *-aǰ̓is* ‘cheek’, *-amap* ‘hip’, *-anaq* ‘thigh’, *-anʼa* ‘neck’, *-ap* ‘heel’, *-aq* ‘sexual organ’, *-awus* ‘eye’, *-awʼu* ‘toe’, *-ayčʼ* ‘intestine’, *-aymixʷ* ‘breast’, *-ayʼaxẓan*‘upper arm, elbow’, *-ayʼiqʼʷan* ‘ankle’, *-čis* ‘hand’, *-čsən* ‘forehead’, *-igan* ‘side of body’, *-igs* ‘body’, *-inas* ‘chest’, *-iqʷ* ‘nose’, *-iqʷan* ‘top of head, hair’, *-iqʷɬa* ‘knee’, *-iθẋan*‘armpit’, *-ixʷθaɬ* ‘tongue’, *-iyqinʼ* ‘hair’, *-lawʼi* ‘belly’, *-ɬaɬ* ‘throat’, *-ƛ̓ačʼ* ‘intestine’, *-načʼ* ‘buttock, bottom’, *-nis* ‘tooth’, *-qin* ‘mouth (inside)’, *-šən* ‘foot, leg’, *-uǰ̓a* ‘hand’, *-us* ‘head, face’, *-uθin* ‘mouth (outside)’, *-wum* ‘side’

Non-somatic lexical suffixes:

> *-ʔay* ‘tree’, *-aʔaɬaɬ* ‘breath’, *-aʔaq* ‘wind’, *-aǰ̓a* ‘leaf, root’, *-akʷup* ‘fire, firewood’, *-aɬ* ‘times’, *-am* ‘inside of container, pot’, *-amiɬ* ‘food’, *-anxʷ* ‘fish runs (?)’, *-aqap* ‘smell’, *-awuɬ* ‘cup shaped object’, *-awʼtxʷ* ‘house’, *-aẋan* ‘corner’, *-aẋiθ*‘lying position, bed’, *-ayʔiqʷ* ‘hat’, *-aya* ‘person’, *-aya* place’, *-ayin* ‘end’, *-ayis* ‘money’, *-ayitən* ‘cloud, weather’, *-ays* ‘rock’, *-ayu* ‘instrument’, *-ənʔaL* ‘child, baby’, *-ičən* ‘back’, *-ipan* ‘lid’, *-itʼᶿa* ‘clothes’, *-iyaʔkʷ* ‘field’, *-ǰan* ‘net’, *-kʷu* ‘water’, (p. 636) *-kʷum* ‘root’, *-ɬaw* ‘food’, *-min* ‘instrument’, *-mixʷ* ‘house’, *-s* ‘days of the week’, *-šagɬ* ‘path, door, road’, *-taɬ* ‘fathom’, *-tən* ‘instrument’, *-txʷ* ‘roof ’, *-ukʷt* ‘blanket’, *-uɬ*

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'young, offspring', *-umiš* 'appearance', *-umix*^{w} 'floor, ground', *-um'a* 'berry', *-uwuɬ* 'side', *-uθ* 'language, words', *-VgiL* 'canoe'

Lexical suffixes can occur in both intransitive and transitive predicates. In intransitive predicates, they refer to the object or concept to which a state or process is ascribed. In the following Sliammon examples, the lexical suffixes and their glosses are in italics. The glosses are preceded by "LS" (for "lexical suffix").

ʔah-*ɬaɬ* =č
(33) sore-LS:*throat* =1SG.INDC.SBJ
'I have a sore throat. / My throat is sore.' (elicited)

ƛ̓'ə-ƛ̓'ɬ-əɬ-*an'a* =č
(34) IMPF-stiff-INC-LS:*neck* =1SG.INDC.SBJ
'My neck is getting stiff.' (elicited)

saχ̣^{w}-*šən*-əm =t^{θ}əm
(35) shave-LS:*foot*-MDL =1SG.INDC.SBJ+FUT
'I will shave my legs.'

ǰanx^{w}-*aqap-uǰ'a* =č
(36) fish-LS:*smell*-LS:*hand* =1SG.INDC.SBJ
'My hand/finger smells like fish.' (elicited)

t'^{θ}ək^{w}-*am*-ʔəm
(37) wipe-LS:*inside.of.container*-A.INTR
'wipe dishes.' (elicited)

gəq'-*ipan*-ʔəm
(38) open-LS:*lid*-A.INTR
'open (s.t.) [e.g. box, can].' (elicited)

Somatic lexical suffixes in transitive predicates refer to the specified body part of the semantic patient. Non-somatic lexical suffixes in transitive predicates refer to a part of the semantic patient.

k'^{w}ən-*us*-t-∅-as
(39) see-LS:*face*-CTR-3OBJ-3ERG
'She looked at his face.' (elicited)

(p. 637)

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(40)

ẋiq-*ag'ič*-θi		=t^{θ}əm
scratch-LS:*back*-CTR+2SG.OBJ		=1SG.INDC.SBJ+FUT

'I will scratch your back.' (elicited)

(41)

t'^{θ}ip'-*ayin*-əx^{w}-∅	=č	tə=	t^{θ}=	pəču
sharpen-LS:*end*-NTR-3OBJ	=1SG.INDC.SBJ	DET=	1SG.POSS=	basket

'I made a pointed end on my basket.' (elicited)

(42)

huy	ʔiy	t'^{θ}ip'-ig-*ayi (n)*-t-∅-as	
then	and	sharpen-PL-LS:*end*-CTR-3OBJ-3ERG	

'Then he sharpened (both ends of) it [a stick].' (text)

Transitive predicates with lexical suffixes can further be passivized:

(43)

θiq^{w}-*umix*^{w}-st-uw-əm
dig-LS:*ground*-CAU-1PL.OBJ-PASS

'They make us dig ground.' (*lit.* 'We are made to do ground-digging.') (text)

Speakers usually have the choice of whether to use a lexical suffix in the predicate verb form or express the same concept in a separate NP. Arguments already established in the discourse and background information are often expressed using a lexical suffix. In (44), we can observe the use of lexical suffixes as a backgrounding device. In (44a), the narrator is setting the scene for what is about to happen, that she heard a mysterious baby's cry coming from a bush. It was a premonition for the loss of her real child. Here, what the narrator was hanging, that is, clothes, is not a central issue in the narrative and therefore backgrounded by the use of the lexical suffix *-it'^{θ}a* 'clothes' in the predicate. Compare with (44b), which uses an analytic construction.

(44)

a.

hə-hk^{w}-ay'-*it'^{θ}a*	=č	ni?	k^{w}=	ʔasq'
IMPF-hang-LIG-LS:*clothes*	=1SG.INDC.SBJ	be.there	DET=	outside

'[It was a fine day like today.] I was hanging clothes outside. [All of a sudden, a baby was crying.]' (text)

b.

hək^{w}-t-∅	=čən	=səm	tə=	t^{θ}=	kapu
hang-CTR-3OBJ	=1SG.INDC.SBJ	=FUT	DET=	1SG.POSS=	COAT

'I am going to hang my coat.' (elicited)

Examples in which the lexical suffixes refer to instruments are also attested but there are only a few.

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(45)
ẋənat-*uǰ'a*-t-∅ =čx^{w}
give-LS:*hand*-CTR-3OBJ =2SG.INDC.SBJ
'You hand (it) to him.' (lit. 'You give (it) to him with your hand, from your hand.' (elicited)

(p. 638)

łatš-*uyʔ*-əm
(46) splash-LS:*hand*-MDL
'to splash water with one's hand' (text)

ǰuk'^{w}-*šən*-am-(m)i-t-∅ tə= kikaʔ
(47) squish-LS:*foot*-MDL-RLT-CTR-3OBJ DET= insect
'to squish the bug with one's foot' (elicited)

The use of lexical suffixes is abundantly attested throughout Salish. Their functions are basically the same as in Sliammon. As examples of lexical suffixes that refer to clearly non-core arguments, the following from Halkomelem can be cited. Suttles (2004: 290) describes these lexical suffixes as "locus" in ((48), (49), (50)) and as "instrument" in ((51), (52), (53)):

Musqueam Halkomelem (Suttles 2004: 290, 301)

(48)
ʔəɬtənáθən 'eat along the way (as berries off the bush)' (ʔəɬtən 'eat', -áθən 'margin, edge')

(49)
x^{w}q'əwílt 'go with him in a canoe' (x^{w}- 'inward', q'áʔ 'accompany', -wíl-~-wəɬ 'canoe')

(50)
k^{w}éʔcəs 'drop it from the hand' (cf. k^{w}éʔt 'drop it, let it go', -cəs 'hand')

(51) k'^{w}cáləs 'see with one's own eyes' (k'^{w}éc 'see', -áləs 'eyes')

(52)
x^{w}ʔəw'cəst 'show him with the hands how something is done' (x^{w}- 'oblique', ʔíw'- 'understand', -cəs 'hand')

(53)
yəp'èp'əƛ'xén'əm' 'be feeling along with the feet (in shallow water looking for cockles)' (yə- 'along', p'eƛ'- 'feel', -xən 'foot')

30.4.2 Applicatives

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There are two productive applicative suffixes in Sliammon: *-ʔəm* 'Indirective (IND)' and *-mi* 'Relational (RLT)'.[10] The verb forms with these suffixes encode semantically peripheral arguments as the (direct) object.

A simple transitive clause is given in (54a). The semantic patient is expressed by an NP. In (54b), the Indirective applicative suffix is attached in the predicate (in its allomorphemic form *-aʔam*). The semantic patient can only be expressed in an Oblique NP, marked by the (p. 639) preceding clitic *ʔə=*. The beneficiary ('child') is treated as the object, which is expressed on the predicate by the object suffix but also by an unmarked NP.

(54)

a. t'əmq'^{w}-a-t-∅-as tə= saplin
break-LV-CTR-3OBJ-3ERG DET= bread
'He breaks off the bread.' (elicited)

b. t'əmq'^{w}-aʔam-t-∅-as tə= čuy' ʔə= tə= saplin
break-IND-CTR-3OBJ-3ERG DET= child OBL= DET= bread
'He breaks off the bread for the child.' (elicited)

The Indirective applicative suffix is quite productive. It can attach to Unsuffixed intransitives, as in (55), and to Middles, as in (56). It can also attach to Causative stems, as in (57). Indirective applicative forms are given in (b) and their corresponding simple forms are in (a).

(55)

a. ʔu-ʔuɬq^{w}u =č
IMPF-dig.clams =1SG.INDC.SBJ
'I am digging clams.' (elicited)

b. ʔu-ʔuɬq^{w}u-ʔəm-θi-s
IMPF-dig.clams-IND-CTR+2SG.OBJ-3ERG
'He is digging clams for you.' (elicited)

(56)

a. č'ah-əm =štəm
pray-MDL =1PL.INDC.SBJ+FUT
'We will pray. / Let us pray.' (elicited)

b. č'ah-əm-ʔəm-θi =štəm
pray-MDL-IND-CTR+2SG.OBJ =1PL.INDC.SBJ+FUT
'We will pray for you.' (elicited)

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(57)

a. ʔiɬtən-sx^{w}-∅ =t^{θ}əm tə= čuy’
eat-CAU-3OBJ =1SG.INDC.SBJ+FUT DET= child
‘I will feed the baby.’ (elicited)

b. ʔiɬtən-st-aʔam-əx^{w}-∅-an ʔə= šə= mimaw’-s
eat-CAU-IND-NTR-3OBJ-1SG.ERG OBL= DET= cat-3POSS
‘I have fed his cat for him.’ (elicited)

Incidentally, the object in this applicative construction is not necessarily a beneficiary, as can be observed in the two possible translations in (58) and (59):

(58)

q^{w}uq^{w}u-ʔəm-θ-as ʔə= tə= t^{θ}= tiy
drink-IND-CTR+1SG.OBJ-3ERG OBL= DET= 1SG.POSS= tea
‘He drank up my tea [on me].’
‘He drank my tea for me [when I could not finish it].’

(p. 640)

(59)

mək^{w}-ʔəm-θ-as
eat-IND-CTR+1SG.OBJ-3ERG
‘He [or an unknown s.o.] ate my food [on me, by stealing it from my plate].’
‘He ate it for me [because I could not finish it].’

The Relational applicative suffix *-mi* attaches to intransitive stems. The suffix is in turn followed by the Control transitivizer. The transitive stems thus formed with this suffix specify that the act denoted by the root is performed in some sort of relation to the (direct) object of the stem. If the predicate denotes motion, then the object is the entity towards which the subject moves, as in (60b) and (61). (60a) is an analytic constuction that corresponds to (60b):

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(60)

a.	ǰəƛ̓’ =čən	=səm	θu	ʔə=	kʷ=	tawn
	run =1SG.INDC.SBJ	=FUT	go	OBL=	DET=	town
	‘I will run to town.’ (elicited)					
b.	ǰəƛ̓’-mi-t-∅	=ga	tə=	θ=	man	
	run-RLT-CTR-3OBJ	=IMP	DET=	2SG.POSS=	father	
	‘Run to your father!’ (elicited)					

(61)

k’ʷit’θ-im-(m)i-t-∅	=čxʷ	tə=	pəlamas
jump-MDL-RLT-CTR-3OBJ	=2SG.INDC.SBJ	DET=	plums
‘(You) jump for the plums!’ (elicited)			

The relation between the subject and the object may be locational rather than directional, as in (62):

	niʔ-mi-θi	=tθəm
(62)	exist-RLT-CTR+2SG.OBJ	=1SG.INDC.SBJ+FUT
	‘I will stay with you.’ (elicited)	

The object may be an entity in relation to whom / which the action is performed, or towards or against whom an attitude is held, as in (63) and (64):

	x̣əɬ-it-mi-t-∅-as	tə=	čuy’
(63)	angry-STV-RLT-CTR-3OBJ-3ERG	DET=	child
	‘He is angry at the baby.’ (elicited)		

(64)

yəč’-mi-θi-m	=a	ʔə=	kʷə=	θ=	ʔayaʔ
full-RLT-CTR+2SG.OBJ-PASS	=QN	OBL=	DET=	2SG.POSS=	house
‘Is your house full [of people]?’ (elicited)					

(p. 641) 30.5 Final Remarks

In this chapter, I discussed the nature of Salishan languages, taking Sliammon as an example, in regard to the degree and the kind of synthesis observed in predicate verbs.

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A preliminary count of morpheme-per-word was conducted, following Greenberg (1960). The result was a fairly low number, and therefore Sliammon does not rank high among the languages studied by Greenberg (1960). The degree of synthesis according to the sheer number of morphemes per word is surely the clearest basis for classifying languages into the polysynthetic category. The question is then, what characteristics still give the impression that Salish is polysynthetic. In other words, if we were to consider Salish to be polysynthetic, what could be the traits other than the degree of synthesis? There appear to be three characteristics, in addition to the list by Fortescue (1994, 2007), that became evident in the present discussion of Sliammon. All three are closely interrelated.

First, word forms are flexible, that is, a word can consist of just one morpheme or more than several morphemes. Second, speakers can manipulate what goes into a predicate. Third, non-core arguments, that is, peripheral concepts, can be expressed in the predicate by means of lexical suffixes and applicatives. The valency alternation can be regarded as one aspect of the second trait, the manipulation of predicate content. The last trait, inclusion of non-core arguments, is an option at the disposal of the speakers; this is also a manifestation of the manipulation of predicate word content. The manipulation can be achieved by the grammatical and lexical morphologies on the predicate word, because of the first trait, the flexibility of word. These characteristics, clustering together along with other traits listed by Fortescue (1994, 2007), appear to be the nature of polysynthesis, and Salish appears to be among the polysynthetic type.

Abbreviations

A.INTR
Active-intransitive
AUX
Auxiliary
CAU
Causative
CLT
clitic
CNJ
Conjunctive
CTR
Control transitive
DAT
Dative (applicative)
DET
Determiner

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DSD
Desiderative
EPEN
epenthetic
ERG
Ergative
FUT
Future
IMP
Imperative
IMPF
Imperfective
IND
Indirective (applicative)
INDC
Indicative
INDP
Independent pronoun
LS
lexical suffix
LV
link vowel
MDL
Middle
MTG
Mitigator
NEG
Negator
NOM
Nominalizer
NTR
Noncontrol transitive
OBJ
Object
OBL
Oblique (p. 642)
PASS
Passive
PL
Plural
POSS
Possessive
PRED

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predicate
QN
question marker
QUOT
Quotative
RCP
Reciprocal
RDPL
reduplication
RFL
Reflexive
RLT
Relational (applicative)
SBJ
Subject
SG
Singular
STV
Stative

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Notes:

(1) For the indigenous names of the Salishan languages, see Czaykowska-Higgins and Kinkade (1998).

(2) Sliammon stress placement is not fully understood. For some observations, see Kroeber and Watanabe (2004).

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(3) Notable exceptions are the Conjunctive Subject suffixes. Although they are suffixes (they can be followed by another suffix), they attach to the auxiliary, if there is one, preceding the predicate. See Watanabe (2003: 47–9).

(4) A full description of the conditions where the link vowel appears is in Watanabe (2003: 214–16).

(5) A limited number of Control transitive stems mark the Stative aspect by a secondary accent on the linking vowel before the transitivizer.

(6) The Future marker has fused with the indicative pronominal clitics except the second person plural clitic.

(7) I have slightly modified the notation for ease of comparison but the segmentation is as in the original source. Abbreviations for the Thompson example are as follows:INT–INTRODUCTORY; NB–NEARBY; EP–ESTABLISHED IN PAST; TO–TOWARD; ST–STATIVE; AUG–AUGMENTATIVE; IM–IMMEDIATE; DRV–DIRECTIVE; TR–(CONTROL) TRANSITIVE; RCP–RECIPROCAL; DIM–DIMINUTIVE; RLT–RELATIONAL; IDF–INDEFINITE SUBJECT.

(8) Some of the auxiliaries can be used as predicates, for example, *θu / hu* ‘*go*’, *qʷəl*’ ‘come’, *ƛ̓’iʔ* ‘go fast’, *qəǰi* ‘still, there remains’, while others, like *čaʔat* ‘now’, *χ̣ʷit* ‘really’, cannot be used predicatively. The latter can be regarded as adverbs. They are all grouped here as ‘auxiliaries’ because they behave similarly in their morphosyntactic behavior.

(9) They are “etymologically different” in Sapir’s (1911) term.

(10) There are two other applicative suffixes that can occur with only a limited number of stems: *-us* ‘Dative’ and *-ni* ‘Malefactive’.

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Nawatl (Uto-Aztecan)

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Abstract and Keywords

A brief introduction places the language, Nawatl, geographically and chronologically, with emphasis on dialect diversity and the long-documented history of the language. The dialect spoken in one community in Northern Puebla is in focus in the following. Basic typological features of this dialect are presented. A valency system based on verb derivation is outlined. A conceptual approach to valency is adopted, and it leads to no recognition of anti-passive in Nawatl. A suffix, ta/te:, the function of which is to broadly suspend referentiality to subject, object, and possessor, is presented. Reduplication is shown to be equally broadly used with several meanings. A brief presentation of a second Nawatl dialect shows that Nawatl dialects cannot all be said to display equally strong polysynthetic features.

Keywords: valency, reduplication, Nawatl, Nahuatl, polysynthesis

31.1 Introducing Nawatl

31.1.1 The Nawatl language and Tacuapan Nawatl

NAWATL[1] is the southernmost member of the Uto-Aztecan language family. The language is spoken in many disconnected areas from the westernmost Mexican state of Durango to the southeastern state of Tabasco. There are also speakers of the variety of Nawatl called Pipil as far south as the state of El Salvador.

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Because of this location south and southeast of all the other Uto-Aztecan languages, and also based on myths recorded in the sixteenth century, the general hypothesis is that speakers of Nawatl entered Mesoamerica from the north and subsequently spread out towards the south. Furthermore, based on certain dialect features, the dialects naturally divide into two groups assumed to represent two immigrations from the north. However, concerning their time of entry into this area of the features of shared culture, there is no agreement. Some suggest that the first group entered the scene as early as the sixth century AD (Kaufman and Justeson 2008), whereas others suggest a date as late as 1159 (Smith 1997: 32).

Around 1325 a group of Nawa-speakers, called Mexica, entered the then already densely populated central area. While the Mexica invaders from the north subjugated earlier populations to the east and south, their capital, Tenochtitlan, and its sister city, Tlatelolco, grew into true cities.

At the time of the Spanish invasion around 1520 Nawatl was thus widely spoken. Towards the southeast were groups belonging to the first immigration; other groups had been relocated in several directions from Tenochtitlan in order to defend the areas conquered by the Mexica; Nawatl was used as a lingua franca along trade routes, and in the two central cities there was a high concentration of speakers.

Dialect diversification was considerable: every small community had its own dialect and formed with neighboring villages dialect areas, but there were also varieties created by the (p. 644) relocated people and by traveling merchants. In the capital an urban variety emerged converging several dialect features and displaying innovations which till this day are not found in the dialects spoken in the provinces (Canger 2011b).

It is this Urban Nawatl from the sixteenth century which Spanish clergymen studied, and for which they produced excellent grammars and a dictionary (Olmos, Molina, etc.). A wealth of documents from the sixteenth and seventeenth centuries written primarily in this Urban Nawatl exists. The documents offer information about religion, history, and all aspects of daily life of the Aztecs. Therefore Urban Nawatl became the prime object of philological study in the late nineteenth century; it became Nawatl per se.

During the last five hundred years all varieties of Nawatl have to a varying degree been influenced by Spanish in lexicon, phonology, morphology, and syntax. The description of Nawatl will in the present chapter deal with a variety spoken in a small community, Tacuapan (TacNaw), municipio of Cuetzalan, in the northern part of the state of Puebla. I also refer to sixteenth-century Urban Nawatl and a few other dialects. The dialect area where TacNaw is spoken, is known as Sierra de Puebla or Nororiente. I have studied TacNaw since 2002 under the auspices of Project for the Documentation of the Languages of Mesoamerica (PDLMA) and have since 2007 carried out six shorter periods of field work in Tacuapan (three to eight weeks). This variety is spoken by all generations in the community.

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31.1.2 Previous studies of Nawatl concerning polysynthesis

Mark Baker's book *The Polysynthesis Parameter* has provoked some studies of Nawatl with focus on the properties which form part of his polysynthesis parameter, such as nonconfigurationality, word-order, and noun incorporation (MacSwan 1998; Haugen 2011; Bruhn de Garavito et al. 2005; Hansen 2011). Basing his analysis on data from southeast Puebla Nawatl, MacSwan argues against Baker's claim that Nawatl fits his polysynthesis parameter. On data from other dialects Bruhn de Garavito et al. and Hansen discuss MacSwan's findings with which they disagree. One problem with MacSwan's and Bruhn de Garavito et al.'s analyses can be explained by their depending on elicited material. Eliciting or discussing word order with bilingual speakers is notoriously problematic.

Showing how the Uto-Aztecan languages move from grammaticalization to the polysynthetic characteristics of Nawatl, Haugen (2011) also responds to Baker's polysynthesis parameter.

An article on 'Noun incorporation and discourse reference in Modern Nahuatl' (Merlan 1976) deserves special attention because it is often and broadly quoted, but also because it describes an unusual use of noun incorporation. Originally my study of distinct Nawatl dialects, including Nawatl from the sixteenth century, made me wonder about the examples given in Merlan's article. A visit in 2014 to Huazalinguillo, the hometown of the speaker who supplied Merlan with data, confirmed my suspicion. The validity of the examples cannot be confirmed by speakers in the community (Canger 2014).

The present chapter does not attempt to confirm or disconfirm Baker's polysynthesis parameter. Based on traditional concepts of what characterizes a polysynthetic language, it accepts a priori that TacNaw is polysynthetic. I occasionally address topics that have played a role in linguistic discussions about polysynthesis in the last four decades.

(p. 645) The description of TacNaw is divided into the following sections: basic clause and phrase morphology, verbal roots and verb derivation—valency, noun incorporation, reduplication, polysynthesis in another Nawatl dialect, and conclusion.

31.1.3 Typological characteristics of TacNaw

TacNaw is a verb-first language. The order of subject and object is less clear, although my general impression is that OS is a bit more common than SO; however, both are rare since one seldom hears clauses with both nominal subject and nominal object.

Word order is fairly free, but not random. The order of syntactic elements conveys the information structure of the text. In (1)[2] *yeho:n itzkwimeh* 'those dogs' (carved, wooden dogs) is the topic of the sentence and therefore placed sentence initially.

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(1)
yeho:n itzkwi-meh, Ø-k-in-ketzak, Ø-k-in-chihchi:w [02_01:58]
those dog -PL s3-O3-OPL-raise s3-O3-OPL-make
'those dogs, he stood them up, he made them'

TacNaw is a head-marking language with nominative-accusative alignment. Syntactic arguments are not marked for case. Subject and object(s) are obligatorily marked on the predicate with prefixes and suffixes for person and number. This marking is present whether there is a nominal subject or object(s) or not.

(2) ni-k-ita in kali 'I see the house'
S1SG-O3-see the house

Michel Launey (1994; 2002: 114–18) has called Urban Nawatl an omnipredicative language; he shows how not only verbs function as predicates, but also nouns, adjectives, demonstratives, and numerals, and how predicates function also as arguments. Launey's analysis of Urban Nawatl involves a particle, *in*, which plays a crucial syntactic role. In TacNaw this particle is used as a definite particle, and it seems to have lost some of its syntactic functions.

Examples (3) – (6) show how nouns, adjectives, and numerals in TacNaw receive subject prefixes,

(3)
ni-mo-no:tza **ni-Ma:teo** B. H. [04_04:01] 'I am called Mateo B.H.'
S1SG-R-call S1SG-Mateo B. H.

(p. 646)

(4)
ke kwa:ntoh katka **ni-pilli**=ok [10_03:06] 'that is when I was still a child'
that.is when past S1SG-child=still

(5)
neli **ni-a:kimichtik** ni-ehko-k ya:lwa [10_03:06]
very S1SG-wet S1SG-arrive-PR yesterday
'I arrived yesterday very wet'

(6)
Ø-te:ch-sentilia:-ya-h, n ti-e:yi-n, C., O., wa:n C.
S3-O1PL-gather-IMPF-SPL, the S1PL-three-PL C. O. and C.
'they gathered us, who are three, Concha, Oscar, and Cipriano'

In TacNaw there are no infinitives. A subordinate clause functions as object for the predicate in the main clause,

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(7)
Ø-ki-nemilih ke a:mo Ø-ki-neki mah Ø-ki-pale:wi [02_01:52]
$S3_i$-O3-think that not $S3_{ii}$-O3-want that $S3_{ii}$-$O3_i$-help
'he_i thought that he_{ii} would not want to help him_i'

Or, if there is coreferentiality between the two subjects, the two clauses are coordinate,

ke:man ti-ma:tami-h=ya ti-tachipa:wa-h,
when S1PL-finish-SPL=now S1PL-clean-SPL
(8) ti-k-pixka-h ne: in sinti [02_09:07]
S1PL-O3-harvest-SPL there the corn
'when we have finished weeding, we harvest the corn'

Where secondary predication might be expected, we usually find two coordinate predicates, see (5).

31.2 Basic Clause and Phrase Morphology

As a head-marking language TacNaw marks possessum for person and number of possessor in constructions expressing possession.[3] The most common order is possessum–possessor as in (9)–(10),

(9) i-sin in ta:ka-t 'the man's corn'
Ø-ki-pa:ta-h ne: in i-xiw-yo neho:n
S3-O3-dissolve-SPL there the P3SG-leaf-PO that
(10) pla:ntah de mowih [02_15:11]
plant of mohuite
'they dissolve the leaves from that mohuite plant'

(p. 647) Some nouns are marked with a suffix indicating that they are not possessed, thus the word for 'corn' (see (9)) is *sin-ti* when not possessed; this suffix, which also indicates singular, is traditionally called the absolute or absolutive suffix. Inalienable possession is expressed with the suffix *-yo/-o* (see (10)) on nouns where it makes sense to speakers of TacNaw.

The common plural suffix is *–meh*; the suffix *-wa:n* indicates possession and plural. Most nouns are thus marked for number and plus/minus possession. The subject is in (11)–(12) 3. Person.

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(11) (a) Ø-siwa:-t 'she is a woman'
(b) Ø-siwa:-meh 'they are women'

The morphology is not as simple as here presented, but allomorphs and detailed morphophonemics will only obscure the picture.

There is no gender distinction in TacNaw. But in the verb complex a plus/minus human distinction occurs which I deal with in section 31.3.4. In Urban Nawatl nouns were classified into living beings versus non-living objects. Only nouns referring to living beings had a plural form. Shortly after the Spanish invasion, the plural began to be used with all nouns, undoubtedly under influence from Spanish.

31.2.2 Relational nouns and locative constructions

Possessor prefixes also occur in constructions indicating the spatial relation between two objects. These constructions correspond to prepositional phrases in other languages. They consist of what is traditionally called a relational noun with a possessor prefix and a noun.

(12) ni-yah-ka=ya n **imin-wa:n** ni-tekiti-k [04_03:45]
S1SG-go-PR=now P3PL-with S1SG-work-PR
'I now went to work with them'

(13) wa:n Ø-ki-so:wa-h **i-tech** se: iswa-t [02_02:10]
and S3-O3-spread-SPL P3SG-on one leaf-ABS
'and they spread it out on a leaf'

31.2.3 Paradigms for person and number prefixes

We find three paradigms for person and number:

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		Subject	Object	Possessor
Sg	1	ni-	ne:ch	no
	2	ti-	mitz	mo
	3	Ø	ki, k, Ø	i

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(p. 648)

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		Subject	Object	Possessor
Pl	1	ti	te:ch	to
	2	nan	ame:ch	namo
	3	Ø	ki, k, Ø	in, imin

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The distribution of the three variants for object 3 person is phonologically determined: initial consonant clusters are not tolerated, so word initially we find *ki; k* gets absorbed by a following *k* if preceded by a vowel: *ki-mati* 'he knows it', *ni-k-mati* 'I know it', *ni-Ø-kaki* 'I hear it', *ki-kaki* 'he hears it', *nan-ki-kaki-h* 'you (pl) hear it'.

Plural of subject is indicated by a few suffixes which are tied to tense morphemes.

(14)

(a) ti-k-ita-h in kali 'we see the house'
S1PL-O3-see-SPL the house

(b) ti-k-ita-keh in kali 'we saw the house'
S1PL-03-see-SPL.PR the house

(c) ti-k-ita-s-keh in kali 'we shall see the house'
S1PL-O3-see-F-SPL the house

Reflexive is marked by a prefix, *mo*, for all persons in both singular and plural:

(15)
ni-mo-taloa 'I run'
S1SG-R-run

Plural of object is indicated by a prefix, *im*, which directly follows the *k/ki* 'object, 3. Person', resulting in *kim*,

(16)
ni-k-**im**-ita in siwa:-meh 'I see the women'
S1SG-O3-OPL-see the woman-PL

However, due to a rule which allows only one overt object prefix in di- or tri-transitive verbs (see 31.3.3), this prefix 'plural of object' will when alone refer to a second object in the plural:

(17)
ti-ne:ch-**im**-maka o:me to:toli-meh 'you give me two turkeys'
S2SG-O1SG-OPL-give two turkey-PL

(18)
Ø-mo-Ø-**in**-ki:xtilih [04_04:73]
S3-R-O3-OPL-make.leave.from
'he shook them (bees) off (of himself)'

This situation, richly documented in TacNaw, also existed in Urban Nawatl, although not well documented. Launey (1986: 199) writes,'Carochi en cite 3 exemplaires, don't (p. 649) nous n'avons malheureusement pas trouvé confirmation (ni d'ailleurs

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information) dans le reste du corpus: (388) (C.414) Xi-nēch-im-maca in motōtōlhuan “Donne-moi tes dindes” ’[4]

31.2.4 Root compounding

31.2.4.1 Nominal compounding

In TacNaw compounding is a productive strategy. That compounding is productive in this dialect is shown, for example, in the undoubtedly recent word for ‘telephone number’, *tepos-meka-tapo:wal* ‘iron-cord-count’, ‘count’ here in the sense of ‘a counting’. There is no upper limit for the number of roots that can be compounded to form a new word.

The last root of the compound is the head, and roots to the left of that are modifiers. Most long compounds have an internal constituent structure, being made up of several compounds. Thus *ista:k-te-kakawa-tl* ‘egg shell’ consists of *ista:k-te* (white-stone) ‘egg’ and *kakawa-t* ‘shell’ where ‘shell’ is the head and ‘egg’ the modifier. However, words with more than three roots are uncommon.

31.2.4.2 Verbal compounds

There is less flexibility and creativity in the compounding of verbal roots. Four such types exist, the first three of which were also frequent in Urban Nawatl.

(i) Verb1 is the main verb, and verb2 indicates the manner in which the action takes place; the two are combined with *t(i)*, traditionally called a ligature. Only eight verbs of motion appear in this function:

(19)
a la o:rah de Ø-mo-e:wi-**ti-ketza** in tawito:n
at the hour when S3-R-set.off-LIG-stand.up the bird.snare (w. stick)
Ø-mo-metz-piloh-**ti-ki:sa** in palo:mah [02_14:21]
S3-R-leg-hang-LIG-go.out the dove
‘when the stick straightens up, the dove’s leg gets caught and it hangs’

(ii) The second construction also deals with motion, indicating movement hither or thither before the action of the main verb. The second verb exists only in abbreviated forms in this construction. Launey calls these constructions ‘extroverse’ and ‘introverse’.

(20) (a) se-ko:sah=sah Ø-ki-ta:lih-**ti:wi**-h [10_01:06]
one-place=only S3-O3-place-go.to-SPL
‘they just go to put it in one place’

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(p. 650)

(b) nika:n ti-k-in-ka:wa-**ko**-h nika:n [04_08:03]
here S1PL-O3-OPL-leave-come.PR-SPL here
'we came here to leave them'

(iii) In a few fixed expressions *neki* 'want' is entered as V2 after a future form of V1. It means 'want to V1'. In another type which also has *neki* as V2, V1 is either a noun or an adjectival form. It has the meaning 'to pretend to be N/V1'. The latter are all reflexive.

(21)
(a) Ø-k-ihto:-s-**neki** 'that is to say'
S3-O3-say-F-want
(b) Ø-mo-kokox-ka:-**neki** 'he pretends to be sick'
S3-R-be.sick-PAR-want
(c) Ø-mo-koyo:-**neki** 'he pretends to be a mestizo'
S3-R-coyote-want

(iv) Contrary to the first three types, the stable verb is here V1, tami 'finish, complete', and it simply means to finish V2. I have not seen this construction in other varieties of Nawatl.

(22) wa:n de ompa ti-k-**tami**-chichinoa-h
and then there S1PL-O3-finish-burn-SPL
'and then we finish burning it' [04_15:18]

31.3 Verbal Roots and Verbal Derivation - Valency

Historically verb roots have the following shape, CVC, *ne:s* 'appear', *koch* 'sleep', *mik* 'die', *cho:k* 'cry', *tzop* 'close up', *kak* 'hear', *to:k* 'bury', *no:tz* 'call', *mak* 'give'. At some point before the diversification of dialects, the root was extended with a vowel which originally indicated valency of the verb, *-i* for intransitives, and *-a* for transitives. This assumption is based on the observation that in all dialects of Nawatl most underived intransitive verbs end in *-i*, and most underived transitives end in *-a*. However, there are enough exceptions to not make this an absolute rule.

INTRANSITIVE		TRANSITIVE	
ne:si	'appear'	kaki'	'hear'

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kochi	‘sleep’	to:ka	‘bury’
miki	‘die’	‘no:tza‘	‘call’
cho:ka	‘cry’	‘maka’	‘give’
tzopi	‘close up’	‘tzopa’	‘close up’

In running text most verbs are derivations from simple verbs. Two types of verbs derived from simple roots exist:

(p. 651)

i. The first type, discussed in 31.3.1, is non-productive and the roots from which they are derived, no longer exist as simple verbs
ii. The suffixes used in the second type (see 31.3.2) serve to create a valency system with causatives and applicatives; some of these forms can be produced at will, and most of the possible causatives exist, and the regularity and pervasive use of these derived verbs make it appropriate to say that they are formed productively.

The same system exists in Urban Nawatl as well as in other dialects where we find roughly the same simple verbs, the same types of historically derived verbs, and the same valency system. Naturally, there is variation in detail, but the overall picture is the same.

31.3.1 Non-Productively Derived Verbs

Verbs in the non-productive system of derived verbs which appears to involve certain semantic features (see Canger 1980: ch. v), fall into three classes with the following sets of suffixes, 1) *-wa-ya/wa, -wi/-oa*, 2) *-ya/-lia*, and 3) *-ni/-n(i)a*.

The content of the first class describes the surface, shape, or size of subject/object. Verbs of the second class, in *-ya* for intransitive and *-lia* for transitive, refer to taste, smell, and other sensations. Verbs in class three, in *-ni/-n(i)a*, indicate sound, a feature observed already by Carochi (1645: f. 73v), and the act of spreading.

From these three classes of roots adjectival forms are also derived:

(23)
(a) Ø-toma:-waya ‘he becomes fat’
(b) Ø-ki-toma:-wa ‘he makes it fat’
(c) Ø-toma:-wa-k ‘it is fat’

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(24)	(a)	Ø-maxali-wi	'it splits'
	(b)	Ø-ki-maxal-oa	'he splits it'
	(c)	Ø-maxal-tik	'it is split'
(25)	(a)	Ø-poye:-ya	'it becomes salty'
	(b)	Ø-ki-poye:-lia	'he salts it'
	(c)	Ø-poye:-k	'it is salty'
(26)	(a)	Ø-molo:-ni	'it boils'
	(b)	Ø-ki-molo:-nia	'he boils it'
(27)	(a)	Ø-xiti:-ni	'it collapses'
	(b)	Ø-ki-xiti:-nia	'he demolishes it'
	(c)	Ø-xiti-ktik	'it is frayed, unraveled'

(p. 652) Two more verbs are formed from the last class of roots, an intransitive and a transitive one, which add repetitiveness to the meaning. They are formed with reduplication and two suffixes, *-ka* and *-tza*,

(28)	(a)	Ø-xi-xiti-ka	'it collapses repetitively'
	(b)	Ø-ki-xi-xiti-tza	'he makes it collapse continually'

31.3.2 Derived verbs—valency system

The derivational suffixes which participate in the valency system, create causatives and two distinct applicatives. The suffixes for causatives are *-tia* for intransitive verbs and *-ltia* for transitive verbs. The suffixes for applicatives are *-lia* and *-ia*. The suffix *-lia* is well known in all Nawatl dialects and well described with some phonological variation (Canger 1980: ch. iv), whereas *-ia* has not been described for other dialects, although it existed with the same functions in Urban Nawatl as in TacNaw, see Canger 2012.

(29)	(a)	Ø-ki:sa	'he goes out'
	(b)	Ø-ki-ki:x-**tia**	'he takes it out'
	(c)	Ø-ki-ki:x-**ti-lia**	'he takes it out for/from him'
	(d)	Ø-cho:ka	'he cries'
	(e)	Ø-ki-cho:k-**tia**	'he makes him cry'
	(f)	Ø-kiø-cho:ki-**lia**	'he cries for him'

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In constructions with applicatives in *-ia* the first object, also called direct object, is demoted and cannot be referred to. As a consequence, the so-called indirect object, the object added when the applicative is created, becomes the main object. The first or direct object is indicated either by an incorporated noun or by a prefix, *ta*, the role of which is to suspend referentiality (30c and 30d), see 31.4.2.

(30)

(a) Ø-ki-ko:wa 'he buys it'
S3-O3-buy

(b) Ø-ki-Ø-ko:wi-**lia** 'he buys it for/from him'
S3-O3-O3-buy-APP2

(c) Ø-ki-**ta**-ko:w-**ia** 'he shops for him'
S3-O3-SUSPN-buy-APP

(d) Ø-ki-**taxkal**-ko:w-**ia** 'he buys tortillas for him'
S3-O3-tortilla-buy-APP2

Causatives and applicatives in *-lia* are derived from intransitive verbs as well as from transitive verbs, and applicatives in *-lia* are derived also from causatives, see (29c), whereas applicatives in *-ia* are derived only from simple transitives.

(p. 653)

31.3.3 Valency and argument indexing

Valency enhancement is thus handled by derivation in the system of inchoatives, causatives, and applicatives, expressed by suffixes as I have presented. In TacNaw I recognize no valency reduction, a standpoint which will be discussed in 31.3.5.

For my analysis it is a crucial point that the concept of valency of a verb is inherent. The verb *kwa* 'eat' is inherently transitive, its conceptual meaning is transitive—whatever construction it appears in. And the verbs *maka* 'give' and *ki:xtilia* 'take out for' are conceptually transitive—in all constructions.

The valency of a verb is reflected in the argument indexes which are co-nominated with co-referential nominal in the same clause. This is terminology which I have taken from Haspelmath (2013) who discusses a well-known problem of how to analyze the status of obligatory bound person forms and overt argument nominals. By adopting Haspelmath's analysis and terminology I avoid discussing whether nominal arguments are arguments or adjuncts—as argued by Jelinek (1984) and many others. Although I have taken over Haspelmath's terminology, the present analysis by far predates my reading of his article simply because an analysis with argument indexes (obligatory pronominal affixes) and nominal arguments seems natural.

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The discussion of indexing is restricted to third person since first and second persons are deictic and do not participate in the syntactic system of indexing.

Third person index *k(i)-*, see 31.2.4, is indiscriminate as to gender and number, and it will co-nominate definite and indefinite nouns as well as indefinite pronouns and another clause, see (7) for clause as object.

(31)
ya:lwa ni-k-ita-k se: a:skakwahkeh 'yesterday I saw an anteater'
yesterday S1SG-O3-see-PR one anteater

(32) to:ni ti-k-ihtoa 'what do you say'
what S2SG-O3-say

(33) tehsa: Ø-ki-kwa-h 'he ate something'
something S3-O3-eat-PR

According to a rule mentioned in 31.2.3 only one object prefix is allowed in a verb complex, but since the conceptual meaning of ditransitive verbs includes two objects, and since there is a slot after an object prefix which can be filled with an incorporated object or another prefix *ta* or *te:* to which I shall return, I indicate a second object with a zero.

(34)
ni-k-Ø-maka no-siwa:-w se: wi:pi:l 'I give my wife a huipil'
S1SG-O3-O3-give P1SG-woman-PO one huipil

Nawatl does not mark the difference between direct and indirect object the way many descriptions seem to indicate. There is a hierarchy giving priority to first and second person (p. 654) objects, but between two third person objects there is no indication of which is referred to by the prefix *ki-* and which by zero. In (34) we can posit that *ki-* refers to 'my wife' and zero to 'huipil', however, there is no overt expression to support this interpretation.

31.3.4 Suspension of referentiality 1

Naturally, there are situations where speakers of TacNaw wish to talk about someone eating without necessarily saying what the person is eating. In such sentences the third person object index *ki-*, which consistently refers to some item in the broader context, cannot appear.

For this situation TacNaw—like all Nawatl dialects—has a prefix *ta* (*tla* or *la* in other dialects) which suspends the requirement of referentiality. In fact, speakers have at their disposition two such prefixes, *ta* and *te:*. Here TacNaw makes a semantic distinction

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between human and non-human: *te:* is restricted to suspending reference to a potential human item, whereas *ta* covers everything else.

(35)
ni-ta-kwa 'I eat'
S1SG-SUSPN-eat

(36)
porke a:mo ni-k-mati-ya
because not S1SG-O3-know-IMPF
ox Ø-kakisti-ti xa: Ø-te:-kwa [02_01:95]
if S3-sound-to.go if.maybe S3-SUSPH-eat
'because he did not know if it is going to make a sound, if it might eat people'

In some descriptions of Nawatl, verbs with the prefix *ta* are considered to be intransitive. The prefix is described as a detransitivizer, and the form is called an antipassive (Flores Nájera 2009). The same is true for constructions with the prefix *te:*, but since its occurrence is less common, it receives less attention, although it functions exactly like *ta*. By analyzing (35) as an intransitive verb, the inherent valency and the conceptual meaning of the verb is not recognized, but what is worse, a significant generalization is missed: The prefixes *ta* and *te:* have the function of suspending reference, not only to an object, but also to the subject of intransitive verbs (in this case only *ta*), and to possessor of nouns (in this case only *te:*), and to relational nouns and locative expressions; see 31.4.3.

31.3.5 Valency reduction

In grammatical descriptions of Urban Nawatl we find a form traditionally called passive and another named impersonal. These forms are constructed with the suffixes *-lo* and *-wa*. In my study of TacNaw I have been able to elicit a few forms with *-lo*, but there is not one example of such forms in the text corpus. Suppression or demotion of subject is expressed either with *se:* 'one', or with a reflexive form. In neither case can we talk about valency reduction.

(p. 655)

(37)
se: Ø-ki-bo:-bo:lsah-te:ma [04_18:03] 'one pours it into bags'
one S3-O3-RED-bags-pour

(38)
Ø-mo-kaki fye:roh [02_01:91] 'it is heard in an ugly way'
S3-R-hear ugly

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31.4 Noun Incorporation

Noun incorporation and the incorporation of adverbials in the verb is in TacNaw a common and productive strategy for synthesizing much information in one word. There are four types of noun incorporation: subject incorporation, object incorporation, possessor raising, and the incorporation of a noun or an adverbial with the purpose of describing the action of the verb.

In my TacNaw material I have not been able to identify the elegant progression of discourse functions which Mithun (1984a) establishes for her four types of incorporation. The three types I here describe are based on the simple criteria mentioned.

Incorporation of all three types is used, as Mithun says, for a reason: they refer to common or institutionalized activities, and consequently many of them are lexicalized, but in a language where compounding and incorporation is such a widespread strategy, it is impossible to determine how many times a complex word should be used in order for it to be called a lexicalization.

31.4.1 Subject is incorporated in a few cases referring to natural events.

(39) ta:l-ta:-tapa:ni [CSC] ‘the earth cracks’
earth-RED-crack

31.4.2 Object incorporation—valency

Object incorporation in polysynthetic languages has received much attention in the last three or four decades (see Mithun 1984a, Baker 1996, and many others), and Nawatl is often quoted as an example. It is therefore worth observing that object incorporation is not productive in all dialects of Nawatl (see 31.6). In TacNaw, however, it occurs, although not as frequently as possessor raising, and the incorporation of a noun or an adverbial. Some examples are,

(40)

(a) Ø-ki-chichi:na n tasa:l n a:-t [RBG] ‘the clothes absorb the water’
S3-O3-absorb the clothes the water-ABS

(p. 656)

(b) a:mo Ø-a:-chichi:na n ta:l [CSC] ‘the earth does not absorb water’
not S3-water-absorb the earth

The following is an example of object incorporation with a ditransitive verb,

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(41)

we:noh, neh ne: ni-k-in-a:-maka-ti ne: in tapial-meh [04_12:33]
good I there S1SG-O3-OPL-water-give-go.to there the animal-PL
'good, I'll go there and give the animals water'

A widespread and unquestioned analysis states that the incorporation of an object to a transitive verb makes the verb intransitive, and incorporation of an object to a ditransitive verb makes it monotransitive. According to such an analysis the verb in (40a), *Ø-ki-chichina* 'it absorbs it' is transitive, whereas the verb in (40b), *Ø-a:-chichi:na* 'it absorbs water' is intransitive. Galust Mardirussian to whose article, 'Noun-incorporation in universal grammar', many scholars refer concerning noun incorporation, states that, after incorporation of the noun the verb becomes intransitive (if it was not already so).' He goes on to say, 'From this it follows that other syntactic phenomena which are sensitive to the transitive/intransitive distinction will behave differently after noun-incorporation has taken place' (Mardirussian 1975: 384).

It seems to me that Mardirussion here reverses the inference. He first gives an absolute statement: verbs with object incorporation become intransitive, and then an inference from this statement: 'other syntactic phenomena … will behave differently after noun-incorporation has taken place,' I believe that the result, that is, the inference, is in fact his argument for the statement. The syntactic phenomena which he and others after him refer to, stem from Mayan—as well as other languages which have one set of subject prefixes for intransitive verbs and another for transitive ones.

It certainly makes sense to claim that a verb with an incorporated object is analyzed as an intransitive verb if there is syntactic evidence for this. But in languages where there is no such syntactic distinction, I see no reason to automatically analyze them in the same way. By doing so one ignores the inherent valency and the conceptual meaning of the verb. It makes the concept of valency a purely syntactic phenomenon with disregard for the semantic aspect of it. I find it semantically counterintuitive to claim that the following two clauses do not have the same valency:

(42)

(a) a:mo Ø-ki-kwa naka-t 'he does not eat meat'
not S3-O3-eat meat-ABS
(b) a:mo Ø-naka-kwa 'he does not eat meat'
not S3-meat-eat

From a traditional syntactic point of view, I agree that one would describe the verb in (42b) as intransitive, but that does not capture the way Nawatl functions. One might ask whether traditional syntax offers the best tools for analyzing polysynthetic languages.

In 31.3.2 I mentioned that there are two applicatives in TacNaw, the well-known one with the suffix *-lia*, and the other with *-ia*. Applicatives derived from transitive verbs (p. 657) with the suffix *-ia*, have focus on what we might call the indirect object, the benefactive or

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malefactive; while the so-called direct object is demoted and indicated either by the prefix *ta/te:* or by an incorporated noun. The incorporated noun and *ta/te:* thus share a function, namely, to background or suppress the direct object.

(43)

ni-k-Ø-ilia:-ya no-we:yi-na:n mah **Ø-ne:ch-siwa-htan-i**[5]
S1SG-O3-O3-say-IMPF P1SG-big-mother that S3-O1SG-woman-ask.for-APP2
wa:n a:mo Ø-ki-neki-k **Ø-ne:ch-Ø-ihtani-li-:s** ne: siwa:-t [07_11:23]
and not S3-O3-want-PR S3-O1SG-O3-ask.for-APP1 that woman-ABS
'I said to my grandmother that she should ask for a woman for me, and she did not want to ask for that woman'

5

In (43) we have this distinction exemplified. From the transitive verb, *ihtani* 'ask for a woman's hand' an applicative in *-lia* appears in the second part of the example; the two objects are *ne:ch* 'object 1. person singular' and *ne: siwa:-t* 'that woman'. In the first part of (43) the applicative in *-ia* appears. The benefactive object is the same as in the second part, namely, *ne:ch* 'object 1. person singular', whereas the so-called direct object is incorporated and thus has the expected generic nature of incorporated objects.

Example (44) shows the use of the prefix *ta* in applicatives with *-ia*.

(44)

xa: a:ksa: Ø-mitz-**ta**-po:w-ia-:ya tehwa-tzi:n [10_29:076]
probably someone S3-O2SG-SUSPN-tell-APP2-IMPF you-REV
'probably someone told you something'

In TacNaw incorporated objects are generic in the sense that they do not refer to specific identifiable items. This differs from how Merlan describes incorporation in Nawatl spoken in the Huauhtla area, a description which is later profusely cited. As already mentioned (31.1.2), in 2014 I visited the community from where her informant came, and have found no confirmation of the validity of her examples (Canger 2014).

That an incorporated object is generic does not mean that it cannot subsequently be referred to, but as a generic term.

(45)

wa:n achto:pa ni-k-welita-ya demela:w ni-**xo:no:**-ehke:wa-s
and first S1SG-O3-like-IMPF really S1SG-jonote-flay-F
ni-k-a:-pachoa se: ki:nse dias [11_07:223]
S1SG-O3-water-soak one fifteen days
'and formerly I really liked to flay the jonote, I soak it some 15 days in water'[6]

6

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(p. 658) The incorporated object in the first clause is *xo:no:* 'jonote', and in the following clause the object prefix, *k-*, appearing in *ni-k-a:-pachoa*, refers back to the incorporated *xo:no:*, but it still refers to a generic, and not a specific jonote.

31.4.3 Suspension of referentiality 2

I have argued that *ta* and *te:* are not simple detransitivizing morphemes, but that their basic function is suspension of referentiality in general. There is evidence that an incorporated noun functions like *ta* and *te:*. In other words, it makes sense to recognize that an incorporated object is present, but needs no reference.

The use of *te:* with nouns indicating suspension of reference to possessor is limited to nouns which must be marked for possession, that is, inherently possessed nouns, such as close relatives. The two morphemes *ta* and *te:*, are not—like other phrasal morphemes—limited to specific syntactic constructions. This broad use of the prefix *ta/te:* is a significant feature of Nawatl; however, probably because it fits poorly into most theoretical paradigms, it has not been given this unifying description in other analyses of Nawatl. By describing the function of the two morphemes as suspending reference I have identified what they share in all constructions where they occur.

Example (35) showed how *ta* suspends reference to objects. The following are examples of *ta* suspending reference to subject (46b) and (47b), *te:* suspending reference to possessor (48), and *ta* and *te:* suspending reference to relational nouns and other locatives (49) and (50):

(46)

(a) Ø-ihxi:ka in tasa:l 'the (washed) clothes drip'
S3-drip the clothes

(b) **ta**-hxi:ka kal-ihtik 'it drips/there is dripping inside the house'
SUSPN-drip the house-inside

(47)

(a) ni-i:xkawa:ni 'I glow with heat'
(b) **ta**-i:xkawa:ni 'it is hot'

(48)

wa:n ompa, ke:mah, ni-k-ita=ya ne: n **te:**-mama:n
and there yes S1SG-O3-see=now there the SUSPH-mother
'and there, yes, now I check the mother' (says the midwife) [10_16:93]

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(49) miyak-eh Ø-yowi-h, pero yeh a:mo **te:**-wa:n [CSC]
much-PL S3-go-SPL but he not SUSPH-with
'many go, but he does not go with others'

(50) nika:n **te:**-i:xte:noh [11_07:140] 'here in front of people'
here SUSPH-in.front.of

(p. 659)

(51)

(a) **i-nakas-tan** n kal-i 'next to the house'
P3SG-ear-LOC the house-ABS

(b) kwaltzi:n Ø-ta-chihchi:w-tok ompa ihko:n **ta-nakas-tan** [02_08:54]
beautiful S3-SUSPN-decorate-is there thus SUSPN-ear-LOC
'it is decorated beautifully there at the side'

(c) **kal-nakas-tan** 'next to the house'
house-ear-LOC

A comparison of (51b) *ta-nakas-tan* 'at the side' and (51c) *kal-nakas-tan* 'next to the house' shows how *ta* and a noun share the function of serving as substitute for a possessor prefix. As I showed in 31.4.2, an exact parallel case holds for incorporated objects and *ta*: both suspend the otherwise required referentiality. Baker suggests that *tla* (in TacNaw *ta*) is a noun root,

> *Tla* is usually described as being a special kind of object agreement morpheme. However, this does not explain the fact that *tla* occurs in a different position within the verb complex than true object agreements do (closer to the verb root), nor the fact that verbs with *tla* can be the input to derivational morphology (e.g., nominalization, as in (73)). Both of these facts are consistent with the view that *tla* is actually a noun root. (Baker 1996: 395, f.n.28)

This an interesting suggestion, which supports my analysis of *ta/te:* and an incorporated noun sharing a function. However, my analysis does not make *ta* and *te:* nouns, and historically they are not noun roots—contrary to Baker's suggestion. According to Langacker (1976: 129),

> There seems little doubt that *ta- marked unspecified subject in Proto Uto-Aztecan while *tɨ- marked unspecified objects…. The distinction between human and non-human objects in Aztec [Nawatl] is almost certainly secondary; since there is no indication of such a contrast in any other subfamily.'

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31.4.4 Possessor raising

The second type of noun incorporation in TacNaw has been described for other varieties of Nawatl. Peralta (2013), who analyzes Nawatl of Amanalco, state of Mexico, uses the term external possession and recognizes three constructions with external possession: 1) with incorporation, restricted to body parts; 2) with applicative where the possessor is raised; and 3) with both incorporation and applicative. Peralta focuses on the semantic differences between internal and external possession in the three constructions.

In this description of TacNaw I shall deal with two constructions.

31.4.4.1 Raised possessor and incorporated possessum

Possessor is raised to function as an argument; in the case of intransitive verbs possessor acquires the function of subject, and with transitive verbs it becomes object. The possessum which, like in Amanalco, is restricted to body parts, is incorporated. There is no change of (p. 660) valency in the verb. In order to make the functions absolutely clear I have chosen to give an example, (52), in which the subject, that is, the raised possessor, is first person.

(52) ni-tzon-tepe:wi ‘my hair falls out, I lose my hair’
S1SG-hair-drop

porkeh Ø-tan-wetzi, Ø-tan-tepe:wi,
because S3SG-tooth-fall S3SG-tooth-drop

(53) wa:n ihkwi Ø-miki n itzkwin-ti [10_04:13]
and thus S3SG-die the dog-ABS
‘because its teeth fall out, drop out, and thus the dog dies’

According to Peralta (2013:131–2) the incorporation of possessed body parts to intransitive verbs, raising the possessor to subject position, is not found in other Mesoamerican languages.

The following examples show how possessor is raised to subject position and possessum is incorporated. In (54) possessor also occurs as a noun, *pili* ‘child’. In order to make it more transparent one might translate it ‘clean the child concerning the nose’.

(54)
xi-k-yeka-po:powa n pili mah a:mo ihkwi Ø-nen-ti-nemi [CSC]
IMP-O3-nose-clean the child that not thus S3-go-LIG-go
‘clean the child’s nose! So that it should not go around like that’

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(55)
Ø-wa:lah-keh=ya xi-mo-mah-teki wa:n xi-ta-kwa=ya [07_12:11]
S3-come-SPL.PR=now IMP-R-hand-wash and IMP-SUSPN-eat=now
'now they have come, now wash your hands and eat!'

31.4.4.2 Applicative plus possessed nominal object

In the second construction, which is restricted to transitive verbs, possessor is raised to object position, and that requires a change of the transitive verb to an applicative, and possesum is not incorporated, but marked with possessor prefix. In other words, possessor is marked twice: with an object prefix in the verb and with a possessor prefix on the nominal object. In Nawatl of Amanalco this construction is restricted to kinship terms. Examples (56)–(57) show that that is not the case in TacNaw.

(56)
ni-mitz-Ø-alaxowi-lia mo-ikpal [CSC] 'I sand your bench'
S1SG-O2SG-O3-sand-APP1 P2SG-bench

wa:n ke:manya:n ni-kech-teki-ti,
and when S1SG-neck-cut-go.to

(57) Ø-ne:ch-Ø-ma:-kwi-li-h no-naba:hah [10_03:22]
S3-O1SG-O3-hand-grab-APP1-PR P1SG-knife
'and when I am going to cut its throat, it grabbed my knife'

(p. 661) #### 31.4.4.3 Peralta's third type of external possession

Peralta's third type of possession, which he defines as combining incorporation with applicative, differs from what one finds in TacNaw. It corresponds to the already mentioned construction (see 31.3.2 and 31.4.2) with the second applicative, in *-ia*, in which a generic object is incorporated, and in this construction only the benefactive object can be referred to, see (30d). Apparently this second applicative, in *-ia*, is not found in Nawatl of Amanalco. Since incorporated objects are generic in TacNaw, this construction cannot be considered a case of possessor raising—or external possession.

31.4.5 Modifying incorporation

In a third type of construction with incorporated nouns the nouns function adverbially, indicating location, instrument, or manner. Launey calls this the modifying type. An example of modifying incorporation referring to location is found in example (37).

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(58)

ihko:n kami:sah-meh ni-k-in-ma:-chihchi:wa-ya, de ta:ka-t [13_07:324]
thus shirt-PL S1SG-O3-OPL-hand-make-IMPF of man-ABS
I thus made shirts by hand, men's shirts'

Another type of modifying incorporation involves incorporated adverbials, and this is an extremely common construction in TacNaw. For some reason it has not received much attention in descriptions of Urban Nawatl where it also occurs frequently. Some examples from TacNaw are:

(59)

(a) chiko 'to one side, in a crooked way'
ni-chiko-ihkopi 'I close one eye'
ni-k-chiko-ihtoa 'I curse him'
ni-chiko-ki:sa 'I go out at the side'

(b) na:l 'through an opening, to the other side'
ni-na:l-ki:sa 'I go out (from a cave, through a window …)'
ni-na:l-kalaki 'I go in (into a cave, through a window …)'
Ø-na:l-to:na '(sun) light shines through (clouds)'

(c) pinis 'messily versus *ye:k* 'orderly'
ni-k-pinis-ochpa:na 'I sweep it messily'
ni-k-ye:k-ilpia 'I tie it in an orderly way'

(d) ma:l 'wickedly' (loan from Spanish)
ni-ma:l-ta-htoa 'I curse'

In all, there are more than twenty-five such adverbials, including some which deal with direction: 'this way', 'that way', 'upwards', 'downwards', etc.

There is some variation in the order of elements in constructions with modifying incorporation. Speakers seem to vary as to the order of *ta* and the incorporated noun or adverbial, (p. 662) a fact which to me shows how productive these forms are. We thus find both *Ø-na:l-ta-kaki* and *Ø-ta-na:l-kaki* for 'he listens for what goes on outside' (said by a person who is inside). In a recording a speaker uses within less than a minute the following two forms, meaning 'the act of weeding by hand',

(60)

ta-ma:-me:wa-lis	ma:-ta-me:wa-lis [11_07:05. 12]
SUSPN-hand-weed-NOUN	hand-SUSPN-weed-NOUN

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31.5 Reduplication

The prefix *ta/te:* is not the only case of a morphological phenomenon that functions broadly in TacNaw and cuts across word classes. Several types of reduplication of the first syllable of a noun, a verb, an adjective, an adverb, or a numeral are found in TacNaw, and they are profusely used. Like in other Nawatl dialects where reduplication is as frequently occurring as in TacNaw (see Canger 1981), there are three shapes of reduplication: CV-, CVh-, and CV:-. Reduplications with CV- are not productive, but found only in a few single words and in a system of derived verb pairs, an intransitive and a transitive verb. Here the reduplication indicates repetitiveness, see examples (28a) and (28b).

The use and meaning of the other two types of reduplication is complex, and this is not new. In presenting reduplication with verbs Carochi (1645, F.70r-v) says,

> El saber en que ocasion se had de doblar esta syllaba primera, y como se ha de pronunciar, si con saltillo ò sin el. Y saber, que significa puntualmente el verbo, quando la primera syllaba doblada tiene saltillo, y quando tiene accento largo, es la cosa mas difficil q[ue] hay en esta lengua.

Basically reduplication in CVh- indicates distributive, and CV:- indicates consecutive, but CV:- also has a second, very different meaning which I have called ‘pseudo-’, ‘pretense’, or ‘like but not identical to x’. The word *kali* means ‘house’, and *ka:-kali* refers to a shed, to something house-like, but not for people to live in.

Examples of CVh-,

(61) ti-k-**teh**-tekih n kwow-tzi:n ‘we chop the wood’
S1PL-O3-RED-cut-SPL the wood-DIM

(62) Ø-**xoh**-xo:ta nochi n te-t ‘every stone was on fire’
S3-RED-be.on.fire all the stone-ABS [11_07:34]

(63) **oh**-o:me ni-k-to:ka-ti n e-t [RBG]
RED-two S1SG-O3-sow-go.to the bean-ABS
‘I am going to sow beans, two in each hole’

(p. 663)

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(64)
e:yi, se: ta-tahko Ø-mo-no:tza te:-na:n,
three one SUSPN-middle S3-R-call SUSPH-mother
wa:n o:me i-**keh**-ke:s-pampa [02_01:08]
and two P3SG-RED-thigh-on
'three, one in the middle called the mother, and two, one on each side'

(65) Ø-ki-**teh**-tel-iksa 'he steps on it several times'
S3-O3-RED-very-step.on

Examples of CV:- in the sense of 'consecutively, orderly, one after the other',

(66) se: Ø-ki-**bo:**-bo:lsah-te:ma [04_18:03] 'one pours it into bags'
one S3-O3-RED-bag-pour

(67) **me:**-metz-ti-ka 'every month'
RED-month/moon-LIG-ka

(68)
ka:n owih, Ø-pe:wa-k ni-k-**ta:**-ta:lia, ni-k-**ta:**-ta:lia
not hard S3-begin-PR S1SG-O3-RED-place S1SG-O3-RED-place
'it is not difficult, I began to place it, to place it

(69) wa:n xi-k-**ma:**-mati-ti tiyo:tak [11_07:115]
and IMP-O3-RED-know-go.to afternoon
'and go to see her many times (day after day) in the afternoon

Below are a few examples of the second meaning of CV:-,

(70) se: pane: ka:-kal-tzi:n [11_07:27]
one it.seems RED-house-DIM
'one (a sweat-bath) that seems a small house'

(71)
ko:-kochi-ni
RED-sleep-HAB
'it pretends to sleep' (name of a plant that folds its leaves when touched)

Both CV:- and CVh- can occur in the same word. In (72) *tza:-* indicates the regularity of pruning (ever so often), and *tzah-* tells us that pruning is done here and there on the tree.

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(72)
Ø-ki-tza:-tzah-tzaya:na-h [CSC] ‘they always prune it (a tree)’
S3-O3-RED-RED-cut-SPL

(p. 664) However, the meaning of reduplication is not always obvious to a non-speaker of TacNaw. A speaker has explained to me that reduplication in (73) in *pa:-pati:yoh* indicates ‘a little more expensive’!

no Ø-ki-ko:-ko:wa-ya-h tehsa: sombre:roh
also S3-O3-RED-buy-IMPF-SPL something hat
(73) te:in achi Ø-**pa:-pati:yoh** [11_07:165]
which a.bit S3-RED-dear
‘they also bought a hat which was a bit more expensive’

31.6 Polysynthesis in Another Nawatl Dialect

Nawatl[7] is still spoken in three small communities in the northern part of the state of Guerrero, some 125 kilometers southwest of Mexico City. North Guerrero Nawatl (CcNaw) is radically different from TacNaw, a difference which is particularly striking in the typological features of the two. My knowledge of this dialect is from a town called Coatepec Costales where for several generations Nawatl has not been spoken by children who, however, learn it as they grow up, see Canger (2009).

CcNaw noun compounding exists, but it is my impression that the many examples I have registered can be said to be lexicalized, and formation of compounds does not seem to be a productive process. They are particularly common in names of trees and plants.

In many cases what would be a compound in TacNaw is in CcNaw constructed on the Spanish model of ‘A de B’,

	CcNaw	TacNaw	
(74)	tequil de morrales	xo:chi-chi:walis	‘work with x’
	work of bags	flower-work	
	omi-l de masa:l	masa:-omi-t	‘deer bone’

Object incorporation is not a strategy that I have observed in CcNaw at all. Incorporation with possessor raising exists. However, here again the examples I have registered appear to be clear lexicalizations. Adverbial incorporation seems to exist solely in lexicalized form.

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Of the four types of V + V compounding described for TacNaw, only the first type is used in CcNaw, and with the same auxiliary verbs that are found in TacNaw,

(p. 665)

(75)
Ø-m-tu:ka in mexkali kune:l para ya Ø-mapaw-ti-ka [Canger 1993:16]
S3-R-bury the maguey child so.that now S3-grow-LIG-is
'one plants the maguey off-spring so that it can grow'

(76)
ukinu in xiul ya Ø-ki-nekwalti'-ti-yaw in ilu [Canger 1993:83]
Then the heddle now S3-O3-separate-LIG-go the thread
'then the heddle goes separating the thread'

The second type of verb compounding, which Launey calls extroverse and introverse, see 31.2.4.2, is not found in CcNaw, and the third type exists only in one lexical example, *ki'tu:sneki* 'that means'.

The lack of polysynthetic features observed for CcNaw is also characteristic of Nawatl spoken on the coast of Michoacan and in the state of Durango. The first explanation that comes to mind in order to account for the striking typological difference between TacNaw and CcNaw is Spanish influence which can certainly also be observed in the number of loan words and other borrowed features in CcNaw. However, we know little about what other original languages might in the past have influenced Nawatl in the area west and southwest of present-day Mexico City

31.7 Conclusion

Since Nawatl is not a homogeneous language, but holds great dialect variation, I have limited the description to the dialect spoken in one community, Tacuapan, which excels in root compounding and incorporation, but also referred to features in Urban Nawatl. Contrary to Merlan I argue that incorporated objects are generic and I support this position with examples. Through a comparison of polysynthetic features in TacNaw with the dialect spoken in North Guerrero, CcNaw, I have demonstrated that not all Nawatl dialects are equally polysynthetic.

In the description I have focused on valency and incorporation, taking the stand that a conceptual approach is more appropriate for a description of TacNaw, and I have as a consequence argued that object incorporation does not lead to a change in valency. I have shown that valency and referentiality are features overtly marked in TacNaw and emphasized the role of a prefix, *ta/te:* whose function is to suspend referentiality at all

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levels of grammar. For lack of space I have not included the observation that suspended referentiality to subject in so-called passive and impersonal forms in Urban Nawatl forms part of this pervasive system of referentiality and its suspension (see Canger 1996).

Abbreviations

A
adjective suffix
ABS
absolute/absolutive suffix
APP1
applicative 1 (-lia)
APP2
applicative 2 (-ia)
F
future
CAUS
causative (p. 666)
DIM
diminutive
F
future
HAB
habitual
IMP
imperative
IMPF
imperfect
O1SG
object, first person singular
O1PL
object, first person plural
O2SG
object, second person singular
O2PL
object, second person plural
O3
object, third person
OPL
plural of object
R

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reflexive
RE
reduplication
P
possessor
PAR
participial
PL
plural
PO
possession
PR
preterite
P1SG
possessor, first person singular
P2SG
possessor, second person singular
P3SG
possessor, third person singular
P1PL
possessor, first person plural
P2PL
possessor, first person plural
P3PL
possessor, third person plural
R
reflexive
RED
reduplication
REV
reverential
S
subject
S1SG
subject, first person singular
S1PL
subject, first person plural
S3
subject, third person
SPL
plural of subject
SUSPH
suppression of referentiality, human

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SUSPN
suppression of referentiality, non-human

Notes:

(1) In spite of Nahuatl being the more common spelling, I prefer Nawatl or Nauatl since the *h* in the first form never had any phonetic function (Canger 2011a).

(2) TacNaw has the following phonemes: i, e, a, o, u; i:, e:, a:, o:, u:; p, b, t, d, k, g, kw, d, x (voiceless palato-alveolar fricative), h, tz (voiceless alveolar fricative), ch (voiceless palato-alveolar affricate), m, n, w, l, y (palatal approximant). The penultimate syllable generally has more prominence than other syllables in a word.

Examples are identified by speakers' initials or by text number; the numbers refer to year, number of text, and number of line. Thus, [04_11:27] refers to line 27 in text 11, from 2004. No example was produced specifically for the present chapter; examples that do not come from a recorded text were elicited, but in general for the purpose of having the word exemplified, and they are reproduced in Canger (in press).

(3) Possessor prefixes are: SG 1 no-, 2 mo-, 3 i-; PL to-, 2 amo-, 3 imin-.

(4) Carochi cites three examples, which we have unfortunately not found confirmed (neither disconfirmed, however) in the rest of the corpus:

(388) (C.414) Xi-nēch-im-maca in motōtōlhuan "Give me your turkeys"

(5) In imperative and future forms the final a of *-ia* is lost. That explains the forms *Ø-ne:ch-siwa-htan-i, Ø-ne:ch-Ø-ihtani-li-:s*, and *ti-mo-ta-pa:ki-:s.*

(6) To strip the bark off of a certain tree; the bark comes off in lengths as long as the tree is tall, and it is used to make rope of.

(7) According to a document from the 16th century the language then spoken in Coatepec Costales was a Chontal, which is not documented, but the same document also informs that the population spoke some Nawatl. This information should naturally be taken into consideration in discussing CcNaw from a dialectological perspective, cf. Canger 2017.

Una Canger

Una Canger studied under Louis Hjelmslev in Copenhagen and holds a PhD in linguistics from UC Berkeley. Her thesis was on the Mayan language, Mam. Since 1970 she has directed the 'American Indian Languages and Cultures' programme at the University of Copenhagen. Due to the wealth of written Aztec documents from the 16th century students wanted to study Nawatl rather than Mayan languages.

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This led to a shift in her research to Urban Nawatl and Nawatl dialects which has gone on since 1973.

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Purepecha, a Polysynthetic but Predominantly Dependent-Marking Language

Claudine Chamoreau

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Abstract and Keywords

Purepecha (language isolate, Mexico) has one relevant characteristic that leads to identifying it as a polysynthetic language: productive verbal morphology (in particular locative suffixes). Purepecha is a predominantly dependent-marking language, as its pronominal markers are enclitics, generally second position enclitics. But, in some contexts Purepecha shows head-marking characteristics. Today, pronominal enclitics exhibit variation, tending to move to the rightmost position in the clause; they may encliticize to the predicate itself, showing a head-attraction or polypersonalism strategy and making Purepecha more polysynthetic. But this language lacks noun incorporation. Purepecha has three types of non-finite clause: two subordinate clauses (non-finite complement clauses and purpose clauses) and a syntactically independent clause (the chain-medial clause). This seemingly inconsistent situation (characterized by a correlation of different properties, some of which have not been identified as polysynthetic) calls for addressing the typological classification of Purepecha among the polysynthetic languages.

Keywords: Purepecha, locative suffixes, dependent marking, head attraction, head marking, pronominal enclitics, non-finite clause

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32.1 Introduction

FORTESCUE (1994) lists various traits that tend to cluster together to give rise to a polysynthetic language, but says that they are not necessarily all attested in a single language. These include noun incorporation, a large inventory of bound morphemes, numerous morphological slots, the verb constituting a clause, head marking, pronominal markers on verbs, and adverbial elements integrated into verbs. In the same framework, Evans and Sasse (2002) propose a definition that reflects the correlation of different typological features and the possibility that languages without incorporation and pronominal markers on verbs can also be considered polysynthetic. They claim that

> Essentially, then, a prototypical polysynthetic language is one in which it is possible, in a single word, to use processes of morphological composition to encode information about both the predicate and all its arguments, for all major clause types to a level of specificity, allowing this word to serve alone as a free-standing utterance without reliance on context. (2002: 3)

Mithun (2009: 15) gave emphasis to the correlation of various features and noted that etymologically, the term ‘polysynthesis’ refers simply to multiple morphemes per word, but it remains to be seen what other properties might be crucial for predicting additional characteristics. From a different and restrictive perspective, according to Baker (1996: 19), polysynthesis is defined by noun incorporation and verb agreement. Taking account of these perspectives is relevant to characterizing the correlation of properties that lead us to identify a polysynthetic language and to defining the limits within which a specific language must (p. 668) fall in order to be polysynthetic. This leads us to ask how far a specific language is polysynthetic: the goal of this chapter is to apply this question to the case of Purepecha.

The structure of Purepecha demonstrates that the fundamental features typically associated with polysynthesis—that is, elaborate verbal morphology, holophrasis, head marking, and noun incorporation—do not need to coexist. Purepecha is characterized by the first two, as illustrated in (1a). In particular, Purepecha has a large inventory of locative suffixes, various suffixes for voice changes, and a third person plural object suffix. But, in contrast with this productivity, Purepecha has less-developed directional, desiderative, and adverbial suffixes. The presence of various types of suffixes constitutes a significant characteristic that allows the building of holophrasis, as illustrated in (1a). Various characteristics of the derivational suffixes lead us to argue that they are lexical suffixes and not possible traces of noun incorporation. Purepecha is predominantly a dependent-marking language, as its pronominal markers are enclitics, generally second position enclitics, as illustrated in (1b).

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(1)

a. ata-mu-ku-ncha-nt'a-x-p-ka=**ri**
beat-ORIF-NCS-DES-IT-AOR-PST-ASS1/2S=S2SG
'You had wanted to hit the mouth of another again.'

b. no=**ri** xïpa-ku-a-xa-p-ka
NEG=S2SG steal-APPL3O-O3PL-PROG-PST-ASS1/2S
'You were not stealing from them.'

In three contexts, Purepecha shows head marking. In the first, the head marking is the consequence of the form of the pronouns: the third person singular is always unmarked, and the first person singular is unmarked when it appears with the assertive mood (that has the form *–ka* for speech act participants, codified as 1/2), as illustrated in (2a). In the second context, the third person plural object marker is a verbal suffix that only occurs in the verb (2a). In the third context, the applicative suffix encodes a recipient or the possessor of the entity introduced as the object (external possession); this suffix appears exclusively within the verb, as in (2b). Moreover, pronominal enclitics display the development of a head-attraction strategy in which they tend to move to the rightmost position in the clause and may encliticize to the predicate itself.

(2)

a. che-ra-**a**-xïn-ka
be_afraid-CAUS-**O3PL**-HAB-ASS1/2S
'I scare them.'

b. jwa-**chi**-s-ti=rini
bring-APPL1/2O-AOR-ASS3S=O1SG
'He brought it to me.' 'He brought something mine to me.'

Next, Purepecha entirely lacks the fourth feature, that is, noun incorporation. Lastly, Purepecha has developed the use of non-finite clauses in three contexts: two subordinate clauses (non-finite complement clauses and purpose clauses) and a syntactically independent clause (the chain-medial clause). In these three contexts, the verb may be marked by (p. 669) the third person plural object suffix *-a*, and in one, the chain-medial clause, the pronominal enclitics may be attached to the verb. Because of this seemingly inconsistent situation, Baker would exclude Purepecha as a polysynthetic language, as it lacks noun incorporation and head marking, the two prototypical criteria in his view. But as defined by Fortescue, Evans and Sasse, or Mithun, Purepecha is polysynthetic. However, the correlation of these properties, some of which have not been identified as polysynthetic, calls for addressing the typological classification of Purepecha among the polysynthetic languages. Exploring the sentential vs. non-sentential typology proposed by Drossard (1997: 252), I will argue that Purepecha is a polysynthetic language located

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somewhere in between the sentential and non-sentential types, with tendencies toward the sentential type.

The chapter is organized as follows. In Section 32.2, I briefly sketch the basic typological characteristics of Purepecha. In Section 32.3, I discuss the predominantly dependent-marking characteristics of Purepecha (32.3.1), showing contexts that reveal head-marking constructions (32.3.2) and head attraction (32.3.3). In Section 32.4 I illustrate its elaborate verbal morphology, contrasting the large inventory of locative suffixes (32.4.1) and the less developed inventory of other types of suffixes (32.4.2). In Section 32.5, I describe three types of non-finite clause in Purepecha. Finally, in Section 32.6, I review the different characteristics described in this chapter and assess to what extent Purepecha is polysynthetic, taking into account especially the sentential vs. non-sentential typology proposed by Drossard (1997: 252).

32.2 Basic Typological Characteristics of Purepecha

Purepecha (formerly known as Tarascan) is classified as a language isolate and is spoken in the state of Michoacán in western Mexico by approximately 110,000 people (Chamoreau 2009, 2012). The classification of Purepecha as a part of the Mesoamerican linguistic area is still debated, but generally it is not classified as a Mesoamerican language, as it shows very few signature Mesoamerican characteristics (Smith-Stark 1994).

Purepecha has nominative-accusative alignment, and is a case-marking language in which the nominal subject has no overt marker. The object is generally marked by the objective case marker *-ni*. This morpheme encodes the object of a transitive verb, such as *misitu-ni* 'the cat' in (3), and both objects of a ditransitive verb, such as *inte-ni wantantskwa-ni* and *Puki-ni*, in (4). The presence or absence of the object case marker depends on different hierarchies: (i) the inherent semantic properties of the referent (human, animate); (ii) properties related to grammatical features (definite, count noun vs. mass noun, generic vs. specific, etc.); and (iii) pragmatic strategies (topic, focus) (Chamoreau 2009). The presence of the objective case marker *-ni* generally indicates that the noun phrase is characterized as individuated.

	jo	celia	ata-x-ti	ima-eri	misitu-ni
(3)	yes	Celia	beat-AOR-ASS3S	DEM-GEN	cat-OBJ
	Yes, Celia beat her cat.'				

(p. 670)

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(4)

celia	arhi-x-ti	inte-ni	wantantskwa-ni	Puki-ni
Celia	tell-AOR-ASS3S	DEM-OBJ	story-OBJ	Puki-OBJ

'Celia told Puki this story.'

A ditransitive verb in Purepecha is mixed or hybrid in type (Chamoreau 2008). According to criteria proposed in Malchukov et al. (2010), it exhibits neutral alignment for flagging, that is, the objective case marker *-ni* is the same for the patient of a transitive verb and the patient and the recipient of a ditransitive verb, as illustrated in (3) and (4), and for syntactic processes such as topicality, focus, interclausal co-reference control, and relativization. But Purepecha displays secundative alignment for accessibility to voice change: in other words, the recipient of the ditransitive verb aligns with the object of the transitive verb in reflexive, reciprocal, passive, and antipassive constructions, as shown in (5a) for the passive construction. Example (5b) is ungrammatical because the patient of the ditransitive verb cannot become the subject of the passive construction.

(5)

a.

tataka-icha	arhi-na-xa-ti=kxï	wantantskwa	thaletskwa-icha-iri
boy-PL	say-PAS-PROG-ASS3S=S3PL	story	elf-PL-GEN

'The boys are being told the story about the elves.'

b. * **wantantskwa thaletskwa-icha-iri** arhi-na-xa-ti tataka-icha-ni

Purepecha displays the predominance of dependent marking, for example with the pronominal enclitic, as in (1b), and the genitive suffix, as illustrated in (6) and (7).

(6)

jinte-s-ti	wámpa	Maria-**eri**
be-AOR-ASS3S	husband	María-GEN

'He is Maria's husband.'

(7)

nanaka-echa-**eri**	jawiri	sési	ja-rha-x-ti
girl-PL-GEN	hair	well	be.there-FT-AOR-ASS3S

'The girls' hair is beautiful.'

Purepecha is basically a SV and SVO constituent order language, as illustrated by examples (3) and (4). This order is the basic order in the region of Lake Patzcuaro (Capistrán 2002, Chamoreau 2009: 55–8). Other orders indicate specific pragmatic properties. Studies of constituent order in the other regions do not as yet exist. However, Purepecha exhibits some traits of a SOV language: (i) tense, aspect, irrealis and modal markers following the verb; (ii) postpositions; (iii) only suffixes; (iv) only enclitics; (v) case markers; (vi) main verbs preceding inflected auxiliaries; and (vii) variation of the position of head noun in noun phrase that reveals that final head noun precedes non final head noun (compare examples (6) and (7)). SVO and SOV constituent orders were attested in the sixteenth century, and the former has gradually increased since then. The change is probably due to areal contact. Prior to the Conquest there were speakers of other

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languages in this territory, mostly Nahuatl (Uto-Aztecan family) and Otomi (Otopamean family), two languages with verb-initial structure. The change probably began under the influence of these languages; (p. 671) Spanish, a SVO language, continued the process, for example by introducing prepositions (Chamoreau 2007).

In Purepecha, the different morphemes that attach to the verb stem are always suffixed. There are two types of stems: a simple stem and a bipartite stem. The stems end in a vowel and generally receive the accent on this vowel, that is, the accent indicates the morphological end of the stem, as illustrated in (8a) and (8b) by a monosyllabic root and in (8c) by disyllabic roots.

(8)
a. u 'do'
b. jwa 'bring'
c. jupa 'wash'

These simple stems directly accept the inflectional suffixes of third person plural object, tense, aspect, irrealis, and mood, as illustrated in (9) by the verb *ewa* 'take' to which the third person plural object *-a*, the irrealis *-a*, and the assertive mood for speech act participants (codified as 1/2) *-ka* are suffixed. In (10), the non-finite suffix *-ni* is directly suffixed to the root *kara* 'write'.

(9)
ewa-a-a-ka
remove-O3PL-IRR-ASS1/2S
'I will remove them.'

(10)
mi-ti-xïn-ka=ri kara-ni
open-SUP-HAB-ASS1/2S=S2SG write-NF
'You know how to write.'

Example (10) also illustrates the second type, the bipartite stem (DeLancey 1999). These stems are constituted by two bound forms: a root and a suffix. In Purepecha, it is easy to distinguish the verbal root and the derivational element because the latter is not accented and is suffixed to the former. In (10) the root *mi-* always requires a morpheme before an inflectional suffix. This may be a locative morpheme, as in (11a) and (11b), but it is generally an obligatory suffix whose meaning is not always easy to determinate but may change the meaning of the root, as shown in (11c) and (11d). This is called a formative suffix (Chamoreau 2009: 92–6; Friedrich 1971: 4; Monzón 2004: 53–61).

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(11)

a. mi-ti-
open-SUP- 'know' (open the forehead / intellectual activity)

b. mi-narhi-
open-PRINC- 'recognize' (open the face)

c. mi-ka- 'close'

d. mi-ta- 'open'

(p. 672) In Purepecha, the verbal template has a range of potential slots, most of which need not be filled. The template is divided into three main sections; from left to right the order is: stem (slot +1); derivational morphemes, more than seventy suffixes (from slot +2 to slot +7 in table 1); and flectional morphemes, fifteen suffixes (from slot +8 to slot +12 in Table 32.3). The first section, the stem, has already been introduced: it may be constituted by a simple stem or a bipartite stem. The other two sections have slots that appear in a rigid order, as illustrated in Table 32.1.

Table 32.1 Three main sections of the verbal template

Slots	Types	Categories	Morphemes
Root	Stem	root	
+1		root + formative suffix bipartite stem	
+2	Derivational suffixes	locative	30/50 suffixes (table 2)
+3		directional	CENTRIF –*pa* CENTRIP –*pu*
+4		causative	*-ra / -ta / -tara*
+5		voice	REFL –*kuri* REC *-p'era* PASS - *na* ANTIP *-pe* APPL3O *-ku* APPL1/2O –*chi*

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+6		desiderative	*-keka* / *-ncha*
+7		adverbial	‘early’ *-cha* ‘quickly’ *-ma* ‘violently’ *-ntu* ‘suddenly’ *-k’ama* ‘iterative’ *-nt’a*
+8	Flexional suffixes	third person plural object	*-a*
+9		aspect	AOR *-x* PROG *-xa* HAB *-xïn* CONT *–xam*
+10		tense	PRS *unmarked* PAST *-p/-an*
+11		irrealis	IRR *-a* COND *-pirin*
+12		mood	ASS1/2S *-ka* / ASS3S *-ti* INT *-ki/-i/-ø* SBJV *-ka* IMP.SG *-ø* / IMP.PL *-e* EXCL *-k’a*

(p. 673)

32.3 Predominance of Dependent-Marking, Head-Marking and the Possibility of Head Attraction

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Purepecha is a predominantly dependent-marking language, as its pronominal markers are enclitics, generally second position enclitics (Section 32.3.1). But in three types of contexts, Purepecha shows features of a head-marking language. In the first type of context, the head-marking characteristic is the consequence of the form of the pronouns: the third person singular is unmarked, and the first person singular may be unmarked. In the second type of context, the third person plural object is a suffix that occurs only in the verb. In the third type of context, the applicative suffix appears exclusively within the verb and encodes a recipient or a possessor (Section 32.3.2). In other contexts, Purepecha shows a head-attraction strategy, as pronominal enclitics have recently begun to appear in a new position, depending on the type of their grammatical host; that is, the enclitics are associated with words that function as the syntactic predicate of the clause (Section 32.3.3). This position makes Purepecha more polysynthetic, as it develops polypersonalism.

32.3.1 Dependent-marking language

Subject and object pronouns are expressed by pronominal enclitics. Table 32.2 presents the two paradigms of pronominal enclitics, namely the subject and object enclitics.

This language possesses only enclitics and combines different types—fixed and floating, pronominal and non-pronominal (Chamoreau 2014). Pronominal enclitics are illustrated (p. 674) by example (12) and non-pronominal discourse enclitics by example (13). Both are fixed second-position enclitics. By contrast, adverbial non-pronominal enclitics have a floating position, as in example (14).

Table 32.2 Pronominal enclitics in Purepecha

	Subject	**Object**
1	ø / =ni	=reni (=rini) / =ts’ïni[2]
2	=re (=ri)	=kini / =kxïni
3	ø	ø
1PL	=ch’e (=ch’i) / =kxï[1]	=ts’ïni
2PL	=ts’ï	=kxïni
3PL	=kxï	=kxïni

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(12)

ka=kxï ikya-pa-rini wanto-nts-kwarhe-pa-nt'a-ni
and=S1PL get.angry-CENTRIF-PTCP.PST.AC tell-FT-REFL-CENTRIF-IT-NF
ja-rha-x-p-ka
be.there-FT-AOR-PST-ASS1/2S
'… and, getting angry, we discussed.'

(13)

k'orhunta-echa-ni=xï lola-ni ewa-a-a-ka
tamal-PL-OBJ=FOC Lola-OBJ take-O3PL-IRR-ASS1/2S
'They are the tamales that I will bring to Lola.'

(14)

jiniani ire-ka-s-ti, cha-ri tata jingoni=t'u,
there live-FT-AOR-ASS3S S2PL.IND-GEN father COM=too
primu-e-s-ti ima=t'u
cousin-PRED-AOR-ASS3S DEM=too
'He lived up there, with your father too, he is also a cousin.'

It has accented independent pronouns (see the paradigm in Table 32.3).[3] They are used to introduce or to emphasize a referent, as illustrated in example (15).

(15)

jucha isï=sï mi-ti-s-p-ka tshirakwa jimpo
S1PL.IND thus=FOC open-SUP-AOR-PST-ASS1/2S cold INS
'We thus, knew it for the cold.'

For pronominal enclitics, the second position is their unmarked and more frequent position (see Chamoreau 2014). The pronominal enclitic is used to indicate that the referent (p. 675) functions either as the subject of a clause, as illustrated by *=ksï* in (16) in an independent clause, or as the object of a clause, as illustrated by *=kini* in (17) in a dependent clause, whatever the valency of the verb (Chamoreau 2009). In this position, non-pronominal enclitics may be found, as in the case of *=taru* in (16). One of the functions of a second-position enclitic is to delimit the beginning of a clause, either an independent clause, as in (16), or a dependent clause, as in (17).

Table 32.3 Independent pronouns

	Subject	**Object**
1	ji	jintini

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2	t’u	t’unkini
1PL	jucha	juchants’ïni
2PL	t’ucha / cha	chankxïni

(16)

no=taru=ksï	ima-echa-ni	jatsi-a-s-ka
NEG=other=S1PL	DEM-PL-OBJ	have-O3PL-AOR-ASS1/2S

‘We no longer had them (papers).’

(17)

xu	jano-s-ti	[eki=kini	juchi	watsi	jwa-kurhi-ø-ka]
here	arrive-AOR-ASS3S	SUB=O2SG	POSS1SG	son	bring-REF-AOR-SBJV

‘He arrived here when my son brought you ...’

Second-position pronominal enclitics have a fixed position within a clause regardless of the grammatical class of their host. A great variety of hosts is attested; the list below is organized by frequency of the element that functions as host for second-position enclitics (see Table 32.4). Adverbs, subordinators, and verbs are the three most frequent constituents that function as hosts for second-position pronominal enclitics. The high frequency of the subordinator as host shows that in dependent clauses, pronominal enclitics almost always attach after this element. At the bottom of the list, postposition and coordinating conjunctions almost never function as possible hosts.

Table 32.4 Frequency of the constituents in first position to which pronominal enclitics are attached

+ frequent	**%**
Adverb	19.8
Subordinator	17.6
Verb	17.5
Deictic marker	10.8
Demonstrative pronoun	9.8
Independent pronoun	8.1
Interrogative pronoun	5.6

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Negation	5.5
Noun, noun phrase	2.8
Postposition	1.4
Coordinating conjunction	1.1
– frequent	

(p. 676) Different enclitic strings, also known as clitic clusters, are possible in Purepecha.

- two non-pronominal enclitics, as in (18)
- one non-pronominal and one pronominal enclitic, as in (16)
- two non-pronominal enclitics and one pronominal enclitic, as in (19).

(18)
sani k'e-ni ka, no=teru=chk'a anta-nku-ni
little grow-NF and NEG=other=certainly gain-INTS-NF
'He grows a little, and this is not sufficient.'

(19)
pawani=t'u=chk'a=ri ni-a-ka
tomorrow=too=certainly=S2SG go-IRR-ASS1/2S
'Also tomorrow, you will go.'

Enclitic strings have a strict internal order: the non-pronominal enclitic precedes the pronominal enclitic as illustrated in (19). However, two non-pronominal fixed enclitics, the focus *=sï* and the evidential *=na,* generally appear at the end of the string (except with first person singular that appears after the focus *=xi*). In the sixteenth century, the order was the reverse, that is, =pronominal =non-pronominal. Today, the fixed position shows some signs of weakening. Non-pronominal enclitics keep their position, while pronominal enclitics exhibit variation, tending to move to the right position in the clause, and may encliticize to the predicate itself (see Section 32.3.3).

32.3.2 Contexts of head-marking characteristics

Third person singular is always unmarked regardless of the mood, in assertive mood, as illustrated in (20), in interrogative mood, as shown in (21), and in subjunctive mood, as illustrated in (22). In (20c), (21c), and (22c), the absence of pronominal marker is understood as the third person singular.

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(20)

a.	kara-s-ka / kara-sïn-ka=ni	'I wrote'
b.	kara-s-ka=ri	'You (sg.) wrote'
c.	kara-s-ti	'He wrote'
d.	kara-s-ka=ksï	'We wrote'
e.	kara-s-ka=ts´ï	'You (pl.) wrote'
f.	kara-s-ti=ksï	'They wrote'

(21)

a.	kara-s-ki=ni	'Have I written?'
b.	kara-s-ki=ri	'Have you (sg.) written?'
c.	kara-s-ki	'Has he written?'
d.	kara-s-ki=ksï	'Have we written?'
e.	kara-s-ki=ts´ï	'Have you (pl.) written?'
f.	kara-s-ki=ksï	'Have they written?'

(p. 677)

(22)

a.	eka=ni	kara-ø-ka	'when I wrote'
b.	eka=ri	kara-ø-ka	'when you (sg.) wrote'
c.	eka	kara-ø-ka	'when he wrote'
d.	eka=ksï	kara-ø-ka	'when we wrote'
e.	eka=ts'ï	kara-ø-ka	'when you (pl.) wrote'
f.	eka=ksï	kara-ø-ka	'when they wrote'

As illustrated in (20), the assertive mood is *-ka* for speech act participants, as in (20a, b, d, e), and *-ti* for third persons, as in (20c, f). Interestingly, in this mood two of the persons —the first person singular and the third person singular—may have a zero marker when they function as the subject: the third person singular is always unmarked whereas the first person singular has two possibilities. For the first person there is no difference in the use of the covert marker or the overt *=ni*. In the sixteenth century the use of the unmarked form was the most frequent (Chamoreau 2014). There are two ways of identifying the referent in assertive clauses: The absence of the enclitic is always interpreted as first person singular with *–ka*, as in (20a); by contrast, in the case of other persons the enclitic or independent pronoun is used, as in (20b), (20d), and (20e). With a mood other than the assertive, for the interrogative or subjunctive, which have the same morpheme for all the persons, the enclitic (or the independent pronoun) is introduced, as in (21a) and (22a).

The consequence is that Purepecha shows head marking or polypersonalism with third person in all moods and with first person in the assertive mood. The other context in which Purepecha displays head-marking behavior is with the third person plural object

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suffix. This is the unique suffix for pronominal encoding that occurs exclusively in the verb. The suffix *-a* occurs only for third person plural when it functions as the object of the clause, as illustrated in (23).

(23)
che-ra-a-xïn-ti
be_afraid-CAUS-O3PL-HAB-ASS3S
'He scares them.'

The presence of *-a* is not obligatory when the object is the third person plural. The presence or absence of the object suffix depends on the way the referent of the noun is conceived. When the noun refers to various entities that can be individuated, the suffix is used as in (24a), but when the same entities are understood as unindividuated, the suffix does not appear, as illustrated in (24b) (Chamoreau 2009: 84–91). In the context of body parts or objects that always function in pairs (eyes, ears, legs, arms, etc.), the noun generally is not marked by the *-echa* marker but the suffix *-a* is attached to the verb, as in (25). This suffix is not a marker of agreement of a noun in the plural, in the sense that its presence is not obligatory.

(24)
a. jwa-chi-a-ø=rini naraxa-icha
bring-APPL1/2O-O3PL-IMP.SG=O1SG orange-PL
'Bring me the oranges.'

b. jwa-chi-ø=rini naraxa
(p. 678)
bring-APPL1/2O-IMP.SG=O1SG orange
'Bring me oranges.'

(25)
jupa-narhi-a-xa-p-ka=ri eskwa-ni
wash-PRINC-O3PL-PROG-PST-ASS1/2S=S2SG eye-OBJ
'You were washing your eyes.'

In Purepecha, there are two suffixes for applicative voice: *-chi* for speech act participants (1/2) and *–ku* for the other participants. The use of applicative voice allows the introduction of the recipient or the beneficiary as illustrated in (26a). In (26b), two interpretations are possible: the applicative suffix introduces the beneficiary or the possessor of the entity expressed as second argument *wichu-ni* (external possession).

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(26)

a. anchi-kurhi-**chi**-xïn-ti=**rini**
work-FT- APPL1/2O-HAB-ASS3S=O1SG
'He works for me.'

b. jwa-**chi**-s-ti=rini wichu-ni
bring-APPL1/2O-AOR-ASS3S=O1SG dog-OBJ
'He brought the dog to me.' 'He brought my dog to me.'

To sum up: Purepecha is a predominantly dependent-marking language, as the arguments are coded as second-position enclitics (see Section 32.3.1). But it shows head marking or polypersonalism with the unmarked third person singular form and the first person singular form in the assertive mood. This head-marking characteristic is also attested with third person plural object suffix codified within the verb and when a suffix of applicative voice is attested.

32.3.3 Head attraction

In Purepecha, pronominal enclitics have recently begun to appear in a new position, after the syntactic predicate of the clause, frequently a verb. For methodological reasons, I treat predicate enclitics as different from verbs in first position that are hosts for second-position pronominal enclitics. In Table 32.4, verbs are one of the three most frequent constituents that function as the host of second-position pronominal enclitics. This is not a surprise in the case of verbs, as it is a well-known feature cross-linguistically (Givón 2011a: 182; Heine and Song 2011). But it is new in Purepecha: in the sixteenth century, verbs were generally not positioned at the beginning of a clause (Chamoreau 2014). The high frequency of verbs as hosts of second-position enclitics is significant in a narrative with chain-medial clauses, which contain non-finite clauses with referential continuity; these chain-medial clauses are only constituted by predicates that express a succession of events or indicate overlapping events, as illustrated by example (27) (see Section 32.5 and Chamoreau 2016). The verb (p. 679) occurs more frequently in first position, and becomes a "frequent candidate to host second-position clitics" (Givón 2011: 190). In this context, generally only the pronominal enclitic that functions as subject is expressed.

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(27)

a. ka tsïma anima-icha wanta-pa-nt'a-ni,
and DEM.PL soul-PL tell-CENTRIF-IT-NF
'and these souls were telling,

b. tsipi-pa-nt'a-ni=kxï,
be.happy-CENTRIF-IT-NF=S3PL
they were happy,

c. tere-kurhi-pa-nt'a-ni=kxï,
laugh-REFL-CENTRIF-IT-NF=S3PL
they were laughing …'

In the new strategy, enclitics are attached to the end of the predicate after the aspect, tense, and irrealis mood markers. This is also a fixed position, but what has changed is that predicates need not appear in the first position of the clause, but can appear in any position. This movement to the right, from second-position enclitic to predicate enclitic, occurs only with pronominal enclitics. The host is chosen for its syntactic and pragmatic properties, and is frequently the predicate itself, as illustrated by example (28), or in a few cases the last element before the predicate, when it is an adverb or a negation, as in (29).

(28)

ka yontki anapu ire-kwari-p-ti=ksï Chao
and before origin reside-REF-AOR.PST-ASS3S=S3PL Chao
'and since before they lived in Chao.'

(29)

xani arhi-a-xïn-ka=ni éxki no=kxï itsu-ta-ø-ka
much say-S3PL-HAB-ASS1/2S=S1SG COMP NEG=S3PL absorb-CAUS-AOR-SBJV
'I always ask them not to smoke.'

Five new morphosyntactic possibilities for the new strategy have been identified. Going from the most frequent strategy to the least frequent, these are:

1. After the predicate: this is more frequent for the subject, as in (28), than for the object, as in (30).
2. Pronominal agreement: independent pronoun and enclitic after the predicate, as in (31).
3. Repetition of the enclitic that functions as the subject (in the same clause): as the second-position enclitic and after the predicate (32). For the object, this strategy has not been found to occur.

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4. Pronominal agreement: independent pronoun, second-position enclitic, and enclitic after the predicate, as in (33). This strategy has been found for the subject, never for the object.

5. After an element that occurs before the predicate: generally negation (29), but there are two examples with an adverb (34). This strategy has been found for the subject, never for the object.

(p. 680) ### 32.3.3.1 Examples of the new morphosyntactic possibilities

1. After the predicate:

(30)

jima	pia-chi-a-ti=**kini,**	eki=rini	ixe-ø-ka
there	buy-APPL1/2O-IRR-ASS3S=O2SG	SUB=O1SG	see-AOR-SBJV

'There, he will buy (something) for you when he will see me.'

2. Pronominal agreement: independent pronoun and enclitic after predicate:

(31)

ka	**t'u**	tata	generali-i-x-ki=**ri**	a	no
and	S2SG.IND	sir	general-PRED-AOR-INT=S2SG	ah	NEG

'and, YOU are the general, aren't you?'

3. Repetition of the enclitic:

(32)

jimpoki=**ni**	yontki=t'u	unta-ø-ka=**ni**	a-rha-ni
SUB=S1SG	before=too	begin-AOR-SBJV=S1SG	divide-FT-NF

'because before I also began to drink.'

4. Pronominal agreement: independent pronoun, second-position enclitic, and enclitic after predicate:

(33)

eki=**ni**	ji	ni-nt'a-p-ka=**ni**
SUB=S1SG	S1SG.IND	GO-IT-AOR.PST-SBJV=S1SG

'When I came back …'

5. After an element that occurs before the predicate:

(34)

tepekwa-icha	nanaka-icha-iri	sési=**kxï**	ja-rha-x-ti
braid-PL	girl-PL-GEN	well=S3PL	be.there-FT-AOR-ASS3S

'The girls' braids are beautiful.'

Quantitative data are highly relevant to proving that the predicate enclitic ought to be viewed as a new strategy that is marked and infrequent. I have gathered a corpus of 123 texts (narrative and conversation) in which I count 4,182 pronominal enclitics: 3,710 function as the subject and 472 as the object. This result shows that the majority of the

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clauses are intransitive or transitive with a third person object. In this corpus, only 228 pronominal enclitics, or 5.5 percent, were not found in the second position. The predicate enclitic is very infrequent: 209 of these enclitics function as the subject and 19 as the object. Another finding is that 216 enclitics occur in main clauses, 12 in dependent clauses. In dependent clauses, the referent frequently attaches after the subordinator. Table 32.5 displays the different strategies for codifying referents (outside the nominal codification). These are generally expressed by (p. 681) a pronominal enclitic, and only very infrequently by an independent pronoun (line g). The non-predicate enclitic position accounts for 94.5 percent of the occurrences in only three types of position, namely (a), (e), and (g). Conversely, the predicate enclitic only accounts for 5.5 percent, and in five types of position, (b), (c), (d), (f), and (h). Table 32.5 also shows the current variation in the codification of referents in particular as enclitics. The development of the predicate enclitic explains this variation. Another consequence is an increase in the contexts in which independent pronouns are used. In the sixteenth century, independent pronouns were infrequent (Chamoreau 2014).

Table 32.5 Frequency of ways to codify grammatical participants

+ frequent	**%**
a. Second position	93.8
b. After the predicate (not in second position)	2.9
c. Independent pronoun + after the predicate	1.6
d. Second position + after the predicate	0.5
e. Independent pronoun + second position	0.5
f. Independent pronoun + second position + after the predicate	0.3
g. Independent pronoun	0.2
h. After an element that occurs before the predicate	0.2
– frequent	

The analysis of the corpus identifies some specific texts in which the use of predicate enclitics (not in second position) is more frequent. These texts display two types of pragmatic and sociolinguistic characteristics. On the one hand, there are autobiographical stories or narratives with only one or two referents, that is, narratives in which the main referent has a very prominent role and exhibits high continuity. On the other hand, texts with a frequent use of predicate enclitics are narrated by bilingual

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speakers who have had at least an intermediate-level school education or who use Spanish more than Purepecha in everyday communication. There are three representative texts. The first text is an autobiographical story told by a Purepecha speaker who uses Purepecha in everyday communication (see Chamoreau 2012 for more details). Predicate enclitics represent 18 percent of total enclitic occurrences. The second story is told by a man from Arantepacua who has studied in Morelia and has responsibilities in his village; he uses Spanish more than Purepecha. In his account of a traditional legend, 14 percent of the occurrences are predicate enclitics. The third example is an autobiographical story by a woman who lives in Mexico City (story cited by Capistrán 2004). In this text, 36 percent of the occurrences are predicate enclitics.

How has this variation in pronominal enclitics become possible? Two related hypotheses may be advanced to answer this question. The first hypothesis for explaining change in predicate position and its restriction to pronominal enclitics is that pronominal enclitics choose their hosts because of their syntactic and discourse properties, exhibiting head attraction (see Haig 2008 for Western Iranian languages). Syntactic predicates generally express the main information. Cases of head attraction for pronominal enclitics are described in the (p. 682) literature for Iranian languages (Haig 2008) and Romance languages (Vincent 2001). In earlier stages, ancient Iranian and Latin possessed pronominal second-position clitics. Today, Persian and Romance languages have pronominal markers placed close to the verb, usually within the verb phrase. This shift was analyzed by Haig (2008) as a case of attraction to the verb, that is, to the head that governs pronominal markers. In Purepecha, the process began centuries ago when the pronominal enclitics moved to the end of the second-position enclitic string (see Section 32.3.1 and Chamoreau 2014). This process allowed the pronominal enclitics to move to the last position and to gain more freedom to move. The second hypothesis is based on analysis of characteristics of the speakers who narrated the texts with more frequent predicate positions: Spanish grammatical constructions may influence the change of position of pronominal enclitics in Purepecha (Chamoreau 2007, 2012). Spanish expresses the referents close to the verb as clitics or in the flexion associated with tense and mood (Vincent 2001). Almost all Purepecha speakers are bilingual, speaking at least Purepecha and Spanish. Spanish is the language of prestige, linked to education, a better standard of living, oral and written media, religion, administration, commerce, and work. The speakers who narrated these texts use Spanish more frequently in everyday conversation.

In short, Purepecha exhibits variations in position, distribution (predicate), frequency (increase in pronominal enclitics attached to the verb), and grammatical function (from clause delimitation to marking the predicate in whatever position). These variations are the consequences of new tendencies that give more relevance to predicates, showing head attraction and making Purepecha more polysynthetic as it displays polypersonalism in these contexts, as illustrated in Sections 32.3.2 for head marking and 32.3.3 for head attraction.

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32.4 Verbal Morphology

One of the most frequently described characteristics of polysynthetic languages is the combining of bound morphemes with the verb (Evans and Sasse 2002, Drossard 2002, Fortescue 1994, Mithun 2009). In Purepecha, locative suffixes are particularly numerous; this is the wider class of derivational suffixes. Other types of derivational suffixes are less developed: there are two directional suffixes, two desiderative suffixes, five adverbial suffixes, three causative suffixes and five suffixes for voice change (as illustrated in Table 32.1).

32.4.1 Locative suffixes

Between thirty and fifty morphemes belong to the class of locative suffixes. Friedrich lists thirty-two (1971: 15–16), and Monzón has studied forty-six (2004: 67). This variation may be due to dialectal differences. In Table 32.6, I present the thirty suffixes attested in Jaracuaro.

In Purepecha, these locative suffixes are lexical suffixes that exhibit characteristics similar to those described by Mithun (1997, 2009) for the lexical affixes of the Salishan languages. The locative suffixes constitute a closed paradigm of exclusively dependent morphemes that may suffix to the verbal stem (see Table 32.6). They have a lexical meaning basically related to spatial concepts, which include parts used for the body, for the majority of the suffixes.

(p. 683) The class of locative suffixes breaks down into two semantic subclasses. The first consists of morphemes that indicate a specific physical area (outside the body), for example in (35a) *-nu* ‘patio’, in (35b) *-ru* ‘street’, and in (35c) *-k’ara* ‘inside the house’.

(35)

a. waxa-**nu**-x-ti ‘He sat on the patio.’

b. waxa-**ru**-x-ti ‘He sat in the street.’

c. waxa-**k’ara**-x-ti ‘He sat inside the house.’

The elements of this first subclass are not numerous; the majority of the locative suffixes belong to a second subclass that refers to a part of a larger entity. Example (36) illustrates a suffix of this subclass: the suffix *-narhi* refers to the principal part of a larger area. In the situation in (36), the part is obligatorily interpreted as a body part and the possessor of the face is the referent of the entity that functions as subject. There is no ambiguity; no independent locative noun is required to specify the body part. When *-narhi* refers to a subpart of the face of the referent of the subject, the eye for example, an independent spatial noun is obligatory. This noun may be marked by the objective case or by the locative case, as illustrated in (37). When *-narhi* refers to the face or a subpart of

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the face of another participant, a non-coreferential subject suffix is required, for example *-ku*, as illustrated in (38).

(36)
jupa-**narhi**-xa-p-ka=ri
wash-PRINC-PROG-PST-ASS1/2S=S2SG
'You were washing your face.'

(37)
jupa-**narhi**-xa-p-ka=ri — eskwa-ni / eskwa-rhu
wash-PRINC-PROG-PST-ASS1/2S=S2SG — eye-OBJ /eye-LOC
'You were washing your eye / in your eye.'

(38)
jupa-**narhi**-**ku**-xa-p-ka=ri
wash-PRINC-NCS-PROG-PST-ASS1/2S=S2SG
'You were washing the face of another person.'

These suffixes are considered abstract because they may be used for areas outside the body. The suffix *-narhi* may refer to the sun, as in (39), to an emotion of fright, as in (40), to the center of a dish, as in (41), or to a wall, as in (42) (for more details, see Chamoreau 2009: 224–6, Friedrich 1971: 43–7, Monzón 2004: 128–33). In examples (40) and (41), a non-coreferential subject suffix is used:*-ku*, as in (41), and *-ta*, as in (42). The distribution of these suffixes depends on dialectal variation and on the conception of the referent as animate or inanimate (for more details, see Friedrich 1971: 55–67, Monzón 2004: 252–79). The meanings of these suffixes are abstract and refer to geometrical features, even though the most frequent use is for a body part (Friedrich 1971, Monzón 2004). Their meanings are wider or more general than the noun that might seem to have a similar meaning: for example, the suffix *-narhi* refers to a principal flat area and may be used for face, hair, eye, sun, light, wall, texture, and leaf, but also for emotional states such as fear and dream. A single noun cannot subsume all (p. 684) these contexts of use. Relations between suffixes and nouns are not straightforward even if the body part meaning seems to be the reference from which metaphoric and abstract extensions are made (Mithun 1997: 359). Moreover, there are no formal similarities between the suffixes and the noun that has related meaning. For example, the suffix that refers to the hair is *–tsï*, whereas the noun for the hair is *jawiri*. This is the reason why they do not correspond to a path of development from noun incorporation.

(39)
jurhiata — mere-mere-**narhi**-xïn-ti
sun — shine-shine-PRINC-HAB-ASS3S
'The sun shines a lot.'

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cho-**narhi**-xïn-ka
(40) be_afraid-PRINC-HAB-ASS1/2S
'I am afraid.'

(41)

ma	tinti	ma-**narhi**-**ku**-x-ti	erokxï-rhu
ART.INDF	fly	stick-PRINC-NCS-AOR-PST-ASS3S	dish-LOC

'A fly is stuck to the dish.'

jupa-**narhi**-**ta**-xa-p-ka=ri
(42) wash-PRINC-NCS-PROG-PST-ASS1/2S=S2SG
'You were washing the wall.'

A relevant syntactic feature of this type of suffix is a co-referential relation with an argument of the verb. These suffixes generally refer to a part belonging to the referent of the entity that functions as the subject, as illustrated in (36), (37), and (38). But a small number of morphemes are directly co-referential with a part that belongs to the participant codified as the object, as illustrated in (43), and the reflexive morpheme *-kuri* is required when this body part belongs to the participant codified as the subject, as in (44) (Monzón 2004: 221–4, 235–42).

era-**ti**-s-ti
(43) look-SUP-AOR-ASS3S
'He looked at somebody.'

era-**ti**-**kuri**-s-ti
(44) look-SUP-REFL-AOR-ASS3S
'He looked at himself.'

They may co-occur with an independent noun phrase that has the same meaning as the suffix or that specifies a subpart included in a larger part denoted by the suffix. This phrase may function as subject, as in (39), object or locative noun phrase as in (37). They may be (p. 685) (p. 686) co-referential with an argument or a noun that functions as subject, object, or locative noun phrase.

Table 32.6 Locative suffixes found in Jaracuaro (Chamoreau 2009: 221–30)

Suffix	Meaning	Context of use
a	central area	stomach, uterus, intestines, field

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cha	large and narrow area	neck, throat, larynx, penis, grain, oral function (criticize)
ch’u	lower and bottom area	buttocks, bottom, background
kurhi	crossing area	waist, crossing area, malformation
k’arha	interior of a house area	
k’u	extremity and upper area	arm, hand, leaf, tissue
ma / mi	open area with liquid	mouth, lips, teeth, shin, liquid, oral function (miaow)
marhi	orifice-edge area	out of the mouth, out of place, oral function (yawn)
marhu	crotch	
mu	orifice and orifice-edge area	mouth, chin, lips, open area, oral function (order, blow)
na / ni	interior area	chest, breast, interior, shirt
narhi	principal and flattish area	face, hair, eye, sun, light, wall, food, leaf, be afraid, dream
nti	external and peripheral area	ear, branch soil, auditory function, atmospheric phenomena, quiet
ntira	external area of an edge	mouth, cheek, chin, teeth, feminine sex, oral function (lie)
ntu	lower outer area	foot, base of a tree or plant, field
nu	basic and central area	patio
p’a / p’i	front area	fire, front

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parha	long exterior area	back, shoulder, outer part of the wall, load, cost, dress
p'i	body	
ru	road, street	
rhi	external body area	body, trunk
rhu	projection of something longish	nose, forehead, tip, hanging fruit, olfactory function
ta / nta	around the side of something	
ti	top, upper area	top of the face, eyes, intellectual activity (knowing)
t'a	flat and vertical area	leg, side
tsi	lower area	lower surface, lower ground, states perceived as negative (thin, shame) or carried out in secret
tsï	top area	hair, skull, head, hat, top surface, spiritual activity
xa	flat area	knee, braid
xu	arm	
xurhi	knee articulation	

In Purepecha the majority of the nouns are built from verbal stems with the addition of a nominalizer suffix. As a result, the lexical suffixes may also appear in deverbal nouns (Friedrich 1971, 1984; Monzón 2004). For example, the verb *era-ti-kuri* 'look at superior area oneself', as illustrated in (44) forms the noun *eratikurita* 'mirror' with the nominalizer *-ta*. These suffixes also serve as devices for creating neologisms, for example *era-nari-* 'look at principal area' forms a noun with the nominalizer *-kwa*. This noun *eranarikwa* was created for 'photography'. The suffixes make the meaning of the verb to which they bind more specific by indicating the participation of certain locative parts in the event.

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32.4.2 Other derivational suffixes

Other types of derivational suffixes are less developed in Purepecha: there are two directional suffixes, two desiderative suffixes, and five adverbial suffixes. Purepecha has three causatives (with three allomorphic suffixes) and five suffixes for voice change.

There are two directional suffixes, one for centrifugal direction, as illustrated in (45), and one for centripetal direction, as illustrated in (46). The directional suffixes encode the information in a more synthetic way and avoid the use of the two verbs that mean ‘go’ and ‘come’. As in the case of locative suffixes, there are no formal similarities between the suffixes and the verb which has the same meaning: the suffix that refers to centrifugal direction is *-pa*, and the verb ‘go’ is *ni*; the suffix *-pu* means ‘come’ and the verb ‘come’ is *ju*. There is no evidence of a nominal or verbal source for the affixes.

kwi-para-**pa**-a-ka=kini
(45) carry-LONG.EXT-CENTRIF-IRR-ASS1/2S= O2SG
‘I will go carrying you on my back.’

chkari-ni kachu-ku-**pu**-xa-ti
(46) wood-OBJ cut-FT-CENTRIP-PROG-ASS3S
‘He comes cutting the wood.’

Desiderative and adverbial suffixes appear in the last slots of the derivational suffix complex. The use of desiderative suffixes is common, whereas the use of adverbial suffixes is unusual. The two desiderative suffixes are *-keka* ‘desire’ and *-ncha* ‘have a fancy for, want’ as in (47). The verbs that mean ‘desire, have a fancy for, want’ are *tsitsi* and *wé*. As seen with locative and directional suffixes, there is no similarity between the form of the suffixes and the verbs that have a similar meaning.

u-**ncha**-a-s-ka=ri
(47) do-DES-O3PL-AOR-ASS1/2S=S2SG
‘You desired to make them (tamales, in this situation).’

(p. 687) Five adverbial suffixes have been found: *-cha* ‘early’, *-ma* ‘quickly’, *-ntu* ‘violently’, *-nt’a* ‘iterative’, and *-k’ama* ‘suddenly’ (Monzón 2004: 65–7). The suffixes *-k’ama*, as in (48a), and *-nt’a*, as in (48b) are the most frequent.

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a. incha-k'ama-x-ti=kxï
enter-suddenly-AOR-ASS3S=S3PL
'They enter suddenly.'

(48)

b. janó-nkwa-**nt'a**-s-ti ireta-rhu
arrive-CENTRIP-IT-AOR-ASS3S village-LOC
'He returned to the village.'

Purepecha has three suffixes for the causative: *-ra*, *-ta*, and the combination of both, *-tara*. These three morphemes have a distribution depending on the type of stem (Capistrán 2010; Maldonado and Nava 2002). The causative *-ra* appears after simple stems, that is, roots that directly accept the inflected suffixes of third person plural object, tense, aspect, irrealis, and mood (see Section 32.2), as illustrated in (49), and verbs that denote properties, as illustrated in (50).

thiri-**ra**-a-x-ka
(49) eat-CAUS-O3PL-AOR-ASS1/2S
'I gave to eat to them.'

te-**ra**-x-ti itsï-ni
(50) become_sweet-CAUS-AOR-ASS3S water-OBJ
'He sweetened the water.' ('He made sweet the water.')

The suffix *-ta* generally occurs after a locative suffix, as in (51):

ana-**t'a**-**ta**-s-ti tsintsikata-rhu
(51) be_vertical-VERT-CAUS-AOR-ASS3S wall-LOC
'He stood him up near the wall.'

The suffix *-tara* is attached to bipartite stems that have another suffix after the root (except locative suffixes), for example formative suffixes, as illustrated in (52):

(52)
jaka-k'u-**tara**-xa-ti=rini ixka tumpi-i-ø-ka
believe-FT-CAUS-PROG-ASS3S=O1SG COMP young-PRED-AOR-SBJV
'He makes me believe that he is young.'

These suffixes generally indicate direct causation. In Purepecha, double causation is possible. In this context, the causative morpheme slot is filled by two morphemes. In (53a), the verb *te-* is intransitive. In (53b), with one causative morpheme *-ra*, the verb *te-* is (p. 688) transitive and takes two arguments; by contrast, in (53c) we can recognize a

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double causation, using two causative morphemes *-ra* and *-tara*. The result is a ditransitive verb. The causer is the subject of the clause and the causee is encoded as a syntactic object in the clause, *Celia-ni*.

(53)

a. itsï te-x-ti
water become_sweet-AOR-ASS3S
'The water became sweet.'

b. te-**ra**-x-ti itsï-ni
become_sweet-CAUS-AOR-ASS3S water-OBJ
'He sweetened the water.' ('He made sweet the water.')

c. te-**ra**-**tara**-x-ti itsï-ni celia-ni
become_sweet-CAUS-CAUS-AOR-ASS3S water-OBJ Celia-OBJ
'He made Celia sweeten the water.'

Purepecha distinguishes five suffixes for voices: the reflexive voice is marked by the suffix *-kuri*, in (54), *-kuri* is also used for the middle voice, as illustrated in (55) (other suffixes exist for marking the middle voice, see Nava 2004); the reciprocal voice is marked by the suffix *-pera* in (56); the passive voice is codified by the suffix *-na*, in (57), *-na* is also used for the impersonal voice as in (58); the antipassive voice is marked by the suffix *-pe*, in (59); and the applicative voice is codified by two suffixes (see Section 32.3.2), one for speech act participants (1/2), the suffix *-chi*, in (60), and the other for third persons, the suffix *-ku*, as illustrated in (61).

REFLEXIVE

(54) pa-**kuri**-s-ti thirikwa
take-REFL-AOR-ASS3S food
'She took the food for her/ She took her food.'

MIDDLE

(55) mikwa mi-**kuri**-x-ti
door open-REFL-AOR-ASS3S
'The door closed up.'

RECIPROCAL

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jura-**p'era**-xïn-ti=kxï
(56) separate-RECP-HAB-ASS3S=S3PL
'They cut among themselves.'

PASSIVE

misitu ata-**na**-**na**-x-ti
(57) misitu beat-INTR-PASS-AOR-ASS3S
'The cat was beaten on the chest.'

(p. 689) IMPERSONAL

warha-**na**-xa-ti
(58) dance-PASS-PROG-ASS3S
'They are dancing.' 'One is dancing.'

ANTIPASSIVE

meya-**pe**-xïn-ka k'urunta
(59) trade-ANTIP-HAB-ASS1/2S tamale
'I sell tamale.' 'I am a seller of tamale.'

APPLICATIVE

jwa-**chi**-s-ti=rini wichu-ni
(60) bring-APPL1/2O-AOR-ASS3S=S1SG dog-OBJ
'He brought the dog to me.' 'He brought my dog to me.'

xïpa-**ku**-a-xa-p-ka
(61) steal-APPL3O-O3PL-PROG-PST-ASS1/2S
'You were stealing from them.'

A suffix of voice may coexist with a locative suffix, as in (57), in which the first *-na* refers to an interior area, the chest, and the second *-na* is the morpheme of the passive voice. Two voice morphemes may coexist when one of the two morphemes is the impersonal *-na*, as illustrated in (62) with the reciprocal suffix, in (63) with the reflexive suffix, and in (64) with the antipassive suffix (Capistrán 2010, Chamoreau 2009, Monzon 2004, Nava 2004).

wanti-ku-**p'era**-**na**-xïn-ti
(62) kill-FT-RECP-PASS-HAB-ASS3S
'They kill each other.'

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wanti-ku-**kurhi**-**na**-s-ti
(63) kill-FT-REFL-PASS-AOR-ASS3S
'They committed suicide.'

wanti-ku-**pe**-**na**-s-ti
(64) kill-FT-ANTIP-PASS-AOR-ASS3S
'They killed (people).' 'One killed (people).'

The coexistence of two applicative suffixes is also possible, but this is restricted to constructions in which the second argument corresponds to the possessor of the first, both arguments introduced by the applicative voice. This construction constitutes an external possession strategy. In it, each argument introduced by the applicative voice has its own function. It is common as a way of introducing the possessor of a body part, as illustrated in (65). In this example, the first *-ku* codifies the fact that the body part does not belong to the subject (Section 32.4.1); the second *-ku* codifies the patient and corresponds to the possessed (p. 690) entity (the nose of the girl); and the third *-ku* corresponds to the possessor, *Ismaeli*. In these constructions the possessor is affected by the action.

(65)

jupa-rhu-ku-**ku**-**ku**-a-ti	nanaka-ni	Ismaeli-ni
wash-PROJ.LONG-NCS-APPL3O-APPL3O-IRR-ASS3S	girl-OBJ	Ismaeli-OBJ

'He will wash the nose of the girl of Ismael.'

In example (66), the co-occurrence of the causative *-ra* and the two applicative morphemes results in a verb with three objects. The first applicative marker *-ku* codifies the possessed entity, *k'urhunta-ni*, whereas the second applicative marker *-che* codifies the possessor entity, the first person object enclitic *=rini*. This external possession construction applies to a verb that is marked by the causative marker *-ra*. The causer is the subject of the clause and the causee is encoded as a syntactic object in the clause, *Celia-ni*.

(66)

Maria=rini	jwa-**ra**-**ku**-**che**-a-ti	k'urhunta-ni	Celia-ni
Maria=O1SG	bring-CAUS-APPL3O-APPL1/2O-IRR-ASS3S	tamale-OBJ	Celia-OBJ

'Maria will ask Celia to bring my tamale for me.'

To sum-up: Purepecha has a productive verbal morphology and a large number of slots in the verb, though the development of the different types of suffixes show an unbalanced treatment between locative suffixes and the other suffixes.

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32.5 Non-Finite Clauses

For Baker (1996), non-finite clauses should not be possible in polysynthetic languages, as the expression of the arguments must be on the verb, and agreement morphology is only possible in finite tensed verbal forms. Nevertheless, Nordlinger and Saulwick (2002) show that a canonical polysynthetic language, Rembarrnga, has two types of non-finite clauses, with and without pronominal affixes on the verb. They claim that non-finite verbs inflected by person are not uncommon: for example, they are attested in some Romance languages, such as Portuguese. Purepecha constitutes another challenge for Baker's restrictions. This language has three different types of non-finite clause: two subordinate clauses (non-finite complement clauses and purpose clauses), and a syntactic independent clause (the chain-medial clause). In these three types of clause, the verb may be marked by the third person plural object suffix. Chain-medial clauses may also include a subject enclitic attached to the verb. In Purepecha, finiteness is a clear multilayered feature including the characterization of various properties, in particular combinations of aspect, tense, irrealis, mood (ATIM), and referential continuities, and intonation contour (Chamoreau 2016). In this language, non-finite chain-medial clauses occupy an intermediate position in the finiteness continuum between two extreme positions: independent finite clauses (ATIM markers, possibility of a different referent, separate intonation contours) and non-finite complement and purpose clauses (no ATIM markers, same reference, one intonation contour).

(p. 691) 32.5.1 Subordinate clauses: non-finite complement and purpose clauses

Purepecha has two types of complement clauses: a finite complement clause with the complementizer *exka* (see Chamoreau 2016) and a non-finite complement clause.

In finite complement clauses, the complementizer is placed at the beginning of the complement clause, and the predicate is always modified by the mood *-ka* called "subjunctive" (a type of marker of dependence). Tenses and aspects are present, but they have a distinctive form. In particular, aspects have a reduced form: for example, the aorist is encoded *-x-* (or *-s-*) in an independent or main clause, as in (67), and unmarked in a dependent clause. Co-reference is possible, but generally there is no co-reference between main and dependent clauses.

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(67)

juchi	nante	no	wé-ka-x-ti	[éxka=ni	ni-ø-ka
POSS1SG	mother	NEG	want-FT-AOR-ASS3S	COMP=S1SG	go-AOR-SBJV

ichorita-mpu]
canoe-INS
'My mother did not want me to go by canoe.'

By contrast, in non-finite complement clauses the verb is marked by the overt non-finite marker *-ni*, with no ATIM, no complementizer, no pronominal enclitic, generally same-subject as in (68a), and the same intonation contour. In the non-finite complement clause, there is co-reference between the agent of the main and complement clauses, as in (68a) (92.5% of the occurrences); in the case of manipulative verbs, as in (68b), the manipulee of the main clause (syntactic object) is co-referential with the agent of the complement clause (7.5% of the occurrences). This construction is used in order to indicate successful manipulation.

(68)

a. ero-ta-xa-ka [k'ama-ta-**ni** prontu]
hope-CAUS-PROG-ASS1/2S finish-CAUS-NF quickly
'I hope to finish soon.'

b. no=chk'a jwina-x-ka ugo-ni [**jupi-ka-ni** juchi kawayu-ni]
NEG=then allow-AOR-ASS1/2S Hugo-OBJ take-FT-NF POSS1SG horse-OBJ
'I do not allow Hugo to take my horse.'

The non-finite purpose clause is introduced by *para*, with co-reference and TAM continuity, as in (69). This construction is not attested in the sixteenth century and seems to be a grammatical replication of the Spanish construction: *para + non-finite V*:

Kumicho incha-parha-ku-x-p-ka
Ocumicho enter-LONG.EXT-NCS-AOR-PST-ASS1/2S
(69) [para eskwela **arhi-t'a-a-ni**]
for school say-IT-O3PL-NF
'I had entered into Ocumicho in order to teach them.'

(p. 692) In non-finite complement and purpose clauses, the verb can have its own object codified by a third person object suffix, as in (69) and (70), a pronominal enclitic, as in (71), or a noun phrase, as in (68b).

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(70)

jucha=na	wé-ka-xïn-ka=kxï	[pámpi-a-ni]
S1PL.IND=EV	want-FT-HAB-ASS1/2S=S1PL	accompany-O3PL-NF

'We want to accompany them.'

(71)

wé-ka-xïn-ti=rini	[ata-ni]
want-FT-HAB-ASS3S=O1SG	beat-NF

'He wants to beat me.'

32.5.2 Non-finite chain-medial clauses

Within work on discourse coherence, a clause-chain is characterized as the "smallest unit of coherent multi-propositional discourse", one that has "the tightest, most continuous cross-clausal coherence links" (Givón 2001: 355). Chain-medial clauses "carry the bulk of sequential new information in the chain, and display the highest degree of cross-clausal coherence. Their grammatical marking is the most minimal, since most threads of thematic coherence (topical referents, temporality, aspectuality, modality, perspective) remain the same" (Givón 2001: 356). Chain-initial and chain-final clauses are generally the most finite type, while chain-medial clauses are the least finite (the degree of finiteness of chain-grounding clauses is often unpredictable, although generally they are nominalized phrases). The correlation between degree of finiteness and clause-types within the chain in discourse shows that the more referential ones and those with thematic predictability—corresponding to the highest degree of cross-clausal coherence and continuity—display less finiteness.

Non-finite chain-medial clauses in Purepecha are constructions employed to facilitate thematic, referential, and aspectual continuities in discourse (Chamoreau 2016). Such strategies thus correlate with reduced finiteness. When the subject is the same in the discourse, reference tracking is always possible and easy; in a chain-medial clause the referent generally has the function of the subject. In the chain-initial clause, as in (72a), the referent is introduced by the definite noun phrase *acheti-echa* 'the men', and the verb is marked by aspect. In chain-medial clauses, as in (72b) and (72c), the pronominal enclitic *=ksï* is attested and attached to the verb (see also example (27)). The evidential non-pronominal enclitic *=na* follows the pronominal enclitic (see Section 32.3.1.). Referential and tense-aspect-mood continuities are crucial to understanding the use of these constructions. In non-finite chain-medial clauses in Purepecha, ATIM are not expressed but are easily recoverable. The aspect of the narratives is generally the aorist, as in (72a).

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(72)

a. xasï=ksï=nha kustakwa jinkoni acheti-echa pa-s-ti,
next=S3PL=EV music COM man-PL take-AOR-ASS3S
'They said that then **the men took** her with music,

b. ka jikwa-ra-ni=ksï=nha ya,
and bathe-CAUS-NF=S3PL=EV NOW
and they said that **they bathed** her,

(p. 693)

c. ka ampa-tsi-ku-ni=ksï=nha ya.
and be_clean-LOW-NCS-NF=S3PL=EV NOW
and they said that **they combed** her.'

In short, Purepecha may be viewed as a polysynthetic language that has non-finite clauses. In the three types of non-finite clause, the suffix of the third person plural object may be suffixed and in chain-medial clauses the pronominal enclitic may be attached to the verb, as in Portuguese and as Nordlinger and Saulwick (2002) show for Rembarrnga.

32.6 To what Extent is Purepecha Polysynthetic?

Purepecha exhibits properties that lead us to identify it as a polysynthetic language. Even if some of the properties are generally not identified as prototypical for that type of language, the cluster constitutes an interesting correlation for a polysynthetic language:

– Morphology plays a prominent role due to the existence of a number of bound morphemes.

– Complex verb forms feature a large number of morphemes or potential slots per word.

– It allows for "word sentences', i.e. complex word forms that correspond to whole sentences in other languages.

– It accepts arguments attached to the verb, showing, in some contexts, head-marking features: when first and third persons are unmarked for subject, when the third person plural object suffix is attached to the verb, and when applicative suffixes introduce recipient, beneficiary or external possessor.

– Purepecha recently displays head attraction and pronominal enclitics may be attached to the verb, making this language more polysynthetic.

– Non-finite clauses accept arguments attached to the verb, like finite clauses.

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Purepecha is thus a predominantly dependent-marking language (head-marking features are restricted to some contexts) in which verb forms feature a large number of morphemes per word (having developed widely locative suffixes but less other types) and that displays various types of non-finite clauses. But even with these features, Purepecha can be polysynthetic, even though it is not a prototypical polysynthetic language, unlike the Mixezoquean languages, for example.

The question to be addressed, then, is the position of Purepecha relative to other polysynthetic languages. In other words, the question is: To what extent is Purepecha polysynthetic? Drossard (1997) proposes an interesting typology that distinguishes “sentential” and “non-sentential” polysynthetic languages. In “sentential” polysynthetic languages, one word (p. 694) represents one sentence and the language displays polypersonalism and/or noun incorporation. By contrast, in “non-sentential” polysynthetic languages arguments are not attached to the verb in bound forms, but a whole range of other affixes can be attached to the verb. Purepecha is not clearly “sentential” or “non-sentential”, as it shows features of both extreme types, but it is located somewhere in between these two types: a word may constitute a sentence, and one of the arguments (third person plural object) is attached to the verb, while the others may be attached to the verb (see also Mattissen 2002 for Nivkh). However, the new positions for pronominal enclitics that exhibit head attraction may locate Purepecha closer to the “sentential” type.

Abbreviations

AC
active
AOR
aorist
ANTIP
antipassive
APPL
applicative
ART
article
ASS
assertive
CAUS
causative
CENTRIF
centrifugal
CENTRIP
centripetal

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COM
comitative
COMP
complementizer
CONT
continuative
DEM
demonstrative
DES
desiderative
EV
evidential
EXT.B
external body area
FOC
focus
FT
formative
GEN
genitive
HAB
habitual
IMP
imperative
IND
independent
INDF
indefinite
INS
instrumental
INT
interrogative
INTR
interior area
INTS
intensive
IRR
irrealis
IT
iterative
LOC
locative
LONG.EXT

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long exterior area
LOW
lower
NCS
no coreferential subject
NEG
negation
NF
non-finite
O
object
OBJ
objective case
ORIF
orifice and orifice-edge area
PAS
passive
PST
past
PL
plural
POSS
possessive
PRED
predicativizer
PRINC
principal area
PROG
progressive
PROJ.LONG
projection of something longish
PTCP
participle
RECP
reciprocal
REFL
reflexive
S
subject
SG
singular
SUB
subordinating conj.

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SBJV
subjunctive
SUP
superior area
VERT
flat and vertical area

(p. 695) # Acknowledgements

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Notes:

(2) The first person object enclitic *=ts'ïni*, and the second person object *=kxïni* are always used when the subject is plural.

(1) For the first person plural, the difference between *=ch'e* and *=kxï* (or *=ksi*) today exhibits a dialect variation (Chamoreau 2009: 64) that reveals a diachronic change: in the sixteenth century only *=kuch'e* (the marker that has been grammaticalized in *ch'e*) was used.

(3) In the singular, subject pronouns are simple forms, and in the plural, the plural marker *-cha* is suffixed to the singular form. Object pronouns are complex entities constituted by three elements now considered to be lexicalized, that is, subject pronoun plus objective case marker and objective pronominal enclitic (see Table 32.2), for example, in the case of the second person, *t'u-ni=kini*.

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Pesh (Chibchan family, Honduras). She also explores syntactic changes appearing in settings involving language contact and the relation between contact-induced change and internally motivated change, in particular grammaticalization.

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Mapudungun

Fernando Zúñiga

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Abstract and Keywords

Mapudungun, an unclassified language of southern Chile and south-central Argentina spoken by a somewhat uncertain but sizeable number of speakers, has word-formation phenomena that deserve to be called polysynthetic according to most of the (sometimes mutually exclusive) definitions of this term found in the descriptive and typological literature. Polypersonalism, productive nominal incorporation, a limited amount of lexical affixation, alongside significant grammatical affixation, and especially root-serializing/compounding processes lead to long and complex templatically structured verbal predicates that markedly contrast, not only with rather simple nouns in the same language, but also with predicates in many other languages of the region. This chapter describes the major word-formation processes of Mapudungun paying special attention to the typologies of polysynthesis that have been proposed in previous studies on the subject.

Keywords: compounding, lexical affixation, root-serializing, Mapudungun, nominal incorporation

33.1 Introduction

33.1.1 The language

THE apparently isolate Mapuche language (aka Mapudungun) is currently spoken by around 250,000 people in south-central Chile and west-central Argentina (Zúñiga 2006a). Fluency rates are declining in younger generations; the highest concentrations and/or numbers of fluent speakers are found among the elderly who live in rural, or at least non-

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metropolitan, areas in the Bío-Bío and Araucanía regions in Chile. The present chapter concentrates on Central Mapudungun, mainly spoken in Araucanía, but the particular structural features addressed here are shared by all regional varieties. Data come from my own field notes unless otherwise specified. The orthographic convention I use here is the Chilean version of the so-called *Alfabeto Mapuche Unificado*.[1]

Mapudungun is clause-head-marking and fairly consistently suffixing. It shows constituent order patterns that reflect both syntactic and pragmatic sensitivity: typical clauses are of the V and VS types, especially in narrative texts, but VO and SVO clauses are also found, the latter especially in elicitation. The morphology is largely agglutinative/concatenative, of predominantly separative exponence (i.e. poly-exponential morphemes and portmanteaus are rare), and basically without flexivity (i.e. allomorphy is found in some inflectional phenomena, but it is almost exclusively phonologically conditioned).

(p. 697) 33.1.2 The phenomena

What lies at the centre of attention in the present study is the parameter of synthesis, in particular the sense(s) in which Mapudungun morphology can meaningfully be said to be polysynthetic. The characteristics of Mapudungun morphosyntax most relevant in this context are surveyed in Sections 33.2 (non-verbal words) and 33.3 (verbal words). Section 33.4 discusses the significance of the findings against the background of different views of polysynthesis.

Received notions of polysynthesis crucially depend on both the notion of morpheme, which I assume for the purposes of this study to be reasonably straightforward, and the notion of word, which is notoriously problematic. Recent literature (e.g. Dixon and Aikhenvald 2002b) has emphasized the need to distinguish, in principle, between low-level units identified via phonological and prosodic rules (p-words) and those identified via rules of grammar (g-words). The relevant units subject to morphological–typological exploration since Humboldt are g-words, but Haspelmath (2011) claims that the usual cluster of criteria for g-wordhood is not always adequate when invoked in comparative studies. In his view, this in turn leads to the impossibility of distinguishing morphology from syntax cross-linguistically, rendering—among many other things—traditional morphological typology moot.

As acknowledged by Haspelmath (2011), however, defining g-words language-specifically is not necessarily troublesome. Even though p-word domains and g-word domains do not coincide in a simple way in Mapudungun, I would like to claim that several of the usual criteria for g-wordhood (free occurrence, mobility, non-interruptability, non-coordinatability, non-extractability, and morphological idiosyncrasies) are in fact rather unproblematic when applied in the language, and allow the identification of a meaningful kind of g-word in the language. Other than noting that most long g-words probably consist of several p-words (cf. Evans et al. 2008 on Dalabon for a similar case), I will not say anything about the latter here; the interplay between different kinds of words

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(possibly: different kinds of p-words) in Mapudungun merits a separate study (cf. Bickel and Zúñiga, this volume, for some discussion of the fundamental issues related to the mismatches found in Mapudugun). For the purposes of this study, I will limit myself to surveying the grammatical and semantic traits involved in complex word formation on a strict language-specific basis in Sections 33.2 and 33.3. (The discussion section will assume some cross-linguistic commensurability along traditional lines.)[2]

33.2 The Complexity of Mapudungun Non-Verbal Words

The traditionally defined parts of speech in the language include verbs, nouns, pronouns and articles, adjectives (including participles), adverbs, adpositions, conjunctions, interjections, and particles. The former category is the subject of the next section. The latter four do not participate in either derivational or inflectional morphological processes and I will not address them further here.

(p. 698) The morphology of pronouns is not particularly complex; such elements mark person and number but show few additional features of interest in the present context. Adverbs comprise a closed subclass of underived items, and a potentially open class of derived ones. Adjectives show a degree of derivational complexity roughly comparable to what equivalent elements display in Romance languages, and are therefore relatively unspectacular, except in the case of participles, which may inherit substantial complexity from the verbs they originate in. The inflection of non-deverbal adjectives consists only of the non-singular number marker *-ke*.

Nouns can show a higher degree of morphological complexity. Their inflectional potential is rather modest: apart from the enclitic adpositional / suffixal element *mew*, there is no morphological case, and (animate) nouns mark plural number via a preposed element *pu* (e.g. *che* ‘person’ vs. *pu che* ‘people’). Nevertheless, there are some deverbal nominalizing suffixes: *-fe* for agentive nouns (e.g. *küdaw-* ‘work (v.)’ > *küdaw-fe* ‘worker’), *-we*, *-peyüm* or *-kemum* for instrumental nouns (e.g. *trari-* ‘tie (v.)’ > *trari-we* ‘belt’, *iratu-* ‘chop (wood)’ > *iratu-peyüm* ‘adze’, and *ketra-* ‘plow (v.)’ > *ketra-kemum* ‘plow (n.)’), and *-n* for action nouns (e.g. *awka-* ‘wage war, rebel’ > *awka-n* ‘war, rebellion’).

More importantly, compounding is a prominent process in Mapudungun nominal word formation. Compound nouns can be formed unproductively from adjectives plus nouns (1a) and verbs plus nouns (1b) on the one hand (the former being more frequent than the latter), and productively from nouns plus nouns (1c–d) on the other:

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(1)

a.	*pichi-che*	[little-person]	'child'
b.	*trem-che*	[grow-person]	'(a) grown-up'
c.	*mapu-che*	[land-person]	'person of the land, a Mapuche'
d.	*longko-moyo*	[head-breast]	'nipple'

Note that the order of the constitutive elements depicted in (1a–b) corresponds to the default cases; even though head-initial compounds of those Adj+N and V+N types do exist, head-final ones are much more frequent. With respect to the N+N type depicted in (1c–d), however, both head-final and head-initial subtypes are robust and stand in complementary distribution regarding the kind of semantic relation between their components they convey: roughly, the head-final structure (1c) is semantically unmarked, while the head-initial one (1d) encodes part–whole, object–substance, or container–content relationships (Baker and Fasola 2007, Zúñiga 2014b).

33.3 The Complexity of Mapudungun Verbal Words

There are two reasons why Mapudungun verbs can show a remarkable degree of morphological complexity. First, the suffixes that a verb stem can take to form a word are numerous; they include valency-changing operators, temporal and aspectual markers, elements expressing evidentiality and mood, person and number markers, suffixes encoding either actional direction (i.e. the direct-inverse clause opposition) or spatial-deixis categories, (p. 699) and the polarity markers. Many of these can co-occur on any given verb form. Second, verb stems can themselves be complex: they can consist of several verb stems, a verb stem plus a nominal element, and/or a verbalized nominal element. The following subsections deal with these two sources of complexity.

33.3.1 Complex verbs through extensive suffixation

Mapudungun verbal suffixation can be represented schematically as follows; symbols in curly brackets represent slots that can filled by more than one marker:[3]

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(2)

Mapudungun verbal template (simplified)

stem	{voice}	{TAM}	{directional}	{modal}	{TAM}	evidential	negation	TAM	inversion	mood	ending

The only obligatory positions are the slots for stem and mood (e.g. *lef-i* [run-IND] 'he ran'[4]). The category labelled "ending" here actually consists of several positions and includes person and number markers for one to two arguments. The following examples illustrate complex verb forms with suffixes of different kinds; (3a) shows a future-marked form with two syntactic arguments; (3b) shows several voice markers and the reportative evidential *-rke* on a negative form. (3c) shows two directionals, the ruptured implicature modal marker *-fu* and a 2SG ending:[5]

(3)

a. Leli-a-e-i-m-u-mew.
look.at-FUT-INV-IND-2-DU-3A
'He will suddenly look at you (DU).'

b. Küpa-l-el-nge-rke-la-i.
come-CAUS-APPL-PASS-REP-NEG-IND
'They did not bring it to him, they say.'

c. Adkintu-yekü-me-fu-i-m-i.
watch-DIRCTL-AND-RI-IND-2-SG[6]
'You (SG) were watching everywhere.' (Augusta 1903: 102)

6

(p. 700) In addition to the person–number markers leading to polypersonal verb forms, five elements are of special interest in the context of polysynthesis because of their origin and paradigmatic opposition to elements outside the verbal complex. All but one appear to originate as incorporated verbs. The first one (*-rume*) can occur in the modal slot and means 'suddenly, absolutely, generally'; note that with lexical elements I give it different glosses according to its sense.

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(4)

a. Angkü-rume-i rayen.
dry-suddenly-IND flower
'The flower suddenly dried out.' (Augusta 1903: 121)

b. Pepi-kim-fal-rume-la-i.
can-understand-be.able-absolutely-NEG-IND
'It is absolutely incomprehensible.' (Augusta 1903: 121)

Note that this morpheme is homophonous with preposed *rume* 'very, excessively' (5a) and postposed *rume* 'even, at least' (5b):

(5)

a. Rume fücha illku-i-ngn.
very big get.angry-IND-3PL
'They (PL) got very angry.' (Augusta 1916: 202)

b. Kiñe rume elu-e-n kuram!
one at.least give-INV-1SG.IND egg
'Give (SG) me at least one egg!' (Augusta 1916: 201)

Interestingly, free *rume* also occurs after *pichi* 'little' and *fentre* 'so (much)'; the resulting expressions mean 'narrow' and 'wide'. The likely etymological source for at least some of these elements is the verb *ru-me-* [pass-AND-] 'pass thither, pass (time)', contrasting with *ru-pa-* [pass-CIS-] 'pass hither'; the plain root **ru-* 'pass, cross' is no longer in use. The word *rumel* 'forever, for ages' seems to be a lexicalized, and slightly eroded, instance of the temporally interpreted verbal noun *rume-el*. *Rume(-)* also occurs in complex verb stems, occasionally with unpredictable semantic results; Augusta (1916: 202) lists the dictionary entries *rume-duam-* 'forget, provoke' (cf. *duam-* 'intend'), *rume-fem-* 'pass by' (cf. *fem-* 'do so'), and *rume-kintu-* 'look through, look past' (cf. *kintu-* 'look for'). At any rate, the semantic connection between the verb and the verbal suffix *-rume* 'suddenly, absolutely' is less debatable than the one to postposed *rume* 'even, at least'.

The second element, *-püda*, can also occur in the modal slot and means 'in vain, too much, uselessly, unfairly':

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(6)

a Nie-püda-i kulliñ.
have-too.much-IND animal
'He has too many animals.' (Augusta 1903: 122)

b. Kim-püda-a-fu-i-m-i.
know-in.vain-FUT-RI-IND-2-SG
'You (SG) don't need to know it.' (lit. 'you (SG) would know it in vain')(Augusta 1903: 123)

(p. 701) Unlike most modal morphemes, this one shows free or perhaps dialectal variation with respect to form; Augusta (1903: 122) gives the variants *-püda, -püsha, -püta, -püra, -pra*. With regard to its etymological origins, *püra-* 'ascend' is an unlikely source for semantic reasons, while *püdü-* 'spread, scatter' is unattractive because of its final root vowel. Instead, I would suggest *püsha-* 'lose, leak, be wasted' as the probable verbal origin of this morpheme.

The other three elements, all TAM markers, are *-meke*, *-(kü)le,* and *-we*.

The first denotes progressivity. The existence of both an extra-verbal (7a) and a suffixal (7b) construction, plus the fact that the latter retains an agentivity requirement, suggests a relatively recent grammaticalization:

(7)

a. Meke-i ñi küdaw-n.
be.busy-IND 3.PSR work-INF
'He is busy working / he is working.'

b. Küdaw-meke-i.
work-PROG-IND
'He is working.' (cf. *mawün-*meke-i*, intended for 'it is raining')

The second element can be seen in (8) and has two senses: resultative with inchoative verbs (8a) and progressive with dynamic ones (8b).[7] Unlike *meke*, grammaticalized *müle* 'be (temporarily)' has developed two suffixal allomorphs: *-le* post-vocalically and *-küle* elsewhere. Note that the auxiliary construction in which it remains an independent verb has a very different meaning in (8c):

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(8)

a. Kurü-le-i.
become.black-RES-IND
'It has become black.'

b. Küdaw-küle-i.
work-PROG-IND
'He is working.' (cf. *mawün-küle-i* 'it is raining')

c. Müle-i ñi küdaw-a-el.
be-IND 3.PSR work-FUT-NFIN
'He has to work.' (Not: 'he is working')

Lastly, the suffix *-we* means 'already' on its own—its etymon is probably the adjective/adverb *we* 'new, young; newly, recently'—but it seldom appears as a suffix without the resultative *-(kü)le* (9a) or with a negated verb form (9b). In the latter case, the whole has cessative value, that is, 'no longer'.

(9)

a. Kurü-le-we-i ñi ange antü mew.
get.black-RES-already-IND 3.PSR face sun POSP
'His face has become black because of the sun.' (Augusta 1903: 43)

b. Weñe-we-la-a-n.
(p. 702) steal-already-NEG-FUT-1SG.IND
'I won't steal anymore.' (Augusta 1903: 123)

Several other elements can occur in the modal slots. They include two "adverbial suffixes" (Hernández et al. 2006), for example the relatively productive *-kantu* 'for fun, not seriously' (probably from continuative *-ka* plus infinitive/nominalizer *-n* and telicizer *-tu*) (a), *-faluw* 'feigning' (perhaps from derivational *-fal* 'able to' and reflexive *-(u)w*) (b):

(10)

a. Ruka-kantu-meke-i-ngn.
build.house-for.fun-PROG-IND-3PL
'They (PL) build houses for fun.' / 'They (PL) jokingly pretend to be building houses.'
(Hernández et al. 2006: 125)

b. Fey tachi kalko domo rume lladkü-faluw-ke-rke-i.
DEM ART witch woman very be.sad-feigning-HAB-REP-IND
'That witch would pretend to be very sad, they say.' (Salas 2006: 256)

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Other “thematic suffixes” (Salas 2006, Hernández et al. 2006) seem to be comparatively less productive, for example, *-fem* ‘immediately’ (< *fem-* ‘do so’) (a) and *-kaw* ‘a lot, much’ (< continuative *-ka* + reflexive *-w*) (b):

(11)

a. Aku-fem-i.
arrive.here-immediately-IND
‘He arrived (here) immediately.’ (Hernández et al. 2006: 133)

b. Aye-kaw-i-m-i.
laugh-much-IND-2-SG
‘You (SG) laughed with all your might.’ (Hernández et al. 2006: 133)

Except for *–we*, all modal suffixes we have seen appear to have originated as incorporated or compounded verbs. Several other elements occurring in the verbal complex are clearly of verbal origin; most will be discussed in Section 33.3.2.2. For now, I simply note the perambulative *-(ki)yaw* (< *miyaw-* ‘walk’), which occurs in the TAM slot and means ‘go around V-ing’:

(12)

Entu-soyüm-yaw-le-ke-i.
remove-shrimp-PERAMB-PROG-HAB-IND
‘He is always going around gathering (lit. removing) shrimps.’ (Salas 2006: 179)

33.3.2 Complex verbs through complex stems

33.3.2.1 Nominal incorporation (NI)

Mapudungun verbs easily integrate nominal elements into their morphological make-up. The examples in (13) illustrate the kind of structures more frequently found in (p. 703) texts; (a) shows a finite verb and (b) shows a non-finite verb form with incorporated nominals:

(13)

a. Ina-mara-le-i tachi pu trewa.
chase-hare-PROG-IND ART PL dog
‘The dogs are chasing hares.’ (Salas 2006: 179)

b. pu lafken-che fende-mungu-yaw-pa-lu
PL sea-person sell-seaweed-PERAMB-CIS-PTCP
‘people from the coast who went about selling seaweed here’ (Salas 2006: 204)

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As mentioned by Baker et al. (2003) and Loncon (2011), Mapudungun NI belongs to Type III in Mithun's classification ("manipulation of discourse structure"); Type IV ("classificatory NI") is not attested in the language. Harmelink (1992: 131) says that any common noun can be incorporated if the semantics and pragmatics are appropriate, and my own data confirm this.[8] Incorporated nominal elements follow the verbal stem.[9] Incorporated nominal elements are not reduced in any way when compared to their verb-external counterparts. Although the details of how stress patterns operate in the context of NI are not well understood, nominal elements retain some prosodic prominence in that they can carry (secondary, possibly independent) stress.

Incorporating predicates are typically bivalent. Although some studies claim this is obligatorily so (Harmelink 1992, Loncon 2011), others explicitly say that monovalent verbs can incorporate as well, and my own data confirms this—at least for some nonagentive verbs, compare the ones mentioned by Smeets (2008: 319): *waw-yuw-* [leak-nose-] 'have a bloody nose', *lef-umaw-* [run-sleep-] '(someone's) sleep is gone', *puw-trafiya-* [arrive-evening-] 'the evening fall', and *kon-a nt ü-* [enter-sun-] 'the sun warm (sthg.) up'. Augusta's dictionary (1916: 233) records numerous examples; a particularly clear one is *tripa-longko-* [exit-ear-] 'shoot into ears (wheat)'. Based on data like the following, Baker et al. (2005) conclude that agentive monovalent predicates (like *küdaw-* 'work', (14a)) do not incorporate nominals but some patientive ones do (like *lüf-* 'burn in (14b) and *la-* 'die' in (14c)) if there is an overt NP in the clause referencing the possessor of the incorporated nominal:[10]

(14)

a. *Juan küdaw-fo̲tüm-i.
J. work-son-IND
Intended: 'Juan's son works (for him).' (Baker et al. 2005: 171)

b. *(Juan) lüf-ruka-i.
J. burn-house-IND
'(Juan's) house burned down.' (Baker et al. 2005: 167)

(p. 704)

c. L̲a-ofisa-i *(Juan).
die-sheep-IND J.
'Juan's sheep died (on him).' (Baker et al. 2005: 172)

While with such patientive verbs the possessor NP is obligatory, *kutran-* 'get sick, hurt' allows the incorporation of body-part nouns even in the absence of an overt possessor/experiencer NP:

(15)

Kutran-foro-le-fu-n.
get.sick-tooth-RES-RI-1SG.IND
'I had sore teeth.' (Salas 2006: 179)

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Augusta even has a separate entry for *kutran-longko-* [get.sick-head-] ‘have a headache’ (1916: 101). Lastly, observe that trivalent verbs (whether underived (a) or derived (b)) can also incorporate nominals:

(16)

a. Müntu-chumpiru-fi-i Pedro.
take.away-hat-3PO-IND P.
‘He took the hat away from Pedro.’ (Loncon 2011: 123)

b. Dewma-chumpiru-lel-fi-i-m-i fábrica mew.
make-hat-APPL-3PO-IND-2-SG factory POSP
‘You (SG) made the hat for him in the factory.’ (Loncon 2011: 124)

With bivalent and trivalent predicates, incorporates are patients or at least patientive.[11] Possessa of bivalent *nie-* ‘have’ can be incorporated:

(17) Mapuche nie-kawell-la-i-ngn.
M. have-horse-NEG-IND-3PL
‘The Mapuche do not own horses.’ (Baker et al. 2005: 145)

By contrast, incorporation of goals, sources, maleficiaries, and beneficiaries is not possible:

(18) Juan ngilla-waka-lel-fi-i.
J. buy-cow-APPL-3PO-IND
‘Juan bought a cow for him.’
Not: ‘Juan bought it for the cow.’ (Baker et al. 2005: 140)

(p. 705) In *püra-kawellu-* [ascend-horse-] ‘mount a horse’ and *nag-kawellu-* [descend-horse-] ‘dismount from a horse’, the predicates are syntactically monovalent and the incorporate is a location. (There exist (causativized) bivalent counterparts *püram-* ‘lift’ and *naküm-* ‘lower’, but if these were employed, the horse would be understood as the theme/patient.)

It is particularly noteworthy that incorporated elements need not be mere noun roots or stems. Harmelink (1992) mentions two subtypes here, namely, head-initial compounds (a) and, more strikingly, syntactically complex NPs (b):

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(19)

a. Ngilla-kal̲-ufisa-ke-n.
buy-wool-sheep-HAB-1SG.IND
'I always buy sheep's wool.' (Harmelink 1992: 133)

b. Adkintu-we-ngilla-n-mansun-kiyaw-i.
watch-newly-buy-PTCP-OX-PERAMB-IND
'He is going around looking after newly bought oxen.' (Harmelink 1992: 133)

Such complex NPs can include adjectives (or participles, like *ngilla-n* 'bought' in (18b)) and even adverbs (like *we* 'newly'), but they cannot include numerals, demonstratives, or articles. Harmelink (1992) says he does not know how productive this subtype is; to judge from my own experience with such constructions, I would say that the compound-N subtype is not only more frequently found in texts but more readily accepted (and volunteered) in elicitation than the complex-NP subtype.[12] Notably, however, (i) NI occurs relatively seldom in narrative texts—not more than two or three times on average in 500-word narratives—and (ii) NI of simple noun roots is found most often.

33.3.2.2 Multiple verb stems

Several modal-like verb roots combine with an open class of verbal stems in order to create complex verbs. These are *kim*-V- 'know how to V' (< *kim*- 'know'), *pepi*-V 'can V' (< obsolescent *pepi(-l)*- 'be able to, know how to'), *küpa*-V- 'want to V' (< *küpa*- 'come'),[13] *fentre*-V- 'V so much, V until the end' (cf. *fentre-l*- 'make so big'), *kellu*- 'help to V' (< *kellu*- 'help'),[14] and (p. 706) *kalli*-V- 'allow to V' (no longer attested as independent verb). *Kim*- and *pepi*- are highly productive; *küpa*-, *fentre*-, and especially *kellu*- possibly less so; *kalli*- seems to be disfavoured by younger generations of speakers. These verb roots do not normally combine with each other. Examples follow:

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(20)

a. Kim-rüngkü-i.
know-jump-IND
'He knows how to jump.'

b. Pepi-nengüm-i.
can-move-IND
'He can move.'

c. Küpa-ülkantu-n.
want-sing-1SG.IND
'I want to sing.'

d. Fentre-feim-fi-i.
do.so.much-tighten-3PO-IND
'He squeezed him/it to death.'

e. Kellu-nü-kawellu-fi-i.
help-catch-horse-3PO-IND
'He helped him catch a horse / horses.'

f. Kalli-küpa-pe.
allow-come-3.SBJ
'Let him (be allowed to) come!'

Augusta (1903: 275f.) mentions compounds with other roots (e.g. *tu-* 'get, take' and *ye-* 'carry' in *tu-kutran-* 'begin to get sick' and *ye-ngolli-* 'begin to drink / get drunk') that do not seem to be productive in the present-day language. He also discusses others that are productive, namely, *ina-* 'follow, pursue' and *wüño-* 'return, go back'—giving *nach-* 'after' and *rück-* 'back' respectively as German equivalents for their contribution as serialized elements (Augusta 1903: 275–6):

(21)

a. ina-kintu- (follow-look.for-) 'follow with one's gaze' (Gm. *nachsehen*)

b. wüño-kutran- (return-get.sick-) 'have a relapse' (Gm. *einen Rückfall bekommen*)

The path verbs *püra-* 'ascend', *nag-* 'descend', *tripa-* 'exit', and *kon-* 'enter' freely combine with verbs denoting motion or physical activities (and they very rarely combine with each other, even in cases where the semantics would allow for it), for example:

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(22)

a. Anü-püra-i.
sit-ascend-IND
'He sat up.'

b. Anü-nag-i.
sit-descend-IND
'He sat down.'

c. Rüngkü-tripa-i.
(p. 707) jump-exit-IND
'He jumped out.'

d. Rüngkü-kon-i.
jump-enter-IND
'He jumped in.'

Such verbs differ from the modal-like elements I have sketched in three respects.

First, *püra-* 'ascend' and *nag-* 'descend' almost invariably agree in valency with the verb expressing the concurrent activity; with bivalent verbs, they appear causativized as *püram-* 'lift' and *naküm-* 'lower':

(23)

a. ütrüf-püram- [throw-lift-] 'throw up'
b. ütrüf-naküm- [throw-lower-] 'throw down'

Although *tripa-* 'exit' and *kon-* 'enter' do not have morphological causative counterparts, their lexical equivalents *(n)entu-* 'remove, get out' and *tüku-* 'insert, put (in), set' are used with bivalent verbs:[15]

(24)

a. ütrüf-tüku- [throw-insert-] 'throw in'
b. kücha-nentu- [wash-remove-] 'wash off'

Second, note that the path verbs follow, rather than precede, the verbs from the open class.[16] Third, *nag-* 'descend' and *kon-* 'enter' are found with a nonliteral meaning in quasi-lexicalized stems, for example *füshkü-nag-* [cool-descend-] 'cool down' and *truftruf-kon-* [boil-enter-] 'start boiling'. Lastly, observe that the deictic stems *ru-pa-* 'pass hither' and *ru-me-* 'pass thither' can also occur in the slot occupied by the path verbs that have been mentioned (Augusta 1903: 272), though such compounding seems to be much less productive in the present-day language.

One last group of verbs can be said to participate in V+V compounding processes (25); it consists of *künu-* 'leave, set' (a–b) and *nie-* 'have' (c–d):

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(25)

a. Rütriñtu-künu-fi-nge tami ikülla.
fasten-leave-3PO-2SG.IMPER 2SG.PSR cloak
'Leave (SG) your cloak fastened (with a brooch)!' (Augusta 1903: 263)

(p. 708)

b. Fey ütrüf-entu-künu-pa-rke-i fentren fill-ke challwa.
DEM throw-remove-leave-CIS-REP-IND much each-NSG fish
'He threw many and varied fish out and left them (there), they say.' (Salas 2006: 204)

c. Entonse leli-nie-ke-fi-i.
then look.at-have-HAB-3PO-IND
'Then he looked at it for some time.' (Salas 2006: 214)

d. rupan trarin-tüku-nie-l-fi-lu pel mew
after tie.up.INF-insert-have-APPL-3PO-PTCP neck POSP
'after having tied it up around his neck …' (Salas 2006: 310)

According to Hernández et al. (2006: 134), these two verbs combine with the main lexical verb to express either "definite purpose" or "constancy/permanency" on the part of the subject's involvement. These authors see *tüku-* 'insert, put (in), set' as belonging to this group as well, the latter's function being like that of *künu-* 'leave' but with an added spatial/positional component—which can be somewhat bleached, for example in *kellu-tuku-i-m-i* [help-set-IND-2-SG] 'you (SG) did your part (there)' (lit. you left your part of the helping)' (Hernández et al. 2006: 134). Observe, however, that *tüku-* and *nie-* can co-occur (like in 22d above), while *künu-* and *nie-* seem to never do so.

33.3.2.3 Verbalization of nominal elements

Unlike adjectives, which can be used as verbal roots without any derivational material, other non-verbal elements need to be verbalized first in order to be used as heads of predications. The means employed include a special marker *-(u)w*, the verbs *tu-* 'take', *ye-* 'carry', and applicativized *feye-l-* 'believe', and *-nge* 'be'; I will address them in turn in what follows.[17]

The suffix *-(u)w*—homophonous with the reflexive marker—turns nouns into inchoative verbs (26a); the nominal element can in principle be more complex than a noun stem (26b):

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(26)

a. Kura-w-i.
stone-VBZR-IND
'It turned into (a) stone.'

b. Anümka kelü-peshkiñ-uw-i.
plant red-flower-VBZR-IND
'The plant turned into (something like) a red flower.' (Hernández et al. 2006: 135)

The three verbalizing verbs are semantically specialized. *Tu-* 'take' turns a noun into a verb meaning 'do with N whatever is normally done with it', for example *kofke-tu-* [bread-VBZR-] 'eat bread', *kawellu-tu-* [horse-VBZR-] 'ride (on) a horse'.[18] Nouns verbalized with *ye-* 'carry' (p. 709) mean 'have/treat as N', and they are mostly (but not exclusively) kinship terms, for example *chaw-ye-* [father-VBZR-] 'regard as one's father', *patron-ye-* [boss-VBZR-] 'regard as one's boss'. Lastly, *feye-l-* 'believe' turns nouns or complex NPs into predications meaning 'SBJ believes OBJ to be N(P)':

(27)

Rume-weda-feye-l-n.
very-bad-believe-APPL-1SG.IND
'I believe he is very bad.' (Hernández et al. 2006: 135)

The element *nge* is like the verbalizing verbs in that it can occur not only as the sole predicate of the clause (28a), but also a verbalizing suffix (28b); it is homophonous with the passive suffix *-nge*. However, there are constraints on its use as a predicate: it appears that a formerly productive verb *nge-* 'be, exist' has become defective and can occur on its own only with additional morphology, like the negation in (28a, b) and the directionals in (29a, b):

(28)

a. Q:Müle-i chadi? A:Nge-la-i chadi.
exist-IND salt exist-NEG-IND salt
Q: 'Is there any salt?' A: 'There is no salt.'

b. Chadi-nge-la-i.
salt-VBZR-NEG-IND
'It is not salty / it lacks salt.' (Smeets 2008: 126)

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(29)

a. Iñche nge-pa-n.
PRO:1SG be-CIS-1SG.IND
'I have been here [before].' (Smeets 2008: 125)

b. Nge-l-me-fi-n tüyüw chi waka.
be-CAUS-AND-3PO-1SG.IND over.there ART cow
'I have taken the cows over there.' (Smeets 2008: 126)

The usual occurrence of verbalizing *-nge* is with nouns to denote a permanent property or class membership (30a),[19] but it is also used to verbalize cardinal numerals (30b). It also turns the interrogative *chum* 'what' into *chum-nge-* 'be how' and can be employed with adjectives to denote permanent qualities (30c):

(30)

a. Kalku-nge-i.
warlock-VBZR-IND
'He is a warlock.' (cf. *fey ta kalku* [DEM PART warlock] 'he is the warlock')
(p. 710)

b. Küla-nge-i.
three-VBZR-IND
'They are three / there's three of them.'

c. Karü-nge-i.
green-VBZR-IND
'It is (the color) green.' / 'It has green (in it).' (cf. *karü-i* 'it has become green')
(Smeets 2008: 124)

Like other noun-to-verb derivational suffixes, *-nge* can verbalize whole NPs (31a). As already seen in (28) above, in addition to meaning 'be', *-nge* can mean 'be with' (31b-f), either with simple or complex NPs:

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(31)

a. Rume-küme-wentru-nge-i.
very-good-man-VBZR-IND
'He is a very good man.' (Smeets 2008: 123)

b. Küme-trawa-nge-i.
good-body-VBZR-IND
'She has a fine body.' / 'It is a fine body.' (Smeets 2008: 123)

c. Trewa-ad-nge-i.
dog-face-VBZR-IND
'He has the face of a dog.' (Smeets 2008: 123)

d. Füta-nge-i.
husband-VBZR-IND
'She is married.' (lit. 'she is with husband')

e. Küme-sapato-nge-tu-i.[20]
good-shoe-VBZR-TEL-IND
'From then on he wore good shoes.' (Salas 2006: 224)

f. Rume-fütra-longko-nge-tu-rke-i.
very-big-hair-VBZR-TEL-REP-IND
'She had turned into a long-hair(ed person), they say.' (Salas 2006: 228)

20

33.4 Discussion

If we take Greenberg's (1960) synthesis index as a quantitative measure, and look at the average number of morphemes per word in running discourse, Mapudungun does not rank as (p. 711) particularly polysynthetic (somewhere near Yakut). My analysis of Salas's (2006) narrative texts yields a value of slightly more than 2.2, which is less than those for Swahili (2.55), Sanskrit (2.59), and Eskimo (3.72). (But note that, if we only consider the verbs in those texts, the index reaches 4.71 for finite forms and 3.75 for non-finite ones, which make up 75 per cent and 25 per cent of verbs respectively.) Bickel and Nichols (2008) classify Mapudungun as scoring 8–9 maximum inflectional categories per verbal word, which places it in the same (high-synthetic) group as Chukchi, Slave, Oneida, Haida, and Squamish, among 24 out of the 145 languages they surveyed. At the higher

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end are the groups with 10–11 and 12–13 morphemes per word respectively, to which only 9 languages belong. Note that Bickel and Nichols also describe polysynthesis impressionistically in an earlier article as “an abundant mixture of formatives and lexical roots in polysynthetic words” (2007: 192)—a picture that corresponds to some extent to the profile of Mapudungun verbs, depending on what is meant by ‘abundant’.

Similarly, according to Mattissen’s (2003) qualitative approach, which regards so-called lexical affixes as criterial, the language would be only mildly polysynthetic and figure more at the compositional than the affixal end of her spectrum. Some suffixes do express location, direction, and motion, but morphemes denoting chronology, specific temporal location, or instruments (e.g. ‘first’, ‘in the night’, or ‘by hand’) are conspicuously missing. Event quantification (roughly: iterativity and distributivity) is expressed via reduplication plus suffixation (Zúñiga and Díaz-Fernández 2014), but argument-quantifying affixes denoting ‘all’, ‘some’, etc. are missing as well. Lastly, suffixes / secondary verb roots encoding manner and degree are not numerous when compared to the situation found in Athapaskan, Algonquian, Salishan, or Wakashan.

Other qualitative approaches to synthesis, however, clearly give the language polysynthetic status. The Mapudungun brand of nominal incorporation and its polypersonal verbs are straightforwardly polysynthetic for Baker (1996), for instance. The language does fairly well according to Fortescue’s (1994) trait cluster approach: head-marking inflection, polypersonal verbs, the verb as minimal clause, relatively free constituent order, some potential slots of specific/concrete semantic import, integration of some adverbial affixes into the verb, and noun stem incorporation certainly allow Mapudungun to emerge as polysynthetic. According to Evans and Sasse’s account, the language appears as prototypically polysynthetic in that “it is possible, in a single word, to use processes of morphological composition to encode information about both the predicate and all its arguments […], to a level of specificity allowing this word to serve alone as a free-standing utterance without reliance on context” (2002: 3).

We know very little about the history of Mapudungun, but its polysynthetic morphology looks like “newer” Chukchi than “older” Nuu-chah-nulth, in the terms outlined in Fortescue (2007). The source of many derivational affixes is still transparent, incorporated and serialized stems retain some prosodic prominence, the morphology basically adheres to Bybee’s generalization as to the relative ordering of derivational and inflectional material, and there is not much evidence of successive historical layering and fossilization of affixes.

Mapudungun might be said to be strongly polysynthetic in that verbal compounding is quite productive and allows for up to (easily) three to (exceptionally) five stems per verb, and especially in that syntactically complex NPs can be integrated into the stems of verbal predications—although the incorporation of complex NPs is admittedly infrequent. Nevertheless, lexical affixation in general is comparatively limited, and there are no raising (p. 712) affixal verbs like the ones found in Wakashan (Pittman 2009) and Eskimoan (Fortescue 2007, Pittman 2009, Mithun 2012). Mapudungun multi-stem verbs

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constitute a simple predicate: they share an argument structure and cannot be independently tensed or negated, unlike *-ni* ‘say’ in Central Alaskan Yup’ik and its cognates in other Eskimoan languages. Thus, the ways in which Mapudungun (verbal) words reach high levels of complexity depend exclusively on the possibility of expressing selected notions related to the clause head, its arguments, some circumstantial information, and modality. There do not seem to exist any structures in the language where predicates, arguments, or adjuncts belonging to superordinate or subordinate clauses migrate towards, or are integrated into, a single verbal word.

Abbreviations

A
agent-like argument of bivalent predicate
Adj
adjective
AND
andative
APPL
applicative
ART
article
CAUS
causative
CIS
cislocative
DIRCTL
directional
DEM
demonstrative
DU
dual
FUT
future
HAB
habitual
IMPER
imperative
IND
indicative
INF
infinitive

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INV
inverse
N
noun
NEG
negative
NFIN
non-finite
NI
nominal incorporation
NSG
non-singular
NP
noun phrase
PO
primary object of bivalent or trivalent predicate
PASS
passive
PERAMB
perambulative
PL
plural
POSP
postposition
PROG
progressive
PSR
possessor
PTCP
participle
REP
reportative
RES
resultative
RI
ruptured implicature
S
single argument of monovalent predicate
SG
singular
TAM
tense-aspect-mood
TEL

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telicizer
V
verb
VBZR
verbalizer

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Notes:

(1) I present only underlying forms, rather than surface ones, in the present study; some epenthesis, elision, and resyllabification rules apply (cf. Zúñiga 2007: ch. III). I have also adapted the spelling of examples taken from different sources in order to make reading and quoting easier for the non-specialist. (This includes glossing over some phoneme variation, as in *tüku* ~ *tuku*, and reduction, as in *nie* > *ne*, in Salas's examples.) In the orthographic convention used here, underlined letters represent interdental phonemes, *ll* is the aveolo-palatal lateral and *ü* stands for the vowel [ə]~[ɨ], which is also found in epenthesis.

(2) See Zúñiga (2014a) for more comments on Haspelmath (2011) in the context of polysynthesis.

(3) Augusta (1903: 330f) proposes an explicit model of the Mapudungun verbal suffixal template that is largely equivalent to the one presented here. The one espoused in Smeets (2008: 177f) is probably too rigid and differs from mine somewhat more markedly.

(4) Mapudungun does not have grammatical gender; English translations in this article employ 3rd person singular masculine forms for expository convenience only.

(5) See Golluscio (2000) on *-fu* as a marker of ruptured implicature.

(6) The ruptured implicature suffix often has a purely temporal interpretation (a state of affairs that no longer holds), like in Exx. (3) and (15), and with the future marker *-a* it typically corresponds to the Spanish or English conditional, like in Ex. (6).

(7) See Zúñiga (2001a, 2001b) for more on the resultatives and progressives in Mapudungun.

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(8) Loncon (2011: 120) says that *mütrüm-* 'call' can incorporate *püllü* and *alwe* (nouns denoting the soul of a living and a dead person respectively) but strikingly fails to incorporate *am* (the noun denoting the soul of person that is about to die). My own data clearly suggest, however, that the problems with[??] *mütrüm-am-keiñ mawida mew* 'we (PL) called the spirit in the mountain' are pragmatic rather than lexical–semantic.

(9) Most authors addressing nominal incorporation say this is invariably the case (Harmelink 1992: 131, Smeets 2008: 318f, and Loncon 2011: 120). Fernández-Garay (2005: 74f) reports some examples from the Argentinian varieties in which the verb can allegedly follow the incorporated element (*pangku-tripa-* 'get a bump' and *fotra-kon-* 'get stuck in the mud', *kure-ye-* 'marry', and *che-dungu-* 'speak the language of the people'), but I think they are best seen as instances of verbalization; cf. Section 33.3.2.3.

(10) In Baker et al.'s (2005) terms, unergatives cannot incorporate nominals but some unaccusatives can if there is a stranded possessor in the clause.

(11) Cf. the partition of incorporated noun vs. object-affix roles in ditransitives in Bininj Gun-wok, Evans (2003a), which shows identical behaviour.

(12) Loncon (2011: 125–6) claims that adjectives are actually not admissible per se in complex NPs; in her view, only Adj+N compounds are possible incorporates. When confronted with Loncon's examples, however, my consultants' reactions unmistakably suggested that such coinages are questionable on semantic/pragmatic, rather than on lexical/syntactic, grounds. Given the appropriate context, my consultants readily accepted the incorporation of complex NPs with adjectives even when the specific Adj-plus-N combination used was not particularly frequent or lexicalized.

(13) *Küpa-* 'come' is possibly etymologically plurimorphemic (from **kü*, unattested as an independent root, plus cislocative *-pa*). Synchronically, there is no reason not to regard *küpa-* as a root rather than a stem.

(14) The entries in Augusta (1916: 81) suggest a substantial degree of lexicalization of compounds with *kellu-* already in the early twentieth century. The combination with *pi-* 'say' is particularly interesting in that the order/scope differs from those found with the other verbs of this group, namely, *kellu-pi-e-n-mew* [help-say-INV-1SG.IND-3A] means 'he told/asked me to help him', not 'he helped me to tell him'.

(15) Both *tuku-* and *entu-* seem to sometimes combine with a nominalized stem or the infinitive (ending in *-n*) rather than an uninflected form, but it is not entirely clear how parasitic the *n* in *entu* ~ *nentu* really is.

(16) A notable exception to this are compounds with *kintu-* 'look for, search', where the path verbs (and a handful of others) precede *kintu-*.

(17) Note that some lexical items can be employed as verbs without any verbalizing morphology, e.g. *chew-a-i-m-i?* (where-FUT-IND-2-SG) 'where are you (SG) going?'.

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(18) Occasionally, verbalizing *-tu* is dropped (perhaps for euphony), e.g. *Antonio fütra-wentru-(tu-)i* (A. big-man-TEL-IND) 'Antonio grew (up)' (Hernández et al. 2006: 135).

(19) This is opposed both to identifying referents, which is done without a verbal element, and to denoting a temporary property, which is done with resultative forms of verbs.

(20) Stative predicates in general—and *nge*-denominals in particular—can be telicized, i.e. turned into an inchoative predicate, by suffixing *-tu*.

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Tariana, an Arawak Language from North-West Amazonia

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Abstract and Keywords

Tariana, the only Arawak language spoken in the Vaupés River Basin linguistic area, has developed numerous polysynthetic patterns, as a result of areal diffusion neighbouring East Tucanoan languages. Tariana is spoken in a situation of obligatory societal multilingualism, based on linguistic exogamy. Special features of Tariana shared with other polysynthetic languages include variable order of morphemes, 'recursive affixing' (similar to Eskimo-Aleut languages), templatic structures of nouns and verbs, and multiple serial verb constructions which behave as single word structures with respect to derivational processes. Most of these patterns are absent from Baniwa and other closely related Arawak languages, and also from one of the two extant dialects of Tariana under strong influence from Baniwa.

Keywords: areal diffusion, variable order of morphemes, serial verbs, Arawak languages, East Tucanoan languages, Vaupés River Basin, recursive affixing, multilingualism

34.1 The Tariana Language: Genetic and Areal Perspective

THE Tariana language belongs to the Arawak language family. It is currently spoken by fewer than 100 people in the multilingual linguistic area of the Vaupés River Basin (northwest Amazonia, Brazil; Map 34.1). The area is known for its multilingual exogamy: one can only marry someone who speaks a different language and belongs to a different tribe (see Aikhenvald 2002b for the history and the composition of the area). Speakers of East Tucanoan languages are the marriage partners of the Tariana. Hup and Yuhup

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(members of the putative Makú language family: see Aikhenvald 2012a for a discussion) are spoken in the same area, but are outside the Tariana-Tucanoan marriage network. Descent is strictly patrilineal, and consequently, one identifies with one's father's language group. There is a strong cultural inhibition against 'language-mixing', viewed in terms of lexical loans. In its grammatical structure Tariana combines a number of features inherited from proto-Arawak, with numerous grammatical categories developed under areal influence from Tucanoan languages. A comparison between Tariana and closely related North Arawak languages from the Uapuí subgroup (including the Baniwa-Içana-Kurripako dialect continuum, Piapoco, and Guarequena) allows us to distinguish between contact-induced and genetically inherited phenomena in the language.

Tucanoan languages and Tariana are genetically unrelated and typologically different. Like many Arawak languages, Tariana employs prefixes for subject cross-referencing, while Tucanoan languages are predominantly suffixing. As a result of a long-term contact, Tariana has developed numerous un-Arawak features, including cases for core arguments, a complex system of evidentials, and numerous markers of mood, associated action, manner of action, and modality (some of which have developed out of grammaticalized one-word serial verb constructions).[1] (p. 714)

Click to view larger

Map 34.1 Northwest Amazonia, Brazil

(p. 715) Tariana was once spoken in various settlements along the Vaupés River and its tributaries. The Tariana clans used to form a strict hierarchy (according to their order of appearance stated in the creation myth). Lower-ranking groups in this hierarchy (referred to as 'younger siblings' by their higher-ranking tribespeople) would perform various ritual duties for their 'elder siblings'. Each group spoke a different variety of the language. The difference between these was comparable to that between Romance languages.

As the Catholic missions—and with them European influence—expanded, the groups near the top of the hierarchy abandoned the Tariana language in favour of the numerically dominant Tucano language. This process started in the early 1900s. The Tariana language as described here is spoken by members of two subtribes of the lowest-ranking group Wamiarikune in two villages, Santa Rosa and Periquitos. The language is seriously endangered, and is hardly being learnt by children (Aikhenvald 2013c addresses the current language situation). [2]

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Innovative speakers of Tariana tend to have more Tucanoan-like features in their language than do traditional speakers. These include a tendency towards a fixed verb-final constituent order, the expansion—and grammaticalization—of one-word serial verb constructions, and of the morphemes which share surface similarities with Tucano (see Aikhenvald 2012b, 2016). There are a number of phonological differences and differences in morpheme shape between generations of speakers. Throughout this chapter, we focus predominantly on the traditional language. The features of innovative speakers will be mentioned inasmuch as they are relevant for the status and the development of highly synthetic structures.[3]

34.2 Typological Profile

Tariana is agglutinating with some fusion, and is highly synthetic. Similarly to other Arawak languages, the few prefixes are cross-referencing markers, relative prefix *ka-*, and its negative counterpart *ma-*. All other categories are expressed through suffixes or enclitics. Enclitics cannot form a phonological or a grammatical word on their own, and always bear a secondary stress. They divide into (a) fixed position phrasal enclitics which attach to certain morphological classes of words or phrases (noun, noun phrases, or verbs), and (b) floating clausal enclitics which can attach to any constituent within a clause if it is contrastive.

(p. 716) Phrasal enclitics include case and nominal tense for nouns and NPs, and clause-sequencing markers and markers of manner of action for verbs. Floating clausal enclitics express mood, tense, evidentiality, and some aspects (see Figures 34.1 and 34.2; further discussion is in Aikhenvald 2002b, 2003a: 57–60).

There are no discontinuous morphemes. Subtraction is employed for marking number in nouns, but not in verbs (see Aikhenvald 2014b), e.g. *tʃĩãri ‘man’, ãtʃa* ‘men’. Some nominal (but not verbal) categories are expressed recursively (see Figure 34.3).

Constituent order within clauses and word order within noun phrases containing adjectives and modifiers from closed classes is pragmatically determined. The order within possessive noun phrases is always Possessor–Possessive marker+classifier–Possessee.

Open word classes are nouns and verbs. Underived adjectives constitute a closed class of about twenty members. Adjectives can be derived from nouns and from verbs, and are thus an open class through derivation. Similarly to nouns, adjectives can be used as copula complements and heads of NPs. Adjectives are similar to stative verbs in that they take the same morphological markers when they head a predicate. Special features of adjectives include the plural marker *-peni* and the approximative suffix *-iha* ‘more or

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less' (see Aikhenvald 2014b). They obligatorily require classifier and number agreement with the head noun in a noun phrase (see §34.6.3).

Manner adverbs and time words constitute largish closed classes. Further closed classes include personal pronouns, specifier articles, demonstratives, interrogative-distributive marker, gestural deictic, number words, quantifiers, proclauses, adpositions, and connectives. Postpositions form a closed class of thirty-five members. Postpositions derived from verbs with directional meanings, or from body parts, take cross-referencing prefixes to refer to the postpositional object, for example *di-ɾuku-i-ta-ka* (3sgnf-descend-CAUS1-CAUS2-SUB) 'near it, downwards from it', *di-whida-na* (3sgnf-head-AFFIX) 'at the end of it'. Postpositions with no such etymology do not take prefixes and combine with free pronouns, for example *diha kayu* (he like) 'like him', *diha pamuña* (he/it amidst) 'in the middle of it'. There is just one preposition *te* 'until, till' which cannot take prefixes.[4]

A member of any word class can occupy the intransitive predicate slot. A verb, a noun, or an adjective can stand alone as the sole predicate. A non-verb in the predicate slot takes a limited class-specific selection of verbal morphology.

There is no incorporation of any sort (similarly to other North Arawak languages of the Upper Rio Negro area). A large set of over eighty classifiers are used as agreement markers on adjectives, demonstratives, interrogatives, number words, quantifiers, nouns themselves (as derivational suffixes), possessive constructions, and some verbal forms. Somewhat different forms of classifiers are used in each context. Classifiers categorize nouns in terms of animacy, sex, shape, and form, arrangement (e.g. bundle, piece), and function (e.g. means of transport); there are also specific classifiers. Just under half of underived nouns with inanimate reference cannot occur with the established classifiers. To mark agreement, the noun has to be repeated on the agreeing constituent. Some of the classifiers can be shown to be grammaticalized from such 'repeaters' (see Aikhenvald 2003a: 87–122).

(p. 717) 34.3 Argument Structure and the Expression of Arguments

Similarly to all Arawak languages, Tariana expresses grammatical relations and most categories on the verb. Markers of grammatical relations on the verb are inherited from the proto-language. In contrast, the expression of grammatical relations (fused with pragmatic meanings) with cases has been developed as a consequence of long-term contact with East Tucanoan languages in the Vaupés River Basin linguistic area. The meanings (not the forms) of most cases in Tariana are partly shared with the neighbouring languages (including Hup, Yuhup and Dâw, the Makú languages of the area: see §15.5 of Chapter 15).

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The marking of grammatical relations follows a split S-pattern (typical for most Arawak languages, and reconstructible for Proto-Arawak). The subject of transitive and active intransitive verbs is marked with prefixes. The subject of stative verbs (most of which are intransitive) is not marked. Every verbal root in Tariana is either prefixed or prefixless. Prefixed verbs can be transitive, for example *-keta* 'encounter, reach, hit target', ditransitive, for example *-hñeta* 'show', ambitransitive of the type A = S_a, for example *-hima* 'hear, see, think, understand', or of the type O = S_a, for example *-thuka* 'break', or active intransitive of the type S_a, for example *-emhani* 'walk around'. Most prefixless verbs are stative intransitive, for example *kai* 'be painful'; some are A = S_o ambitransitives, for example *karu* 'be afraid', or O = S_o ambitransitives, for example *hui* 'enjoy (food); be tasty'. There is no object marking on the verb.[5]

Prefixes also cross-reference a possessor in an NP (see Table 15.1 in Chapter 15) and a pronominal object of a postposition. Cross-referencing prefixes are transparently related to personal pronouns: see Table 34.1.

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Table 34.1 Cross-referencing prefixes and free pronouns

	SINGULAR		**PLURAL**	
	cross-referencing	free pronouns	cross-referencing	free pronouns
1	*nu-*	*nuha*	*wa-*	*w(a)ha*
2	*pi-*	*piha, phia*	*i-*	*iha*
3nf	*di-*	*diha, dihya*	*na-*	*n(a)ha*
3f	*du-*	*duha, duhua*		
impersonal	*pa-*	*p(a)ha*	—	—
indefinite	*i-*	—	—	—

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(p. 718) The indefinite prefix is used only on postpositions and on nouns in possessive constructions, very rarely on verbs (only if the subject A/S_a precedes the verb in a number of fixed combinations: Aikhenvald 2003a: 124–6). Younger and innovative speakers tend to lose it. This also happens with other categories shared with related Arawak languages but absent from East Tucanoan languages. The impersonal prefix has inclusive overtones in the language of the innovative speakers of Tariana (mirroring the Tucanoan pronominal system).

Pronominal prefixes can occur with an overtly expressed subject (as in (4)), if it is contrastive. The innovative Tariana is developing a new set of subject enclitics on the verb, mostly used for focussed A/S. Since Tucanoan languages mark person on the verb suffixes, this development is, in all likelihood, due to areal diffusion (see Aikhenvald 2003a: 571–3).

Grammatical relations are expressed with cases on nouns, on a subject-nonsubject basis. The markers result from the reanalysis of locative suffixes of Arawak origin (see Aikhenvald 2003b). The case-marking phrasal enclitic =*naku* (innovative version =*nuku)* appears on a noun phrase in a non-subject (A/S) function provided it is topical and referential (resulting in a system of differential case marking: see Bossong 1991). The case-marker =*ne/=nhe* (also a phrasal enclitic) marks focussed subjects (A/S). The semantically and pragmatically determined marking of subjects and non-subjects on NPs in Tariana is summarized in Table 34.2.

The non-subject case =*naku* marks a variety of topical constituents, including object, recipient, beneficiary, locative, manner, instrument, and time (see (2) and (3)). In its meanings and functions, it parallels the topical non-subject marker =*re* in Tucanoan languages (see Ramirez 1997 on Tucano, Stenzel 2013 on Wanano; a summary in Aikhenvald 2006a).

The combination of differentially marked subjects and non-subjects in one language is unusual typologically, and appears to be unique for the Vaupés River Basin linguistic area (see Aikhenvald 2006a).

Nouns distinguish two additional cases—locative suffix -*se* and instrumental-comitative -*ne*. Personal pronouns have just the instrumental-comitative case. Meanings ‘from’, ‘towards’ and ‘at, in’ are distinguished through multiword serial verb constructions (see §34.4.2). We turn to multiple case marking in §34.6.

Table 34.2 Grammatical relations and core cases in Tariana

GRAMMATICAL FUNCTION	DISCOURSE STATUS	NOUNS	PRONOUNS

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subject (A/S)	non-focussed	subject form (noun *-ø)*	subject form (pronominal prefix + formative *-ha)*: see Table 34.1
	focussed	subject form + clitic *=ne/=nhe*	
non-subject (non A/S)	non-topical	subject form (noun-*ø)*	pronominal prefix + suffix *-na*
	topical	subject form + clitic *=naku/=nuku*	

(p. 719)

34.4 Morphological Structure of the Verb

There are three main types of predicates—simple predicates, serial verb constructions, and complex predicates. We first turn to the structure of a simple predicate, and then look at serial verb constructions and complex predicates.

34.4.1 Simple predicate and its structure

Every verbal root belongs to either A/S_a (prefixed) or S_o (prefixless) type (see §34.3). Simple predicates have one prefix position and up to eight suffix positions.

34.4.1.1 The order of affixes and enclitics in a simple predicate

The structure of a simple predicate in Tariana follows a templatic pattern. The order of suffixes arranged by slots is shown in Figure 34.1.

Suffixes may be followed by enclitics. The most frequent order of enclitics is shown in Figure 34.2. Enclitics can be fixed position phrasal enclitics, or floating enclitics (see §34.2; these are marked with * in Figure 34.2). All the enclitics (except for the imperative) occur on all verb types. Imperative enclitics have restrictions as to their occurrence on stative verbs (Aikhenvald 2008).

All suffixes (except the thematic suffix in slot 3) and enclitics are optional. Meanings expressed by floating enclitics can be stated once per sentence, or per paragraph, and do not have to be repeated on every verb. A simple predicate with twelve positions filled is in (1).

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(1)

1	2	4	4a	6	12	13	15
na-	-pisya	-i	-ta	-kaka	=kasu	=tha	=pidana
3pl-	-tear	-CAUS1	-CAUS2	-REC	=INTENT	=FRUST	=REM.P.REP

17	19c	19d	20
=bala	=pita	=niki	=ka
IN.EVERY.DIRECTION	=AGAIN	=COMPL	=SUB

'While (they) reportedly were going to tear at each other again completely in every direction in vain . . . ,' (from a story about birds fighting)

1. Cross-referencing prefixes (A/S_a) or Negative *ma-* or Relative *ka-*
2. ROOT
3. Thematic syllable
4. Causative *-i*

[4a. Complete involvement of O *-ta* (only after *-i*)]

5. Negative *-(ka)de*
6. Reciprocal (rarely: reflexive) *-kaka*
7. *-ina* 'almost, a little bit'
8. Topic-advancing *-ni*, or Passive *-kana* , or Purposive nonvisual *-hyu* or Purposive visual *ka/u*
9. Verbal classifiers (only if slot 8 is filled)
10. Benefactive *-pena*
11. Relativizers, nominalizers

Click to view larger

Figure 34.1 Predicate structure in Tariana: Affixes and root

12. Intentional, 'be about to' *=kasu*
13. Mood (imperative, declarative, interrogative fused with evidentiality and tense) and modality (frustrative, conditional, apprehensive)
14. Aspect 'zone' I
    - 14a. Habitual prescribed *=hyuna* 'what you do and what you ought to do'
    - 14b. Customary *=kape*
    - 14c. Habitual repetitive *=nipe*
    - 14d. Anterior *=nhi*
15. * Evidentiality and tense, e.g. *=mha-na* 'non-visual-remote.past'; future
16. Epistemic *=ida* 'doubt', *=psuda* 'isn't it true that'
17. Aktionsart (manner or extent of associated action, e.g. 'split open', 'step on and feel pain', 'wag one's tail', 'away');
18. * Degree: augmentative (also meaning 'indeed'), diminutive, approximative ('more or less'), excessive
19. Aspect 'zone' II
    - 19a Prolonged, ongoing=*daka* 'yet, still', *=sida* 'on-going'
    - 19b Perfective *=sita* 'already accomplished'
    - * 19c Repetitive *=pita,=ta* 'once again'
    - * 19d Completive *=niki* 'totally, completely'
20. Switch-reference and clause-chaining
21. * Emphatic enclitics *=a/ya*, *=wani*; confirmation of evidence *=sõ*; degree enclitics: augmentative (also meaning 'indeed'), diminutive, approximative ('more or less'), excessive

Click to view larger

Figure 34.2 Predicate structure in Tariana: Enclitics

(p. 720)

34.4.1.2 The structure of the verbal root and types of morphemes

Tariana has just one prefix position on prefixed (transitive or active intransitive) verbs which can be occupied by cross-referencing prefixes (see Table 34.1), the negative prefix *ma-* or the relativiser and attributive marker *ka-*. Person and number distinctions on the verb are thus neutralized under negation. Only two verbs in the language contain two prefixes, *-ka-wĩta* 'pay' and *-ma-wĩta* 'owe, not pay'. Both are old loans from Portuguese *ven(der)* 'sell' and contain a thematic syllable *-(i)ta*. Thematic syllables are *-ka, -na* (typically used with intransitive verbs and a few loans from Portuguese), and *-(i)ta* (typically used with transitive verbs and with a handful of verbal roots borrowed from Tucanoan languages). Thematic suffixes are an archaic feature of Arawak languages.

The prefixes *ka-* 'attributive' and its negative counterpart *ma-* derive stative intransitive (S_o) verbs from nouns, for example *ka-sa-do* (REL-spouse-fem.sg) 'marry (of a man, lit. be wifed)', *ma-sa-do* (NEG- spouse-fem.sg) 'be unmarried (of a man, lit. be un-wifed)'.

One-word serial verb constructions are limited. The only instance of a prefixed (S_a) verb root consisting of two verbs is *-ñu-pi|u* (go.up-move.with.noise) 'move fiercely'. Any stative prefixless verb (S_o) can combine with the stative verb *matʃa* 'be good, proper', with the

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meaning of 'VERB completely/properly', e.g. *matʃa-makara* (be.good/proper-dry) 'be really dry', *matʃa-kera* (be.good/proper-be.shiny) 'be really shiny'. This appears to be an independent innovation of Tariana.

A small number of verbal roots (transitive or intransitive) encliticized to inflected verbs have developed into phrasal enclitics marking manner or extent of action or associated action (slot 17), aspect (slot 19b), and clause chaining (slot 20). This development is a consequence of areal diffusion from Tucanoan languages (see also §15.5 of Chapter 15). East Tucanoan languages have productive one-word serial verb constructions which express a variety of aspects, manner, extent of action, and associated action. The Tariana phrasal enclitics mirror their Tucanoan prototypes.

(p. 721) Innovative speakers of Tariana develop new enclitics, as a consequence of a tendency towards further convergence between the now dominant Tucano and the obsolescent Tariana. Thus the enclitic *=wyume* 'DO FOR THE LAST TIME' has developed from the stative (S_o) verb *whyume* 'be last' within the last decade (Aikhenvald 2016).

Older and more traditional speakers use recently grammaticalized enclitics less than innovative ones. In a number of instances, a traditional speaker would use a serial verb construction (see §34.4.2) where an innovative speaker would opt for an enclitic. The enclitic *=sita* 'perfective, accomplished action' (slot 19b) comes from a prefixed verb *-sita* 'finish, complete'. In (2), a younger speaker used the aspect marking enclitic *=sita* 'accomplished'. Innovative speaker:

(2)

pi-na	hi=nuku	di-kalite=ka=sita
2sg-OBJECT	this=TOP.NON.A/S	3sg-tell=REC.P.VIS=ACCOMPLISHED
'He has already told you this'		

This was rephrased by a traditional speaker as (3), with a serial verb construction (effectively correcting the innovative one) (see Aikhenvald 2002b: 140). Traditional speaker:

(3)

pi-na	hi=naku	[di-kalite=ka	di-sita]$_{SVC}$
2sg-OBJECT	this=TOP.NON.A/S	3sgnf-tell=REC.P.VIS	3sgnf-finish
'He has already told you this'			

In a number of instances, variable order of morphemes depends on whether we are dealing with an innovative or with a traditional speaker.

34.4.1.3 Variable order of morphemes

Verbal suffixes always occur in a fixed order. In contrast, some verbal enclitics allow variable ordering. Degree clitics can appear at the end of the predicate in slot 21 or in slot 18, with a difference in meaning. In (4), the diminutive precedes a subordinating

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enclitic. The meaning is that of an 'action nearly averted' (Kuteva 1998). Clauses are in square brackets. Slot numbers are included in the glosses.

(4)

[nuha	paita-ne	nu-kapi	nu-tutu=tuki=ka]
I	one+CL:ANIM-INS	1sg-hand	1sg-tie=DIM(18)=SUB(20)
nu-dalipa-se	i-uka=ka		phia
1sg-near-LOC	2sg-arrive=REC.P.VIS		you

'As I almost married someone else, you arrived'

In (5), the diminutive follows the sequencing enclitics and the meaning is 'do a bit':

(5)

[hi)	kayu	nu-ni=kayami=tuki	du-a=na	nu-na
this	like	1sg-do=AFTER.DS(20)=DIM(21)	3sgf-say=REM.P.VIS	1sg-OBJECT

'After I'd made (manioc beer) like this a little bit (or for a little while), she said to me…'

(p. 722) Variable ordering of enclitics in slot 19 can be accounted for by the facet of the activity to be focussed on. The focussed clitic occupies the final position. In (6), the focus is on full completion of the action (the story was told to the very end again), and the clitic =*niki* occupies the final slot in the verbal word.

(6)

di-sape=sina=sita=pita=niki
3sgnf-speak=REM.P.INFR(15)=PERF(19b)=COMPLETIVE(19c)=REPETITIVE(19d)
'He had completely (finished) speaking again' (one stresses the complete extent of the action)

In (7), the focus is on the repetition of the action. The clitic =*pita* occupies the last slot.

(7)

di-sape=sina=sita=niki=pita
3sgnf-speak=REM.P.INFR(15)=PERF(19b)=REPETITIVE(19c)=COMPLETIVE(19d)
'Again, he had completely (finished) speaking' (one stresses the repetition of the action)

Speakers' competence and their status as highly innovative accounts for variable placement of the newly developed enclitic =*sita* (slot 19b). Its position in (2), (6), and (7) is consistent with Tariana verb structure in Figure 34.2. Here, aspectual meanings are divided between those in Zone I and those in Zone II. Aspectual meanings expressed in Zone I (slot 14) cover habitual, customary, habitual repetitive, and anterior. These morphemes must have developed early; there is no indication that they result from any recent grammaticalization. They precede tense-cum-evidentiality markers (slot 15). The perfective enclitic =*sita* which is the product of a recent process of grammaticalization, follows the tense-evidentiality markers.

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Aktionsart enclitics (slot 17), (many of which can be shown to have recently grammaticalized out of verbs), follow tense-cum-evidentiality markers. They are followed by markers of degree (slot 18), and markers of Aspect in Zone II (slot 19). This slot includes markers =*daka* 'prolonged action', =*sida* 'on-going', =*pita, =ta* 'repetitive', and =*niki* 'completive'. This is where the completive =*sita* occurs, for those speakers who use it. Representatives of the younger generation of Tariana speakers (aged between 30 and 40) go a step further in their grammaticalization, and reinterpretation, of the newly developed aspectual enclitic =*sita.* They spontaneously produced sentences such as (8), with =*sita* in the Aspect Zone I—that is, closer to the verb root than in (2). Highly innovative speaker:

(8) nu-pita=sita=mhade
1sg-bathe=FINISH(14)=FUTURE.UNCERTAIN(15)
'I would have bathed (by the time you come back)'

This position of the clitic =*sita* parallels the placement of the verb 'finish' as a minor verb with aspectual overtones in one-word serial verb constructions in Tucano. This behaviour of =*sita* is partly due to the fact that Tariana is an obsolescent language, under pressure from the dominant Tucano, which is now used more and more in every sphere of communication. The change of place of the aspectual marker =*sita* is indicative of a general tendency (p. 723) to replicate the meanings, and the structures, found in Tucano. Instances like these indicate that Tariana is gradually becoming like a relexified Tucano, something not unexpected in an obsolescent language.

Additional explanation may be analogical pressure, that is, a tendency to express aspectual meanings in the Aspect Zone I (slot 14 in Figure 34.2) towards which =*sita* is currently drifting. Note that =*sita* is the only aspectual marker in Aspect Zone II which has a transparent origin in a recently grammaticalized verb. It is also the only one which tends to move to the Aspect Zone I. This offers support to our hypothesis that the primary motivation for changing its place is convergence with Tucano.

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34.4.1.4 Types of meanings expressed in a verb

Tariana verbs have a complex system of tense fused with evidentiality (that is, grammaticalized marking of information source; slot 15), in addition to a variety of markers of aspect, modality, mood, degree, and manner of action. Negation is expressed through a combination of a prefix and a suffix for prefixed verbs, and a suffix for prefixless verbs.[6]

Valency changing derivations include causative *-i* which applies to intransitive verbs and just a few transitive verbs (including *-iɾa* 'drink'). The causative *-i* can be accompanied by the marker *-ta* 'complete involvement of the object; intensity of causation; and plural objects' (in the Periquitos variety), if added to intransitive verbs. If added to a transitive or an ambitransitive verb, the suffix *-i* (which can be accompanied by *-ta*) has an applicative-like effect, indicative that a peripheral constituent has to be obligatorily stated in the clause. Thus, *-hña* means 'show, point', and *-ñha-ita* means 'show something to someone' (with an obligatory addressee) (see Aikhenvald 2003a: 279–83). Passive is a valency-reducing derivation, and is expressed with a complex predicate and suffix *-kana* in slot 8. The suffix *-kaka* (slot 6) marks reciprocal (rarely reflexive) and is alongside a reciprocal–sociative serial verb construction (developed under Tucanoan influence).

The topic-advancing derivation *-ni* serves to promote a topical non-A/S_a constituent into the subject slot, and requires classifier agreement on the verb with the new A/S. Two purposive derivations, *-hyu* 'purposive non-visual' and *-kaɾu* 'purposive visual', also require classifier agreement, for example *nu-ña-kaɾu-dapana* (1sg-live-PURPOSIVE.VISUAL-CL:HOUSE) 'house (visible) for me to live in'. We will see, in §34.5, that purposive forms are used in clause combining and as complementation strategies.

The declarative mood is marked with the clitic *=ka* (slot 13). Declarative clauses have five evidentials (visual, non-visual, inferred, assumed, and reported) fused with three tenses (present, recent past, and remote past). Interrogative clauses have fewer evidentiality distinctions: they lack assumed and reported evidentiality. The system of tense and evidentiality marking has been largely developed as a consequence of contact with East Tucanoan languages. Some markers have evolved out of grammaticalized verbs, for example *=mha* 'non-visual' from the A/S_a verb *-hima* 'hear, sense, smell' (see further details in Aikhenvald 2003a). The only evidential shared with genetically related Arawak languages is the reported (p. 724) evidential *=pida,* the most archaic member of the system (cf. Baniwa and Kurripako *=pida* 'reported evidential').

No evidentiality is distinguished in the future. However, a combination of the reported evidential with a purposive can convey the meaning of a speech report referring to the future. In (9), the location of the action in the future is expressed with the purposive visual. The remote past reported evidential shows that (a) the information was obtained through speech report, and (b) that the speech report happened a long time ago (in the remote past).

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(9)
di-nu-kaɾu=pidana
3sgnf-come-PURPOSIVE.VISUAL=REM.P.REP
'He will come based on speech report in remote past' (that is, the speaker was told a long time ago that he would come)

Following the pattern in East Tucanoan languages, certain and uncertain future are distinguished in first person. Other persons have only one future form (this is the same one as the 'uncertain' one with first person: an example with first person is in (8) and with third person (12)).

Tariana has nine markers of imperative (slot 13). These are: proximate 'do here', distal 'do there', postponed 'do later', 'detrimental (do to your own detriment)', conative precative 'please try and do', cohortative 'let's do', polite suggestion 'please do', and imperative by proxy 'do on someone else's order'. The latter includes the reported evidentiality marker =*pida*. Most of these have been developed as a result of diffusion from East Tucanoan languages.

Modality distinctions include intentional, frustrative ('do in vain'), apprehensive ('lest'), and conditional. Some of these are mutually exclusive with mood markers (in slot 13). Others—such as dubitative and counter-expectational in slot 16—can co-occur with mood markers.

Over forty clitics cover type and manner of action (slot 17). They include =*bosa* 'break by smashing, split', =*wisa* 'flatten', =*taka* 'cut in two', =*ñu* 'feel a sharp pang of pain', =*dhuli* 'bow, fold', =*thepi* 'into water', =*bisi* 'into fire', =*liphe* 'hold on firmly', =*phi* 'close firmly'. Less than half of these can be traced to grammaticalized verbs (stemming from one-word serial verb constructions), for example =*dhala* 'touch the surface' and S_a verb -*dhala* 'come unstuck, peel', =*kolo* 'action of turning over' and S_a verb -*kolo* 'roll, fall down'. New enclitics grammaticalize out of independent verbs, following the East Tucanoan one-word serial construction pattern. These are a feature of younger innovative speakers, for example =*wyume* 'do for the last time', based on the S_o verb *whyume* 'be last'.

Markers of degree of action include the suffix -*ina* 'almost, a little bit' (slot 7), and augmentative, diminutive, approximative 'more or less', and excessive clitics (in slot 18). Emphatic enclitics =*a/ya,* =*wani* 'really, truly', and the enclitic =*sõ* 'well and truly attested, evidence' occupy the last position in the verbal word and are mutually exclusive.

Aspect meanings are expressed with clitics in two templatic zones. Customary, anterior, habitual repetitive, and habitual prescribed (with deontic overtones) are positioned in slot 14 (before evidentiality and tense markers). A set of aspects covering prolonged and ongoing, perfective, repetitive, and completive appear in slot 19. We saw in §34.4.1.3 that (p. 725) two of these allow variable morpheme ordering. We have also seen that just one of these, =*sita* 'perfective', can occur in slot 14 for some innovative speakers, under pressure from East Tucanoan languages.

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34.4.2 Serial verb constructions, complex predicates, and the verbal word

Tariana has a complex system of multiword serial verb constructions. These consist of several independent verbs (each with its own prefix, thematic syllable, and a causative marker). Each component of a serial verb construction is an independent phonological word, and they all receive the same inflection for person, number, and gender of subject (A/S_a). Each serial verb construction refers to a single action.

A serial verb construction has all the properties of a single predicate, sharing subjects, tense-evidentiality, aspect, mood, and modality value. Components of serial verb constructions cannot be negated separately (negation is marked once per construction, on the first component). The constructions are strictly contiguous (i.e. no other constituent can intervene between their components), and monoclausal. No markers of syntactic dependency can be placed between their components (see Aikhenvald 2006b for their further features).

The order of the components may be fixed or not depending on the construction type. A serial verb construction cannot consist of stative (S_o) verbs only. Asymmetrical serial verb constructions consist of a verb from a closed class and a verb from an open class, and are widely used to express aspectual, directional, and modal meanings.

An example of an aspectual serial verb construction with a completive meaning is in (3). The construction in (10) consists of three verbs (in square brackets). The directional verb *-musu* ‘go out’ (in (10)) imparts the ablative meaning ‘out of, from’. The verb *-(u)ka* ‘arrive, reach’ provides a telic specification to the construction. We recall, from §34.2, that Tariana has just one locative case on nouns, so directional verbs in serial verb constructions serve to provide additional disambiguation.

(10)

[na-musu	na-doreta	naka=pidana]$_{SVC}$	na-ya-yawa-se
3pl-go.out	3pl-carry	3pl+arrive=REM.P.REP	3pl-POSS-CL:HOLE-LOC

‘They (ants) carried (the burden) out of their holes’ (lit. went out carried arrived)

Causative serial verb constructions display an unusual pattern of subject marking. The subject (A/S) of the verb of causation and the subject of the verb expressing the action ‘caused’ to happen are always marked in the same way, even if the subjects are in fact different. In (11), a woman orders a man to eat magic food. The feminine non-singular cross-referencing appears on both verbs. The masculine causee is expressed with a personal pronoun.

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	[du-ɾa	du-hña=pidana]$_{SVC}$	di-na
(11)	3sgf-order	3sgf-eat=REM.P.REP	3sgnf-OBJECT
	'She ordered him to eat' (lit. she ordered she ate (to) him)		

(p. 726) This kind of causative serial verb is typologically unusual. It cannot be accounted for by either diffusion or inheritance, and is likely to be an independent innovation.

Symmetrical serial verb constructions consist of two or more verbs from large open classes, and express cause–effect, or a sequence of sub-actions. They often get lexicalized, so that their meanings are not fully compositional, for example *-sata -hema* (greet hear) 'ask', *-yena -ema* (surpass stand) 'behave arrogantly'. This is a cross-linguistically well-attested feature of symmetrical serial verbs.

Each component of a serial verb could be used on its own. This justifies their status as independent grammatical words. Further evidence in favour of the monopredicative character of serial verbs in Tariana is 'affix sharing'. A number of affixes, from slot 5 onwards (as per Figure 34.1), occur only once per serial verb construction characterizing it as a whole. One suffix within a serial verb construction typically attaches to the first verb.

So, *na-musu-nipe na-doreta naka* (3pl-go.out-NOM 3pl-carry 3pl+arrive) 'carrying out' is an action nominalization of the serial verb in (10) (with the action nominalization suffix *-nipe*). Similarly, *phe-ɾi pa:* 'entrance' is a locative nominalization of a serial verb *phe pa:* (IMPERSONAL+enter IMPERSONAL+go) 'enter' (with a locative nominalization marker *-ɾi*). Classifiers in a nominalizing function behave in a similar way. The animate classifier *-ite* can derive a modifier from a causative serial verb construction *na: na-hña* (3pl+give 3pl-eat) 'they make (someone) eat; feed someone', for example *karaka na:-nite na-hña* (chicken 3pl+give-TOP.ADV+CL:ANIMATE 3pl-eat) 'domestic fowl' (lit. chicken whom they make eat or feed).

The components of a serial verb construction in Tariana are independent grammatical words. The 'affix-sharing' shows that the whole serial construction also 'works' as a single morphological unit, on a par with a morphological word, with regard to a number of affixes, especially nominalizers which characterize it as a whole. This suggests a possibility of postulating morphological units ('words') of different levels for Tariana verbs, similar to distinctions between 'verbal themes' and 'verbal bases' in the Athapaskan linguistic tradition (Rice 1989).

Serial verb constructions are a feature of all the extant Arawak languages in the Upper Rio Negro region where the Vaupés River linguistic area is located. Serial verb constructions in Tariana are much more complex than those in its close relatives Baniwa and Piapoco. The property of 'affix sharing' in serial verbs is unique to Tariana.

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In addition, Tariana has eleven complex predicates which each consist of no more than two verbs. Complex predicates have epistemic modal, aspectual, admirative, apprehensive, and irresultative meanings, and meanings related to the extent of action. A passive is also expressed with a complex predicate. Complex predicates are strictly contiguous, have the same subject marking, and can take only one marker of tense, evidentiality, and modality. They differ from serial verbs in a number of properties (see Aikhenvald 2003a: 458–9). Serial verb constructions consist of several verbs, each of which can be used as an independent predicate. In contrast, parts of a complex predicate cannot be used this way (as, for instance, the parts of the admirative complex predicate). An epistemic complex predicate marked by repetition of the same verb is at (12).

(12)

[di-nu	di-nu=mhade]$_{\text{COMPLEX.PREDICATE}}$
3sgnf-come	3sgnf-come=FUT

'Maybe he will come'

(p. 727) An admirative complex predicate with the meaning of 'surprise' consists of a perception verb with the suffix *-mhe* 'admirative' followed by the auxiliary verb *-a* 'say, do, go, give' accompanied by a tense-evidentiality marker:

(13)

[nu-ka-mhe	nu-a-mahka]$_{\text{COMPLEX.PREDICATE}}$
1sg-see-ADMIRATIVE	1sg-AUXILIARY-REC.P.NONVISUAL

'I saw with surprise (that my things were stolen)'

Complex predicates cannot be nominalized, or be the target of any derivation, unlike serial verbs. A complex predicate cannot contain a serial verb construction. The origin of the majority of complex predicates is unclear. They are not shared with any of the Arawak languages of the area.[7]

34.5 Relations between Clauses

Linking clauses is achieved mainly through sequencing enclitics. Many of these are switch-reference sensitive (slot 20 in Figure 34.2). Their choice depends on whether their subject (A/S) is the same as that of the main clause or is different from it. Sequencing enclitics thus operate on a nominative–accusative basis, similarly to many other languages of the world (see Aikhenvald 2012a, for a snapshot of switch-reference in Amazonian languages). They express temporal and causal meanings. Tense, evidentiality, and aspect cannot be expressed within non-main clauses. Non-main clauses marked with sequencing enclitics can be marked for relative time frame—their action can be either prior to that of the main clause, or simultaneous with it. The anterior meaning ('before')

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is expressed with the prefix-taking preposition *-peya* ‘before, first’ in its clause-linking function.

Sequencing enclitics are in Table 34.3. Non-switch-reference-sensitive enclitics are in the last column of the table.

Table 34.3 Switch-reference-sensitive and other sequencing enclitics

	SAME SUBJECT	**DIFFERENT SUBJECT**	**NON-SWITCH-REFERENCE SENSITIVE**
ACTION PRIOR TO MAIN CLAUSE	*=hyume/ =yuhme* ‘after, because’	*=kayami* ‘after’	*=ka*
ACTION SIMULTANEOUS WITH MAIN CLAUSE	*=nikhe,=kakaɾi* ‘during, while’	*=nisawa, =kanada, =nipua, =piyana, =kaɾiku,=kapua* ‘while, during’	*=kaya* ‘while (adverse overtones), despite’ *=khe, =nikhe* ‘although’ *=kheya* ‘in spite of, against all expectation’

(p. 728) The sequential enclitic *=ka* (slot 20) has a wide range of meaning covering ‘after’, ‘when’, ‘while’, ‘if’, ‘because’, and ‘as’. Its homonym is the enclitic *=ka* (slot 20) used to mark complement clauses (see Aikhenvald 2006c on their different properties). Purposive verb forms can be used as complementation strategies with predicates ‘be difficult’ and ‘be easy’ (these are marked with *-kaɾu* ‘purposive visual’ or *-hyu* ‘purposive nonvisual’: slot 8 in Figure 34.1). As in most Amazonian languages (see Aikhenvald 2012a: 332–4), nominalizations can also be used as complementation strategies. These include the action nominalization *-nipe*, the locative–resultative nominalization *-mi* and the multipurpose nominalization *-ɾi* which can refer to an object, a location, or a process. Nominalizations are a special subclass of nouns. They lack a few nominal features: for instance, they cannot be pluralized or used as transitive subjects (in A function). An example of a *-ɾi* nominalization in S function as a complementation strategy is in (14).

(14)

yanaka	pa-ɨɾa-ɾi	puaya=na
whisky	IMPERS-drink-PROCESS.NOM	be.different=REM.P.VIS

‘(The process) of drinking whisky is different (from manioc beer)’

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Multifunctional nominalizations as complementation strategies are a prominent feature of East Tucanoan languages. Tariana shares complement clauses marked by the complementizer *=ka* with its North Arawak relatives. Innovative speakers of Tariana who use mostly Tucano on a day-to-day basis tend to use nominalizations instead of a more archaic complement clause (see Aikhenvald 2002a: 461, 2006c).

Purposive clauses are marked with purposive suffixes (slot 8 in Figure 34.1) accompanied by classifiers referring to animacy, sex, shape, and form of the O of the matrix clause verb. There are no restrictions on same or different subject for purposive clauses.

Participles mark the predicate of a relative clause. They are marked with the prefix *ka-* (positive) or *ma-* (negative). Participles distinguish relative tense: simultaneous with that of the main clause, prior to that of the main clause, and subsequent to it. A participle marked for action prior to that of the main clause is shown in (15). It is formed on a serial verb construction. Each verb within it takes the prefix *ka-*. The relative tense marking appears on the first verb only, in agreement with the principle of 'affix sharing' (see §34.4.2). The case clitic *=naku* marks the O function and the topicality of the whole nominalized serial verb construction.

(15)

ne=pidana	naka	na-pisa	
then=REM.P.REP	3pl+arrive	3pl-cut	
di-ya-dapana-se		[kema-kari	ka-swa=naku]$_{SVC}$
3sgnf-POSS-CL:HOUSE-LOC		REL+sleep-REL.PAST	REL-lie-TOP.NON.A/S

'Then they reportedly came and cut up (him) who had been sleeping in his (own) house'

Subordinate clauses can be marked with postpositions *-ipeya* 'before' (which takes personal prefixes) and *mañ*a 'during, immediately after', and the preposition *te* 'until' (which cannot take prefixes). Interrogatives can be used as relative pronouns. These structures have arisen as a result of the influence of Nhêengatú (a Tupí-Guaraní-based former língua franca of the area, itself influenced by Portuguese), and now also by Portuguese. (p. 729)

34.6 Morphological Structure of the noun and the noun Phrase

Nouns in Tariana are morphologically complex. Figure 34.3 shows the maximal structure of a noun. The main difference between the structure of a noun and the structure of a verb (Figures 34.1 and 34.2) is that noun categories can be marked recursively, and more than once in a word, while verb categories cannot be. Categories which can be marked more than once are classifiers, number, and core cases. Each of these will be addressed

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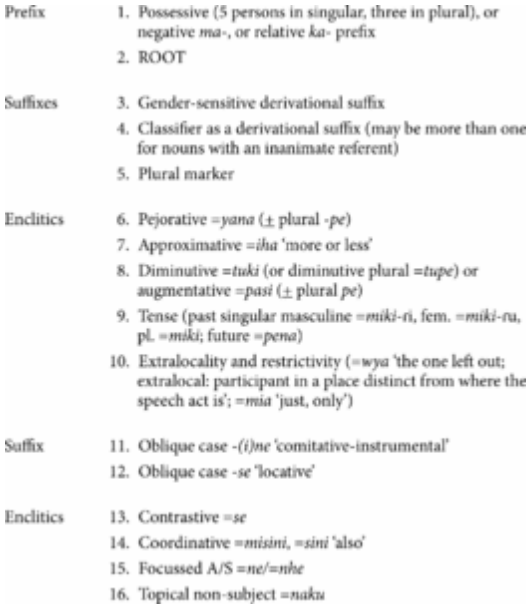
in this chapter. Not all nouns can have all positions filled; they fall into several subclasses depending on which structural positions can be filled (see Aikhenvald 2003a: 82–6).

Some nouns can contain more than one root. Possessive compounds consist of a possessor or location and a notional possessee (which may be accompanied by a fossilized possessive marker of common Arawak origin), for example *keri-yaka-ni* (moon/sun-shrimp-POSS) 'type of small shrimp' (lit. shrimp of the moon), *u:ni-dumeni* (water-snake) 'water-snake', *yaru-si-minari* (thing-NONPOSSESSED-owner) 'rich person'. Compounding is not productive.[8]



Click to view larger

Figure 34.3 Noun structure in Tariana

(p. 730) The number of positions filled, and their meanings, depends on the type of noun. The categories and markers shared by nouns and verbs are classifiers and degree markers. Classifiers have somewhat different forms when used with nouns and adjectives, and with verbs (see Aikhenvald 2003a: 93–9, 2007a). Diminutive and augmentative with nouns require their own number marking (see Aikhenvald 2003a: 193–4, for the form of the diminutive with different word classes). In addition, nominal case markers can be used as clause-linkers attaching to the final verb in a non-main clause.

34.6.1 Types of meanings expressed in a noun

Slot 1 in Figure 34.3 is restricted to inalienably possessed nouns and other nouns which take prefixes (e.g. nominalizations). Nouns have a system of five persons (first, second, and third in singular and in plural, indefinite and impersonal without number distinctions), while verbs have only four, since the indefinite person prefix is hardly ever used with verbs (see Table 34.1). Nominalizations do not take the indefinite person prefix, unlike other nouns.

Slot 3 is filled with non-productive, or semi-productive, derivational suffixes, the choice of which depends on the noun. For instance, nouns with human referents take gender-sensitive suffixes, for example *nu-kesi-dua* (1sg-blood.relative-fem) 'female blood relative'.

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Slot 4 can be filled more than once, and it allows variable morpheme ordering, with a semantic effect, as shown in (16) and (17).

(16) nu-kapi-ma-da
1sg-hand-CL:SIDE.OF-CL:ROUND
'part of my palm', 'one round part of a side of my hand'

(17) nu-kapi-da-ma
1sg-hand-CL:ROUND-CL:SIDE.OF
'one side of my finger'

The effect of this variable ordering is comparable to 'scope' effects in variable morpheme orders for verbs in southern Amazonian languages (see §15.3.1.3 of Chapter 15). Other suffixes and the enclitics with a noun, or a noun phrase, occur in a fixed order. We can recall, from §34.4.1.3, that phrasal enclitics which go onto a verb, or a verbal phrase, allow some variability.

Classifiers are very frequent in discourse, and are semantically versatile. Any inanimate noun can be used with one or more classifiers, to focus on its different properties and disambiguate its meanings. For instance, *u:ni* 'water, river' can be classified as a liquid, and then it takes the classifier agreement marker *-peri* 'collective', for example *u:ni kada-peri* (water black-COLL) 'black water (as in the Vaupés River), coffee (which is black in colour)'. If it refers to a river, the classifier *-pua* 'RIVERWAY' will be used, as in *u:ni hanu-pua* (river big-CL:RIVERWAY) 'a big riverway'. If it is curved, the classifier will be *-kha* 'CURVED', as in *u:ni hanu-kha* (river big-CL:CURVED) 'a big curved river', and so on (similarly to classifiers in South East Asian languages, as highlighted by Becker 1975, and classifiers in many other South American languages with multiple classifiers systems: Aikhenvald 2012a). Tariana does not have any adjectives referring to shape or form: meanings such as 'round', 'vertical', 'curved', 'extended', and 'flat', are conveyed through classifiers.

(p. 731) To refer to an object in terms of its form or shape without mentioning the overt noun, Tariana employs the dummy adjective root *maka-* [9] (cognate to Baniwa-Kurripako *maka-* 'big') accompanied by a classifier, for example *maka-kyere* (DUMMY.ROOT-CL:ISLAND) 'something island-like', cf. *kewere* 'island'. A dozen or so classifiers in Tariana do not have a corresponding noun, and so, if necessary, the noun can be formed using the dummy root, for example *maka-pulikuda* (DUMMY.ROOT-CL:HILL) 'a hill', *maka-pina* (DUMMY.ROOT-CL:SWAMP) 'swamp'. This morphological construction is a calque from Tucanoan languages (the functional equivalent of Tariana *maka-* in Tucano is *opâ,* for example *opâ-yõo* (DUMMY.ROOT-CL:PALM) 'something palm-like' (Ramirez 1997: 327–8; also see Aikhenvald 2002a: 94–5). Double or even triple occurrence of a classifier may reflect agreement with different 'heads', within an NP—see §34.6.2.

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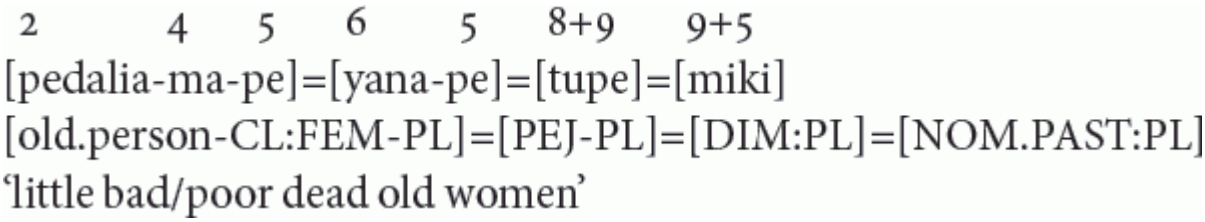
A classifier can derive a noun or an adjective from a noun phrase. Thus, a noun phrase *ka-kama hanupe* (REL-drink.alcohol much) ‘the one who drinks a lot’ can be further nominalized with the animate classifier *-ite*, yielding *kakama hanupite* ‘the one who possesses a property of drinking a lot’. The same classifier applies in the same way to a symmetrical serial verb construction, for example *ka-yena kema hanupite* (REL-exceed REL+stand/stay much+CL:ANIM) ‘the one who is arrogant or pushy’ (lit. ‘the one who exceeds in staying’). Serial verb constructions or clauses nominalized this way are still treated as consisting of separate phonological words. This is reminiscent of ‘affix sharing’ discussed in §34.4.2.

A further unusual feature of the Tariana noun structure is that the enclitics in slots 6, 8, and 9 require their own number marking (which can then intervene between enclitics). The oblique locative case *-se* is a suffix and not an enclitic (it is positioned between enclitics). The three enclitics which require plural marking are thus somewhat similar to independent words in that they have grammatical categories of their own (see Aikhenvald 2002b for a discussion of separate grammatical categories for clitics). Brackets in (18) indicate the scope of the number-marking suffix *-pe*:

(18)



These enclitics cannot be used as independent grammatical words in their own right, thus being both prosodically and grammatically ‘deficient’. Slots 11-12 (oblique cases) and 15 (focussed ‘subject’) cannot be filled simultaneously. Slots 15 and 16 can, creating an instance of marking two syntactic functions within the same word or the same NP.

Categories in slots 1, 2, 3, and 4 are characteristic of the head noun, while all other slots 5–16 are filled once per noun phrase; they can be considered as belonging to a ‘phrasal’ level. That is, in a sense, not just nouns but noun phrases in Tariana can be considered inflectionally complex. We now turn to double marking of syntactic function in Tariana noun phrases.

34.6.2 Marking syntactic function twice

Tariana has two ways of marking syntactic function, or case, twice. Case markers usually occur at the end of a noun phrase (unless each component is independently focussed).

(p. 732) Firstly, the locative and the instrumental cases can combine with the topical non-subject case if the constituent is topical. This is a typologically unusual instance of ‘double case’ (different from case-stacking in closely related languages such as Baniwa

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and Baré, discussed in §15.4 of Chapter 15). In (19), the location ('in the house') is the topic. It is marked with the locative case *-se* and with the topical non-subject case *=naku*:

(19)

di-ɾuku	di-dia=pidana	panisi-se=naku
3sgnf-go.down	3sgnf-return=REM.P.REP	house-LOC=TOP.NON.A/S

'He went down returning to the house' (the topic of the stretch of discourse)

Secondly, double marking of syntactic function takes place when an NP has a certain, case-marked, function in a complement clause, while the complement clause itself is case-marked for a syntactic function in a higher clause. (20) illustrates a topical subordinate clause which takes the *=naku* marker (it is topical because the action of putting a magic shirt on is what changes the whole course of the story). The A of this subordinate clause is marked with the focussed A/S marker, a clitic *=ne*, because the participants who are supposed to be watching are in contrast to other participants of the story. Square brackets indicate the scope of *=naku* which is here the whole subordinate clause.

(20)

diha	dhita	di-ña=pidana
he	3sgnf+take	3sgnf-put.on=REM.P.REP
[nha=ne	na-ka=ka=naku]	
they=FOC.A/S	3pl-see=SUB=TOP.NON.A/S	

He (the man) took (the magic shirt) and put it on, while they (the girls, NOT anyone else) were looking.'

The predicate of the topical subordinate or complement clause is often omitted if it is retrievable from the context. If its A/S is contrastive, it can take focussed A/S marker *=ne/=nhe* followed by *=naku*, thus creating the situation of a double marking of syntactic function on one noun phrase. This is illustrated with (21). Square brackets indicate the scope of case marking.

(21)

[[diha=ne]=naku]	mawali=pidana
[[he=FOC.A/S]=TOP.NON.A/S	snake=REM.P.REP

'For him (for man) (looking) it was a snake'

Double marking of syntactic function—one in the main clause, and the one in the subordinate clause—is a feature found in numerous Australian languages (see Dixon 2002: 147–51 for an overview). A special feature of Tariana is that the use of cases is governed by pragmatic factors—the focality and the topicality of constituents. This type of double case is especially frequent in stories dealing with different perspectives and transformations.

This is different from just combining two morphemes to refer to the same syntactic function of a noun phrase. When two morphemes combine to refer to the same function, one of them is a locative or an instrumental-comitative case marker, and it provides a

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specific meaning, while the other is =*naku* ‘topical non-subject’. It indicates the generic ‘non-subjecthood’ combined with the indication of the discourse status of the noun phrase, for example *di-daki-ne=naku* (3sgnf-body-INS=TOP.NON.A/S) ‘with his body’ (topical).

(p. 733)

34.6.3 Multiple agreement marking

We can recall, from §34.6.1, that a classifier in slot 4 can mark agreement. If a noun phrase is used as a modifier to another noun phrase, a noun class marker is attached to the end of the NP to mark agreement, as in (22), where, the NP ‘medicine for a bad cold’ (in square brackets) is used to modify the head noun, ‘tree’; the classifier *-na* ‘VERTICAL’ is attached to the end of the modifying NP.

(22)

heku-na	[wesi	i-tape]-na
tree-CL:VERT	[bad.cold	INDF-medicine]-CL:VERT

‘a tree, (which is) a medicine for a bad cold’

There can be more than one classifier in this position, marking agreement with more than one head. If the last element modifying the NP already contains a classifier, the agreement marker will go onto it, thus creating a situation whereby agreement takes place with two heads: that of an embedded NP and that of an embedding one. The classifier *-phe* ‘leaf.like’ in (23) marks agreement with the head of the embedded noun phrase, ‘beautiful leaf’, and the classifier *-na* ‘vertical’ marks agreement with the ‘higher level’ NP, ‘tree with beautiful leaves’.

(23)

[heku-na	[pana-phe	ma[a-phe]-na]
tree-CL:VERT	eaf-CL:LEAF.LIKE	good-CL:LEAF.LIKE-CL:VERT

‘a tree which has beautiful leaves’

This stacking of classifier agreement usually involves only two ‘levels’, as in (23). A more complicated structure is illustrated in (24). Here, the noun phrase ‘flowering like a curved vine’ is a modifier to the head, ‘leaf’. The modifier takes the appropriate classifier agreement marker *-phe* ‘CL:LEAF.LIKE’.

(24)

pana-phe	[heku-na	[bebi-kha	kayu
leaf-CL:LEAF.LIKE	[tree-CL:VERT	[vine-CL:CURVED	like
kewi-kha]-na]-phe			
REL+flower-CL:CURVED]-CL:VERT]-CL:LEAF.LIKE			

‘a leaf of a tree flowering like a curved vine’

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Thus, agreement in noun class is marked twice in (23), and three times in (24). It reflects agreement ‘on different levels’: that with the head of embedded noun phrase(s), and that with the head of the ‘embedding’ noun phrase of a higher level. This double agreement marking has been attested with adjectives and articles, but not with members of any other closed class (such as interrogatives and demonstratives). Younger speakers do not use such structures.

The principle of ‘double’ marking of syntactic function (within a lower clause and a higher clause) and of agreement (within an embedded noun phrase and the larger noun phrase) appears to be consistent in Tariana. It also shows the inflectional complexity of nouns and their modifiers in Tariana. The syntactic structure is mirrored in the morphological structure allowing the inflection—both case markers and noun class agreement markers—to specify the syntactic environments simultaneously at different levels. These features appear to be independent innovations in the language.

(p. 734) 34.7 To Conclude: Highly Synthetic Structures in Tariana, and Language Obsolescence

An interaction of areal diffusion, genetic inheritance and independent innovation accounts for the emergence of highly synthetic structures in Tariana. Tariana expresses much more information within a verbal and a nominal word than its genetic relatives—including Baniwa-Kurripako and Piapoco. Many Tariana categories developed as a result of the impact of a long-term areal diffusion from East Tucanoan languages. However, a number of typologically unusual features of Tariana cannot be easily accounted for by language contact. At this stage, affix sharing in serial verb constructions, unusual person marking in causative serial verb constructions, double marking of agreement in a noun phrase, double case marking of two types, and a highly complicated noun structure appear to have been independently innovated.

Abbreviations

A
transitive subject
CAUS
causative
CL
classifier

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CL:ANIM
classifier: animate
COMPL
complementiser
DIM
diminutive
DS
different subject
fem
feminine
FOC.A/S
focussed subject
FRUST
frustrative
FUT
future
IMPERS
impersonal
INDF
indefinite
INS
instrumental
NEG
negation
nf
nonfeminine
NOM.PAST
nominal past instrumental
LOC
locative
O
object
PEJ
pejorative
PERF
perfective
POSS
possessive
PROCESS.NOM
process nominalization
REC
reciprocal
REC.P.VIS

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recent past visual
REL
relativiser
REM.P.INFR
remote past inferred
REM.P.REP
remote past reported
REM.P.VIS
remote past visual
S
intransitive subject
S_a
active intransitive subject
S_o
stative intransitive subject
SUB
subordinator
TOP.ADV
topic advancing
TOP.NON.A/S
topical non-subject
VERT
vertical

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Notes:

(1) These and other instances of completed contact-induced changes in Tariana are discussed in Aikhenvald (2002a).

(2) The Periquitos and Santa Rosa varieties are mutually intelligible. The other extant dialect of Tariana is the Kumandene Tariana, spoken by about seventy people in the settlement of Santa Terezinha on the Iauarí river (a tributary of the Vaupés River) and not mutually intelligible with Wamiarikune Tariana (the focus of this contribution). Kumandene Tariana is highly endangered and is under pressure from a closely related

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Baniwa of Içana (Hohôdene dialect). High degree of individual variation among the extant speakers of Kumandene Tariana combined with extensive language mixing with Baniwa makes a synchronic description of this language a daunting task (see Aikhenvald 2014a, on the Kumandene Tariana as a curious instance of 'language blend').

(3) This chapter is based on more than twenty years' work with the Tariana. My corpus consists of over thirty hours of recordings (including texts of various genres and conversations). All examples in this chapter (as in my other work) are taken from natural discourse and narrative (I avoid elicitation). A comprehensive grammar of the language is in Aikhenvald (2003a).

(4) This preposition is, in all likelihood, an old borrowing from Portuguese *até* 'until' shared with East Tucanoan languages and other Arawak languages of the area. In contrast to Baniwa and a few other closely related languages, postpositions cannot be used as prepositions.

(5) In Baniwa of Içana both O and S_o are marked with pronominal enclitics. The oldest wordlist of Tariana, collected by Johann Natterer in 1831, contains what appears to be a bound object pronoun *nua* (reminiscent of Baniwa of Içana *-hnua* (1sgS_o/O) attached to the verb: *tʃino li maa nuá* (dog 3sgnf bite? I) 'dog bit me' (see Aikhenvald 1995, 2006c).

(6) One major difference between extant dialects of Tariana lies in the ways in which they express negation (see details in Aikhenvald 2014a).

(7) The apprehensive complex predicate ('for fear that something might happen') is the result of a calque from Tucano (see Aikhenvald 2002a: 144–5, for details). The origin of other complex predicates is uncertain.

(8) However, since most underived nouns with an inanimate referent can be used as classifiers in repeater constructions (see §2), difficulties may arise in distinguishing nominal root compounding from a morphological construction nominal root + classifier (see further on in this section).

(9) It is an adjective because it can take an adjectival noun class agreement marker-*ite.*

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Imperatives and Commands (OUP, 2010), Languages of the Amazon (OUP, 2012), The Art of Grammar (OUP, 2014), and How gender shapes the world (OUP, 2016).

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Polysynthesis in Lakondê, a Northern Nambikwaran Language of Brazil

Leo Wetzels and Stella Telles

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Abstract and Keywords

Lakondê, together with Mamaindê and Latundê, belongs to the Northern Nambikwara branch of the Nambikwara linguistic family spoken in Northwestern Brazil. The language is head-marking, predominantly suffixal, and of great derivational productivity. It has an elaborate system of nominal classifiers; it is incorporating, with nuclear arguments integrated in the morphology of the verb. Lakondê has two ways of incorporating nouns: one is prefixal when the incorporated morphemes represent body parts; the other is suffixal, involving nominal classifiers. When the incorporation occurs in dynamic verbs, the integrated classifier morphemes assume the role of direct object. The verbal template provides for more than thirty morpheme positions, which, from the point of view of their function, can be categorized as argumental, adverbial, evidential, and TAM. Flexional suffixes may function as nuclear arguments and dispense with the lexical realization of the subject and the object. With these characteristics Lakondê may be classified as a typical polysynthetic language.

Keywords: Nambikwaran languages, polysynthesis, Lakondê, Mamaindê, Latundê, Brazil

35.1 Typological Aspects of the Lakondê Language

THE Lakondê language belongs to the Northern Nambikwara branch of the Nambikwara family, located in the southern region of the Brazilian Amazon. The family is divided into three branches: Northern Nambikwara, Southern Nambikwara, and Sabanê. The first two are genetically closer and each represents a group of different languages, while the third

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is constituted of only one language that is significantly different from the others (Araujo 2004). The languages that form the Northern and Southern branches are intelligible within each branch, but not across the branches. The Lakondê language, which is the subject of this work, pertains to the Northern branch and is on the verge of extinction.

With the exception of Sabanê, the Nambikwaran languages have a complex system of vowel contrasts, which exceeds the number of contrastive consonants, a typologically uncommon feature (Hyman 2007. The vocalic and consonantal systems in Tables 35.1 and 35.2 are from Lakondê (cf. Telles 2002).

The abundance of vowel phonemes is explained by the phonological use of nasality and creaky voice, which combine in the high and the low vowel series (a circumflex above a vowel marks nasality; underneath the vowel, it marks creaky voice).

As was shown by Telles (2002), primary word accent in Lakondê is quantity sensitive and predictable for the great majority of nominal and verbal roots. Roots that contain a heavy syllable are stressed on that syllable. Roots with only light syllables are stressed on the right-most syllable. Only for roots that contain more than one heavy syllable is the location of accent unpredictable and marked lexically. Moreover, some roots never carry accent. Affixes are subcategorized as accented/unaccented. At the level of the prosodic word, lexical as well (p. 736) as predictable accents are realized as secondary stresses, except for the left-most accent, which surfaces with primary stress.

Table 35.1 Consonants of Lakondê

p	t	k	ʔ
	s		h
m	n		
	i		
w	j		

Table 35.2 Vowels of Lakondê

i ĩ i̯ ĩ̯	u ũ u̯ ũ̯
e e̯	o o̯
a ã a̯ ã̯	

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The most important phonetic correlate of primary and secondary stress is high pitch. Unaccented syllables surface with low pitch. In verbs with imperfective aspect, tone is used to disambiguate person distinctions, but only in stressed syllables. Although limited, the morphologically conditioned tone-shifts that occur in Lakondê, together with the quantity-sensitivity of the rule of accent placement, suggests a classification of the word-prosodic system of this language as a mixed system, more specifically, a tone-to-stress system (Wetzels and Meira 2010). As expected, phonological rules of the language sometimes need to refer to the stressed ~ unstressed distinction, to account for the voicing of consonants, for example.

The organization of the grammar in the Northern (Telles 2002; Eberhard 2009) and Southern (Kroeker 2001) branches of the Nambikwara family is very similar and the typological characteristics are widely common among these languages. Although the differences in syntactic constructions and morphological expressions among them are not yet entirely mapped, the available studies show that polysynthesis is a common typological feature among the languages of the Northern and Southern branches (see Telles and Wetzels 2011, for a comparative sketch).

Like the other Northern and Southern Nambikwaran languages, Lakondê is highly polysynthetic. There are five word classes: noun, verb, adverb, interrogative, and conjunctive. The two first classes are open and the others are closed. The noun class includes the personal pronouns. The verb class can be split into subclasses: dynamic and stative.

The lexical classes of noun and verb have a broad morphology. The verb can receive morphemes with lexical, nominal, and adverbial content that occur as necessary autonomous constituents in non-polysynthetic languages.

Lakondê is a head-marking language with SOV order. It is predominantly suffixal, of the agglutinating type, with little fusion in the verbal morphology. It has a high derivational **(p. 737)** productivity, and is classifying and incorporating. Verbal subclasses are defined on the basis of the semantics of the verbal roots. Dynamic (active) verbs receive agentive subjects. Stative verbs are marked for patient subjects. There are no markers that differentiate the verbs in terms of transitivity. Intransitive verbs can be transitivized by the presence of the person marker on the verb.

In the verbal morphology, the person inflections function as nuclear arguments and do not require the presence of independent lexical subject and object in the clause. The words of the language, especially the verbs in main clauses, may contain various root morphemes. Verbs are able to select from more than thirty affixes.

The dynamic verbs can be divided into intransitive, transitive, and ditransitive verbs. The stative verbs can be subdivided into intransitive and unipersonal. The stative verbs express and/or describe the state of the subject. These verbs include verbs of cognition, descriptive verbs, adjectival verbs, locative/positional verbs, and color terms. The

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unipersonal verbs correspond to those that express natural phenomena, number, and quantification.

Despite being a shared feature of polysynthetic languages, a rich verbal morphology does not imply necessarily that a language is to be classified as polysynthetic. In addition to a complex morphology, the characteristic widely referred to as being typically polysynthetic are holophrastic clauses that correspond to syntactically autonomous constituents in other languages. As a matter of fact, Lakondê has most of the following characteristics, identified by Fortescue (1994: 2, 2007) as being recurrent in polysynthetic languages:

(i) Noun/adjective incorporation
(ii) A large inventory of bound morphemes (but a restricted number of stems)
(iii) The verb is a minimal clause
(iv) Pronominal markers on verbs (subject/object) and nouns (possessor)
(v) Adverbial elements integrated into verbs
(vi) Numerous morphological 'slots'
(vii) Productive morphophonemics and resultant complex allomorphy of bound and free morphemes
(viii) Non-configurational syntax
(ix) Head-marking (or double-marking) type of inflection

Some doubts remain concerning its non-configurational syntax, which is not yet established with certainty. According to Hale (1983: 5) a language with non-configurational syntax typically has: "(i) free word order, (ii) the use of syntactically discontinuous expressions, (iii) extensive use of null anaphora". Although Lakondê allows a variety of word orders, the use of a particular order is imposed by pragmatic constraints. Equally, where syntactic discontinuity is attested, aspects such as topicalization and focus appear to intervene. Lakondê consistently meets only the third criterion, showing an extensive use of anaphora. Even so, although explicit nominal arguments in this language are largely omitted, verification of the referential status of the pronominal arguments, in terms of Baker (2000) and Jelinek (1984), requires further investigation.

Languages like Latundê (Telles 2002) and Mamaindê (Eberhard 2009), which are closely related to Lakondê, are also characterized as highly polysynthetic, exhibiting at least eight of the nine traits that have been listed.

(p. 738) 35.2 Polysynthesis in Lakondê

35.2.1 Noun incorporation and classifiers

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There are two types of morphological operations applied to the verb that involve nominal roots in Lakondê: noun incorporation and classifier suffixation. Nouns that refer to body parts are incorporated and prefixed to the verb, while classifier morphemes of form or substance occur as verbal suffixes expressing some inherent characteristic of one of the verbal arguments. From a phonological perspective, none of these morphemes constitute independent stress domains. Both morphological processes occur with dynamic and stative verbs, but among the latter only with the ones belonging to the adjectival and numeral classes. In comparative terms, the suffixation of nominal classifiers to the verb is widely occurring, while the incorporation of the body parts is rather restricted. This is observed both in the occurrence of the phenomenon as well as in the quantity of the morphemes involved.

35.2.1.1 The incorporation of nouns representing body parts

The incorporation of body parts is prefixal and corresponds to a process of lexical composition between noun and verbs, in accordance with Mithun (1984a). There are two morphosyntactic processes that involve the incorporation of morphemes relative to body parts: the first, in which the composition derives a new verb, as in (1), and the second, which is restricted to transitive verbs, in which the nominal incorporation appears as a patient (as in (2)), as a non-canonical object, like an instrument (as in (3)), or a locative (as in (4)).[1]

(1)
nuʔ-ˈkãn-ø-ˈtãn-ta
arm-be.hard-3Subj-IMPF-ANT
‘he had grown strong’

(2)
ju-ˈten-ø-ˈtã:ń
mouth/door-close-3Obj-1Subj/IMPF
‘I closed the door’

(3)
wa-ˈlon-ø-hi-ˈtãn[2]
hand.as.an.instrument-tighten-3Obj-HAB-IMPF
‘shake his hand!’
(LIT: shake the hand (of someone) with the hand)

(p. 739) **(4)**
ju-haˈwa-ø-nah-hi-ˈtãn
foot-put/dress-3Obj-2Subj-HAB-IMPF
‘You put something on (your) foot!’ (like shoes)

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(5)
ike'tet *na*-'li?-ka-nah-'tã:ń
much.head-arrive-BEN-2Obj-1Subj/IMPF
'I was really missing you'

The incorporated body part may denote the item possessed by the subject or the object of the verb. This happens in the example sentence (5), in which 'head' represents the possessed part of the subject of the clause. The prefixed body part forms with the verb a composite unit, the meaning of which may be transparent, as in the sentences (2) to (5), or result in a less transparent meaning, as in (1).

35.2.1.2 Classifiers

In Lakondê, classifiers may occur as autonomous lexical and prosodic words, as in the example sentence (6), where the sentence-initial classifier *kaloh* 'flat' stands for the noun *mãn* 'dress'. In (7) it is suffixed to the noun, which exhibits a compound stress pattern, in which the right member carries secondary stress. In the examples (6)–(8), when it is right-adjoined to the verb, the classifier loses its prosodic autonomy completely.[3] It functions on the verb as a co-referent of the verbal argument or as an anaphor, when the noun phrase representing the argument is not expressed in the clause. This behavior of the classifier is in agreement with the characteristics described in Aikhenvald (2000) and Grinevald (2007).

(6)

[ka'lo:	'la?kalo,rãn]
ka'loh	'la? - ka'loh -'tãn
CL: flat/unidimens.	be.large- CL: flat/unidimens.-IMPF

'the dress is big'

(7)

['mãga,lo	'la?kalo,rãn]
'mãn-ka'loh	'la?-ka'loh-'tãn
dress - CL: flat/unidimens.	be.large- CL: flat/unidimens. –IMPF

'the dress is big'

(8)
['la?kalo,rãn]
'la?-ka'loh-'tãn
be.large- CL: flat/unidimens. - IMPF
'the dress is big'

(p. 740) In dynamic verbs the classifier only co-references the object. In stative verbs, because of their intransitive nature, the classifier obligatorily co-references the subject.

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The presence of classifier morphemes in dynamic and stative verbs is optional. It may be considered a syntactic–pragmatic resource available as a textual or discourse-based construct. The verbal pronominal marker of subject and object of the third person singular and plural is the zero morpheme, which, despite a lack of phonological expression, makes the occurrence of the corresponding arguments as syntactic constituents unnecessary. When present in the verb, the classifier refers to the third person, which would otherwise not be phonologically substantialized.

If the argument is realized as an independent lexical item in the surface structure, a copy of the verbal classifier may be realized optionally in the noun phrase. The complete set of possible structures can be verified in examples (9)–(13). The first is a principal clause with an adjectival verb; (10) is a clause with the classifier; (11) is a clause which features the presence of a subject noun phrase, the head of which receives the nominal classifier in agreement with the classifier morpheme; (12) is a clause with the classifier attached to the verb, in which the head of the subject noun phrase is without a classifier. In (13), the classifier is absent in the verb, as it occurs only suffixed to the nominal root.

(9)
ˈlaʔ-ø-ˈtãn-ta
be.large-3Subj-IMPF-ANT
‘(It) was large’

(10)
ˈlaʔ-***kinĩn***-ø-ˈtãn-ta
be.large-CL: round/oblong/tridimens-3Subj-IMPF–ANT
‘(the rock) is large’

(11)
ˈt̪ajn-***kinĩn*** ˈlaʔ-***kinĩn***-ø-ˈtãn-ta
rock-CL:**round/oblong/tridimens** be.large-CL-**round/oblong/tridimens**-3Subj-IMPF–ANT
‘the rock was large’

(12)
ˈt̪ajn ˈlaʔ-***kinĩn***-ø-ˈtãn-ta
rock be.large-Inc: CL **round/oblong/tridimens**-3Subj-IMPF–ANT
‘the rock was large’

(13)
ˈt̪ajn-***kinĩn*** ˈlaʔ-ø-ˈtãn-ta
rock-CL: **round/oblong/tridimens** be.large-3Subj-IMPF–ANT
‘the rock was large’

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The classifiers that present a high occurrence in the verbal complex are those expressing shapes, like ***kinĩn-,*** exemplified earlier, as well as those expressing *animacy* or the semantically composite category *consistency-edible* illustrated as follows:

(p. 741)

	ˈwa̰já	te̲h-n-***saw***	ˈnah-ˈtã:ń
(14)	you	cook-?-**CL:liquid**	drink-1Subj/IMPF
	‘You cooked maize beer, and I drank it’		
	kaˈmat-nũ	jaw-***to*** - ø-ˈtãn	
(15)	bean-food	be.here-**CL:food**-3Subj-IMPF	
	‘the beans are here’		
	ˈwa̰ja	tah-***hu***	wḭ-ˈtã:na
(16)	you	bake-**CL:baked.food**	eat-1Subj/IMPF
	‘you baked meat, and I ate it’		
	ˈta̰ja-ko	ˈte̲h-***ho***-ˈten-ni-tã	
(17)	I-INC	cook-**CL: ani/com**-DES-FUT-1Subj/IMPF	
	‘you will cook with me’ (LIT: I will cook together)		

35.2.2 Verb incorporation

Verb incorporation is a productive phenomenon in Lakondê. Dynamic and stative verbal roots can undergo incorporation, in which process the semantic result of the V_1-V_2 sequence, where V_1 represents the incorporated verb, does not correspond to a typical process of compounding. This is owing to the fact that the speaker analyzes the constituting parts as independent semantic units.[4] Moreover, the incorporated verbal root may occur non-contiguously to the nuclear verb, when the benefactive/goal/source is interposed between the two verbs, resulting in a V-Benefactive/Goal/Source[5]-V sequence, which corroborates the idea that we are not dealing with morphological compounding.

	e-ka-ˈ***hat*** -ta-ni-hi-ˈwi̲	
(18)	look-BEN-**not.have**-1Obj-FUT-HAB-IMP	
	‘Don’t look at me’	

Incorporation of dynamic (active) verb roots codifies aspectual function, as with the verb ***ta***ˈ***lown***- ‘end’, in (19), which adds a perfective meaning. Another example is with the verb ***awn***- ‘miss the mark’, given in (20), with an imminentive value.

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tẹh-*ta*ˈ*lown*-ø-ho-ø-ˈtãn
(19) cook-**finish**-3Obj-CL:ANI/COM-3Subj-IMPF
'he finished cooking (something with someone)'

(p. 742)

(20)
loh sun-*awn* -ta-ø-ˈtãn-ta
jaguar kill-**miss**-1Obj-3Subj-IMPF-ANT
'the jaguar had nearly killed me' / 'I was almost killed by the jaguar'

The aspectual function of the incorporated verb in these examples could also be considered part of the verbal morphology, since it is not directly related to the clause structure and is also independent from the argument structure required by the verb. One could consequently question the interpretation of these constructs as instances of incorporation. However, such an account fits with the overall polysynthetic character of the language and explains why Lakondê opts for the use of independent verbal stems instead of affixes to express this part of the aspect system.

Incorporated stative verbs, in turn, can represent several different concepts. In this way, the verb '***hat***- 'not have', as in (21), functions as a polarization morpheme. That is, it negates the semantics of the nuclear root, the verb ***jaw***- 'be in a (active) position', given in (22), which associates positional adjectival information to the agent of the principal verb. The verb ***hã***- 'are all', in (23), attributes a quantifier–totalizer value to the subject of the main verb.

ka-mạh -ˈ*hat* – ta - ta
(21) ?-be.wet-**not.have**-1Subj-ANT
'I had not wetted'

i-*jaw*-ta-ø-ˈtãn-ta
(22) bite-**be.in.position**-1Obj-3Subj-IMPF-ANT
'(the mosquito) had been biting me'

tẹh-*hã*-ø-ˈtãn
(23) cook-**are.all**-3Subj-IMPF
'everyone cooked'

Another process of incorporation of stative roots forms nominal compounds with a N-V structure. The incorporated stative verb has an attributive value, the function of which is to create hyponyms of a higher order species. Stative verbs of color are used to these ends, as follows.

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loh-*toh* -ˈte
(24) jaguar-**be.black**-FinNomSfx
'panther' (jaguar species)

loh-ˈ*wawn* -ˈte
(25) jaguar-**be.red/yellow**-FinNomSfx
'cougar' (jaguar species)

loh-*ko*ˈ*lo*ʔ*ko*ˈ*lon* -ˈte
(26) jaguar-**be.painted (texture)**-FinNomSfx
'jaguar' (jaguar species)

(p. 743) 35.3 An Inventory of the Bound Morphemes in Lakondê, the Number of Morphological Slots, and the word as a Minimal Clause

Three of the five word classes (adverbs, interrogatives, and conjunctives) are closed, formed by a very limited number of items, which, as expected, lack a rich morphology. Of these categories, the adverb may receive the final nominal suffix when it occurs in isolation, without linguistic context. Functionally, adverbs are distinguished from nouns insofar as they modify verbs and do not serve as the predicate of a canonical argument.

The noun and verb classes are both open. Members of these classes may be affixed with a wide range of morphological material. The noun can receive a significant number of bound morphemes. As specified in Table 35.3 below, this lexical category has up to thirteen different suffixal options.

The nominal morphology is characterized by possessive prefixes and a set of suffixes, including classifiers, plural/totalitive, emphatic, non-proximity of the referent, evidential visual, restrictive ('only'/'just'), locative interrogative, inclusive/comitative, locative, exhortative, and final nominal suffixes.

Comparatively, the verbal morphology is characterized by its larger set of affixes, which are functionally distributed according to prefixes of nominal incorporation, causative, resultative, and argumental (subject and object) suffixes, benefactive, reflexive, adverbials (such as negation, emphatic, inclusive, temporal, etc.) evidential, and TAM.

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The verb has nearly twice as many suffixes available as the noun. The presence of morphemes annexed to the verb root, be they grammatical or lexical, is only obligatory in the verb of the main clause. From the perspective of prototypicality, the template of the verb root, which is the category that requires more morphological material for it to appear as a (p. 744) (p. 745) word, can be expanded with over thirty affixal categories (Table 35.4), the majority of which are optional.

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Table 35.3 Structure of the noun

NOUN							
Prefixes	**Lexical Morpheme**		**Suffixes**				
Inflectional prefixes	**Radical**		**Derivational Suffixes/Classification System**			**8 options of various morphemes**	**Inflectional Suffixes**
(Possession)	Root	(Root)	(Size)	(Shape)	(Consistency)	(Various suffixes)	Final Nominal Suffix

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Table 35.4 Structure of the verb

(Directional)	**Derivational Prefixes**	**Theme**	**Verb**
(Agentive / Resultative)			
(Incorporation of body parts)			
ROOT			
(Benefactive—target-Source)	**Derivational Suffixes Incorporated roots**		
(Causative)			
(Root)			
(Incorporated Nominal Root/ Classifier)			
(Verbal Classifiers)			
Object	**Argument *Status***	**Suffixes**	
(Number)			
(Comitative)			
(Reflexive)			
(Locative)			
(Demonstrative)			
(Negation)	**Adverbial *Status***		
(Temporal)			
(Internal motivation)			
(Intensifier/Emphatic)			
(Suppositive)			

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(Intensifier/emphatic)			
(Inclusive)			
(Veracity)			
(Desiderative)			
(Permissive)			
(Dubitative)			
(Imminentive)			
(Admonitive)			
(Exhortative)			
(Potential)			
(Completive)			
Subject	**Inflectional Suffixes**		
Evidentials			
Aspect			
Tense {Past Tense, Future Tense}			
Mood {Epistemic Mood, Deontic Mood}			

The categories in Table 35.4 that are not between parentheses are obligatory. The inflectional suffixes represent paradigms, the members of which exclude each other mutually. The simultaneous presence of the remaining affixes is governed by semantic and functional compatibility.

In Lakondê, as is typical in other polysynthetic languages, the profusion of semantically diverse bound morphemes favors the formation of large structures in the morphology of open lexical classes. Furthermore, the marking of the person in the verb, aside from the presence of other morphemes encoding non-canonical arguments, is typical of a head-marking language and allows a verb to correspond to a minimum clause. The

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polysynthetic construction, which is morphologically rich, always has a competing analytic construction in Lakondê.

35.4 Pronominal Markers on Verbs (Subject/Object) and Nouns (Possessor)

35.4.1 Pronominal markers on verbs

Person markers on verbs are suffixed. The syntactic functions of subject and direct and indirect object are marked in the verbal structure. The verbal alignment is of the active–stative type. From the point of view of morphological ordering, pronominal suffixes have fixed positions. Pronominal suffixes express activity (agent) or inactivity (patient) of the subject function.

The existence of two subclasses of intransitive verbs that differently mark the subject argument is known as “split intransitivity”. Intransitive verbs whose subject marking coincides with that of the object of transitive verbs are also interpreted as non-accusative verbs (Perlmutter 1978). Dixon (1994: 71–8) defines the type of marking system of Lakondê as split-ergative, subclassified as split-S, conditioned by the semantics of the verb. Active-stative languages, like Lakondê, are not uncommon in the Americas, being represented by different languages of the Tupi linguistic stock in South-America (Awetí, Siriono, Tupinambá, Kamaiurá, Guarani), and, in North America, by languages belonging to the Sioux and Muskogean families. Languages that contain a split intransitivity system of subject marking, like Lakondê, have been analyzed from different theoretical perspectives and at different levels of the grammar (Mithun, 1991: 511–12). The semantic level is considered fundamental to explaining agentive case marking (Mithun, 1991; Adelaar, 1986; Van Valin, 1990; Danziger, 1996).

Intransitive verbs in Lakondê may be dynamic or stative. They have distinct inflectional person suffixes depending on the semantic role (agentivity) of the subject. Subjects of intransitive verbs, whether dynamic or stative, present distinct forms for the singular and plural first and second person. The subject forms of stative verbs are the same as the object forms of transitive verbs. In agreement with Nichols (1986: 66), this behavior is typologically productive in head-marking languages like Lakondê. The singular and plural third person lacks phonological expression and is marked by the zero morpheme.

The distribution of pronominal morphemes (subject and object) in dynamic and stative verbs is provided in Table 35.5. (p. 746)

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Table 35.5 Pronominal morphemes in dynamic and stative verbs

Person Marker	SUBJECT				OBJECT
	Dynamic Verb			Stative Verb	
	PAST	FUTURE	PRESENT		
1sg	ton	ton	ton	-ta-	-ta-
1dual	-wi-	-wi-	-wi-	-wi-	-wi-
1pl	-wahi-	-wahi-	-wahi-	-wahi-	-wahi-
2sg/pl	ton	-wehĩ-	ton	-nah-	-nah-
3 sg/pl	-ø-	-ø-	-ø-	-ø-	-ø-

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The notions of agentivity, causality, and control are irrelevant to the choice of pronominal markers. The same expression of subject occurs in all the dynamic verbs independent of whether the participant is agent or patient of the action. Thus, verbs like ‘fall’ and ‘leave’ receive the same pronominal form regardless of the agentivity of the subject or verbal transitivity.

ta̲-ˈtãn
(27) fall–3Subj/IMPF
‘he fell’

ˈlit-ˈtã:ń
(28) leave–1Subj/IMPF
‘I left’

The same happens with the stative intransitive verbs, which mark the inactive subject (Sa) with the same morphemes as the objective case that occurs in dynamic transitive verbs, independent of the semantic role of the participant.

taˈliʔ-ta-ˈten-ni-ˈtã
(29) mollify-1Subj-DES-FUT-1Subj/IMPF
‘I will mollify (the fight)’

saˈnajn-ta-ˈtãn
(30) know-1Subj-IMPF
‘I know’

In dynamic verbs, the same paradigm occurs in direct and indirect objects. The lack of distinction between “accusative” and “dative” owes to the fact that these semantic roles are not morphologically relevant in this language.

(p. 747) A dynamic verb receives stative morphology if the participant is inactive, in accordance with the examples (31)–(34):

ki̲h-ˈtã
(31) itch-1Subj-IMPF
‘I am scratching’

ki̲h-*ta*-ˈtãn
(32) itch-**1Subj**-IMPF
‘I am itching’

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ˈwa̲je ikaˈla?-ka-ˈtã
(33) you work/play-BEN-1Subj/IMPF
'I am working for you'

ˈon ikaˈla?-ka-*ta*-ˈtãn
(34) lack.desire.to.do work-BEN-**1Subj**-IMPF
'I lack desire to work for myself (I am lazy).'

In the last example, the active verb 'work' follows the stative verb 'lack desire to do', the latter affecting the activity of the former, which therefore passes into the stative paradigm. Although they are individual clauses, the way in which they integrate with one another is semantically similar to a VV compound.

35.4.2 The expression of possession

In Lakondê, a number of nominal categories can be possessed. Possession is marked with prefixes. Nouns that regularly receive possession markers are those which refer to kinship relations and body parts, which express part–whole relationships, or which belong to a class designating goods for personal use. The possession prefixes are reduced forms of free personal pronouns. They are arranged in Table 35.6.

35.5 Adverbial Elements Integrated into Verbs

In Lakondê, a considerable number of derivational morphemes can occur between the inflectional suffixes that participate in the argument structure of the verb and the inflectional suffixes of subject, tense, aspect, evidentiality, and mood (see Table 35.4). These bound morphemes modify the verb, integrating various adverbial values such as polarity (negation), tense, and mood. The presence of these elements in the verbal morphology can co-occur with preverbal adverbial roots. The verb-internal categories are described in the following sections. (p. 748)

Table 35.6 Possession prefixes

Number	Person	Possessives Prefixes
Singular	1	**tą̃**-ˈnąjn-kinĩn-ˈte **1sg**-head-CL:round/oblong/tridimens-FinNomSfx 'my head'

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	2	**wą̃**-ˈnąjn-kiˈnĩn-ˈte **2sg**-head- CL:round/oblong/tridimens-FinNomSfx ‘your head’
	3	**ã-**ˈnąjn-kinĩn-ˈte **3sg**- head-CL:round/oblong/tridimens-FinNomSfx ‘his head’
Plural	1	**nũh-**ˈnąjn-kinĩn-ˈte **1pl**-head-CL:round/oblong/tridimens-FinNomSfx ‘our heads’
	2	**wą̃-**ˈnąjn-kinĩn-ˈte **2pl**-head-CL:round/oblong/tridimens-FinNomSfx ‘your heads’
	3	**ã-**ˈnąjn-kinĩn-ˈte **3pl**-head-CL:round/oblong/tridimens-FinNomSfx ‘their heads’

35.5.1 Negation

Negation is expressed in the verb by the presence of the suffix ***-ta-*** [6]. Examples of verbal words with negative polarity follow:

(35)
saˈnajn-*ta*-ta-ˈtãn ũˈtot ˈnũh ˈta-ˈlahni-ø-ˈtãn
know-NEG-1Subj-IMPF which animal sit-DUB-3Subj/IMPF
‘I don’t know the animal that is sitting’

(36) i?-*ta*-ta
blow-NEG-ANT
‘the wind was not blowing’

(37) woˈto?-ø-*ta*-ˈtã:ń
pierce-3Obj-NEG-1Subj/IMPF
‘I have not pierced it’

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(p. 749)

35.5.2 Temporal

The morpheme ***-ã-*** indicates an action in the past and expresses a meaning similar to the term ‘already’ in English.

a̲w-***ã***-nah-tã:ɲ́
(38) tell-**already**-2Obj-1Subj/IMPF
‘I already told you that’

iˈwa-***ã***-tãɲ́-ˈka̲
(39) lie-**already**-2Subj/IMPF-ASS
‘you already lied’

35.5.3 Motivation

The morpheme ***-ˈsuh(a)-*** expresses a strong determination or motivation on the part of the subject of the verb.

ikaˈtet tẽh-ka-ˈ***suha***-ta-ta
(40) much cook–BEN–INT.MOT–1Subj–ANT
‘I have been with a strong desire to cook (for every one).’

ikaˈtet ikaˈla-ka-ˈ***suh***-seˈta-ø-ˈtãn
(41) much work-BEN-INT.MOT-QUO-3Subj-IMPF
‘She had a strong desire to work for herself (she told me)’

jãjn-ˈ***suh***-ˈjown-ø-ˈtãn
(42) eat- INT.MOT-INT(strong.emph)-3Subj-IMPF
‘She really wants to eat’

35.5.4 Intensifier/weak emphasis

The suffix ***-jãn-*** serves to emphasize or enhance the content of the clause. This form contrasts with another morpheme that marks a strong emphasis ***-ˈjown-*** (see 35.5.6). Although they do not occupy the same slot in the morphology of the verb, the semantic contrast prevents their co-occurrence.

In stative verbs, ***-jãn-*** expresses intensity:

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mũn-*jãn* -ta-ˈtãn-ta
(43) be.beautiful-INT(**weak.emph**) -1Subj-IMPF-ANT
'I was once quite beautiful (but am not anymore)'

(p. 750)

ˈnuʔ-ˈkãn-*jãn* -nah-ˈtãn
(44) arm-be.strong-INT(**weak.emph**)-2Subj/IMPF
'you were once very strong (but not anymore)'

In accordance with the structure of the verb given in Table 35.4, syntactic objects occupy a position close to the verb root and before the suffixes with adverbial status (verb root + OBJECT + adverbial), while the subject markers come before the categories of tense, aspect, mood, and evidentiality and after the adverbial elements (verb stem + object + adverbial + SUBJECT + inflection). In stative verbs, as can be seen in the examples given, the pronouns occupy the post-adverbial positions (adverbial suffix + pronoun), thereby confirming the stative alignment in Lakondê.

In dynamic verbs, ***-jãn-*** has an emphatic function:

nah-ˈhã-*jãn*-ø-ˈtãn
(45) drink-all.are-INT-3Subj-IMPF
'everybody was really drinking'

ˈe-*jãn*-ˈsenta-ˈtãń
(46) see-INT-SUP-2Subj/IMPF
'It really looks as if you saw (it)'

When the stative verb ***-ˈhat-*** co-occurs with the emphasis morpheme, it only partially negates the contents of the main verbal root. The contrast is made clear by comparing the two sentences which follow.

ˈnajnkini-ˈ*hat*-ø-ˈtãn
(47) be ill-**not.have**-3Subj/IMPF
'he is not ill'

ˈnajnkini-ˈ*hat*-jãn-ø-ˈtãn
(48) be ill-**not have**-INT(weak.emph)- 3Subj-IMPF
'he is not very ill'

35.5.5 Suppositive

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The suffix ***-'senta-*** encodes the speaker's assumption about the propositional information of the sentence. The assumption is hypothetical and is not necessarily based on concrete evidence.

(p. 751)

'wẹn kamãn-jãn-'*senta* -'tãń-len-hi
(49) now send-INT(weak.emph)-SUP-2Subj/IMPF-PAS-NEU
'it really looks like you just sent it now'

'e- ø -'*senta* -'jown-'tãń
(50) See-3Obj-SUP-INT(strong.emph)-2Subj/IMPF
'it really looks like he saw (something)'

35.5.6 Intensifier/strong emphasis

The suffix ***-'jown-*** encodes strong emphasis. Functionally, this morpheme is similar to ***-jãn-***, 'weak emphasis', differing only in the degree. Morphologically, these forms occupy different positions in the structure of the verb and do not occur together for obvious functional reasons. The slot filled by the morpheme ***-jãn-*** precedes the position occupied by the morpheme ***-'jown-.*** Between their respective slots the 'suppositive' morpheme occurs, as can be observed in the example sentences (49) and (50).

set-ka-ø-'*jown*-ø-'tãn
(51) talk-BEN-3Obj-INT(strong.emph)-3Subj/IMPF
'he speaks a lot (for someone)'

jajn-'suh-'*jown*-ø-'tãn
(52) eat-INT.MOT-INT(strong.emph)-3Subj-IMPF
'he really wants to eat'

35.5.7 Inclusive

The suffix ***-'jon-*** conveys a meaning similar to 'also'. This morpheme can co-occur with 'inclusive' ***-ko-*** that is suffixed to nouns when the arguments are expressed phonologically in the sentence, as in sentence (54).

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hejn-ka-ø-ˈ***jon***-ˈtã:ń
(53) wash-BEN-3Obj –INC-1Subj/IMPF
'I also washed (something for someone)'

ˈtaja-ko hejn-ka-ø-ˈ***jon***-ˈtã:ń
(54) I-INC wash-BEN-3Obj –INC-1Subj/IMPF
'I also washed (something)'

(p. 752)

35.5.8 Veracity

-ˈ*to?*- is a suffix that expresses a truth value to the statement expressed in the sentence. When this morpheme is preceded by the root ***hat***-'not have', the resultant meaning expresses complete denial, 'never.'

ˈe-nah-ˈ***to?***-ˈtã:ń
(55) see- 2Obj-VERAC-1Subj/IMPF
'I really saw you'

ˈe-ø-ˈhat-ˈ***to?***-ˈtã:ń
(56) See-3Obj-not.have-VERAC-1Subj/IMPF
'I never saw him'

ˈun ˈajh-ˈhat-ˈ***to?***-ˈtã:ń
(57) far go-not.have-VERAC-1Subj/IMPF
'I never walked far'

35.5.9 Desiderative/permissive

The 'desiderative' meaning is expressed by the verb ***ten-*** 'want'. This form is widely used in future constructions, and its occurrence may make a tense morpheme no longer obligatory. In future interrogative constructions only the desiderative morpheme occurs. The morpheme ***ten-*** also expresses the 'permissive' notion (example 60).

ˈtoh-ˈhat-ta-ˈ***ten***
(58) want-not have-1Subj–DES
'I don't want anything.'

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wi̲-ha-'*ten*
(59) eat-EXOR-DES
'Let's eat?'

'nah-'há ta'we̲n-'naw 'a̲jh-'*ten*-'ha
(60) mom-VOC forest-LOC go-PERM-INTER
'Mom, may I go into the forest?'

35.5.10 Dubitative

The morpheme ***-'lahni-*** conveys the speaker's doubt with regard to the content expressed by the event indicated by the verb to which it is suffixed

(p. 753)

wi̲-'*lahni*-ø-'tãn
(61) eat-DUB-3Subj-IMPF
'Maybe she has eaten'

(62)

ka̲-'ka̲n-kiñ̃n	'ta-'*lahni*-ø-'tãn
pineapple-CL:round/tridim	be.horizontal.position-DUB-3Subj-IMPF
'Perhaps it is a pineapple'	

35.5.11 Iminentive

The morpheme ***-te'hĩn-*** expresses the notion of risk or imminence of the action expressed by the verb.

ta̲-*te*'*hĩn*-ø-'tãn
(63) fall-IMIN-3Subj-IMPF
'he nearly fell'

'nũ ta'lown-*te*'*hĩn*-ø-ta
(64) food end-IMIN-3Subj-ANT
'the food is nearly ready'

35.5.12 Admonitory

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-hoto- expresses a warning addressed to the interlocutor. Its position is prior to the inflectional suffixes of tense, aspect, mood, and evidentiality

	ta-ˈlawn-***hoto***-ˈtãn	
(65)	DIR-be.much water-AD-IMPF	
	‘be careful with the water (to not fall)’	

35.5.13 Potential

The morpheme ***-hi-*** conveys the notion of ‘capacity / ability’ of the subject of the clause. This suffix occurs only in dynamic verbs.

	hoˈta	ã- ø-***hi***-ˈtã:ń
(66)	monkey	kill-3Obj-POT-1Subj/IMPF
	‘I managed to kill the monkey’	

(p. 754)

	ˈwa̱ja-ko	ˈa̱jh	ãn-ø-***hi***
(67)	You-INC	go	kill-3Obj-POT
	‘you were capable of killing it’		

35.5.14 Completive

The suffix ***-ˈtãwn-*** expresses the aspectual notion of completion or punctuality.

	ˈwa̱ja	hejn-ka-ˈ***tãwn***	ˈpat-ˈtãń-si
(68)	you(plur)	wash-BEN-COMP	stop-2Subj/IMPF-PS
	‘it is possible that you all had stopped washing (for someone)’		
	ˈnah-ˈ***tãwn***	hã-ø-ˈtãn	
(69)	drink-COMP	be.all-3Subj-IMPF	
	‘he drank everything at once’		

As can be seen in the example sentences (49)–(51), as well as in (70), adverbial elements can be combined, within the limits of semantic compatibility. Their relative order is not completely fixed, but may vary for pragmatic purposes.

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ta'lown-'hat-jãn-'tãwn-ø-ta-'ka
(70) end-not.have-INT(weak.emph)-COMP-3Subj-ANT-ASS
'nothing had been ready'

35.6 Productive Morphophonemics and the Resultant Complex Allomorphy of Bound and Free Morphemes

Generally, both nominal and verbal roots consist of one or two syllables. Only very few roots are trisyllabic. Most of the time the final (or only) syllable of lexical morphemes have branching rhymes. The phonological and morphophonological processes triggered by morpheme concatenation affects the post-vocalic material, resulting in both root and suffix allomorphy.

Some of the (morpho)phonological operations that apply to affixed sequences can be seen in the examples in (71)–(72), taken from Braga 2012: 103, 128).

/aun-tah/ > [aumda]
(71) parrot-large
'parrot species'

(p. 755)

/'nih-'te/ > ['ni:'ɾe]
(72) kindling-FinNomSfx
'firewood'

In (71), the labialization of the root-final coronal nasal plosive happens independently of the suffix, because it is triggered by the labiality of the second root vowel. On the other hand, the voicing of the suffix-initial voiceless stop is caused by postnasal voicing. The rule follows.

(73)

$$[\text{-sonorant, -continuant}] \rightarrow [\text{+voice}] / [\text{-approximant, +nasal}] ____$$

In the second example, the optional deletion of the glottal fricative / h / in the syllable coda leads to compensatory lengthening of the root vowel. Independently of h-deletion and compensatory lengthening, however, a suffix-initial voiceless coronal stop is voiced and optionally flapped in the context {Vh, VV} $_{\text{suffix}}$[___.

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(74)

$$[\text{-sonorant, -continuant, coronal}] \rightarrow [\text{+voice (+sonorant)}] / \{Vh, VV\}_{\text{suffix}} [___.$$

The activity of morphophonemic rules and their effect on the creation of allomorphy is salient in the class of dynamic verbs. Table 35.7 provides the different allomorphs for the imperfective (***-tãn-***) and the non-recent past (***-len-***) suffixes, resulting from operations, both tonal and segmental, that affect the subject markers of the first person singular and second person singular and plural. Since the marks of third person (singular and plural) are zero, the morphemes remain unaltered.

The imperfective ***-tãn-*** and the non-recent past, ***-len-***, undergo morphophonological processes that affect the first person singular and the second person singular and (p. 756) plural. In accordance with Table 35.7, the behavior of the processes can be described thus:

◦ First person singular: the imperfective ***-tãn-*** and the non-recent past ***-len-*** undergo vocalic lengthening. The high tone of the nuclear vowel spreads to the nasal coda, as in (75). When the imperfective follows the future tense, ***-ni-*** (as in (76), or is followed by the morpheme ***-ta-***, expressing anteriority, deletion of the coda nasal and preservation of the high tone on the nuclear vowel of the imperfective is attested. Also observe the oralization of the nasal coda consonant of the desiderative suffix ***-ten-***, due to dissimilation in (76).

(75)

first person singular

H

ˈe-ˈtãn ⟶ ˈe-tã́ːń̥ ⟶ [ˈe-ɾã́ːń̥]

to. see-1Subj/IMPF

‘I saw’

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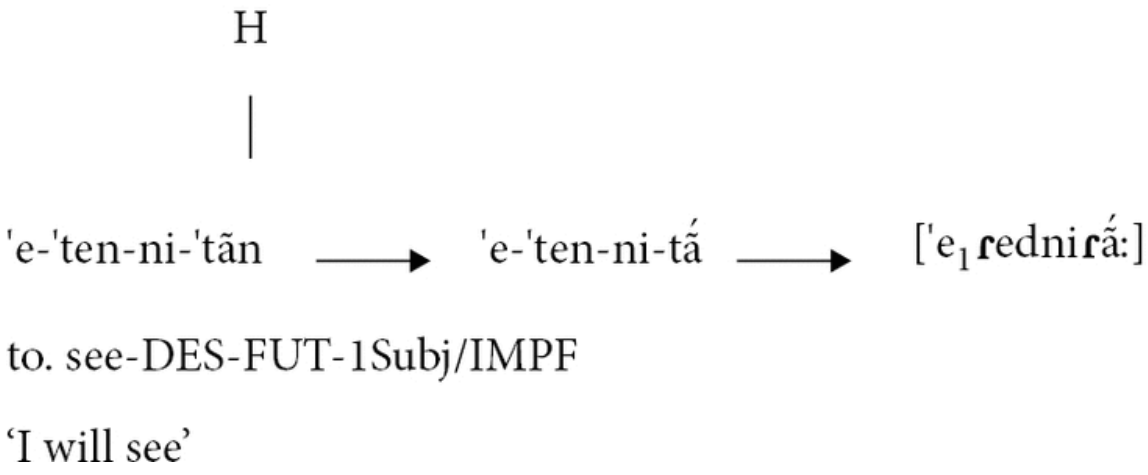
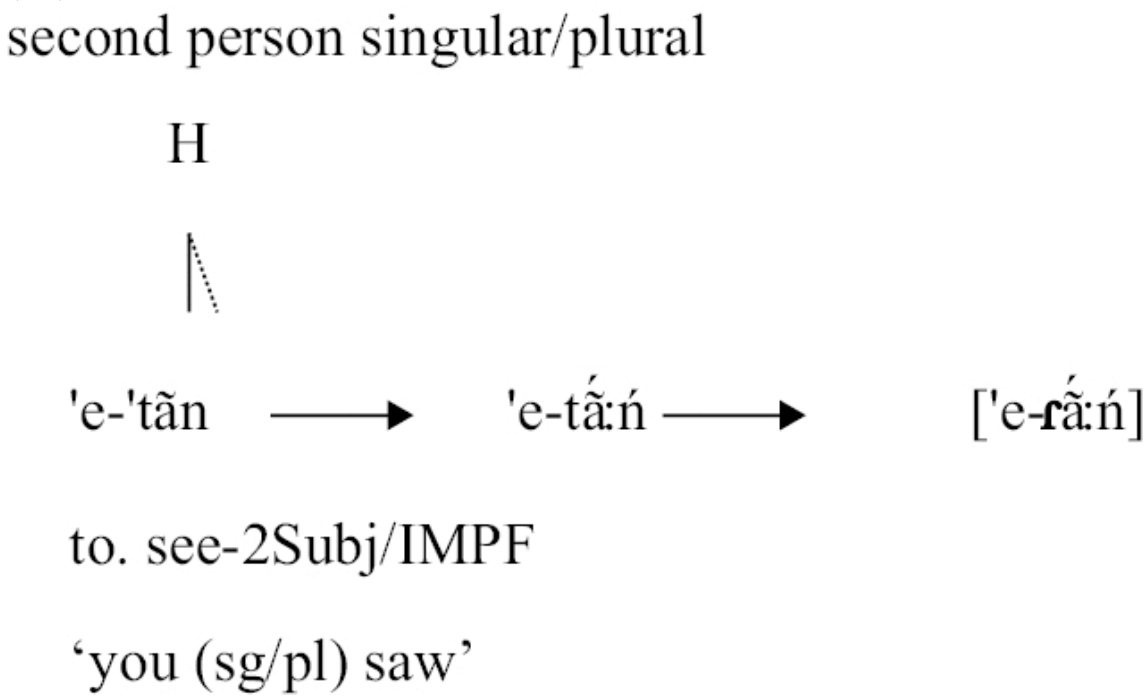
(76)



◦ Second person singular/plural: the high tone of the nuclear vowel of the imperfective morpheme, ***-tãn***-, and the non-recent past morpheme, ***-len***- spreads to the nasal coda. The same process operates when the imperfective is followed by the morpheme expressing anteriority, ***-ta***-.

(77)



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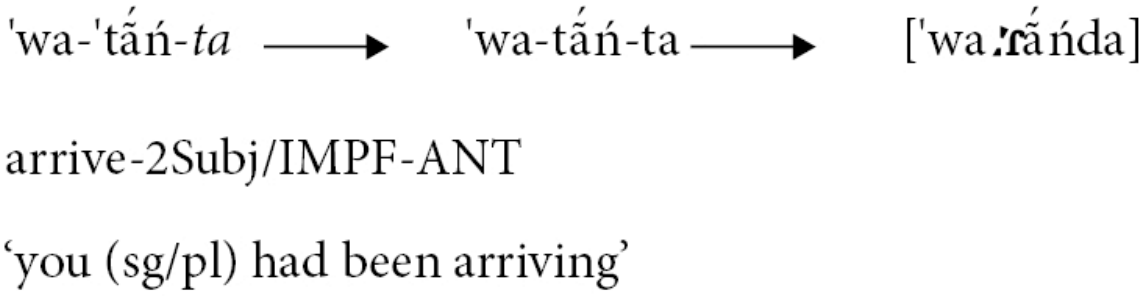
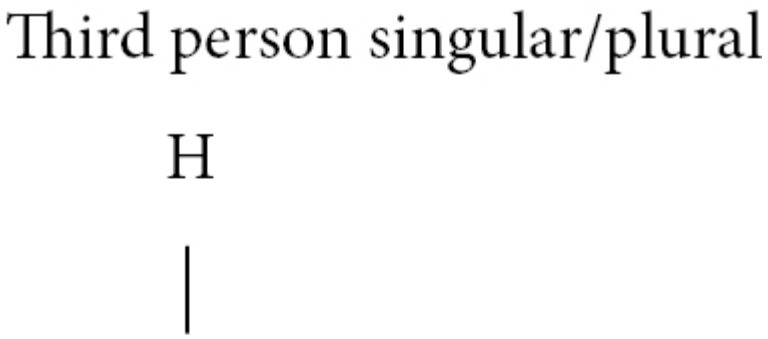
(78)



(p. 757)

◦ Third person singular/plural: zero morpheme and no allormorphy of the verbal suffixes.



(79)

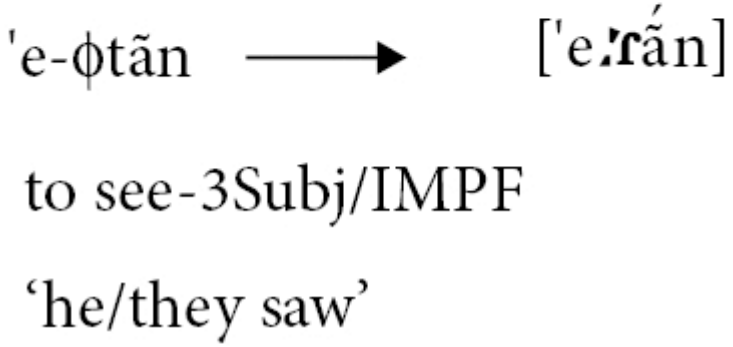


Table 35.7 Morphophonological operations affecting person markers

Morphemes	1 sg + High Tone	2 sg/pl + High Tone	3 sg/pl Zero
Imperfective (-tãn-)	-tã:ń-	-tãń-	ø
Past (-lén-)	-lé:ń	-léń	ø

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Future: (-ni+tãn-)	-ni-'tã-		ø
Present (-tãn- + -ta-)	-tã-ta-	-tãń-ta-	ø

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35.7 Conclusion

In this chapter, we discuss the polysynthetic characteristics of Lakondê. Nearly all the features that, according to Fortescue (2007: 2), define a language as polysynthetic are found in this language except for the non-configurational nature of its syntax, with regard to which some serious doubts remain. The existence of (a) a high number of morphemes per word, (b) the abundant inflectional morphology, (c) the incorporation of the argument in the verb and, (d) the marking in the nucleus, seem sufficient cause to claim the status of polysynthesis for this language. In view of this, we may reflect over the time depth of the coming into existence of the polysynthetic nature of Lakondê, referring to the set of features provided by Fortescue (2007: 21), which may reflect the relative age of polysynthesis in a given language. For that author, the following traits are indicative of an ancient polysynthesis:

> (a) Few if any lexical sources of derivational affixes to be found. (b) No independent stress (or other individualizing prosodic marking) on incorporated morphemes. (c) Entangled ordering of derivational and inflectional morphemes. (d) Evidence of successive historical layering of affixes, with fossilization.

By comparison, a language in which polysynthesis appeared recently will exhibit:

> (a) Lexical sources of derivational affixes transparent; (b) Residual stress on incorporated or serialized stems; (c) Strict adhesion to Bybee's morpheme-ordering generalizations (derivation affixes closer to stem than inflection); (d) Productivity of incorporation or morphological verb serialization.

Lakondê presents characteristics that divide over the sets proposed above. Only a small part of the derivational affixes has a transparent lexical origin and a preserved prosodic autonomy. Nominal classifiers and body parts, which behave as independent phonological words elsewhere, lose their prosodic autonomy when integrated in the verbal complex. As for the order of the morphemes inside the verb, Lakondê is very much in agreement with the generalizations proposed in Bybee (1985): the affixes with lexical content are located closer to the root than the flectional affixes, which fact would point to a recent polysynthesis. On the other hand, the object inflection goes against the rule, because this marker is located between the root and the derivational suffixes. The productivity of the nominal incorporation is (p. 758) limited to a few prefixed morphemes representing body parts, which fact could signal a more ancient polysynthesis. However, since the size of the morphemes of Lakondê, including the lexical verbal and nominal roots, is generally small —morphemes larger than two syllables are rare—the activity of historical fusional processes is not a typical trait. Indeed, only few cases of verbal root allomorphy could be indicative of fossilization. Incorporation and verb serialization are very productive. Equally productive is verbal classification, through which bound lexical morphemes referring to shape and substance co-reference verbal arguments or function as anaphora

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for the latter. When evaluating this mixture of characteristics, it seems plausible to consider that, while polysynthesis in Lakondê may not be very recent, it very probably is not as old as it is in some languages of North America.

Abbreviations

1
first person
2
second person
3
third person
AD
admonitory
ANI
animate
ANT
anterior
ASS
asserverative
BEN
benefactive
COM
comitative
COMP
completive
CL
classifier
DES
desiderative
DIR
directional
DUB
dubitative
EXOR
exortativo
FinNomSfx
Final nominal suffix
FUT
future
H

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High tone
HAB
habitual
IMIN
imminentive
IMP
imperative
IMPF
imperfective
INC
inclusive
INT
intensifier
INTER
interrogative
INT.MOT
internal motivation
LIT
literal
LOC
locative
NEG
negative
NEU
neuter
Obj
object
PAS
past
PERM
permissive
pl
plural
POT
potential
PRE
present
PS
possibilitive
QUO
quotative
sg
singular

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Subj
subject
SUP
suppositive
VERAC
veracity
VOC–
vocative

Notes:

(1) The top line in the example sentences in (4) represents the lexical representations of the different morphemes. In Lakondê stress is lexical for some words. As has been discussed, lexical stresses do not always appear in the surface structure. The high tone is phonologically active in the person marking of the verb. In this study, the high tone will only be indicated in verbal person suffixes, as an acute accent over the tone bearer (cf. the final /n/ in example (2)).

(2) The form -wa- which functions to mark “manual instrument” does not correspond to the noun ‘hand’, in Lakondê or Mamaindê (Kingston 1991). The Lakondê word for ‘hand’ is ***hiʔ.***

(3) For clarity’s sake, we have indicated in the morphemic representation of the examples (6)–(8) all the main stresses, whether lexical or predictable.

(4) The identification of the different verb roots by the speakers was tested as part of the elicitation sessions.

(5) The morpheme ***-ka-*** encodes several morphosyntactic functions. It may function as a benefactive, as a goal, and as a source. The occurrence of the external object is not obligatory.

(6) Another way of expressing negation is through the incorporation of the verbal root '***hat-*** ‘not have’ (ex: '*nah-hat-s a w-'tã:ń* drink-not have-CL:liquid-1Subj/IMPF ‘I don’t drink beer’).

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Polysynthesis in Dalabon

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Abstract and Keywords

This chapter gives a sketch of how polysynthesis behaves in Dalabon, a polysynthetic language of Arnhem Land belonging to the Gunwinyguan family. It focuses on synchronic issues; some additional features of Dalabon which are better understood in a diachronic perspective and hence require comparative data from other Gunwinyguan languages are discussed in Chapter 19. Particularly interesting are the rich set of adverbial prefixes to the verb, the complex methods for modifying valency (stem thematic alternations, applicatives, and reflexive/reciprocal suffixes), the rich incorporation possibilities for both nouns and (more limited) verbal stems, and the existence of a number of types of subordinating morphology.

Keywords: Arnhem Land, Gunwinyguan, Dalabon, applicatives, prosodic word, subordinating morphology

36.1 Introduction

DALABON is a polysynthetic language, of the Gunwinyguan family, spoken in central Arnhem Land (northern Australia) by a handful of fluent speakers. Apart from a sketch by Capell (1962), there is no full grammar; here I sketch its main features, focussing on its polysynthetic characteristics. Further material relevant to ongoing structural change in Dalabon can be found in Chapter 16.

36.2 Overall Typological Profile

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The Dalabon phoneme inventory (with graphemes from the practical orthography in <> where they differ from standard symbols) is as follows: p <b>, t <d>, ʈ <rd>, c <dj>, k <k>, m, n, ɳ <rn>, ɲ <nj>, ŋ <ng>, l, ɭ <rl>, r <rr>, ɻ <r>, w, j <y>, ʔ <h>, h <H>; a, e, i, o, u, ɨ <û>. As in most Australian languages voicing is not contrastive, but there is a short vs. long contrast in medial position, written in the practical orthography by doubling the grapheme.

There are only a few morphophonemic rules: underlying forms of morphemes virtually always surface directly, except for the optional reduction of *-yelûng-* to *-lng-* as mentioned, and the flapping of /d/ to /r/ in some positions. This makes Dalabon morphology highly agglutinative and transparent, but removes some of the lines of evidence other languages provide (e.g. vowel-harmony, word-internal sandhi processes) for adjudicating on word-boundaries.

Dalabon's polysynthetic characteristics can be illustrated with the following three examples from a mythological text by Jack Chadum and Djoli Laywanga[1] about a hunter who is tricked by some *Mimih* spirits into going back to their cave, where they rob him and leave him for dead; subsequently he makes a new set of weapons and returns to wreak (p. 760) his revenge. Example (1) illustrates the predominance of verbs in a typical passage; it also illustrates the use of procliticized object pronouns (*bulu*=) which have a number of positional options (Evans 2013)—they can be separated from the verb by a few particles like negatives, can procliticize as in this example, or can further reduce and fuse into a prefix (*bulkah-*). Note also that while there is limited suffixation for TAM, most of the morphology on verbs is prefixal.

(1)

ka-lng-yurdmi-nj	bulu=ka-h-yelûng-berrû-bawo-ng
3SG.S-SEQ-run-PP	3PL.O=3SG.A-R-SEQ-many-leave-PP
bala-buh-ngong-boyenj-ni-nj	mahkih
3PL.S-because-mob-big-be-PP	because

'He ran away then and left them all, because there were so many of them.'

Example (2) illustrates several other typical characteristics of polysynthetic languages: the possibility of double argument representation in the first sentence by free and bound pronouns, the use of special reflexive/reciprocal verb forms. Less typically, it is possible to mark fully inflected verbs with case suffixes such as the locative, which, in the second and third lines forms an adverbial clause of location.

	"Marrû-kah	njing	derrhno	dja-h-bo-niyan?
(2a)	where-LOC	you	tomorrow	2SG.S-R-go-FUT
	'"Where will you go tomorrow?"			[said one Mimih to another]

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“Nahda	nga-h-bo-niyan,	kahnûn	na	kornbo
this.way	1SG-R-go-FUT	him	now	that.man

(2b) nga-me-y-kah,
1SG.A>3SG.O.IRR-get-PP-LOC
“I’ll go this way, to where I picked that feller up,

nge-y-na-rr-inj-kah”	ka-h-yin-inj.
1DIS.S-SUB-see-RR-PP-LOC	3-R-say-PP

(2c) “To where we two met up (lit. saw each other)” he said.’

Our third example illustrates the use of verb stem reduplication to indicate iteration, the incorporation of nouns such as *borndok* ‘woomera, spearthrower’ (doubled here by the external nominal *borndokno* ‘his woomera’), and the use of applicatives to bring adjuncts into an argument relation—here a comitative showing motivation for the action.

Ka-h-yelûng-djed-djedm-inj	korlkkorlk-no
3SG.S-R-SEQ-ITER-make.new.one-PP	by.night-ADV

(3)

yibungkarn-walûng=kûn	borndok-no=mûn
himself-ABL=GEN	woomera-3SG.POSS=only

(p. 761)

bûla-buh-borndok-murri-murridjka-ng	mahkih
3PL.A(/3SG.O)-because-woomera-ITER-break-PP	because

‘Then he made a new (woomera), (working) by himself through the night. Because they had completely broken up his woomera.’

There are no genders/noun classes, but Dalabon employs a half-dozen case suffixes (marked phrase-finally): ergative/instrumental *–yih* (glossed simply INST), ablative *-walûng*, locative/allative *-kah*, genitive/purposive *-kûn*, temporal *-kûno*, comitative *-dorrûng(h)*, and privative *-dih*. Further nominal morphology includes a set of possessor markers like *-ngan* ‘my’ and *-(r)no* ‘his/her/its’. Possessive relationships are doubly marked, by possessor suffixes on the possessed noun and genitive markers on the possessor (4a, b).

nah-ngan-kûn	wurlkûn-djan-rno
mother-1SG.POSS=GEN	younger.sibling-FEM-3SG.POSS

(4a) ‘my mother’s younger sister’

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djikka-no kûrdûkûrd-ngan-kûn
(4b) breast-3SG.POSS wife-1SG.POSS-GEN
'my wife's breasts'

Certain case markers can attach to phrase-final verbs in adverbial subordinate clauses; (2b, c) illustrate such a use with the locative *-kah*; and (5) is an example of the genitive used in a purpose clause. The use of case-suffixing on verbs to signal interclausal relations is widespread in Australian languages, though it is more commonly associated with dependent-marking than with head-marking languages (Dench and Evans 1988).

kardûko ngayh-mele-monwo-yan=ngan,
maybe 1SGA/3SG.O:HORT-swag-prepare-FUT=1SG.POSS

(5) ngayh-yong-iyan-kûn
1SG.S:HORT-sleep-FUT-GEN
'I better make up my swag well (since it's cold), so I can sleep.'

Morpheme boundaries coincide with syllable boundaries except in two parts of the grammatical word: (a) tense/aspect/mood suffixes, which may form rhymes or codas added to C(V) initials drawn from the lexical stem, for example *bo-ng* [hit|go-P.PFV] 'hit/went' (b) the right edge of the pronominal prefix, where realis, sequential, and subordinating morphemes may be part of the rhyme, as exemplified by the initial *kah-* prefix in (3).

Table 36.1 gives some statistics about word-length and morphological complexity for two Dalabon texts, recorded by the present author from the last generation of fluent speakers. The first is an autobiographical narrative, the second a mythological text. As can be seen, verbs comprise just over a third of the words in the texts (average 35.24%), are 44 per cent (p. 762) longer in terms of numbers of syllables than the average word in the corpus (i.e. a ratio of 4.39 syllables to 3.05), and have on average 7.35 morphemes.[2]

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Table 36.1 Some statistics on verbs and complexity in two Dalabon texts

	Total number of words	Number of verbs	% of verbs / total words	Average number of syllables per word	Average number of syllables per verb	Average number of morphemes per word
My life	368	117	31.79	2.93	4.12	6.65
Naworneng	350	136	38.86	3.18	4.64	7.95
Total	718	253	35.24	3.05	4.39	7.35

‘My life’ (Alice Boehm, recorded 1993) and ‘Mimih and Naworneng’ (Jack Chatum and Don Bunandjawa, recorded 1992)

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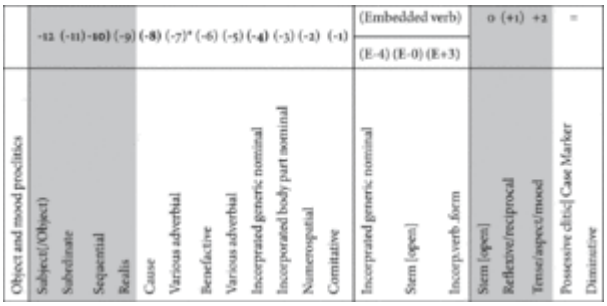
Having sketched its overall typology, we now turn to a more systematic examination of Dalabon's polysynthetic characteristics.

36.3 Morphological Structure of the Verb

As Figure 36.1 shows, it is possible to embed a maximum of one 'incorporated verb', which takes a special gerundivizing suffix to prepare it for incorporation before the main verb stem; this may in turn incorporate its own nominal (§36.6.3). The grey shading shows the obligatory elements found in all verbs, namely argument indexation: one for monovalent, two for di- or tri-valent.[3] Case, possessor markers, or a diminutive may follow the verb, as exemplified in (2), (5), and Chapter 16 (12)–(13); so far there are no examples of two or more of these co-ocurring. Case-markers are true suffixes, whereas the possessor markers are more like clitics and occasionally occur on other hosts (e.g. in negative *mak ka-no* [NEG 3SG.IRR-3SG.POSSD] 'It's not his' (Maia Ponsonnet p.c.). (p. 763)



Click to view larger

Figure 36.1 A template of the most important aspects of Dalabon verbal structure

36.3.1 Pronominal prefixes

Dalabon has a rich set of pronominal prefixes for both subject and object, where object is to be taken in a broad sense that includes indirect objects and other types of objects derived by applicatives (benefactives, comitatives).

The person–number combinations distinguished in the prefix set, for the two speakers who had the formally neatest system,[4] are shown in Table 36.2. These are just the basic set, and derived paradigms for other modal values are not shown here, but an idea of their relation to the base forms can be gained by comparing the 3rd minimal forms for realis *kah-,* irrealis *ka-*, apprehensive *wûkû-*, purposive *kuku-*, hortative *kayh-,* and subordinate *kaye-*. Note the mismatch between the phonologically most basic form, the irrealis *ka-*, and the statistically commonest form, the irrealis *ka-h-*, which attaches a final glottal stop to the irrealis form.[5] These prefixes can be combined directly with the TAM-

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suffixed forms of intransitive verbs to give forms like *ngahboniyan* ‘I will go’ (√*bo* ‘go’, -*niyan* ‘FUT’), *yahboniyan* ‘you and I will go’, etc.

As can be seen, there is a three-valued number system. This version of the paradigm can be neatly analysed as a minimal vs. unit augmented vs. augmented system, with *–rra-* indicating ‘unit augmented’, *-la-* indicating ‘augmented’, and all minimal and disharmonic forms being monosyllabic (with two of the disharmonic forms based on the corresponding minimal form).[6] **(p. 764)**

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Table 36.2 Intransitive pronominal prefixes (irrealis forms)

	1st exclusive	**1st inclusive**	**2nd**	**3rd**
disharmonic	*nge-*	*dje-*	*de-*	*ke-*
minimal	*nga-*	*ya-*	*dja-*	*ka-*
unit augmented	*yarra-*	*ngarra-*	*narra-*	*barra-*
augmented	*yala-*	*ngala-*	*nala-*	*bala-*

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Table 36.3 Alternative analysis of the pronominal prefix system for speakers who lack the form *ngala-*

	1st exclusive	**1st inclusive**	**2nd**	**3rd**
disharmonic	*nge-*	*dje-*	*de-*	*ke-*
singular	*nga-*		*dja-*	*ka-*
dual	*yarra-*	*ya-*	*narra-*	*barra-*
plural	*yala-*	*ngarra-*	*nala-*	*bala-*

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However, this neat system is not actually what most Dalabon speakers use, since they lack the form *ngala-*, extending *ngarra-* to all inclusive first person groups of more than two, as shown in Table 36.3. Semantically, this gives a more conventional singular/dual/plural system; the alignment of monosyllabic basic roots still tracks minimal number, but the semantics of the *–rra-* and *–la-* formatives is no longer as neat.

The 'disharmonic' prefixes denote groups of two whose members are on 'different sides' in some way. They are all monosyllabic, like the minimal-number row in Table 36.2, and all share the vowel *e-*. The prototypical metalinguistic use of the 'harmonic' vs. 'disharmonic' contrast (Hale 1966), originally described for Dalabon by Alpher (1982), is for types of kinship relation between the set's members: relations between even-numbered generations (siblings, spouses, grandkin) take harmonic prefixes (e.g. *kakkakno barrah-bon* 'the grandparent and grandchild are going'), while those between odd-numbered generations (parents/children, uncles/nephews, aunts/nieces etc.) take disharmonic prefixes (e.g. *kardakno keh-bon* 'the uncle and nephew are going'). *Kakkakno* and *kardakno* are 'dyadic kin terms' (Evans 2006a) which denote pairs of kin as indicated.

The harmonic vs. disharmonic contrast expresses a number of other functions in addition to the kinship contrast just given. Firstly, they regularly denote membership of contrasting categories, for example indigenous and non-indigenous (Alpher 1982 gives examples like 'the white man and I will go') or enemies like the Mimih and Naworneng as in example (2b), (2c). Secondly, it is frequently used to denote actions involving two participants moving from opposite directions, as when two hunters are burning a fire drive from opposite sides of a valley. Thirdly, it can be used to disambiguate reflexive and reciprocal readings of the suffix *–rrû-: barrah-nanh-na-rrû-n* [3DU.R-ITER-look.at-RR-PR], with the harmonic dual form, can mean either 'the two of (p. 765) them look at themselves' or 'the two of them look at each other', whereas *keh-nanh-na-rrû-n* [3DU.DIS.R-ITER-look.at-RR-PR] can only mean 'the two of them look at each other', and is then applied regardless of kinship relations between the two parties. A fourth and highly unusual use is to distinguish different types of control in complements of verbs like 'want'. The conjunct situation—for example, 'she wanted to come'—is expressed by concatenating the verb 'want' in the realis with the complement in the purposive form (6a); the disjunct situations (e.g. 'she wanted me to come') uses the benefactive applicative on 'want' to make the second subject a derived object of the main clause but otherwise uses a comparable construction (6b). However, in partially disjoint constructions in which the higher subject is included in the set denoted by the complement subject, the complement clause uses the disharmonic prefix (6c)—as if metaphorically coding the 'coming together from opposite sides' of the two participants' intentional trajectories.

(6a)

Dabarngh	ka-h-djare-minj	kuku-bo-ni.
yesterday	3SG.S-R-want-PP	PURP.3SG.S-go-IRR

'Yesterday she wanted to go.'

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	Ka-h-marnû-djare	ku-nga-bo-ni.
(6b)	3SGA>1SG.O-R-BEN-want	PURP-1SG.S-go-IRR
	'She wants me to go.'	
	Ka-h-marnû-djare	nge-h-bo-niyan.
(6c)	3SG>1SG-R-BEN-want	1DIS.S-R-go-FUT
	'She wants us (me and her) to go.'	

The situation with divalent verbs is more complex, owing to:

(a) the presence of some double-indexing portmanteaux (e.g. *dja-* '3SG.A>2SG.O',[7] *djirra-* '3DU.A>2SG.O')
(b) the derivation of divalent from monovalent prefixing forms by vowel-substitution if disyllabic (e.g. *barra-* '3DU.SUBJ' > *bûrra-* '3DU.A>3SG.OBJ'; *yala-* '1PL.SUBJ' > *yila-* '1PL.A>3SG.OBJ'), and a special form for 2sg subjects (*dja-* '2SG.S', *da-* '2SG.A>3SG.O'). If no further material is present, these are interpreted as having a third singular object, but it is possible to get other objects by adding pronominal proclitics, so that a more accurate gloss would be e.g. '3DU.A>[unspecified]O' for *bûrra-,* 2SG.A>[unspecified]O' for *da-*, etc. Thus *bûrrah-nan* 'they two see him/her/it' but also e.g. *njel burra-h-nan* 'they two see us (>2)' where *njel* is '1PL subject or object'; likewise *dah-nan* 'you see him/her/it' but also *njel dah-nan* 'you see us (pl)' . These pronominal proclitics allow varying degrees of phonological integration into the verb, from free word to reduced prefix—see Evans (2013). (p. 766)
(c) extensive patterns of syncretism use systematic referral to recycle more basic meanings with 3rd person objects into those with 1st person objects (e.g. *bûrra-* '3DU.A>3SG.O; 3DU.A>1SG.O'), followed by a second recycling which extends forms meaning '3>Speech Act Participant' to cover cases where the transitive subject is the other speech act participant. Thus *bûrra-*, already extended once from 3DU.A>3SG.O to 3DU.A>1SG.O as we just saw, gets extended further to 2DU.A>1SG.O, while *djirra-* '3DU.A>2SG.O' (see (a)) gets extended to '1DU.A>2SG.O'. This rather complex system forms part of an areal tendency among head-marking languages in Arnhem Land to deal with subject+object combinations involving speech-act participants through various methods of 'pragmatic disguise' (Heath 1991), and is described in detail in Evans et al. (2001).

36.3.2 Cause

The prefix *buh-*, following the pronominal prefix zone, can signal a causal relation ('because'), as already exemplified in (3).

36.3.3 Adverbial prefixes

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Dalabon has a rich set of adverbial prefixes, some preceding and some following the benefactive prefix; our corpus is not large enough to determine the exact position for each, and it is possible that some are compatible with either position. These include quantifying prefixes (*djarrk-* 'acting together', *bebbe(h)-* 'distributive'), extent quantifiers (*kakku-* 'properly' (7), *woh-* 'partly'), numerospatial quantifiers (*ngong-* 'many', *mokûn-* 'in a bunch', *njon-* 'big mob', *kaberrk-* 'flock', *berrû-* 'many', *karra-* 'many'), spatial/moral mismatch (*warrkah-* 'in the wrong place, wrongly' (21)), adverbials of repetition and minimization (*yawoyh-* 'again', *dja-* 'just'), aspect and sequence prefixes (*bangmû-* 'not yet', *barlanh-* 'nearly', *yelûng-* [8] 'then, next'), spatial prefixes (*bobo-* 'flat', *larra-* 'in the sun', *darnh-* 'close up', *delûng-* 'hanging', *lambarri-* 'lying on back', *malk-* 'far off', *neyneykûn-* 'propped up, leaning against', *nu-* 'underneath, concealed inside' (8)), diurnal prefixes like *kangH-* 'by night' and *rdeh-* 'in the morning' (9), and sociocognitive prefixes like *djong-* 'afraid', *molkkûn-* 'unbeknownst (to someone given by context)', *kuni-* 'sneaking up on, intending to attack', *kohyi-* 'looking around attentively for' (12), *kohkirrng-* 'keeping an eye on' (13), and *wakku-* 'for nothing, in vain'.

(7)

keninjhmah	nun	kanh	birnday	ka-h-nu-burlhmû,
what	DEM	DEM	grass	3SG.S-R-hidden-emerge(PR)

ka-h-birnday-roka-n?
3SG.S-R-grass-move-PR
'What's that moving in the grass there?'

(p. 767)

(8)

Nga-h-yo	malûng	ka-h-barrhbu-ninjmey	
1SG.S-R-sleep.PP	first	3SG.S-R-dawn-PI	food

nga-rdeh-ngu-ninj,	brekfidj-kuno.
1SG.A>3SG.O-morning-eat-PI	breakfast-TIME

'I slept first, and when it was dawning I ate in the morning, at breakfast time.'

(9)

rakalk	bala-h-kakku-kom-djarr-djarrhmi-nj	kahkeno
sorcerer	3PL.S-R-properly-neck-ITER-crane-PP	nothing

mak	bula-ne-y.
NEG	3PL.A/3SG.IRR-see-IRR

'Sorcerers, they really craned their necks, but nothing, they didn't see.'

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A number of these adverbial prefixes originate from incorporation of nouns or adverbials, and have counterparts in which the relevant morpheme occurs as a separate word—typically followed by the suffix *–no*, whose numerous functions include the marking of part nouns and time adverbs. The nominal *kangH-no* 'night, night-time', for example, can occur as an external NP (10), or the root *kangH-* can be used as an adverbial prefix (11):

(10)

KangH-no	barra-h-bo-ng.
night-PRT	3DU-R-go-PP

'They went (hunting) by night.'

(11)

Bala-h-kangH-bo-ng,	mak	bulu	ka-marnu-barrhbu-y.
3PL-R-night-go-PP	NEG	3PL.O	3SG.S.IRR-BEN-dawn-IRR

'They travelled by night, it never dawned on them (while they were travelling).'

Others originate from more complex patterns of incorporation. For example, both the adverbial prefixes *kohkirrng-* 'while keeping an eye on' and *kohyi-* 'looking around attentively for' are built on the root *koh-*, which is not a freely combinable morpheme in contemporary Dalabon but has far-flung cognates suggesting an original meaning of 'eye (as organ of perception)', for example *kuwa* '(metaphorical) eye' in Kayardild. *Koh-yi-* adds the proprietive suffix *–yi* (thus 'with (one's) eye') and *kohkirrng-* is compounded with an otherwise-unattested element *kirrng*.

(12)

Bala-h-kohyi-warddinj	yirrhwalûng	balaybbalay
3PL.S-R-attentive-standPP	down	far

dulum-kardabun-kah.
hill-tall-LOC
'They stood looking down attentively from a distant mountain top.'

(13)

Bûka-h-dja-durduka	wanjingh-yih	kinikin	rok-kah
3SG.A>3SG.H.O-R-just-chase(PR)	one-ERG	other	side-LOC

ka-h-di	lirri-no	ka-h-bon,	ka-h-yurdmû
3SG.S-R-stand(PR)	side-PRT	3SG.S-R-go-PR	3SG.S-R-run(PR)

bûka-h-kohkirrng-duyika.
3SG.A>3SG.H.O-R-keeping.an.eye.on-chase(PR)

'One (dingo) chases him now from a different side, one stays in front while one goes around from the side; he runs along, chasing (his prey) while keeping an eye on him.'

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(p. 768) The prefix *neyneykûn-* is a reduplication of the root *ney* 'elbow'[9] plus genitive *–kûn*. It shows how adverbial prefixes can originate as incorporates carrying a case suffix, which supplies the relevant manner interpretation—literally 'they-elbow-elbow-of-lay' for 'they lay on their elbows', 'they-eye-with-stood' for 'they looked attentively', etc. (cf. Chapter 16, §36.4.3).

36.4 Argument Structure and Valency-Changing

With external NPs largely only present for emphasis, word order relatively free, and core case-marking optional, the job of coding and building argument structure falls mostly to the verb.

For a given verb, the argument structure is a product of the intrinsic valency of the stem, any applicatives that may be present, and (if present) the reflexive/reciprocal suffix, which decreases valency.

(i) the INTRINSIC STEM VALENCY (monovalent/intransitive, bivalent/transitive, or trivalent/ditransitive). There are no 'labile verbs'—every stem has a fixed valency. There are a few dozen pairs of verbs corresponding to 'sink', 'break', etc. in English: in Dalabon these have a common 'prepound' (e.g. *bak* 'break'), but the choice of thematic (intransitive *–mû* vs. transitive *–ka* or *–wo*) always makes the transitivity clear, e.g. *bakmû* 'break (v.i.)', *bakka* 'break (v.t.)'. Sample verbs of each type (one simple, one complex) are: intransitive *bon* 'to go', *bobmû* 'smell (v.i.)'; transitive *nan* 'see', *bobnan* 'smell (v.t.)'; ditransitive *won* 'give', *buyhwon* 'show, teach'.
(ii) INCREASES IN VALENCY effected by one or more applicative prefixes: benefactive *marnû-*, comitative *ye-*, instrumental *ye-* (see §36.5 on reasons for distinguishing them). Examples of valency-increasing pairs or triplets are: *barrhbun* 'dawn', *marnû-barrhbun* 'dawn break on someone as they travel' (11); *nan* 'see', *ye-nan* 'see with' (14), *yung* 'put down (v.t.)', *marnû-yung* 'put down for' (15), *dudjmû* 'return', *ye-dudjmû ~ yerrudjmû* 'return with, bring/take back', *marnû-ye-dudjmû* 'return with for (p. 769) someone; bring/take back for' (16). It is the derived valency built up by the combination of the various applicatives which serves as input to the system of pronominal prefixes: the object prefix or proclitic can index derived objects, whether comitative (14) or benefactive (15), (16).

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djakih naworneng bûka-h-ye-burlhmi-nj
there Naworneng 3SG.A>3SG.H.O-R-COM-appear-PP

(14) bûla-h-ye-na-nj
3PL.A>3SG.O-R-COM-see-PP
'They saw him appear there with Naworneng.'

Burrumat yang bulu nga-h-marnû-yung-iyan
then(Kriol) language 3PL.O 1SG.A-R-BEN-put-FUT

(15) nga-h-yolkyolkmi-yan.
1SG.A>3SG.O-R-straighten.up-FUT
'Then I'll put the language down for them, I'll straighten it up.'

(16)
ka-h-njerrh-buyhwo-ninj yo ka-yi-yam-inj
3SG.A>1SG.O-R-body-show-PI yes 3SG.A>3SG.O-SUB-spear-PI

yibun-walûngkû kah-marne-yerrûh-ye-rrudjm-inj bulu-ngan,
3SG-self 3SG.A>1SG.O-BEN-ITER-COM-return-PP father-my
'He showed me what they looked like, yeah, the ones that he had speared himself, he kept bringing them back for me, my father did.'

(iii) DECREASES IN VALENCY effected by the reflexive/reciprocal suffix *–rr(û)-*, which reduces the verb's valency by one, e.g. *na-n* 'see, look at (v.t.)', *na-rrû-n* 'see, look at self/each other (v.i.)'. The difference in transitivity can be demonstrated using the prefixes *barra-* '3DU.S' vs. *bûrra-* '3DU.A>3SG.O': *bûrrah-nan* 'the two of them see/look at him/her/it', *barrah-narrûn* 'the two of them look at themselves / each other'. Note that whenever the reflexive/reciprocal suffix is applied with reciprocal meaning, the intransitive prefix series is used (i.e. no object of any type gets indexed, whether underived, or introduced by some applicative), even when two arguments are still present, as shown in (17) by the incorporation of *yaw* 'child'.

Barra-h-marnû-yaw-nanHna-rrû-n
(17) 3DU.S-R-BEN-child-care.for-RR-PR
'The two of them care for each other's children.'

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(p. 770) 36.5 Applicatives

Dalabon has three full applicative prefixes, with a fourth one incipient.

The benefactive *marnû-* introduces an argument which is usually a beneficiary of the action, though it may also be a maleficiary or a possessor of the absolutive argument. The new argument may be added to a basic intransitive (18) or to a basic transitive (19).The beneficiary argument is indexed in the object pronominal prefix slot, outranking any underlying object. But the argument role of any incorporated noun remains unaffected, and the incorporated noun comes between the benefactive and the stem, as was seen in (17).

(18)

Kurnh-ngan ka-ye-yaw-yung-inj ngey,
country-1SG.POSS 3SG.A>1SG.O-SUB-child-put.down-PP me
'My country which gave birth to me,

kanihdja namarndi dreamin
DEM devil dreaming

ka-ye-marne-di.
3SG.A>1SG.O-SUB-BEN-stand(PR)
'there where the devil country is my dreaming (lit is there, for/belonging to me.)'

(19)

rolû ka-h-warrkah-marnû-dulubo-ng.
dog 3SG.A>1SG.O-R-wrongly-BEN-shoot-PP
'He shot the wrong dog of mine.'

There is an etymological pair of applicatives, each with form *ye-~re-*, which appear to have originated from a comitative/proprietive suffix *–yi* or *–ye* (semantically a bit like the proprietive *–ed* in English *three-toe-d* or *long-hair-ed*) which surfed into the verb on the back of a noun (Chapter 16, §16.4.3), with the sequence [N-*ye*-V] later reanalysed from [[N-*ye*]-V] to [N-[*ye*-V]], then allowing for the omission of the incorporated nominal ([*ye*-V]). Dalabon attests these affixes both with (20) and without (21) an incorporated nominal.

(20)

Ka-h-rla-ye-yurdm-inj.
3SG-R-spear-COM-run-PP
'He ran away with spears in his body.'(DD:390)

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(21)

Manjh	nga-h-bu-ninjyi,	djenj	nga-h-ma-nginj,
animal	1SG.A>3SG.O-R-kill-PCUST	fish	1SG.A>3SG.O-R-get-PP

nga-h-ye-rdudjm-inj	nah-ngan-kûn.
1SG.A>3SG.O-R-COM-return-PP	mother-1SG.POSS-GEN

'I used to kill animals, and get fish, and I'd bring them back for my mother.'

(p. 771) Dalabon has taken the grammaticalization of *ye-* one step further, however. The combination *ye-V* can mean either 'do with (in possession/company of/because of) O', that is, the original comitative meaning, or 'do with (using) O', an innovative instrumental meaning not found in Bininj Gun-wok. Examples of the former are *yebon* 'go with', *yeburlhmû* 'arrive with', *yeyurdmû* 'run (away) with', and *yenan* 'see with'; of the latter are *yebun* 'hit with', *yebarhdung* 'sponge up with', *yebimbun* ' (use to) paint with'.

Just looking at the verbs with their prefixes, this could be seen as a fairly normal case of affixal polysemy, comparable to the range of English 'with'. However, a different combinatorics is found with each meaning: incorporated nouns precede comitative applicatives, and introduce new entities into argument structure (22), but follow instrumental applicatives (23), and denote entities that are already the arguments of the basic verb. With both semantics and combinatorics splitting, we are warranted in treating these as two distinct applicatives, albeit historically related.

(22)

Ngale!	kardu	danj	bula-h-lerrkdji-ye-dudjm-inj	ngokorrng
hey	maybe	spear	3PL/3-R-bundle-COM-return-PP	1PL.POSS

kardu	danj-yih	derrhyahrno	bula-h-ye-burlhm-iyan.
maybe	spear-INST	in.the.morning	3PL.A>3SG-R-COM-appear-FUT

'Hey! Maybe they've brought back spear bundles [= returned with spear bundles] for us, maybe they'll turn up in the morning with spears.'

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(23)

Dulh kah-marnu-biwka,
stick 2SG.A>1SG.O-R-BEN-bend(PR)

nga-h-ye-kurnh-dulubu-yan
1SG.A>3SG.O-R-INSTR-ground-poke-FUT

nga-h-lng-kurnh-binj-iyan.
1SG.A>3SG.O-R-SEQ-ground-dig-FUT

'You bend the stick for me, I'll poke the ground with it, I will dig the ground.'

This development has two important implications for our views of how polysynthetic structures evolve. First, the possibility of incorporating nouns with their affixes creates a pathway for the affixes to be reanalysed as applicatives, as shown in Chapter 16, §16.4.3. Second, the order of morphemic elements is not simply frozen syntax but can be reworked—perhaps by analogy—on the basis of other ordering templates. It is possible that in this example the ordering Applic-N-V, found with the benefactive applicative, supplied a template for the innovative Instr-N-V order found with the instrumental applicative (as in (23)). Alternatively, the sequence N-V has been reanalysed as a new unit, to which *ye-* is prefixed in the same way that it can be with underived verbs. Either way, the origins of the instrumental applicative as a nominal suffix show that some process of reanalysis must have occurred, to account for why it is now prefixed to incorporated nominals.

There is another construction which might be thought to have the potential to create an applicative, namely the incorporation of a noun plus the suffix *-kûn~-kun*, which functions (p. 772) as a genitive/purposive when attached to nouns in external NPs. This construction is used with some general incorporated adverbials (e.g. *molk-kûn* 'unbeknownst' (24), *neyney-kûn* 'propped up on one's elbow'), but also with incorporated nouns denoting locations of the action, for example *dun-* 'cave, hollow' (25).

(24)

Kardû nga-h-molk-kûn-do-niyan bo
maybe 1SG.S-R-unbeknownst-GEN-die-FUT PART
'I might die sometime without anyone knowing about it.'

(25)

Bala-h-djarrk-dun-kun-ni, bala-h-djarrk-dun-kun-daddi.
3PL.S-R-together-cave-GEN-sit(PR) 3PL.S-R-together-cave-GEN-be.inside(PR)
'They are all together in the cave, they are all together inside the cave.'

This piggybacking of the suffix *–kûn* into the verb might be expected to lead in time to a locative applicative, in much the same way as the erstwhile nominal suffix *-ye* has evolved into a comitative applicative. However, this is not yet an appropriate synchronic analysis,

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for two reasons: (a) unlike the case with the comitative and instrumental applicatives, the erstwhile suffix (*-kûn*) cannot occur without an incorporated noun to attach to; and (b), unlike all the other applicatives (benefactive, comitative, instrumental), the incorporated N-*kûn* construction does not impact on the verb's valence: intransitive verbs with incorporated N-*kûn* remain intransitive, and take the monovalent prefix set (*bala-* '3PL.S' in (25)), whereas verbs prefixed with any of the applicatives take the divalent set.

A final point worthy of note is that even though *dun-kûn* [cave-GEN] is certainly a well-formed external nominal expression (with the meaning 'of/for the cave'), it cannot actually be used to encode location when used externally; for this the locative case would be used. Thus an external alternative to the last example is:

	Bala-h-djarrk-ni	dun-kah	/	*dun-kûn
(26)	3PL.S-R-together-sit(PR)	cave-LOC		*cave-GEN
	'They are all together in the cave.'			

For these reasons, then, the construction just sketched has a *sui generis* status: it is the only synchronically attested[10] construction in which the sequence N-Case appears incorporated inside the verb, but the meaning it then has is different from what the same sequence would have if used externally, and conversely a different case suffix would be used to express the same meaning without incorporation. While this illustrates the productivity of the system, in terms of incorporating morphologically complex material, it also shows that there is no straightforward semantic mapping between unincorporated and incorporated variants.

(p. 773) 36.6 Verb-Stem Structure (Complex Verb Stems)

36.6.1 Noun incorporation

Incorporated nominals can have one of three distinct functions:[11]

- **(a)** expressing part-whole relationships
- **(b)** expressing 'generic' semantics
- **(c)** expressing secondary predicates

Each function is linked to an argument role in the same way—that is, to intransitive subjects (of monovalent or semi-transitives by adding the benefactive to an intransitive) or objects (underived, of a transitive, or introduced by a comitative applicative prefixed to

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an intransitive). However, their semantics are rather different, as is the size of their lexical class.

The valency of a verb is unaffected by noun incorporation: as is the case with Mithun's 'Type III incorporation' (Mithun 1984b), the incorporated noun offers semantic specification of one of the arguments (basically the absolutive, plus comitative applicatives) without altering the argument structure. The external noun *yang* in (15), for example, could be incorporated without any other changes being made: *bulu ngah-marnû-yang-yungiyan* 'I will set the language down for them'. Incorporated body-parts and secondary predicates replicate this basic alignment: incorporated body-parts are those which form part of the absolutive (or comitative) entity, while incorporated secondary predicates describe attributes of the absolutive.

Part nominals denote the part of the participant involved in or impinged upon by the action (e.g. I-arm-ascended for 'I raised my arm', he-me-leg-touched for 'he touched me on the leg'). Though these are sometimes known as possessor-raising constructions in the typological literature, this is a misnomer because even if the nominal root were not incorporated the 'whole' noun would still occupy the same syntactic slot (see Evans 1996, 2003a, for fuller discussions of this position). It is more appropriate to treat the relation of part and whole nouns as a type of syntactic apposition (Hale 1981), in which part and whole noun bear the same syntactic relation to the predicate. Part nominals, when unincorporated, obligatorily take a suffix denoting their possessor; this is dropped when they incorporate. The set of part nominals is open (i.e. any part nominal can incorporate); note that the term 'body part' is a little inaccurate since the class also includes other 'person parts' (Chappell and McGregor 1996) such as *melk-no* 'voice', *ngey-no ~ ngi-no* 'name', and *wungurr-no* 'shadow'. An example showing incorporation of the term *kodj-no* 'head' is (27); for an example of incorporation into the intransitive verb *barrmû* 'be open' see (37).

(27)
Bidjdjirri yila-h-kodj-ba-ng.
file.snake 12PL.A>3SG.O-R-head-bite-PR
'We bite the heads off file snakes.'

(p. 774) *Generic nominals* denote a range of inanimate objects, typically of a generic nature. There are about forty such nominals, including *bad* 'rock', *bolh-no* 'track, road', *dun-no* 'hole, hollow, cave, door' (25, 26), *durn-no* 'string, rope', *kowk* 'humpy, house', *kurnh-no* 'place, country', *madj-no* 'swag, possessions', *yang ~ yang-no* 'word, language, noise'. As these illustrate, most include the intrinsic part-suffix *–no*; this is dropped when the root is incorporated (28), (29). The only animate generic nominal is *yaw-rno* 'small one, child', which can be incorporated with the meaning 'child, baby' (17).

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(28)

Nga-h-won-iyan	ka-h-dun-yenjdju-ng.
1SG.A>3SG.O-R-listen-FUT	3SG.S-R-hollow-speak-PR

[Tapping trees with the back of a tomahawk to see which one has been hollowed out and will make a good didgeridoo:]
'I will listen for the hollow speaking, for it to make a hollow sound.'

Dolng-no	ka-h-dolng-dokka-ng
smoke-PRT	3SG-R-smoke-get.up-PP

(29)

njel	ka-h-mukka-ng	dolng-no-yih
12PL	3SG-R-cover-PP	smoke-PRT-INST

'Smoke rose up, smoke covered us.'

In terms of the relationship between semantic specification and overt lexical representation, all of the four following combinations are possible: (a) neither incorporated nor external noun, for example (28) could be reworded as *ngahwoniyan kahyenjdjung* 'I will hear it sound', (b) noun is external rather than incorporated (15), (c) noun is incorporated but not external (23), (d) there is lexical representation by both an external and an incorporated noun (29), (30).

(30)

kanh	langka-no	ka-h-langka-di
DEM	billabong-PRT	3SG-R-billabong-stand(PR)

'(Talking about how trees growing along it betray the presence of a river) there is a billabong "standing" there (in the form of its trees).'[12]

12

The availability of all four possibilities speaks against the sort of movement account proposed for noun incorporation by Baker (1995), who sees incorporated nouns moving out of their NP head position to inside the verb. If only (b) and (c) were found, the Bakerian account would be plausible, but (d) in particular cannot be reconciled with movement.

(p. 775) Nonetheless, some features of incorporation described by Baker are true of Dalabon, as for the languages he cites. Most importantly, incorporated generic nominals can be modified, for example by possessive pronouns (cliticized *=ngu* 'your' in (31), and *=ngan* 'my' in (5)) and demonstratives (*nûnda* 'this', also in (31)).

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(31)

Numu	dah-karrû-warhw-iyan!
NEG	2SG.A>3SG.O-song-forget-FUT

da-h-lng-karrû-yidjnja-n=ngu	nûnda,
2SGA>3SG.U-R-SEQ-song-have-PR=2SG.POSS	DEM

dja-h-ngabbu-n	wangka	bla	yu.
1SGA>2SG.O-R-give-PR	wangga	POSS	you

'Don't forget the song! You've got this song of yours now, I gave you a *wangga* song.'
[Alan Maralung, Minmin]

Secondary predicate incorporations give depictive or resultative predications on the absolutive argument. Consider the root *moy(h)* 'sickness, state of being wounded'. This can occur as a free nominal (32), as a main predicate (then prefixed with a pronominal prefix), for example *kah-moyhno rolu* 'it's sick, the dog', or as a secondary predicate on intransitive subjects (33) or object as in *bûlah-moyh-bong* 'they strike it (the kangaroo) (to be) wounded'.

(32)

wurrhwurrungu	kardû	marrhkuno,
old.person	maybe	when

yelekmanj	kardû	moyh-yih	ka-h-bu-n
not.yet	maybe	sickness-INST	3SG.A>1SG.O-R-hit-PR

'I'm an old woman now, who knows when (I'll pass away), but it seems sickness hasn't killed me yet.'

(33)

ka-lng-moy-yurdm-inj	yibungkarn
3-SEQ-wounded-run.away-PP	himself

'he ran away wounded then by himself.'

Other commonly incorporated depictives are *njengu-* 'asleep' (*njengu-yu* 'lie asleep', *njengu-yung* 'put in a lying position, put to sleep'), *djong-* 'afraid' and *murnungu* 'one responsible for a killing', as in *kahlng-murnungu-komhminj* 'now he turned up as a murderer', *kah-murnungu-wayirninj* 'he sang as victor (having killed his enemies)' and *wûkû-murnungu-wurdihmû* 'lest he run away as a criminal'.

We have already seen that many Dalabon verbs have a complex stem comprising a 'prepound' and a root.[13] In many cases these have exactly the structure one would expect of a verb (p. 776) with an incorporated nominal, and it is likely that many have become lexicalized from just this source. Examples with the root *bun* 'hit' are *danjbun* 'spear (v.t.)' (*danj* 'spear (n.)') and *ngibun* 'name (v.t.)' (*ngino ~ ngeyno* 'name'). Three tests can

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be used to distinguish such lexicalized compounds from the types of incorporation described above: (a) the coexistence of incorporated and unincorporated structures (e.g. both *yang ngahmarneyungiyan* and *ngahmarneyangyungiyan* for 'I will set down the language'—as already discussed), (b) accessibility of the incorporated nominal for modification by possessives, numerals, demonstratives, or other modifiers, (c) the preclusion test—incorporated nouns preclude the incorporation of another noun in the same functional slot, whereas the denominal parts of complex verbs do not, so that from *danjbun* 'spear', for example, we can form words like *kodj-danjbun* 'spear it in the head', *yaw-danjbun* 'spear the child', and so forth.

Nonetheless, there are many borderline cases where it can be hard to draw the line: do we treat *kolk* 'liquid' as incorporated in *kolkngun* 'drink' (34), given that *ngun* 'eat' also exists? It may turn out to be more realistic to see individual combinations as arranged on a cline from maximally productive to maximally lexicalized, once we have more sensitive corpus-based studies of the language.

(34)

Mak	ngûlah-kolk-ngu-yan,	wehno,	nalu-do-n.
NEG	12AUG.A>3MIN.O-R-liquid-eat-FUT	bad	2PL.S:APPR-die-PR

'Don't let's swallow the water, it's bad, you might get sick.'

A special construction type which originates in what might be called 'delocutive incorporation' yields kinship verbs of the type 'Call K' (see Evans 2000). These verbs have the form *K-ngandung*, where K is a kin-term. On its own, *K-ngan* means 'my K' (as with *mamamh-ngan* in (35)), and the verb *dung* means 'swear at' but probably originally 'call, address' also; the origin of the construction is thus 'call O "my K" ', in other words a possessed kin-term has been incorporated into the verb 'call'. Note that only the first person singular suffix is available, regardless of how the person and number of the relevant kin would be calculated from the point of view of the primary speech act ('her grandchild' in (35)) or the reported speech event 'our aunt' in (36). This is what one would expect if a type of original direct speech ('my K') were incorporated and the combination of possessor-suffix plus *dung* lexicalized as a unit meaning 'to call K'—stress is assigned on the *ngan* suggesting *ngandung* is now treated as a single unit. The resultant type, which productively incorporates kin terms, is the only one into which terms for human categories can be incorporated.

	Mamamh-ngan	ka-h-mimi-ngandu-ng.
(35)	grandmother-1SG.POSS	3SG.A>1SG.O-R-grandchild-call-PR

'My mamam (grandmother) calls me her mimi (grandchild).'

(p. 777)

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Ya-h-djongok-ngandu-ng.
(36) 12MIN.A>3SG.O-R-aunt-call-PR
'You and I call her aunty.'

36.6.2 Verbal incorporation

To a limited extent, it is possible to incorporate one verb stem into another; the incorporated verb may have its own incorporated nominal. For example, *barrmû* 'be open' can incorporate its own body-part noun (thus *dalû-barrmû* 'have one's mouth open') , and this in turn can be incorporated into *bon* 'to go', meaning 'to go along with one's mouth open'. Note that the incorporated verb is suffixed with the comitative *ye* before incorporation into the main stem.

(37)

djamard	kah-dalû-barrme-yi-bon,	yirrh	wah-kah
archer.fish	3SG-R-mouth-be.open-COM-go-PR	under	water-LOC

'The archer fish goes along with its mouth open under the water.'

This pattern is most common with motion verbs (another example, *kah-komhmi-komhmi-wiyan* 'he'll keep following along', incorporates *komhmû* 'to keep going' into *wan* 'to follow'). With *bon* 'go', in addition to its associated motion use, the construction can also express an imminent future / continuous present, for example *kah-mudda-yibme-yi-bo-n* [3SG.R-sun-sink-COM-go-PR] 'the sun is setting now / about to set'.

In addition to these associated motion uses, verbs may also incorporate into the verb *won* 'give', with a causal meaning. Example (38) illustrates this with the incorporated verb *burlhka* 'make appear, make come out'; IVF stands for 'incorporating verb form', the other morphological device besides the comitative for accommodating one verb inside another. Another example is *yin* 'to do, say', *yinmi-won* 'tell someone what to do, get someone to do something'.

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(38)

Dulu-djerrngû-no	kanh
meaning-new-3SG.POSS	DEM

djah-marnû-burlhke-yh-wo-ng		kanh
1SG.A>2SG.O-R-BEN-make.appear-IVF-give-PP		DEM

Dalabon-walûng	yala-h-yi-n
Dalabon-ABL	1PL-R-say-PR

'I brought out (remembered and said) a new Dalabon word for you, that's what we say in Dalabon.'

36.7 Morphology of Non-Verbal Predicates

A substantial amount of the 'verbal' morphology given in Figure 36.1 and exemplified throughout this chapter, can be applied to predicates more generally, especially nominals (p. 778) (often further followed by suffixes like *–dih* 'without', *-dorrûng(h)* 'with', and *–yah* 'only') and adjectival expressions like *malkah-ngan* 'on my ownsome'. Cardinal among the prefixes that can be so used are (a) the subject prefixes, (b) the realis prefix *–h-* , (c) the 'just' adverbial prefix *dja-*, and (d) the sequential prefix *–yelûng ~ -lng*. This is still a rather small subset of the total number of prefixal possibilities, but suggests that sizeable sequences of the prefixal zone are independent enough to be freely combinable without being linked to verbal stems in undissociable chunks. Some examples are (39), with the prefix sequence *kah-* (*kah-ngirringirrmiyi*), and (40) where the occurrence of *ngah-djalng-* 'and now I …' on a (borrowed) adjective is immediately followed by the identical structure with a native Dalabon verb.

(39)

ka-h-ngirri-ngirrmi-yi	ka-h-yenjdjung.
3SG.S-R-REDUP-white-PROPR	3SG.S-R-talk(PR)

Nûrnh-ma	njerrh-ngurlmi-yih	rangem	wolmud
all.those.ones	body-black-PROPR	boy	girl

ka-h-dja-yelûng-yingkilidji-yah
3SG.S-R-just-SEQ-English-only

'The one who is fair-skinned can talk (Dalabon), but all those black-skinned boys and girls (of mine) just English.'

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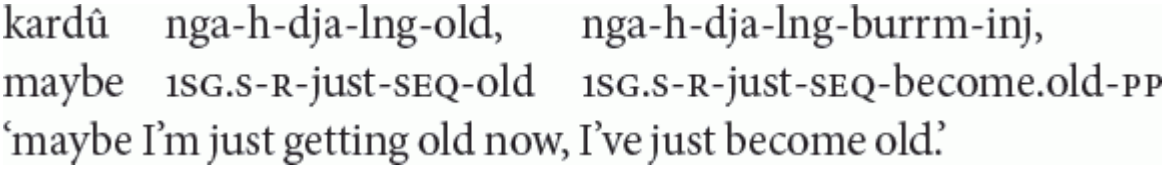
(40)



36.8 Subordination and Interclausal Relationships

Subordination does not occur with high frequency in Dalabon—only around 5 per cent of clauses are formally subordinated. This squares with observations by Heath (1975) and Mithun (1984b) that many of the functions accomplished in languages like English by syntactic subordination are discharged in polysynthetic languages by various verbal affixes, which bring information that would require a separate clause in English into the ambit of material expressed on the verb, for example prefixes specifying the instrument used, instead of a dependent clause like 'using an X'. In many cases, intonation alone is used to integrate inflected verbs, particularly to express ideas of cotemporality (Ross, Fletcher, and Nordlinger 2016).

Nonetheless, Dalabon possesses a considerable number of subordination strategies, signalled overtly on the verb at a number of sites. Many of these have already been exemplified: the 'because' prefix *buh-* (1), (3), the use of case suffixes like the locative (2c), the genitive (5) on the main verb to form adverbial clauses of location or purpose, and the use of special (p. 779) subordinate verb prefixes (like *–y(e)-* in ((2c), (18)), ultimately derived from the comitative affix), as well as other prefixes with more specific modal meanings like purposive *ku-* (6b) 'in order to' and apprehensive 'lest' (*wû-* and other variants like *wi*). The strategy of incorporating one verb stem (plus suffix) inside another ((37), (38)) can also be seen as a type of subordination, but morphological rather than syntactic. This is in addition to adverbial prefixes such as *molkkûn-* (24) whose felicitous translation often requires a subordinate clause in English, like 'without anyone knowing', though in Dalabon there is no structural reason to consider this subordination.

Apart from the case where one verb is incorporated inside another, subordinated verbs in Dalabon are almost always finite on most criteria: they have their full complement of argument-coding prefixes, and are specified for TAM. However, there is one type of derived nominalization, only used rarely, in which no pronominal prefixation or TAM marking is present. Thus the verb *worrkmû* 'to be/become full/sated' (e.g. *ngahworrkminj* 'I'm full') can be suffixed with the 'incorporating verb form' suffix to give *worrkmini*, which can then be incorporated into another verb (41).

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(41)

Ka-h-worrbo-n,	kardû	ka-h-madme
3SG.S-R-fly.around-PR	maybe	3SG.S-R-hungry

ka-h-worrkmin-i-yawa-rr-un.
3SG.S-R-be.full-IVF-search-RR-PR

'They are flying all around, they must be hungry and looking for something to fill them up.' (i.e. they are searching, (with the goal of) being full).

This incorporated form of the verb can then be stripped out of the verb to form the bare nominalization *worrkmini* 'being.full' (42); this can optionally be followed by a possessive suffix encoding the experiencer (who would be the subject of the corresponding verb), and/or by a case suffix such as the genitive, indicating purpose (43):

(42)

Berlmerr	ka-h-bo-n	worrkmini	ka-h-yawa-n
rainbow.fish	3SG.S-R-go-PR	being.full	3SG.S-R-search-PR

ka-h-madme-do-nj.
3SG.S-R-hungry-die-PI

'The rainbow fish goes around looking for food so he'll be full; he's hungry.'

Dabarngh	nga-h-kinj-inj	lawa	burrkunh-ko
yesterday	1SG.A>3SG.O-R-cook-PP	damper	two-DYAD

(43) worrkmini-njelng-kûn.
full-1PL.POSS-GEN
'Yesterday I cooked two dampers to keep us full up.'

A fuller account of Dalabon subordination can be found in Evans (2006b).

(p. 780) 36.9 Conclusion

In many ways Dalabon is a canonical polysynthetic language. Verbs regularly use a combination of affixation and nominal incorporation to semantically specify all their arguments, there is a rich battery of valency-changing devices to upgrade the argumental reach of basic verbs, and a host of adverbial-type prefixes as well as TAM prefixes and suffixes allow rich circumstantial specification within the morphological boundaries of the

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verb. As a result, the information load of verbs is high and counts of morpheme density in natural discourse confirm that this is regularly deployed by speakers.

A remarkable feature of Dalabon is the great transparency of its morphological components. Apart from the fusional pronominal paradigm near the beginning of the word, and the TAM paradigm near the end, all elements are formally invariant and clearly segmentable. Phenomena like excorporation, reduplication of prepounds for narrative effect, and the extraction of incorporated verb forms (see Chapter 16, §16.4.5) suggest that speakers are clearly aware of significant chunks of internal word-structure and feel free to highlight them prosodically or even move them out of the verbal word for extra effect. Conversely, the possibility of incorporating nominals while still bearing case suffixes (comitative and genitive) indicates that the units combined in verb morphology are not confined to roots.

Finally, Dalabon is interesting for the way that ongoing processes of grammaticalization are packing more material into the verb on some dimensions (pronominal object and mood prefixes, diminutive suffix, development of new applicatives, interclausal relation-marking case clitics and possessor clitics modifying incorporated nouns) while simultaneously reducing the amount on others—through excorporation and prosodic splitting of the verb. See Chapter 16 for a description of these processes, which introduce a range of differences with respect to other languages of the Gunwinyguan family.

Abbreviations

A
transitive subject
ABL
ablative
ADV
adverb
AUG
augmented number
APPR
apprehensive
BEN
benefactive applicative
COM
comitative applicative
DEM
demonstrative
DIM
diminutive

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DIS
disharmonic dual
DU
dual
DYAD
kinship dyad
FEM
feminine
FUT
future
GEN
genitive
H
human object, with 3sg subject
HORT
hortative
IDEOPH
ideophone
INCEP
inceptive
INST
ergative/instrumental case
INSTR
instrumental applicative
INTERJ
interjection
IRR
irrealis
ITER
iterative
IVF
incorporating verb form
LOC
locative
MIN
minimal number
NEG
negative (p. 781)
O
object – including direct object, indirect object, derived object
PART
particle
PCUST

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past customary
PI
past imperfective
PL
plural
POSS
possessed
PP
past perfective
PR
present
PRIV
privative
PROPR
proprietive
PRT
part-noun
PURP
purposive
R
realis
RR
reflexive-reciprocal
S
intransitive subject
SEQ
sequential
SG
singular
SUB
subordinate
12
first person inclusive

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Notes:

(1) Djoli Laywanga takes over from Jack Chadum, tag-team style, about halfway through the telling of the story.

(2) The concept of 'morpheme' is of course problematic, since many are portmanteaux, but in making these counts I used the number of feature specifications rather than the number of segmentable strings of phonemes. Thus, the prefixal sequence *djah-* , when used with an intransitive verb, has the gloss '2sgS:R' and would be counted as four morphemes. This is done because for each feature it is possible to vary it and produce a change in form, e.g. 1sgS:R *ngah*, 2duS:R *narrah*, 2sgA:R *dah*, 2sgS:Irr *dja-*.

(3) As will be explained, I use the terms mono-, di-, and trivalent to refer to the number of arguments, and intransitive, semi-transitive, transitive, and ditransitive to refer to particular mappings of arguments onto grammatical relations. Thus, both *wonan* 'hear' and *marnû-borlhmû* 'to come upon, ambush' are divalent, but only the first is transitive, while the second (derived from intransitive *borlhmû* 'appear' by prefixing the benefactive marnû-) is semi-transitive. The difference has consequences for which argument incorporates, and how reflexive/reciprocals interact with argument structure. All monovalent verbs index one argument in the pronominal prefix slot, and all di- or trivalent verbs index two; incorporated nominals of divalent verbs are coreferent with one of their arguments, while those of trivalents supply a third argument not represented in the pronominal prefix slot. Examples will be given in Section 36.6.1.

(4) David Karlbuma and Alice Boehm, both of whom I worked with in the early 1990s; other speakers had the messier system given below.

(5) The use of forms in *–h* for realis and the restriction of the morphologically more basic forms to irrealis is a Dalabon innovation; in Bininj Gun-wok a base form like *nga-* is used in almost all contexts, whereas the augmented form *nga-h-* is limited to 'immediate' aspect—see Evans (2003a: 524).

(6) The first inclusive form is built from the second person intransitive form *dja-*, and the second person form from the second person transitive form *da-*.

(7) The reader may have noted that this is the same prefix that is used for 2sg intransitive subjects, but since all verbs in Dalabon have determinate transitivity, there is no ambiguity: if it combines with a transitive verb it means '3sgA>2sgO' (or syncretic extensions therefrom, as we shall see).

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(8) This commonly reduces to *–lng*, and the common sequence *–h-lng* [assertative-sequential] is then realized as *–lng* following a pharyngealized vowel.

(9) Like other part nouns, this would never occur alone, but would always be cited with a possessor suffix, e.g. *neyno* '(his/her/its) elbow', *neyngan* 'my elbow', etc.

(10) Whereas diachronically a similar construction is postulated for step (a) of the evolution of comitative applicatives, in Bininj Gun-wok, Rembarrnga, and Dalabon.

(11) In the related language Bininj Gun-wok (Evans 1996, 1997, 2003a), there are examples, albeit rare, of words with a distinct incorporated nominal root for each function. So far we lack examples of this for Dalabon.

(12) This example illustrates another interesting feature of Dalabon which we have not had the space to discuss here, namely the use of verbs from the posture set for various semantics. Normally billabongs 'lie', as flat features of the landscape, but here the verticality of the 'stand' verb is being coerced to talk about it as a three-dimensional landscape object bounded by the trees growing at its edges.

(13) In many other languages of northern Australia, e.g. Jaminjung (Schultze-Berndt 2000), the equivalent two-part verbal expressions divide their parts across two separate words: an uninflecting 'coverb' and a second invariant element generally termed a light verb or auxiliary verb. There is considerable cognacy between coverbs and what I am here calling 'prepounds', and also between light verbs and the basic roots described here, but it is too early in our understanding of the historical morphosyntax to say which of the two structural options is original.

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The Languages of the Daly River Region (Northern Australia)

Rachel Nordlinger

The Oxford Handbook of Polysynthesis
Edited by Michael Fortescue, Marianne Mithun, and Nicholas Evans

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Abstract and Keywords

This chapter surveys the polysynthetic characteristics of the languages of the Daly River region of Australia's Northern Territory. Although they are not all closely related, these languages share many typological features typical of polysynthesis, including the encoding of core arguments in the verbal word; noun incorporation; applicatives; and complex templatic verbal morphology. In addition the Daly languages exhibit complex verbal predicates composed of two discontinuous stems, one functioning broadly to classify the event type and the other providing more specific lexical semantics. These properties are surveyed across a range of Daly languages, considering both their similarities and their differences, and the implications they have for a cross-linguistic typology of polysynthesis.

Keywords: polysynthesis, complex predicates, incorporation, applicatives, Australian languages

37.1 Introduction

IN this chapter I discuss the languages of the Daly River region of Northern Australia, focussing particularly on the typological features relevant to polysynthesis. These languages are relatively undescribed in the literature (as a whole), and are generally treated as an areal *Sprachbund* sharing substantial typological features. However, as we will see in this chapter, the typological similarities among these languages may have been overstated and we find variation in a number of features across the languages. Furthermore, the issue with respect to polysynthesis is complex. The class of

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polysynthetic Daly languages changes significantly depending on the definition of polysynthesis one applies, since many of the points of variation across the region are those that reveal the challenges of defining this morphological type.

The notion of polysynthesis is notoriously difficult to define and various authors have treated different grammatical properties as criterial. It is generally agreed that polysynthesis involves holophrasis (the possibility that an inflected verb can stand alone as an independent clause), although this is not a sufficient condition for a language to qualify as polysynthetic. Another relevant feature is the possibility of lexical morphemes occurring within complex verb forms, such as in noun incorporation. In fact, focusing on Australian languages, Evans (Chapter 16, this volume: 312) treats this property as crucial in distinguishing the polysynthetic languages of Northern Australia from the surrounding head-marking languages which "lack vital criterial characteristics of polysynthetic languages, particularly nominal and adverbial incorporation, and applicatives".

Other approaches to polysynthesis focus on the expression of arguments within the verbal word. Evans and Sasse (2002: 3) state that "a prototypical polysynthetic language is one in which it is possible, in a single word, to use processes of morphological composition to encode information about both the predicate and all its arguments, for all major clause types (p. 783) […]." Fortescue (1994: 2601), on the other hand, points to "the entanglement of derivational and inflectional elements, such that morphemes having a bearing on the sentential syntax may be packed deep within the complex word" as being one trait shared across polysynthetic languages.

The languages of the Daly vary in a number of these respects. While holophrasis and noun incorporation are found in all languages of the region, the entanglement of inflectional and derivational material is less widespread, and very few of the languages have applicatives at all. Furthermore, while subjects and objects are encoded on the verb across all languages of the region, almost none of the languages encode all three arguments of a ditransitive verb morphologically, thus not meeting the Evans and Sasse (2002) definition of polysynthesis. Instead, what we find is a continuum of polysynthetic characteristics across the languages of the region and, depending on the characteristic(s) taken to be criterial for polysynthesis, we may either consider all of them to be polysynthetic, none of them to be polysynthetic, or something in between.

37.2 The Daly Languages

The Daly region lies in the Northern Territory of Australia, south-west of Darwin. This region is home to twenty-two different language varieties, many of which have been the subject of only limited (published) description. Tryon (1974) proposed a single Daly language family including all of the languages of the region, except for Murrinhpatha. However, his evidence for considering them to be a single family appears to be largely typological (Tryon 1974: 304). Subsequent work, most notably by Ian Green (e.g. 2003)

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and Mark Harvey (e.g. 2003a; 2003b) has revised this picture, as outlined below. Evans (2003a: 13) observes: "[t]he overall picture that emerges from recent work on the Daly languages is that they have much more genetic diversity than originally believed, but that this has been overlaid and partly erased by strong convergence in a Daly River Sprachbund." However, this typological convergence across the whole region may likewise be overstated—as we will see there is considerably more similarity among some of the families (e.g. Western and Southern Daly) than across the region as a whole.[1]

The current consensus on the languages of the Daly region is shown in Figure 37.1, which represents a collation of the information in Dixon (2002), Evans (2003a), Green (2003), and Harvey (2003a; 2003b). Language varieties listed in a single column are most likely dialects of a single language (as defined by linguists, not by communities, who consider all named varieties to be distinct languages); alternative names for language varieties are given in brackets.

The twenty-two language varieties can be grouped into ten different languages belonging to five language families. It is not clear whether there are any superordinate relationships among these five families, apart from proto-Australian, and indeed Evans (2003a) suggests that (some of) these Daly families may be early offshoots of the proto language itself. Harvey (2003a) suggests a possible remote connection between the Eastern Daly group and (p. 784) the Gunwinyguan languages of Arnhem Land to the east, but this has yet to be definitively established.

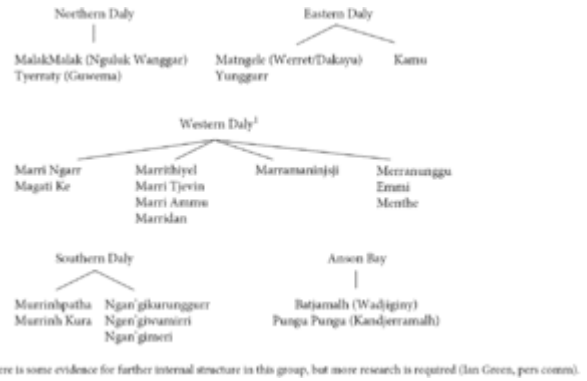

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Figure 37.1 The languages of the Daly region

Irrespective of genetic relationships, the Daly languages form a loose areal grouping ("a small linguistic area with ragged edges" (Dixon 2002: 679)), with a number of shared grammatical features.[2] These include high-levels of morphological fusion in the verb; bipartite verbal systems; incorporation of body parts; and the use of serialized verbs of motion or stance to mark imperfective aspect (Dixon 2002: 677–8). Many of these features are discussed in the following sections.

37.3 The Current Sociolinguistic Situation and Previous Work

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The languages of the Daly region are greatly under-represented in the Australianist literature, and many have had only limited description beyond a brief chapter in Tryon (1974).

The Southern Daly languages are the best described group: Ngan'gikurunggurr (also Ngan'gityemerri[3]) has been the subject of grammatical descriptions by Hoddinott and Kofod (1988) and Reid (1990; published as 2011), as well as a published dictionary (Reid (p. 785) and McTaggart 2008) and a number of other publications (e.g. Reid 1997, 2000, 2003). Murrinhpatha has had a fair amount of previous description (Walsh 1976a, 1976b, 1996a, 1997; Street 1987; Blythe 2009, 2013; Nordlinger 2010a, 2011a. 2015; Nordlinger and Caudal 2012; Mansfield 2014), but no published grammatical description as yet.[4]

Of the Western Daly languages, the only published grammatical description is Tryon's (1970) grammar of Merranunggu. Emmi has been described in a PhD thesis by Ford (1998; published as 2011), as has Marrithiyel (Green 1989; also Green 1997). The other Western Daly languages have almost no grammatical materials available apart from a brief description in Tryon (1974), a few journal articles (e.g. Ford 2006), and some unpublished student work (Preston 2012).

Beyond Tryon (1974), the Eastern Daly languages and the Anson Bay language have had barely any grammatical description, apart from an unpublished sketch grammar of Kamu (Harvey 1989), and two unpublished shorter theses on Matngele (Zandvoort 1999) and Batjamalh (Ford 1990). Malak Malak (Northern Daly), was the subject of a short published grammar by Birk (1976) and an unpublished honours thesis by Cahir (2006). Dorothea Hoffmann is currently undertaking documentation research with the remaining speakers of MalakMalak and Matngele (see Hoffmann 2015b; 2015a).

Unfortunately, our opportunities to expand on this relative dearth of linguistic information are limited. Murrinhpatha is the most robust language of the region; still being used by around 2,500 people for daily communication in the community of Wadeye (Port Keats) and acquired by all Wadeye children as their first language. All other languages of the region are highly endangered; many have only a handful of elderly speakers left and some (e.g. Marramaninjsji, Yunggurr) have no fluent speakers left at all.

37.4 The Daly Languages: Grammatical Overview

The Daly languages are all head-marking with complex predicates (see examples that follow), nominative–accusative alignment in their agreement systems, word order flexibility, templatic morphology, and some noun incorporation (to varying degrees of productivity, see §37.7). All languages have subject, object, and indirect object (or 'goal')

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pronominal marking within the verbal word (although the details of this and the structure of the verbal template may vary, see Table 37.1).

Unsurprisingly for head-marking languages, case morphology plays a relatively minor role across the Daly languages in encoding core grammatical relations. Most of the languages do not have obligatory case marking on subjects and objects; in some languages (e.g. Ngan'gityemerri (Reid 1990), Marrithiyel (Green 1989)) an ergative marker can be attached to transitive subjects that are 'pragmatically' marked. Many languages also have a set of semantic cases, including dative, instrumental, ablative, locative (e.g. Emmi (Ford 1998), Kamu (Harvey 1989), Marrithiyel (Green 1989), etc); Kamu even has multiple case marking:

(p. 786)

(1)

barl-datj=ngu=bumu — ngun-gin-diyn-ni
wrongly-hit=1MIN.OBJ=3MIN.SBJ.AUX.PST:PRF — there-ALL-ABL-ERG
'The bloke from that way wrongly hit me.' (Kamu, Harvey 1989: 73)

Across the Daly languages we find complex predicates, or compound verb constructions (McGregor 2002), in which the verbal predicate is formed through the combination of two parts: the first is variously called the 'auxiliary verb', the 'classifier', the 'light verb', or the 'inflecting verb', and generally belongs to a small class of verbal stems that serve to classify or categorize the event in some way. This combines with the second element—the 'verb root', 'verb stem', 'coverb', or 'lexical stem'—which is generally from a larger (potentially open) class and carries the primary lexical meaning. The verbal predicate is formed through the combination of these two parts, in a way that is not always fully compositional. Some examples from across the Daly languages follow. In these examples the two parts of the verbal predicate are shown in bold, with the gloss of the 'auxiliary' or 'classifier verb stem' (CVS) provided in capitals.

Kamu (Eastern Daly)

(2)

wer=wun=any-**ta**-m
tease=3AUG.OBJ=2MIN.SBJ-**SPEAR**-PST:PRF
'You teased them.' (Harvey 2003a:160)

MalakMalak (Northern Daly)

(3)

kaykay-ma — **wutta**
call out.RDP-IPFV — 3AUG.SBJ.**GO**.PST
'They were screaming.' (Cahir 2006: 30)

Batjamalh (Anson Bay)

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ŋakuḻø kutti-ɲerr-p-**uc**-pe-cica-kaɲi
(4) NEG **fight**-2DU.SBJ.FUT-FUT-**SCOLD**-FUT:CM-RECP-DU
'Don't you two fight each other!' (Ford 1990: 135)

Marri Ngarr (Western Daly)

ganggi **gumbun**-ninggi-**musjinin**-fingi-ganggi
(5) 1DU.INCL **1INCL.SBJ.GO.R**-1INCL.G-**frightened**-NOW-RECP
'We were frightened of each other.' (Preston 2012:10)

Murrinhpatha (Southern Daly)

wurdana-nga-**yith**-ngintha-yu
(6) **3SG.SBJ.shove.RR.PST:PFV**-1SG.IO-**tell**-DU.NSIB-DM
'They (two non-siblings) were telling me.' (Blythe 2009: 100)

Although this complex verbal construction type is found across the Daly languages, its features differ in important ways (see also Table 37.1 for a summary). In MalakMalak (3), (p. 787) the two constituents are usually separate phonological words (Hoffmann 2015a), whereas they are more tightly bound in Marri Ngarr and Murrinhpatha. There are also differences in the ordering: in the Eastern Daly, Northern Daly, and Anson Bay languages, the 'lexical stem/coverb' (LVS) typically appears before the 'auxiliary/classifier' (CVS),[5] whereas in the Western Daly and Southern Daly languages, it typically appears to the right of the CVS in the middle of the verbal word.[6] Languages also vary in terms of the number of CVSs, ranging from six in MalakMalak (Hoffmann 2015a) to thirty-eight in Murrinhpatha (Blythe, Nordlinger, and Reid 2007); see Table 37.1 for full details.

Similar to other languages with this type of complex predicate system across Australia (e.g. Wilson (1999), Schultze-Berndt (2000)), the argument structure and predicate semantics of the overall verb in the Daly languages are determined through interaction of the two parts of the complex predicate. Although the details vary across languages, the following examples from Murrinhpatha serve as an illustration of the general nature of the system.[7] The combinations of CVS and LVS vary in their productivity, with some forms being very restricted in their occurrence. However, for the most part the system is fairly productive, with CVSs entering into combinations with many different LVSs, and vice versa. In (7) we see the same LVS (*-rtal-* 'break by single chopping action') combining with four different CVSs to produce four different predicates; and in (8) we see a single CVS (BASH(14)) combining with four different lexical stems, again resulting in different verbs.[8]

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bangarntal
bangam-rtal
(7a) 3SG.SBJ.BASH(14).NFUT-chop
'He chopped it (with an axe).'
(RN 20070530-002:003)

pantal
pan-rtal
(7b) 3SG.SBJ.SLASH(23).NFUT-chop
'He sliced it (with a knife).'
(RN 20070531-002:012)

mungarntal
mungam-rtal
(7c) 3SG.SBJ.BREAK(11).NFUT-chop
'He broke it with his hands.'
(RN 20070530-002:009)

darntal
dam-rtal
(7d) 3SG.SBJ.POKE(19).NFUT-chop
'He broke it off with his mouth.'
(RN 20070530-002:009)

(p. 788)

bangarntal
bangam-rtal
(8a) 3SG.SBJ.BASH(14).NFUT-chop
'He chopped it (with an axe).'
(RN 20070530-002:003)

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bangamelmel
bangam-melmel
(8b) 3SG.SBJ.BASH(14).NFUT-flatten
'He flattened it (with a hammer).'
(RN 20070531-002:015)

bangamparnta
bangam-warnta
(8c) 3SG.SBJ.BASH(14).NFUT-split.open
'He smashed it open (with a hammer).'
(RN 20070531-002:016)

bangamlet
bangam-let
(8d) 3SG.SBJ.BASH(14).NFUT-stick
'He stuck it together (with something).'
(RN 20070607-002:020)

The argument structure of the verb is also determined through the interaction of the two parts of the complex predicate. In the Western and Southern Daly language groups, valence-changing operations are largely achieved through changing the classifier stem, without the need for causatives, detransitivizers, and other types of valence-changing morphology (although see §37.8 for a discussion of limited applicative marking). Reid (2000) provides a detailed discussion of this in Ngan'gityemerri (see also Green (1989) on Marrithiyel). Some examples from Murrinhpatha are provided in (9)–(12) (see also Seiss and Nordlinger 2010). In (9) we see that the transitive verb 'to crush something' is given an anticausative reading once the classifier stem is changed to the intransitive 'SIT(1)'. Similarly, in (10) we see that the causative 'to drop (to make descend)' is encoded with the use of the transitive classifier stem 'do with HANDS(8)'. Examples (11) and (12) illustrate a common pattern in which transitive classifier stems alternate with reflexive/reciprocal counterparts to provide verbs with different argument structures (see Nordlinger (2011a) for further discussion).

	ku	tumtum	mam-lerrkperrk
(9a)	NC:ANIM	egg	1SG.SBJ.HANDS(8).NFUT-crush

'I crushed the egg in my hand.' (RN 002:039)

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dim-lerrkperrk
(9b) 3SG.SBJ.SIT(1).NFUT-crush
'It's crushed.' (RN 002:039)

(10a)
ngirra-dharday-nu
1SG.SBJ.STAND(3).FUT-descend-FUT
'I'll descend straight down.' (Street and Street 1989, entry for #dharday)

(10b)

nanthi	karlay	kanhi-ka
NC:THING	fishing.net	this-TOP

nguma-dharday-deyida-nu-neme
1DU.SBJ.HANDS(8).FUT-descend-again-FUT-PAUC.M
'We (exclusive, paucal, nonsibling, male) will drop this fishing net down again.'
(Street and Street 1989, entry for #dharday)

(p. 789)

thu ngu-nhi-bat-nu
(11a) NC:WEAPON 1SG.SBJ.SLASH(23).FUT-2SG.OBJ-hit-FUT
'I'm going to hit you (with a weapon).' (RN 001:009)

(11b)
pam-ngintha-nu-bat (*pan- SLASH(23))
3SG.SBJ.SLASH:RR(24).NFUT-DU.F-RR-hit
'They two (fem) hit each other.' (RN 001:079)

mam-yerl=dim
(12a) 3SG.SBJ.HANDS(8).NFUT-paint=3SG.SBJ.SIT(1).NFUT
'He is painting.' (RN 001:081)

mem-nintha-yerl
(12b) 3SG.SBJ.HANDS:RR(10).NFUT-DU.M-paint
'They two painted each other up.' (RN 001:081)

In the Eastern and Northern Daly languages valence changing does not normally involve a change in the CVS, but may be encoded by compounding LVSs in grammaticalized functions. The following examples from Kamu illustrate the use of *gatj* 'throw' as a causative marker.

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ni-gatj=ayayn
(13) name-CAUS=1MIN.SBJ.AUX.PST:PFV
'I named him.' (Harvey 1989: 88)

boeng.ger diyenu-gatj=ayayn
(14) billycan full-CAUS=1MIN.SBJ.AUX.PST:PFV
'I filled the billycan.' (Harvey 1989: 88)

Table 37.1 provides an overview of some basic features of verbal constructions across the Daly languages. We go on to discuss the more complex features relevant to polysynthesis, such as noun incorporation, adverbial incorporation, and applicatives and shown in Table 37.4. In all of the Daly languages except for Batjamalh, the CVS listed here also encodes subject information and some tense/aspect/mood (TAM).

As can be discerned from Table 37.1, there is a clear three-way typological split between the Western/Southern Daly languages, the Eastern/Northern Daly languages, and Batjamalh (Anson Bay). The Batjamalh verbal system is quite different to those of the other Daly groups. Firstly, there is a large number of CVSs that can occur on their own without forming a complex predicate. Ford (1990) identifies 134 such verbs in her corpus, of which only 37 are found in complex predicates. This is fundamentally different from the other Daly languages, in which complex predicates form the overwhelming majority of verbal constructions, with only 5–13 simple verbs that can occur alone. Batjamalh's class of 134 CVSs is also significantly larger than the other Daly languages; (p. 790) (p. 791) (p. 792) the next highest being 38 in Murrinhpatha. In addition, Batjamalh differs from all of the other Daly languages in distinguishing transitive (A) from intransitive (S) subject marking in the verb, and in using portmanteaux prefixes to encode transitive subject (A) and object (O).

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Table 37.1 Some basic typological features of Daly languages

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	Complex predicate as single word?	No. of CVS (No. as simple verbs)	Basic order of complex predicate	Object agreement	Indirect object agreement	Serialized constructions ?
Southern Daly						
Murrinhpatha (Nordlinger 2015)	Yes	38 (11)	CVS-OBJ-IBP-LVS-TAM	Affix internal to verbal word	Distinct set of affixes but in same slot as object marker	Yes, a second CVS is serialized to encode imperfective aspect
Ngan’gi (Reid 1990)	Yes	31 (10)	CVS-OBJ-IBP-LVS-TAM	Affix internal to verbal word	Distinct set of affixes but in same slot as object marker	Yes, a second CVS is serialized to encode imperfective aspect
Western Daly						
Marrithiyel (Green 1989)	Yes	22 (12)	CVS-OBJ-(IBP)-LVS-(IBP)-BEN-TAM	Affix internal to verbal word	Distinct set of affixes but in same slot as object marker. Separate benefactive/	Yes, a second CVS is serialized to encode

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					purposive marker follows LVS.	imperfective aspect
Marri Ngarr (Ford 2006; Preston 2012)	Yes	22 (‘a few’)	CVS-OBJ-IBP-LVS-TAM	Affix internal to verbal word	Distinct set of affixes but in same slot as object marker	Yes, a second CVS is serialized to encode imperfective aspect
Emmi (Ford 1998)	Yes	29 (13)	CVS-OBJ-(IBP)-LVS-(IBP)-BEN-=TAM	Affix internal to verbal word	Distinct set of affixes but in same slot as object. Separate benefactive marker follows LVS.	Yes, a second CVS is serialized to encode imperfective aspect
Northern Daly						
MalakMalak (Birk 1976; Hoffmann 2015a)	No, LVS and CVS are typically separate words	6 (5)	LVS followed by CVS=OBJ (Object marker can also attach to LVS in	One paradigm of enclitics used for both object and indirect object	One paradigm of enclitics used for both object and indirect object	Up to 4 LVSs can be compounded in a single verb

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			reduced subordinate clauses)			
Eastern Daly						
Kamu (Harvey 1989)	No, LVS and CVS are combined via cliticization	15 (8)	IBP-LVS=OBJ=CVS (but other variations that move internal clitics to after CVS are also possible)	Object enclitics generally attach to the end of the LVS	A separate set of indirect object enclitics may appear in the OBJ slot	Up to 3 LVSs can be compounded in a single verb
Matngele (Harvey 1989; Zandvoort 1999)	No, LVS and CVS are combined via cliticization	6 (6)	IBP-LVS=CVS=OBJ (but in some cases OBJ can come after LVS (Zandvoort 1999:83))	One paradigm of enclitics for both object and indirect object	One paradigm of enclitics for both object and indirect object	Up to 3 LVSs can be compounded in a single verb
Anson Bay						

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Batjamalh (Ford 1990)	Yes	134 of which only 37 form complex predicates	IBP-LVS-SBJ/ OBJ(TAM)-CVS-TAM-IO	Object prefixes portmanteau with transitive subject	Pronominal enclitics attach to the end of the verbal complex	Yes, a second CVS is serialized to encode bodily orientation and associated motion

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Table 37.2 Typological distinctions amongst Daly language groups

Western and Southern Daly	Eastern and Northern Daly
Complex predicate is a single morphological word	Complex predicate is two morphological words, which may be cliticized but can be inflected separately.
4-way number distinction (singular, dual, paucal/trial, plural)	3-way number distinction (singular, dual, plural)
Objects marked by affixes	Objects marked by enclitics
IBP internal to verbal complex	IBP prefixed to verbal complex
CVS precedes LVS	LVS precedes CVS
Serialization of CVS	Serialization of LVS
One LVS per verb	Up to 4 LVS per verb complex
No nonfinite verbs (see §37.9)	LVSs can be used as nonfinite verbs (see §9)
Valence changing done by CVS	Valence changing done primarily by serialization of LVS
Greater verbal synthesis	Lesser verbal synthesis

Among the remaining Daly groups we find a clear typological distinction between the Western/Southern groups on the one hand, and the Eastern/Northern groups on the other. These differences are presented in Table 37.2.

37.5 Verbal Morphology

As with other head-marking languages across northern Australia, verbs in the Daly languages encode person and number for subject and objects and tense/aspect/mood information in a templatic structure. Table 37.1 provides the basic verbal structure for each of the languages, but in fact the addition of number marking, derivational marking, and other optional elements makes the verbal template significantly more complex. The most complex verbal templates are found in the Southern and Western Daly languages.

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The verbal template for Murrinhpatha can be found in Forshaw et al. (Chapter 23, this volume) and Evans (Chapter 16, this volume). In the interests of variety, here I provide the verbal template for Marrithiyel, based on Green (1989).

The Marrithiyel verb template is similar to that of the other Western and Southern Daly languages, beginning with the obligatory CVS which also encodes subject person/number features and tense/aspect/mood information. The CVS is followed by a slot encoding (p. 793) objects, indirect objects and goals (in complementary distribution), incorporated nouns, and then the lexical stem. Example (15) illustrates these four slots in the verb, along with the tense/aspect/mood inflection in Slot 12 which, along with the classifier stem, is the only other obligatory element:

(15)

ngirr	-iginj	-yeri	-batj	-Ø	-wa
1EXCL.SBJ.IRR.RR	-1EXCL.G:REFL	-child	-lie.down	-PL	-FUT
Slot 1	Slot 2	Slot 3	Slot 4	Slot 10	Slot 12

muku ganda
woman there
'We (excl, pl) and those women (pl) will camp together.' (Green 1989: 308)

One interesting feature of the Marrithiyel verb is that it has multiple positions for incorporated nominals. Lexicalized incorporations can appear before the lexical verb stem (15), while productive incorporations (Evans' (1996) 'syntactic' incorporation) appear after the lexical stem. Of these, there are three different types: incorporated body parts (slot 5), incorporated locational nominals (slot 6), and incorporated general nouns (slot 7). The latter two occur less frequently, but are nevertheless possible. The following examples illustrate these three incorporation types and their positions in the template:

(16)

ngirrinjinggi	-git	-muwarri	buluki	-fini	-wa
1EXCL.SBJ.IRR.NJ	-cut	-testicles	bull	-DU	-FUT
Slot 1	Slot 4	Slot 5	Slot 7	Slot 10	Slot 12

'We (excl, du) will cut (off) the bull's testicles.' (Green 1989: 255)

(17)

ngata	anji	-dim	-miri	-demi	-Ø
house	2SG.SBJ.IRR.NJ	-sink	-eye	-side	-IMP
	slot 1	Slot 4	Slot 5	Slot 6	Slot 12

'(You sg) Shut the side window on the house.' (Green 1989: 227)

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(18)

arri	-fesjirr	-demi	-ngata	-ya
2SG.SBJ.IRR.RR	clean	side	house	PST
Slot 1	Slot 4	Slot 6	Slot 7	Slot 12

'You (sg) should have cleaned up around the side of the house.' (Green 1989: 255)

Slot 8 is used for the marking of additional participants, such as adversatives (as in *gunj-inggi-srip-**nginanga**-Ø-ya* 'They (pl) speared (my brother) **on me**' (Green 1989: 126)), and purposives, as in (19):

(19)

mana	gani	-sri	-winjel	-fini	-njsjan-	-Ø
brother	3SG.SBJ.R.GO	cry	3NSG.PURP	DU	NOW	PRS
	slot 1	Slot 4	Slot 8	Slot 10	Slot 11	Slot 12

muku	yuwa-wa
woman	that-PURP

'(MY) brother is crying for those two women now.' (Green 1989: 126)

(p. 794)

The verbal template in Table 37.3 illustrates clearly the entanglement of inflectional and derivational morphology. Discontinuous dependencies are also evident in this verbal structure, most clearly in the interaction between the number markers in slots 9 and 10 and the verbal agreement marking in earlier parts of the verb. These additional number markers work together with the number information encoded by the subject and object agreement markers, and encode non-singular number and clusivity for any participant in the verb. Slot 9 encodes non-singular number for an inclusive participant, and Slot 10 for a non-inclusive participant. Example (20) illustrates the two co-occuring in the same verb:

(20)

yeri	sjitjukuni
child	two

ngumburr	**-di**	**-butj**	**-fundi**	**-nim**	**-fini**	**-wa**
1INCL.SBJ.IRR.RR	-2/3.NSG.OBJ	hold	hand	INCL.PL	DU	FUT
Slot 1	Slot 2	Slot 4	Slot 5	Slot 9	Slot 10	Slot 12

nganggi-nim-gin	diyerr federr-sran
1INCL-INCL.PL-ERG	river bank-ALL

'we (INCL, PL) will take the two children to the river bank.' (Green 1989: 138)

The classifier stem in slot 1 encodes the subject as first person inclusive, and this information unifies with the number marker in slot 9 which specifies the inclusive

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participant as plural. The object marker in slot 2 marks the object as non-singular; this is further specified by the dual number marker *fini* in slot 10. See Green (1989: 136ff.) for a more extensive discussion of this number marking system.

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Table 37.3 Marrithiyel verbal template (based on information in Green 1989)

1	2	3	4	5	6	7	8	9	10	11	12
Classifier stem + SUBJ + Mood	OBJECT / GOAL	Lexically incorporated noun / applicative	**Lexical Verb Stem**	Incorporated body part	Incorporated locational noun	Incorporated general noun	Additional participant (incl. BEN)	Inclusive number	Non-inclusive number	Temporal Adverbial	Tense/ aspect/ mood inflection

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(p. 795) 37.6 Serial Verbs

In addition to the complex predicates already discussed, many Daly languages use serialized constructions of various types (Reid 2002; Hoffmann 2015b). In the Western and Southern Daly languages, these serialized constructions are used to encode imperfective aspect (see Nordlinger and Caudal (2012) on Murrinhpatha), encliticizing a CVS to the end of the verbal complex. The encliticized CVS must be one of the subset that can be used alone as a simple verb, and must be intransitive. Examples from Murrinhpatha include:

(21)
dirran-nintha-nu-bath
3SG.SBJ.28.NFUT-DU.M-RR-look.at
'They (two) looked at each other.' (RN 20070607-002:024)

(22)
dirran-nintha-nu-bath=**dim**
3SG.SBJ.28.NFUT-DU.M-RR-look.at=3SG.SBJ.SIT(1).NFUT
'They (two) are looking at each other.' (RN 20050711-001:007)

In (21), without the serialized CVS, the verb has a past perfective reading; with the serialized CVS in (22) the verb receives an imperfective (present) reading. The serialized CVS must agree with the tense of the main verb, but additional markers are not repeated on the serial verb, as shown by the fact that the future tense marker *–nu* is not present on the serialized CVS in (23).

(23)
pirra-nintha-nu-bath-nu=**pi**
3SG.SBJ.28.FUT-DU.M-RR-look.at-FUT=3SG.SBJ.SIT(1).FUT
'They (two) will be looking at each other.' (RN 20070607-002:024)

Serialized CVSs marking imperfective aspect in this way are found in all of the Southern Daly and Western Daly languages. In the Eastern Daly and Northern Daly languages, however, serialization takes a different form and function (Hoffmann 2015a). In these languages, it is the LVS that is serialized in order to modify the event semantics, or effect a change in the argument structure. Examples below are from Kamu (Harvey 1989: 92); note Kamu allows up to three serialized elements, as in (26).

(24)
dak **bul-bul-guritj**=buwali
camp RDP-clean-go around=3MIN.SBJ.AUX.SBJV
'She should be going around, cleaning up the camp.'

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(25)

binya	guluwurr-ma	anayn=gimin
animal	bird.sp-PRM	how=3MIN.SBJ.DO.PRS

'What is the bird doing?'

meyi	ngak-ma=guyang	**dal-ngak-ma**=guyang
food	eat-IPFV=3MIN.SBJ.AUX.PRS	poke-eat-IPFV=3MIN.SBJ.AUX.PRS

'It is eating the food. It is pecking the food.'

(p. 796)

(26)

	ditj-dey-jet=atayn
	return-look-stand=1MIN.SBJ.AUX.PST:PFV

'I (stood and) looked back.'

37.7 Incorporation

Incorporation is often central to definitions of polysynthesis. Bickel and Nichols (2007: 193), for example, argue that "[o]ne of the typologically most important characteristics of polysynthesis is that pronominal and even lexical arguments are incorporated into their governing verb". Evans (2014) considers incorporation as criterial for polysynthesis in Northern Australia, describing other head-marking languages "which have most features of polysynthetic languages, except incorporation of nouns and adverbials" as "the wannabes".

All Daly languages have noun incorporation to some degree. Many have limited incorporation of adverbial elements also. In this section I discuss the properties of incorporation across the Daly languages in some detail; I return to a discussion of the relationship between incorporation and polysynthesis in §37.10.

Noun incorporation in the Daly languages primarily involves body part nominals, as in the following examples:

(27)

dangim-ngi-**tyerr**-da	dafi
3SG.SBJ.POKE-1SG.OBJ-**mouth**-itch	cheeky

'It's burning my mouth.' (Ngan'gityemerri, Reid 1990: 210)

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(28)

melŋmelŋ wuŋmarrac **mipe**-kat-pø-mene-kaɲi.
cheeky.yam long.yam **eye**-3DU.A.3OBJ.NFUT-hit-NFUT-DU
'They found both cheeky yams, long yams.' (Batjamalh, Ford 1990: 159)

(29)

ginj-ing-wulit-**thenggi**-ya
3SG.SBJ.R.NJ-1SG.OBJ-tie.on.clothing-**bottom**-PST
'He tied on the clothing (loin cloth) around my bottom.' (Marrithiyel, Green 1989: 273)

In the Southern Daly languages, body parts are the only nominals that may incorporate (Murrinhpatha (Forshaw 2011); Ngan'gityemerri (Reid 1990)). In Batjamalh, approximately half of the incorporated nouns in the corpus are body parts, and the rest are other nominals (Ford 1990: 159), although many of these seem lexicalized in their semantics and so may not be productive. In the Western Daly languages Marrithiyel (Green 1989) and Emmi (Ford 1998), incorporation of non-body part nominals is infrequent, but possible:

(30)

guninj-felbatj-**ngusra**-nimbini-ya
3NSG.SBJ.R.GO-jump-**creek**-TRIAL-PST
'They (3) jumped over the creek.' (Marrithiyel, Green 1989: 246)

(p. 797) In these Western Daly languages, it is even possible to incorporate two nominals into the one verb (as in Bininj Gun-Wok, for example (Evans 2003b)), as we saw for Marrithiyel in §37.5, and in the Emmi example in (31):

(31)

gana-purr-**nunggu-katpilak**=enhdheni ganen
3MIN.SBJ.R.WALK-dance-**hand-bucket**=NOW 3MIN.SBJ.R.SIT
'She's sitting beating time (lit. hand-dancing) on a bucket now.' (Emmi, Ford 1998: 263)

As illustrated in Table 37.1, the Daly languages differ in the position of the incorporated nominal in the verbal template. In the Southern Daly languages, the incorporated body part appears in the middle of the complex verb, between the two parts of the complex predicate:

(32)

*dirran-ngi-**me**-thith=dim*
3SG.SBJ.28.NFUT-1SG.OBJ-**foot**-stare=3SG.SBJ.SIT(1).NFUT
'She's staring at my feet.' (Murrinhpatha, Forshaw 2011: 50)

In Batjamalh (Anson Bay) and the Northern and Eastern Daly languages the incorporated body part is prefixed to the left of the verbal complex:

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(33)
melŋmelŋ wuŋmarrac **mipe**-kat-pø-mene-kaɲi.
cheeky.yam long.yam **eye**-3DU.A.3OBJ.NFUT-hit-NFUT-DU
'They found both cheeky yams, long yams.' (Batjamalh, Ford 1990: 159)

(34)
detoem-dap-denek-awa
back-grab-3MIN.SBJ.DO.PST-1MIN.OBJ
'He rubbed my back.' (Matngele, Zandvoort 1999: 96)

In the Western Daly languages Marrithiyel and Emmi, on the other hand, there are two positions for incorporated body parts, either before (35) or after (36) the LVS:

(35)
ganya-na-**gumbu**-gulu=yi
3MIN.SBJ.R.MAKE-3MIN.M.REFL-**foot**-bend=PFV
'He bent his feet.' (Emmi, Ford 1998: 234)

(36)
gana-ngany-betj-**wulhtji**=wany
3MIN.S.R.WALK-1MIN.OBJ-grab-**ribs**=REPET
'He kicks me in the ribs again' (Emmi, Ford 1998: 234)

In Marrithiyel there is a subtle difference between the two positions: 'lexically' incorporated nominals can occur in *either* position (37a) but productive 'syntactically' incorporated nominals can *only* occur after the lexical stem (37b) (Green 1989). This suggests that the pre-LVS position may be older, since it is the location of lexicalized incorporations (as well as the position for incorporations in the Southern Daly languages), and that (p. 798) Marrithiyel and Emmi may have innovated a second post-LVS position for (productively) incorporated nominals.[9]

(37a)
ninjsja-wa gan nanj ginn-ing-**thenggi**-pirr-njsjan
what-PURP here 2SG 2SG.SBJ.R.GO-1SG.OBJ-**bottom**-leave-NOW(PRS)
'For what purpose are you keeping me here now? (Marrithiyel, Green 1989: 273)

(37b)
ginj-ing-wulit-**thenggi**-ya
3SG.SBJ.R.NJ-1SG.OBJ-tie.on.clothing-**bottom**-PST
'He tied on the clothing (loin cloth) around my bottom.' (Marrithiyel, Green 1989: 273)

Note, however, that in Marri Ngarr (also Western Daly), it appears that productive incorporations occur in the pre-LVS position, as in the Southern Daly languages (although the data is limited), suggesting that this innovative post-LVS position may not be a feature of all Western Daly languages:

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(38)
ngurri-ngin-**pundi**-pit=ni
1SG.SBJ.IRR.RR-1SG.G-**hand**-wash=FUT
'I'll wash my hands.' (Marri Ngarr, Preston 2012: 29)

Noun incorporation is most commonly of patient/theme objects (or more accurately, body parts associated with the patient/theme object), but in some languages it is possible to incorporate nominals with the thematic roles of location (e.g. (30)) and instrument (e.g. (31)) also.

The incorporation of lexical adverbials is also found in some Daly languages (see Table 37.4), although it is less widespread and more limited than noun incorporation. Such incorporation generally involves aspectual/adverbial elements with the semantics of 'now', 'in turn', 'again'. These incorporated adverbials occur in a different position in the verbal template than incorporated nominals; in the Western and Southern Daly languages, we find these positioned after the LVS:

(39)
puddan-wunku-rlarl-**deyida**-ngime=pumpan
3PL.SBJ.29.NFUT-3PAUC.OBJ-drop.off-**in.turn**-PAUC.F=3PL.SBJ.GO(6).NFUT
'They were going along dropping them (paucal) off, one by one.' (Murrinhpatha, Blythe 2009)[10]
10

(40)
niwinj yi gudingi-derrkurr-**fingi**=gawunh
3DU that 3DU.SBJ.DI.R.IPFV-sharpen-**NOW**=3DU.SBJ.SIT.R
'Those two fellas are sharpening their knives now.' (Marri Ngarr, Preston 2012: 39)

(p. 799) 37.8 Applicatives

Evans (Chapter 16, this volume) discusses applicatives as one of the polysynthetic traits of the Gunwinyguan languages. Daly languages do not have the range of productive applicative constructions that Gunwinyguan languages do. Benefactives, for example, do not require valence-changing morphology, but are simply encoded with existing pronominal markers in the verbal word. The following examples from Murrinhpatha show the same set of markers being used to encode indirect object arguments (41) and benefactive adjuncts (42) (Nordlinger 2011a). In the latter case, the benefactive marker simply replaces the object marker with no valence-changing morphology required (42b).

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	parram-**na**-mut	kardu	numi
(41)	3PL.SBJ.POKE(19).NFUT-**3SG.M.IO**-give	NC:HUMAN	one
	'They gave them to one person.' (RN 20050715-001:065)		

	ma-nhi-berti-nu	ngarra da
(42a)	3SG.SBJ.HANDS(8).FUT-2SG.OBJ-take-FUT	home
	'I'll take you home.' (RN 20070608-002:042)	

	ma-**mpa**-berti-nu	ngarra da
(42b)	1SG.SBJ.HANDS(8).FUT-**2SG.IO**-take-FUT	home
	'I'll take him home for you.' (RN 20070608-002:042)	

Although applicatives are not prevalent in Daly languages, there is evidence in some languages of the development of applicative markers from incorporated body parts. This has been reported for the Southern Daly languages Ngan'gityemerri (Reid 1990, 2000) and Murrinhpatha (Nordlinger 2011b) and also for Marrithiyel (Western Daly) (Green 1989). It is worth noting, however, that these three languages are also the Daly languages for which we have the most detailed descriptions, so it may be that further investigation of other Daly languages would yield more examples of such grammaticalization.

In Murrinhpatha a 'source' applicative has grammaticalized from the incorporated body part *-ma-* 'hand', as shown in the following examples. In (43) we see the use of the incorporated body part in its productive sense; in (44) we see it being used as an applicative marker.

	dirran-**ngi**-**ma**-thith=dim
(43)	3SG.SBJ.28.NFUT-**1SG.OBJ**-**hand**-stare.at=3SG.SBJ.SIT(1).NFUT
	'She's staring at my hands.' (RN 20090930-002:079)

	mangan-art	kura
(44a)	1SG.SBJ.SNATCH(9).NFUT-get	NC:WATER
	'I got (some) water.' (RN 20091001-002:094)	

(p. 800)

	mangannhimart	kura
	mangan-**nhi**-**ma**-art	kura
(44b)	1SG.SBJ.SNATCH(9).NFUT-**2SG.OBJ**-**APPL**-get	NC:water
	'I took some water from you.' (RN 20091001-002:094)	

(44c) *mangan-nhi-art

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In (44b) *-ma* serves to promote a source role to an object argument, which is shown by the fact that it is then cross-referenced with a direct object marker (here *–nhi*) in the verb. If the applicative marker is not present (as in 44a and c) then a second person object is not grammatical (44c), showing clearly that its presence in (44b) is licensed by the applicative.

The fact that the incorporated body part has completely grammaticalized in this applicative function is shown by the fact that it is possible to have the applicative even with verbs for which the original body part meaning would be nonsensical, as shown in (45).

(45a)
binthepup
bim-yepup
1SG.SBJ.HEAR(16).NFUT-listen
'I heard it.' (RN 20091001-002:098)

(45b)
bim-pirra-yepup
1SG.SBJ.HEAR(16).NFUT-3PL.IO-listen
'I listened to them.' (RN 20091001-002:098)

(45c)
bim-pun-**ma**-yepup
1SG.SBJ.HEAR(16).NFUT-3PL.OBJ-**APPL**-listen
'I heard (the story) from them.' (RN 20091001-002:098)

(45d)
*bim-pun-yepup (bimpunthepup)
1SG.SBJ.HEAR(16).NFUT-3PL.OBJ-listen

Only one such applicative exists in Murrinhpatha, but several are reported for Ngan'gityemerri and Marrithiyel involving other body parts as well. In Marrithiyel *-mi* 'eye' has grammaticalized into an applicative with a range of meanings, including comitative (46), and *-ma* 'belly' derives a causative of emotion (47) (Green 1989: 288ff).

(46)
gun-ninggi-**mi**-batj-nim-Ø-a
3NSG.SBJ.R.GO-1INCL.OBJ-**APPL**-lie.down-INCL.PL-PL[11]-PST
'They (pl) camped with us (incl.pl).' (Green 1989: 294)

11

(p. 801)

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(47)

gumun-ngi-ma-tjarr-Ø	mana	yigin-wa
3SG.SBJ.R.PAINT-1SG.OBJ-APPL-sad-PRS	brother	1SG-PURP

mubungandi
poor.fellow
'It makes me feel sad for my brother, poor bugger.' (Green 1989: 299)

Whereas incorporated body parts can appear either before or after the lexical stem in the Marrithiyel verb (see Table 37.3 and the discussion in §37.7), these applicative markers *must* appear in the pre-lexical stem position (slot 3), as for all other lexical incorporations (and, as in Murrinhpatha).

Ngan'gityemerri also has a comitative applicative derived from the incorporated body part 'eye' (Reid 1990):

ngaganiny-wap
(48a) 1SG.SBJ.GO.PFV-sit
'I sat down'.

ngaganiny-nyi-**mi**-wap
(48b) 1SG.SBJ.GO.PFV-2SG.OBJ-**APPL**-sit
'I sat down with you'. (Reid 1990: 138)

Additional evidence for the fact that this applicative has grammaticalized from the body part, which has the free form *muy*, is the fact that in data from the 1930s collected by Gerhardt Laves—at which stage the language was less polysynthetic and lexical stems were often separated, preceding the classifier stem (Reid 2003)—the full form *muy* is found with this applicative function. The following examples are taken from Laves' data, as reproduced in Reid (1990: 139). In (49a) we see the applicative incorporated within the polysynthetic verb, and in (49b) it is word final, given the separated lexical stem, and in this case takes the full form *muy*.

yenim-**mi**-wab[12]
(49a) 3SG.SBJ.GO.PRS-APPL-sit
'He sits with him.'

12

wab yenim-**muy**
(49b) sit 3SG.SBJ.GO.PRS-APPL
'He sits with him.' (Reid 1990: 139)

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The development of applicatives out of incorporated body parts is barely mentioned in the cross-linguistic literature yet appears to be an areal feature among the Daly languages (at least the Southern and Western subgroups). See Nordlinger (2011b) for further discussion.

(p. 802) 37.9 Subordination

Many researchers have observed the relative lack of subordination among polysynthetic languages (Mithun 1984b; Baker 1996), although it has also been argued that this correlation does not always hold (Nordlinger and Saulwick 2002; Evans 2006). The Daly languages behave fairly predictably in this respect: the more highly synthetic Western and Southern Daly languages have limited subordination structures, and no nonfinite verb forms; whereas the Eastern and Northern Daly languages form nonfinite subordinate constructions from the LVS.

Murrinhpatha (Southern Daly) has one finite subordinate construction, introduced by the complementizing preposition *ngarra*, as shown in (50). There are no nonfinite subordinate clauses in this language—associated events are represented with strings of finite clauses as shown in (51).

(50)

murrinh	ngurdi-mpa-yith-nu	[ngarra	ngay
language	1SG.SBJ.30.FUT -2SG.IO-tell.story-FUT	COMP	1SG

kardu	wakal-te	ngardi-dha]
NC:HUMAN	small-TEMP	1SG.SBJ.BE(4).PST:IPFV-PST:IPFV

'I'll tell you a story [about when I was a child].' (MP-20091008-RN01.wav)

(51)

me-nganku-berti-ngintha-dha-tharra
3SG.SBJ.HANDS(8).PST:IPFV-1DU.EXCL.OBJ-take-DU.F-PST:IPFV-moving

ngay-ka	nganam-yagarl-warda	ngarra	kura	pepe
1SG-TOP	1SG.SBJ.BE(4).NFUT-fall-NOW	LOC	NC:WATER	under

'While he was taking my grandfather Pulthen and I (across the river), I fell under the water.' (9-08 CP Drowning 251.256-258.629)

Ngan'gityemerri has an unusual subordination construction in which fully finite verbs are nominalized through the attachment of a noun class prefix, and can then function to modify nominal arguments, or even function as arguments themselves (Reid 1990: Chapter 5). Consider the following example:

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(52)

yerr-ngini-handbag-gumu yerr-wedimuy
THING-KIND-handbag-SEMBL THING-small

yerr-[every room nem key dim-nyine fillimup-mem]
THING-every.room 3SG.M key 3SG.SBJ.SIT.PRS-FOC fill-3SG.OBJ.PRS

watypela nyin me-wa
whitefella ANAPH 3SG.SBJ.SNATCH.PFV-pick.up
'That whitefella (hotel receptionist) picked up a thing like a kind of handbag, a small thing, a thing filled up with the keys to every room.' (Lit: a thing like a handbag, a small thing, a thing (which) the key to every room fills up, that whitefella picked it up) (Reid 1990: ex. 5–114)

(p. 803) In (52) we see clearly the noun class prefix *yerr* 'thing/tree' co-occuring with the nominals 'handbag' and 'small', as well as with the whole finite clause 'keys to every room fill it up'. This clause is identical in form to any other finite independent clause, except for the presence of the noun class prefix *yerr-* (see Reid (1997) for further discussion). This use of noun class prefixes with finite verbal clauses has not been reported for other Daly languages.

In the Eastern and Northern Daly languages we find LVSs used as nonfinite verbal predicates. The following example is from Kamu (Eastern Daly):

(53)

yil nguru-ma [yirr-ma-rdiyn] bilpurr-jet=butayn
skin 1MIN-PRM scratch-IPFV-ABL red-INCH=3MIN.SBJ.AUX.PST:PFV
'My skin has gone red from me scratching it.' (Harvey 1989: 98)

37.10 Summary: Polysynthesis in the Daly

Across the Daly languages we find a number of features characteristic of polysynthesis: holophrasis, head marking, the incorporation of nouns and adverbs, and complex verbal templates which entangle inflection and derivation. However, there is also a reasonable amount of variation across the languages in these (and other) features. The Southern and Western Daly languages show significantly greater verbal synthesis, elaborate verbal templates, productive incorporation of both nouns and adverbs, and applicatives and discontinuous dependencies across the verbal inflectional morphology. The Eastern and Northern Daly languages, while still morphologically complex in many ways, show more evidence of syntactic combination, with detachable verb stem components, object

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enclitics rather than suffixes in their verbal systems, and a clearer separation between inflectional and derivational morphology in the verbal template.

Table 37.4 focuses on the key features associated with polysynthesis in the literature, and shows their realization across the Daly languages. Holophrasis, incorporation, and the entanglement of inflection and derivation were all discussed as properties of polysynthesis in §37.1. The marking of three arguments of the trivalent verb relates to Evans and Sasse's (2002: 3) definition of polysynthesis as involving the morphological encoding in the verbal word of all arguments of all major clause types. Applicatives are mentioned in Evans (Chapter 16, this volume) as one of the features (along with incorporation) that distinguishes polysynthetic languages from other head-marking languages in Northern Australia; and the relationship between a lack of nonfinite verbal forms and polysynthesis relates back to claims by Baker (1996).

A quick glance at this table reveals that, while the Daly languages vary considerably on many of these features, an analysis of which of these languages are polysynthetic depends solely on which feature(s) we take to be criterial for polysynthesis (as opposed to just head marking). If holophrasis and noun incorporation are criterial, then all of the Daly languages fit the definition. If, on the other hand, the ability to morphologically encode all verbal arguments for all major clause types is central to the definition of polysynthesis, then none of the Daly languages, apart from Batjamalh, appear to be polysynthetic since they don't morphologically encode three arguments in a trivalent verb. Note, however, that although all three (p. 804) (p. 805) (p. 806) arguments are not morphologically encoded in these languages, it is still possible for the trivalent verb to stand alone as a sentence without an additional NP encoding the third argument:

(54) dam-nge-mut=dim
3SG.SBJ.POKE(19).NFUT-3SG.F.IO-give=3SG.SBJ.SIT(1).NFUT
'He's giving it to her.' (Murrinhpatha, RN-20050711-001:008)

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Table 37.4 Common polysynthetic features across the Daly languages

	Holophrasis	Noun incorporation	Adverbial incorporation	All three arguments marked on ditransitive verb	Applicatives	Nonfinite subordinate verbs	Entanglement of inflection and derivation	Discontinuous dependencies
Southern Daly								
Murrinhpatha	Yes	Yes (body parts only)	Yes (limited)	No, only 2 argument slots in the verb	Yes (one)	No	Yes	Yes
Ngan’gi (Reid 1990)	Yes	Yes (body parts mostly, with a few non-body parts possible (Reid and McTaggart 2008))	Yes (limited), although described as enclitics	No, only two argument slots in the verb	Yes	No	Yes	Yes

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Western Daly								
Marrithiyel (Green 1989)	Yes	Yes (body parts and other nouns have separate positions in the verb)	Yes (limited)	No, only two argument slots per verb, although third additional participant can be encoded in some contexts (19)	Yes	No	Yes	Yes
Marri Ngarr	Yes	Yes (body parts)	Yes (limited)	No, only two argument slots per verb	Not reported	Not reported	Yes	Yes

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Emmi (Ford 1998)	Yes	Yes	No, adverbial clitics	No, only two argument slots per verb, but three participants possible if one is a benefactive adjunct (p. 155)	Not reported	No	Yes	Yes
Northern Daly								
MalakMalak (Birk 1976, Cahir 2006)	Verb complex (= 2 words)	Yes, mostly body parts but a few others (Hoffmann, pers. comm)	No	No, only two arguments slots per verb	No	LVS can be used as a nonfinite verb	No	No
Eastern Daly								

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Kamu	Verb complex (=2 cliticized lexemes)	Yes, mostly body parts but a few others	No clear adverbial incorporation, but adverbial enclitics to verbal complex	No, only one object enclitic per verb	No	LVS can be used as nonfinite verb	No	No
Matngele	Yes (cliticized?)	Yes	No clear adverbial incorporation	No, only one object enclitic per verb	No	Not reported	No	No
Anson Bay								
Batjamalh (Ford 1990)	Yes	Yes	Not reported	Yes	No	LVS function as nonfinite verb	No	Yes

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Looking across Table 37.4 we can see a clear typological distinction between Batjamalh, Western Daly, and Southern Daly languages on the one hand—which show a great majority of polysynthetic features and the most highly synthetic verb structures—and the Eastern and Northern Daly languages which, apart from having noun incorporation, show less synthesis in the verb and significantly fewer polysynthetic features. I would argue that Batjamalh, Western Daly, and Southern Daly languages are clearly polysynthetic, despite the fact that they don't morphologically encode all arguments for *all* major clause types. MalakMalak (Northern Daly) is clearly head-marking but not polysynthetic. The Eastern Daly languages fall somewhere in between, showing some features of polysynthesis (most notably noun incorporation), but not all.

The data from the Daly languages, therefore, argues for a gradient, contingently multi-factorial view of polysynthesis as a collection of grammatical features which may develop and exist independently of each other, but which can also co-exist and cluster in the most prototypical of polysynthetic languages.

Abbreviations

ANAPH
anaphoric element
AUG
augmented number
CM
conjugation marker
DM
discourse marker
G
goal
IBP
incorporated body part
IO
indirect object
MIN
minimal number
NC:ANIM
animate noun class marker
NC:HUMAN
human noun class marker
NC:WATER
water noun class marker
NC:WEAPON

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weapons noun class marker
NC:THING
residue noun class marker
NSIB
non-sibling
PAUC
paucal
PRM
prominence marker
PUNC
punctual
R
realis
RDP
reduplicand
REPET
repetitive
RR
reflexive/reciprocal
SEMBL
semblative
TEMP
temporal marker
THITH
direction away

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Notes:

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(1) Thank you to Mark Harvey and Ian Green for discussion of this issue.

(2) Although, as Dixon (2002: 677–9) points out, most of these are also shared by one or more of the surrounding languages, hence the ‘ragged edges’.

(3) Reid uses the term Ngan’gityemerri as a cover name for the two dialects Ngan’gikurunggurr and Ngen’giwumirri.

(4) Walsh (1976a) has been published unrevised as Walsh (2011), but it is not a complete grammatical description of the language.

(5) For ease of comparison, I use the labels ‘classifier verb stem (CVS)’ and ‘lexical verb stem (LVS)’ throughout this chapter although the terms are not necessarily the best ones for all the languages under discussion. The CVS equates to McGregor’s (2002) ‘Inflecting Verb’, and the LVS to McGregor’s ‘Uninflecting Verb’.

(6) There is some evidence that the Western and Southern Daly languages used to have the ‘coverb/lexical stem’ before the ‘auxiliary/classifier’, as in the other Daly languages: namely, there is a subset of complex predicates that retain this older order (Green 1989; Reid 1990), and Reid (2003) shows that the order has switched since the 1930s in Ngan’gityemerri (Southern Daly).

(7) Murrinhpatha examples given with no bibliographic source are from my own field recordings. The semantics of CVSs in Murrinhpatha is still being determined—the number in the CVS glosses indicates the traditional way of referring to these paradigms (see Blythe, Nordlinger, and Reid 2007).

(8) See Green (1989), Reid (1990), and McGregor (2002) for more detailed discussion of the semantics of these systems.

(9) This is further supported by the fact that it is in the pre-LVS position that we find incorporated body parts that have grammaticalized into applicatives, see §37.8.

(10) In examples taken from Joe Blythe’s work, I have changed the orthography to be consistent with the community-preferred orthography used in the rest of this chapter.

(11) This is incorrectly glossed as ‘dual’ in the original, but corrected here.

(12) The original Laves spelling is retained here, following Reid (1990).

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The Polysynthetic Profile of Yimas, a Language of New Guinea

William Foley

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Abstract and Keywords

Yimas is a language of the Lower Sepik family of six languages spoken along the lower reaches of the Sepik River in the northern lowlands of Papua New Guinea. All six languages are quite morphologically complex head-marking languages, but Yimas is the most complex and cross-linguistically a good candidate for categorizing as a ‘polysynthetic language’. It has eight prefix positions preceding the verb stem and five following it, and is a ‘triple agreement language’, that is, it exhibits pronominal agreement affixes for all core arguments of a ditransitive verb. Yimas also makes heavy use of incorporation: a wide array of adjuncts are incorporated into the verb, and in most cases,non-incorporated alternatives are not available. However, Yimas differs from what has been claimed to be typical of polysynthetic languages in its heavy usage of subordination and nonfinite nominalization. This chapter addresses the place of Yimas in an overall typology of polysynthesis.

Keywords: head marking, agreement, polysynthesis, triple agreement, incorporation, nonfinite

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AS proposed in Foley (this volume, Chapter 17), I define a polysynthetic language as one whose verbs exhibit both head marking (Nichols 1986) and incorporation through a formal process of dependent-head synthesis (Mattissen 2003), though in Yimas this is restricted to adjunct and verb incorporation; the language lacks true noun incorporation. With head marking also typically goes polypersonalism, the signaling of core grammatical relations by bound agreement or pronominal affixes or clitics, normally on the main verb of a clause, though this is not strictly necessary, as in Nivkh (Mattissen 2003), and in Yimas pronominal agreement is tied to information structure and strictly speaking optional. Polypersonalism by itself is not a diagnostic of polysynthesis, as there are strictly head-marking languages, such as those of the Torricelli family like Southern Arapesh (Conrad and Wogiga 1991), or indeed languages of the Bantu family, which have extensive polypersonalism, but lack incorporation, and hence do not qualify as polysynthetic by this definition. But there are also languages like Abau (Lock 2011; Foley this volume), which do have some incorporation, but are basically dependent-marking, and so again by this definition are not polysynthetic. Obviously this definition is open and flexible and allows languages to be more or less polysynthetic along a scale, but I would argue that Torricelli and Bantu languages on the one hand, regardless of their head marking and extensive polypersonalism, and Abau on the other, regardless of its incorporation, fall outside its purview.

Yimas, on the other hand, fits squarely within it, though it may be less polysynthetic than its unrelated neighbor, Alamblak, or canonical cases of polysynthesis such as Pawnee, Mohawk, Greenlandic, or Bininj Gun-wok. Yimas is overwhelmingly head marking; it exhibits polypersonalism for all core grammatical relations, being a member of the quite small class of languages which exhibits triple agreement, that is, all three core arguments of a ditransitive verb like *give* are indicated by bound pronominal affixes or clitics, and it has extensive incorporation through dependent-head synthesis. And all of this is exhibited in a single complex word, normally a verb, though we shall see that Yimas also allows nominal heads to incorporate adjuncts in some cases. First it needs to be established that we are talking about a single complex word here, not a phrase consisting of its head plus its satellites (p. 809) (in my view, this is the mistake made in Aranovich 2013). And we need to distinguish what kind of word we are talking about here, a phonological word or a morphological word, as they need not coincide (Dixon and Aikhenvald 2002) and do not in Yimas. In this language, a phonological word is determined by stress patterns and the operation of certain phonological rules at word final boundaries, but a morphological word is determined by the distribution and scope of bound morphemes over a domain; see Foley (1991: 80–7). But a claim about polysynthesis is a claim about the morphological typology of a language, and so it is the notion of the morphological word which is relevant here, and the morphological integrity of complex polysynthetic words in Yimas is easily established. Consider the following two examples of complex verbs in Yimas:

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(1)

(a) p-mpu-pay-ma-takat-ncut-mpun
VII.SG.NOM-3PL.ERG-first-inside-touch-RM.PAST-3PL.DAT
'they first applied it (paint) to them inside'

(b) ya-mpu-park-mpi-kapik-mpi-wark-t
VII.SG.NOM-3PL.ERG-split-SEQ-break-SEQ-tie-PERF
'they split them (branches), broke them into pieces and tied them'

The Roman numerals denote gender/noun classes, about which more follows. The crucial point here is to demonstrate that these words form a morphological unit, a sequence of bound morphemes. This is readily apparent if we alter the mood of the examples from declarative and positive polarity to hortative and negative respectively. These mood morphemes must occur as the first bound morphemes in the string, and when they do, they usurp the position of the first pronominal prefix, forcing it to a suffixal position and in absolute final position in the entire string; it may appear nowhere else:

(2)

(a) ka-mpu-pay-ma-takat-ɲa-mpan-m
LIKELY-3PL.ERG-first-inside-touch-IMP-3PL.DAT-VII.SG.NOM
'let them first apply it (paint) to them inside'

(b) ta-mpu-park-mpi-kapik-mpi-wark-r-(r)a
NEG-3PL.ERG-split-SEQ-break-SEG-tie-PERF-VII.SG.NOM
'they didn't split them (branches), broke them into pieces and tied them'

Note that the noun class agreement markers which were at the beginning of the verb in (1) now end them in (2). Not only that, but they also trigger morphological changes in the morphemes which precede them. The allomorphs of the third plural dative suffix *-mpun* in (1a) and the perfect suffix *–t* in (1b) are those which occur in word final position. They are no longer in word final position in (2), and hence they appear in their non-final allomorphs, *-mpan* and *–r* respectively. The fact that the same morphemes which occur in absolute initial position in (1) occur in absolute final position in (2) and yet trigger word internal allomorphy of the affixes which precede them is powerful confirmatory evidence that all of the morpheme sequences in (1) and (2) are single coherent morphological words. (p. 810)

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Table 38.1 Yimas agreement affixes for local persons

		PRO	ERG	NOM	ACC (=DAT)
	dl	kapa	ŋkra-	kapa-	ŋkra-
1	pl	ipa	kay-	ipa-	kra-
	sg	ama	ka-	ama-	ŋa-
	dl	kapwa	ŋkran-	kapwa-	ŋkul-
2	pl	ipwa	nan-	ipwa-	kul-
	SG	mi	n-	ma-	nan-

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These examples also exhibit all the hallmarks of polysynthesis by the definition offered above: head marking, including extensive polypersonalism, and incorporation, here obviously *pay-* 'first' and *ma-* 'inside' in the (a) examples. Yimas head marking is thoroughgoing. The language lacks all nominal case marking for core grammatical relations, and there is a single case marker *–n ~ -nan* to indicate oblique relations. Nominal case and verbal pronominal agreement are in complete complementary distribution; no nominal can be indicated by both. The pronominal verbal agreement system is very complex. The language is basically split ergative/accusative in alignment, but this is crosscut by a direct–inverse system, a not uncommon property of heavily head-marking languages. Other examples include the Algonkian or Tibeto-Burman languages. The split ergative system separates the local persons, namely the immediate speech act persons, first and second, from the non-local person, the third person. The local persons, first and second, align according to a three-way system, distinguishing the transitive subject, A, in ergative case, from the intransitive subject, S, in nominative case, and the transitive object, O, in accusative case. The non-local third person distinguishes the transitive subject, A, with ergative case from the intransitive subject, S, and the transitive object, O, both marked with nominative case.[1] Tables 38.1 and 38.2 present the two forms.

Transitive verbs take prefixes for both core arguments, A and O, but their position and their actual case form is determined by animacy/person considerations along a hierarchy of first > second > third animate > third inanimate and case rankings such that ACC > ERG > NOM. The higher rank follows the lower in a position closer to the verb root, reflecting the salience of the immediately preverbal position. To see how this system all works, consider how one would say 'I hit them' versus 'they hit me' in Yimas. The direct form, 'I hit them' is (p. 811) straightforward. The first person A is ergative, hence *ka-* 1SG ERG. The third person is O and should be realized as accusative. But for third persons, there are no accusative bound pronominals; their case marking system is ergative-nominative, so any erstwhile accusative is formally realized as nominative, *pu-* 3PL NOM. Because local (that is first or second person) > non-local and ERG > NOM, the first person ergative prefix will occupy the salient immediately preverbal position, and the third person nominative the left edge:

(3)
pu-ka-tpul
3PL NOM-1SG ERG-hit
'I hit them'

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Table 38.2 Yimas agreement affixes for non-local persons

	PRO	ERG	NOM	DAT
SG	na-k/n	n-	na-	-nakn
DL	impa-k/n	mp-	impa-	-mpn
PC	kra-k/n	ŋkl-	kra-	-ŋkt
PL	pu-k/n	mpu-	pu-	-mpun

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The inverse form ‘they hit me’ is a little more complicated. The O is first person, and first person does have overt accusative forms, for example *ŋa-* 1SG ACC. Note that the first person is higher by both 1 > 2 > 3 and ACC > ERG, so *ŋa-* 1SG ACC must occupy the salient immediately preverbal position. The third person A would normally take ergative case, and indeed there is an ergative form for third plural: *mpu-* 3PL ERG. But the expected form **mpu-ŋa-tpul* is ungrammatical because it runs afoul of an additional requirement that the language stipulates for an overt nominative: such a verb lacks a nominative prefix on the left edge. So instead, the third plural pronominal is realized by the corresponding nominative prefix, *pu-* 3PL NOM:

(4)
pu-ŋa-tpul
3PL NOM-1SG ACC-hit
‘they hit me’

Ditransitive verbs are a bit more complex, due to their triple agreement patterns. Consider ‘I gave it to them’ versus ‘they gave it to me’, the first, direct, the second, inverse. The direct form is straightforward. The third person recipient is realized by a suffix, so it doesn’t compete with the interaction of the prefixes where the direct–inverse system holds sway. The A, the ergative pronominal, is first person and therefore the higher ranked than the third person theme argument, by both and ERG > NOM, so it appears in the immediately preverbal position. The theme argument is inanimate; themes with human or higher animate referents are completely prohibited for ditransitive verbs in Yimas. The affixes in Tables 38.1 and 38.2 only apply to pronominals with human or very high animate referents, like pigs, dogs, or (p. 812) crocodiles. Nouns with such referents belong to one of three noun classes. Nouns with all other referents and particularly all nouns with inanimate referents belong to one of the other seven major and a handful of minor noun classes. These classes also have verbal bound pronominals, but they usually occur in only one case, nominative. For our examples here let us take *patn* ‘betelnut’, a noun of noun class V, as the referent of ‘it’; the relevant nominative pronominal is *na-* V.SG.NOM. As it is a nominative pronominal, it satisfies the requirement of overt nominative and will appear on the left edge, so the resulting form is:

(5)
na-ka-ŋa-r-mpun
V.SG.NOM-1SG.ERG-give-PERF-3PL.DAT
‘I gave it to them’

The inverse form is more interesting, as first and second person recipients are realized by accusative pronominals, the highest ranked. As a first person participant realized by an accusative pronominal, it ranks highest by both 1 > 2 > 3 and ACC > ERG > NOM, so it must occupy the immediately preverbal position. Now the third person plural actor argument and the third person singular theme argument slug it out. Both are third person, so 1 > 2 > 3 will not distinguish them, but ERG > NOM will. The A argument is ergative, and the theme argument because it is inanimate only has the option of being

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nominative, so by ERG > NOM, the actor argument is of the next highest rank and occupies the position next closest to the verb, while the hapless theme argument satisfies the requirement of an overt nominative on the left edge:

na-mpu-ŋa-ŋa-t
(6) V.SG.NOM-3PL.ERG-1SG.ACC-give-PERF
'they gave it to me'

Finally consider the case of ditransitive verbs where the A is first person, but the recipient second. This is problematic because the two principles conflict: by 1 > 2 >3, the actor is the higher ranked, but by ACC > ERG > NOM, the recipient is the higher ranked. In this case the language sidesteps the problem by having a suppletive portmanteau morpheme that explicitly expresses this combination, and in exactly the immediately preverbal salient position:

na-mpan-ŋa-t
(7) V.SG.NOM-1 > 2SG-give-PERF
'I gave it to you'

So much for Yimas's extensive head marking and polypersonalism, now for incorporation, specifically of adjuncts. Its head marking and polypersonalism Yimas has inherited from its parent protolanguage, as all languages of its immediate Lower Sepik family share its complex split-ergative, direct-inverse shenanigans, though the details differ (Foley 2016). But adjunct incorporation is another matter. Yimas is far and away the most and possibly the only really polysynthetic language in its family, a distinction it shares with its neighboring, but unrelated language, Alamblak of the Sepik Hill branch of the larger Sepik family. While polysynthesis is possibly found, depending on one's definition, in other sub-families of the Sepik family, the languages of the Sepik Hill family lack it to our knowledge, with the clear (p. 813) exception of Alamblak. It is likely that Yimas and Alamblak have egged each other on in building up their polysynthetic structure, as speakers of the two languages have longstanding trade and intermarriage arrangements. Incorporation happens on very many levels in Yimas, and I can only illustrate some in the space allotted. But one typical feature of polysynthetic languages that Yimas largely lacks is noun incorporation. It does have it, but mainly with body parts and essentially in fixed idiomatic expression, such as:

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(8)

(a) ura-mpu-n(a)-**akpi-api**-n
fire.NOM-3PL.ERG-PRES-back.V.SG-put.inside-PRES
'they are turning their backs to the fire'

(b) na-mampi-**yaŋkuraŋ-kamal**-kia-k
3SG.NOM-again-mind.VI.SG-search-NIGHT-IRR
'he thought it over again'

(c) ampan-pay-**pucm-api**-n
HORT.1.ERG/2SG.ACC-first-time.VIII.SG-put.inside-IMP
'I will give you time first' = 'I'll wait for you'

Note that these incorporated nouns remain adjuncts; they do not affect the valency of the verb: *api-* 'put inside' in (8a) is a two argument verb and remains so in this example. The only other kind of noun incorporation Yimas possesses is with nominalized adjectives or adjectival verbs. The language only has three true adjectives, meaning 'big', 'good', and 'other', though the class of adjectival verbs is larger. When the adjectives or the adjectival verbs are suffixed with one of the nominal concordial suffixes for noun class, they become nouns syntactically, and can then occur as free nouns in the clause or incorporated in inchoative or causative constructions:

(9)

(a) mpa kumpwi yua-y i-ɲa-t-n
now boy.I.PL good-I.PL I.PL.NOM-PRES-become-PRES
'nowadays the boys are growing up well'

(b) mpa kumpwi i-ɲa-**yua-y**-c-n
now boy.I.PL I.PL.NOM-PRES-good-I.PL-become-PRES
'nowadays the boys are growing up well'

(c) kumpwi i-kay-**yua-y**-cal-c-t
boys.I.PL I.PL.NOM-1PL.ERG-good-I.PL-CAUS-become-PERF
'we raised the boys well'

It seems rather likely that the reason that Yimas lacks productive noun incorporation is its rich noun class system. It is very noticeable that most canonical polysynthetic languages either lack gender or noun class systems (Pawnee, Greenlandic) or have quite simple ones (Alamblak, Mohawk). These simple gender systems are a far cry from the

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rich set of contrasts that Yimas makes: over thirty, with ten major classes and three numbers. Interestingly, though, the typical discourse properties of incorporated nouns and (p. 814) the bound concordial pronominal markers of Yimas are exactly the opposite. Cross-linguistically incorporated nouns are usually discourse-wise non-salient, with typically generic or non-specific referents, though this is not true in all cases (Fortescue 2007; Sadock 1986; Evans 2003a).

Yimas pronominal affixes, on the other hand, always have specific and commonly definite referents; they represent what Bresnan and Mchombo (1987) call anaphoric agreement. If a nominal is non-specific, it does not agree, and this means that pronominal affixes are not obligatory in Yimas. Again, from the standpoint of many polysynthetic languages, where such agreement is obligatory (Bininj Gun-wok (Evans 2003a)), this is typologically unusual and violates Baker's (1996) Visibility Condition. No matter what its core grammatical function is, if a nominal is not specific, it will not be marked with a pronominal affix:

(10)

(a) payum patn ka-ŋa-ŋa-n
man.I.PL betelnut.V.SG LIKELY-1SG.ACC-give-PRES
'there's a good chance some men will give me betelnut'

(b) nimpi ay-cra-wampaki-ɲa-ŋkt
leaf.VII.PL HORT.PL-around-throw-IMP-PC
'let us few distribute letters'

In (10a), neither the A argument nor the O argument are realized by pronominal affixes. In both cases their referents are non-specific, and therefore that option is unavailable; only the definite first person recipient argument is indicated by a pronominal prefix. In (10b) the A argument is definite and realized pronominally in a portmanteau morpheme with the hortative mood, but the O argument is again non-specific new information and is blocked from such realization. In both examples the nominals with non-specific referents appear simply as free constituents in the clause. Given these facts, there is no architectural reason why Yimas could not incorporate, say, these non-specific O arguments in (10): it simply doesn't, though I suspect the rich noun classification system has something to do with it. Nouns are obligatorily marked for number and class in Yimas. Incorporating nouns would typically require stripping at least number specification away, something I think the language just won't tolerate, though why is not clear. It does seem that cross-linguistically if you are a polysynthetic language you typically invest heavily in either noun incorporation (Pawnee, Mohawk) or in noun classification (Yimas), but not both; some northern Australian languages like Bininj Gun-wok (Evans 2003a) appear to have a bet each way, but do clearly favor the former.

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Yimas may lack productive noun incorporation, but it does have productive verb incorporation, and it has this in spades. And it goes much further than the usual cases of causative verbs or other types of auxiliaries like desideratives, inceptives, or conatives, though it does have these too. Verb incorporation is pervasive and very weakly constrained, often described as verb compounding or nuclear verb serialization. Essentially verbs of any type can be incorporated up to a maximum of three. There are two major types of very productive verb incorporation in the language, one of which clearly falls under the formal rubric of dependent-head synthesis, while the other one is more problematic. The first concerns verbs which are in a simultaneous relationship, that is, 'do X while doing Y'. The time of event (p. 815) Y here is dependent on that of X, like a participle in English and Latin grammar. It is an adjunct; if not incorporated, the verb expressing this event must be realized as an obliquely marked non-finite nominalization, as in (11):

(11)

taw-kia-r-mat-ɲan
sit-NIGHT-NFN-PL-OBL

pia-mp-ŋa-i-kia-ntut
talk.NOM-3DL.ERG-1SG.ACC-tell-NIGHT-RM.PAST

'at night, while sitting down (with them both), they both told me'

But the verb in the adjunct can be incorporated. This is done by simple juxtaposition with the head, and usually with either reduplication of the incorporated verb or incorporation of the aspectual adverbials *yakal-* CONT or *nanaŋ-* DUR, or both, as in this example, closely corresponding in meaning to (11) (the prefix *caŋ-* is an allomorph of the comitative applicative *taŋ-*):

(12)

pu-n-yakal-caŋ-tantaw-malak-ntut
3PL.NOM-3SG.ERG-CONT-COM-sit.RED-converse-RM.PAST
'while sitting, he was conversing with them'

Other examples of verb incorporation of this type:

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(13)

(a) kia-kay-nanaŋ-kamat-kula-ntut
VI.PL.NOM-1PL.ERG-DUR-search-walk.about-RM.PAST
'we were walking around, looking for them (stems of leaves)'

(b) kia-n-kankan-awkura-kiantut
VI.PL.NOM-3SG.ERG-shoot.RED-gather-FR.PAST
'he was hunting them (ducks) a few days ago'

The other major type of verb incorporation involves verbs in a sequential temporal relationship. This is more problematic as an example of dependent-head synthesis, as really none of these verbs are in an obvious adjunct relationship to another. If not incorporated, verbs in sequential relationships occur in typical Papuan clause-chaining constructions sharing the same actor:

(14)

kay ak-mpi i-ka-wut-ncut
canoe.VIII.SG push-SEQ VIII.SG.NOM-1SG.ERG-put.down-RM.PAST
'I pushed the canoe and put it down (into the river)'

But incorporation is definitely an option:

(15)

kay i-ka-ak-mpi-wut-ncut
canoe.VIII.SG VIII.SG.NOM-1SG.ERG-push-SEQ-put.down-RM.PAST
'I pushed the canoe down into the river'

(p. 816) There is a clear meaning difference between these two as noted in the translations: in the clause-chaining construction the two events are related simply as a sequence of events that the actor has done, and there may be a significant time lag between them, while in the incorporating construction, the second event immediately follows from the first, and there is a causal relationship between them. This causal condition need not always hold, nor is there a the requirement that the actors be shared, since any core argument will do (16b), but the lack of any significant time delay must hold for verb incorporation to be possible:

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(16)

(a) ya-mpu-park-mpi-kapik-mpi-wark-t
V.PL.NOM-3PL.ERG-split-SEQ-break-SEQ-tie-PERF
'they split them (branches), broke them and tied them'

(b) ura-mpu-kra-taŋ-ntak-mpi-ɲa-ntut
IX.PL.NOM-3PL.ERG-1PL.ACC-COM-leave-SEQ-stay-RM.PAST
'they left them (pieces of coconut) with us'

(c) tma-mp-ŋkra-wul-mpi-ŋa-kt
III.DL.NOM-3DL.ERG-1DL.ACC-boil-SEQ-give-RM.FUT
'they both will boil them both and give them to us both'

(d) awt ŋa-kra-awl-mpi-waraca-ŋa-n
fire IMP.PL-1PL.ACC-get-SEQ-return-BEN-IMP
'bring back fire for us!'

Note that the pronominal affixes for these incorporation constructions mark the complex verb as a whole, clearly demonstrating them to be a coherent unit, not just a sequence of verbs. In example (16c), the verb exhibits triple agreement, but the immediately following verb is only monotransitive; it is only the second ditransitive verb that licenses the ditransitive marking for the whole unit. In (16d), the first verb is monotransitive and the second, intransitive; it is the benefactive applicative suffix *–ŋa* that derives the whole structure as ditransitive. This applicative suffix in (16d) is homophonous with the verb 'give' in (16c), but distinct in that it does not require a physical transfer to occur, whereas the latter does. The crucial meaning is that the recipient for whom the object is intended is not present when the act is performed (Foley 1991: 308–11). But all these verbs in sequential verb incorporation structures seem to be of equal rank. It is not obvious that one or more are adjuncts to the other, so where is the head and where are the dependent(s) in any dependent-head synthesis? My suggestion is that the verb carrying the tense suffix is the head, as tense is the only obligatory verbal inflection in the language, and that means the final verb in the chain. The only possible issue here is semantic, as this could be viewed as anti-iconic: the head is the verb which denotes the last event to occur in the sequence of events, so verbs denoting events which are later in time incorporate those denoting events earlier in time, though this is in keeping with more general discourse patterns in the language which favor building subordinating finite clauses that describe prior events.

For both types of verb incorporating construction, it is not only verb roots that can be incorporated. This has already been illustrated by the use of reduplication in the simultaneous type and the overt presence of *–mpi* SEQ in the sequential type. But more

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generally, (p. 817) various other types of derivations or incorporations can apply to verb roots before another stage of incorporation; incorporation is recursive:

(17)

(a) paŋkra-kaykaykay-kwalca-mpi-kulanaŋ-tal-kiantu-ŋkt
1PC.NOM-quickly-get.up-SEQ-walk-start-FR.PAST-PC
'we few got up quickly and started to walk'

(b) na-n-way-mpi-ira-ya-ntut
3SG.NOM-3SG.ERG-turn-SEQ-ALL-come-RM.PAST
'she turned and came towards him'

In (17a) the adverb *kayakaykay* 'quickly' is incorporated by the verb root *kwalca-* 'get up', while the verb root *kulanaŋ* 'walk' is incorporated by the verb *tal-* 'hold', with the specialized meaning 'start' in this type of incorporation construction. The latter now complex incorporation structure then incorporates the first in a sequential verb incorporation construction. In (17b) the intransitive verb *ya-* 'come' is derived into a transitive verb by the allative applicative prefix *ira-* ALL; this then incorporates the verb *way-* turn' in a sequential verb incorporation construction.

Beyond its very richly productive verb incorporation, Yimas has adjunct incorporation of nearly every stripe. There is a whole class of adverbial elements which do not exist in a free form, but must be incorporated, and another set which are optionally incorporated. Many of these were possibly originally verb roots, but none currently function as verbs, having been reanalyzed via incorporation constructions as adverbials. Here are a few examples:

(18)

(a) na-n-**pay**-ira-wampuŋ-kra-ntut
3SG.NOM-3SG.ERG-first-ALL-heart.V.SG-cut-RM.PAST
'he was angry at her right then'

(b) impa-na-**kwanan**-t-kratk-n
3DL.NOM-PRES-wrongly-RCP-fight-PRES
'they are fighting each other for no reason'

(c) ya-kay-**mamaŋ**-arkat-ɲcut
VIII.PL.NOM-1PL.ERG-slowly-paddle-RM.PAST
'we paddled them (canoes) slowly'

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The set of applicatives, six altogether, overlaps with that of the obligatorily incorporated adverbials, both uses probably having developed from verbs in incorporating constructions (Foley 1991). Consider the visual applicative *taŋkway-* VIS, which adds a benefactive or allative participant who is visually monitored for his response, in contrast to the simple allative applicative which adds a participant toward whom an action is directed:

(19)

(a) na-n-**taŋkway**-wampaki-kia-k-nakn
V.SG.NOM-3SG.ERG-VIS-throw-NIGHT-IRR-3SG.DAT
'he threw it at him' (looking at him)

(p. 818)

(b) na-n-**ira**-wampaki-kia-k-nakn
V.SG.NOM-3SG.ERG-ALL-throw-NIGHT-IRR-3SG.DAT
'he threw it toward him' (in his direction)

The verb root *wambaki-* 'throw' is a simple monotransitive one, with two core arguments, yet the inflection here shows three. The extra argument is added by the applicative prefixes. But the same prefixes can be used as simple incorporated adverbials, with no addition of arguments:

(20)

(a) ya-n-**taŋkway**-wampaki-pra-k
V.PL.NOM-3SG.ERG-VIS-throw-toward-IRR
'he threw them down carefully' (toward me)

(b) aympanuŋ ku-mp-**ira**-yawra-k
stick.X.SG X.SG.NOM-3DL.ERG-ALL-pick.up-IRR
'they both fetched the stick'

In both these examples the verb roots remain monotransitive; no new arguments are added by the prefixes, so they are not functioning as applicatives. Rather they are incorporated adverbials modifying the event. In (20a) *taŋkway-* VIS simply adds the meaning that the event is being monitored visually, that is, it is being done carefully, while *ira-* ALL adds the meaning that what is picked up is brought to where the main action is going on, that is, fetched.

Another common type of adjunct incorporation in Yimas involves the elevational and directional affixes. Again there are no free morphemes that express these general locational notions; incorporation is obligatory. They occur as both prefixes and suffixes. The suffixes are straightforward; *-pu* 'toward the deictic center' versus *–pra* 'away from deictic center'. These can occur alone, as in (20a) above, but most commonly occur with an elevational or directional prefix. The elevationals are a simple contrast of *wi-* 'up' versus *l-* 'down', but the directionals include *ma-* 'in, inside' (see example (1a)), *tu-* 'out,

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outside', *kaw(ku)-* 'straight across', and *tra-* 'about, in many directions or places' (see example (10b)). These elevationals and directionals are pervasive in Yimas discourse, and occur with verbs of motion to indicate direction (21a, b, c) or verbs of stationary actions to indicate where the actions occur (21d, e, f):

(21)

(a) kapa-l-way-mpi-mul-pra-kia-k
1DL.NOM-down-turn-SEQ-run-toward-NIGHT-IRR
'we turned around and ran down here'

(b) kia-mp-**kawku**-ta-pu-k
VI.PL.NOM-3DL.ERG-straight-put-away-IRR
'they both put them (fish traps) straight down'

(c) anta-pay-**wi**-ŋka-pu-kia-k nam-n
HORT.SG-first-up-go.by.land-away-NIGHT-IRR house-OBL
'let me go up to the house first'

(p. 819)

(d) nampt ya-mpu-**tra**-wark-k
house.PL houses.PL.NOM-3PL.ERG-about-tie-IRR
'they built their houses about' (in different places)

(e) kay i-na-l-ampu-n
canoe.VIII.SG VIII.SG.NOM-PRES-down-float-PRES
'the canoe is down there'

(f) irmpŋ na-nan-l-ant-kia-ntut
slit.drum.V.SG V.SG.NOM-2PL.ERG-down-hear-NIGHT-RM.PAST
'did you all hear the slit drum down below in the night?'

Another common feature of polysynthetic languages that Yimas shares is possessor raising. though this is, of course, shared with non-polysynthetic languages, being found, for instance, in English: 'he poked me in the eye'. In possessor raising the possessor of a body part affected by the event denoted by the verb which is functioning either as an S, O, or occasionally an oblique constituent (22c) is raised to core argument status and treated like a recipient participant, being realized by an accusative pronominal prefix for local persons and a dative suffix for non-local persons:

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(22)

(a) ŋarwa wa-ŋa-kwalca-t
penis.IX.SG IX.SG.NOM-1SG.ACC-get.up-PERF
'I have an erection'

(b) k-n-pay-mpi-t-kia-k-nakn yampaŋ
VI.SG.NOM-3SG.ERG-lie-SEQ-lay.down-NIGHT-IRR-3SG.DAT head.VI.SG
'he lay (there) and laid down his head' (of a snake coiling up)

(c) pŋkmp-n yaw-n muraŋ
guts.VII.SG-OBL path.IX.SG-OBL oar.VI.SG

k-n-kaw-kaca-kia-ntuk-nakn
VI.SG.NOM-3SG.ERG-straight-swing-NIGHT-RM.PAST-3SG.DAT
'at night he swung his oar straight down its esophagus' (of a crocodile)

Interestingly, this construction is not restricted to true body parts: anything that is viewed as belonging inherently to or intimately associated with the person licenses this construction:

(23)

(a) kuran na-ka-tu-r-akn
lice.V.SG V.SG.NOM-1SG.ERG-kill-3SG.DAT
'I killed his lice'

(b) ta-mpu-ant-kia-k-nak-mpwi
NEG-3PL.ERG-hear-NIGHT-IRR-3SG.DAT-talk.NOM
'they didn't listen to her calls'

(p. 820) Unlike some other polysynthetic languages such as Bininj Gun-wok (Evans 1996) or Mohawk (Mithun 1995b), which commonly incorporate the body part noun after its possessor has been raised, this is not a feature of Yimas; this is linked, of course, to the fact that the language lacks productive noun incorporation. Possessor raising though is being treated here as another case of incorporation by dependent-head synthesis. While the incorporated possessor is semantically a dependent of an argument of the verb, not a dependent of the verb directly, it is nonetheless within the verb's domain; the possessor is stripped away from its own directly governing head to be incorporated into the head of the clause, the verb.

Yimas is typical of many polysynthetic languages in not having much formal constituent structure above the word level, complex enough as that is. There is little in the way of phrases, and the word order of constituents at the clausal level is quite free, though the language is typologically of a right-headed structure. What noun phrases there are in the

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language are extremely simple; they consist of a head, plus one and only one preceding dependent. This dependent can be either a possessor, which is restricted to a pronominal or a proper name, or one of the adjectives, nothing more:

(24)

(a)	ama-na	apak		(b)	Yakayapan	na	kay
	1SG-POSS	sister.II.SG			PN	POSS	canoe.VIII.SG
	'my sister'				'Yakayapan's canoe'		
(c)	kpa	kay		(d)	yua	payum	
	big	canoe.VIII.SG			good	man.I.PL	
	'a big canoe'				'good men'		

The indication of possession in Yimas is the only place where it departs from its head-marking profile; here the dependent is marked (unless, of course, we analyzed the possessor as the head, but this would go against the pattern of the language everywhere else). In these dependent-head structures absolutely no permutation of the order of the two constituents is possible, in marked contrast to the enormous freedom of constituents elsewhere in the language, nor can material be inserted between the dependent and the head. This strongly suggests that these are not phrases at all, but complex words built by dependent-head synthesis, that is, adjunct incorporation by nominal heads. They are not noun compounds, however, as these have a different structure, usually joined together by the oblique suffix: *puratuŋk-n tampan* bile-OBL liver 'gall bladder', *num-n karm* village-OBL language 'native language' (see also the example in (22c)). Unlike with verbal heads, though, incorporation with nominal heads is not recursive; one cannot combine adjectives nor nest possessors (one can, though, say *ama-na* [*num-n karm*] 'my native language' as this is a single incorporation of a dependent to a compound noun head):

(25)

(a)	*ama-na	apak-na	impram
	1SG-POSS	sister-POSS	basket.VII.SG
	'my sister's basket'		

(b)	*kpa	yua	kay
	big	good	canoe.VIII.SG
	'a big, good canoe'		

(p. 821) The only way to say such things is to break them up into multiple nominal constituents, and now the order of these is free, suggesting a lack of recursion in the noun phrase which has also been claimed for the South American language Pirahã by Everett (2005):

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(26)

(a) [apak] [ama-na-nmaŋ] na-m] [impram] ~
sister.II.SG 1SG-POSS-II.SG NR.DIST-POSS-VII.SG basket.VII.SG

[impram] [m-na-m] [ama-na-nmaŋ] [apak]
basket.VII.SG NR.DIST-POSS-VII.SG 1SG.-POSS-II.SG sister.II.SG
'my sister, her basket'

(b) [yua kay] [kpa-y] ~
good canoe.VIII.SG big-VIII.SG

[kay] [yua-y] [kpa-y]
canoe.VIII.SG good.VIII.SG big.VIII.SG
'a big good canoe'

Once the noun class concordial suffixes for possessives and adjectives are appended to them (they are the same set for both), they are no longer dependents, but noun phrases in their own right, hence this freedom of ordering, as they are just nouns in apposition to each other. Adjectival verbs always require them and never form complex words by incorporation through dependent-head synthesis; this is due to the fact that they are essentially finite relative clauses, and as such, not incorporable. It is clear that these are strings of distinct constituents, not just a single constituent with relatively free word order, because they are interruptible by external material:

(27)

anti kanta waca-k-i-ɲan kapa-taw-wat
land.VIII.SG but small-IRR-VIII.SG-OBL 1DL.NOM-sit-HAB
'but we both live on a little land'

Yimas conjunctions like *kanta* 'but' strongly favor second position in the clause. Note that both *anti* 'land' and *waca-* 'small' are under the scope of the oblique suffix. While *waca-* 'small' clearly modifies *anti* 'land', it cannot form a constituent with it because it is separated from it by the conjunction *kanta* 'but', in spite of it bearing the oblique suffix which governs *anti* 'land' as well. This example transparently demonstrates how the concordial system works in Yimas. The adjectival verb *waca-k-* 'be small' bears a concordial suffix *–i* which both nominalizes it and indicates that the noun derived belongs to noun class VIII and is singular: 'a small thing of noun class VIII'; with the oblique suffix is derived 'on/at a small thing of noun class VIII'. This is a constituent all on its own, and if the referent has been already established in discourse, this is all that would most likely be used to refer to it. In (27) this noun is in apposition to *anti* 'ground', being of the same noun class, and so its semantics unifies with it, 'on a small (bit of) land'. This is how *anti* 'ground' inherits its oblique reading, even though it itself is not case marked by the oblique suffix.

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The only other type of phrase in Yimas is the postpositional phrase. These too are quite restricted, although less so than noun phrases, if indeed the language has any true noun (p. 822) phrases bigger than a word. Most commonly, the dependent of a postpositional head is also just a single noun or pronoun; however, it does permit a complex dependent consisting of coordinated nouns. As coordination is theoretically unrestricted, this rules out an incorporation analysis here:

(28)

(a) mawnta makau kantk
catfish.IX.SG tilapia.IX.SG with
'with catfish and tilapia'

(b) kumpwi kpa-y kpa-y kantk
boy.I.PL big-I.PL big-I.PL with
'with grown up boys'

This could be taken as evidence that such strings form constituents, but outside of postpositional phrases there is nothing to support this, and much to refute it. Given that coordination is known cross-linguistically to often have unusual syntactic properties, I do not take it as convincing evidence that Yimas has noun phrases (see Stassen (2001) and Haspelmath (2005b) for typologies of coordination).

Yimas clause structure is also very simple and very flat, again typical of polysynthetic languages. There is no hierarchical structure of any type. Word order is quite free, and, as we have seen, constituents are essentially limited to words. Yimas is an excellent exemplar of a non-configurational language (Hale 1983) at the clause level, in contrast to its highly wrought and quite rigid structure at the word level, especially for verbs. The only obligatory constituent of a clause is a verb (Yimas does possess a copula), and the bulk of clauses in narrative discourse or conversation do indeed consist of just that. The verb projects no higher structure, that is, there is no VP, no constituent consisting of the verb and its dependents that does not include all the nouns, core or oblique, in the clause. The next most common clause type contains a verb and one noun; this is usually the O argument, but it can be the A argument or an oblique as well. This single noun can precede (21f) or follow (22b) the verb, though the former is more common. It is very rare to have two overt core argument nouns with a verb (a combination of a core argument, usually the O, and an oblique is less rare (see (22c)); this is a very marked structure, well less than 1 percent of all clauses. If this does occur, word order is very flexible:

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(29)

anmal kay i-n-yamal ~
man.I.SG canoe.VIII.SG VIII.SG.NOM-3SG.ERG-carve

kay panmal i-n-yamal ~
panmal i-n-yamal kay ~
kay i-n-yamal panmal

'the man carved the canoe'

though verb initial order is not attested in this configuration. Speakers reject it as awkward, although it must be admitted most examples of clauses with two overt core arguments have been elicited—they are that rare in spontaneous speech.

(p. 823) Where Yimas does differ from more typical polysynthetic languages like Mohawk (Baker 1996) or Bininj Gun-wok (Evans 2003a) is in the domain of clause combining or interclausal relations. Languages like Mohawk or Bininj Gun-wok, in a point made much of theoretically by Baker (1996), typically lack any kind of nonfinite constructions and disfavor or lack subordination, preferring instead to link clauses via coordination of fully inflected finite verbs. This appears not to hold for a number of polysynthetic languages, such as Dalabon (Evans 2006b), Chukchi (Dunn 1999), or Pawnee (Cruickshanks 2011), and does not hold for Yimas. Coordination is only a minor option in Yimas, and this is true for two reasons. First, as a Papuan language, it exhibits the typical pattern of clause chaining found among most Papuan language families in New Guinea, though not all, the languages of southern New Guinea being a notable exception (Evans 2015); this was a trait it inherited from its proto-language. Although its clause-chaining structures are less elaborate than those of the Trans New Guinea languages of the highlands of New Guinea, as they are much shorter and there is no switch reference morphology, they are still a common enough feature of Yimas texts. Clause-chaining structures are those in which dependent clauses with morphologically stripped down verbs are coordinated together with a final independent clause whose verb carries the full range of inflections (Foley 1986). The dependent clauses take their specifications for grammatical features like tense and mood from the independent clause:

(30)

(a) kaprak-mpi yaŋi-ɲan na-mp-ayŋ-(n)tut
cut-SEQ pot.VIII.SG-OBL 3SG.NOM-3DL.ERG-put-RM.PAST
'having cut it, they both put it in a pot'

(b) tmal kray-mpi ya-kay-am-wat amtra
sun.V.SG-OBL dry-SEQ V.PL.NOM-1PL.ERG-eat-HAB food.V.PL
'the sun having dried it, we always eat the food'

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Note the subjects of the two clauses in the chain are the same in (30a), but different in (30b), yet the dependent verb marker *–mpi* SEQ is unchanged; there is no switch reference morphology in Yimas, nor a ban on chaining clauses with different subject referents.

But the second reason why Yimas doesn't favor coordination of fully inflected finite verbs is that it doesn't favor coordination at all. While clause-chaining structures like those of (30) are common, the favored way for the language to combine clauses, quite unusually for a Papuan language, is by subordination, again a feature it shares with languages of southern New Guinea (Evans 2015). Subordinate clauses are always nominalized, and Yimas has a very rich array of types of nominalized clauses, both nonfinite and finite, far too rich to treat all here, but I will summarize the basic workings of the system (for more details, see Foley (1991: 377–444). Because subordinate clauses are nominalized, they are nouns, and like all nouns they must carry a marker of noun class (and number, if relevant). There are no complementizers in Yimas. Their functional equivalents are the noun class markers. Verbs in finite nominalizations bear the normal tense suffixes and make all the same tense distinctions as verbs in main clauses. In nonfinite nominalizations, the tense suffix of the verb is replaced by *–ru* NFN (with a number of allomorphs). The uses of the two types of nominalizations can be summarized as in Table 38.3. **(p. 824)**

Table 38.3 Nominalizations in Yimas

Nonfinite	Core: Verbal Complement
	Oblique: Simultaneous Clause (example (10))
	Modifier: Participial Relative Clause
Finite	Core: Perception Clause
	Oblique: Adverbial Clause
	Modifier: Relative Clause

As mentioned, all nonfinite nominalizations are marked by the suffix *–ru* with a number of allomorphs, which replaces the usual tense suffix, plus a noun class/number suffix. The most straightforward kind are agentive nominalizations, which are just the nonfinite verbs marked by one of a set of noun class markers that indicate human referents. These distinguish four numbers, singular, dual, paucal, and plural, plus masculine and feminine gender, though that contrast is lost in the paucal number:

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(31)

(a)	kpanti-pramuŋ-tu-mat		(b)	irut	ampa-r-maŋ
	a.lot-sleep-NFN-M.PL			mat.IX.PL	weave-NFN-F.SG
	'men who sleep too much'			'a mat weaver'	

Note that these are essentially just verb plus noun compounds, where the noun head is replaced by a noun class/number marker:

(32)

(a)	pan-tu-impram	(b)	am-tu-tpuk
	pound.sago-NFN-basket..VII.SG		eat-NFN-sago.X.SG
	'a basket for holding pounded sago flour'		'sago to eat'

Note also that in examples like (31b) nothing can come between the O argument of the nominalized verb, nor can it be modified by a preposed possessor or adjective, although as the example shows, it is inflected for number. Still, these syntactic restrictions strongly suggest that it is in fact incorporated, yet another example of dependent-head synthesis, so perhaps (31b) would be more accurately written following the English convention: *irut-ampa-r-maŋ* mat.IX.PL-weave-NFN-F.SG 'a mat-weaver'.

Nonfinite nominalizations functioning as core arguments of verbs have the same structure. Of course, agentive nominalizations are just a type of these, but there are four other types, with differing semantics. They are complements of desire, complements of speech or thinking (thoughts are internal speech), complements of actions, and complements of habitual or customary action. All of these have their distinctive noun class suffixes, with the exception of complements of desire which are formed by compounding the nominalized verb to the head noun *wampuŋ,* a class V noun meaning 'heart, desire, care, feelings':

(p. 825)

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(33)

(a) complement of desire

tpuk	am-tu-**wampuŋ**	na-n-kacapal
sago.X.SG	eat-NFN-heart.V.SG	V.SG.NOM-3SG-ERG-forget

'he lost interest in eating sago'

(b) complement of speech

tpuk	am-tu-**mpwi**	pia-mpu-ŋa-i
sago.X.SG	eat-NFN-words	words.NOM-3PL.ERG-1SG.ACC-tell

'they told me to eat sago'

(c) complement of thought

tpuk	am-tu-**mpwi**	pia-ka-kacapal
sago.X.SG	eat-NFN-words	words.NOM-1SG.ERG-forget

I forgot to eat sago'

(d) complement of action

tpuk	am-t-**nti**	yua-nti	antiak
sago.X.SG	eat-NFN-act	good-act	COP.act

'(the way you now are) eating sago is good'

(e) complement of habitual or customary action

tpuk	am-tu-**wal**	yua-n	anak
sago.X.SG	eat-NFN-custom.V.SG	good-V.SG	COP.V.SG

'(the custom of) eating sago is good'

Again, nothing can intervene between the O arguments and the verb, nor can they be modified directly.

These nominalized verbal complements are full nouns in every way. Not only do they bear noun class marking, but they can be modified by adjective and adjectival nouns (34a) and take possessors. The possessor noun is how the actor of these nominalizations is realized (34b):

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(34)

(a) pacuk-tu-wampuŋ kpa-n ama-na-t-n
copulate-NFN-heart.V.SG big-V.SG 1SG.NOM-PRES-feel-PRES
'I'm feeling very horny' (literally 'I feel a big desire to copulate')

(b) tia-ka-n(a)-aykapiŋa-n God na anti
act.NOM-1SG.ERG-know-PRES God POSS ground.VIII.SG

papk-tu-wal
carve-NFN-custom.V.SG

'I know how God made the world'

(p. 826) And nominalizations can be derived from complex verbs built up by incorporation:

mŋkawŋ yara-mpi-wul-cu-mpwi
house.post.X.SG pick.up-SEQ-put.in.hole-NFN-words

(35) pia-ka-i-c-mpun
words.NOM-1SG.ERG-tell-PERF-3PL.DAT

'I told them to erect the house posts'

All finite nominalizations have the basic form of a finite relative clause, so they are the best place to start when describing the structures. Relative clauses in Yimas, both finite and nonfinite, are never embedded: they are simply nominalized verbs bearing noun class/number suffixes in apposition to a noun bearing the same specifications which they modify, namely their head noun. The examples in (36) illustrate the contrast between nonfinite (36a) and finite (36b) relative clauses:

(36)

(a) namarawt [awt pampay-kulan-t-awt]
person.I.SG fire carry-walk-NFN-M.SG
'the man who tends the fire' (as his job)

(b) namarawt [awt m-na-pampay-kulanaŋ-Ø]
person.I.SG fire NR.DIST-PRES-carry-walk-3SG.NOM
'the man who is tending the fire' (right now, others may do it later)

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The nonfinite relative clause expresses a characteristic action of long duration or customary behavior, while the finite relative clause denotes the action as occurring within the time frame provided by the tense suffix, in (36b), present tense, 'right now'. Both nonfinite (37a) and finite relative clauses (37b) are adjoined (Hale 1976), not embedded, as other material can freely intercalate between them and their head noun:

(37)

(a) namat pu-ŋkl-awl-k [nampt wark-t-mat]
man.I.PL 3PL.NOM-3PC.ERG-get-IRR house.PL build-NFN-M.PL
'those few got the men who build houses'

(b) tia-ka-n(a)-aykapiŋa-n anti papk-tu-wal
act.NOM-1SG.ERG-PRES-know-PRES ground.VIII.SG carve-NFN-custom
[God m-n-papk-ntuk-i]
God NR.DIST-3SG.ERG-carve-REM.PAST-VIII.SG.NOM
'I know how God made the world'

(p. 827) Example (37b) is especially interesting. The head noun of the relative clause *anti* 'ground' is actually inside the nominalized complement of customary action as its O argument. Yet here it serves as the head of the following relative clause, which by its position is outside of the nominalized complement, as such nominalizations are rigidly verb final. The true heads of these relative clauses in any case are the noun class/number suffixes, the apparent head nouns are just other nouns in apposition to them. Hence, relative clauses can appear with no external noun being modified, that is, they are apparently headless, though this is somewhat uncommon for pragmatic reasons:

(38)

na-mpu-ŋa-tkam-t
3.SG.NOM-3PL.ERG-1SG.ACC-show-PERF
[m-(m)pu-tu-r-ak]
NR.DIST-3PL.ERG-kill-PERF-3SG.DAT
'they showed me it, the one that they killed'

Finite relative clauses differ from nonfinite clauses in two ways. First, they take a tense suffix instead of *–ru* NFN, and second, they normally begin with the stem of the near distal deictic *m-* 'that, it'. Yimas lacks true third person pronouns: it simply uses the deictic stems according to distance from deictic center, typically the speaker: *-k* PROXimate, 'this near speaker or deictic center', *m-* 'NeaR DISTal, 'that near you or mid way from deictic center', and *–n* FaR DISTal, 'that yonder, away from both of us and deictic center'. To these stems are added noun class/number affixes to establish the referent of what is being located: *na-k* I.SG-PROX 'him near me', *m-m* NR.DIST-VII.SG 'something of class VII and singular near you or mid distance', *kia-n* VI.PL-FR.DIST 'some

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things of class VI far away'. Yimas *m-* NR.DIST is the functional equivalent of English *that.* The entire nominalized verb of the finite relative clause is appended to *m-,* and this has the same effect on the system of pronominal verbal prefixes as the prefixed modals do: the leftmost nominative prefix is demoted to final suffix position:

(39)

God anti i-n-papk-ntut ⇒
God ground.VIII.SG VIII.SG.NOM-3SG.ERG-carve-RM.PAST
'God made the world'

anti [God m-n-papk-ntuk-i]
ground.VIII.SG God NR.DIST-3SG.ERG-carve-RM.PAST-VIII.SG.NOM
'the world that God made'

However, unlike English relative pronouns such as *that, which, who*, etc that take the relative clause as their complement, and in addition that function as the relativized noun within the relative clause, neither of these hold for Yimas *m-* NR.DIST. The relativized noun of a Yimas relative clause is realized by the noun class/number suffix on the nominalized finite verb, as (38) and (39) demonstrate. And *m-* NR.DIST is clearly not a complementizer with a coherent embedded clausal complement because all the overt arguments (p. 828) of the relative clause precede the *m-* prefixed to the finite nominalized verb; see examples (36b), (37b), (39) and:

(40)

wakntt [kalakn nam-n
snake.III.PL boy.I.SG house-OBL

m-n-(n)a-tu-nt-um]
NR.DIST-3SG.ERG-PRES-kill-PRES-III.PL.NOM

'the snakes the boy is killing in the house'

This is further evidence of the very flat structure of Yimas with very little evidence for any constituents larger than a word. Even relative clauses are little more than sequences of words; hence their constituents 'leak' out of their obvious domain bound by prefixed *m-* NR DIST and the noun class/number suffixes which realize the relativized noun.

Temporal adverbial clauses are just relative clauses whose presumed head noun originally would have been *pucm* 'time, part, piece', although it is only ever realized by its noun class suffix *–mp* VII.SG, and which are case marked by the oblique suffix *–n* OBL, so their literal meaning is 'at the time/part that…':

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(41)

m-ka-na-wa-kiant-**mp**-n ŋarŋ
NR.DIST-1SG.ERG-go-PRES-NR.FUT-VII.SG-OBL one.day.removed

ta-ka-mampi-waraca-mpi-ya-kt
NEG-1SG.ERG-again-return-SEG-come-RM.FUT

'when I go tomorrow, I won't come back again'

Different types of adverbial subordinate clauses, temporals (42a), conditionals (42b), counterfactuals (42c), etc. are simply expressed by different choices of tense or mood marking, but all use this same structure:

(41)

(a) stua-nan m-n-(n)a-irm-(n)t-mp-n
store-OBL NR.DIST-2SG.ERG-PRES-stand-PRES-VII.SG-OBL

yaki-ɲmprm ŋa-wu-ŋa-n
tobacco-leaf.VII.SG 1SG.ACC-buy-BEN-IMP

'while you are at the store, buy me some tobacco!'

(b) m-n m-n-tay-c-mp-n
NR.DIST-I.SG NR.DIST-2SG.ERG-see-PERF-VII.SG-OBL

na-kra-i-ɲa-mpwi
IMP-1PL.ACC-tell-IMP-talk.NOM

'if you see him, tell us'

(c) tuŋkuruŋ ant-ka-tay-c-mp-n
eye.VI.SG POT-1SG.ERG-see-PERF-VII.SG-OBL
ant-ka-tu-r-ak
POT-1SG.ERG-kill-PERF-III.SG.NOM

'If I had seen the eye (of the crocodile), I would have killed it'

(p. 829) Yimas is an interesting example of a polysynthetic language. Like polysynthetic languages generally the word seems to be its favored grammatical level, and consequently its morphology is complex indeed. Yimas exhibits the main defining properties of polysynthesis, polypersonalism and incorporation extensively, but is unusual in a number of the ways in which it does so. First of all, polypersonalism, while very rich in that the language is a relatively rare example of a triple agreement one, is not

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obligatory, as the pronominal agreement affixes normally only indicate nominals with specific referents; those with non-specific referents do not agree. Secondly, while incorporation is also very pervasive, this primarily applies to verbs and allied parts of speech; noun incorporation, the hallmark of many other canonical polysynthetic languages, is lexicalized and sporadic at best. Finally, in contrast to the use of coordination as the main clause linkage pattern in many polysynthetic languages like Mohawk (Mithun 1984b, 2006), and Bininj Gun-wok (Evans 2003a), Yimas is like Pawnee (Cruickshanks 2011) in preferring subordination, and again in contrast to these and like Pawnee has a well-developed array of nonfinite subordinate construction types. Languages like Yimas allow us to explore the range of what polysynthetic languages may be like; the canonical types like Mohawk and Bininj Gun-wok clearly do not exhaust the possibilities. But Yimas, like most of the world's polysynthetic languages, is rapidly approaching extinction, as the juggernaut of the world's metropolitan languages, all non-polysynthetic, continues apace.

Notes:

(1) These affixes need to be described in terms of case and not grammatical relations like subject or object or semantic-grammatical primitives like A, S, and O because the actual formal realization of these vary for case depending on the morphological configurations of verbs. For instance, subjects of intransitive verbs or S arguments are normally in nominative case, as expected: *ama-wa-t* 1SG.NOM-go-PERF 'I went'; however, if the verb is negative in polarity, it appears in ergative case: *ta-ka-wa-t* NEG-1SG.ERG-go-PERF 'I didn't go'. Similarly, if the transitive subject or A argument has third person reference and it occurs with an object also of third person reference, it appears, again as expected, in ergative case: *na-mpu-tay* 3SG.NOM-3PL.ERG-see 'they saw him'. But if the object has first or second person reference, due to the operation of constraints derived from the system of inverse marking, the A argument now appears in nominative case: *pu-kra-tay* 2PL.NOM-1PL.ACC-see 'they saw us'. See Foley (2016) for more discussion of the verbal case marking systems in Lower Sepik languages.

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Koryak

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Abstract and Keywords

The present chapter focuses on verbal polysynthesis in Koryak, a member of the Chukotko-Kamchatkan language family and aims to show how a polysynthetic holophrase is formed in this language. The result of the examination reveals that the language owes the major driving force in promoting verbal polysynthesis to incorporation, especially noun incorporation (NI). In NI, polysynthetic incorporative stems are derived through NP incorporation, multiple nominal incorporation, double P-argument incorporation (though not always accepted), and adverbial incorporation. Denominal verbal affixes which express concrete verbal meanings such as ‘make’, ‘go gathering’, and ‘look for’ can also derive polysynthetic holophrases by (quasi)-incorporating one or more modifiers and adverbial stems. The polysynthetic stem thus formed is enclosed and shaped into a polysynthetic holophrase by verbal inflectional categories such as aspect, mood, and agreement in person and number with the core argument.

Keywords: Chukotko-Kamchatkan, Koryak, incorporation, NP incorporation, multiple noun incorporation, adverbial incorporation, person–number agreement, denominal verbal affix

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39.1 Introduction

THE Chukotko-Kamchatkan language family to which Koryak belongs displays a kind of polysynthesis distinct from that of others in the Arctic/Sub-Arctic region. Unlike in the other polysynthetic language groups in the Arctic, Eskimo-Aleut and Na-Dene, the major driving force towards polysynthesis in Chukotko-Kamchatkan (with one exceptional member, Itel'men) is incorporation, in which almost any kind of stem can be integrated into a very long incorporative complex stem. In addition, rich verbal inflectional categories such as aspect, mood, person-number agreement, and valency changes including causative, antipassive, and anticausative, enable the incorporative complex stem to be completed as a polysynthetic holophrase. Furthermore, denominal verbal affixes that convey concrete verbal meanings often play a complementary role to free-standing and incorporating verb stems of similar meanings. Therefore, it can be said that Chukotko-Kamchatkan displays a kind of polysynthesis intermediate between the incorporating type such as that of the Iroquoian languages (Mithun 2009) and the affixing type such as that of the Eskimo languages (Miyaoka 2012).

The present chapter mainly focuses on Koryak (the Chawchuvan dialect) as a representative of Chukotko-Kamchatkan, citing supplementary Chukchi data when needed (Kurebito, T. 1998, 2012), and aims to clarify the nature of polysynthesis in this language family. The structure of the present chapter is as follows. First, the profile of Koryak is overviewed in Section 39.2. Next, verbal inflectional morphology is examined in Section 39.3. Section 39.4 deals with incorporation in the VP, including various types of noun incorporation (NI, hereafter) in addition to adverbial incorporation and multiple verb incorporation, all of which promote polysynthesis. Denominal verbal affixes used in place of the corresponding free-standing verbs in NI and multiple verb incorporation are examined in Section 39.5. Section 39.6 provides concluding remarks.

39.2 Profile of the Language

Koryak belongs to the Chukotko-Kamchatkan language family, together with Chukchi, Kerek, Alutor, and Itel'men. It is distributed in the northern part of the Kamchatka peninsula (p. 831) and on the mainland opposite. This area corresponds to the former Koryak Autonomous Region (on Kamchatka) and the Severo-Evensk region of Magadan oblast (on the mainland). According to the Russian Census of 2010, the number of Koryak speakers is estimated to be about 2,191. The language is in danger of extinction, since its youngest speakers are in their 50s, and children do not learn it as their native language anymore.

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The phonemic inventory of the Chawchuvan dialect is as follows: p, t, t’, k, q, v, ɣ, ʕ, c, m, n, n’, ŋ, l, l’, j, w, i, e, a, o, u, ə. /ʕ/ indicates a pharyngeal in Koryak (correlate of the Chukchi glottal stop, initially at least). Note that voicing is not a contrastive feature and all the stops are voiceless. The symbol /’/ denotes palatalization of the dentalveolars. /c/ is used as the symbol of the affricate [/tʃ/] (For further details on the phonetic and phonological features of the dialect, see Kurebito, M. 2004).

Typologically, Koryak is agglutinating, polysynthetic, and double-marking. Word order is relatively free, as there is agreement in person and number with the core arguments of intransitive and transitive verbs. Affixation (suffixes, prefixes, and circumfixes), incorporation, reduplication, and suppletion are employed for word formation. Reduplication of a noun-initial (C)VC is often employed for forming the absolutive singular of nouns (e.g. liŋliŋ ‘a heart’, wunewun ‘pine cone’, al’peʔal’ ‘flatfish’). Suppletion is sometimes employed for distinguishing between intransitive and transitive (compare ewjik(INTR) vs. jukkə(TR) ‘eat’, iwwicik(INTR) vs. pələk (TR) ‘drink’). Affixation and incorporation will be examined in detail in later sections, as they are closely connected with the polysynthesis of Koryak.

Koryak is also an ergative language. S-arguments and P-arguments are marked with the absolutive, while A-arguments are marked with the ergative. However, Koryak does not have an exclusive marker for the ergative except the personal pronominal -nan. The locative or instrumental is used for the ergative of nouns according to the animacy hierarchy (Comrie 1979; Kurebito, M. 2001).

Verbal inflectional categories are aspect, mood, agreement in person and number with the core arguments, and there are valency changes such as causative, antipassive, and anticausative (see further in Kurebito, M. 2013, 2014).

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39.3 Verbal Inflectional System

As mentioned, the verbal character of Koryak is salient and a verb can stand alone as a holophrase. Koryak holophrases are constructed according to the following linear structure.

(1)
(S/A agreement/Inverse)(Mood)(Aspect)(Valency change)(P agreement)
Incorporation (Valency change) Verb stem (Valency change)(Pluralizer)(Aspect)
(A+P agreement)(S/P agreement)

There are two values for aspect: perfective and imperfective. There are four values for mood: indicative, optative, potential, and conjunctive. The verb agrees in person and number with its core arguments. It distinguishes three persons (1st, 2nd, and 3rd person) and three numbers (singular, dual, and plural). Intransitive verbs take person-and-number affixes coding their S-argument, while transitive verbs take person-and-number affixes coding their A-argument and P-argument. There is also an inverse prefix ne-/na- indicating an (p. 832) A-argument low on the following animacy hierarchy relative to a P-argument (see (6) for an example of the inverse na-).

(2) 1st person > 2nd person > 3rd person singular > 3rd person plural

The simplest conjugation of a single verb stem without any incorporated stem and valency change is the following. (3a) illustrates the conjugation of the intransitive verb tawji ‘cough’ (1SG.S, Indicative). (3b) illustrates the conjugation of the transitive verb pŋlo ‘ask’ (1SG.A/3SG.P, Indicative). Note that the following examples can stand alone as holophrases without any independent core argument.

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a. t-ə-tawjiŋ-ə-k-Ø
1SG.S-E-cough-E-1SG.S-PFV
'I coughed.'

t-ə-ku-tawjiŋ-ə-ŋ
1SG.S-E-IPFV-cough-E-IPVF
'I am/ was coughing.'

t-ə-ja-tawjiŋ-ə-ŋ
1SG.S-E-POT-cough-E-POT
'I will cough.'

t-ə-ja-tawjiŋ-eke
1SG.S-E-POT-cough-IPFV
'I will be coughing.'

(3)

b. t-ə-pəŋlo-n-Ø
1SG.A-E-ask-3SG.P-PFV
'I asked him/her.'

t-ə-ko-pŋəlo-ŋ-ə-n
1SG.A-E-IPFV-ask-IPFV-E-3SG.P
'I am/ was asking him/her.'

t-ə-ja-pŋəlo-ŋ-ə-n
1SG.A-E-POT-ask-POT-E-3SG.P
'I will ask him/ her.'

t-ə-ja-pŋəlo-jk-ə-n
1SG.A-E-POT-ask-IPFV-E-3SG.P
'I will be asking him/ her.'

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Besides these inflectional aspects, perfective and imperfective, Koryak has optional aspectual suffixes such as the iterative -tku/-tko, inceptive and habitual -ŋvo, and terminative -pl’ətko. -ŋvo and -pl’ətko are grammaticalized forms of the free-standing verbs ŋvo (p. 833) ‘begin’ and pl’ətko ‘finish’ respectively. It is noteworthy that -ŋvo bears inceptive meaning when it occurs with the perfective (4), while it bears habitual meaning (5) when it occurs with the imperfective (Kurebito, M. 2010). In the following examples, the free-standing personal pronouns are put in parentheses, as they are not obligatory.

(4)

(ənno)	lajv-ə-ŋvo-j-Ø.	
3SG.ABS	walk-E-INC-3SG.S-PFV	
‘He/she started walking.’		

(5)

(ənno)	k-ajaʕ-ə-ŋvo-ŋ-Ø	ɣətɣ-ə-k.
3SG.ABS	IPFV-fish-E-HAB-IPFV-3SG.S	lake-E-LOC
‘He/she always fishes/fished in the lake.’		

There are two types of valency change in Koryak, that is, the S=P alternation, which includes the causative (j-, j- … -et/-at, j-…-ev/-av) and anticausative (-ŋtet/-ŋtat, -et/-at), and the S=A alternation, which includes the antipassive (ine-/ena-, -cit/-cet, -tku/-tko, -et/-at). Both the causative and antipassive are productive ways of valency changing, while the anticausative is limited in its productivity; (6) is an example of the causative j- … -ev/-av; (7) is an example of the anticausative -ŋtet/-ŋtat; (8a) is an example of the antipassive ine-/ena-; and (8b) is an example of the corresponding transitive sentence. Note that in the antipassive sentence (8a) the verb conjugates intransitively and that the agent ‘father’ is promoted to the absolutive and the patient ‘dried fish’ is demoted to the instrumental.

(6)

(əcɣ-ə-nan)	ʕətvəʕət	na-n-qamanci-v-ə-n-Ø.[1]
3PL-E-ERG	boat(ABS.SG)	INV-CAUS-turn.over-CAUS-E-3SG.P-PFV
‘They turned over the boat.’		

1

(7)

Amu	ənkəjep	ɣa-cc-ə-ŋtal-lin	kəltəɣiŋ-ə-n	ujetiki-kin-Ø.
probably	long.ago	RES-untie-E-ANTIC-3SG.S	knot-E-ABS.SG	sledge-REL-ABS.SG
‘Probably the knot of the sledge was untied long before.’				

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(8)

a. En’pic-Ø tewʕel-e pəce
father-ABS.SG dried.fish-INS for.the.moment

k-ine-jpe-ŋ-Ø enanomkaw-ja-k.
IPFV-ANTIP-unload-IPFV-3SG.S store-house-LOC
‘Father is/was first unloading a dried fish into the storehouse.’

b. En’pici-te tewʕel-Ø pəce
father-INS (ERG) dried.fish-ABS.SG for.the.moment

ku-jpe-ŋ-ə-n-Ø enanomkaw-ja-k.
IPFV-unload-IPFV-E-3SG.P-3SG.A store-house-LOC
‘Father is/ was first unloading the dried fish into the storeroom.’

(p. 834) A causative verbal stem derived from an intransitive stem can be further antipassivized: (9a) is an example of the basic intransitive stem umeket ‘gather together’, which might be further analysed into umek ‘together’ and the verbalizing suffix -et; (9b) is an example of its corresponding causative jumekev ‘gather (TR)’; and (9c) is an example of the antipassivized inenumekev ‘gather (INTR)’.

(9)

a. Tumɣ-u mojək-ja-k vetɣəl’ʕat-ə-nv-ə-ŋ
friend-ABS.PL our-house-LOC consult-E-place-E-DAT

ɣ-umekel-linew.
RES-gather.together-3PL.S
‘Friends gathered together at our house for consultation.’

b. (ə-nan) j-umek-ew-ni-n-Ø vitʕ-u.
3SG-ERG CAUS-gather.together-CAUS-3SG.A-3PL.P-PFV moss-ABS.PL
‘He/she gathered the mosses.’

c. (ənno) ajɣəve ŋelvəlʕ-ə-k
3SG.ABS yesterday reindeer.herd-E-LOC

ɣ-ine-n-umek-ew-lin.
RES-ANTIP-CAUS-gather.together-CAUS-3SG.S
‘He/she gathered a/the reindeer herd yesterday.’

Note that the synthetic construction with intransitivizer -et/-at or -ev/-av vs. the corresponding analytic construction with an auxiliary transitive verb lŋ ‘regard’ is also

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another instance of S=A alternation (see Fortescue 2009 for the factors behind the choice between the two constructions): (10a) and (11a) are synthetic intransitive constructions, and (10b) and (11b) are the corresponding transitive constructions with auxiliary verb lŋ.

(10)

a. El'ʕa-Ø ku-jejwec-et-ə-ŋ-Ø toj-ʕojacek-ə-ŋ.
woman-ABS.SG IPFV-sympathize-INTR.ER-E-IPFV-3SG.S young-guy-E-DAT
'The woman sympathizes/ sympathized with a young guy.'

b. El'ʕa-ta jejwec-u ku-lŋ-ə-ŋ-ni-n
woman-ABS.SG sympathize-ESS IPVF-regard-E-IPFV-3SG.A-3SG.P

toj-ʕojacek-Ø.
young-guy-ABS.SG
'A woman sympathizes/ sympathized with the young guy.'

(11)

a. ʕojacek-Ø ko-lmal-av-ə-ŋ-Ø el'ʕa-ŋ.
guy-ABS.SG IPFV-trust-INTR.ER-E-IPFV-3SG.S woman-DAT
'The guy trusts/ trusted a woman.'

b. ʕojacek-a ləmal-o ku-lŋ-ə-ŋ-ni-n el'ʕa-Ø.
guy-INS trust-ESS IPFV-regard-E-IPFV-3SG.A-3SG.P woman-ABS.SG
'A guy trusts/ trusted the woman.'

(p. 835) 39.4 Incorporation in the VP

Section 39.3 focused on the verbal inflectional frame of the holophrase and limited the discussion to verb stems. This section discusses incorporation in the VP, especially NI, whose flexibility and capacity for expansion is largely responsible for the extensive polysynthesis in Koryak (Kurebito, M. 2001).

Adverbial incorporation and multiple verb incorporation are referred to in addition. That is, 39.4.11 presents examples of adverbial incorporation. Examples of multiple verb incorporation (although not so common in Koryak) and of complex incorporation found in Chukchi riddles (not in Koryak) are presented in 39.4.12 and 39.4.13.

Tests based on phonological and morphological criteria reveal that the combination of noun and verb in Koryak NI is a lexical unit. First, vowel harmony,[2] which morphophonologically serves to combine several morphemes together into a single word,

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applies to the whole NI complex (Kurebito, M. 1999). Second, the incorporated noun is located directly to the left of the verb stem and is often preceded by inflectional prefixes.

Koryak permits the incorporation of nouns that stand in various notional relations to their verbs. In the most common type of NI, the incorporated noun serves as the P-argument of the transitive clause. In addition, the S-argument of an intransitive clause and a number of oblique case-marked nominals, such as instrumental, locative, allative, prolative, and ablative, may be incorporated. A predicate S-argument which stands logically in a predicative relation to the subject can also be incorporated. However, incorporation of the A-argument such as found in Ainu (Sato 1992) and of the predicate P-argument is not permitted in Koryak. Examples of NI bearing various notional relations to the verb are given below in subsections 39.4.1 through 39.4.10.

As NIs have corresponding analytical constructions (AC, hereafter) with unincorporated, free-standing nouns, both of them are presented in the following examples; examples of NI (p. 836) are presented as (a), and those of AC are presented as (b). In the examples, for descriptive purposes, an incorporated noun in examples of NI is translated as indefinite, while an unincorporated, free-standing noun in examples of AC is translated as definite, although the free nouns of the analytic sentences are specific/individuated rather than definite and this is the case for all forms of incorporating/analytic alternations. Therefore, the English definite article in the glosses is not quite accurate (see Dunn 1999 for a discussion of discourse functions of NI).

39.4.1 P-argument incorporation

Koryak productively permits transitive P-argument incorporation. This type of NI causes valency alternation. That is, an A-argument, which is marked with the ergative in AC, raises to the absolutive S-argument in NI, and the whole incorporative complex inflects intransitively. In the following examples, NI is shown in (a), and AC is shown in (b) respectively.

(12)

a. (ɣəmmo) t'-omlecʕ-ə-jece-k-Ø.
1SG.ABS 1SG.S-woodchip-E-gather-1SG.S-PFV
'I gathered woodchips.'

b. (ɣəm-nan) t'-ə-jici-new-Ø omlecʕ-o.
1SG-ERG 1SG.A-E-gather-3PL.P-PFV woodchip-ABS.PL
'I gathered the woodchips.'

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(13)

a. (ɣəmmo) t’-ə-jaja-n-cem-av-ə-k-Ø.
1SG.ABS 1SG.S-E-yurt-CAUS-break-CAUS-E-1SG.S-PFV
‘I broke a yurt.’

b. (ɣəm-nan) t’-ə-n-cim-av-ə-n-Ø jaja-ŋa.
1SG-ERG 1SG.A-E-CAUS-break-CAUS-E-3SG.P-PFV yurt-ABS.SG
‘I broke the yurt.’

(14)

a. (ɣəmmo) t-ə-kmiŋ-ə-n-ɣəjul-av-ə-k-Ø.
1SG.ABS 1SG.S-E-boy-E-CAUS-learn-CAUS-E-1SG.S-PFV
‘I taught a boy.’

b. (ɣəm-nan) t’-ə-n-ɣəjul-ev-ə-n-Ø kəmiŋ-ə-n.
1SG-ERG 1SG.A-E-CAUS-learn-CAUS-E-3SG.P-PFV boy-E-ABS.SG
‘I taught the boy.’

Note that P-argument incorporation shares similarity with antipassivization in its absolutive case marking on the underlying A-argument and intransitive conjugation of the verb. In the following (15a) is the example of NI, (15b) is the antipassive sentence, and (15c) is the corresponding transitive sentence. The underlying P-argument in the antipassive sentence takes different case marking according to the Affectedness hierarchy: omission>the (p. 837) instrumental>the locative>the allative>the dative (Kurebito, M. 2014). The underlying P-argument is omitted in (15b), because the transitive verb nm ‘kill’ is the highest in the Affectedness hierarchy.

(15)

a. Kawi-Ø ɣa-qoja-nm-al-len.
Kawi-ABS.SG RES-reindeer-kill-INTR.ER-3SG.S
‘Kawi killed reindeer.’

b. Kawi-Ø ɣ-ena-nm-al-len [Ꝑ]
Kawi-ABS.SG RES-ANTIP-kill-INTR.ER-3SG.S
‘Kawi killed (something).’

c. Kawi-na-k təm-ne-n-Ø qoja-ŋa.
Kawi-AN.SG-LOC(ERG) kill-3SG.A-3SG.P-PFV reindeer-ABS.SG
‘Kawi killed the reindeer.’

39.4.2 S-argument incorporation

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S-argument incorporation is limited to descriptions of natural phenomena.

(16)

a. ku-wajam-qit-ə-ŋ-Ø
IPFV-river-freeze-E-IPFV-3SG.S
'A river is/was freezing.'

b. Wejem-Ø ku-qit-ə-ŋ-Ø.
river-ABS.SG IPFV-freeze-E-IPFV-3SG.S
'The river is/was freezing.'

(17)

a. Tijk-ə-jelqiv-i-Ø.
sun-E-set-3SG.S-PFV
'The sun set.'

b. Tijkətij jelqiv-i-Ø.
sun(ABS.SG) set-3SG.S-PFV
'The sun set.'

Koryak NI provides a confirmation of Sapir's (1911: 275) observation that animate nouns do not seem to incorporate as often as inanimate nouns. In Koryak, animate nouns can be incorporated, although less readily than inanimate nouns. The examples in (18a) show incorporation of the animate noun 'fish'.

(18)

a. ənn-inini-j-Ø
fish-appear-3SG.S-PFV
'A fish appeared.'

b. ənnəən inini-j-Ø.
fish(ABS.SG) appear-3SG.S-PFV
'The fish appeared.'

(p. 838) ## 39.4.3 Instrumental incorporation

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(19)

a. (ɣəmmo) t’-ə-qapl’-ujicivat-ə-k-Ø.
1SG.ABS 1SG.S-E-ball-play-E-1SG.S-PFV
‘I played with a ball.’

b. (ɣəmmo) qapl-a t’-ujicivet-ə-k-Ø.
1SG.ABS ball-INS 1SG.S-play-E-1SG.S-PFV
‘I played with the ball.’

(20)

a. (ɣəm-nan) t-ə-pəlwənt-ə-velat-ə-n-Ø peŋke-n.
1SG-ERG 1SG.S-E-money-E-buy-E-3SG.P-PFV hat-ABS.SG
‘I bought the hat with money.’

b. (ɣəm-nan) peŋke-n pəlwənt-a t-ə-vilet-ə-n-Ø.
1SG-ERG hat-ABS.SG money-INS 1SG.A-E-buy-E-3SG.P-PFV
‘I bought the hat with money.’

(21)

a. (ɣəmmo) t’-ajɣəvenŋ-ə-en’ajace-k-Ø.[3]
1SG.ABS 1SG.S-evening-E-go.out.visiting-1SG.S-PFV
‘I went out visiting in the evening.’

b. (ɣəmmo) ajɣəven’ŋ-a t’-en’ajace-k-Ø.
1SG.ABS evening-INS 1SG.S-go.out.visiting-1SG.S-PFV
‘I went out visiting in the/one evening.’

3

a. (ɣəmmo) t-ə-nki-kjev-ə-k-Ø.
1SG.ABS 1SG.S-E-midnight-wake-E-1SG.S-PFV
‘I woke up in the middle of the night.’

(22)

b. (ɣəmmo) t-ə-kjev-ə-k-Ø nəki-ta.
1SG.ABS 1SG.S-E-wake-E-1SG.S-PFV midnight-INS
‘I woke up in the middle of the/that night.’

(p. 839) ## 39.4.4 Locative incorporation

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(23)

a. (ɣəmmo) t-ə-nəmnəm-jonat-ə-k-Ø
1SG.ABS 1SG.S-E-village-live-E-1SG.S-PFV
'I lived in a village.'

b. (ɣəmmo) nəmnəm-ə-k t-ə-junet-ə-k-Ø
1SG.ABS village-E-LOC 1SG.S-E-live-E-1SG.S-PFV
'I lived in the village.'

(24)

a. (ɣəmmo) t-ə-vutq-ə-ʕeqev-ə-k-Ø.
1SG.ABS 1SG.S-E-darkness-E-go.out-E-1SG.S-PFV
'I went out in the dark.'

b. (ɣəmmo) vutq-ə-k t-ə-ʕeqev-ə-k-Ø
1SG.ABS darkness-E-LOC 1SG.S-E-go.out-E-1SG.S-PFV
'I went out in the darkness.'

39.4.5 Allative incorporation

(25)

a. (ɣəmmo) t-ə-tnup-təpɣet-ə-k-Ø.
1SG.ABS 1SG.S-E-hill-climb-E-1SG.S-PFV
'I climbed a hill.'

b. (ɣəmmo) t-ə-təpɣet-ə-k-Ø tənop-etəŋ.
(p. 840) 1SG.ABS 1SG.S-E-climb-E-1SG.S-PFV hill-ALL
'I climbed the hill.'

(26)

a. (ɣəmmo) t-ə-vutq-ə-lqət-ə-k-Ø.
1SG.ABS 1SG.S-E-darkness-E-go.out-E-1SG.S-PFV
'I went out towards evening.'

b. (ɣəmmo) votq-etəŋ t-ə-lqət-ə-k-Ø.
1SG.ABS darkness-ALL 1SG.S-E-go.out-E-1SG.S-PFV
'I went out towards the evening.'

39.4.6 Prolative incorporation

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(27)

a. (ɣəmmo) t-ə-kimitʕa-kaŋitku-k-Ø
1SG.ABS 1SG.S-E-clothes-bend.down-1SG.S-PFV
'I looked for clothes.'

b. (ɣəmmo) t-ə-kaŋitku-k-Ø kemetʕa-jpəŋ
1SG.ABS 1SG.S-E-bend.down-1SG.S-PFV clothes-PRL
'I looked for the clothes.'

39.4.7 Ablative incorporation

(28)

a. (ɣəmmo) t'-ə-n'ut'e-lejv-ə-tku-k-Ø
1SG.ABS 1SG.S-E-tundra-walk-E-ITR-1SG.S-PFV
'I often walked from (the) tundra.'

b. (ɣəmmo) nota-ŋqo t-ə-lejv-ə-tku-k-Ø
1SG.ABS tundra-ABL 1SG.S-E-walk-E-ITR-1SG.S-PFV
'I often walked from the tundra.'

a. (ɣəmmo) t'-ə-qipju-ll'ap-ə-k-Ø
1SG.ABS 1SG.S-E-hole-look-E-1SG.S-PFV
'I looked from a hole.'

(29)

b. (ɣəmmo) qepjo-ŋqo t'-ə-ll'ap-ə-k-Ø
1SG.ABS hole-ABL 1SG.S-E-look-E-1SG.S-PFV
'I looked from the hole.'

(p. 841) ### 39.4.8 Predicate S-argument incorporation

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(30)

a. ʕeɣəlŋ-ə-n ko-ʕətʃ-ə-mowola-ŋ-Ø
wolf-E-ABS.SG IPFV-dog-E-bark-IPFV-3SG.S
'The wolf is barking like a dog.'

b. ʕeɣəlŋ-ə-n təqən ʕətʃ-ə-n ko-mowola-ŋ-Ø
wolf-E-ABS.SG as.if dog-E-ABS.SG IPFV-bark-IPFV-3SG.S
'The wolf is barking like the dog.'

39.4.9 NP Incorporation

The NI process is not limited to a single noun. If the head noun itself is incorporated by the verb, its modifier can also be incorporated along with it as in the following (a) examples. An AC example with the modifier not incorporated into the head noun will also be given in (b) sentences, where each modifier corresponds to any of the four affixed forms: n-…-qin/-qen for property predication as in (31) and (32), ɣe-/ɣa-…-lin/-len for participles as in (33), -in/-en for possessives as in (34), and -kin/-ken for relationals as in (35) and (36).

(31)

a. (ɣəmmo) t-iwl-utt-ə-mle-k-Ø.
1SG.ABS 1SG.S-long-stick-E-break-1SG.S-PFV
'I broke a long stick.'

b. (ɣəmmo) n-iwl-ə-qin uttəut t-ə-mle-n-Ø.
1SG.ABS PRP-long-E-ABS.SG stick(ABS.SG) 1SG.A-E-break-3SG.P-PFV
'I broke the long stick.'

(32)

a. qejalɣ-ə-moqa-ɣala-j-Ø
coldness-E-rain-pass-3SG.S-PFV
'Cold rain passed.'

b. nə-qejalɣ-ə-qin muqemuq ɣala-j-Ø.
PRP-E-coldness-E-ABS.SG rain(ABS.SG) pass-3SG.S-PFV
'The cold rain passed.'

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(33)

a. (ɣəmmo)
1SG.ABS
t-ə-jomja-nalɣ-ə-n-ə-pʕ-av-ə-k-Ø.
1SG.S-E-dye-skin-E-CAUS-E-dry-CAUS-E-1SG.S-PFV
'I dried a dyed skin.'

b. (ɣəm-nan) t-ə-n-ə-pʕ-av-ə-n-Ø.
1SG-ERG 1SG.A-E-CAUS-E-dry-CAUS-E-3SG.P-PFV

ɣa-jomja-len nalɣ-ə-n
PTCP-dye-ABS.SG skin-E-ABS.SG
'I dried the dyed skin.'

(p. 842)

(34)

a. t-ə-kmeŋ-ə-mənɣ-elɣətav-ə-k-Ø
1SG.S-E-child-E-hand-clean-E-1SG.S-PFV
'I cleaned a child's hands.'

b. Kəmiŋ-in mənɣ-ə-t t-ilɣətew-net-Ø.
child-POSS hand-E-ABS.DU 1SG.A-clean-3DU.P-PFV
'I cleaned the child's hands.'

(35)

a. (ɣəmmo)
1SG.ABS
tʾ-om-lʾəqlʾaŋ-kemetʕa-nʾ-coccəm-av-ə-k-Ø.
1SG.S-warm-winter-clothes-CAUS-get.prepared-CAUS-E-1SG.S-PFV
'I prepared warm winter clothes.'

b. (ɣəm-nan) n-om-qinew ləqleŋ-kine-w kimitʕa-w
1SG-ERG PRP-warm-ABS.PL winter-REL-ABS.PL clothes-ABS.PL

tʾ-ə-n-coccəm-aw-naw-Ø.
1SG.A-E-CAUS-get.prepared-CAUS-3PL.P-PFV
'I prepared the warm winter clothes.'

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(36)

a. (ɣəmmo) t'-əcco-wala-java-k-Ø.
1SG.ABS 1SG.S-cut.fish-knife-use-1SG.S-PFV
'I used a knife for cutting fish.'

b. (ɣəm-nan) t-ə-java-n-Ø əcco-kin-Ø wala-Ø
1SG-ERG 1SG.A-E-use-3SG.P-PFV cut.fish-REL-ABS.SG knife-ABS.SG
'I used the knife for cutting fish.'

39.4.10 Multiple NI

Koryak also allows multiple NI of a P-argument and an oblique case-marked nominal as in (37) and (38). In such cases, the P-argument is located directly to the left of the verb and the (p. 843) oblique case-marked nominal before the P-argument. Furthermore, the incorporated noun can be accompanied by modifiers.

(37)

a. (ɣəmmo)
1SG.ABS
t'-ə-toja-ajɣəven'ŋ-ə-qoja-n-omak-av-ə-k-Ø.
1SG.S-E-new-evening-E-reindeer-CAUS-gather.together-CAUS-E-1SG.S-PFV
'I herded reindeer in the early evening.'

b. (ɣəm-nan) toj-ajɣəven'ŋ-a qoja-w
1SG-ERG new-evening-INS reindeer-ABS.PL

t-ə-n-umek-ew-new-Ø.
1SG.A-E-CAUS-gather.together-CAUS-3PL.P-PFV
'I herded the reindeer in the early evening.'

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(38)

a. (ɣəmmo)
1SG.ABS1SG.AB
t-ə-ləqlaŋ-kemetʕ-ə-lqəl-qoja-nm-at-ə-k-Ø.
1SG.S-E-winter-clothes-E-material-reindeer-kill-ANTIP-E-1SG.S-PFV
'I killed a reindeer as material for a winter coat.'

b.

(ɣəm-nan)	ləqleŋ-kin	kimitʕ-ə-lqəl-a	qoja-ŋa
1SG.ERG	winter-REL	clothes-E-material-INS	reindeer-ABS.SG

t-ə-nm-ə-n-Ø.
1SG.A-E-kill-E-3SG.P-PFV
'I killed the reindeer as material for a/the winter coat.'

Double P-argument NI is not so readily accepted in Koryak. For example, the following NI (39a) was only accepted after some hesitation by an elderly language consultant.

(39)

a. ? (ɣəmmo) t'-ə-milɣijocɣ-ə-kanca-akmet-ə-k-Ø.
1SG.ABS 1SG.S-E-match-E-cigarette-take-E-1SG.S-PFV
'I bought a box of matches and cigarettes.'

b.

(ɣəm-nan)	t-ekmit-ə-new-Ø	milɣijocɣ-ə-n	to	kanca-w
1SG-ERG	1SG.S-buy-E-3PL.P-PFV	match-E-ABS.SG	and	cigarette-ABS.PL

'I bought the box of matches and cigarettes.'

39.4.11 Adverbial incorporation

NI can further increase synthesis by incorporating an adverbial stem. Note that certain adjective stems express adverbial meanings when incorporated into the verb, for example, mejŋ 'big' means 'in large numbers', tuj 'new, young' means 'just'.

(p. 844)

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(40)

a. (ɣəmmo) t-ə-nkʾe-mejŋ-ə-jetem-ə-nni-k-Ø
1SG.ABS 1SG.S-E-midnight-big-E-yurt.cover-E-sew-1SG.S-PFV
'I sewed a lot of yurt covers in the middle of a night'

b. (ɣəm-nan) nəki-ta unmək ŋənvəq jetem-u
1SG-ERG midnight-INS very many yurt.cover-ABS.PL

t-ə-nni-new-Ø
1SG.S-E-sew-3PL.P-PFV
'I sewed a/that lot of yurt covers in the middle of the night'

(41)

a. (ɣəmmo) t-ə-jəqmitiw-tuj-qleva-kmit-ə-k-Ø
1SG.ABS 1SG.S-E-in.the.morning-new-bread-take-E-1SG.S-PFV
'I have just bought bread in the morning.'

b. (ɣəm-nan) jəqmitiw vitku qəleva-n t-ekmit-ə-n-Ø
1SG-ERG in.the.morning just bread-ABS.SG 1SG.A-take-E-3SG.P-PFV
'I have just bought the bread in the morning.'

39.4.12 Multiple verb incorporation

In addition to NI and adverbial incorporation, multiple verb incorporation, generally incorporating two verbs, occasionally appears in the texts (Kurebito, M. (ed.) 2014, 2016). The two verbs stand in various notional relations to each other and the positional relation between the two verbs does not correlate with which is the head and which is the dependent. For example, in (42) the second transitive verb, java 'use', is the head and the preceding intransitive verb lʕeja 'race' is the dependent, because the whole verb complex conjugates transitively. Meanwhile in (43) the second verb, təla 'go', is the dependent denoting aspectual meaning, that is, a process of continual change, subsidiary to the main verb majŋat 'grow up.' In (44) two verbs, ajm 'draw water' (intransitive) and jewl-al 'bring' (antipassive) stand in the coordinative relation with each other.

T-ə-ko-lʕeja-java-ŋ-naw
(42) 1SG.A-E-IPF-race-use-IPF-3PL.P
'I am/ was riding them in order to race.'

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(43)

Ecɣi-kine-w	majŋ-at-təla-ma,	ewən	l'al'u-l'ʕ-ə-pil'l'aq-u.
now-REL-ABS.PL	big-VBL-go-COM	already	beard-one.with-E-DIM-ABS.PL

'Contemporary young guys already have a little beard while they are growing up.'

(44)

K-ajm-ə-jewl-al-ŋ-Ø	
IPF-draw.water-E-bring-ANTIP-IPF-3SG.S	
'He/she is/was drawing water and bringing it.'	

(p. 845) In Chukchi we will find holophrases which include three verb stems and correspond to complex sentences including a coordinate clause and a purposive clause as in (45) (Kurebito, T. 2012).

(45)

ɣa-jʔa-kətɣənt-ə-n-omak-aw-qaa-ɣatat-len.	
RES-very.much-run.fast-E-CAUS-together-CAUS-reindeer-drive-3SG.S	
'He/she ran very fast and prepared to drive reindeer.'	

39.4.13 Incorporation in Chukchi riddles

There are a number of highly polysynthetic holophrases used for riddles in Chukchi (Kurebito, T. p.c.). In the holophrases in (46) and (47), multiple oblique nominals are seemingly incorporated into the intransitive verb. Note that in (47) the adjective stem ɣətte 'cunning' does not modify nute 'tundra' but is used adverbially, meaning 'cunningly'.

(46)

Question

teŋ-uwʔel-irʔ-ə-qətap-rer-ə-rkən-Ø	meŋinʔ
very-black-fur.coat-E-rich.place-search-E-PRS-3SG.S	who

'He/she is searching (food) in a very black fur coat in a rich place. Who?'

Answer

walwəjŋ-ə-n

raven-E-ABS.SG

'A raven.'

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(47)

Question

ewl-ə-nalɣ-ə-ŋojŋ-ə-ɣətte-nute-leiw-ə-rkən-Ø	meŋin?
long-E-skin-E-tail-E-cunning-tundra-walk-E-PRS-3SG.S	who

'He/she is walking cunningly on the tundra with a long skin tail. Who?'

Answer

selɣəreqokarɣ-ə-n
fox-E-ABS.SG
'A fox.'

The following riddle is an example of complex multiple verb incorporation.

(48)

Question

mas-ləla-pəlm-armasʔ-ə-lʔalan-jəlqat-ə-mŋo-rkən-Ø	meŋin?
almost-eye-blur-strong-E-winter-sleep-E-prepare-PRS-3SG.S	who

'He is almost blind, strong and prepares to sleep in winter. Who?'

Answer

kejŋ-ə-n
bear-E-ABS.SG
'A bear.'

(p. 846)

39.5 Denominal Verbal Affixes

The present section examines the denominal verbal affixes (NV affix, hereafter) used in place of corresponding free-standing verbs in denominal verbal predicates (DV). They produce derived polysynthetic holophrases.

39.5.1 Correlation between NV affixes and free-standing verbs in NI

Koryak forms denominative verbal predicates from noun stems by means of various NV affixes with lexical meanings one would generally expect of free-standing verbs. Denominative verbal predicate constructions show several properties that seem to parallel NI in the following respects.

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First, like free-standing verbs in NI, NV affixes can combine not only with the noun serving as the notional P-argument, but also with the nouns serving as the notional S-argument, directional or instrumental.

(49)

NV affixes combining with P-arguments:	
-ŋel/-ŋal	'go gathering'
- ŋta/ - ŋəta	'fetch'
-u/-o	'eat/drink/kill'
te-…- ŋ/ta-...- ŋ	'make'
-ɣili/-ɣele	'look for'
-ŋəjt	'hunt'
-tve/-tva	'take off'
-ɣijke	'catch'

(50)

NV affixes combining with S-arguments:	
-ŋtet/-ŋtat	'come off'
-tuje/-toja	'get untied'
-juʕ/-joʕ	'begin'
-et/-at	'occur'

(51)

an NV affix combining with directionals:	
-jt	'go to'

(52)

NV affixes combining with instrumentals:	
-lʕet	'go by'
-tku/-tko	'cut by'

Second, like direct object NI, a DV formed by a noun functioning as the transitive direct object and the NV affix with transitive meaning inflects intransitively, and the subject appears in the absolutive case.

(p. 847)

(53)

(ɣəmmo)	t-ə-kmeŋ-ə- ŋta-k-Ø.
1SG.ABS	1SG.S-E-child-E-go.for-1SG.S-PFV

'I went for a child.'

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(ɣəmmo) t-acʕ-o-k-Ø.
(54) 1SG.ABS 1SG.S-boiled.fish-eat-1SG.S-PFV
'I ate a boiled fish.'

Third, like NI, a DV can be formed by a noun phrase with a modifier.

(ɣəmmo) t-enʾpici-melɣəj-ŋəta-k-Ø.
(55) 1SG.ABS 1SG.S-father-gun-fetch-1SG.S-PFV
'I fetched Father's gun.'

(ɣəmmo) t-ənp-ə-kajŋ-ə-ŋəjt-ə-k-Ø.
(56) 1SG.ABS 1SG.S-old-E-bear-E-hunt-E-1SG.S-PFV
'I hunted an old bear.'

(57)
(ɣəmmo) t-ə-ta-kmeŋ-ə-paŋka-pillʾaq-ə-ŋ-ə-k-Ø.
1SG.ABS 1SG.S-E-make-child-E-hat-DIM-E-make-E-1SG.S-PFV
'I made a child's small hat.'

See also the following Chukchi DV with three modifiers in (58). Note that in this example, a denominal verbal affix with concrete verbal meaning is not used but the verbalizing suffix -at is used instead.

jəɣa-qeralɣ-ə-kətɣiɣ-el-at-ə-lʕat-ə-rkən-Ø.
(58) fog-coldness-E-wind-rain-VBL-E-CONT-E-PRS-3SG.S
'Foggy cold windy rain is always falling.'

Fourth, like NI, a DV can be formed by multiple nominals. It can further include adverbs.

(59)
(ɣəmmo)
1SG.ABS
t-ə-qoja-nalɣ-ə-ta-kmeŋ-ə-paŋka-pillʾaq-ə-ŋ-ə-k-Ø.
1SG.S-E-reindeer-skin-E-make-child-E-hat-DIM-E-make-E-1SG.S-PFV
'I made a small child's hat with reindeer skin.'

(ɣəmmo) t-umk-ə-majŋ-ə-vəʕaj-ŋəjt-ə-k-Ø.
(60) 1SG.ABS 1SG.S-forest-E-big-E-grass-mow-E-1SG.S-PFV
'I mowed a lot of grass in a forest.'

(p. 848) DV formation with double P-arguments is not observed in Koryak. However, in Chukchi a DV holophrase such as (61) is permitted.

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(61)
korpa-kawkaw-kante-nŋa-ɣʕat-Ø
grain-bread-candy-get-3PL.S-PFV
'They got grain, bread, and candy.'

Probably because of these similarities between DV and NI, if a free-standing verb has its semantically corresponding NV affix, the DV does not allow NI. The following are examples of free-standing verbs and their corresponding NV affixes, enajej vs. -ɣili 'look for' in (62) and pje-ŋtet[4] vs. -ŋtet 'come off' in (63).

(62)

a. (ɣəmmo) t-ə-wapaq-ɣele-k-Ø
1SG.ABS 1SG.S-E-fly.agaric-look.for-1SG.S-PFV
'I looked for a fly agaric.'

b. *(ɣəmmo) t-ə-wapaq-enajej-ə-k-Ø
1SG.ABS 1SG.S-E-fly.agaric-look.for-E-1SG.S-PFV

c. (ɣəmmo) t-enajej-ə-n-Ø wapaq-Ø
1SG.ABS 1SG.A-look.for-E-3SG.P-PFV fly.agaric-ABS.SG
'I looked for the fly agaric.'

(63)

a. peŋke- ŋtet-i-Ø
hat-come.off-3SG.S-PFV
'A hat came off.'

b. *peŋke-pje-ŋtet-i-Ø
hat-take.off-AC-3SG.S-PFV

c. Peŋke-n pəj-e-ŋtet-i-Ø.
hat-ABS.SG take.off-E-AC-3SG.S-PFV
'The hat came off.'

However, some free-standing verbs, for example, tejk 'make', pje 'take off', and jɣ 'catch', each of which has a corresponding NV affix, te-… -ŋ, -tve, and -ɣijke, may incorporate when accompanied by the antipassive markers, -et/-at, and ine-/ena-.

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(64)

a. (ɣəmmo) t-ə-ta-macina-ŋ-ə-k-Ø.
1SG.ABS 1SG.S-E-make-car-make-E-1SG.S-PFV
'I repaired a car.'

b. (ɣəmmo) t-ə-macina-tejk-et-ə-k-Ø.
1SG.ABS 1SG.S-E-car-make-ANTIP-E-1SG.S-PFV
'I repaired a car.'

(p. 849)

c. (ɣəm-nan) t-ə-tejk-ə-n-Ø macina-Ø.
1SG-ERG 1SG.A-E-make-E-3SG.P-PFV car-ABS.SG
'I repaired the car.'

(65)

a. (ɣəmmo) t-ə-peŋke-tve-k-Ø.
1SG.ABS 1SG.S-E-hat-take.off-1SG.S-PFV
'I took off a hat.'

b. (ɣəmmo) t-ə-peŋke-pj-et-ə-k-Ø.
1SG.ABS 1SG.S-E-hat-take.off-ANTIP-E-1SG.S-PFV
'I took off a hat.'

c. (ɣəm-nan) peŋke-n t-ə-pj-ə-n-Ø.
1SG-ERG hat-ABS.SG 1SG.A-E-take.off-E-3SG.P-PFV
'I took off the hat.'

(66)

a. (ɣəmmo) t-ə-qoja-ɣijke-k-Ø.
1SG.ABS 1SG.S-E-reindeer-catch-1SG.S-PFV
'I caught reindeer.'

b. (ɣəmmo) t-ə-qoja-ena-jɣ-at-ə-k-Ø.
1SG.ABS 1SG.S-E-reindeer-ANTIP-catch-ANTIP-E-1SG.S-PFV
'I caught reindeer.'

c. (ɣəm-nan) qoja-ŋa t-ə-jɣ-ə-n-Ø.
1SG-ERG reindeer-ABS.SG 1SG.A-E-catch-E-3SG.P-PFV
'I caught the reindeer.'

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39.5.2 The NV affix corresponding to a free-standing verb in multiple verb incorporation

Only one example has been found so far in the texts (Kurebito, M. [2016]), in which the NV suffix -ɣili ‘look for’ is attached to the free-standing verb ejeʕu ‘fish’ and forms a verb complex like in multiple verb incorporation.

	ɣamɣa-ɣətɣ-epəŋ	ko-ŋvo-la-ŋ-Ø	ejeʕu-ɣili-k.
(67)	every-lake-PRL	IPF-begin-PL-IPF-3S	fish-look.for-INF
	‘They began to fish and look for fish in every lake.’		

(p. 850)

39.6 Final Remarks

The present chapter examines verbal polysynthesis in the Chukotko-Kamchatkan language family, focusing on Koryak. The following key characteristics were pointed out:

(A) Verbal polysynthesis in Koryak is first and foremost ensured by various forms of incorporation, including NI, adverbial incorporation, and multiple verb incorporation.
(B) Verbal inflectional categories such as aspect, mood, and agreement in person and number with the core arguments enclose and shape the polysynthetic incorporative stem into a holophrase which can stand alone without independent core arguments.
(C) Like verb stems in NI and multiple verb incorporation, NV affixes which express verbal meanings can also derive polysynthetic holophrases by (quasi-)incorporating single P-arguments plus one or more modifiers, double P-arguments (in Chukchi only), adverbial stems, and at least one verbal stem.

Abbreviations

A
agent-like argument
ABL
ablative
ABS
absolutive
AC
anticausative

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ALL
allative
AN
animate
ANTIC
anticausative
ANTIP
antipassive
AUG
augmentative
CAUS
causative
COM
comitative
CONT
continuous
DAT
dative
DIM
diminutive
DV
denominal verbal predicate
E
epenthetic schwa
ERG
ergative
HAB
habitual
INC
inceptive
INF
infinitive
INS
instrumental
INTR
intransitive
INTR.ER
intransitivizer
INV
inverse
IPFV
imperfective
ITR

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iterative
LOC
locative
NV
denominal verbal affix
P
patient-like argument
PTCP
participle
PFV
perfective
PL
plural
POSS
possessive
POT
potential
PRL
prolative
PRS
present
PRP
property predication
REL
relational
RES
resultative
S
intransitive (subject)
SG
singular
TR
transitive
VBL
verbalizer

Notes:

(1) Note that the initial element of the causative j- in j-…-ev/-av becomes n- in word-medium in na-n-qamanci-v-ə-n-Ø.

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(2) Koryak has a complex dominant/recessive type of vowel harmony system along the phonetic parameter high/low, where the presence of a dominant vowel in a word changes the vowels of the non-dominant, recessive segments. In such systems, vowels are divided into two groups, one recessive (**e_1**, **o**, **a,** **$ə_1$**) and the other dominant (**i**, **e_2**, **u,** **$ə_2$**). Both recessive **e_1** and dominant **e_2** are phonetically equivalent to [e], but phonologically they behave differently from each other. Both **$ə_1$** and **$ə_2$** are also phonetically equivalent to [ə], but their phonological behavior is different. A word must contain either all dominant vowels or all recessive vowels and the coexistence of members from both groups of vowels in a word is not permitted. The vowel harmony applies to all words, even to words of high synthesis such as those formed by compounding or incorporation:

> qoja-tʕol-Ø ←**qoja-tʕul-Ø** ‘reindeer meat’ (qoja ‘reindeer’, -tʕol ‘a piece of’, -Ø ABS.SG)
>
> nalɣ-at-ə-k ← **nalɣ-e_1 t-k** ‘cover with buckskin’ (nalɣ ‘buckskin’, -at VBL, -ə- E, -k INF)
>
> k-in-iv-ə-ŋ ← **ku-ine$_1$ -iv-ŋ** ‘He is telling me.’ (k- … -ŋ IPFV, in- 1SG.P, iv ‘tell’, -ə- E)
>
> majŋ-ə-kajŋ-ə-naqo ← **me$_1$ jŋ-kajŋ-ne$_1$ qu** ‘big bear’ (majŋ ‘big’, -ə- E, kajŋ ‘bear’, -ə- E, -naqo AUG)
>
> t-ə-jaja-ŋajkətva-n-Ø ←**t-jaja-ŋajkə$_2$ tva-n-Ø** ‘I cleaned the house for him.’ (t- 1SG.A, -ə- E, jaja ‘yurt’, ŋajkətva ‘clean’, -n 3SG.P, -Ø PFV)

However, the vowel harmony of Koryak is not as strict as that of Chukchi, and many exceptions to the rules are also observed.

(3) By contrast, examples (ia) and (iia) that follow are not examples of NI in which a temporal noun such as ajɣəvenŋ ‘evening’ in (18a) is incorporated. Rather, they exemplify adverbial incorporation. This is apparent because the forms used for ‘morning’ and ‘daytime’ are not nominal. Instead, both jəqmitiw and ʕəl’o are adverbs, meaning ‘in the morning’ and ‘in the daytime’ respectively.

(4) Note that this NV affix -ŋtet/-ŋtat is also the marker of the anticausative as in the corresponding free-standing verb pje-ŋtet ‘come off’ in (63).

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Nivkh

Johanna Mattissen

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Abstract and Keywords

Nivkh (Paleosiberian group), spoken on the lower reaches of the Amur River and on Sakhalin island in Siberia by a few hundred speakers in four main varieties, but rapidly dying out, is a polysynthetic head-marking but configurational SOV language, with defective polypersonalism, noun incorporation, verb root serialization, and complex noun forms. Its dominant structural principle and characteristic design is dependent-head-synthesis, with dependents lexically head-marked and still referentially active. Nivkh displays compositional polysynthesis with a mixed internal structure, as the suffixal domain of a word-form may be described by a template, whereas the pre-root domain is scope-ordered due to dependent chaining. The evolutionary path of complex forms is best conceived of as coalescence of formerly adjacent words. Morphophonemic processes at the word-internal morpheme boundaries, especially consonant dissimilation and assimilation, and bound allomorphs prove the wordhood of the complexes. Non-root bound morphemes encode modalities, degree, scalar, and focus operators and phase of action.

Keywords: head-dependent synthesis, noun incorporation, verb root serialization, mixed internal structure, defective polypersonalism

40.1 The Situation of Nivkh

NIVKH (Paleosiberian group) is spoken on the lower reaches and estuary of the Amur River and on the coasts of Sakhalin island in Siberia by a few hundred speakers in four main varieties, namely, the Amur, North Sakhalin, East Sakhalin, and South Sakhalin varieties, but rapidly dying out. The Nivkh used to be fishermen, hunter-gatherers, dog-

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trainers, and metalworkers, moving between summer and winter dwellings. They have been in contact with other Siberian peoples, especially Ainu and Tungusic, and with the Chinese, Mongolian, Manchu, Russian, and Japanese as the ruling powers over centuries.

Nivkh is a polysynthetic head-marking but configurational SOV language with defective polypersonalism, noun incorporation, verb root serialization and complex noun forms. Its dominant structural principle is dependent-head synthesis, with dependents (complements, modifiers, possessors) lexically marked on their heads, thus forming both complex verb and noun forms. Morphophonemic processes at the word-internal morpheme boundaries, especially consonant dissimilation and assimilation, and bound allomorphs prove the wordhood of the complexes.

Word formation (compounding) follows the same dependent-head synthesis principle (see (51), (62), (91)); there is little derivation, including reduplication. Derivation suffixes comprise several verbalizers (lexicalized output) and nominalizing suffixes.

Clausal linkage relies on a rich inventory of converbs and the nominalized complement form. Nivkh does not have voice, applicative, obviation, nor inverse systems, and there are no discontinuous morphemes.

40.2 Lexical Categories

Nivkh distinguishes the lexical categories noun and verb, pronoun, quantifier, and (invariable) particle. Nouns and verbs are distinguished by their inflectional potential. Due to regular morphophonemic alternations of initial and final sounds at word-internal morpheme boundaries, mainly dissimilation of obstruent clusters, assimilation otherwise, and to final devoicing (see also Shiraishi 2006), both lexical categories have up to eight bound root allomorphs (for details, see Mattissen 2003).

(p. 852)

(1)

ṭus	'meat'	-ṭus ~ -zus ~ -ḍus ~ -sus ~ -ṭuz- ~ -zuz- ~ -ḍuz- ~ -suz-
vəkz-ḍ	's.o. loses sth.'	-vəkz- ~ -pəkz- ~ -bəkz- ~ -fəkz- ~ -vəks- ~ -pəks- ~ -bəks- ~ fəks-
e-v-ḍ	's.o. holds sth.'	-vo- ~ -po- ~ -bo- ~ -v- ~ -f-

Nouns have one free root allomorph, an unmarked case form ("nominative"); verb roots only marginally occur as free forms, they need at least a mood suffix (Mattissen 2003: 186ff.). Bound root allomorphs occur with inflectional affixes and in complex word-forms.

40.2.1 Nouns

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Nouns inflect for number, peripheral case, relational morphemes (see Section 40.5), scalar operator (e.g. ‘also’, ‘only’, ‘even’) and focus (e.g. question, highlighting, exhaustive focus). Nivkh has neither a gender nor an article system, but there are independent nominal classifiers (see 40.2.3).

Number comprises the unmarked singular, the plural -ku ~ -ɣu ~ -xu ~ -gu (Amur dialect, -kun etc. on Sakhalin), correlative–associative singular -ke ~ -ɣe ~ -xe ~ -ge (-kin etc. on Sakhalin) and correlative-associative plural -ko ~ -ɣo ~ -xo ~ -go (see (2)). A plural meaning also comes about by reduplication: erieri ‘rivers’, ñivɣñivx ‘people’ (see Gruzdeva 1997: 143, Panfilov 1962: 97).

(2)
(Panfilov 1962: 169)

hə-ñivx	lur-ko	seta-ɣo	ma-ɣo-gir	qʻotr-ar-ḍ
that-person	ice-ASC.PL	sugar-ASC.PL	dried_fish-ASC.PL-INS	bear-feed-IND/NML

‘S/he fed the bear with pieces of ice, sugar and dried fish.’

Case markers are shown in Table 40.1

Table 40.1 Nivkh case suffixes

Case	Form
Nominative	(unmarked)
Vocative VOC	*-j ~ -a*
Instrumental INS	*-kir ~ -ɣir ~ -xir ~ -gir* (Am), *-kis* etc. *-kit* etc. (ES)
Standard of comparison COMP	*-ək* (Am), *-ak* (ES)
Causee CAUSEE	*-(a)x*
Ablative ABL	*-ux*
Perlative PRL	*-uɣe* (Am)
Locative LOC	*-(u)in* (Am)
Allative ALL	*-tox ~ -dox ~ -rox ~ -rx* (Am), *-toχ* etc. (ES)
Terminative TERM	*-toɣo ~ -doɣo ~ -roɣo*, *-tʻəkə ~ -řəkə* (Am), *-tʻaka ~ -řaka* (ES)

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	-tʿχa ~ -ř̆χa ~ -rʁa

(p. 853)

Table 40.2 Nivkh focus suffixes

verum (question) focus	*-la* *-lo* 'whether'	without interrogative pronoun in the clause
question focus	*-ŋa* *-ata* (Am), *-ara* (ES) '…exactly?'	with interrogative pronoun in the clause
inquiry focus	*-qa ~ -ʁa ~ -χa ~ -ɢa*	'what about …?'
completive/ highlighting focus	*-ta ~ -ra ~ -da*	
exhaustive focus	*-at*	'it is … who/that'
quotational/evidential	*-qan ~ -ʁan ~ -χan ~ -ɢan*	subject of quotation converb *-vut/-vur*
'even' (topical)	*-aqr ~ -aʁr ~ -aχr ~ -ār ~ -ar*	subject/object of focused predicate
'nevertheless'	*-rej ~ -dej ~ -vej*	(mockingly)

The unmarked case form is used for topic, subject, secondary object, predicative noun, and time adverbials.

Scalar operators and focus suffixes (Table 40.2) are mutually exclusive in the final slot of the nominal word form, but are distinct categories. Up to two scalar operators may be chained, while at most one focus suffix is allowed, and focus suffixes, as case suffixes, never occur word-internally, but only at its right margin.

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(3)

scalar operators	
-an	‘also’
-park ~ -vark ~ -bark	‘only’
-para ~ -vara ~ -bara	‘still, yet’
-ti ~ -ri ~ -di (Am), -ṭiŋ ~ -ziŋ ~ -ḍiŋ (ES),	
-tə ~ -rə ~ -də (Am)	‘even’ (focal), negation focus
-avr ~ -uvr ~ -əvr	‘at least’
-lu	‘be it ...’

The basic noun template is:

(4)
(determiner/possessor_slot-attribute_slot/quantifier)-nominal_root-(number)-(scalar operator)-(relational_morpheme)--case-(scalar operator/focus)

The categories separated by “--” mark the right margin of a nominal word and cannot occur word-internally, for example in incorporation.

(5) (Otaina 1978: 64)

if	ur-la-ḍ-γu-gir-park	jeski-ḍ
3s	good-PERM-IND/NML-PL-INS-only	sell-IND/NML

‘S/he sold only the good ones.’

(p. 854)

(6) (Krejnovič 1979: 321)
i-ŋəñf-ku-bark-uvr-nřə-nə-ḍ-ō
3s.POSS-bone-PL-only-at_least-see-FUT-IND/NML-XCL
‘Oh! if only I could see his bones.’

40.2.2 Pronouns

Nivkh pronouns are personal, possessive, demonstrative (see Section 40.7), interrogative, and indefinite pronouns which inflect for case, relational morphemes, scalar operators, and focus suffixes. Personal pronouns (Table 40.3) are not determinable or modifiable, and cannot be the head of a word complex, but non-singular forms enter a complex in a dependent slot (possessor, undergoer, see 40.4.1.5).

Table 40.3 Nivkh personal pronouns

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	singular	dual (1 + 2)	plural
1	*ñi*	*megi* (Am)	INCL: *mer* (Am) EXCL: *ñəŋ* (Am), *ñin* (Sakh.)
2	*ʈʻi*	-	*ʈʻəŋ* (Am), *ʈʻin* (Sakh.)
3	*if* (Am), *i* (NS), *jaŋ*	-	*imŋ* (Am), *in* (NS,ES), *iřn* (ES)
REFL		*pʻi*	
RECI		*rolo, orχ orχ, u-*	

Possessive pronouns are derived from personal pronouns with suffixes:

(7)

possessive with suffix -nə(ḍ):	ñinə(ḍ)	'mine, my folks'	ñəŋnə(ḍ)	1p.EXCL	etc.
possessive with suffix -eo:	ñeo	'mine	ñəŋeo	1p.EXCL	etc.

Interrogative pronouns are:

(8)

human	*aŋ ~ ay* (Am), *tʻaunt ~ tʻaud* (ES), *nar* (NS)	'who'
	tʻaḍ ~ řaḍ (Am)	'which'
	aŋnə ~ aynə	'whose one'
inanimate	*siḍ* (Am), *nunt ~ nud, runt ~ rud* (ES)	'what'
	tʻaḍ ~ řaḍ (Am)	'which'
	řaŋs (Am), *tʻaŋs ~ tʻags* (ES)	'how much/many'
	řar (Am), *tʻas* (ES)	'where'
	tʻakr ~ řakr (Am)	'where to'
	əyr (Am), *ayř* (ES)	'when'

Indefinite pronouns are derived from interrogatives with the suffixes *-laq, -lu* 'be it', *-hagin* 'even if, although', and *-əvr* 'at least' (with analogues for all interrogatives):

(p. 855)

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(Krejnovič 1979: 307, Panfilov 1962: 256–8)

(9)

aŋlu, aŋlaq	'anybody, somebody'
aŋhagin	'anyone at all, everybody', + NEG 'nobody'
aŋəvr	'whoever'
aŋaŋ	'each one'

40.2.3 Quantifiers and particles

Quantifiers in Nivkh fall into three subclasses: non-numeral quantifiers such as *sək* 'all' or *erɣali* 'a lot' (used as copredicates), bare numeral morphemes (used in the modifier slot of a complex noun: *hə-ŋamg-ñivx* 'those seven people'), and classifiers (composed of a numeral + one of about thirty classificatory elements (Krejnovič 1979: 304)), used as heads of noun complexes with appropriate inflection (see (48)) or copredicate).

(10)

	person	boat	general classifier	bundle of dried fish	net
1	*ñin*	*ñim*	*ñaqr*	*ñar*	*ñvor*
2	*men*	*mim*	*meqr*	*mer*	*mevor*
3	*ṭaqr*	*ṭem*	*ṭaqr*	*ṭar*	*ʈfor*
4	*nər*	*nəm*	*nəkr*	*nər*	*ñəvur*
5	*tʿor*	*tʿom*	*tʿoqr*	*tʿor*	*tʿovor*
6	*ŋax*	*ŋax*	*ŋax*	*ŋax*	*ŋayvor*
7	*ŋamk*	*ŋamk*	*ŋamk*	*ŋamk*	*ŋamkvor*
8	*minr*	*minr*	*minr*	*minr*	*minrvor*
9	*ñəñben*	*ñəñben*	*ñəñben*	*ñəñben*	*ñəñbenvor*
10	*mxo*	*mxo*	*mxoqr*	*mxor*	*mxovor*

Invariable particles are

(11)

tʿək	'for a long time'
ərk	'already'
ñik	'recently'
nana	'just'
napa	'up until now, still'
lele, lili	'very'
tʿa	prohibitive particle etc.

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40.2.4 Verbs

Nivkh verbs are marked for causative *-gu*, tense (FUT *-nə-*) and aspectoid/phase of action categories (e.g. completive, progressive, habitual, (40b), (52), (67)), degree (14), modality, polarity (see 40.4.5), mood (15), scalar operator (69), and focus (35), and they form converbs (see 40.4.4). Further polarity, aspectoid, and modal categories (p. 856) are encoded with the help of auxiliaries. Reduplication expresses intensification, for example *pilabilaḍ* 'sth. is very big', iterative, or multiplicative, for example *pəɣzpəɣzḍ* 's.o. throws sth. several times', *zazaḍ* 's.o. knocks at sth.' There is no passive, applicative, or other voice. The causative does not change relations, since the causee enters the clause as an additional participant:

(12) causative of monotransitive verb (Panfilov 1965: 48)

ñi	qan-ax	mavr-ŋaɣi-gu-ḍ-ra
1S	dog-CAUSEE	drake-fetch-CAUS-IND/NML-HILI

'I had the dog retrieve the drake.'

(13) causative of ditransitive verb (Panfilov 1965: 48)

ñi	pʿ-əmək-ax	ṭus	Xevgun-ar-gu-inə-ḍ
1S	REFL-mother-CAUSEE	meat	X.-feed-CAUS-INT-IND/NML

'I will ask my mother to feed Xevgun the meat.'

(14) degree (Otaina 1978: 14)

ṭʿuz-jo-dəf
new-DIM-house
'a newer house'

(15) mood (Panfilov 1965: 160)

if	pʿrə-dox	qʿau-ɣitle
3S	come-SUP	not_exist-naturally

'Naturally, he didn't come.'

The basic verbal template is:

(16)

undergoer_slot-(serial_slot)-root-(transitiviser)-(aspectoid/degree)-(causative)-(aspectoid/degree/tense)-(scalar_operator)-(modality)--mood/scalar_operator/focus/converb_suffix (auxiliary)

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The categories separated by "--" mark off the right margin of a verbal word and cannot occur word-internally. Scalar operator and focus markers are

(17)

negation focus	*-də ~ -tə*	scalar operator
'even'	*-ri*	scalar operator
'still, yet'	*-bar(a) ~ -var(a)*	scalar operator
'only'	*-bark*	scalar operator
interrogative	*-l*	focus
'whether'	*-lo*	focus
highlighting	*-ra*	focus

(p. 857) A special case constitutes the main predicate form: the "indicative" in *-ḍ*, which is originally a nominalization (and still used as such) and inflects partly in a nominal, partly in an idiosyncratic verbal way (see Table 40.4):

(18)

… (modality)-ḍ-(PL)--(scalar_operator/focus)-modal_operator (auxiliary)

Table 40.4 Suffixes on the ḍ-form

number	***-ɣu***	**plural (on matrix predicate only)**
scalar operator	*-ri*	'even'
	-əvr	'at least'
	-lu	'be it'
focus (on matrix predicate only)	*-la*	verum focus
	-ŋa	question word focus
	-ata, -ara	'what exactly'
	-ar ~ -er ~ -aʁr ~ -ār	'even'
	-ra	highlighting
	-ñi	here & now focus

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modal	*-rej ~ -vej*	‘nevertheless’
	-for	irreal apodosis
	-furu	hearsay marker
	-ā ~ -ō ~ -ē	exclamatory

(19) (Panfilov 1965: 160)
if p‘rə-ivi-də-ləγə-ḍ-ra-vej
3s come-PROG-even-lack-IND/NML-HILI-nevertheless
‘Nevertheless, he is not coming.’

The possessor and modifier slots of a nominal word and the undergoer and serial slots of a verbal word are filled via dependent-head synthesis.

40.3 Dependent-Head Synthesis and Head Marking

The Nivkh type of polysynthesis relies on the structural principle of dependent-head synthesis, manifest in both verb and noun forms: dependents coalesce ad hoc with their heads in a productive way, yielding a single non-lexicalized wordform, called a complex in Mattissen (p. 858) (2003) and Nedjalkov and Otaina (2013). Evidence for the phonological and morphological wordhood of complexes lies in the morphophonological consonant changes at the complex-internal morpheme boundaries, the use of bound allomorphs of roots within complexes, and the position of inflection (see Mattissen 2003: Chapters 2 and 3).

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(20)

(Krejnovič 1937: 28)

a.	Pəf	oʁla-tʻo-ḍ
	P.	child-carry-IND/NML
	subject	N+V_complex = predicate
	'Pəf carried the child.'	
b.	Pəv-oʁla	řo-ḍ
	P.-child	3sU:carry-IND/NML
	N+N_complex = subject	predicate
	'Pəf's child carried it.'	
c.	ñi	Pəv-oʁla-tʻo-ḍ
	1s	P.-child-carry-IND/NML
	subject	$[[N+N]_N+V]$-complex = predicate
	'I carried Pəf's child.'	

The remarkable facts about Nivkh dependent-head synthesis are that dependents coalesce in the form of full lexemes to their heads, which are also full lexemes, which makes dependent-head synthesis an extreme type of head marking, and synthesizing undergoers referentially active.

Dependent-head complexes are right-headed and of four basic formal types: noun (including pronoun) + verb, noun (including pronoun) + noun, verb+noun, and verb+verb. Dependent-head synthesis of noun and verb is equivalent to noun incorporation, and of verb and verb to verb root serialization. Besides, a synthesizing verb may be in its nominalized form (VN), attaching to either a verb or a noun.

In terms of function, the following syntactic relations are encoded in these complexes, which will be presented in detail in the ensuing sections:

function	relation	form
modality, phase		V+V (different stages of grammaticalization, also lexicalized)

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complement clause	government	VN+V, VN+N
primary object	government	N+V_{tr}
theme/subject	modification	N+V_{itr} (lexically restricted and partially lexicalized)
relational morpheme	government	N + reanalysed N, N + reanalysed V
modifier (+/- clausal)	modification	V+N, N+N
possessor	modification	N+N

In addition to dependent-head synthesis, there is the usual kind of head marking through affixes, with a lower functional load. Affixal head marking is of two kinds: prefixes (p. 859) encode undergoer, possessor, and determiner; suffixes encode the subject on a subset of predicates.

function	form
primary object	singular-person / reflexive / reciprocal prefix on verb
possessor	singular-person / reflexive prefix on noun
determiner	demonstrative prefix on noun
subject	person suffix on actor-sensitive converbs and on directive moods
	nominal plural suffix on the indicative/nominalized verb form

All other syntactic relations are not head-marked in Nivkh. Other subjects as well as secondary objects (the patients of ditransitive verbs) are neither synthesizing nor affixing nor case-marked, they show no marking. Peripheral and adverbial relations are dependent-marked through case on their NPs or converbs.

function	form on NP/dependent	form on main predicate
topic	no marking	no marking

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subject (of other moods, converbs, focus)	no marking	no marking
secondary object	no marking	no marking
peripheral relations	dependent marking (case suffix)	no marking
adverbial clause	dependent marking (converb suffix)	no marking

Where there is no dependency relation, for example in coordination or apposition, dependent-head synthesis is impossible, hence its name.

This overview already shows that dependent-head complexes largely comprise what would be phrases, NPs, and VPs, in more analytic languages. Only actor-sensitive converbs and directive mood forms are “word-clauses” typical of polysynthesis (see 40.4.4).

40.4 The Verbal Complex

40.4.1 Noun incorporation and syntactic relations

In Nivkh, the primary object synthesizes obligatorily with its transitive head verb in a head-marking fashion—either in the form of a prefix (singular persons, reflexive, reciprocal) or in the form of a pronoun (non-singular persons, demonstrative, interrogative) or of a noun stem via dependent-head synthesis. Compare the paradigm of *za-* ‘beat’with the three different types of undergoers:

(21)

prefix		pronoun		noun	
(*za-ḍ*)	3sU	(*i-ḍa-ḍ* 3s emphatic)		*pʿ-asq-za-ḍ*	‘s.o. hits self’s younger brother’
ñ-za-ḍ	1sU	*megi-ḍa-ḍ*	‘hits 1du’	*ṭʿəlm-za-ḍ*	‘s.o. claps hands’

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(p. 860)

ʈʿ-sa-ḍ	2SU	*mer-ḍa-ḍ*	'hits 1p.INCL'	*řə-za-ḍ*	's.o. knocks on the door'
pʿ-sa-ḍ	REFL.U	*ñəŋ-ḍa-ḍ*	'hits 1p.EXCL'	*ʈoŋr-ʈa-ḍ*	's.o. hits on the head'
		ʈʿəŋ-ḍa-ḍ	'hits 2p'	*qan-ḍa-ḍ*	's.o. hits a/the dog'
		imŋ-ḍa-ḍ	'hits 3p'	etc.	
		aŋ-ḍa-ḍ	'hits whom?'		
		həḍ-za-ḍ	'hits that one (him/her/it)'		

A singular third person prefix is not marked on single-fricative and sonorant initial verbs. The (vowel harmonic) undergoer prefixes are:

(22)

1S	*ñ- ~ ñi- ~ ñe-*	REFL	*pʿ- ~ pʿi- ~ pʿe-*
2S	*ʈʿ- ~ ʈʿi- ~ ʈʿe-*	RECI	*v- ~ u- ~ o-*
3S	*j- ~ i- ~ e-*		

Cluster-initial and ablauting verbs show an idiosyncratic root allomorph reserved for prefixation:

(23)

-xu- 'kill':	*ʈʿo-xu-ḍ*	'kills a fish'		*liys-kʿu-ḍ*	'kills a wolf'
	i-ɣ-ḍ	'kills s.o.' (3sU-kill-IND)		*qan-kʿu-ḍ*	'kills a dog'

The primary object comprises the undergoer of a monotransitive (24) and the recipient (25) or goal (26) of a ditransitive verb (cf. Dryer 1986 for the terminology).

(24) (Otaina 1978: 34)

atak	kʿe-seu-ḍ
grandfather	net-dry-IND/NML

'Grandfather dried the net.'

(25) (Panfilov 1965: 46)

əmək	karandas	pʿ-oʁla-kʿim-ḍ
mother	pencil	REFL-child-give-IND/NML

'The mother gave her child a pencil.'

(26) (Panfilov 1965: 47)

ñi	qan	ʈʿχas-tov-ḍ
1S	dog	post-tie-IND/NML

'I tied the dog to the post.'

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The incorporated noun stem may bear number (6) and scalar operator marking in its suffixal domain as well as a quantifier and relational morpheme (“bound postposition” (74b)) in front of the bound allomorph of the verb root. The noun is never marked for the final categories of case or focus.

(p. 861)

(27)
(Nedjalkov and Otaina 2013:11)
if tavʁaj-ñən-vark-uvr-bo-ḍ
3s crab-one_CLF-only-at_least-take-IND/NML
‘S/he took only one crab at least.’

Further on, the synthesizing noun may be a proper name (28), or demonstrative or interrogative pronoun (29). The incorporees are not doubled in reference inside or outside the verb form, that is, there is no prefix, pronoun, noun, or classifier coreferent to the incorporee, neither within the verb form nor outside of it as a free constituent.

(28)
(Krejnovič 1937: 61)
Xor-ḍa-ḍ
Xor-hit-IND/NML
‘S.o. hits Xor.’

(29)
(Bondarko/Zinder 1962: 85)
if aŋ-qʿa-ḍ?
3s who-shoot-IND/NML
‘Who did s/he shoot at?’

This basic type of complex may be elaborated in two ways. First, dependent-head synthesis is recursive:

The incorporee may have its own dependents still synthesizing in front of its root, namely, determiner (prefix), possessors (prefix/pronoun and/or noun) and modifiers (verbal or nominal, see 40.5), which in turn may have their dependents synthesizing, or the head has dependents of different relations.

(30)
(Nedjalkov and Otaina 2013: 278)
if ətək mu-lət-dəv-ñřə-ḍ
3s father boat-make-house-see-IND/NML
‘S/he saw the house where father had made a boat.’

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(31)

(Krejnovič 1937: 27)

a. ţʿ-χan ñ-saŋ-ɢan-tʿu-ḍ
2s.poss-dog 1s.poss-white-dog-pursue-ind/nml
'Your dog is chasing my white dog.'

b. (Krejnovič 1958:26)
oʁla-gu u-dəmk-rəmk-vo-t ler-ḍ
child-pl reci-hand-hand-take/hold-cv:3p play-ind/nml
'The children are playing, taking each other's hands.'

The reciprocal prefix *u-* is not marked on nouns, therefore the reduplicated form *-dəmk-rəmk* must be incorporated into the verb which also governs the reciprocal prefix. Besides, (p. 862) each root-initial sound in (31b) is affected by morphophonological changes, and the verb *evq* 's.o. takes/holds sth.' is in its bound form *-vo-*.

Second, a synthesizing dependent may be the head of a complement clause, triggered by verbs of cognition, emotion, sense perception and deontic modality. It is in the nominalized ("indicative") form then without converbal, mood, or focus suffixes. Its participants are stranded in front of the verb complex. Possessors and participants in the embedded clause which are coreferent to the subject of the matrix clause are encoded as reflexive prefixes or pronouns, otherwise there are no formal changes to the constituents.

(32)

(Otaina 1978: 68)
ətik pʿi ɣe-bos nok-nə-ḍ-xe-ḍ
grandmother refl 3sU:buy-cloth thin-fut-ind/nml-consider-ind/nml
'Grandma thinks that the cloth she bought is too thin.'

(33)

(Panfilov 1965: 153)
at por-ŋan hemar pʿu-nə-ḍ-heʁa-ḍ-ra
tiger lie(down)-cv:when old_man go_out-fut-ind/nml-scared-ind/nml-hili
'When the tiger lay down, the old man was afraid of going out.'

Complement-taking modal verbs are

(34)

j-əjm-ḍ 's.o. knows how to V' *j-əɣi-ḍ* 's.o. does not want to V'
j-əɣzu-ḍ 's.o. does not know how to V' *j-ali-ḍ* 's.o. cannot master/cope with V-ing'
j-aʁñ-ḍ 's.o. wants to V'

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40.4.2 Dissolution of a verbal complex

Primary object synthesization being obligatorily, the verbal complex is dissolved only under well-defined conditions:

(i) when object and verb have different information statuses, e.g. under topicalization/equi-NP dislocation or focusation
(ii) under attributive formation
(iii) under object resultative formation and
(iv) under object demotion of ditransitives.

In all four cases, the undergoer is either not left-adjacent to its verb and/or is case or focus marked whereas the verb is in its 3s-undergoer form (fricative-initial/prefix). Thus, the marked construction in Nivkh is not noun incorporation, but “noun excorporation”.

Case (i) is illustrated below. The topicalized primary object in (35) is moved to sentence-initial position. In (36), two chained predicates share a primary object (*i-nār*), which is gapped in each clause and dislocated to a position directly to the right of the topic (“equi-NP dislocation”).

(p. 863)

(35) (Panfilov 1965: 167)

tə-bitɣə	if	e-v-l?
this-book	3s	3sU-take/hold-Q

‘This book, did s/he take it?’

(36)

(Panfilov 1965: 66) context: the old man found a fox in the trap

ṭīr-kir	za-ř	i-ɣ-ra	řo-r	vi-ra,
wood-INS	3sU:hit-CV:3s	3sU-kill-ENU:3s	3sU:carry-CV:3s	go-ENU:3s

i-nār	səu-ra	seu-ra	verax-tox	i-mɣ-ra
3s.POSS-pelt	3sU:take_off-ENU:3s	3sU:dry-ENU:3s	slave-ALL	3sU-give-ENU:3s

‘Hitting it with a stick he killed it and took it with him and skinned it and dried the skin and gave it to his servant.’

If any constituent is focused and moved to the pre-predicate position, the primary object–verb complex is dissolved and the object is moved to the topic position. If the primary object itself is to be focused, it has to be marked with focus suffixes (not incorporable!) and is usually moved to clause-initial position.

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(Savel'eva/Taksami 1970: 501)

(37)

p'-oʁla	maŋ-gu-r	j-ar-ḍ
REFL-child	strong-CAUS-CV:3S	3SU-feed-IND/NML

'S/he OVERFEEDS his/her child.'

(Krejnovič 1934: 200, Savel'eva/Taksami 1970: 146)

(38)

tux-qa	ṭ'i	γe-l?	ṭaqo-ʁa?
hatchet-IQY	2S	3SU:take-Q	knife-IQY

'Did you take the HATCHET? What about the KNIFE?'

In sum, if object and verb have different semanto-pragmatic information values they do not synthesize.

Cases (ii) and (iii) are shown in examples (39) to (41). A transitive verb modifying its primary object synthesizes to its head noun in its 3s-undergoer form (*ifkţ*), that is, bears a 3s undergoer prefix (*i-*) or an initial fricative. In the objective resultative construction, the primary object becomes the subject, and the verb is in the 3s undergoer form again.

(Panfilov 1962: 135)

(39)

a. qan-buk-ṭ. →
dog-harness-IND/NML
'S.o. harnessed a dog.'

b. i-fk-qan por-ḍ.
3SU-harness-dog lie(down)-IND/NML
'The harnessed dog lay down.'

(p. 864)

(Nedjalkov and Otaina 1988: 143)

(40)

a. if qan-gu-buk-ṭ →
3S dog-PL-harness-IND/NML
'S/he harnessed the dogs.'

b. qan-gu i-fk-xəta-ḍ
dog-PL 3SU-harness-RES-IND/NML
'The dogs are harnessed.'

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(Nedjalkov and Otaina 1988: 145)

a. if vəṭ pʿ-huxt-aγ-ḍ →
3s iron REFL-gown-sew_on-IND/NML
'She sewed metallic ornaments to her gown.'

(41)

b. (Nedjalkov and Otaina 1988: 146)
i-huxt vəṭ j-ax-kəta-ḍ
3s.POSS-gown iron 3sU-sew_on-RES-IND/NML
lit: 'Her gown are sewn metallic ornaments onto.'

Note that because the former subject is ousted, the possessor in (41b) is encoded as 3s (*i-*), not as reflexive (*pʿ-*). This shows that the former primary object is indeed the subject. The secondary object (*vəṭ*) is not affected by this transaction; in particular it does not synthesize to the verb (in that case the 3sU marker could not be there).

There are then two elements in the sentence referring to one and the same participant (e.g. *i-huxt* and *j-* in (41b)), the undergoer, which is disallowed in other contexts. What is the argument and referentiality status of the elements referring to that participant? As the undergoer reflex is obligatory on the verb in the absence of a synthesizing nominal undergoer, mutually exclusive with it and not necessarily agreeing in number (see (40b)), it seems to be a transitivity marker rather than a "pronominal prefix".

Case (iv), demotion of objects, is only observed with ditransitive verbs. The primary object principle is obvious with these verbs and contrasts sharply with Russian syntax. Demotion makes the construction more similar to Russian, I therefore suspect that it arose under Russian influence. In any case, primary object demotion is not a promotion of the secondary object at the same time. A demoted primary object generally moves out of its verb-adjacent position and takes the allative, while the verb is prefixed with the undergoer marker (cf. Gruzdeva 1998: 42).

(42)

(Panfilov 1974: 86)

a. əmək karandas pʿ-oʁla-kʿim-ḍ →
mother pencil REFL-child-give-IND/NML
'Mother gave her child a pencil.'

b. əmək pʿ-oʁla-dox karandas i-mγ-ḍ-ra
mother REFL-child-ALL pencil 3sU-give-IND/NML-HILI
'Mother gave a pencil to her child.'

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(p. 865) Where there is no dependency relation, dependent-head synthesis is impossible. Thus, of two or more coordinated primary objects, only the last one synthesizes to its head verb, the others are stranded in front of it with associative (number) marking, that is, dependent marking, and are not case or focus marked.

(43)

(Panfilov 1962: 169)

təmk-xo	qʻos-ko	nos-ko-ḍu-ja
hand-ASC.PL	neck-ASC.PL	ear-ASC.PL-wash-IMP.SG

'Wash your hands, neck, and ears!'

40.4.3 Theme incorporation

In addition to fully productive synthesis of primary object and predicate, there is lexically restricted but productive synthesis (noun incorporation) of themes ("subjects"), mainly body parts, and dimensional, quantity, colour, or value verbs, such as *ur-* 'good', *qo-* 'ache', *pil-* 'big', *kəl-* 'long', *ver-* 'wide', *ul-* 'high', *ʈʻaŋ-* 'white [pelt]', *piu-* 'black [hair/skin]', *tam-* 'a lot' (see Otaina 1978: 36–8, Mattissen 2003: Section 3.8.3).

(44)

(Otaina 1978: 31–2)

a.

ʈʻo	tam-ḍ	intransitive verb
fish	a_lot-IND/NML	

'There are a lot of fish.'

b.

tə-eri	ʈʻo-ram-ḍ	incorporation
this-river	fish-a_lot-IND/NML	

'This river swarms with fish.'

(45)

(Otaina 1978: 31–2)

a.

təmk	kəl-ḍ
hand	long-IND/NML

'The hands are long.'

b.

if	təmk-ɣəl-ḍ
3S	hand-long-IND/NML

'S/he has long hands.'

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Morphophonemics prove that there is indeed incorporation and a resulting word unit (for details, see Mattissen 2003: Chapter 3). The verb remains intransitive; compare intransitive *pil-* 'big' with phonologically conditioned allomorph *-vil-*, and transitive *vil-u-* 'enlarge, increase' with transitivizer (cf. Otaina 1978: 28, Panfilov 1965: 41–2). Incorporation in Nivkh thus does not affect transitivity.

40.4.4 Subject and configurationality

Whereas one undergoer has to be encoded on a transitive verb obligatorily, Nivkh does not generally mark the actor on a verb. The actor, if overt, is usually encoded as (p. 866) the subject, which may be expressed by a complex noun or a pronoun without being obligatory.

On the verb, actors are marked in person and number on the directive moods (imperative, hortative, permissive, preventive) and on the three actor-sensitive converbs (the anterior and general converbs and the cosubordinate enumerative).

(46)

Imperative	(1>2s)	*-ja ~ -əj*
	(1>2p)	*-ve ~ -be ~ -pe* (Am), *-nave* (ES)
Hortative	(1>1d)	*-nəte* (Am), *-nate* (ES)
	(1>1p)	*-da*
Permissive	(>1s/p)	*-nəkta ~ -nəxta*
	(>2s)	*-gira*
	(>2p)	*-girla*
Preventive	(>2s)	*-jra ~ -nra*
	(>2p)	*-jtla*

Converbs marking person have the following paradigms:

(47)

	general converb		anterior converb		enumerative	
	Am/ES	FUT/IMP (ES)	Am/ES	FUT/IMP (ES)	Am/ES	FUT/IMP (ES)
1s	*-t*	*-n*	*-tot*	*-non*	*-ta*	*-na*
2s	*-r*	*-ř*	*-ror*	*-řoř*	*-ra*	*-ra*
3s	*-r*	*-ř*	*-ror*	*-řoř*	*-ra*	*-ra*
1p	*-t*	*-n*	*-tot*	*-non*	*-ta*	*-na*
2p	*-t*	*-n*	*-tot*	*-non*	*-ta*	*-na*
3p	*-t*	*-n*	*-tot*	*-non*	*-ta*	*-na*

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While the general and anterior converbs occur in embedded clauses (the general one also with auxiliaries), the enumerative occurs in coordinated non-embedded clauses. Together, these forms account for more than 50 per cent of all predicates in a text.

(48)

(Beffa 1982: 87) context: The brother grew up.

hoŋgutʿuke	mūv-ñaq	pal-rox	mər-ra	qʿotr-kʿu-ra
living_thus	day-one_CLF	mountain-ALL	go_up-ENU:3S	bear-kill-ENU:3S

hoʁorot	lər-ɣət-ra.
then	3sU:divide_up-CPL-ENU:3S

tʿu-in	ʁoñḍi-ror	vəɣi-ř	məɣ-ḍ.
sledge-LOC	3sU:load-ACV:3S	3sU:drag-CV:3S	go_down-IND/NML

'Living thus, one day he went up into the mountain woods and killed a bear and then cut it fully up. He loaded it onto the sled and, dragging it along, descended.'

Other mood forms (49), adverbial converbs (50) (cf. Gruzdeva 1994, Nedjalkov and Otaina 2013), and verbs marked with scalar operator or focus suffixes have no actor or subject marking.

(p. 867)

(49)

Subjunctive	*-ʁar ~ -qar*
Optative	*-ʁazo* (Am), *-ʁaro ~ -χajro* (ES)
Narrative	*-ʁan(a) ~ -qan(a)*

'it is natural, there is no doubt that' *-kitle ~ -ɣitle ~ -xitle, -kitla ~ -ɣitla*

Negative assumption *-tla/-rla* (A), *-tlo/-rlo* (ES) (in apodosis after converb *-ŋan)*

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(50)

-ŋan	'after, if, because'
-ənke	'before'
-ba ~ -pa	'as soon as, since (HAB)"
-ge	'as soon as' (non-stative roots), 'since' (stative roots)
-ke (Am), *-fke* (ES)	'through V-ing, while, because'
-ivo	'by V-ing, while'
-ʁa ~ -qa (Am), *-ʁaj ~ -qaj* (ES)	'if'
-guin, *-nəftox*	'for to'
-gin ~ -kin (Am), *-girk ~ -kirk* (ES), *-girn ~ -kirn*	'although'
-xrəɣrə	'because'
-lax	'for'
-dox ~ -tox (Am)	supine (15)

On the most frequently used mood form (accounting for about 35% of all predicates in a text), the "indicative", also a nominalization (e.g. as predicate of a complement clause and as verbal noun), a (human) plural subject is usually reflected by the nominal plural suffix.

(51) (Panfilov 1962: 129)

ňřak	imŋ	ṭʿŋaj-vak-pitɣə	Vorguk-xim-ḍ-ɣu
once	3p	picture-only-book	V.-give-IND/NML-PL

'Once they gave Vorguk a picture book.'

Only the subject is the antecedent of reflexive marking in an embedded clause (52) and the trigger of switch reference marking on converbs (53). The coreferential participant appears as the reflexive prefix *pʿ-* if a possessor or primary object, or as the reflexive pronoun *pʿi* with appropriate case marking in other syntactic relations (52) in the embedded clause. In the case of different subjects in (co)subordinate clauses, the actor-sensitive converbs bear the causative suffix as switch reference marker (without implying an actual causation, (53)).

(52)

(Otaina 1978: 87)

if	pʿi	ṭez-ivu-ŋan	ur-gu-r	pʿ-ōla-dəu-ḍ
3S	REFL	weak-PROG-CV:after	good-CAUS-CV:3S	REFL-child-teach-IND/NML

'When he was growing weak, he taught his child well.'

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(Krejnovič 1983: 108–9)

NS same subject

(53) a. ñi pʿřə-t ezmu-d.
1S come-CV:1S rejoice-IND/NML
'I was happy to come.'

b. different subject
ñi pʿřə-g-r ezmu-d.
1S come-CAUS-CV:3S rejoice-IND/NML
'S/he was happy that I came.' (lit. 's/he rejoiced letting me come')

c. different subject
jaŋ pʿřə-g-t ezmu-d.
3S come-CAUS-CV:1S rejoice-IND/NML
'I was happy that s/he came.' (lit. 'I rejoiced letting him/her come')

(p. 868) Actor-insensitive converbs do not mark switch reference.

(54)

(Krejnovič 1983: 114)

NS ṭʿi ñ-ro-lax (ñi) ṭʿe-rχ ŋixə-d-ra
2S 1SU-help-CV:for 1S 2S-ALL thank-IND/NML-HILI
'I thank you for helping me.'

Because of the asymmetry of subject and object in terms of encoding and pivotal significance, Nivkh syntax must be considered configurational—even though head-marking.

40.4.5 Verb root serialization

In addition to the noun + verb complex (with noun incorporation) and compatible with it, there is a verb + verb complex in Nivkh, formed via verb root serialization with no more than two verbal roots in series. In this construction the preceding verb root modifies the following one and cannot be marked for mood, focus, or converb. These final categories occur only once on a verb complex and signal its right margin.

Verb root serialization is formed ad hoc for generic situations with both verbs fully transparent semantically. The second verb is usually intransitive and evaluates the performance within the domain set by the preceding verb in terms of quality, capability,

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speed, or extent, or it denotes a resultant state (55). It cannot be a phase, directional, motion, or transfer verb (these verbs are used in converb constructions).

(55)
(Panfilov 1965: 9)
ñi vi-pʻer-ḍ
1S go-tired-IND/NML
'Walking, I got tired.'

(56)
(Krejnovič 1979: 321)
laq-xir vi-ur-ḍ-a
ski-INS go-good-IND/NML-XCL
'One moves well on skis.'

(57)
(Panfilov 1965: 31)
hə-gan ve-arki-ḍ
that-dog run-soft/slow-IND/NML
'That dog runs lightly.'

(p. 869)

(58)

olγla-di-ləγə-ḍ	(dangerous-even-lack-IND/NML)	'sth. is without risk'
valţ-maŋg-ḍ	(lie-strong-IND/NML)	's.o. is mendacious'
um-biŋr-ḍ	(angry-cheap-IND/NML)	's.o. is irritable'

(59)
(Panfilov 1965: 31)
ñ-mu ţʻ-mu-ək mγe-hiñγəj-ḍ-ra
1S.POSS-boat 2S.POSS-boat-COMP row-easy-IND/NML-HILI
'My boat is easier to row than yours.'

(60)
(Panfilov 1962: 133)
ţʻolŋi qan-ək qama-erʁ-ḍ
stag dog-COMP run-master-IND/NML
'The stag runs faster than the dog.'

(61)
(Krejnovič 1979: 308)
ES ekto wi-nd-aʁr pʻ-əţx-nřə-nau-f-pʻi-ra
there_to go-IND/NML-even REFL-old_man-see-suffice-LOCNML-be_in-HILI
'Having gone there she settled down at a place from where her husband was in sight.'

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The root serializing verb has a unified case frame. Besides ad hoc formation there are lexicalized serial root verbs, for example:

(62)

(Otaina 1978, Savel'eva/Taksami 1970)

pand-ur-ḍ	(grow(up)-good-IND/NML)	'S.O. is pretty'
tʿa-zez-ḍ	(breathe-weak-IND/NML)	'S.O. suffocates'
od-əksu-ḍ	(defecate-ignore-IND/NML)	'S.O. is constipated'
qʿo-hiskij-ḍ	(sleep-sharp_sensed-IND/NML)	'S.O. has a light sleep'
nau-hut-ṭ	(suffice-collapse-IND/NML)	'[time] goes by'

For individual situations, an analytic construction with an adverbial is employed. Adverbials take the form of a general converb with causative marking.

(63)

(Beffa 1982: 88–9)

hoʁor	eʁ-gu-r	məγ-ḍ
therefore	fast-CAUS-CV:3S	descend-IND/NML

'Therefore he descended quickly.'

(64)

(Panfilov 1965)

veta-γət-tot	patej-gu-t	pʿu-ḍ-γu
dress-CPL-ACV:3P	quiet-CST-CV:3P	leave-IND/NML-PL

'After having dressed they left quietly.'

Verb root serialization is one way modality is expressed in Nivkh—in addition to suffixes (which originated in verb root serialization), auxiliary or complement constructions. In this (p. 870) case, the first verb root is not subject to semantic restrictions and the modal verb takes the position of the second root (see Krejnovič 1979: 317; Panfilov 1965: 161–3), encoding deontic modality, specifically negative modality and negation itself:

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(65)

modality and polarity			source: verb
-qavr- ~ -ʁavr-	negation	*qʻau-ḍ*	'sth. does not exist'
-ləγə-	negation	*ləγə-ḍ*	'sth. lacks'
-γzu- ~ -ksu- ~ -xsu-	negative habitual/experiential	*j-əγzu-ḍ*	's.o. ignores sth.'
-ger- ~ -ker-	'not be willing to'	*ker-ḍ*	's.o. refuses'
-iruṭez-	'fail to'	*ṭez-ḍ*	's.o. is weak'
-molo-	'not want'	*molo-ḍ*	'sth. is steep'
-inə-	intentional	*nə-ḍ*	's.o. makes, works sth.'
-jiki-	'cannot'		
-iləkr-	'lest'		

A serial construction is also the source for two aspectoid and two scalar operators. In the latter two cases, the second component is no longer extant as full verb, but as a verbalizer.

(66)

morphemes		source	
-data- ~ -tata-	stative continuative	*tata-ḍ*	'sth. is whole'
-durŋu- ~ -turŋu-	dynamic continuative	*rurŋu-ḍ*	'sth. is uniform to sth.'
-para ~ -vara ~ -bara	'yet'	*-vara-ḍ ~ -bara-ḍ*	'sth. is similar to sth.'
-park ~ -vark ~ -bark	'only'	*-vark-ṭ ~ -park-ṭ ~ -bark-ṭ*	'sth. is contained exclusively'

Although fully productive and formed ad hoc, these constructions show traits of having already been affected by grammaticalization:

(i) Inflection for causative, tense, aspectoid, and scalar operator follows the first (lexical) root, not the second one.

(67)

(Savel'eva/Taksami 1970: 228, 492)

a. ŋarma-γət-γsu-ḍ
3sU:wait-CPL-NEG.EXP-IND/NML
's.o. loses patience'

b. j-uru-γət-jiki-ḍ
3sU-read-CPL-cannot-IND/NML
's.o. cannot read through sth.'

The modal components may also be used if subject and actor are different persons, then causative *-gu- ~ -ku-* is obligatory on the first verb root (as in (68)).

(68)

(Panfilov 1965: 162)

kʻe vərk-ku-i-ger-t seu-tʻa-ḍ
net rot-CAUS-EXPL-unwilling-CV:3p 3sU:dry-HAB-IND/NML
'Not wanting the net to rot they dry it.'

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(ii) There is no analytic or alternative way of construction.
(iii) The second components have split off from their source verbs and/or lost their free verb status to different degrees.

(69) Nivkh (Panfilov 1965: 22)

q'aukra	ñi	i-ndə-**bark**-ḍ-ra
no	1s	3sU-see-**only**-IND/NML-HILI

'No, I only saw it.'

This indicates that the head of the construction has shifted to the first root while the modal, aspectoid, and scalar components have become grammatical markers.

40.5 The Nivkh Noun Complex

The Nivkh noun forms complexes, as well, also according to the principle of dependent-head synthesis. Determiners, possessors, and modifiers synthesize to their head noun in the form of a prefix, pronoun, noun, or verb root and thus form noun + noun and verb + noun complexes. These complexes cannot be paraphrased or dissolved.

(70) (Savel'eva/Taksami 1970: 203)

if	hə-ula-bal-doχ	mər-jiki-ḍ
3s	that-high-mountain-ALL	go_up-cannot-IND/NML

'S/he cannot climb that high mountain.'

Determiners are demonstrative prefixes (71) which take the first position of a nominal complex (73a).

(71) (Panfilov 1962: 241, Gruzdeva 2006)

Amur dialect		East Sakhalin dialect
tə-	'this N'	*tuŋ-*
hə-	'that N'	*huŋ-*
a-	'that N there'	*eγŋ-*
ahə-	'that farther N'	*aγŋ-*
aēhə-	'that far N'	*aīxŋ-*
ku-	'that N' (not visible)	*kuŋ-*

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Possessors take the form of singular-person and reflexive prefixes (72), (73b), non-singular pronouns (73c), demonstrative (73d) and interrogative pronouns (73e), or nouns (73f) including proper names (73g).

(p. 872)

(72) possessor prefixes

1S	*ñ- ~ ñi- ~ ñe-*	3S	*v- ~ i- ~ vi- (~ e- ~ j-)*
2S	*ʈʿ- ~ ʈʿi- ~ ʈʿe-*	REFL	*pʿ- ~ pʿi- ~ pʿe-*

Modifiers are either verb roots (in a verb + noun complex (73m)) or nouns (in a noun + noun complex, (73h), (73i)) including proper names (73l), pronouns (73j), (73k), or numeral quantifiers (73n). They may be inflected for all but the final categories mood, converb, focus, and case.

(73)

(Krejnovič 1934: 205, Saveľeva/Taksami 1970: 422, Panfilov 1968: 416)

a.	*hə-haq*	'that cap'	determiner
b.	*ñ-aq*	'my cap'	possessor prefix
c.	*ñəŋ-haq*	'our cap'	pronoun + noun complex
d.	*həḍ-haq*	'cap of that one'	pronoun + noun complex
e.	*aŋ-mu*	'whose boat'	pronoun + noun complex
f.	*ətək-haq*	'father's cap'	noun + noun complex
g.	*Kab-rəf*	'Kab's house'	noun + noun complex
h.	*tʿulv-haq*	'winter cap'	noun + noun complex
i.	*ormi-ŋir* (clay-dish)	'earthenware dish'	noun + noun complex
j.	*siḍ-zi* (what-track)	'what track?'	pronoun + noun complex
k.	*řaŋz-mu* (how_many-boat)	'how many boats?'	pronoun + noun complex
l.	*manḍu-dəf* (Chinese-house)	'Chinese style farmhouse'	noun + noun complex
m.	*ula-haq* (high-cap)	'hat'	verb + noun complex
n.	*ŋay-xuvi* (six-dog_food_helping)	'six helpings of dog food'	quantifier + noun complex

A range of local relational nouns and transitive verbs have been grammaticalized in dependent-head synthetic constructions: erstwhile possessed head nouns (noun + noun complex) and transitive verbs with synthesizing primary object became reanalysed as bound relational morphemes (cf. Panfilov 1962: 147–56). They resemble postpositions except for their bound status (which morphophonology proves); they may be integrated into complexes (74b) or inflected with case (74a) or converb suffixes (depending on their nominal or verbal source, respectively).

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(74)

(Gruzdeva 1997: 144)

a. utkuoʁla tər-vəj-uin pʿləv-ḍ.
boy table-under-LOC hide-IND/NML
'The boy hid under the table.'

b. ño-vəj-si-ḍ
barn-under-put-IND/NML
'S.o. puts sth. under the barn.'

(p. 873)

(75)

relational morpheme		source: noun	
-tʿxə ~ -řxə	'on'	*tʿxə*	'upper surface'
-qʿomi ~ -χomi	'next to'	*qʿomi*	'flank'
-tʿayr ~ -řayr	'between'	*tʿayr*	'distance, interval'
-tʿara ~ -řara	'opposite'	*tʿara*	'opposite side'
		source: verb	
-tulku ~ -rulku	'through'	*rulku-ḍ ~ -tulku-ḍ ~ -dulku-ḍ*	's.o. creeps through sth.'
-tʿməsk ~ -řməsk	'over'	*i-rmə-ḍ ~ -řmə-ḍ ~ -tʿmə-ḍ*	's.o. crosses (over) sth.'
-kʿrə	'with'	*i-ɣrə-ḍ ~ -xrə-ḍ ~ -kʿrə-ḍ*	's.o. accompanies s.o.'
-ro-t/r	'with'	*ro-ḍ ~ -ro-ḍ ~ -to-ḍ ~ -do-ḍ*	's.o. helps s.o.'

Thus, the dependents of adposition equivalents are fully marked on their head by dependent-head synthesis.

The basic complex types can be elaborated: as dependent-head synthesis is recursive, synthesizing dependents may carry along their synthesizing dependents (30), (76), or a head noun may have synthesizing dependents of two different relations, namely, determiner and modifier (70) or possessor and modifier (31a).

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(76)
(cf. Nedjalkov and Otaina 2013: 287)

ətək	j-or-ñivx-əkən	əɣrəkon	mu-ḍ
father	3sU-meet-person-elder_brother	long_ago	die-IND/NML

'The elder brother of the man my father met had died long ago.'

When the synthesizing dependent is the head of a clause, the rest of its clause is stranded in front of the noun complex, and possessors and participants in the embedded clause which are coreferent to the subject of the matrix clause are encoded as reflexive prefixes or pronouns (see 40.4.1). Otherwise there are no formal changes.

The head of an attributive clause synthesizes in the form of a verb stem without final inflection (for mood, converb or focus; verb + noun complex), as in (77) to (79); the head of a noun complement clause synthesizes in the verb form which is both a nominalization and the indicative predicate form to its head noun (e.g. *kʻes* 'news', *ʈəu* 'sound', VN + N, (80)). This means that attributive and noun complement clauses are formally distinct.

(77)
(Panfilov 1965: 136)

pʻ-χa-ñivx	miv-uin	por-ḍ
REFL-shoot-person	earth-LOC	lie(down)-IND/NML

'The suicide fell to the ground.'

(p. 874)

(78)
(Panfilov 1965: 52)

ñi	pʻi	zosq-ʈaqo-vəkz-ḍ
1S	REFL	3sU:break-knife-throw_away-IND/NML

'I threw away the knife which I had broken.'

(79)
(Panfilov 1954: 23)

Niaz	ŋəŋg-ɣir	lət-kʻe-ɣir	ŋəñk-tu-ḍ
N.	hair-INS	3sU:make-net-INS	face-cover-IND/NML

'Niaz covered his face with a net made out of hair.'

(80)
(Krejnovič 1979: 309)

tʻevrq	pəj-ḍ-zəu-mə-ra
small_bird	fly-IND/NML-sound-hear-HILI

'I heard the sound of birds flying.'

The enhanced verb + noun construction is the only Nivkh equivalent of a relative clause.

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Where there is no dependency relation, for example in coordination, dependent-head synthesis is impossible. Thus, of two or more coordinated modifiers or prefixes only the last one synthesizes. The other modifiers are stranded in front of the verb form as phonological, but not morphological words nor complexes in the Amur dialect, and as participles in the Sakhalin varieties (Mattissen 2003: 114, 241, 246f). In the following example, *pila-* 'big', modifying *qʻotr* 'bear', lacks finite or converbal inflection and is outside of the complex although not being a free morphological form.

(81) (Panfilov 1954: 20)

ñi	pila	piula-qʻotr-kʻu-ḍ.
1s	big	black-bear-kill-IND/NML

'I killed a big black bear.'

40.6 Polysynthetic Type

As more than one root may be integrated into a complex via dependent-head synthesis, for example in the form of noun incorporation and verb root serialization, Nivkh is of the compositional word-formational type of polysynthesis (first parameter, Mattissen, this volume), as are other Paleosiberian languages (Chukcho-Kamchadal, Ket, Ainu).

Furthermore, there is derivational morphology akin in function to incorporation, but it is marginal. Derivations with verbalizers are lexicalized:

(82) verbalization

a.	*-t-*	*urk-t-ṭ*	'night falls'
b.	*-ju-*	*la-ju-ḍ*	'it is stormy'
c.	*-z-*	*kʻe-z-ḍ*	's.o. puts up a net'

(p. 875) Nominalizations with *-ḍ* and local *-f* are productive and ad hoc, even of whole complexes:

(83) (Otaina 1978: 64)

if	ur-la-ḍ-γu-gir-park	jeski-ḍ.
3s	good-PERM-IND/NML-PL-INS-only	sell-IND/NML

'S/he sold only the good ones.'

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(84)
(Nedjalkov and Otaina 2013: 76)

ñi	ṭʻ-ətək-or-nə-f-toχ	pəxt-t	ex-t	vi-jnə-t
1S	2S.POSS-father-meet-FUT-LOCNML-ALL	avoid-CV:1S	return-CV:1S	go-INT-CV:1S

hum-ḍ
be_there-IND/NML
'I am returning home in order to avoid meeting your father.'

With respect to its word-internal organization (second parameter), Nivkh cannot be described in a homogeneous way. Whereas a template can be set up for the suffixal domain of both verb and noun complexes with recursive positions for aspectoid and scalar operators (see 40.2.4), the pre-root domain enjoys a certain flexibility because of the recursiveness of dependents. As the general principle of dependent before head is observed, the pre-root domain can be considered scope-ordered. Nivkh therefore shows a mixed internal structure.

Nivkh has obligatory undergoer marking on the verb, whereas the actor is encoded on three of the converbs, on directive moods, and via plural marking on the indicative/nominalized form, which amounts to defective polypersonalism (third parameter).

The characteristic design of Nivkh polysynthesis is dependent-head synthesis (fifth parameter), of course, which is active both in verb and noun complexes and the unique feature of Nivkh. Dependent-head synthesis of partly inflected stems suggests coalescence of originally adjacent independent words into a single word-unit as the evolutionary path of Nivkh complex forms (fourth parameter), that is, the "burdock type".

In compositional-polysynthetic languages local, phase, and manner non-root bound morphemes dominate; Nivkh lacks local and manner ones and operates with lexical roots in dependent-head synthesis in these cases. Nivkh possesses, however, non-root bound morphemes in the domains of modality (eleven suffixes), scalar and focus operators (at least seven suffixes), phase of action (seven suffixes), degree (three suffixes), and negation (two suffixes) (see 40.2.4, 40.4.5). The ontological domains of classifiers and body parts are under-represented as non-root bound morphemes in compositional polysynthesis (most probably blocked by noun incorporation), which is also true of Nivkh (Mattissen 2006). Nivkh thus seems to be in an early stage of polysynthesis (Mattissen 2006, 2004b, c).

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(85)

ontological domain	Nivkh expression
degree	non-root bound morphemes
phase	non-root bound morphemes
scalar operator	non-root bound morphemes (grammaticalized from verb root serialization)
modality	non-root bound morphemes (grammaticalized from verb root serialization)

(p. 876)

negation	non-root bound morpheme, verb root serialization
manner	verb root serialization
locality	noun incorporation
quantification	noun incorporation
body part	noun incorporation

The grammaticalization of erstwhile verbs in serial constructions is quite advanced, whereas noun incorporation is not affected by grammaticalization.

40.7 Lexical Areas

Nivkh has three outstanding lexical areas: noun-verb pairs/triples, unusual (transitive) verbs, and an extensive deictic and landmark system. There are also onomatopoetics (Nedjalkov and Otaina 2013: 89–91).

Nivkh morphophonemics interact with pairs or triples of intransitive and/or transitive verbs and nouns. These are formed from the same root without a discernible direction of derivation and are distinguished by their typical initial sounds: nouns and intransitives typically have a plosive or vowel, transitives a homorganic fricative or glide, the 3s-undergoer form (cf. Krejnovič 1937, Jakobson 1971: 86, 89).

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(86)

Noun		intransitive verb		transitive verb	
ṭo	'bay, bend'	*ṭoḍ*	'sth. bends'	*zoḍ*	's.o. bends sth.'
os	'root'	*ozḍ*	's.o. rises'	*jozuḍ*	's.o. wakes s.o. up'
kʿər	'hunger'	*kʿərḍ*	's.o. starves'		
ṭoʁ	'juice'	*ṭoʁḍ*	'sth. melts'		
kʿunu	'dawn'	*kʿunuḍ*	'sth. is bright'		
kelma	'step'	*kelmaḍ*	's.o. steps'		
amra	'taste'	*amraḍ*	'sth. tastes'		
kʿes	'story, news'			*xezḍ*	's.o. tells s.o. sth.'
tʿu	'dogsled'			*řuḍ*	's.o. pursues s.o.'
tʿaf	'hook'			*řavḍ*	's.o. hooks sth. in'
ṭʿafq	'chopsticks'			*safqṭ*	's.o. eats with chopsticks'
kʿeki	'need'			*xekiḍ*	's.o. suffers deprivation'
kʿu	'arrow'			*iyḍ*	's.o. kills s.o.' (~ *kʿuḍ*)
uski	'payment, price'			*juskiḍ*	's.o. pays/rewards s.o.'
oχt	'medicine, powder'			*joχtṭ*	's.o. heals s.o.'
ar	'share of food'			*jarḍ*	's.o. feeds s.o.'
nə	'thing, deed'			*nəḍ*	's.o. does sth.'
(p. 877)					
ŋa	'animal'			*ŋaḍ*	's.o. goes for sth.'
va	'sabre'			*vaḍ*	's.o. draws a sabre'
mos	'porridge, jelly'			*mosṭ*	's.o. grinds sth.'
lu	'song'			*luḍ*	's.o. sings sth.'
		ṭosqṭ	'sth. breaks'	*zosqṭ*	's.o. loses sth.'
		hurkiḍ	'sth. is hollow'	*jurkiḍ*	's.o. takes out the marrow' etc.

Among Nivkh verbs, there are quantity verbs, for example *həskṭ* 'sth. is few in number', *tam-ḍ* 'there are a lot', comparational transitive verbs, local monotransitive, and ditransitive verbs, interrogative verbs *ja-ḍ* 's.o. does what/how/why', *jaʁoḍ* 'sth. is how', demonstrative verbs (see the following examples), but no classificatory verbs.

Comparational monotransitives, as well as the two ambitransitives *asqaḍ* 's.o. is younger, s.o. is s.o.'s junior' and *əkəḍ* 's.o. is older, s.o. is s.o.'s senior', synthesize with their standard of comparison:

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(87)

ŋalaḍ	's.o./sth. equals s.o./sth.'
ŋəziḍ	's.o. equals s.o. in size/age'
ŋətəḍ	's.o. equals s.o. in stature'
ŋəkəḍ	'sth. equals sth. in length'
vulkiḍ	'sth. equals sth. in height'
verkeḍ	'sth. equals sth. in width'
raʁaḍ	'sth. equals sth. in thickness'
rurŋuḍ	'sth. is uniform to sth.'
jaruḍ	'sth. equals sth. in quantity'
jalkreḍ	'sth. equals sth. in volume'

(88)

(Otaina 1978: 34)

porχ	tuñ-daʁa-ḍ
bar	finger-equal_in_thickness-IND/NML

'The bar is as thick as a finger.'

(89)

(Otaina 1978: 31, 34)

a.

ñ-ŋafq	pʿ-umgu-ŋətə-ḍ
1S.POSS-comrade	REFL-woman-equal_in_stature-IND/NML

'My comrade is as tall as his wife.'

b.

ñ-ŋafq	pʿ-umgu-ge	u-ŋətə-ḍ
1S.POSS-comrade	REFL-woman-ASC.SG	RECI-equal_in_stature-IND/NML

'My comrade and his wife are of equal stature.'

(90)

(Panfilov 1965: 51, Savel'eva/Taksami 1970: 463)

a.

hə-duv	əkə-ḍ
that-sibling	senior-IND/NML

'That brother is older/the elder one.'

b.

ṭʿi	Xevgun-əkə-ḍ-ra	
2S	X.-senior-IND/NML-HILI	

'You are Xevgun's senior/older than Xevgun.'

(p. 878)

Local monotransitives are *fiq* 's.o. is somewhere', *jəvq* 's.o. is at s.o.'s place', *xuq* 'sth. lies somewhere', *iřpţ* 's.o. sits (down) on sth.', and synthesize with the location as undergoer.

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(91)

(Savel'eva/Taksami 1970: 253)

a. pʿ-rəu-oʁla parta-řiv-ḍ
REFL-teach-child desk-sit(down)-IND/NML
'The pupil sits at a desk.'

b. (Panfilov 1965: 171)
pil-kar-ŋa pʿrə-r qoj-zəx-tʿiv-ḍ
big-ELA-animal come-CV:3S larch-treetop-sit(down)-IND/NML
'A very big animal came and sat down in the treetop of the larch.'

Local ditransitives are:

(92)

siḍ	's.o. puts sth. somewhere'
ŋərḍ	's.o. puts sth. under sth.'
jupuḍ	's.o. dips, plunges sth. into sth.'
marqṭ	's.o. pours sth. into sth.'
řəḍ	's.o. sticks sth. through sth.'
saruḍ	's.o. fills sth. with sth.'
fəñḍ	's.o. throws sth. in/at s.o./sth.'
rovḍ	's.o. ties sth. to sth.'
eyroḍ	's.o. hangs sth. upon sth.'
lalvḍ	's.o. leans sth. against sth.'
jayḍ	's.o. sews sth. onto sth.'
ləkuḍ	's.o. pins sth. to sth.'

They are subject to the primary-object principle (see also (24)–(26)):

(93)

(Krejnovič 1960: 87)
ñi seta ŋir-ṭʿi-ḍ
1S sugar dish-put-IND/NML
'I put the sugar into the cup.'

Third, Nivkh has an array of deictic and landmark roots from which pronouns and a striking number of nouns and verbs are derived. The deictics distinguish six distances corresponding to the determiners (5). Demonstrative pronouns are derived from these deictic roots with the nominalizer *-ḍ* in the Amur variety and with *-d ~ -nd ~ -nt* on Sakhalin (= indicative suffix).

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(94)

(Krejnovič 1979: 305, Gruzdeva 2006, Panfilov 1962: 241)

proximal	*təḍ* (Am), *tud ~ tunt ~ tənt*	'this one'
close	*həḍ* (Am), *hud ~ hunt ~ hənt*	'that one'
medial	*aḍ* (Am), *eyd ~ ehəd ~ ehənt*	'that one over there'
remote	*ahəḍ* (Am), *ayd ~ a(h)ud*	'that farther one'
distal	*aēhəḍ* (Am), *aiyd ~ aīxnt*	'that far one'
invisible	*kuḍ* (Am), *kud ~ kunt*	'it'

Further demonstrative proforms and verbs formed from these roots are:

(95)

(Panfilov 1962: 244–6)

a.	*tur*	'here'	tuŋs	'this much'
	hur	'there'	tuŋr	'such'
	toñ(ñ)i	'this here'	tuŋrəmk	'these many' etc.

b.	*toʁo-ḍ ~ toʁa-ḍ*	'sth. is such'	*hoʁo-ḍ*	'sth. is such'
	tonda	'it's this one here, here you are'		etc.

Seven landmark roots set out a coordinate system of cross-axes constituted by (i) the river and (ii) the slope from the sky down to the mountains, to the river and across.

(96)

landmark roots (Krejnovič 1960, 1986)

a-	'downriver'
kʿe-	'upriver'
tʿa-	'from bank/shore out onto water, from one bank to opposite one'
he-	'from river/open sea to bank/shore, from bank up into interior'
qo-	'down from mountain/tree, from interior down to bank/shore'
kʿi-	'up (onto mountain/tree/into the sky)'
tʿa-	(interrogative)

These roots do not function as non-root bound morphemes, but as derivation bases. Derived nouns and verbs (exemplified in (97) for *kʿe-* 'upriver') can enter nominal or verbal complexes as dependents or heads (Panfilov 1965: 21–2, 31–4).

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(97)

	nouns	
a.	*kʿer*	‘compact location upriver (not very distant)’
	kʿerŋa	‘compact place upriver nearby’
	kʿerŋajo	‘compact place just upriver (from the speaker)’
	kʿeqr	‘distant extended space upriver, upper part of settlement seen from lower part’
	kʿeqrŋa	‘direction upriver, extended space upriver nearby’
	kʿeqrŋajo	‘extended space just upriver’
	kʿeqrək	‘a far region upriver’
	ekʿes	‘there upriver’
	kʿenx	‘an extended space upriver’
	kʿeŋgi ~ kʿegi	‘from upriver’
	kʿenun	‘somebody living upriver’
b.	verbs	
	kʿemḍ	‘s.o. lives upriver’
	kʿeguḍ	‘sth. is somewhere upriver’
(p. 880)	*ekʿeskuḍ*	‘sth. is there upriver’
	kʿeḍiḍ	‘s.o. puts sth. upriver’
	ekʿesʦʿiḍ	‘s.o. puts sth. there upriver’
	kʿe(ŋ)giḍ	‘sth. moves along from upriver’
	xeʦʦ (-kʿeʦʦ)	‘s.o. transports sth. upriver’
	xemiḍ	‘sth. faces/points upriver’
c.	adverb	
	xemi	‘upriver’

The derivations are full members of their lexical classes, transitive verbs (*xeʧʒ* etc.) synthesize with their primary object.

(98)

(Krejnovič 1986: 162)

kʿeqr-pasq-ujn	vo-ñaqr	hum-ra
space_upriver-half-LOC	village-one_CLF	be_there-ENU:3S

‘At the upriver side [of the lake] there is one village.’

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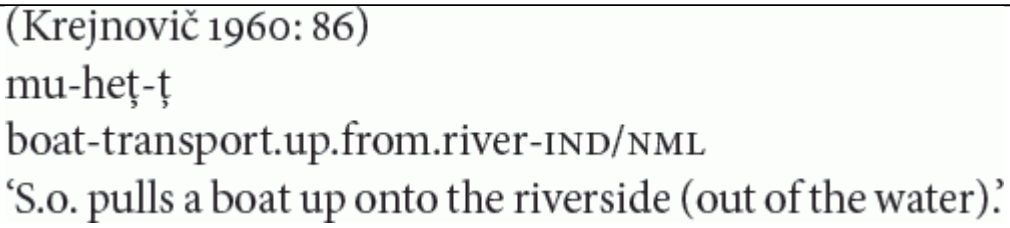
(99) 
(Krejnovič 1960: 86)
mu-heṭ-ṭ
boat-transport.up.from.river-IND/NML
'S.o. pulls a boat up onto the riverside (out of the water).'

Solely intransitive landmark-motion verbs deviate from these roots: *qaḍ* 'move downriver', *tuḍ* 'move upriver', *qoḍ* 'move out to/across the water', *maɣḍ* 'move ashore/inland', *məɣḍ* 'go down', *mərḍ* 'go up'.

40.8 Conclusion

Nivkh cannot be considered a prototypical example of polysynthesis. A small number of non-root bound morphemes, absence of local ones, word-phrases (more pervasive than word-clauses), and configurational syntax alongside an unusual type of head marking make the language an outstanding case.

(p. 881) Abbreviations

ABL
ablative
ACV
anterior converb
ALL
allative
Am
Amur dialect
ASC
correlative-associative
CAUS
causative
CLF
classifier
COMP
standard of comparison
CPL
completive
CV
converb

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DIM
diminutive
du
dual
ELA
elative
ENU
enumerative
ES
East Sakhalin dialect
EXCL
exclusive
EXH
exhaustive focus
EXP
experiential
EXPL
expletive
FUT
future
HAB
habitual
HILI
highlighting focus
HOR
hortative
IMP
imperative
INCL
inclusive
IND
indicative
INS
instrumental
INT
intentional
IQY
inquiry focus
LOC
locative
LOCNML
local nominalization
N

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noun
NAR
narrative
NEG
negation
NML
nominalization
NP
noun phrase
NS
North Sakhalin dialect
p
plural
PERM
permanent property
PL
plural
POSS
possessor
PROG
progressive
Q
question marker
RECI
reciprocal
REFL
reflexive
RES
resultative
s
singular
SG
singular
SS
South Sakhalin dialect
SUP
supine
TR
transitive, transitivizer
U
undergoer
Vitr, Vtr
intransitive, transitive verb

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VN
verbal noun
VP
verb phrase
XCL
exclamative

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Polysynthesis in Ainu

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Abstract and Keywords

Ainu is a typical polysynthetic language in that a single complex verb can express what takes a whole sentence in most other languages. A single verb form may include more than one heavy element: up to two applicative prefixes (out of three), two causative suffixes (out of five), two incorporated objects, one lexical prefix (out of two originating in nouns ‘head’ and ‘bottom’), one verbalizing suffix (originating in the verb ‘make’), as well as reciprocal, reflexive, and general object (=antipassive) prefixes and agreement affixes for the first/second person subject and object. The degree of combinability of voice markers and noun incorporation is spectacular. Nevertheless, it has been claimed that Ainu deviates from more typical polysynthetic languages in having less freedom of word order, interrogative phrases in situ, and unrestricted morphological causatives (Baker 1996). This chapter aims to distinguish what Ainu shares with other polysynthetic languages from what is unique.

Keywords: Ainu, applicatives, noun incorporation, unrestricted morphological causatives, interrogative phrases, word order

41.1 Introduction

THIS chapter will discuss Ainu (isolate; Northern Japan), which is often cited as an example of a typical polysynthetic language. Indeed, a single complex verb in Ainu can express what takes a whole sentence in most other languages, as it can include more than one heavy element: up to two incorporated objects, one lexical prefix (out of two originating in the nouns ‘head’ and ‘bottom’), one verbalizing suffix (originating in the verb ‘make’) and pronominal affixes for the first/second person subject and object, as well

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as up to two applicative prefixes (out of three), two causative suffixes (out of three), reciprocal, reflexive, and general object (=antipassive) prefixes. The degree of combinability of various voice markers and noun incorporation is spectacular too.

The present chapter aims to distinguish what Ainu shares with other polysynthetic languages from what is truly unique to Ainu. In §41.2 I will provide some background information on Ainu and polysynthesis. In §41.3 I will discuss what Ainu shares with other polysynthetic languages, in §41.4 what it does not share with other polysynthetic languages, and in §41.5 I will turn to concluding remarks.

41.2 Background Information on Ainu and Polysynthesis

Ainu is a critically endangered language. Very few remaining speakers of the language live in the south of Hokkaido. Originally, Ainu was spoken in a much broader area which included not just Hokkaido but also (at least) Northern Honshu, Sakhalin, and the Kuril Islands. Ainu is well documented; there are many recorded texts for Hokkaido and Sakhalin dialects. Hokkaido Ainu dialects are divided into the southwestern and northeastern groups, the former being much better documented.

Ainu is usually characterized as an agglutinating, polysynthetic, incorporating, and head-marking language. It has an SOV constituent order. It employs many prefixes in addition (p. 883) to a few suffixes. The opposition of transitive and intransitive verbs is clear-cut because, in pronominal marking, Ainu shows some features of tripartite alignment distinguishing A, S, and O (along with nominative–accusative and neutral alignment). Ditransitive verbs take the same set of personal affixes as transitive verbs; they just have two unmarked objects, but it is usually one of them, the Recipient, that receives object marking on the verb. With only one exception, all ditransitives in Ainu are derived verbs, that is, either applicatives or causatives or both. All intransitive verbs, including "adjectives", which are a sub-class of intransitives, can function as nouns, for example *uwepeker* 'to tell a folktale' or 'a folktale'. Some verbs employ different stems/suffixes for SG and PL; the verbal number basically operates on an ergative basis but with some exceptions. Ainu lacks any kind of special subordinate morphology on verbs. It has an extensive verb-coded voice system, but such categories as aspect, modality, and evidentiality are coded by auxiliaries outside of the verb. There are no pure tense markers.

To qualify as core polysynthetic, a language is expected to display holophrasis, that is, the predicate must bear pronominal marking for all of its arguments and allow more than one lexically 'heavy' morpheme, which at least historically originated in an independent word and involved such processes as noun incorporation or verbal compounding. Ainu perfectly

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meets both requirements with the qualification that it lacks pronominal marking in the third person (§41.3.1.1) and possesses a few restrictions on the co-occurrence of the first and second person markers (§41.3.1.2).

Scholars of Ainu have long been aware of the polysynthetic nature of the language (cf. Kindaichi 1931 (1993): 359–61), which makes it look so different from Japanese. For instance, Chiri (1936 (1974): 168) mentions the following properties of "*shūgō* (polysynthesis)" in Ainu: the inclusion in the verb of pronominal markers for the subject and object, and when semantically necessary, of applicative, reciprocal, and reflexive markers and, in some situations, even of adverbs and nouns. Half a century later, those observations on the polysynthetic character of Ainu were summarized under the heading of *Arity Calculation* in Nakagawa (1993): a calculation of the total valency value of the verb based on counting the valency of each morpheme—compare the double noun incorporation in (1) and the base clause in (2)

(1)

cep-ya-o-kuta-an
fish-shore-to.APPL-throw-IND.S
-1 -1 +1 +2 Total: +1
'I threw the fish (he caught) onto the shore.' (Nakagawa, Bugaeva, and Kobayashi 2016: K7908052.UP)

(2)

pirka	cep	patek…	a-ya-o-kuta
good	fish	only	IND.A-shore-to.APPL-throw
			-1 +1 +2 Total: +2

'I threw only the good fish onto the shore.' (Nakagawa 2001: 145)

It is noteworthy that this *Arity Calculation* bears a striking similarity to the Polysynthesis Parameter (or the Morphological Visibility Condition (MVC)) of Baker (1996: 14): "*Every argument* of a head element *must be related to a morpheme* in the word containing that head".

(p. 884) 41.3 What does Ainu Share with other Polysynthetic Languages?

Fortescue (1994: 2601) lists a number of traits that tend to cluster in polysynthetic languages; all of them are present to a lesser or greater degree in Ainu (high: +++,

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medium: ++, low: +). Henceforth, I will focus only on a few of his traits that seem to be central for polysynthesis in Ainu (and possibly more generally):

d. pronominal marking of subjects and objects ++ (§41.3.1);
f. many potential 'slots', relatively few of them obligatory +++ (§41.3.2);
e. integration of locational, instrumental, and other adverbial elements into the verb +++, with a focus on applicatives (§41.3.3);
a. noun stem incorporation +++ (§41.3.4).

There is one more important trait, which is often included in discussions on polysynthesis: the lack of non-finite constructions in polysynthetic languages (Mithun 1988; Baker 1996; Evans and Sasse 2002), and it is a very conspicuous trait of Ainu. All subordinate clauses (adverbial (36b), relative (29a) etc.) in Ainu exhibit finite morphology, and even lexical nominalizations look like finite clauses.

41.3.1 Pronominal marking of subjects and objects

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As mentioned, Ainu marks grammatical relations on the verb (and does not mark them on NPs), that is, it basically behaves like a polysynthetic language. In this sub-section, I will describe the pronominal marking in Ainu both synchronically and diachronically and discuss whether “information from outside the verbal word” (Evans and Sasse 2002: 3) is still required, that is, whether Ainu shows any features that do not fit into the prototypical profile of polysynthesis.

The Ainu verb is obligatorily marked for the person and number of the intransitive subject (S) or transitive subject (A) and object (O) while personal pronouns are normally omitted. The third person is zero. There is also an “extra” person referred to in the literature either as ‘indefinite’ (Tamura 1988 (2000)) or ‘4th person’ (Nakagawa 1995), which are common labels for a number of different but diachronically related functions (see §41.3.1.3) fully or partially sharing the same marking.

As seen in Table 41.1, Ainu displays a paradigm of pronominal verbal markers and apparently behaves like a typical polysynthetic language. Yet, strictly speaking, these pronominal markers have varying morphological statuses: some of them exhibit properties of words, others are closer to clitics or affixes. For instance, the intransitive subject markers of 1PL ***-as*** and indefinite ***-an***, which originate in intransitive verbs ‘stand’ and ‘exist’ respectively (both verbs are still in use), are autonomous prosodic units just like normal words, and the latter can even be separated from the stem by other words. The indefinite transitive subject ***a-*** and 2PL.S/A/O marker ***eci-*** cannot be separated from the verb and do not have an accent of their own, like affixes, nevertheless they are not included in the word when the (p. 885) general accentuation rule is applied:[1] the accent falls on the first syllable if it is closed (*pás.kur* ‘crow’) and on the second if it is open (*sa.pá* ‘his head’), compare ***a-****tu.yé* ‘one/we (I and you) cut(s) it’ and ***e.ci-****tu.yé* ‘you (PL) cut it’; thus ***a-*** and ***eci-*** should rather be classified as clitics. The personal markers ***ku-, ci-, e-, en-, un-, i-*** are full-fledged prefixes since they cannot be separated from the root and do affect the position of the accent kernel in accordance with the rule (Tamura 1970b: 305; 2001). Though pronominal markers in Ainu show varying morphological statuses, since they perform the same function it is customary to refer to all of them as ‘affixes’ and not to distinguish between them in transcription.

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Table 41.1 Person marking in the Saru dialect of Ainu (Southern Hokkaido, Southwestern group)

person-number	**S/A/O pronouns**	**S markers**	**A markers**	**O markers**
1SG	***káni*** ‘I’	***ku=***	***ku=***	***en=***
1PL.(EXC)	***cóka*** ‘we (I and he/she/them)’	***=as***	***ci=***	***un=***
2SG	***eani*** ‘you.SG’	***e=***	***e=***	***e=***
2PL	***ecioká*** ‘you.PL’	***eci=***	***eci=***	***eci=***
3SG	***sinuma*** ‘he/she’	Ø	Ø	Ø
3PL	***oka*** ‘they’	Ø	Ø	Ø
Indefinite also has the functions of: 1. 1PL.INC ‘we (I and you)’ 2. 2SG/PL honorific 3. logophoric	(***aoka***)	***=an***	***a=***	***i=***

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Adapted from Tamura (2000: 49) with slight modification

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The varying morphological statuses of Ainu personal markers are indicative of their being at different stages in the process of grammaticalization from erstwhile pronouns or verbs respectively. The existing set of independent pronouns (see Table 41.1) exhibits clear features of being the result of secondary development. Most pronouns contain one of the "old pronouns", existential verbs ***an*** (SG) or ***oka*** (PL), and in some cases also a multifunctional nominalizer ***-i/-y*** (< ***hi*** 'thing/place/time'), e.g. ***káni*** 'I' < ***ku-an-i*** (1SG.S/A-exist.SG-thing.NR), lit. 'the place (where) I exist'.

At present, Ainu has seven materially different personal markers: five prefixes (for S, A, and O) and two suffixes (for S only). Intransitive verbs employ both prefixes and suffixes for marking S, as in (3). In the case of transitive verbs, the general tendency is that A markers should come before O markers, as in combinations of 1PL.A and 1SG/PL.O in (5a),(5b), but we rarely find both markers because the third person is zero (4), and because there are (p. 886) restrictions on the co-occurrence of the 1st and 2nd person markers in combinations other than those in (5); see §41.3.1.2.

(3)

a. hempara **e**-ek? núman **k**-ek.
when 2SG.S-come.SG yesterday 1SG.S-come.SG
'When did you come?' 'I came yesterday.' (Tamura 1985a: 10)

b. hempara **eci**-arki? tanto kuneywa arki-**as**.
when 2PL.S-come.PL today in.the.morning come. PL1PL.S.EX
'When did you (PL) come?' 'We came today in the morning.' (Tamura 1985a:

a. toan hekaci **en**-kik
that boy 1SG.O-hit
'That boy hit me.' (Tamura 1985a: 20)

(4)

b. cikap haw **ku**-nu ruwe un.
bird voice 1SG.A-hear INF.EV FIN
'(Yes), I do hear the voice/song of the bird.' (Tamura 1984: 16)

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(5)

a. **eci-en**-nukar
2PL.A-1SG.O-see
'You (pl) see me.' (Tamura 1970b: 228)

b. pirka p **eci-un**-kor-e wa sí-no
good thing 2PL.A-1PL.O.EXC-have-CAUS and real-ADV
c-e-yayirayke.
1PL.A.EXC-about.APPL-be.grateful
'You (pl) gave us so many good things and we are really grateful for this.'
(Tamura 1985a: 20)

41.3.1.1 Encoding 2nd and 3rd person arguments on the verb

Due to some complicated historical developments,[2] Ainu shows a mixed alignment: nominative–accusative in 1SG, tripartite in 1PL exclusive and indefinite, and neutral in 2nd and 3rd persons. This means that when the second and third person arguments, namely, ***e-*** (2SG.S/A/O), ***eci-*** (2PL.S/A/O), and ***Ø-*** (3SG/PL.S/A/O), come on stage, distinguishing between the grammatical relations of S, A, and O by the verbal form alone becomes problematic.

(6)

hápo taampe e-kor-e ruwe?
mother this 2SG.S/A/O-have-CAUS INF.EV
'Mother, did you give this to him?' (Tamura 1972a: 283)
Alternative interpretation: 'Mother, did he give this to you?'

(p. 887) Having both NPs in the AOV order may help to resolve the ambiguity but we do not find them in texts often because of the general tendency for omitting pronouns and topical arguments. This makes one rely greatly on the context.

Besides the context, some clues for interpretation may be drawn from the plurality marking on verbal stems, which can be regarded as a feature contributing to the degree of polysynthesis in Ainu. Verbs of certain semantic groups show an obligatory number distinction, which clearly originated in pluractionality but then was extended to the marking of plurality of participants. Verbal number in (7) is encoded either by the use of completely different verbal stems for singular/plural (suppletion) or by different special plural suffixes, namely, ***-n***/***-p*** and ***-V***[3]/***-pa***. In verbs without a sg/pl distinction in the stem, the number of participants can optionally be expressed with the polyfunctional clitic ***pa***,

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which can also mark pluractionality on various types of verbs regardless of their morphological properties; see the second (word-like) ***pa*** in (7).

(7)

Iskar	emko	wa	payeoka	menoko	ne	(ya)	okkayo	ne
Ishikari	upstream	ABL	walk	woman	COP	Q	man	COP
sinew-pa	pa	kusu	ne	ya	sa-p	wa	arki	
visit.friends-PL	PL	because	COP	Q	come.down-PL	and	come.PL	

'The women and men (PL) walking from Upstream Ishikari came down several tim
(or at several places?) to visit friends or something.'
(Nakagawa, Bugaeva, and Kobayashi 2016: K8109171UP.315)

As a rule, in the case of intransitives, the number distinction refers to the number of subject referents (S), and in the case of transitives to the number of object referents (O), thus ***ek*** '(one person) came', ***arpa*** '(many people) came' and ***rayke*** 'kill (one bear/man)', ***ronnu*** 'kill (many bears/men)' as in (8). This can, to some extent, help to interpret grammatical relations.

(8)

a. (aynu) kamuy **rayke**
human/Ainu bear kill.SG
'An Ainu/Ainus killed a bear (SG).' (Tamura 1996: 568)

b. a-kor turesi… Aynu **ronnu** kor ek ruwe
IND.A-have younger.sister human/Ainu kill.PL and come.SG INF.EV
'My younger sister … came killing Ainu people (PL).' (Nakagawa 2001: 119)

41.3.1.2. Encoding combinations of 1st and 2nd person arguments on the verb

Southwestern Hokkaido dialects (e.g. Saru and Chitose) do not allow the simple combinations of 2SG subject and 1SG/PL object markers, so the subject marking is omitted, that is, (p. 888) ***en-*** (1SG.O) and ***un-*** (1PL.O) alone are used to render the meanings of ***e-en-*** and ***e-un-***; recall that such a restriction does not apply to the combinations of 2PL.A and 1SG/PL.O as in (5).

Moreover, when it comes to the interaction of the 1SG/PL subject (***ku-/ci-***) and 2SG/PL object (***e-/eci-***), a simple combination (e.g. ***ku-e-***) is consistently avoided in all Ainu dialects, though particular strategies employed by different dialect groups may vary significantly. For instance, the Southwestern dialects and some Sakhalin dialects (Raychiska) use ***eci-*** (originally, 2PL.S/A/O) as in (9a) for all combinations of 1SG/PL.A and 2SG/PL.O.

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In Eastern and Central dialects of Ainu, the same combination of 1SG.A and 2SG.O is encoded with ***e-… -an*** (originally, 2SG.(A/S/)O… IND.S) and the combination of 1SG/PL.A and 2PL.O with ***es-(<eci-)… -an*** (originally, 2PL.(A/S/)O…IND.S), which presents a challenge to the transitivity interpretation of the construction due to the co-occurrence of intransitive (S) and transitive (O) morphology on the predicate.[4]

(9)

a. te ta eci-hunara
here LOC 1SG.A+2SG.O-search
'I was looking for you here.' (Bugaeva et al. 2015: #0009)

b. e-e-pakasnu-an kusu ne na.
2SG.O-about.APPL-teach.to-IND.S intention COP FIN
'I will teach this to you (SG).' (Tamura 1970a: 247)

c. es-e-pakasnu-an kusu ne na.
2PL.O-about.APPL-teach.to-IND.S intention COP FIN
'I will teach this to you (PL).' (Tamura 1970a: 248)

In Bugaeva (2011a: 530), I argued against the traditional "circumfixal interpretation" (Asai 1969: 779; Tamura 1970a: 261) of (9b), (9c), and suggested that the marker ***-an*** (IND.S) should be analyzed here as the existential verb ***an*** 'exist.SG' and that the construction has the argument structure of an action nominalization,[5] which functions as an S argument of the verb ***an*** 'be/exist': [*e-e-pakasnu*]$_S$ [***an***]$_V$ lit. 'there will **be** teaching of this to you' (9b).

For whatever hierarchical pragmatic reason this impersonal-like expression occurs (e.g. the first person subject cannot be overtly mentioned in the presence of the second person object), the resultant construction does not fully meet the polysynthesis requirement of encoding on the verb information about all its arguments.

41.3.1.3 Indefinite person as a strategy facilitating argument disambiguation

It may not be accidental that the indefinite person marking, namely, ***-an*** for S, ***a-*** for A, and ***i-*** for O, came to be used so widely in the situation when, due to the neutral alignment, (p. 889) grammatical relations on the verb are underspecified in the second and third persons as in (6), or when the latter is zero-marked as in (8), and when there are pragmatic restrictions on the co-occurrence of the first person subject and second person object markers as in (9). The indefinite person, which does not have such co-occurrence restrictions, as in (13b), can be used, not only for the indefinite proper (impersonal or impersonal passive) as in (10), but also for the 1PL inclusive (I and you (and he)) (29b), 2SG/PL honorific (11), and '1st person in quotation' (logophoric) (12).

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The latter has been conventionalized as the person of the protagonist in folktales of most genres as in (1), (2), (8b), and (13), probably because most of them take the form of reported discourse with the whole story being a quote and the identity of the author of the story being revealed in the last sentence—see for details Tamura (1972a) and Bugaeva (2008). Furthermore, in Sakhalin Ainu, it has been attested even with the function of 1SG in the speech of elderly people (Murasaki 1979: 50).

(10)

ne-wa-an-pe	ká-ha	**a**-eka	wa	ani
COP-and-exist.SG-thing	thread-POSS	IND.A-twist	and	INST
i-tese-**an**				Indefinite pro
APASS-weave.a.rug-IND.S				

'(That is how) one twists the above-mentioned thread and makes with (it) a rug.'
(Tamura 1972a: 387)

(11)

aoka	**a**-sik-ihi	**a**-arka-re	hawe?	2SG honorific
IND	IND.A-eye-POSS	IND.A-hurt-CAUS	REP.EV	

'Have you hurt your eye?' (Tamura 1972a: 376)

(12)

"… *arpa-**an***	*kusu*	*ne*	*na*	*hani!*"	*sekor*	*hawean.*	Logoph
go.SG-IND.S	intention	COP	FIN	EXCL	QUOT	say.SG	

'"I will go!" he said', lit. '"Someone (= oneself) will go!" he said.'
(Tamura 1972a: 373)

(13)

a.

a-kor	ekasi	inaw	ani	sake	ani	**a**-nomi
IND.A-have	grandfather	prayer.stick	INST	rice.wine	INST	IND.A-p

'I worshiped my grandfather with willow prayer sticks and wine.'
(Nakagawa, Bugaeva, and Kobayashi 2016: K7807151UP.268)

b.

a-parunpe	a-**e**-nun-nun-te	Person of protagoni
IND.A-tongue.POSS	IND.A-2SG.O-suck-suck-CAUS	

'(When you started crying,) I gave you my tongue to suck.'
(Nakagawa, Bugaeva, and Kobayashi 2016: K7908051UP.031)

A particular function is attributed to the indefinite based on the context. However, once it has been attributed, like the person of the protagonist in (13), which is conventionally

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translated as ‘I’, there is little ambiguity in assigning grammatical relations (S, A, O) since they are explicitly marked on the verb. (p. 890)

I	II	III	0	IV	VI
APPL	APASS, REC, REFL	APPL	base	SG/PL V TR/INTR	CAUS

Click to view larger

Figure 41.1 Verbal structure in Ainu: Tamura’s model

41.3.2 Many potential ‘slots’, relatively few of them obligatory

To borrow Fortescue’s (1994: 2601) words, Ainu has “many potential ‘slots’, relatively few of them obligatory”. Although it is hardly possible to build up an exhaustive model of what can be included in the Ainu verb, I will make an attempt to clarify what should be included and what are the major tendencies for verbal expansion.

41.3.2.1 Verbal structure in Ainu: Tamura’s model

Fukuda (Tamura) (1955 (2001): 55) suggested that the verb in Ainu has the morphological structure given in Figure 41.1;[6] henceforth it will be referred to as ‘Tamura’s model’.

A personal stem, that is, a stem without personal affixes (they are the last ones to attach and are not included in the model), may consist of a base alone or of a base with one or more affixes. Although the five kinds of affixes do not seem to be mutually exclusive, no verb has been found to contain in itself all of them. By hierarchical graphs under her chart, Fukuda (Tamura) illustrates the ways in which morphemes can be affixed to the base, so her proposed model should probably not be regarded as a linear templatic model, though she does not state this explicitly herself, and makes an effort to search for possible morpheme orders by giving many examples. I will cite only a few verbal forms from her sentences (Roman numerals in brackets indicate slot numbers).

(14)
e-yay-mina-re ‘make oneself laugh at sth’ (vt)
about.APPL-REFL-laugh-CAUS (I-II-O-VI)

(15)
a-en-ko-e-ikka ‘it was stolen from me’ (vd)
IND.A-1SG.O-from.APPL-APPL-steal (I-III-O)

(16)
i-ko-hopun-pa ‘they made an air raid on us’, lit. ‘rose towards us’ (vt)
IND.O-towards.APPL-rise-PL (III-O-IV)

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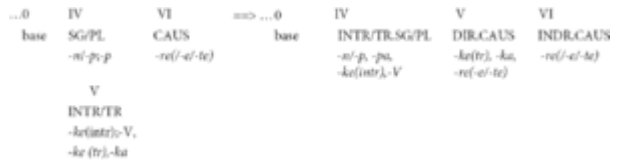
(17)

yay-e-ynonnoitak ‘pray to the gods about oneself’ (vt)
REFL-about.APPL-pray (II-III-O)

(18)

kor-pa-re ‘give (one thing) to each of them’ (vi)
have-PL-CAUS (O-IV-VI)

(p. 891)



Click to view larger

Figure 41.2 A revision of Tamura’s model

What we are dealing with in Ainu is probably closer to some kind of “hierarchical ordering, as if words were built step by step, beginning with the root”, which is how Mithun (1999: 43) characterizes Yup’ik. Indeed, in Ainu too, each added affix has semantic and grammatical scope over all material, and alternative orders are used to convey different scope relations, compare (19a) and (19b).

(19)

a. yay-ko-omap ‘cherish sb alone’, lit. ‘cherish sb with/by oneself’ (vt)
REFL-with.APPL-cherish

b. ko-yay-omap ‘feel sorry for sb’, lit. ‘cherish oneself towards sb’
towards.APPL-REFL-cherish
Cf. *omap* ‘cherish sb’ (vt).

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41.3.2.2 Verbal structure in Ainu: a revision of Tamura's model

As we see, there are many combinatorial possibilities for the valency-changing morphology to the left of the base, and the only obligatory part of the Ainu verb in Tamura's model is the so-called 'verb formation', which can consist of Base(-Slot IV)(-Slot V), depending on the particular verb. However, Tamura's description of the contents of Slots IV and V is confusing, and so is her deliberate choice to place them on top of each other, but the author herself seems to be fully aware of the problem, as she notes that "the relationship between Slot IV and Slot V requires [a] further consideration" (Fukuda (Tamura) 1955 (2001): 43).

In fact, most markers in Slots IV and V are related paradigmatically, so in Bugaeva (2015c : 446) I proposed unifying them into one slot 'INTR/TR.SG/PL' (i.e. INTR.SG ***-n*** and INRT.PL ***-p***; INTR.SG ***-ke***; TR.SG ***-V***;[7] TR.PL ***-pa***), but leaving out those markers which are not related paradigmatically, namely, TR ***-ke*** and ***-ka***, and putting them into a separate 'Direct causative' slot (Figure 41.2), which will be followed by the 'Indirect causative' slot (Tamura's CAUS slot VI) containing the productive allomorphic suffix ***-re(/-e/-te)***, as in (20c), (20d). Note the causative ***-re(/-e/-te)*** can also appear in the 'DIR.CAUS' slot, because it can be used as a default marker of direct causation too[8] (Bugaeva 2014), as in *húre****-re*** 'make sth red' and *arka****-re*** 'hurt sb/sth' (11); this fact has also been overlooked in Tamura's model.

(p. 892)

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(20)

a. ya ta ku-ya-**n** yak-ka pirka ya? (O-
shore LOC 1SG.S-shore-INTR.SG if-even be.good Q
'May I go on land?' (lit. 'May I land on land?') (Bugaeva et al. 2015: #0488)

b. iyotta iyos cip a-ya-n-**ke** (O-IV
most after boat IND.A-shore-INTR.SG-CAUS
'However, I was the last one to land the boat.' (Bugaeva 2004: 296)

c. atuy-kor-kamuy i-ya-n-**te**… (O-IV-
sea-have-god IND.O-shore-INTR.SG-CAUS
'The sea god ordered me to land.'(Kubodera 1977: 50)

d. herepasi arpa katu,
to.the.sea go.SG appearance.POSS
pa-kor-kamuy pa ya-n-**ke-re** (O-IV-V-
smallpox-have-god smallpox shore-INTR.SG-CAUS-CAUS
'The appearance of (my killed old wife's) going to the sea made the Smallpox goo
send (lit. 'make land') the smallpox.' (Tamura 1985b: 34)

41.3.2.3 Verbal expansion possibilities

Tamura's model is not exhaustive, since her purpose was probably to focus on the major valency-changing alternations, namely, applicative prefixes ***e-, ko-***, ***o-***; reciprocal ***u-***, reflexive ***yay-***, reflexive causative/anticausative ***si-***, antipassive (object-blocking) ***i-***, and causative suffix ***-re/-e/-te***. Here is a list of other elements (non-exhaustive) that can be included in the verb in Ainu—see for more details Tamura (1973 (2001), 1975 (2001)).

i. noun incorporation (see §41.3.4) occurs in Slot II or before Slot I, just like other valency-decreasing markers[9];
ii. adverbial modifiers, which are also used as independent verbs or adverbs as in *e-yay-**somo**-mokor-e* (about.APPL-REFL-**NEG**-sleep-CAUS) 'not make oneself sleep because of sth (needlework)' (Tamura 2013: 104), can occur anywhere before the base;
iii. prefixes with adverbial meanings[10] (***rú-*** 'slightly', ***ar-*** 'completely', ***sirko-*** 'strongly', ***toyko-*** 'thoroughly, ***sí*** 'very', etc.), e.g. ***ru-****sesek* 'slightly hot', ***toyko-****kisma* 'grasp firmly', occur immediately before the base;
iv. lexical prefixes ***he***- 'head' and ***ho-*** 'bottom' originating in nouns, e.g. ***he-****etaye* 'pull one's head in' (vi) < *etaye* 'pull sth' (vt), ***ho-****pun-i* 'get up' (vi) < *pun-i* 'raise sth', occur immediately before the base;

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v. verbalizing suffix originating in the verb ***kar*** 'make sth', which can be used as a full-fledged verb too, e.g. *sapa-**kar*** 'cut hair' (vi) (Kubodera 1992: 235) < *sapa* 'head', *apto-**kar*** 'be rained on' (vi) < *apto* 'rain', occurs immediately after the base; (p. 893)
vi. Aktionsart suffixes (***-kosanpa*** 'momentary', ***-natara/-itara*** 'continually', etc.), e.g. *noy-**kosampa*** 'fall suddenly' (Kubodera 1992: 174), occur immediately after the base.

Besides, the base can fully or partially be reduplicated to express iterative and other aspectual meanings, for example *mina-**mina*** 'laugh a lot', *kep-**kep**-i* 'bite repeatedly, gnaw', *turi-**ri*** 'stretch sth out', see Tamura (1972b (2001)).

As mentioned, a minimal verbal stem can consist of a base only or a base and suffix from 'INTR/TR.SG/PL' Slot IV (Schema 2). Once the verbal stem has been fixed, it can be expanded either in the A-adding (causative) direction by suffixation or in the O-adding/deleting (applicative/antipassive, noun incorporation) or A-deleting (reciprocal, reflexive, anticausative) directions to the left by prefixation. Unlike Fukuda (Tamura) (1955), I suggest that the order of valency-increasing and valency-decreasing slots to the left is not fixed, but each type can occur no more than twice. If the verbal stem is transitive, the expansion to the left is likely to begin with a valency-decreasing process (21b), which is then succeeded by a valency-increasing (applicative) process (21c), and then each or both process(es) can take place one more time (21d),(21e), while in the case of intransitive stems it is the other way round, as in (16) and (17). However, this is only a slight tendency based on respective type frequency observations, and in practice there are many intransitive stems preceded by two applicatives (15), or transitive stems which can be turned into ditransitives by an applicative prefix (23b) or causative suffix (22b) (instead of being intransitivized).

(21)

a. ruska 'be angry with sth' (vt) →

b. **i**-ruska (APASS-be.angry.with) 'be angry' (I. Oda p.c) (vi) →

c. **ko-i**-ruska (APPL-APASS-be.angry.with) 'be angry with sb' (I. Oda p.c) (vt)

d. **si-ko-i**-ruska (REFL-APPL-APASS-be.angry.with) 'get angry', cf. 'get angry w another' (Batchelor 1938: 453) (vi);

e. **u-ko-i**-ruska (REC-APPL-APASS-be.angry.with) 'be angry with one anothe (I. Oda p.c) (vi)

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(22)

a. ruska 'be angry with sth' (vt) →

b. ruska-**re** (be.angry.with-CAUS) (vd) 'make sb angry with sth' (vd) →

c. **i**-ruska-**re** (APASS-be.angry.with-CAUS) 'make sb angry'(I. Oda p.c) (vt) →

d. **ko-i**-ruska-**re** (APPL-APASS-be.angry.with-CAUS) 'make sb angry with sb' (I. Oda p.c) (vd) →

e. **si-ko-i**-ruska-**re** (REFL-APPL-APASS-be.angry.with-CAUS) 'make sb angry w oneself' (Kubodera 1992: 243) (vt) →

f. *u-ko-i-ruska-re* (REC-APPL-APASS-be.angry.with-CAUS) 'make sb angry wi each other' (I. Oda p.c) (vt)

(p. 894)

(23)

a. ruska 'be angry with sth' (vt) →

b. **ko**-ruska (APPL-be.angry.with) 'be angry with sb because of sth' (I. Oda p.c) (v

c. **yay-ko**-ruska (REFL-APPL-be.angry.with) 'be angry with oneself because of sth (I. Oda p.c) (vt).

Valency-changing markers are characterized by high combinability, and most restrictions have a semantic basis (Bugaeva 2015b). For instance, the antipassive, which is here conceived of broadly as an object-blocking process, can apply to the majority of bivalent transitive verbs, but three (semantically) highly transitive sub-classes of verbs, namely Creation/Transformation/Contact by Impact, Caused Motion/Removal, and Effective Action verbs, disallow antipassives; the latter also disallow applicatives. Verbs in the middle part of the semantic transitivity hierarchy, namely verbs of Perception/Cognition/Ingesting/Interaction/Communication, are most prone to all kinds of alternations, that is, applicative (23b), antipassive (21b), causative (22b), and also to noun incorporation.

41.3.3 Applicatives

For lack of space I will refrain from detailing all valency-changing alternations and focus only on applicatives, because they show a number of typologically rare features and are related in Ainu to the topic of noun incorporation, which is essential for a discussion of polysynthesis.

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Applicatives in Ainu should probably be conceived of simply as an object-adding valency-increasing process, just the opposite of the antipassive, which is an object-deleting process. Most typological studies of the applicative (Peterson 2007) describe it as a process which promotes a semantically and syntactically peripheral argument to the object position as in (24a) and (29a), that is, there must exist a non-applicative (base) construction, in which the NP in question is encoded as an oblique by some kind of case marker as in (24b) and (29b).

(24)

a. sekor nupuri kor kamuy i-**ko**-asur-ani
QUOT mountans have god IND.O-**to.APPL**-rumor-hold.SG
'Like this the bear god (the god who has/rules mountains) informed me of th
(Nakagawa, Bugaeva, and Kobayashi 2016: K8303243UP.119)

b. ora konto kamuy unu-utar-i **eun** asur-ani hine,
then then god mother-PL-POSS DAT rumor-hold.SG and
'He sent word to (wolf) god mothers.'
(Nakagawa, Bugaeva, and Kobayashi 2016: K8303243UP.111)

Ainu differs from the majority of languages with applicatives in that for many applicatives there are no corresponding non-applicative paraphrases, so in such cases as (25) and (26) applicatives are the only means for expressing the respective meanings. Alternatively, the situation can be encoded by the respective intransitive verbs without applicative markers.

(p. 895)

(25)

*cikap-po poka a-**e**-omuken.*
bird-DIM even IND.A-with.regard.APPL-have.a.bad.hunt
'(Now we are older, and) we cannot even catch small birds.'
(Nakagawa, Bugaeva, and Kobayashi 2016: K7803231UP.109)

(26)

*i-ramante oruspe ka a-**e**-u-ko-isoytak*
APASS-hunt story even/also IND.A-about.APPL-REC-to.APPL-tell.sto
'We can also talk about hunting.' (Nakagawa, Bugaeva, and Kobayashi 2016: K7803231UP.086)

Applicatives in ***e-*** are often used without any visible objects at all referring to the previous situation as a whole and "summing up" what has been said; thus, in (5b) and (39) it

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means ‘about (this)’ and encodes the situation described by the preceding clause. There is also a strong tendency for the anaphoric deletion of topical objects.

41.3.3.1 Applicatives: explaining unusual properties

There are three applicative prefixes in Ainu, which I generally label as Instrumental ***e-***, Dative ***ko-***, and Locative ***o-***. All markers can attach to both intransitive (as is (24)–(26) and (27a)) and transitive verbs (as is (27b)) but applicative derivations from intransitives are much more frequent: 90 percent for ***e-***, 78 percent for ***ko-,*** and 88 percent for ***o-*** (Bugaeva 2010: 758–9), which seems to be unusual cross-linguistically, see Polinsky (2005: 443). The referential range of the respective constructions stretches over several semantic roles, and the exact role is attributed to the interaction between the semantics of the prefix and the verb as is (27) and also to context. The important functions of Ainu applicatives are as follows (Bugaeva 2010: 760):

> ***e-*** 1. Content, 2. Location, 3. Instrument, 4. Theme, 5. Cause/Purpose, 6. Other (Comitative: Co-agent, Manner, Beneficiary, Path);
>
> ***ko-*** 1. Addressee, 2. Goal, 3. Recipient/Beneficiary, 4. Comitative: Co-patient, 5. Malefactive Source, 6. Other (Cause/Purpose);
>
> ***o-*** 1. Goal, 2. Location.

A number of verbal stems have been registered with all three applicative prefixes.

(27)

a. *ek* ‘come (SG)’ (vi)
→ *e-ek* ‘come (SG) for (doing sth)’ (vt) (Tamura 1996: 79); Purpose
→ *ko-ek* ‘come (SG) to sb’ (vt) (AB 151); Goal (‘non-place’)
→ *o-ek* ‘come (SG) to some place’ (vt) (Nakagawa 1995: 80); Goal (‘place’)
b. *resu* ‘raise sb (SG)’ (vt)→ *e-resu* ‘raise sb with sth (e.g. by using the power of treasures)’ (vt) (Tamura 1996: 79); Instrument
→ *ko-resu* i. ‘raise sb (SG) as a bride/groom for sb’ (vd) (Bugaeva 2004: 151); Beneficiary
ii. ‘raise/watch over sb (SG) and sb together’ (vd); Comitative: Co-patient
→ *o-resu* ‘raise sb (SG) at some place’ (vd) (Kubodera 1992: 518); Location

(p. 896) And finally, as was first noted in Shibatani (1990: 66), Ainu allows applicative derivations from apparent unaccusatives as in (28) and (29a), which are claimed as impossible in Baker (1988: 254)—compare the base clause in (29b).

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(28)

e-an 'live/exist (SG) somewhere' (Tamura 1996: 71) < *an* live/ 'exist (SG)'
e-isam 'die at some time' (Tamura 1996: 167) (Loc) < *isam* 'not exist/die'
e-rok ' (of a god) live/reside at' (Tamura 1996: 120) (Loc) (lex) < *rok* 'sit (PL)'
ko-rewsi 'stay overnight with sb' (Co-patient) < *rewsi* 'stay'
o-rewsi 'stay overnight at some place' (Tamura 1996: 481) (Loc) < *rewsi* 'stay'

(29)

a. a-mut emusi notak kas-i-ke e-ray
IND.A-wear sword edge.of. sword top-POSS-POSS at.APPL-die
kuni p e-ne ruwe ne na.
should person 2SG.A-COP INF.EV COP FIN
'You are a person (who) should die on top of the edge of my sword.'
(Nakagawa 2001: 99)

b. kim ta ray kur a-u-ka-o ka eaykap
mountains LOC die man IND.A-REC-top-put even/also be.una
pe ne
NMZ COP
'We cannot bury a man (who) died in the mountains.' (Nakagawa 1995: 125)

As mentioned, some applicatives in Ainu lack corresponding non-applicative paraphrases, but even for those applicatives which do seem to have non-applicative paraphrases with case postpositions, we cannot be sure that there is a direct relationship between the two, as in (24) and (29). Also, recall that there are many more applicatives from intransitives than from transitives, see Polinsky (2005: 443) who investigated eighty-three languages with applicatives and concluded that "the intransitive base of applicatives is less common than the transitive base". Moreover, what is really typologically unusual in Ainu is that there exist applicatives from a special class of unaccusative intransitives. Importantly, applicative objects can easily be incorporated (see (32) and (33)), that is, backgrounded, though cross-linguistically they tend to be topical and foregrounding. And finally, double applicatives, which are not so common in other languages, are rather frequent in Ainu as in (15), (26), and (32). Since quite a number of unusual features cluster together in Ainu applicatives there must be a historical explanation for this.

My current view is that the applicative in Ainu has not always been (and has probably still not fully turned into) a voice, that is, an operation that adjusts the relationship between semantic roles and grammatical relations in clauses. Originally, it was used not for the "promotion" of arguments like voice, but just for the encoding of participants[11] on the verb, that is, as an equivalent of adpositional marking; recall that there is no overt

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pronominal marking (p. 897) for the third person.[12] My assumption is supported by the obviously innovative nature of case postpositions in Ainu and by the exuberant frequency of applicatives in the *yukar* 'heroic epic', which is the oldest genre of Ainu oral literature.

In fact, most case postpositions originate in verbs (Bugaeva 2015a: 46) and are still in an early stage of grammaticalization because they can be used independently, that is, without nouns, as the instrumental *ani* (< *ani* 'hold sth' (vt)) in (10); compare the use with nouns in (13b). Thus one can readily hypothesize that in the past none of the postpositions were used in Ainu as case markers. The function of expressing peripheral case relations was being fulfilled solely by the applicative markers, cf. (24a) and (24b).

As to the etymologies of applicative prefixes, in Bugaeva (2010) I suggested that the applicative prefix ***ko-*** originated in the verb ***kor*** 'have', and that the applicative prefixes ***e-*** and ***o-*** originated in relational nouns meaning 'head/top' and 'buttock/bottom', which are no longer used as independent nouns.

41.3.4 Noun incorporation

Ainu uses noun incorporation in abundance. It is remarkable not only for its frequency, which is particularly high in oral literature, but also for the variety of possible types, which are all word-formation patterns with differing productivity and syntactic and semantic effects, or regularity. There are four types of incorporation in Ainu; recall that A/S/O labels are used for grammatical categories. Compare the respective type frequency and percentage in texts in the Chitose dialect of Ainu (Satō 2012: 10):

1. Object (O)-incorporation. A noun is incorporated in its notional form, e.g. ***turep****-ta* 'dig up the **roots of a wild lily**'. Valency-decreasing. 85.9% (444 examples);
2. Intransitive subject (S)-incorporation. Semantically, a natural phenomenon noun is incorporated in its notional form, ***sir****-pirka* 'the **weather** is good'. Valency-decreasing. 6.8% (35 examples);
3. Intransitive subject (S)-incorporation. Semantically, a body part is incorporated in its possessive form ***tek-e****-pase* 'be(come) heavy-**hand**ed, become old'. Valency-retaining. 5.6% (29 examples);
4. Transitive subject (A)-incorporation. Semantically, a (super)natural phenomenon or insect noun is incorporated in its notional form, ***koy-****yanke* 'be(come) **wave**-raised'. Valency-decreasing. 1.7% (9 examples).

Functionally, incorporation is usually characterized as a backgrounding process (Hopper and Thompson 1980: 254), that is, it is used when the event is of greater interest than its participants.

41.3.4.1 O-incorporation

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This is by far the most common type of noun incorporation in Ainu (85.9%). It is characterized by the highest productivity and semantic transparency or regularity. As is often noted, (p. 898) O-incorporation leading to an intransitive verb is most commonly used when referring to conceptually unitary and noteworthy cultural activities (Mithun 1984). This also seems to be the case in Ainu, for example ***wakka-****ta* 'fetch water', ***cep-****koyki* 'catch fish', ***cise-****kar* 'build a house', ***rawomap-****kar* 'make a fish basket trap', ***ki-****otuye* 'cut grass/reed', ***ni-****uwomare* 'gather firewood', ***pahaw****-nu* 'hear a rumor, gossip', and ***cip-****o* 'row a boat' (Nakagawa, Bugaeva, and Kobayashi 2016).

Incorporation of the Patient/Theme/Goal object by a monotransitive verb produces an intransitive verb, as evidenced by the change of the transitive marker ***ci-*** (1PL.EXC.A) to the intransitive subject marker ***-as*** (1PL.EXC.S), as in the first and second clauses in (30).

(30)

turep-ta-as	kus	*paye-as*	wa		
lily.root-dig-1PL.EXC.S	for	go.PL-1PL.EXC.S	and		
poro-n-no	**turep**	**ci**-ta	wa	sa-p-as	
big-EP-ADV	lily.root	1PL.EXC.A-dig	and	descend-PL-1PL.EXC.S	

'We went for lily root digging and came back having dug up a lot of lily roots.'
(Satō 2008: 220)

Incorporation of the Patient/Theme object by a ditransitive verb reduces valency by one but does not result in intransitivization, that is, both (31a) and (31b) are marked with the same transitive subject marker ***a-***.

(31)

a.

konto	i-tura	pa	utar	**a-puma**-kor-e	pa.
then	IND.O-follow	PL	people	IND.A-wage-have-CAUS	PL

'Then I paid the people who carried things.' (K8109171UP.244)

b.

nep	ka	**puma**	ka	a-kor-e	pa
something	even/also	wage	even	IND.A-have-CAUS	PL
ka	somo	ki	no,		
even/also	NEG	do	and		

'They didn't get their wages at all.' lit. 'people did not give them wages.'
(Nakagawa, Bugaeva, and Kobayashi 2016: K8108011UP.004)

It is perfectly possible to incorporate the applicative object (AO) in the case of both transitive and ditransitive verbs. Naturally, AOs with certain semantic roles get incorporated more often than with others. In the case of the ***e-*** applicative prefix, it is AOs with the roles of Content (32), Instrument, and Cause/Purpose that frequently get

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incorporated. For the ***ko-*** applicative it is usually AOs with the roles of Co-patient (33) and Goal (the latter is occasionally found even with animate referents, as in (35), (36)), and for the ***o-*** applicative AOs with both of its frequently attested roles, namely, Location and Goal as in (1) and (2) (Bugaeva 2010: 789–90).

(32)

iteki	yay-**ipe**-**e**-**ko**-sunke				pa	no	pirka-no
PROH	REFL-food-about.APPL-to.APPL-lie				PL	and	good-ADV
suke	wa	ipe	pa	kor	oka	yak	pirka
cook	and	eat	PL	when	exist.PL	if	good

'You must not eat meager meals (lit. 'lie to oneself about food'), fix proper food and it.' (Nakagawa, Bugaeva, and Kobayashi 2016: K8010291UP.183)

(p. 899)

(33)

po-ko-inne-an	a	korka,
child-with.APPL-numerous-IND.S	PERF	but

'I was blessed with many children.' (Nakagawa, Bugaeva, and Kobayashi 2016: K7803233UP.396)

In the case of ditransitives, incorporation of one of the objects is actually favorable because it helps to avoid a heavy double object construction (see for details Bugaeva (2011b) and (2015c)).[13] It can be either an inherent object as in (31a) or an applicative object as in (32)[14] or a direct causative object as in (34), but never an indirect causative object because the latter is necessarily animate, referential, and specific (the ban on incorporation of indirect causees is probably universal).

(34)

sut-ketusi	a-sa-n-ke		wa,	
grandmother-chest	IND.A-descend-SG-CAUS		and	
a-**tek**-kus-pa-**re**		wa	inkar-an	akusu
IND.A-hand-pass.through-PL-CAUS		and	look-IND.S	when

'I took down my dowry chest and tried to put my hands in (it).' lit. 'made hands p through (it)' (Bugaeva 2004: 153)

Sometimes, we find examples of double incorporation, which is cross-linguistically not a very common phenomenon (1). Occasionally we even find examples with an incorporated Goal, as in (35) and (36c), which is claimed to be impossible in Baker (1996: 297), and in some works on functional typology too—thus Malchukov et al. (2010: 44): "If incorporation occurs at all in a ditransitive construction, it is invariably T that is

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incorporated [but not R].” Note that *katkemat* ‘woman’ in (36c) occurs in discourse several times and refers to a specific woman[15] (the old wife of the female speaker’s lover) rather than to women in general; compare the base clauses in (36a, b).

(35)

kamuy-he-kote-an	ruwe	ne
god-head.PF-tie.to-IND.S	INF.EV	COP

‘I will marry a god.’ lit. ‘tie head to a god.’ (Okuda 1999: 2030222)

(36)

a.

a-sa-ha	oripak	hine	an
IND.A-elder.sister-POSS	be.reserved.in.behaviour	and	exist.SG

‘My sister became still.’ (Nakagawa, Bugaeva, and Kobayashi 2016: K8007292UP.0

b.

a-kor	yupo	a-**ko**-oripak	kusu
IND.A-have	elder.brother	IND.A-to.APPL-be.reserved.in.behaviour	beca

‘I feel respect for your elder brother, (so I will leave you alive).’ (Okuda 1993: 251)

[16]

c.

katkemat-**ko**-oripak-an[16]		kor	hotke-an
woman-to.APPL-be.reserved.in.behaviour-IND.S		and	sleep-IND.S

‘I felt sorry for (this) woman (i.e. my lover’s old wife) and fell asleep.’ (Tamura 1997: 26)

(p. 900) Moreover, Ainu allows the incorporation of reflexive nouns as in (37). Yet the incorporated nouns are never salient in discourse, and that is where Ainu does meet the general typological claim (Muravyova 2004: 46).

(37)

hesasi	si-kiru	kor	**yay-nan-ka**-pir-pa	oraun,
forward	REFL-turn	when	REFL-face-top-wipe-TR.PL	then

‘When she faced forward, she wiped her tears (=top of one’s face).’ (Nakagawa, Bugaeva, and Kobayashi 2016: K8010291UP.144)

Interestingly, it is possible to introduce in discourse the actual referents of incorporated nouns as direct objects (as in ***usa an pe*** ‘various things’ in (39) and ***kut*** in (41)) by applicativizing the incorporating verb with the prefix ***e-***, which has, in such cases, the semantic role of Content/Theme. This probably happens when the respective participants become salient in discourse, but the details of the discourse function of such constructions as in (39) and (41) and the difference between them and normal transitive constructions without the incorporation as in (38a) and (40a) requires further

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investigation. The newly introduced object NP can be encoded by the same noun as the one incorporated as in (41) or by a different noun as in (39).

(38)

a. **imoko** kor 'have/bring a present' (vt)

b. **imoko**-kor 'bring a present' (vi)

c. ko-**ymoko**-kor[17] 'bring a present to sb' (vt)

d. **e**-ko-**ymoko**-kor 'bring sth as present to sb' (vd)

17

(39)

usa	**an**	**pe**	en-**e**-ko-**imoko**-kor
various	exist.SG	thing	1SG.O-APPL-to.APPL-present-have
wa	ek	pe	ne kusu k-**e**-yaykopuntek
and	come.SG	NMZ	COP because 1SG.A-about.APPL-rejoice

'(Aunt) came and brought me various things as presents, so I am happy about (it).' lit. 'brought me presents with/by various things'. (N. Shirasawa p.c)

(p. 901)

(40)

a. **kut** kor 'fasten a waistband' (vt)

b. **kut**-kor 'fasten a waistband' (vi)

c. **e-kut**-kor 'use sth as waistband' (vt)

(41)

kut	a-**e**-**kut**-kor
waistband	IND.A-APPL-waistband-have

'I fastened a waistband.' (Tamura 1996: 95) lit. 'I waist-banded with a waistband

41.3.4.2 S-incorporation: natural phenomena

The following two nouns belonging to the semantic class of Natural Force/Phenomenon, namely, ***sir-*** 'appearance, world, weather' and ***me-*** 'cold', can be incorporated as subjects of intransitive verbs. The valency is decreased, so the resultant verbs are zero-argument meteorological verbs. This type of incorporation ranks second in frequency after O-incorporation: 6.8 percent (35 examples) in Satō (2012:10).

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(42)

nisatta	ka	suy	**sir**-pirka	ya?
dawn-at	even	again	appearance-be.good	Q

'Will there be fine weather tomorrow again?' (Bugaeva et al. 2015: #0131)

(43)

tan-to	**sir**-mean.	
this-day	appearance-be.cold	

'It is cold today.' (Bugaeva et al. 2015: #1042)

In fact, this type lacks the corresponding paraphrases without the incorporation, because ***me-*** 'cold' is no longer used independently and ***sir*** is used only as an evidential and modal marker. Strictly speaking, the examples in (42) and (43), can no longer be regarded as noun incorporation, although there is no doubt about their origin.

41.3.4.3 S-incorporation: body parts

The incorporated noun is usually a body part (the possessee), and it is always incorporated in the possessive form[18], which signals the bound status of the possessee, i.e. of the fact that there is also a possessor though the possessor itself is normally marked on nouns with the same personal prefixes as A (see Table 1) – compare (44b), (45b) and (11), (36). The body part noun is incorporated by an intransitive verb and this should, in principle, reduce the valency, but the resultant verb remains intransitive, as in (44a) and (45a). We are dealing with the rearrangement of valency but not with its decrease. The resultant incorporating verbs tend to be lexicalized (44a), that is, this type of incorporation is less semantically transparent. It (p. 902) ranks third in frequency in Ainu: 5.6 percent (29 examples) in Satō (2012:10), and seems to be rather common cross-linguistically (Mithun 1999: 45).

(44)

a. **tek-e**-pase-an
hand-POSS-heavy-IND.S
'My hands are heavy.' (i.e. 'I feel as if I've aged.')

b.

a-**tek-e**	pase
IND.A/POSS-hand-POSS	heavy

'My hands are heavy.' (Satō 2012: 8)

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(45)

a. cip kamuy, **hon-i**-arka-an
boat god belly-POSS-hurt-IND.S
'The ship god! My belly hurts (i.e. 'I am in labor.') (Okuda 1992: 171)

b. an[19]-**hon-i** arka
IND.A/POSS-belly-POSS hurt
'My belly hurts (i.e. 'I am in labor.') (Okuda 1992: 170)

19

41.3.4.4 A-incorporation: (super)natural forces and insects

A-incorporation is exceptionally rare cross-linguistically and it has been claimed to be totally impossible in Baker (1988). Ainu allows A-incorporation only with the following semantic groups of nouns: i. natural forces (46a), ii. supernatural forces (46b), iii. insects (46c). This type of incorporation is valency-decreasing but it also rearranges valency in a way similar to the passive (Evans p.c), demoting what would otherwise be expressed as an A and casting as S what would otherwise be expressed as an O. Thus, the subject of the base construction *koy* 'wave' in (47b) is incorporated in (47a) and this reduces the valency, but the object of the base construction ('I') is adjusted to the subject position—note the change of the object marker ***en-*** to the subject marker ***ku-*** in (47a).

(46)

a. **rir**-turse-re (tide-fall.down-CAUS) 'be(come) tide-dropped'
koy-turse-re (wave-fall.down-CAUS) 'be(come) wave-dropped'
wakka-mom-te (water-float-CAUS) 'be(come) water-floated'
nis-reye-re (cloud-crawl-CAUS) 'be(come) cloud-carried'

b. **kamuy**-panakte (god/spirit-punish) 'be(come) god-punished'—see (48)

c. **urki**-o (lice-attach) 'be(come) lousy (Kobayashi 2008: 209–10)

(47)

a. ku-**koy**-ya-n-ke
1SG.S-wave-shore-INTR.SG-CAUS
'I am wave-raised.'

b. **koy** en-ya-n-ke
wave 1SG.O-shore-INTR.SG-CAUS
'The wave raises me.' (cf. *ya-n-ke* 'raise' in (20b))
(Satō 2012: 8) (the glossing is mine)

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(p. 903) There are lexical equivalents to A-incorporation in Japanese, and interestingly, nouns of exactly the same semantic classes tend to be incorporated as in ***musi-bamu*** (lit. 'bug-bite') 'ruin, erode, affect adversely' (vt) and ***kami-gakaru*** [god-obsess] 'become obsessed, be possessed by a supernatural spirit' (vi) (Kageyama 2016: 245). Compare the following example of genuine incorporation from Ainu (48a).

(48)

a. ku-**kamuy**-panakte
1SG.S-god/spirit-punish
'I was gods-punished.'

b. **kamuy** en-panakte
god/spirit 1SG.O-punish
'The gods punished me.' (Satō 2012: 8) (the glossing is mine)

To my knowledge, the incorporation of A, although a very rare phenomenon, is also attested in the Mixean languages, for example Olutec (Roberto Zavala, this volume), and there as well it invariably involves the incorporation of (super)natural forces and insects. Overall, this type of incorporation in Ainu has the lowest productivity and semantic/pragmatic regularity.

41.4 What doesn't Ainu Share with other Polysynthetic Languages?

TAM and evidentiality is not marked within the verb in Ainu but after the verb with various auxiliaries of verbal/nominal origin—see (4b), (6), (8b), (11). Unlike in other polysynthetic languages, interclausal relations in Ainu are not maintained within the verb (cf. Mithun (1988: 443) for many North American languages, Miyaoka (2012) for Yupik, and Nedjalkov and Otaina (2013) for Nivkh).

It has also been claimed that Ainu deviates from more typical polysynthetic languages such as Mohawk (Baker 1996: 497) in that it has i. less freedom of word order, ii. interrogative phrases in situ (no movement), and iii. unrestricted morphological causatives (it allows causatives from unergatives and basically has no major restrictions on causative derivation as in (20d)). Indeed, although the order of subject and object(s) in Ainu shows pragmatically determined variations, it is a strictly verb-final language with all the consequences on the relative order of other elements in the clause. And, I suspect that requirements ii. and iii. mentioned in Baker (1996) are not central to the phenomenon of polysynthesis in general.

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(p. 904) 41.5 Concluding Remarks

In this chapter, I have presented arguments for classifying Ainu as a polysynthetic language. At least to some extent Ainu exhibits all the polysynthetic traits of Fortescue (1994: 2601), but for lack of space I have chosen to focus only on the following four: pronominal marking (§41.3.1), many 'slots', relatively few of them obligatory (§41.3.2), applicatives (§41.3.3), and noun incorporation (§41.3.4).

Though generally Ainu makes use of personal marking on the verb, it is not a prototypical polysynthetic language in this respect, that is, in which grammatical relations can be understood without information from outside of the verb. The reasons are as follows: (a) there is no overt marking for the third person; (b) second person markers show neutral alignment (S/A/O); and (c) there are pragmatic restrictions on the co-occurrence of the first person subject and second person object markers. This makes the whole system of marking grammatical relations on the verb not fully efficient (recall that argument NPs are not case-marked and that there is a general tendency for pro-dropping and zero-anaphora). However, Ainu has developed a number of polysynthetic tools, which can, to some extent, help to retrieve grammatical relations. To amend (a), Ainu marks the most frequently used verbal stems for plurality, which originates in pluractionality, but has been extended to marking the number of S with intransitives and O with transitives. To amend (b) and (c), Ainu employs so-called indefinite person marking, namely, ***-an*** for S, ***a-*** for A, and ***i-*** for O, which does not have any co-occurrence restrictions; it can be used instead of almost every other person, and, by showing tripartite alignment, it is perfectly suitable for distinguishing grammatical relations.

Based on my previous revision of Tamura's (1955) model of Ainu verbal structure I have shown that Ainu has a mixed templatic/scopal organization: the suffixed part is templatic and the prefixed part is scopal.

Next, I have focused on applicatives and pointed out that the following typologically unusual properties cluster in Ainu applicatives: (1) there are many more applicatives from intransitives than from transitives; (2) there are even applicatives from unaccusatives; (3) some applicatives lack non-applicative paraphrases; (4) applicative objects (of which we expect a high topicality) can easily be incorporated, that is, backgrounded. My current explanation for this is that the applicative in Ainu has not always been (and has probably still not fully turned into) a voice. Originally, it was used not for the "promotion" of arguments like voice, but just for the encoding of participants on the verb, that is, as a special equivalent of adpositions. My assumption is supported by the innovative nature of case postpositions in Ainu and the exuberant frequency of applicatives in the *yukar* 'heroic epic', which is the oldest genre of Ainu oral literature.

Ainu uses noun incorporation in abundance. It is remarkable not only for its frequency, which is particularly high in oral literature, but also for the variety of possible types, which include: (1) O-incorporation; (2) S-incorporation: natural phenomenon; (3) S-

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incorporation: body part; (4) A-incorporation: (super)natural forces and insects. All these types are word-formation patterns, with differing productivity and syntactic and semantic effects, or regularity. The latter type is extremely rare cross-linguistically but wherever it is attested it shows the involvement of nouns from the same semantic groups. O-incorporation (p. 905) is by far the most common type of noun incorporation in Ainu and it is most commonly used when referring to cultural activities, but not necessarily. Sometimes we also find incorporated reflexive objects and occasionally even animate Goal objects, which is typologically rare and still requires explanation. In the case of ditransitives, there is a preference for incorporating one of the objects. Applicative objects (and also direct causative objects) may perfectly well be incorporated. This probably compensates for the lack of adjunct incorporation in Ainu. Double incorporation is attested too. One of the few general typological claims about noun incorporation that Ainu really meets is that no incorporated nouns are salient in discourse.

Overall, Ainu can be characterized as a fairly good polysynthetic language.

Abbreviations

1/2/3
1st/2nd/3rd person
A
transitive subject
ABL
ablative
ADV
adverbial
APASS
antipassive
APPL
applicative
COP
copula
DAT
dative
DIM
diminutive
EP
epenthetic consonant
EXC
exclusive
FIN

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final particle
IND
indefinite
INF.EV
inferential evidential
INST
instrumental
(IN)(DIR).CAUS
(in)(direct)causativeI
INTR
intransitive
LOC
locative
NEG
negation
NMZ
nominalizer
O
object
PERF
perfect
PF
prefix
PL
plural
POSS
possessive
REFL
reflexive
Q
question marker
QUOT
quotation marker
REC
reciprocal
REFL
reflexive
REP.EV
reportive evidential
S
intransitive subject
sb
somebody

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SG
singular
sth
something
TR
transitive
UP
uwepeker ‘prosaic folktales’
V
vowel
vd
verb ditransitive (three-argument)
vi
verb intransitive
vt
verb transitive

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Notes:

(1) Some words in Hokkaido Ainu show an irregular accent, e.g. *ká.ha* ‘the thread of’ (10), which corresponds to the vowel length in Sakhalin Ainu (*kaaha*) and presumably proto-Ainu. Only the irregular accent will be marked in this chapter.

(2) For example, Okuda (2015) adduced a scenario that originally Ainu had only object personal markers and subject markers appeared later, which is, however, still to be proven.

(3) The choice of the vowel in the suffix ***-V*** is not fully predictable; it is regarded as a vestige of the vowel-harmony phenomenon in Ainu (Chiri 1974 (1952): 201–25). Any of the actual realizations of ***-V*** involve resyllabification and influence accentuation in accordance with the accentuation rules (see §41.3.1). The suffix ***-V*** can also be regarded

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as a lexical direct causative (Bugaeva 2015c), but paradigmatically it should be entered in the previous Slot IV (Schema 2).

(4) For instance, we cannot say that some kind of intransitivization has taken place in (9b), (9c) because the verb ***e-pakasnu*** ‘teach sth to sb’ is ditransitive, so in any event it could take a Theme NP and therefore is expected to maintain its morphosyntactic transitivity.

(5) In terms of Koptjevskaja-Tamm (1994), this is a so-called restricted or argument-reducing action nominal construction in which both A and O cannot co-occur.

(6) I have slightly modified the grammatical labels of affixes in the slots. The reason why Slot V is put under Slot IV will be explained in the next section.

(7) See footnote 3.

(8) The choice of a direct causative marker is to some extent determined by the semantics of the base verb.

(9) Fukuda (Tamura) (1955 (2001): 43) notes that the valency-decreasing prefixes cannot occur in a verbal form more than twice, i.e. she recognizes a possibility of further verbal form expansion to the left (beyond her model).

(10) In fact, the adverbial prefixes are listed in Fukuda (Tamura) (1955 (2001): 44), they are just not included in the model.

(11) Cf. Similar observations on the Iroquoian languages in Mithun (2002): “applicatives in these languages offer speakers choices not between core and oblique encoding within clauses, but between the expression of ideas in two clauses or one.”

(12) I am not saying that applicative markers originate in the third person markers as such.

(13) As mentioned in §41.2, in Ainu, just with one exception, all three-argument verbs are either applicatives or causatives.

(14) In the case of *yay-**ipe-e**-ko-sunke* ‘eat meager meals’, lit. ‘lie to oneself about food’ (32), the double applicative ***e-ko-**sunke* ‘lie about sth to sb’ incorporates the AOs *ipe* ‘food’, so first the valency is reduced by one, and then the verb is intransitivized with the reflexive prefix ***yay-***.

(15) It was pointed out to me by T. Satō (p.c) that, in spite of the context, *katkemat-**ko-oripak*** may still mean something like ‘admire/respect a woman (in general)’ (not a specific one), though this is not obvious from Tamura’s translation of the example.

(16) The spelling in the original indicates separate words: *katkemat**ko-**oripak’an*, and the implication is probably that there is no incorporation in this case. But it is hardly possible to analyze this form without incorporation because the verb ***ko-**oripak* ‘stand in awe at,

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feel reserved in behavior toward' is transitive, so one would expect the transitive personal marker *a-* instead of the intransitive marker *-an* if there were no incorporation here.

(17) The change ***i > y*** occurs in accordance with the rules of morphophonological alternation in Ainu.

(18) In the case of transitive verbs, body part nouns can be incorporated only in their notional forms as in (34).

(19) ***An-*** (IND.A) (Shizunai, Northeastern) is an equivalent of ***a-***(IND.A) in the Northeastern Hokkaido dialects of Ainu.

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Polysynthesis in Ket

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Abstract and Keywords

The Ket language isolate of Central Siberia differs morphologically from the surrounding languages in having a strongly prefixing polysynthetic verb. Grammatical markers are interdigitated between lexical morphemes, creating a discontinuous stem based on a template of eight prefixal positions, a base position and a single suffix position expressing plural agreement with animate-class subjects. Finite verb forms distinguish past from non-past indicative, as well as an imperative form. Verbs are strictly transitive or intransitive and express person, number, and noun class agreement with the subject and direct object. Although the language has accusative alignment, with subjects marked differently than objects, much of the verb's linear complexity derives from lexically conditioned agreement strategies. There are three productive transitive configurations of agreement markers, and five productive intransitive configurations. Noun incorporation is productive for only a small number of stems. Some Ket verbs incorporate their object, others their instrument, and others their unaccusative subject.

Keywords: discontinuous stem, incorporation, template, position class, agreement, accusative alignment

42.1 Introduction

A templatic prefixing verb with several functional types of incorporation distinguishes Ket typologically from all other languages of Inner Eurasia, which by contrast are strongly suffixing, concatenative, and decidedly non-polysynthetic. This chapter examines how incorporation interacts with two other facets of Ket polysynthesis: holophrasis (verb-internal subject and object pronominals) and discontinuous stem morphology. Modern Ket incorporating patterns include detransitivization by object noun incorporation, and

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instrument noun incorporation in transitive stems. Verbs meaning ‘become’ and ‘cause to become’ can incorporate predicate adjectives or nouns. Transitive and intransitive motion verbs incorporate directionals such as ‘outside’, ‘downriver’, ‘across’, ‘from forest to river’, and ‘from river to forest’. Noun incorporation creates transimpersonal verbs like ‘he gets covered in mud ~ mud covers him’. There are also a number of avalent and monovalent pairs of the type ‘rain falls’—‘subject gets rained upon’, in which an incorporated noun rather than a verb-external argument expresses a non-sentient force. The totality of these patterns clearly places Ket among the ranks of polysynthetic languages, though only a few types of incorporation are prolific enough to alternate regularly in discourse with more analytic phrases to express nuances of information structure. Although the Ket verb fits Fortescue’s (present volume) definition of core polysynthesis as a word form conveying a single macro-event with bound pronominal arguments and more than one “heavy” lexical element, the language is only mildly polysynthetic by most quantitative measures, a fact connected with the verb’s rigidly templatic nature, which prohibits the recursive addition of morphological material.

42.2 Overview of Ket Verb Structure

All finite verbs in Modern Ket follow a template of eight prefix positions, a base (historically containing the verb root), and a single suffix expressing plural agreement with an animate-class subject: (p. 907)

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Table 42.1 Position classes of the Modern Ket finite verb

P8	P7	P6	P5	P4	P3	P2	P1	P0	P-1
sbj person agr	incor-porate	obj or sbj agr	thematic con-sonant(s)	3 anim agr + tense/ mood portma nteau	3 inan agr	tense mood aspect	1,2 sbj or obj agr or stative - resulta tive prefix	base (verb root often with fossiliz ed aspect suffix)	anim pl sbj agr

sbj = subject, obj = object, pl = plural, anim = animate-class, inan = inanimate class, agr = agreement, result = resultative

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The Ket verb is rigidly templatic, with each morpheme belonging to a specific position class that determines how it combines with morphemes belonging to other classes. Most productive verb stem patterns obligatorily fill all three lexical slots (P7, P5, P0) with morpheme shapes that appear in all grammatical forms of the given verb. The P7 incorporate slot may be filled with a lexical noun, adjective, directional, or action nominal. The P5 thematic consonant (or 'determiner') slot contains a consonantal affix that is often semantically opaque in Modern Ket, but sometimes retains a distinguishable meaning associated with trajectory of motion (into, toward, away from), or with the shape of the subject or object (round, long, area), or which specifies number or animacy of the subject or object. The P0 base originally contained a root expressing the verb stem's basic meaning, though in verbs where an action nominal occupies the P7 slot, the base has been bleached into a lexical marker of transitivity or *Aktionsart* categories such as inceptivity, semalfactivity, or iterativity. Chapter 18 of the present volume discusses these de-facto suffixing patterns, which arose specifically through typological accommodation to the surrounding suffixal-agglutinating languages and do not represent polysynthetic types of incorporation.

A typical Ket verb stem, which interdigitates its agreement and tense/mood markers among the three lexical position classes P7-5-0, is shown in (1a), with an example verb form generated by the stem given in (1b):

(1)

a. SBJ^{8}=**in**^{7}-OBJ^{6}-**h**^{5}-(a/ol)$^{4\text{-}2}$-**ted**^{o}-PL$^{\text{-}1}$
SBJ^{8}=**needle**^{7}-OBJ^{6}-**area**^{5}-(tense-mood)$^{4/2}$-**hit.endwise**^{o}-PL$^{\text{-}1}$
'SUBJECT hits OBJECT endwise with a NEEDLE (once).'

b. **da**^{8}=**in**^{7}-**ba**^{6}-**h**^{5}-**a**^{4}-**ted**^{o}
3FEM.SBJ^{8}=**needle**^{7}-1SG.OBJ^{6}-**area**^{5}-PRES^{4}-**hit.endwise**^{o}
'She pokes me with a needle (once).'

In verb formulas and morpheme breakdowns, like the ones in (1a) and (1b), superscript numbers indicate position class as correlated with Table 42.1. The transcription is phonemic, with a macron for high-even tone: *tīb* 'dog', apostrophe for rising laryngealized tone *ta'b* 'dogs', and grave accent for falling tone *qà* 'big'. Most polysyllables and all geminate-vowel monosyllables have an accent-like raised pitch on the first vocalic mora; this prosodic type is (p. 908) not marked by any diacritic: *suul* 'snowslead', *ɨntib* 'puppy'. An acute accent on a second syllable marks instances where the prosodic peak rises on a word's second syllable instead of the first: *obáŋ* 'fathers'.

Although Ket has accusative alignment, with subjects marked differently than objects, the agreement positions (abbreviated SBJ and OBJ) that must be filled in each individual verb stem are not predictable. Positional variation in subject and object agreement in Modern Ket has created what have been termed 'actant conjugations' or 'agreement configurations' (Vajda 2001: 49–59). There are five productive intransitive configurations of agreement markers, and three productive transitive configurations. Agreement

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configuration must be listed in the verb's lexical entry. Which positions from among P6, P4, and P1 are used for subject agreement and which are used for object agreement in each given verb depends on a complex variety of historical factors, some of which are discussed in Chapter 18. There are some general tendencies, however. Most transitive verbs, like the example in (1b), mark their subjects using the verb-initial person agreement clitic in P8 and the verb-final animate-class plural agreement suffix in P-1 (which for brevity's sake will be glossed simply as PL).

Tense–mood–aspect marking in Ket is more straightforward. Nearly all Ket verb stems use P4 and P2 to mark tense and mood, but the combination of affix shapes (usually P4 *s/i* or *a/o* plus P2 *l* or *n*) is lexically selected for reasons that are largely opaque from a synchronic perspective. There are five productive tense mood classes: *s/il, s/in, a/ol, a/on,* and *a/o* which lacks a P2 aspectual consonant. The tense/mood morpheme shapes must be listed in the verb's lexical entry, although the position classes they occupy (P4 and P2) are entirely predictable, so that generalized stem formulas need not mark them with superscript numerals. In the case of the stem in (1a), the tense/mood class is (*a/ol*), which appears in stem formula in parentheses with superscript numerals 4–2.

A few other idiosyncrasies in the Modern Ket verb template should be pointed out preliminarily. The animate and inanimate-class agreement morphemes that currently occupy P4 and P3 originated from among the P5 thematic consonants, while the tense/mood prefixes in P4 (originally conjugation markers) and P2 (originally aspect markers: *n*-perfective and *l*-imperfective) were formerly contiguous. The straightforward arrangement of 3rd person agreement followed by conjugation and aspect marker was disturbed when inanimate-class *b*- metathesized rightward into P3. The conjugation markers then became stranded in P4 and separated from the P2 aspect markers. The conjugation markers merged phonologically with the animate-class markers to create the tense/mood/agreement portmanteau that currently occupies P4. More detail about diachronic processes that have complicated the linear arrangement of template position classes can be found in Chapter 18.

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42.3 Lexical Semantics

Despite the elaborate formal complexities inherent in its template, the grammatical and lexical categories systematically expressed across the Ket verbal lexicon are rather limited as compared to many other polysynthetic languages, and some non-polysynthetic languages as well. There are only three grammatical tense–mood categories: past indicative, non-past indicative, and imperative, each of which is expressed by affixes in P4 and P2. Despite the formally elaborate means used to express subject and object agreement, (p. 909) valency-changing derivations are minimal (Vajda 2015), and there are no morphologically trivalent verbs (Nefedov, Malchukov, and Vajda 2010). Each verb stem is strictly transitive or intransitive, and there are no labile (ambitransitive) verb forms. Transitivity is signaled not only by whether or not an object agreement marker is present, but also by the configuration of lexical morpheme shapes in P7-5-1. Morpheme combinations occupying these three positions also convey lexical aspect categories such as iterativity, semelfactivity, and inceptivity.

Lexico-derivational complexity is generally modest. Motion verbs specify either the type of motion (flying, running, crawling, etc.) or the trajectory or destination (across, out, downriver, passing by, to the forest, to the river) but rarely both. An exception is the stem *SBJ* ^{8} *=k* ^{5} *-(a/oj)-ok* ^{0} ‘subject flies up, takes to flight’, where the P5 thematic consonant *k* ‘up’ combines with the base *-ok* ^{0} (< *-doq-ŋ* ‘fly’). Only a handful of basic verbs allow alternations between P5 consonants: *t-abdo* ‘smooth a surface by cutting’, *d-abdo* ‘cut a long shape’, *n-abdo* ‘cut a round shape’, *k-abdo* ‘created (a path) by cutting (branches) away’, and finally *-abdo* ‘cut off, remove by cutting’. Such patterns are completely unproductive. The P5 thematic consonant found in most verb stems is semantically opaque, its presence nothing more than a structural requirement of the given stem formula. Leaving incorporation patterns aside, the lexico-semantic categories typical of Ket verb morphology are less rich than is typical even for the non-templatic, prefixing systems of Russian and a number of other Indo-European languages.

42.4 Toward a Typological Characterization of Ket Polysynthesis

Ket verbs typically express a single macro-event on the basis of a discontinuous stem with bound pronominal arguments and more than one “heavy” lexical element. However, the rigid template restricts overall verb length, and there are quantitative limits to semantic complexity, as well. Only a few specific incorporation patterns are productive, though a few of these are so productive that they involve what could be called a lexically underspecified stem. All synthetic languages have syntactic rules that add grammatical morphology to word forms; the stem slots into which inflections are placed can be said to

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be underspecified until the application of phrase structure rules. Some polysynthetic languages, including Ket, have phrase structure rules that add purely lexical morphology to word forms. In a language with fully active lexical underspecification, it is not possible to list exhaustively every verb stem any more than it would be possible to list every free phrase. The underspecified lexical component of Ket polysynthetic stem formulas will be represented using syntactic labels such as OBJECT.NOUN, ADJECTIVE, etc.

Because of its intrinsic link with phrase structure rules, a fully productive pattern of incorporation generally coexists alongside more analytic means of expressing the same referential meaning. Ket is no exception. These forms alternate with synthetic transitives to express nuances of information structure such as backgrounding or topicalization. The incorporating forms in (2a), (2c), (2e) are referentially synonymous with the alternating non-polysynthetic phrases in (2b), (2d), (2f). The two variants differ only stylistically, with (p. 910) incorporation tending to be used to background an item in discourse and the more analytic phrase used to topicalize the same item:

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(2)

a. d^{8}=suul^{7}-il^{2}-bed^{o}
3SBJ^{8}=sled^{7}-PAST^{2}-make^{o}
'He was sled-making.'

b. ki' suul d^{8}=b^{3}-il^{2}-bed^{o}
new snowsled 3SBJ^{8}=INAN.OBJ^{3}-PAST^{2}-make^{o}
'He made a new snowsled.'

c. se'n d^{8}=tareŋ^{7}-l^{2}-a^{o}-n^{-1}
reindeer 3SBJ^{8}=moss^{7}-PAST^{2}-eat^{o}-SBJ.PL^{-1}
'Reindeer (pl.) fed on reindeer moss.'

d. se'n òn tareŋ d^{8}=b^{3}-il^{2}-a^{o}-n^{-1}
reindeer much moss 3SBJ^{8}=3INAN.OBJ^{3}-PAST^{2}-eat^{o}-SBJ.PL^{-1}
'The reindeer(pl.) ate a lot of reindeer moss.'

e. qus^{7}-di^{1}-bed^{o}
tent^{7}-1SG.SBJ^{1}-possess^{o}
'I have a tent.'

f. ab-əŋta qu's usaŋ
1SG-ADESS tent be
'I have a tent.'

As Mithun (1984) argued, polysynthesis is a morphological feature, though one with strong relevance to the language's phrase structure and information structure patterns. As morphological entities, polysynthetic word forms are prone to developing lexical idiosyncrasies, especially where logical semantic constraints already exist on their formation and usage. Incorporation of object nouns into EAT-verbs is highly lexicalized, as can be seen by these examples:

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(3)

a. sūj da^{8}=sul^{7}-s^{4}-a^{o}
mosquito 3FEM.SBJ^{8}=blood^{7}-PRES^{4}-eat^{o}
'A mosquito feeds on blood.'

b. ɖɨl d^{8}=hənaŋ^{7}-s^{4}-a^{o}
child 3SBJ^{8}=sand^{7}-PRES^{4}-eat^{o}
'The baby is putting sand in its mouth.'

c. da^{8}=daan^{7}-l^{2}-a^{o}
3FEM.SBJ^{8}=grass^{7}-PAST^{2}-eat^{o}
'She (fem.-class animal) was grazing.'

d. daan da^{8}=b^{3}-il^{2}-a^{o}
grass 3FEM.SBJ^{8}=3INAN.OBJ^{3}-PAST^{2}-eat^{o}
'She (a person) was eating grass.'

(p. 911) The incorporated form expresses a prototypical example or a routine situation, such as when an ungulate feed on vegetation (3c). The corresponding transitive expresses instead a focused, unexpected, or otherwise individuated verb-external object, as when a person eats grass (3d). The incorporated for meaning 'eat sand' might describe the action of a small child prone to putting sand or dirt in its mouth (3b). The connection between incorporation and defocussing to express nameworthy cultural or natural realities leads to lexicalization of frequently used combinations. The incorporated form 'eat blood' references specifically a biting insect's feeding habits (3a). A person drinking animal blood would more likely be expressed analytically. Because polysynthetic verbs are morphological objects, lexicalization tends to affect them more readily than it affects free syntactic phrases.

Individual polysynthetic forms may or may not become lexicalized, and degrees of lexicalization can be measured in various ways. Finite verb stems in Ket typically derive action nominals (a parallel form meaning 'VERBing' or 'to VERB') by compounding the lexical morphemes in P7, P5, and P0; however, the most highly productive polysynthetic patterns produce verbs that serve as stylistic variants of free syntactic phrases in conveying information structure; such forms are not lexicalized semantically and have no parallel action nominal. Most other Ket verb stems involving incorporation act more like typical compounds or derivations in non-polysynthetic languages.

Incorporation in Ket is functionally diverse in the sense that it includes full lexical underspecification, somewhat productive patterns prone to lexicalization, and vestiges of completely unproductive patterns. Modern Ket has a few active patterns of incorporation and several marginally productive ones, as well as dozens of stems that preserve earlier

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forms of incorporation (unproductive stem types are discussed in Chapter 18). Every one of these patterns—whether prolific or moribund—involves lexical roots or nominal stems incorporated in the P7 slot. Modern Ket has no other means of adding heavy lexical material to a verb stem.

42.5 Object Incorporation

Most Ket transitive verbs cannot incorporate their object nouns. Only two transitive bases allow incorporation of their patient-role noun object with any productivity: *-bed* ‘make and *-a* ‘eat, feed upon’. A few others, including *-doh* ‘injest (liquid or smoke)’, *-ted* ‘beat’, and *-aq* ‘give’ have been attested with isolated incorporated objects. Only *-bed* ‘make’ is highly productive, with virtually any patient-role noun capable of being incorporated for purposes of backgrounding it in discourse. In the polysynthetic stem formula shown in (4a) the lexically underspecified element is generalized using all capital letters, while grammatically underspecified elements (inflections) are marked with small capitals. The grammatical tense/mood marker shapes in P4/2 are given in parentheses: *s* ^{4} or *i* ^{4} for present indicative and *il* ^{2} for past-indicative or imperative. The choice of present-tense marker depends on whether the incorporate was historically monosyllabic, as in (4b), in which case *s* ^{4} is used, or polysyllabic as in (4c), in which case *i* ^{4} appears:

(p. 912)

(4)

a. SBJ^{8}=OBJ.NOUN(PL)^{7}-(s~i/il)-bed^{o}-PL^{-1}
‘SUBJECT makes the item(s) named by the P7 incorporate.’

b. da^{8}=nan^{7}-si^{4}-bed^{o}
3FEM.SBJ^{8}=bread^{7}-PRES^{4}-make^{o}
‘She is making bread.’

c. d^{8}=ildub^{7}-i^{4}-bed^{o}
3SBJ^{8}=fishing.rod^{7}-PRES^{4}-make^{o}
‘He is making a fishing rod.’

The polysynthetic stem formula in (4a) is a capable of generating a potentially huge number of individual word forms. Virtually any lexical noun—in either its singular or plural form—can be incorporated into the P7 slot of this formula, provided only that it refer to an item that can conceivably be crafted by human endeavor. This pattern can generate word forms never before uttered yet perfectly predictable, and perfectly acceptable if used in a particular information structure context.

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Individual *-bed* verbs can lexicalize for the same reasons discussed earlier with reference to the EAT-verbs in (3a)–(3d). The examples below illustrate polysynthetic (5a) and non-polysynthetic (5b) variants:

(5)

a. da^{8}=uk^{7}-li^{2}-bed^{o}
3FEM.SBJ^{8}=gruel^{7}-PAST^{2}-make^{o}
'She was gruel-making.'

b. lōql u'k da^{8}=b^{3}-il^{2}-bed^{o}
runny gruel 3FEM.SBJ^{8}=INAN.OBJ^{3}-PAST^{2}-make^{o}
'She made thin gruel.'

The form in (5a) might typically have referred to the traditional daily practice of cooking up dog food. Verb phrases containing a modified object, as in (4b), cannot detransitivize by undergoing object incorporation. Quantifiers or other free modifiers in Ket cannot be incorporated along with their head noun; nor can a noun be incorporated when its modifier remains outside the verb form.

The *-bed* pattern does allows incorporation of the interrogative pronoun *akus* 'what?', as first discussed in Krejnovič (1981: 133–6):

(6)

a. k^{8}=akus^{7}-il^{2}-bed^{o}
2SBJ^{8}=what^{7}-PAST^{2}-make^{o}
'What were you doing?' ~ 'What activity were you engaged in?'

b. akus k^{8}=b^{3}-il^{2}-bed^{o}
what 2SBJ^{8}=INAN.OBJ^{3}-PAST^{2}-make^{o}
'What were you making?'

(p. 913) As typical for productive patterns of Ket incorporation, the incorporating form in (6a) backgrounds the object, making the action more general, while the non-incorporated verb phrase in (6b) focuses contextual attention on the item being made. The form in (6a) shows the language's only attested stem with interrogative incorporation. While other incorporating *-bed* verbs regularly derive parallel action nominals such as *nanbed* 'making bread', *ukbed* 'making gruel', *suulbed* 'making snowleds', there is no action nominal **akusbed* 'making what'.

Incorporation of the patient-role noun also occurs with the base *-a* 'eat, feed on', though much less regularly. The polysynthetic formula in (7a) is only somewhat productive:

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(7)

a. SBJ[8]=OBJ.NOUN(PL)[7]-(s/il)-a[O]-PL[-1]
'SUBJECT eats the item named by the P7 incorporated noun.'

b. qiin d[8]=əəŋ[7]-s[4]-a[O]-n[-1]
elk.PL 3SBJ[8]=leaves[7]-PRES[4]-eat[O]-PL[-1]
'Elk eat leaves.'

Forms generated by (7a) include (2c)–(2d) and (3c)–(3d), already discussed earlier.

Incorporation with *-a* 'eat' entails constraints not applicable to the *-bed* 'make' pattern. This is probably because the Ket traditionally ate relatively few foods, and animal species fewer still, whereas the making of any object requiring time and patience might be judged nameworthy. Incorporation with EAT-verbs sometimes requires a plural form, sometimes a singular form, while in other cases a specific compound stem is required. These morphological idiosyncrasies arose from logical differences in the type or quantity of the item eaten. Small animals that were normally eaten several at a time tend to require a plural incorporate (*su'n* 'partridges', *saan* 'squirrels), as does, less understandably, the word for 'breastmilk' *mamul*.

(8)

dɨl d[8]=mamul-an[7]-s[4]-a[O]
baby 3SBJ[8]=breastmilk-PL[7]-PRES[4]-eat[O]
'A baby feeds on breastmilk.'

Many nouns denoting larger animals, birds or fish that require butchering before being eaten can only be incorporated when compounded with the noun root *ki'd*, meaning 'meat' or 'flesh'.

(9)

de'ŋ d[8]=qoj-kid[7]-s[4]-a[O]-n[-1]
people 3SBJ[8]=bear-meat[7]-PRES[4]-eat[O]-SBJ.PL[-1]
'People eat bear meat.'

Despite the high degree of lexicalization, object incorporation with *-a* 'eat' is at least mildly productive, as shown by the incorporation of Russian loan nouns such as *kampit* 'candy' and *saar* 'sugar':

(10)

b=hu'n da[8]=kampit[7]-s[4]-a[O]
1SG.POSS=daughter 3FEM.SBJ[8]=candy[7]-PRES[4]-eat[O]
'My daughter eats candy.'

(p. 914) The third object-incorporating stem, *-doh* 'drink (liquid), inhale (smoke)' only allows incorporation of the nouns *ūl* 'water', *sa'j* 'tea', and *sa'l* 'tobacco' in Modern Ket:

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(11)

a. d^{8}=saj^{7}-a^{4}-doh^{o}
3SBJ^{8}=tea^{7}-PRES^{4}-drink^{o}
'He's having tea.'

b. sa'j d^{8}=a^{4}-b^{3}-doh^{o}
tea 3SBJ^{8}=PRES^{4}-3INAN.OBJ^{3}-drink^{o}
'He is drinking tea.'

c. d^{8}=sal^{7}-a^{4}-doh^{o}
3SBJ^{8}=tobacco^{7}-PRES^{4}-drink^{o}
'He is smoking.'

d. ? sa'l d^{8}=a^{4}-b^{3}-doh^{o}
tobacco 3SBJ^{8}=PRES^{4}-3INAN.OBJ^{3}-drink^{o}
? 'He is gulping tobacco smoke.'

Incorporation with the base *-doh* (realized phonologically as [do], [doː], or [dop] depending on dialect and morphological context) is completely unproductive, and no evidence exists that it was significantly more productive in the past. Nouns for drinks such as *bok-ul* 'vodka (literally, 'fire-water') or *qəlaj-ul* 'coffee (literally, 'bitter-water') cannot be incorporated regardless of pragmatic considerations such as nameworthiness or backgrounding in context. The verb 'smoke (tobacco)' in (11c) is completely lexicalized so that a non-incorporating transitive form meaning 'inhale tobacco smoke' (11d) is generally rejected.

A few other bases are attested with only one or a few highly lexicalized patient-noun incorporates. The examples in (12a), (12c), (12e) show incorporates alongside semantically related transitives with the same base (12b), (12d), (12f):

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(12)

a. dɨl d^{8}=mam^{7}-s^{4}-ut^{o}
baby 3SBJ^{8}=breast^{7}-PRES^{4}-suck^{o}
'The baby nurses.'

b. dɨl ma'm d^{8}=n^{5}-a^{4}-m^{3}-ut^{o}
baby breast 3SBJ^{8}=around^{4}-PRES^{4}-3INAN.OBJ^{3}-suck^{o}
'A baby sucks on the breast.'

c. d^{8}=ek^{7}-in^{2}-ted^{o}
3SBJ^{8}=iron^{7}-PAST^{2}-beat^{o}
'He forged iron.'

d. ē d^{8}-b^{3}-in^{2}-ted^{o}
iron 3SBJ^{8}=3INAN.OBJ^{3}-PAST^{2}-beat^{o}
'He beat (a piece) of iron.'

e. d^{8}=lək^{7}-o^{4}-j^{2}-aq^{o}
3SBJ^{8}=fur^{7}-PAST$^{4/2}$-give.once^{o}
'He paid the yasak (tsarist-era fur tax).'

f. lək d^{8}=o^{4}-b^{3}-ij^{2}-aq^{o}
fur 3SBJ^{8}=3MASC.SG.OBJ^{4}-TC^{3}-PAST^{2}-give.once^{o}
'He gave him a piece of fur.'

(p. 915) The list of unproductive object incorporating types in (12) could be extended (see Krejnovič 1968: 219 for verbs meaning 'spend the fall, winter, spring, summer', etc.), suggesting that object incorporation may have once been more prevalent.

While all instances of Ket object incorporation reduce the verb's morphological transitivity by replacing the need for grammatical object agreement, only the *-bed* pattern is regularly used in discourse to background a patient-role noun, and only this pattern can be unambiguously regarded as actively involving lexical underspecification. Object incorporation with *-a* 'eat' and particularly with *-doh* 'drink' is lexically more idiosyncratic and highly constrained, so that each individual incorporated form of these bases must be regarded as a distinct stem in the lexicon.

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42.6 Partitive Object Incorporation

Another morphological feature of the Ket verb system involves the incorporation of what could be called the “partitive object marker”. Each of the three transitive bases that allow object incorporation may instead incorporate *us-*, meaning ‘a quantity of (the object)’ into the P7 incorporate slot. Verbs with P7 *us-* have no object agreement affix even when they appear in transitive clauses with a verb-external object.

(13)

a.	ətn	itn	d^{8}=us^{7}-li^{2}-bed^{o}-n^{-1}
	1PL	dried.fish	1SBJ^{8}=quantity^{7}-PAST^{2}-eat^{o}-PL^{-1}
	‘We made (some ~ a bunch of) dried fish.’		
b.	b-huʾn	hənuna	kampit	da^{8}=us^{7}-l^{2}-a^{o}
	1SG.POSS=daughter	little	candy	3FEM.SBJ^{8}=quantity^{7}-PAST^{2}-eat^{o}
	‘My daughter ate a bit of candy.’			

The quantity may be large or small, as clarified by the phrasal context. If partitive *us-* is removed, an object agreement affix must be added:

(14)

b=huʾn	kampit	da^{8}=b^{3}-il^{2}-a^{o}
1SG.POSS=daughter	candy	3FEM.SBJ^{8}=3INAN.OBJ^{7}-PAST^{2}-eat^{o}
‘My daughter was eating candy.’		

At least two other verb bases not otherwise attested as allowing patient-role object incorporation, also combine with partitive *us-* in the same way:

(15)

a.	koh-n	d^{8}=us^{7}-q^{2}-ej^{o}
	chipmunk-PL	3SBJ^{8}=quantity^{7}-PAST^{2}-kill^{o}
	‘He did some chipmunk hunting.’ ~ ‘He killed some chipmunks.’	
b.	koh-n	d^{8}=aŋ^{4}-q^{2}-ej^{o}
	chipmunk-PL	3SBJ^{8}=3ANIM.PL.OBJ^{4}-PAST^{2}-kill^{o}
	‘He killed chipmunks.’	

(p. 916) The notion ‘a little bit’ can be specified verb externally by quantifiers such as *hənuna* ‘little’, or *hənuna us* ‘some, a small amount’, which may appear in the verb phrase even when *us-* appears in P7, as shown in (16a) and (16b).

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(16)

a. bolba-ŋ-esaŋ — da^{8}=il^{2}-aq^{o}
mushroom-PL-for — 3FEM.SBJ^{8}=PAST^{2}-go^{o}

hənuna us — da^{8}=us^{7}-n^{2}-bək^{o}
small quantity — 3FEM.SBJ^{8}=quantity^{7}-PAST^{2}-find^{o}
'She went out for mushrooms and found some.'

b. hənuna bolba-ŋ — də^{8}=b^{3}-in^{2}-bək^{o}
little mushroom-PL — 3FEM.SBJ^{8}=3INAN.OBJ^{3}-PAST^{2}-find^{o}
'She found a few mushrooms.'

Partitive object marking reveals yet another facet of semantic richness in the P7 slot. It partly follows the language's patterns of object incorporation, yet leaves the verb's syntactic transitivity unaffected because it represents the incorporation of a modifying concept (the quantity of the object), while leaving the modified object noun stranded verb-externally. Partitive incorporating stems do not form corresponding action nominals.

42.7 Instrument Incorporation

Two bases allow incorporation of the instrument-role noun: *-ted* 'hit endwise (using a long object)' and *-kit* 'smear (with a substance), rub (with an object)'. Neither can incorporate a patient-role object noun, so that the non-incorporated (17a) and incorporated (17b) forms are morphologically transitive:

(17)

a. assano ke'd — tīb — sal-as — d^{8}=a^{6}-t^{5}-a^{4}-kit^{o}
hunting person — dog — tobacco-INSTR — 3SBJ^{8}=3MASC.SG.OBJ^{6}-TC^{5}-PRES^{4}-rub^{o}
'The hunter rubbed the dog with tobacco ~ rubbed tobacco on the dog.'

b. assano ke'd — tīb — d^{8}=sal^{7}-a^{6}-t^{5}-a^{4}-kit^{o}
hunting person — dog — 3SBJ^{8}=tobacco^{7}-3MASC.SG.OBJ^{6}-TC^{5}-PRES^{4}-rub^{o}
'The hunter "tobaccoed" the dog (to rid it of fleas).'

(p. 917) This incorporation pattern arose because the bases *-ted* and *-kit* are naturally associated with a specific type of instrument rather than a specific category of object. Any object can be poked or hit or have its surface rubbed, but the action conveyed by *-ted* specifically involves poking or hitting with the distal end of a long object or instrument, while *-kit* verbs normally involve a smearable substance. Single-action hit-endwise verbs exist without (18a) and with (18b) instrument incorporation:

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(18)

a. bu ād ulkid-as d^{8}=ba^{6}-h^{5}-a^{4}-ted^{o}
3SG 1SG elbow-INSTR 3SBJ^{8}=1SG.OBJ^{6}-TC^{5}-PRES^{4}-hit.endwise^{o}
'He hit me with his elbow (once).'

b. *bu* *ād* *d^{8}=ulkid^{7}-ba^{6}-h^{5}-a^{4}-ted^{o}*
3SG 1SG 3SBJ^{8}=elbow^{7}-1SG.OBJ^{6}-area^{5}-PRES^{4}-hit.endwise^{o}
'He elbowed me (once).'

Instrument incorporation with the base *-ted* also regularly forms iterative stems meaning 'repeatedly poke or hit'. In this pattern, the plural suffix on the incorporated instrument noun denotes pluractionality rather than a multiplicity of instruments. Pluractional meaning is redundantly expressed by P5 iterative *d-*, which historically metathesized with the P5 'area' consonant *h-* (< **p-*) and tense/mood marker *a-* to yield the string t^{5}-a^{4}-b^{3}:

(19)

bu ād d^{8}=ulkid-n^{7}-ba^{6}-t^{5}-a^{4}-b^{3}-ted^{o}
3SG.PRON 1SG.PRON 3SBJ^{8}=elbow-PL^{7}-1SG.OBJ^{6}-ITER^{5}-PRES^{4}-area^{3}-hit.endwise^{o}
'He repeatedly elbows me.'

Virtually any noun denoting a long rigid object usable to poke or hit endwise can be incorporated into a *-ted* verb to yield both a single-action and interative stem. It is not possible to incorporate round or flat instrument nouns into *-ted* verbs. The incorporated nouns in *-kit* verbs mostly name liquid or mushy substances, though a few are rigid instruments like combs or fingernails in stems meaning 'comb (an object's hair)', or 'scratch (an object's itch)'.

42.8 Predicate Nominal Incorporation

Several productive patterns involve the incorporation of nouns or adjectives that would normally appear as predicate nominals in corresponding analytic constructions. These patterns differ structurally in several ways according to whether the incorporated nominal is a noun or an adjective. The translative pattern in (20a) incorporates any singular or plural noun without apparent limitation, but cannot incorporate adjectives:

(20) a. NOUN(PL)^{7}-SBJ^{6}-t^{5}-(a/on)-aq^{o}
'SUBJECT becomes NOUN'

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b. *tib*^{7}*-a*^{6}*-t*^{5}*-o*^{4}*-n*^{2}*-aq*^{o}
dog^{7}-3SG.MASC.SBJ^{6}-TC^{5}-PAST$^{4/2}$-become^{o}
'He turned into a dog.'

(p. 918)

c. *tab*^{7}*-aŋ*^{6}*-t*^{5}*-o*^{4}*-n*^{2}*-aq*^{o}
dog.PL^{7}-3ANIM.PL.SBJ^{6}-TC^{5}-PAST$^{4/2}$-become^{o}
'They turned into dogs.'

Predicate adjective incorporation in translatives involves the patterns shown in (21)–(24):

(21)

a. SG.ANIM.SBJ^{8}=ADJ^{7}-(a/o)-qan^{o}
'Singular animate-class SUBJECT becomes the quality of ADJ'

b. *da*^{8}*=qa*^{7}*-a*^{4}*-qan*^{o}
3FEM.SBJ^{8}=big^{7}-PRES^{4}-become^{o}
'She becomes big.'

The pattern with plural subjects requires the P-1 animate-class subject plural suffix *-n*, which triggers an idiosyncratic change in the base from *-qan* to *-set-n*, the reason for which is unclear. Also, the incorporated adjective sometimes adds what appears to be a plural ending *-ŋ*. This element historically derives from an unproductive adjectival suffix sporadically preserved through reanalysis as the homonymous plural suffix found in many nouns (see Chapter 18, present volume):

a. ANIM.SBJ^{8}=ADJ(ŋ)^{7}-(a/ok)-set^{o}-PL^{-1}
'Plural animate-class SUBJECT becomes the quality of ADJ.'

(22)

b. d^{8}=qa-ŋ^{7}-a^{4}-set^{o}-n^{-1}
3SBJ^{8}=big-PL^{7}-PRES^{4}-become^{o}-PL^{-1}
'They (animate-class) become big.'

Inanimate-class subjects use the same patterns, except that agreement is marked in P3 rather than P8. The underspecified stem formula is shown in (23a), followed by an example verb form in (23b):

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(23)

a. ADJ^{7}-(a/o)-3INAN.SBJ^{3}-qan^{o}
'Singular inanimate-class SUBJECT becomes ADJECTIVE.'

b. qa^{7}-a^{4}-b^{3}-qan^{o}
big^{7}-PRES^{4}-3INAN.SBJ^{3}-become^{o}
'It becomes big.'

(p. 919) Inanimate-class plural subjects do not trigger the P-1 suffix, which is an animate-class marker, so the base *-qan* remains the same:

(24)

a. ADJ(ŋ)^{7}-(a/o)-3INAN.SJB^{3}-qan^{o}
'Plural inanimate-class SUBJECT becomes ADJECTIVE.'

b. qaŋ^{7}-a^{4}-b^{3}-qan^{o}
big.PL^{7}-PRES^{4}-3INAN.SBJ^{3}-become^{o}
'They (those inanimate-class things) become good.'

Paraphrases without predicate nominal incorporation exist for all of these patterns:

(25)

a. qà-ŋ qām k^{5}-a^{4}-b^{3}-qan^{o}
big-PL soon TC^{5}-PRES^{4}-3INAN.SUBJ^{3}-become^{o}
'They (inanimate-class) will soon become big.'

b. qà-ŋ qām du^{8}=k^{5}-a^{4}-set^{o}-n^{-1}
big-PL soon 3SBJ^{8}=TC^{5}-PRES^{4}-become^{o}-PL^{-1}
'They (animate-class) will soon become big.'

A different pattern creates transitive stems by incorporating the predicate nominal adjective and marking object agreement in P4 (3rd person animate), P3 (3rd person inanimate), or P1 (1st or 2nd person):

(26)

a. SBJ^{8}=ADJ^{7}-t^{5}-OBJ$^{4/3/1}$-(a/ol)-sin^{o}-PL^{-1}
'SUBJECT causes OBJECT to become ADJECTIVE.'

b. da^{8}=qa^{7}-t^{5}-a^{4}-b^{3}-sin^{o}
3FEM.SBJ^{8}=big^{7}-CAUS^{5}-PRES^{4}-3INAN.OBJ^{3}-change^{o}
'She enlarges it.' (literally, 'She causes it to become big.')

Another transitive pattern incorporates a predicate nominal noun:

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(27)

a. SBJ^{8}=NOUN^{7}-OBJ^{6}-k^{5}-(s/in)-bed^{o}-PL^{-1}
'SUBJECT makes from OBJECT something resembling NOUN.'

b. da^{8}=sin^{7}-u^{6}-k^{5}-si^{4}-bed^{o}
3FEM.SBJ^{8}=dirt^{7}-3INAN.OBJ^{6}-TC^{5}-PRES^{4}-make^{o}
'She makes it dirty.' (literally, 'She makes dirt from it.')

c. da^{8}=qoj-ol^{7}-bo^{6}-k^{5}-si^{4}-bed^{o}
3FEM.SBJ^{8}=bear-shape^{7}-1SG.OBJ^{6}-TC^{5}-PRES^{4}-make^{o}
'She turns me into a bear.' (lit., 'She makes a bear shape from me.')

(p. 920) Unlike other patterns with incorporated predicate nominals, the transitive stems built by pattern (27a) regularly form action nominals containing the same incorporate + base combination: *sinbed* 'making dirty', *qojolbed* 'assuming the shape of a bear'. The more productive intransitive stem formulas meaning 'become ADJ', 'become NOUN' do not build parallel action nominals.

42.9 Possessum noun Incorporation

Another extremely productive pattern generates intransitives denoting possession of the incorporated noun. Virtually any Ket noun that names an entity that can logically be possessed by a human, whether alienably or inalienably, can be incorporated into this stem type. The possessor is coded as grammatical subject. The position class used for subject marking depends on whether the incorporated possessum is multisyllabic (or was historically multisyllabic), as in (28a), or is (and was historically) monosyllabic, as in (28b):

(28)

a. in-tib^{7}-bo^{6}-l^{2}-bed^{o}
small-dog^{7}-1SG.SBJ^{6}-PAST^{2}-possess^{o}
'I had a puppy.'

b. tib^{7}-il^{2}-di^{1}-bed^{o}
dog^{7}-PAST^{2}-1SG.SBJ^{1}-possess^{o}
'I had a dog.'

The pattern in (28) is the only productive stem type in Modern Ket that does not include a P5 thematic consonant.

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It is unclear whether the incorporated possessum is to be interpreted as a predicate nominal. Analytic paraphrases are completely different structures which mark the verb-external possessor with adessive case (meaning ‘located near’) and use the uninflected predicate linking verb *usaŋ*, meaning ‘be, exist’, leaving the possessum as subject of the clause:

(29)

ab-əŋta	tīb	usaŋ
1SG-ADESS	dog	be

‘I have a puppy.’

Possessum incorporation is deployed to focus attention on the possessor in discourse, while the analytic phrase in (29) is more appropriate in contexts that focus on the item possessed. Possessum-incorporated verbs lack a corresponding action nominal. This makes stems with this type of polysynthesis closer to the output of phrase structure rules and less like fixed lexical items.

(p. 921) 42.10 Incorporation of Natural Force nouns and Transimpersonal Verbs

Ket incorporates nouns denoting natural forces such as *ūl* ‘rain’ and *be’d* ‘snow’, creating avalent verbs:

(30)

a.	ul^{7}-a^{4}-ta^{o}	b.	bed^{7}-a^{4}-ta^{o}
	rain^{7}-PRES^{4}-falls^{o}		snow^{7}-PRES^{4}-falls^{o}
	‘It rains.’		‘It snows.’

These verbs can add a thematic consonant *k* (probably originally with adessive meaning ‘motion toward, onto’) to create transimpersonal verbs:

(31)

a. ul^{7}-ba^{6}-k^{5}-a^{4}-ta^{o}
rain^{7}-1SG.SBJ^{6}-TC^{5}-PRES^{4}-falls^{o}
‘I get rained on.’ ~ ‘Rain falls on me.’

b. bed^{7}-ba^{6}-k^{5}-a^{4}-ta^{o}
snow^{7}-1SG.SBJ^{6}-TC^{5}-PRES^{4}-falls^{o}
‘I get snowed on.’ ~ ‘Snow falls on me.’

Another transimpersonal pattern with natural force incorporation is more productive. The verbs in (32) convey that the subject’s surface becomes negatively affected by the natural growth or accumulation of some (usually) negative feature:

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(32)

a. NOUN^{7}-SBJ^{6}-k^{5}-(a/on)-tij^{o}
'NOUN grows on, infests, covers the SUBJECT's surface.'

b. ək^{7}-ba^{6}-k^{5}-a^{4}-tij^{o}
lice^{7}-1SG.SBJ^{6}-TC^{5}-PRES^{4}-grow^{o}
'I become louse ridden.' (literally, 'Lice grow on me.')

c. hə'ŋ ul^{7}-Ø^{6}-k^{5}-a^{4}-tij^{o}
net algae^{7}-3INAN.SBJ^{6}-TC^{5}-PRES^{4}-grow^{o}
'The fishnet gets covered in algae.'

In addition to *ək* 'lice' and *u'l* 'algae', this pattern has also been attested with the incorporates *kīn* 'maggots', *sīn* 'dirt', *qāde* 'hair', *hənaŋ* 'sand', *tuspoq* 'bits of litter', *utl* 'fish slime', *qə't* 'windfallen branches', *sukaq* 'rust', *aqul* 'oxidation (on copper)', *hu's* 'mold', *do'ŋ* 'pus', *lèl* 'lymph', *ti'ŋ* 'hoarfrost', and *ulij* 'dew'.

Unlike the avalent forms in (30a)–(30b) meaning 'it rains', 'it snows', transimpersonals such as those in (32) have no avalent equivalent; they must include a subject pronominal (p. 922) identifying who or what is adversely affected by the feature named by the P7 incorporate (though for inanimate-class subjects the pronominal shape is zero). Verb forms with natural force incorporates have corresponding action nominals, such as *kintijiŋ* 'getting covered by maggots'. The events they describe can also be expressed using more analytical circumlocutions:

(33)

a. u'l həŋ-di-ŋte a^{4}-b^{3}-a^{1}-tij^{o}
algae net-INAN.POSS-ADESS PRES^{4}-3INAN.SBJ^{3}-INTRANS^{1}-grow^{o}
'Algae grows on the net.'

b. ul-es t^{5}-a^{4}-b^{3}-a^{1}-daq^{o}
rain TC^{5}-PRES^{4}-3INAN.SBJ^{3}-INTRANS^{1}-drop^{o}
'Rain falls.'

Analytic phrases like (33a)–(33b) can be used to individuate or topicalize the natural force noun, while incorporated forms such as (30)–(32) would otherwise be used.

42.11 The Incorporation of Directionals and other Spatial Descriptors

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A few bases denoting movement, most notably *-qod* ‘walk, go’ (often reduced to *-aq* or metathesized to *-daq*), can incorporate morphemes denoting the trajectory of motion. These morphemes form a small, closed class known as directionals: *ikda* ‘from forest to water, into open space, onto the fire’, *aka* ‘from open water onto land, from river to forest, away from open space, off of the fire’, *eta* ‘upriver walking on ice’, at ‘downriver walking on ice’, *tɨka* ‘down the Yenisei’, *əla* ‘outside, downriver on a tributary of the Yenisei’, *qa* ‘inside (a dwelling)’, *suk* ‘back (to point of origin)’, and *tet* ‘across’. A few motion bases incorporate a directional to specify destination. The original semantics of the P5 thematic consonant *k* in most of these verbs remains unclear; though it once may have conveyed vertical displacement (up or down), it is simply marked TC in the examples:

(34)

a. d^{8}=ikda^{7}-k^{5}-s^{4}-aq^{o}
1sbj^{8}=to.river^{7}-TC^{5}-PRES^{4}-walk^{o}
‘I go down from forest to river.’

b. d^{8}=aga^{7}-k^{5}-s^{4}-aq^{o}
1SBJ^{8}=to.forest^{7}-TC^{5}-PRES^{4}-walk^{o}
‘I go up from river to forest.’

c. d^{8}=tet^{7}-s^{4}-aq^{o}
1SBJ ^{8}=across^{7}-PRES^{4}-walk^{o}
‘I go across.’

d. ī da^{8}=es^{7}-a^{4}-qut^{o}
sun 3FEM.SBJ ^{8}=sky^{7}-TC^{5}-PRES^{4}-walk^{o}
‘The sun rises.’ (literally, ‘The sun walks skyward).’

f. d^{8}=əla^{7}-k^{5}-s^{4}-aq^{o}
1SBJ ^{8}=out^{7}-TC^{5}-PRES^{4}-walk^{o}
‘I go outside.’ ~ ‘I walk downriver.’

(p. 923) A few other motion bases incorporate *əla* ‘motion out’:

(35)

a. d^{8}=əla^{7}-a^{4}-bes^{o}
1SBJ^{8}=out^{7}-PRES^{4}-go.by.boat^{o}
‘I travel downriver by boat.’

b. d^{8}=əla^{7}-b^{3}-il^{2}-taŋ^{o}
1SBJ^{8}=out^{7}-3INAN.OBJ^{3}-PAST^{2}-drag^{o}
‘I dragged it out.’

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Many more incorporating motion verb forms, both transitive and intransitive, can be found in Krejnovič (1968: 172–84). Incorporated directionals have a dative suffix (Modern Ket *-a*, Old Ket **-ej*) and are the only known examples of P7 incorporates containing a case suffix.

42.12 Affix-Like Incorporates

There are a number of unproductive P7 incorporates that function like affixes. Their presence in the verb has nothing to do with argument structure but rather specify some sort of spatial or other adverbial nuance. Some clearly derive from independent nouns but have become semantically bleached and more resemble derivational prefixes in Indo-European languages. These include *es ~ ejs ~ ej* ‘in the air, open space’ (< *ēs* ‘sky’), *ul* ‘loose, free’ (< *ūl* ‘handle, stalk, loose end’), *is* ‘up and away, in a spiral’ (< *hɨs* ‘spiral’), *et ~ ɨːt* ‘up onto a visible a surface (< *əqad* ‘back’), *at* ‘down onto a surface (< ?), *teel* ‘shoved out’ (< ?), *hel* ‘dislocated (< ?), and *el ~ al* ‘completely’ (< *bɨl* ‘all, everything’). Unlike transparently nominal incorporates, which often can be removed for discourse purposes, affix-like spatial and manner incorporates generally cannot be removed without changing the verb’s basic lexical meaning. Although completely unproductive, they tend to co-occur with bases that alternate in shape with other bases of the same general meaning to signal transitivity or iterativity. One set of examples shows spatial incorporates with single-action transitive base *-daq ~ -aq*. This base is found in a wide variety of verbs meaning ‘shoot, lift, throw, put, drop, give’ (36a), (36c), (36e) and may represent several originally distinct verb roots. The base *-daq ~ -aq* appears in single-action verbs with iterative counterparts using the base forms *-a*, *-ij*, or *-o* (36b), (36d), (36f):

(p. 924)

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(36)

a. d^{8}=es^{7}-a^{4}-b^{3}-daq^{o}
1SBJ^{8}=in.the.air^{7}-PRES^{4}-3INAN.OBJ^{3}-propel^{o}
'I toss it (once).'

b. d^{8}=es^{7}-t^{5}-a^{4}-b^{3}-a^{o}
1SBJ^{8}=in.the.air^{7}-ITER^{5}-PRES^{4}-3INAN.OBJ^{3}-propel.ITER^{o}
'I toss it up into the air (once).'

c. d^{8}=ul^{7}-t^{5}-a^{4}-b^{3}-daq^{o}
1SBJ^{8}=loose^{7}-TC^{5}-PRES^{4}-3INAN.OBJ^{3}-drop^{o}
'I let it loose ~ untie it (once)'

d. d^{8}=ul^{7}-t^{5}-a^{4}-b^{3}-ij^{o}
1SBJ^{8}=loose^{7}-TC^{5}-PRES^{4}-3INAN.OBJ^{3}-displace.ITER ^{o}
'I let it loose ~ untie it (many times)'

e. ūl d^{8}=at^{7}-b^{3}-aq^{o}
water 1SBJ^{8}=down.onto.surface^{7}-3INAN.OBJ^{3}-displace^{o}
'I pour water (once)'

f. ūl d^{8}=at^{7}-t^{5}-a^{4}-b^{3}-o^{o}
water 1SBJ^{8}=down.onto.surface^{7}-ITER^{5}-PRES^{4}-3INAN.OBJ^{3}-displace.ITER ^{o}
'I pour water (many times)'

A similar series of alternations with bases *-to* 'put (one object)', *-uk* 'put (many objects)', and *-ta* 'be situated' occurs in combination with incorporates specifying an object's arrangement or location once the action has been completed. The examples in (37) appear with *aŋ*, a root also found in nouns and verbs meaning 'rope', 'tie', 'tether':

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(37)

a. d^{8}=a$ŋ^{7}$-k^{5}-i^{4}-b^{3}-to^{o}
1SBJ^{8}=hanging^{7}-TC^{5}-PRES^{4}-3INAN.OBJ^{3}-arrange.one^{o}
'I hung it up (one object).'

b. d^{8}=a$ŋ^{7}$-k^{5}-i^{4}-b^{3}-uk^{o}
1SBJ^{8}=hanging^{7}-TC^{5}-PRES^{4}-3INAN.OBJ^{3}-arrange.many^{o}
'I hung them up (multiple inanimate objects).'

c. a$ŋ^{7}$-k^{5}-i^{4}-b^{3}-ta^{o}
1SBJ^{8}=hanging^{7}-TC^{5}-PRES^{4}-3INAN.SBJ^{3}-be.arranged^{o}
'It is hanging.'

Krejnovič (1968: 186–233) lists many additional stems containing unproductive, affix-like morphemes occupying the P7 incorporate slot. Some are difficult to analyze because either the base or the incorporate itself is found only in a single combination. In *ul-kəŋ* 'washing', the incorporate *ūl* clearly means 'water', while the verb base *-kəŋ* possibly means (p. 925) 'wring'; it is therefore unclear whether *ūl* 'water' represents a location or an instrument. Another is *kas-qos* 'taking', where the base *-qos* unambiguously means 'take' in several verbs, but the incorporate shape *kas ~ kaj* is unique to this one verb, and doesn't seem to add any additional meaning to the stem. In cases where a minor pattern emerges, certain affix-like incorporates obviously refer to the space in which an object is put (38a), its position (38b), or its resultant condition (38c), (38d). There may also be a few attestations of anatomical incorporates that refer to the use of the subject's own body part in the event (38e), (38f):

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(38)

a. d^{8}=tɨn^{7}-k^{5}-o^{4}-j^{2}-a^{o}
1SBJ^{8}=kettle^{7}-TC^{5}-3AN.SG.OBJ^{4}-PAST^{2}-put.once^{o}
'I put it (masc.-class fish) into a kettle (once).'

b. d^{8}=loj^{7}-k^{5}-o^{4}-n^{2}-a^{o}
1SBJ^{8}=leaning^{7}-TC^{5}-3MASC.SG.OBJ^{4}-PAST^{2}-put.once^{o}
'I leaned it (once).'

c. un^{7}-a^{4}-b^{3}-ok^{o}
in.two^{7}-3INAN.SBJ^{3}-jump^{o}
'It splits in two.'

d. d^{8}=us-n^{7}-a^{4}-b^{3}-don^{o}
1SBJ^{8}=quantity-PL^{7}-PRES^{4}-3INAN.OBJ^{3}-rip^{o}
'I rip it to shreds.'

e. en^{7}-bo^{6}-n^{2}-suk^{o}
mind?^{7}-1SBJ^{6}-PAST^{2}-move.back^{o}
'I forgot.'

f. d^{8}=loŋ^{7}-d^{5}-a^{4}-d^{1}-daŋ^{o}
1SBJ^{8}=limbs(?)^{7}-TC^{5}-PRES^{4}-1SG.SBJ^{1}-crumple^{o}
'I stretch my limbs ~ limber up.'

The anatomical incorporates in (38d), (38e) are difficult to gloss with certainty because they do not appear as free nouns (the bound shape *an ~ ɨn ~ en* appears in various words denoting 'mental activity', while 'hand, arm' is expressed by the free root *la'ŋ* rather than by the shape *loŋ-*). Incorporation of anatomical nouns, directionals, and prefix-like spatial descriptors is not productive, though a significant number of basic verbs retain such patterns. Chapter 18 (present volume) argues that prefix-like incorporates like those in (36)–(38) were disfavored by areal pressure from suffixing languages, which instead favored the maintenance, extension, or creation of patterns with a clearly recognizable "heavy" lexical root in the verb's initial syllable. The survival of moribund patterns of prefix-like incorporates in Modern Ket provides an example of how nominal compounding and denominal affixation can readily co-exist in the same modern polysynthetic language.

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(p. 926) 42.13 Typology of Ket Polysynthesis

In a qualitative sense, the Ket verb is unambiguously polysynthetic. First, bivalent and monovalent verbs include bound object and subject pronominals, so that a verb word is typically a complete sentence. Second, nearly all verb stems are discontinuous, with tense/mood or agreement markers interdigitated between the lexical morphemes. Third, at least some productive patterns incorporate “heavy” lexical material into a stem that already contains a verb root. Fewer than a dozen incorporating patterns are productive, however, and all of these incorporate a single noun or adjective stem into the P7 slot. A few allow the addition of a plural suffix, or add or subtract an old adjective-deriving suffix through reanalysis as a plural marker indexed to the plurality of the verb’s subject. In productive patterns, a combination of two or more roots may be incorporated only if it exists outside the verb as an independent lexical stem. Free modifier + noun combinations cannot be incorporated.

Analyzing the most productive types of Ket incorporation in terms of an underspecified slot into which lexical material can be added during syntactic phrase formation allows this aspect of Ket polysynthesis to be quantified along a number of objective parameters. Table 42.2 shows three ways that underspecified lexical morphology can be measured on a gradient from high to low.

Ket ranks low by all three measures. This demonstrates that a language can be unambiguously polysynthetic in categorical terms, yet only mildly so in degree of complexity. Highly polysynthetic languages might have stems containing an entire zone of underspecified lexical material that can be added recursively during clause formation (as in Eskimoan); or, conversely, each polysynthetic stem might have no more than a single underspecified slot (as in the highly templatic Ket). Most stem types could conceivably involve polysynthetic alternations, as in Salishan or Wakashan, with semantically rich lexical suffixes alternating stylistically with periphrastic constructions; or, conversely, lexical underspecification might characterize a small number of stem types (Ket). Polysynthesis might be limited to the incorporation of a single word-like unit fulfilling one specific function per stem (Ket); or the incorporating slot might permit insertion of any noun phrase, even one containing (p. 927) recursive free modifiers (Chukchi). Other polysynthetic verb systems allow multiple parameters of incorporation into the same stem (Iroquoian, Algonquian). Finally, polysynthesis can be templatic and linearly constrained (Ket) or recursive and open-ended (Eskimoan). Generally, as might be expected of any mildly polysynthetic language, lexico-semantic constraints strictly limit all but a few productive patterns of Ket incorporation.

Table 42.2 Quantifying heavy lexical incorporation in polysynthetic languages

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Locus of heavy lexical material in stem	recursive affixal zone – several slots – single slot
Saturation in the lexicon	many polysynthetic stems – few polysynthetic stems
Morphosyntactic status of heavy lexical material	incorporate can be free phrase – incorporate is lexical stem OR affix chain with scopal relations – single affix

42.14 Lexical Underspecification as a Descriptive Parameter

To understand Ket polysynthesis as an active process that builds new stems, rather than merely an inventory of attested types of complex morphology which include vestigial patterns, it is useful to revisit the two most prolific Ket incorporating patterns. More resembling a phrase structure rule in generative potential, each pattern can build as many verb stems as there are singular and plural nouns in the language.

The first pattern is used in discourse to express possession when contextual focus is on the possessor rather than the possessum:

(39) NOUN(PL)^{7}-SBJ$^{6\text{-}4\text{-}1}$-(i/il)-bed^{0}
'SUBJECT possesses NOUN.'

The pattern in (39) is not limited to any specific type of alienable or inalienable possession. Any lexical noun can fill the P7 slot, even to produce a nonsense statement, such as the one in (40):

(40) es^{7}-di^{1}-bed^{0}
sky^{7}-1SG.SBJ^{1}-possess^{0}
'I possess the sky.'

Despite the fact that (40) is a morphological word, it is no less grammatically acceptable than a free phrase expressing the same fantasy situation. It is probably more difficult to create nonsense words that are not generated by active polysynthetic incorporation.

The translative pattern in (41) is equally prolific and unrestricted semantically:

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(41) NOUN(PL)^{7}-SBJ^{6}-t^{5}-(a/on)-aq^{0}
'SUBJECT becomes NOUN.'

The individual verb forms generated by (41) are functionally equivalent to free phrases. Like the possessum-incorporated verb forms in (39), they are perfectly acceptable as morphological words, and yet they are not lexicalized in any idiosyncratic way and do not form action nominals. Semantically bizarre statements like the one in (42) can readily be generated using the translative pattern of noun incorporation:

(p. 928)

qus^{7}-ba^{6}-t^{5}-o^{4}-n^{2}-aq^{0}
(42) birchbark.tent^{7}-1SG.SBJ^{6}-TC^{5}-PAST$^{4/2}$-become^{0}
'I became a birchbark tent.'

Just like its accompanying English translation, the Ket form in (42) is perfectly grammatical. Like a nonsense-free phrase created by syntactic rule, it is not morphologically blocked by the inherent lack of 'nameworthyness' of the event it describes, but rather tends to inspire fanciful searching for a context in which the situation it relates could be imagined.

Morphological words generated by the two patterns just described are normally not lexicalized at all. However, most of the remaining Ket incorporating stem patterns are highly lexicalized in various ways and represent only marginal examples of active polysynthesis. The syntactic atoms that form the basis of most of the remaining patterns of Ket incorporation are strictly subcategorized morphosemantically to allow only a small subset of the language's nominal forms to be incorporated. The *-ted* 'hit endwise' pattern only incorporates nouns that denote (or could be imagined as denoting) long rigid objects. The *-tij* 'get covered by' pattern only incorporates nouns denoting spontaneous undesirable changes in the subject's surface appearance, such as rust, slime, mold, dust, litter, maggots, or lice; it is impossible to incorporate other semantic categories of nouns into this pattern (berries, coins, sunshine, etc.). Adjective incorporating patterns appear largely restricted to basic stems. There is no evidence that any of them were formerly more prolific, so that most types of Ket incorporation may never have progressed beyond regular lexical compounding. Even the most semantically prolific of the remaining patterns—object-incorporation in *-bed* 'make' verbs, which is almost as lexically unconstrained as possessum incorporation—produces verb forms that often lexicalize to describe particular, nameworthy activities. Another obvious lexical trait of *-bed* verbs is their propensity to build accompanying action nominals.

A fourth quantifiable facet of polysynthesis can therefore be added to Table 42.2: the degree to which lexical underspecification resembles a syntactic rule. Productivity will be highest if the element is a free phrase or encompasses an entire form class with no idiosyncratic semantic or formal constraints. Productivity will be lower if there are additional lexical restrictions, such as nouns expressing long rigid instruments (instead of

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all nouns), or basic adjectives (instead of all adjectives). Some Ket incorporation patterns have low productivity and a high degree of lexicalization, while a few others resemble syntactic rules in their generative potential. Ket incorporation can be quantified as highly polysynthetic only with reference to the latter patterns, which are few.

Finally, it is useful to stress the functional interdependence between the three salient facets of Ket polysynthesis: holophrasis, discontinuous stem morphology, and incorporation of secondary heavy lexical material. A language without holophrasis may be less amenable to actively incorporating argument nouns. A language without discontinuous stems may be less likely to bond syntactic material with the rest of the verb string into a single morphological word. Although Ket polysynthesis is not particularly noteworthy in terms of overall complexity, analyzing this language's productive incorporation patterns suggests a model useful for describing lexical underspecification in more complex polysynthetic languages.

(p. 929) # Acknowledgements

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Polysynthesis in Sora (Munda) with Special Reference to Noun Incorporation

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Abstract and Keywords

The Munda language Sora, an Austroasiatic language, has a developed system of noun incorporation. One can always distinguish a structure with incorporation from one that lacks this as the nominal component that is found incorporated into the Sora verbal stem appears in the so-called ‘combining form’ (CF). This CF contrasts with an obligatorily bimoraic syntactically free-standing form of the noun that is lexically associated with the CF, derived through a lexically-determined means of affixation or compounding that includes reduplication, prefixation, infixation, and compounding. Only certain incorporated structures in Sora reduce the valence of the resulting structure, while others do not. Sora is also among the few languages attested that permits verbal constructs with more than one noun incorporated. In Sora a transitive verb may also incorporate its agent argument. Further, these incorporated stems remain transitive in Sora: they allow for the formal indexing of objects as well within in the incorporated complex.

Keywords: Sora, Munda languages, Austroasiatic, noun incorporation, agent arguments

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43.1 Introduction

SORA is a member of the South Munda branch of the Munda language family—the westernmost subgroup of the Austroasiatic phylum. Sora shows certain common South Asian areal features but in other ways the language is atypical for languages of the region. Like virtually all languages of India, Sora is predominantly verb-final. Like most of the Munda languages, Sora has a fairly pronounced tendency to head marking, especially in the verb. Similar to Dravidian languages and its sister Munda languages, Sora has a modestly synthetic noun. Nouns may inflect for case and person, and etymologically consist of a short monosyllabic 'combining form' [CF]—usually the root of the noun—plus some kind of morphological augmentation to form a syntactically free-standing noun form.

Sora manifests a limited degree of polysynthesis. The Sora verbal template (1) is moderately complex, consisting of the following positions or slots, with some examples of relatively expanded Sora verbs instantiating this offered in (2)–(4):

(1)

Sora Finite Verb Template

+1	0	-1	-2	-3	-4	-5	-6
1/2PL:SUBJ- NEG-	verb.root-	-CF-	-TAM-	-ITR-	-OBJ-	-1SG/PL:SUBJ- T/A.SUBJ-	3PL

(p. 931)

(2)
a-ɲam-dʒaʔt-lɪ-n-aj
1PLSUBJ-catch-snake-PST-ITR-1SUBJ
'we caught (a/the) snake(s)'[1]

1

(3)
ɲɛm-dʒaʔt-lɪ-n-dʒi
catch-snake-PST-ITR-3PLSUBJ
'they caught (a/the) snake(s)'

(4)
dʒo-me-bo:b-dem-te-n-ai
smear-oil-head-RFLXV-NPST-ITR-1SUBJ
'I will anoint my head with oil' (Ramamurti 1931: 143)

That is, a first or second person subject prefix and/or negative prefix is followed by the verb root and then a series of suffixes encoding, in order, an incorporated noun root in

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the CF (see following examples), a TAM marker, a marker of intransitivity, object agreement morphology, and potentially followed by a first person subject marker, or portmanteau subject/TAM slot, and finally a third person plural referent marker.

In practice, Sora is only modestly polysynthetic. One area where this manifests itself is that Sora generally prefers only one pronominal index in the verb at a time, encoding either subject or object. However, some poly-personal verb forms are permitted with subject and object both encoded:

(5)

i. ənlen aman daʔa-n aʔ-tiy-t-am
we you water-N.SFX 1PLSUBJ -give-NPST-2OBJ
'we give you water' (Anderson and Harrison 2008: 330)

ii. əʔ-ɣij-lɛ-be-dʒi
NEG-see-PST-1PLSUBJ-3PLOBJ
'we didn't see them' (Starosta 1967: 276)

iii anindʒi rban daʔa-n a-tij-l-əm-dʒi
they yesterday water-N.SFX NEG-give-PST-2OBJ-3PLSUBJ
'yesterday they didn't give you water'

Among the noteworthy features of the language, Sora allows for multiple incorporated nouns in a single verb and incorporated nouns in serialized verb structures, and further in Sora incorporated nouns may refer to agents in transitive verbs; see Sections 43.5 and 43.6 for examples.

43.2 Combining Forms and Noun Formation in Sora

Morphologically speaking, noun incorporation in Sora appears to be a stem-forming process that unites a semantically predicative (or 'verbal') element with a semantically argument (p. 932) ('nominal') element into an inflectable verb stem, in the order V+N. Syntactically however, at least in some combinations, the noun may, but does not obligatorily, retain transparency with respect to the external phrasal syntax; see Section 43.4.

Noun incorporation is a characteristic feature of several South Munda languages (e.g. Sora, Gorum, Gta, and to a lesser extent Gutob, Remo, Kharia, and Juang), but Sora has far and away the most developed system.

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The form of the noun that is incorporated in Sora (the CF) is usually the CV(C) root. The actual free-standing form of the noun is derived from this CF by one of several different means, including prefixation, compounding, reduplication, or infixation, each exemplified in (6):[2]

(6)

Full Form	=Combining Form	Gloss	Means of Derivation	
əleb	=leb	'wild-goat'	-ə < *N-	prefix
əsoŋ	=soŋ	'dung'	-ə < *N-	prefix
kinsod	=sod	'dog'	*kVn-	prefix
kəmbud	=bud	'bear'	*kVn-	prefix
ontid	=tid	'bird'	*on-	prefix
usal	=sal	'skin'	*u-	prefix
gorzaŋ	=zaŋ	'village'	*gor+	compound
saŋsaŋ	=saŋ	'turmeric'	CVC-Reduplication	
tudʒ	=tudʒ	'star'	CVC-Reduplication	
dʒeʔeŋ	=dʒeŋ	'leg'	-ʔ-	infix
raʔa	=ra	'elephant'	-ʔ-[3]	infix

(Starosta 1992: 85–6; Ramamurti 1931: 69ff.)

Despite the dominance of SOV order in the modern Munda languages, which the comparative method compels us to reconstruct for Proto-Munda,[4] various pieces of external/comparative and internal evidence lead one to question whether pre-Proto-Munda was in fact SVO ~ VSO, the likely clausal syntax found in Proto-Austroasiatic and in many of (p. 933) its daughter language families (Jenny 2015). The external evidence comes from the fact that most of the cognate Austroasiatic languages, like Khasi, Khmer, or Bahnar primarily show SVO order, with VSO order found in other Austroasiatic languages, for example in Nicobarese. The internal evidence for possible non-SOV order in earlier stages of the Munda languages comes from noun incorporation. Here we find the order of elements VN (7), not NV as might be expected in an original SOV language.

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(7)

PSM *-*ti* 'hand' (Anderson 2007: 200)

i. Remo	ii. Gta?			iii. Sora
gui-**ti**	(næŋ)	mbæʔsiaʔ	gweʔ-**ti**-ke	le:m-**si**-am
wash-hand	I	left	wash-hand-RLS	bow-hand-NPST-2OBJ
'wash hand'	'I washed my left hand'			'I bow to your hands'

iv. Kharia	v. Juang
gutʃ-**te**	gutʃ-**ti**
wash-hand	wash-hand
wash hands'	'wash hands'

Combining forms, for example for 'hand' in (7), are usually the cognate roots from which the only semi-cognate free-standing forms are derived in each language individually; this can be seen in (8).[5]

(8)

free-standing forms for 'hand' in Munda languages (< Proto-Munda *X-*ti*)[6]

Language	'hand'	< *Form (=cf + means of derivation)
Sora	*siʔi*	< *=*ti* + *-ʔ-
Gorum	*siʔi*	< *=*ti* + *-ʔ-
Juang	*iti*	< *N=*ti*
Kharia	*tiʔ*	< *=*ti* + *-ʔ-
Gutob	*titi*	< *RDPL-=*ti*
(p. 934) Remo	*titi*	< *RDPL-=*ti*
Gta?	*nti* ~ *tti*	< *N=*ti*, < *RDPL-=*ti*

6

Indeed, there is regularly no general agreement on the means of creating the free-standing form of the word from the CF/root across the Munda languages. Table 43.1 offers a set of noun correspondences across the Munda language family that can be seen as typical of such correspondence sets. The forms for 'turmeric' (> 'yellow') and 'broom' are some of the few pan-Munda etymologies where all subgroups show the same pattern of word formation from the same *CVC root.

The patterns of word formation that yield the free-standing forms of these nouns are abstracted in Table 43.2. The main methods are reduplication (RDPL), *n*-infixation (-*n*-), prefixation of a syllabic nasal (N-) or what was a syllabic nasal historically (*N-), one of two **k*-initial prefix forms, glottal stop infixation (-*ʔ*-) or suffixation (-*ʔ*), or suffixation/compounding of *–a/-e/-ai/-ae.*

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The derivational processes create bimoraic free-standing forms of the noun, which meet a minimal word constraint that the underlying roots or CFs fail to meet. Sora inherited this bimoraic minimal word constraint (Figure 43.1) from Proto-Munda and Proto-Austroasistic (Anderson and Zide 2002; Anderson 2004).

Noun incorporation and CFs are old features in Munda with cognates in other Austroasiatic languages, for example Nicobarese. Note that the Nicobarese CFs likewise appear in a VN configuration (9) in (lexicalized) incorporated complexes:

(9)

Nicobarese (Radhakrishnan 1981: 106)

təŋ ‘reach; up to’ təŋtataj ‘reach for’ (cf. *təŋta/tənta* ‘reach at/towards’)

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Table 43.1 Selected Munda noun correspondences

Gutob	**Remo**	**Gtaʔ**	**Kharia** [7]	**Juang**	**Sora**	**Gorum**	**Kherw**	**gloss**
titi	*titi*	*tti, nti*	*tiʔ*	*iti*	*sʔi*	*siʔi*	*ti ~ tii*	‘hand’
susuŋ	*tiksuŋ*	*nco*	*-ɟuŋ	*idʒiɲ/ŋ*	*dʒʔeŋ*	*dʒiʔiŋ*	*dʒaŋga*	‘foot’
mɔd, mɔʔ	*mɔd*	*m-mwaʔ*	*moɖ*	*ɔmɔr/d*	*mʔɔd, amad*	*mad*	*mɛt/ɖ*	‘eye’
gikil, kilɔ	*kilɔ*	*ŋku*	*kiɽo(g)*	*kiɭɔg*	*kɨna*	*kul(a)*	*kul[a] (Mu)*	‘tiger’
gubɔn	*gibɛ*	*gbɛ*	*bane/ai*	*banae*	*kəmbud*	*kibud*	*bana*	‘bear’
sasaŋ	*saŋsaŋ*	*ssia*	*saŋsaŋ*	*sa(ɽa)ŋsaŋ*	*saŋsaŋ*	*saŋsaŋ*	*sasaŋ*	‘turmeric’
sunog	*sunug*	*cnoʔ*	*dʒonoʔ*	*dʒenɔk*	*dʒənoʔ*	*dʒɔnɔ*	*dʒɔnɔ[k’]*	‘broom’

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Table 43.2 Word formation processes in Table 43.1

Gutob	**Remo**	**Gta?**	**Kharia**	**Juang**	**Sora**	**Gorum**	**Kherwari**	**gloss**
RDPL	RDPL	RDPL, N-	-ʔ	*N-	*-ʔ-*	*-ʔ-*	Ø, ˘	‘hand’
RDPL-√	*tik*-√	N-	--	*N-	*-ʔ-*	*-ʔ-*	*-a*	‘foot’
Ø	Ø	N-	Ø	*N-	*-ʔ-*, *a-* < *N-	Ø	**Ø**	‘eye’
Ø/-ʔ[-]	Ø	N-	Ø	Ø	**Ø**	Ø	Ø	‘water’
*kV-√^{1}	*kV-√^{2}	*kV-√^{2}	√^{1}*-e/-ai*	√^{1}*-ae*	**kən*-√^{3}	**kən*-√^{3} / *kV-√^{3}	√^{1}*-a*	‘bear’
RDPL	RDPL	RDPL	RDPL	RDPL	RDPL	RDPL	RDPL	‘turmeric’
-n-	*-n-*	*-n-*	*-n-*	*-n-*	*-n-*	*-n-*	*-n-*	‘broom’

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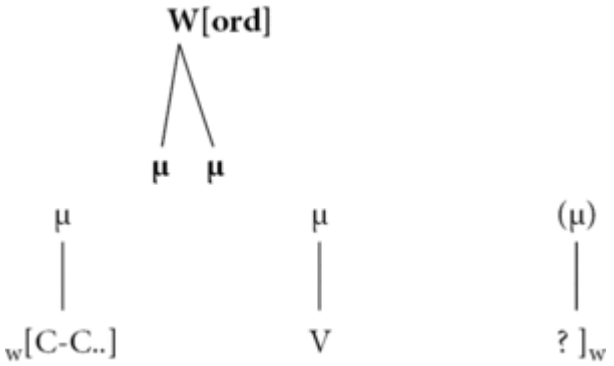

Click to view larger

Figure 43.1 Bimoraic word constaint in Sora, Proto-Munda, and Proto-Austroasiatic

As in Munda, in Nicobarese languages the root or combining form shows full cognacy across the various languages of the branch, while the free forms of the same nouns do not (10). Thus, the various Nicobarese languages all also show a cognate root for 'hand' but each is embedded within a different word-formation template:

(10) Nicobarese words for 'hand' (or 'palm') (Man 1975 [1888–9])

Central	Car	Shom Pen	Teressa	gloss
kane-**tai**	ɛl-**ti:**	noai-**ti:**	mɔh-**ti:**	'hand'

In Car (Pû) Nicobarese, the *ti:* element in turn occurs with different initial segments, forming a set or family of related words all based on the same basic root (11):[8]

(11)
Car (Pû) Nicobarese (Das 1977: 32)
ɛlti: 'palm of hand' ukti: 'back of hand' kunti: 'finger'

(p. 936) Note that lexicalized formations reflecting historical incorporation structures are found in a range of different Austroasiatic languages, so it appears that the construction type is likely ancient in the family. Other Austroasiatic languages with lexicalized incorporation forms that exhibit CFs that are the cognate roots found across the family include So/Thavung, a Vietic language of Thailand (12), Kensiw of the Aslian branch spoken in Malaysia (13), Bolyu of the Pakanic group spoken in southern China (14), or Old Mon formerly spoken in Myanmar (15).

(12)
So/Thavung [Vietic, Thailand] (Premsrirat 1996: 168)
khɛʔɛʔ 'to shit'
cf. Hill Gtaʔ √(h)æg 'shit', as in compounds hæg=bug 'pig shit' and hæg=lug 'ear wax'

(13)
Kensiw (Bishop and Peterson 1994: 188, 193)
kawɔl cf. wɔl 'shoulder blade' puucpɛh cf. k[ə]lapɛh 'upper arm'
'hug' 'swing arms'

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(14)

Bolyu (Edmondson 1995: 134, 141, 144, 154)

tselei	vɯŋqɔ	ɬjitlei	ɬjittsu	ɬjittən
'beat cow'	'to (catch) fish'	'kill cow'	'kill dog'	'butcher pig'

Old Mon (Pan Hla 1976: 907)

(15) titey /titea/
'lead' (cf. *tey /tea/* 'hand') cf. modern Mon *datay /hetoa/*

Thus, the system of incorporation and CFs in Sora has deep historical underpinnings with traces of cognate formations attested lexically in a range of other branches of Austroasiatic. A study of the system of noun incorporation in Sora from both internal Munda and comparative Austroasiatic perspectives yields insights into the various layers and developmental forces at play, such as fossilized systems of prefixation, CFs, and phonological minimal word constraints operative in the language in its present and previous stages.[9]

(p. 937) 43.3 The System of Noun Incorporation in Sora

Incorporation of a nominal CF into the post-root slot in the Sora verbal template to create an inflectable verb stem is a highly productive and characteristic feature of the Sora verbal system, with virtually every noun having a corresponding CF, and most combinations being acceptable, given an appropriate discourse context for the creation of the form. Like many languages with incorporation, the most common use of this structure in Sora is to designate the object/patient of a transitive (two-argument) verb.[10]

(16)

ɲen	dʒum-te-ti-n-ai
I	eat-banana-NPST-ITR-1SUBJ

'I am eating a/the banana'

(17)

lem-dʒeŋ-te-ben-dʒi
bow-foot-NPST-2PLOBJ-3PLSUBJ
'they bow to your feet'
(cf. *əwladʒɪŋ* 'foot')

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(18)
anindʒi paŋ-sal-l-iɲ-dʒi
they bring-liquor-PST-1OBJ-3PLSUBJ
'they brought me liquor'
(Ramamurti 1931: 142)

As (19) demonstrates, the nominal 'hand' *–si-* when incorporated can fill the semantic role of Instrument as well as Patient in Sora.

(19)
ɲen a-dʒiŋ-ɪn-dʒi =aɖoŋ aba:-si-t-ai
I 3-foot-N.SFX-PL =OBJ wash-hand-NPST-1SUBJ
'I am washing their feet by hand'

Object noun incorporation is also permitted in nonfinite, infinitive, and nominalized forms in Sora (20–23).

(20)
ɲam-jo:-le-n
catch-fish-PST-ITR
'having caught fish'
(Ramamurti 1931: 142)

(21)
ə-gik-kid-ben
2PLSUBJ-see-tiger-INF
'(for you) to see the tiger'
(Ramamurti 1931: 44)

(22)
ɲəram-jo:-n
catch/NMLZR/catch-fish-N.SFX
'means of catching fish'
(Ramamurti 1931: 46)

(23)
an-ɲənam-jo:-n
PFX-catch/NMLZR/catch-fish-N.SFX
'fish that have been caught'
(Ramamurti 1931: 44)

(p. 938) There are also forms with an original serialized verb construction (*paŋ-ti-*) and an incorporated noun (*-dar-*) together with object marking (*-iɲ-*)[11], as in the following quintessentially Sora forms (24i)–(24v):

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(24)

i. paŋ-ti-dar-iɲ-te:n
bring-give-cooked.rice-1OBJ-PST.TR
'he brought and gave me cooked rice' (Ramamurti 1931: 43)

ii. paŋ-ti-da-iɲ-ted
bring-give-water-1OBJ-PST.TR
'he brought and gave me water'

iii. paŋ-ti-ul-iɲ-ted
bring-give-mango-1OBJ-PST.TR
'he brought and gave me mango'

iv. paŋ-ti-jel-iɲ-ted
bring-give-meat-1OBJ-PST.TR
'he brought meat to give me'

v. paŋ-ti-ruŋ-iɲ-ted
bring-give-uncooked.rice-1OBJ-PST.TR
he brought uncooked rice for me'

Two incorporated verbs can be juxtaposed in a type of asyndetic coordination in Sora (25i). Forms with an actual coordinated structure are found as well (25ii), but an incorporated noun cannot be joined with a non-incorporated one.

(25)

i. ɲen anɨndʒi =aɖoŋ aba:-si-t-ai aba:-dʒiŋ-t-ai
I they =OBJ wash-hand-NPST-1SUBJ wash-foot-NPST-1SUBJ
'I am washing their hands and their feet'

ii. ɲen dʒum-**te**-ti-n-ai (do) dʒum-**jim**-ti-n-ai
I eat-banana-NPST-ITR-1SUBJ [CONJ] eat-chicken-NPST-ITR-1SUBJ
I am eating chicken and banana'

As (16) shows, the incorporation of the CF element into the verb in Sora may appear with the 'intransitive' inflectional suffix *–n-*. Typically the *-n-* element is used in Sora verbs in various low transitivity functions, to encode reflexives either with (26) or without (27) the reflexive suffix, in formations with transitive verbs where the primary focus of the effect of the action is on the subject or actor (28) or as an obligatory conjugational element with one verb class ('intransitives') in the language (29):

(26) gi?-dam-ti-n-aj
see-RFLXV-NPST-ITR-1SUBJ
'I see myself'

(27) gi?gi?-ti-n-aj
REDPL~scratch-NPST-ITR-1SUBJ
'I scratch myself'

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(28)
aŋgaj-ən=adɔʔɔŋ a-təb-n-ai-bə
moon-N.SFX=OBJ 1PLSUBJ-get.out-n-CLOC-PL:IMP
'… let's get out the moon (to our benefit)' [Starosta no date-ms Text-3, line 10]

(29)
dimәd-le-n-ʤi
sleep-PST-ITR-PL
'they slept, they would sleep' [Starosta no date-ms, Text-3, line 2]

(p. 939) In overt object NP forms and in suppressed object forms that lack incorporation, -*n*- is not used ((30)–(32)).

(30)
ɲen kənte-n ʤum-t-ai
I banana-N.SFX eat-NPST-1SUBJ
'I am eating a banana'

(31)
ɲen ʤum-t-ai
I eat-NPST-1SUBJ
'I am eating (it)'

(32)
ɲen ʤaʔat ɲem-t-aj
I snake catch-NPST-1SUBJ
'I am catching a snake'

In corresponding forms with an incorporated object encoded by the CF in Sora, the -*n*- inflection is frequently used, as in (33) (repeating 16) and (34).

(33)
ɲen ʤum-te-ti-n-ai
I eat-banana-NPST-ITR-1SUBJ
'I am eating (a/the) banana'

(34)
ɲen ɲam-ʤaʔt-[t]ɪ-n-aj
I catch-snake-NPST-ITR-1SUBJ
'I am catching a snake'

Note however that not all incorporated object forms require the intransitive suffix -*n*- in Sora, so noun incorporation is *not* an inherently valence reducing stem-formation process in the language. This is also the case in Bininj Gun-wok and Dalabon, see Evans (this volume, Chapters 16 and 36). Examine the following forms in (35)–(36), which have incorporated nouns but no -*n*- intransitive inflection.

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gad-**boːŋ**-te-dʒi
(35) cut-buffalo-NPST-3PLSUBJ
'they are cutting the buffalo' (Ramamurti 1931: 49)

bagu-n-dʒi ɲaŋ-**bodʒ**-lə-dʒi
(36) two-N.SFX-PL get/take-woman-PST-3PLSUBJ
'they both got married' [Starosta no date-ms; Text 2, line 4]

(p. 940) In incorporated complexes the use of the intransitive marker –*n*- encodes reflexives, or more generally an actor-oriented or subject affecting action, and forms an opposition with the transitive, undergoer-oriented form lacking this element in incorporated complexes. Contrast the following forms in this regard, (37)–(38) and (39)–(40), the latter set also showing the presence or absence of object marking in the verb and in the nominal morphosyntax.

kuŋ-bəb-tɛ
(37) shave-head-NPST
'you shave (s.o.'s) head' (Biligiri 1965: 240)

kuŋ-bəb-te-n
(38) shave-head-NPST-ITR
'you shave your head' (Biligiri 1965: 240)

ɲen aba:-si-ti-n-ai
(39) I wash-hand-NPST-RFLXV/ITR-1SUBJ
'I am washing my hand'

ɲen anɨn =aɖoŋ aba:-si-t-ai
(40) I he =OBJ wash-hand-NPST-1SUBJ
'I am washing his hand'

Here the opposition appears to be between reflexive object with –*n*- and action directed at another referent which lacks this -*n*- element, forming what appears to be a contrast between active vs. middle/reflexive in incorporated forms. However, as previously mentioned, this likely reflects a larger organizational principle of Sora discourse, namely, actor-oriented version vs. undergoer-oriented 'version' (Anderson and Gurevich 2005, Anderson 2007, Anderson and Harrison 2008).

Not only may the intransitive marker -*n*- be suppressed, but overt object indexation may also be found in these verbs forms in Sora as well, that is, pronominal object marking may

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be found with verbs form that also exhibit noun incorporation (41)–(44). These forms exemplify undergoer-oriented version in Sora incorporated complexes.

(41)
lem-dʒiŋ-t-am
bow-feet-NPST-2OBJ
'I bow to your feet'

(42)
lem-si:-t-am
bow-hand-NPST-2OBJ
'I shake (bow to) your hand'

(43)
soi-tam-t-am
burn-mouth-NPST-2OBJ
'I will burn your mouth'
(Ramamurti 1931: 142)

(44)
ɲen ag-ga:-si:-am
INEG-drink-hand-2OBJ
'I will not drink from your hand'
(Ramamurti 1931: 142)

(p. 941) Therefore incorporated complexes are not obligatorily intransitive in Sora, and incorporation is thus not an inherently valence-reducing process in this language. To be sure, an incorporated noun in the verbal stem that allows the possessor of that nominal stem to be expressed as an argument in the verbal form as in Sora—a process often called 'possessor raising' or 'external possession'—is a relatively common feature in languages worldwide (Anderson 1997). However, it is clear that as in various Australian languages discussed by Evans (1996: 88, 2003a), body part incorporation forms a separate system that is interconnected with, but not identical to, possessor-raising. Note in this regard the following forms that encode the possessor of an incorporated noun in a monovalent verb. These typically consist of incorporated body parts with the possessor of the body part encoded as a morphological *object* in Sora, where the referent so encoded represents an undergoer or experiencer.

(45)
kuŋ-bəb-t-əm
shave-head-NPST-2OBJ
'your head is shaven'
(Biligiri 1965: 240)

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asu:-bo:b-t-iɲ
(46) hurt-head-NPST-1OBJ
'my head hurts'
(Ramamurti 1931: 143)

Paradigms of verbs with incorporated nouns in Sora exist that can be productively generated, such as the following non-past [NPST] paradigm meaning 'fish catching':

ɲen ɲam-jo-ti-n-aj
(47) I catch-fish-NPST-ITR-1SUBJ
'I am catching fish'

amən ɲam-jo-ti-ɲ
(48) you catch-fish-NPST-ITR
'you are catching fish'

anlɛn a-ɲəm-jo-ti-n-aj
(49) we 1PL.SUBJ-catch-fish-NPST-ITR-1SUBJ
'we are catching fish'

ambɪn aː-ɲəm-joː-ti-ɲ
(50) you (PL) 2PLsubj-catch-fish-NPST-ITR
'YOU (PL) are catching fish'

anin ɲam-jo-ti-ɲ
(51) s/he catch-fish-NPST-ITR
's/he is catching fish'

anindʒi ɲem-jo-tɪ-n-dʒi
(52) they catch-fish-NPST-ITR/RFLXV-3PLSUBJ
'they are catching fish'

or the following the past [PST] paradigm meaning 'caught a/the snake':[12]

drban ɲen ɲəm-dʒaʔt-lɪ-n-aj
(53) yesterday I catch-snake-PST-ITR-1SUBJ
'yesterday I caught a/the snake'

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amən drban ɲɛm-dʒaʔt-li-ɲ[13]
(54) you yesterday catch-snake-PST-ITR
'yesterday you caught a/the snake'

13

(p. 942)

a-ɲam-dʒaʔt-lı-n-aj
(55) 1PLSUBJ-catch-snake-PST-ITR-1SUBJ
'we caught (a/the) snake(s)'

ɲɛm-dʒaʔt-lı-n-dʒi
(56) catch-snake-PST-ITR-3PLSUBJ
'they caught (a/the) snake(s)'

Forms with incorporation are unacceptable without using the proper CF. To test this theory, I tried to use the following forms with a speaker from Gajapati District, Odisha State, India. The first one (57) was accepted readily and repeated as a normal sentence without noun incorporation.

ɲen kənsim-ən ɲɛm-t-aj
(57) I chicken-N.SFX catch-NPST-1SUBJ
'I am catching a/the chicken'

The one in (58) was generated "productively"—or so it was being tested—as a formation incorporating the noun by dropping the derivational prefix *kən-*.

*ɲen ɲam-sim-te-n-aj
(58) I catch-*chicken-NPST-ITR-1SUBJ
'I am catching chicken'

The speaker mused over (58) for a while repeating it several times before rejecting it and supplying the form with the proper but semi-suppletive combining form for 'chicken' (59), which parallels well-formed incorporated structures such as those in (60)–(61).

(59)

ɲɛm-ji:m-tı-n-aj	~	ɲam-jim-ti-n-ai
catch-chicken-NPST-ITR-1SUBJ		catch-chicken-NPST-ITR-1SUBJ
'I am catching (a/the) chicken'		'I am catching (a/the) chicken'

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ɲam-dʒat-ti-n-ai
(60) catch-snake-NPST-[ITR]-1SUBJ
'I (am) catch(ing) a snake'
14

əɲam-joʊ-ti-n-ai
(61) catch-fish-NPST-[ITR]-1SUBJ
'I (am) catch(ing) a fish'[14]

43.4 Incorporation and External Phrasal Syntax in Sora

In typical unmarked adjectival phrases, Sora has ADJ N order (62).

	ɲen	suɽa	dʒaʔad-an	ɲam-t-aj
(62)	I	big	snake-N.SFX	catch-NPST-1SUBJ
	'I am catching a big snake'			

(p. 943) Under questioning, a speaker was able to produce a form with an external modifier 'big' modifying an incorporated noun 'snake'.

	ʔɲen	suɽa	ɲam-dʒaʔt-tɪ-n-aj
(63)	I	big	catch-snake-NPST-RFLXV/ITR-1SUBJ
	'?I am catching a big snake'		

He then replaced it with a nominal construction in an incorporated [VN] structure together compounded with the agentive noun marker *-mar*. The modifier is stranded and has scope over the nominal incorporated in the verbal stem, qualifying the size of the snakes caught, not the man doing the catching.

	ɲen	suɽa	ɲam-dʒaʔt-mar
(64)	I	big	catch-snake-AGT.NMZR
	'I am a catcher of big snakes.'		

Other forms he outright rejected, so there may be some cline of acceptability of external modifiers in Sora. Thus, (66) was rejected but (63) was felt to be semi-acceptable. The factors controlling this variation need to be investigated further, for example

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demographic, dialectal, types of syntagmatic sense, or scope relations of the modifier and/or the incorporated noun, etc.

	ɲen	kulu?	dʒa?r-an	ɲɛm-t-aj
(65)	I	green	snake-N.SFX	catch-NPST-1SUBJ
	'I am catching the green snake'			

	*ɲen	kulu?	ɲam-dʒa?t-tɪ-n-aj
(66)	I	green	catch-snake-NPST-RFLXV/ITR-1SUBJ
	'*I am green snake catching'		

With words meaning 'right hand' and 'left hand', the stem 'hand' can appear incorporated into the verb, as in (67–8), functioning much like a classifier (or an instrument as in example (25)).

	ɲen	dʒandɽumsi-ɲeɲ	aba:-si-t-ai
(67)	I	right.hand-1	wash-hand-NPST-1SUBJ
	'I am washing my right hand'		

	kaɲədɽabuɲisi-ɲeɲ	aba:-si-t-ai
(68)	left.hand-1	wash-hand-NPST-1SUBJ
	'I am washing my left hand'	

(p. 944) Doubly marked structures with both an external noun NP outside of the verb and an incorporated noun within the verb appearing together may also be found in Sora.

	a-dʒiŋ-ɨn-dʒi	aba:-dʒiŋ-t-ai	
(69)	3-foot-N.SFX-PL	wash-foot-NPST-1SUBJ	
	'I am washing their feet'		

The forms in (67)–(69) are among the few such examples found in the Sora corpus to date, and as such it is at present impossible to tell how similar Sora really is to the part–whole interactions in the syntax that one finds in various Aboriginal Australian languages that have been well discussed in Evans (1996; see also Hale 1981). A thorough analysis of the external syntax of incorporated elements in Sora, such as has been done by Evans for various Northern Australian languages (e.g. Evans 1996, 1997, 2003a, this volume, Chapter 16, this volume, Chapter 36) awaits a more extensive and specialized study, one for which new targeted elicited and spontaneously occurring data examples would need to be collected, and so this must remain a task for future research.

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43.5 Double noun Incorporation in Sora

Another noteworthy characteristic of the system of noun incorporation in Sora is the presence of multiply incorporated constructions. The two nouns appear in immediate succession following the verb root and before any inflectional suffixes, as in the following form with *-me-* ‘oil’ and *-bo:b-* ‘head’ (70).

(70)
dʒo-**me-bo:b**-dem-te-n-ai
smear-**oil-head**-RFLXV-NPST-ITR-1SUBJ
‘I will anoint my head with oil’ (Ramamurti 1931: 143)

Frequently in such double noun incorporated constructions in Sora, the external possessor of, for example, an incorporated body part, is encoded as the morphological verbal object (67)–(69).

(71)
dʒi-**lo:-si:**-t-am
stick-**earth-hand**-NPST-2OBJ
‘mud will stick to your leg’
(Ramamurti 1931: 44)

(72)
ɲen adʒ-dʒa:-**dar-si:**-am
I NEG-receive-**cooked.rice-hand** -2OBJ
‘I won’t receive rice from your hand’
(Ramamurti 1931: 44)

(73)
po-**kun-pʊŋ**-am-te:n
stab-**belly-knife**-2OBJ-PST.TR
‘(who) stabbed you in the belly with a knife’ (Ramamurti 1931: 25)

(p. 945) No more than two incorporated nouns occur in a single verb in my corpus in naturally occurring discourse. Speakers have occasionally accepted forms generated by me with three, but later rejected them upon requestioning, so it appears that two is the likely maximum permissible.

43.6 Incorporation of Agents in Sora

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One of the most noteworthy aspects of Sora noun incorporation is that a transitive verb may incorporate its *agent* argument. While many languages allow for incorporation of intransitive (unaccusative) subjects, incorporated agent forms of transitive verbs are not generally attested cross-linguistically, if at all, in other languages outside of Sora. Because of the nature of Sora verb morphology, with its distinction between free forms and CFs of nouns, it is clear that these are indeed incorporated complexes. Note that these incorporated stems remain transitive in Sora: they allow for the formal indexing of objects as well within the incorporated verbal complex (74)–(76).

(74)
sa:-bud-t-am
mangle-bear- NPST-2OBJ
'bear will mangle you' (Ramamurti 1931: 142)

(75)
mo-kul-t-am
swallow-ghost-NPST-2OBJ
'ghost will swallow you'

(76)
paŋ-sum-t-am
carry-spirit-NPST-2OBJ
'spirit will carry you away' (Ramamurti 1931: 142)

The forms with incorporated subject differ from corresponding forms lacking incorporation both formally and functionally in Sora. From a formal perspective, the free-standing full form of the noun subject appears with the absolutive or nominal suffix *-n* and stands in pre-verbal position (77). In incorporated agent forms (78), the noun appears in a monosyllabic combining form after the verb root within the verb complex before the tense marker and always lacks the intransitive inflection *-n-*, while incorporated patient forms (79) generally occur with the intransitive inflection with the same verb stem and CF. Compare the following in this regard:

(77)
kina-n ɲam-t-am
tiger-N.SFX seize-NPST-2OBJ
'the tiger will seize you'
(Ramamurti 1931: 40)

(78)
ɲam-kit-t-am
seize-tiger-NPST-2OBJ
'tiger will seize you (you'll be tiger-seized)'
(Ramamurti 1931: 40)

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(79)
ɲam-kid-te-n-ai
seize-tiger-NPST-ITR-1SUBJ
'I will seize the tiger'
(Ramamurti 1931: 40)

(p. 946) While not common in normal conversational registers, incorporated agent forms can be freely and easily generated by speakers of Sora today.

(80)

i.	ɲem-bud-t-am	ii.	ɲem-bun-t-iɲ
	seize-bear-NPST-2OBJ		seize-pig-NPST-1OBJ
	'the bear will seize you'		'the pig will seize me'

Like incorporated objects forms, a full paradigm of incorporated agent forms may be found in Sora (81).[15]

(81)
'tiger' => SUBJ/agent, pronominal suffix => OBJ/patient (Ramamurti 1931: 40–1)

pst	npst	imp	prohib
ɲam-kil-l-iɲ	*ɲam-kit-t-iɲ*	*ɲam-kid-iɲ-te*	*ɲam-kid-doŋ-iɲ-te*
ɲam-ki-l-am	*ɲam-kit-t-am*	*ɲam-kid-am-te*	*ɲam-kid-doŋ-am-te*
ɲam-kil-l-e	*ɲam-kit-t-e*	*ɲam-kid-e-te*	*ɲam-kid-doŋ-e-te*
ɲam-kil-lə-len	*ɲam-kit-tə-ten*	*ɲam-kid-len-te*	*ɲam-kid-doŋ-len-te*
ɲam-kil-l-ai	*ɲam-kit-t-ai*	*ɲam-kid-ai-te*	*ɲam-kid-doŋ-ai-te*
ɲam-kil-lə-ben	*ɲam-kit-tə-ben*	*ɲam-kid-ben-te*	*ɲam-kid-doŋ-ben-te*
ɲam-kil-l-e-ʤi	*ɲam-kit-t-e-ʤi*	*ɲam-kid-e-te-ʤi*	*ɲam-kid-doŋ-e-te-ʤi*

neg.pst	neg.npst
aɲ-ɲam-kil-l-iɲ	*aɲ-ɲam-kid-iɲ*

Agent incorporation may even be found in the imperative. Thus, both of the following sentences are grammatical in Sora:

(82)
kina-n ɲam-iɲ-te
tiger-N.SFX seize-1OBJ-3.IMP
'may the tiger seize me!'
(Ramamurti 1931: 41)

(83)
ɲam-kid-iɲ-te
seize-tiger-1OBJ-3.IMP
'may the tiger seize me!'
(Ramamurti 1931: 41)

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43.7 Summary

The South Munda Sora language possesses one of the more intriguing systems of noun incorporation attested. It is always possible to distinguish an incorporated structure from one lacking incorporation in Sora due to the use of combining forms of nouns that occur when incorporated in the verb that formally contrast with the syntactically free-standing forms of the same nouns. Such combining forms represent root forms which are augmented to create the free forms by various lexically specified derivational processes. The combining (p. 947) forms have cognates in other Austroasiatic languages, which reflect a system of noun incorporation mainly in lexicalized formations only. Thus, noun incorporation and the system of combining forms appear to be very old (though expanded) in Sora, and an analysis of them reveals a number of important details in the history of Munda and Austroasiatic more widely. Further, Sora noun incorporation allows for multiple incorporated nouns in a single verb, incorporated nouns in serialized structures, and, quite exceptionally, the use of incorporated nouns to refer to agents in transitive verbs. The last two features of Sora incorporation are not overly common, and in the case of incorporated agents, extremely rare indeed, if not in fact unique to Sora.

Abbreviations

1
1st person
2
2nd person
3
3rd person
ABL
Ablative
AG
Agent
CF
Combining form
CLOC
Cislocative
CONJ
Conjunction
FIN
Finite
FUT.II
Future (2nd form)

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INF
Infinitive
IMP
Imperative
ITR
Intransitive
N.SFX
Noun Suffix
NEG
Negative
NF
Nonfinite
NMLZR
Nominalizer
NPAST
Non-Past
OBJ
Object
PAST.B
Past (2nd form)
PFX
Prefix
PL
Plural
PROHIB
Prohibitive
PRON
Pronoun
PST
Past
Q
Interrogative
REDPL
Reduplication
RFLXV
Reflexive
SG
Singular
SS
Same Subject
SUBJ
Subject
T/A

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Tense/Aspect
TAM
Tense/Aspect/Mood
TNS
Tense

Notes:

(1) Unless cited from a (un)published source, data comes from the author's field notes

(2) The prefixes that are used in this system have no consistent meanings or patterns of use as a whole but some tendencies can be observed, for example, the prefix **kVn-* is often found in words that signify animals in Sora, but not all words with this prefix have this meaning, nor do all words that mean animals have it, so it does not reflect a synchronically active (class) system, though historically it might have (Anderson 2015b). Note that the notation '=' marks by convention the combining form in a lexical entry in Munda linguistics, which are bound suffixes, and thus = does not here mark a clitic boundary as is common in general practice in the field.

(3) Note that the effect of the infixation of the glottal stop historically is realized as a vowel glottalization process synchronically in Sora.

(4) Note that all of the modern Munda languages show a fairly rigid Subject-Object-Verb order. The comparative method suggests then that SOV order should be reconstructed to the Proto-Munda ancestral tongue.

(5) The reflexes of the older prefix system and the minimal word constraint are best preserved when looking at the more southern Munda languages. Kherwarian languages have lost most traces of the prefixation system; some *a-* initial forms likely reflect a syllabic nasal prefix like Santali *alaŋ,* and all of the Munda languages appear to have lexicalized prefixes in specific lexemes, for example, **lV-* in the word for 'ear', and many old Munda roots in Kherwarian nouns now appear only in a mono-moraic root form (e.g. Ho *ti* 'hand'). By 'semi-cognate' what is meant is that the root element is cognate but the derivational means of creating the corresponding full form of the noun from the combining form/root element is not cognate.

(6) Some brief comments on these historical developments are offered here. First, **=ti* >* *=si* in Proto-Sora-Gorum; also, glottal stop may be infixed into the form (in Proto-Sora-Gorum) or suffixed to it (in [Proto-] Kharia). The etymological syllabic nasal is realized as a copy of the stem vowel in Juang *(*N-ti* > **i-ti*). Gta? has variation between a likely borrowed form (from Remo) with reduplication and subsequent loss of reduced vowel in the initial syllable in line with general tendencies in Gta? (*t-ti*) and an original word with a syllabic nasal, here preserved as such (*n-ti*).

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(7) Note that Kharia preserves the old stem in *gu-**ɟuŋ*** ‘wash someone’s feet’.

(8) Indeed, across the entire Austroasiatic phylum as a whole, just as within specific subgroups of Munda or Proto-Munda itself, it is often not possible to reconstruct a full, syntactically free-standing form of a noun, but rather only the root that is found in the word (usually *CVC in shape). Furthermore, that root may occur in semantically related families of forms with lexicalized prefixes, in compounding structures, and as the form that serves for noun incorporation with verbs, and moreover, this CF is the element that is typically cognate both across the Austroasiatic subgroups and within the Munda branch.

(9) Moreover, the prefixes in Austroasiatic stand among the salient characteristics of the Austroasiatic language phylum, commonly as fossilized or historical relics of an earlier prefixation system, now largely lost (Anderson and Zide 2002; Anderson 2015a, 2015b), and instantiate the curious and characteristic minor syllables that typify the languages of this phylum. This sesquisyllabic word structure is a hallmark of eastern Austroasiatic languages but is usually said to be lacking in the Munda languages. A closer inspection of Munda phonology in particular reveals that there appear to be different types of phonological and morphological word patterns existing in parallel that are found with different attendant types of word and phrasal prosody. Further, these reflect both older genetic subgroups within Munda and/or later shared contact or areal diffusion phenomena as well. Thus, there is a pronounced weak–strong phonological word prosody pattern across Munda that is exactly parallel to the word prosody of many other Austroasiatic groups. This is so strong that one must speak of both phonological and morpho-lexical types of words in Munda languages. Note that this older Austroasiatic pattern is so strong that it even carries over to lexically unanalyzable and unitary stems with four syllables in Mundari (Osada 2008: 104), which therefore constitute one morpho-lexical word but two phonological word(s) (or word units) simultaneously. These important issues lie beyond the scope of the present study.

(10) The second plural form here encodes the affected animate referent. Since there is no formal means of distinguishing between raised possessors, patients, or Datives in the verb morphology of Sora, what role this should be interpreted as is not clear, or may not even matter.

(11) Note that only ‘give’ works in this manner for the most part. In other words, the ‘recipient’ with ‘give’ functions as a primary object in terms of both verb agreement and assignment of the object case suffix, but other recipients of verbs like ‘tell’ use a different case element and typically have no verb agreement. This is thus different from the system found in such languages as Bininj Gun-Wok (Evans 1997, 2002, 2003a).

(12) Both indefinite and definite interpretations are possible in this formation (see Evans 2002).

(13) Note that the intransitive marker in Sora has two allomorphs: *–n-* which occurs when something follows it and *–ɲ* when it is in word-final position.

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(14) While some initial schwas convey meaning in Sora, none of the known contexts would license such a form as is found in this example, and thus it must for now be considered a low-level phonetic variant.

(15) Note the usual lack of a tense marker in the negative non-past forms but its use in negative past forms; in other words, these are highly marked forms and do not have ‘regular irregular’ inflection.

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Adyghe (Northwest Caucasian)

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Abstract and Keywords

Adyghe, a polysynthetic language of the West Caucasian family, shows the typological characteristics of ergativity, left-branching word order, and the flexibility of the lexical categories. Its word has a high degree of morphological complexity and consists of five ordered morphological zones, within which the order of affixes can vary, and recursion is possible. The information encoded in the predicate includes the argument structure, causation, and various aspectual and modal characteristics. Many meanings can be expressed, either with a combination of morphemes, or a combination of words, or with both simultaneously. There are structural asymmetries at the clause level and the principle C violations in cross-clausal syntax—the phenomenon that has been recorded also in many polysynthetic languages of America.

Keywords: affix order, causative, ergativity, morphological complexity, Caucasian

ADYGHE, like all the languages of its West Caucasian family, displays most characteristics that typologists associate with polysynthesis. In Section 44.1 we provide some general information about the language and describe its typological characteristics other than polysynthesis. In Section 44.2 we outline its morphological complexity and in Section 44.3 the morphological content of the predicate; in Section 44.4 we address the division of labour between morphology and syntax, and in Section 44.5 the expression of cross-clausal relationships and anaphora.

44.1 Introduction

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44.1.1 General information

Adyghe (*adəgabze*), or West Circassian, is the language of the eponymous people (*adəge*) that inhabit the northern part of the Caucasian coast of the Black Sea and the foothills of the Northwest Caucasus in the basin of the Kuban River. Adyghe belongs to the West Caucasian, also called Northwest Caucasian or Abkhaz-Adyghe(an) linguistic family. It forms the Circassian branch along with genetically closest Kabardian, or East Circassian. Other West Caucasian languages are Abkhaz, Abaza, and the extinct Ubykh (Kumaxov 1981; Nikolayev and Starostin 1994; Chirikba 1996; Hewitt 2004).

Nowadays Adyghe is spoken in the Republic of Adygheya and in the Krasnodar Region, both constituents of the Russian Federation, and in Turkey, where most Circassians emigrated after Russia's conquest of the North Caucasus in the mid nineteenth century. Smaller groups of speakers live in other countries of the Middle East and Balkans. The overall number of the Adyghe can be estimated as more than 700,000, of which about 130,000 live in Russia (Korjakov 2006: 22 and references there). The number of native speakers may be at least twice as small and is hard to evaluate, because in the diaspora and, although more slowly, in Russia, the language is undergoing gradual extinction, especially in cities (p. 949) (Smeets 1984: 56–9, Höhlig 1997: 124–5), and the Adyghe people are becoming monolingual speakers of more prestigious Russian and Turkish.

The main dialects of Adyghe are Abadzekh (or Abzakh), Bzhedug, Temirgoy, and Shapsug. Standard Adyghe was formed on the basis of Temirgoy. The current Cyrillic-based alphabet has been adopted since 1938. In the diaspora, Adyghe remains a vernacular used in everyday communication. Adyghe is the official language of the Republic of Adygheya; it is taught in Adyghe schools and is represented in the media and the Internet. There is an extensive literature that covers various fields like poetry, prose, politics, religion, science, etc.

The first data on Adyghe come from the eighteenth century, but its fundamental linguistic research began in the 1930s. Georges Dumézil's materials on the languages of the Caucasus include several texts in Adyghe (Dumézil and Namitok 1939; Dumézil 1954). In Russian, there are fundamental descriptive grammars (Jakovlev and Ašxamaf 1941; Rogava and Keraševa 1966; Zekox, Meretukov, and Txarkaxo 2003), of which the former two are of special importance. A significant contribution to the study of both Circassian languages are the monographs (Kumaxov 1971; Kumaxov and Vamling 2006; Kumaxov and Vamling 2009, the latter in English).

In his publications in English, Rieks Smeets (1984, 1992) employs a less traditional and more formal approach and addresses some aspects of the language that were ignored in previous studies like morphophonology and the structure of the word. Catherine Paris published a description of the Abadzekh dialect (1989), texts in the Abadzekh (1977, 1978, 1980) and Shapsug (1974) dialects, works on phonology (1972) and syntax (1969,

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1987). Monika Höhlig's (1997) monograph on language contact phenomena in Adyghe also addresses sociolinguistic issues. Maria Polinsky, Eric Potsdam, and Ivano Caponigro's papers on Adyghe grammar are dedicated to aspects of the syntax/semantics interface (Caponigro and Polinsky 2011; Potsdam and Polinsky 2012).

Adyghe lexicon is well documented. The major dictionaries are Adyghe-French (Paris and Batouka 1988–2005), Adyghe-Russian (Šaov (ed.) 1975; Txarkaxo 1991; Xatanov and Keraševa 1960), and Russian-Adyghe (Vodoždokov (ed.) 1960).

The collection in Russian (Arkadiev et al. (eds.) 2009), to which the authors of this chapter contributed, covers various issues in Adyghe grammar from a typological viewpoint.

44.1.2 Typological characteristics

Adyghe shares its main typological characteristics with the other languages of the West Caucasian family: a huge consonant inventory contrasted with the paucity of vowels (three vowels vs. fifty-six consonant phonemes in Standard Adyghe), ejective consonants, noun–verb flexibility, polysynthesis and head marking, left-branching word order, many productive valency-increasing derivations, and ergativity.

44.1.2.1 Ergativity

The marking of the core grammatical relations in Adyghe follows the ergative pattern of alignment both in case and in the cross-reference in the verb.

(p. 950) The *absolutive* case (*-r*) marks the subject with intransitive verbs and the direct object with transitive verbs, and the 1st and 2nd person absolutive arguments are cross-referenced in the leftmost slot of person/number prefixes in the verb.

The *oblique* case (*-m*, with allomorphs), traditionally called *ergative*, marks the transitive subject, which triggers a different set of cross-reference prefixes that belongs to a different slot in the verb:

(1)

a. pŝaŝe-**r** čəja-ʁe.
girl-ABS sleep-PST
'The girl slept.'

b. č'ale-**m** pŝaŝe-**r** ə-λeʁʷə-ʁ.
boy-OBL girl-ABS 3SG.ERG-see-PST
'The boy saw the girl.'

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(2)

a. we wə-čəja-ʁ.
you(SG) 2SG.ABS-sleep-PST
'You (sg.) slept.'

b. se we wə-s-λeʁʷə-ʁ.
I you(SG) 2SG.ABS-1SG.ERG-see-PST
'I saw you (sg.).'

Not all nominals that bear core syntactic functions take overt case-marking. Personal pronouns of the 1st and 2nd persons only marginally inflect for case; proper names and nouns provided with possessive prefixes in the singular normally do not take overt case endings. Common nouns in the singular that represent indefinite or non-specific NPs tend not to have overt case marking either.

Ergativity is also manifested in the behaviour of the plural ending *-x(e)*, which may appear both on arguments and predicates. When it appears on the predicate, it signals plurality of the absolutive argument (mostly if it is 3rd person), as in (3):

(3)

a. pŝaŝe-xe-r čəja-ʁe-x.
girl-PL-ABS sleep-PST-PL
'The girls slept.'

b. č̣'ale-m pŝaŝe-xe-r ə-λeʁʷə-ʁe-x.
boy-OBL girl-PL-ABS 3SG.ERG-see-PST-PL
'The boy saw the girls.'

c. č̣'ale-xe-m pŝaŝe-r a-λeʁʷə-ʁ.
boy-PL-OBL girl-ABS 3PL.ERG-see-PST
'The boys saw the girl.'

The oblique case has the "elsewhere" function, marking all non-absolutive arguments, such as various indirect objects, adnominal possessors, objects of postpositions, and some adjuncts.

(p. 951) 44.1.2.2 Word Order

Adyghe is a language with free order of the major phrasal constituents within a clause, but with a much less free order within a NP. All the six permutations of the Greenbergian categories: subject, object, and verb predicate are available, of which the **SOV** order is the basic, that is, has the widest distribution with respect to context and the status of its

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constituents in terms of given vs. new or topic vs. focus, (cf. Kumaxov and Vamling 2006: Ch. 4).

Apart from the basic SOV order, Adyghe displays other crucial characteristics of a *left-branching* language: it has postpositions and no prepositions, possessive NPs precede head nouns, and in the externally headed relative construction, the relative clause precedes the head noun.

44.1.2.3 Flexibility of lexical categories

Adyghe shows the *flexible* type of part-of-speech systems (cf. Rijkhoff and van Lier (eds.) 2013), in which there is very little distributional evidence to distinguish the four major lexical classes, that is, nouns, verbs, adjectives, and adverbs. Any word that in the argument position denotes an entity X, when used in the predicate position, means 'be X' and needs no overt copula. Likewise any word that denotes action, process, or state, when used in the argument position, denotes a participant of the action, process, or state without any special marking. For instance, the stem *qe-ḳʷe-šʼt-* consisting of the directive prefix *qe-*, the root *ḳʷe-* 'go', and the future tense marker *-šʼt*, may mean '(he, she, it) will come' or its participant, that is, 'the one who will come'. Concomitant shifts in lexical meaning like 'axe' → 'chop with an axe' are rare.

In (4a), a dynamic verb *qeḳʷešʼt* 'he will come' is a predicate and as such obtains zero marking; in (4b), it functions as an argument and is therefore marked with the absolutive case ending *-r*. In (4a), a noun *č̣ʼale* 'boy' is an argument in the absolutive case; in (4b), it is a zero-marked predicate:

(4)

a.	č̣ʼale-r	qe-ḳʷe-šʼt.
	boy-ABS	DIR-come-FUT
	'The boy will come.'	
b.	qe-ḳʷe-šʼtə-r	č̣ʼal.
	DIR-come-FUT-ABS	boy
	'The one who will come is a boy.'	

The regular shift from the predicate to the argument meaning exemplified in (4b) is unmarked (the "zero strategy" used primarily for relativization of the absolutive argument): the verbal stem can be employed in the morphological and syntactic context of a noun. Any noun stem, on the other hand, can be used as a verb.

However, there are some consistent, albeit inconspicuous, distributional differences that contrast nouns vs. verbs, and nouns vs. adjectives. For instance, only nouns can be modified by relative clauses, and, for many speakers, only nouns can be used as arguments when they are not provided with overt case markers.

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It is noteworthy that in the (near-)polysynthetic languages of the American Pacific Northwest that belong to the Salishan and Wakashan families, like in Adyghe, the distributional evidence in favour of the major lexical categories is poor, and the difference appears (p. 952) in the same contexts where it does in Adyghe: verbs cannot head a relative clause or serve as arguments without a determiner (cf. Jacobsen 1979, Van Eijk and Hess 1986; Jelinek and Demers 1994; Demirdache and Matthewson 1995; Davis and Matthewson 1999). More specifically, Adyghe, like Salishan, employs the strategy of "zero" relativization, in which there is no overt relative complementizer or participle marker, so in order to get an argument, it is enough to place a verbal stem in a nominal context.

Moreover, like many polysynthetic languages of the Americas, and Salishan and Wakashan in particular (Davis 2006, 2009; Davis, Waldie, and Wojdak 2007), Adyghe consistently demonstrates Principle C violations in cross-clausal syntax—see Section 44.5. Whether this striking typological similarity is accidental, or the characteristics correlate cross-linguistically, remains an issue for future study.

44.2 Morphological Complexity

At first glance, the Adyghe notional word looks like an unquestionably polysynthetic monster containing a great number of morphemes, both prefixes and suffixes. The speakers of the language are fond of demonstrating the "longest Adyghe word" (5). This word consists of no less than twelve morphemes (or more according to some analyses) and comprises two roots with the meaning of movement, the cross-reference marker of the absolutive argument, the complex of the root 'head' with the locative and translative preverbs, which—together with the directional prefix 'here' and the reversive suffix 'back'—denotes the movement's trajectory, two past suffixes and the morphology of subordination including the prefix indicating the factive relativization 'the fact that …', and the absolutive case ending which marks the whole complex as an argument:

(5)
sə-qə-zere-ŝha-pə-rə-wəḳʷereje-č̣'ə-ž'ə-ʁa-ʁe-r
1SG.ABS-DIR-FACT-head-LOC-TRANS-fall-go.out-RE-PST-PST-ABS
'that I had turned a somersault'

Notably, this word itself can easily serve as a base for further derivation. Compare (6) with no less than fifteen morphemes, which results from causativization of (5). The new affixes are the causative prefix, the prefix cross-referencing the causer, and the potential suffix 'be able':

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(6)

wə-qə-zere-ŝha-pə-rə-z-ʁe-wəḳʷereje-č'ə-ž'ə-ŝʷə-ʁa-ʁe-r

2SG.ABS-DIR-FACT-head-LOC-TRANS-1SG.ERG-CAUS-fall-go.out-RE-POT-PST-PST-ABS

'that I was able to make you turn a somersault'

A rough calculation of the index of synthesis, that is, the average number of morphemes per word, showed 3.49 for a newspaper text of 325 words and 3.01 for an oral text of 130 words. Although more research is needed for comparing such results for different authors and genres, this already makes Adyghe closer to polysynthetic languages like Inuit Eskimo (which may show an index of about 3.7, as opposed to less synthetic languages like Sanskrit, with about 2.6, see Greenberg 1960). (p. 953)

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Figure 44.1 The five morphological zones of the Adyghe notional word

Despite the apparent complexity, the Adyghe word has a transparent structure and its morphology is close to the agglutinative prototype. With few exceptions, it shows almost no fusion, no affixes cumulatively expressing several categories, and almost no phonologically unconditioned allomorphy. The typical word has a structure combining the principles of template morphology based on fixed positions defined with respect to morpheme classes, and morphology based on hierarchical relations among morphemes. In general, the Adyghe notional word—irrespective of its part-of-speech class—consists of five morphological zones which appear in a strict order, as in Figure 44.1.

The zones differ in a number of functional and formal characteristics:

- The argument structure zone primarily bears prefixes cross-referencing the syntactic arguments, such as the core and applicative arguments of the verb, the possessor of the noun, and the object of the postposition.
- The pre-stem and endings zones contain the affixes marking the finite vs subordinated status of the form, polarity and dynamicity—see Section 44.3. In addition, the endings zone includes the suffix *-xe*, which marks the plurality of the referent with nouns and the plurality of the absolutive argument with other word classes. The pre-stem and endings zones also differ from others in that they are immune to certain morphophonological processes.
- The causative zone contains the causative prefix(es).
- The stem includes the root(s) and various suffixes that primarily convey tense, modal, and aspectual (TAM) information.

None of these zones except the stem necessarily gets overt expression, yet (7) illustrates all of them: it demonstrates two cross-reference prefixes in the argument structure zone, a negative prefix in the pre-stem zone, the ending marking adverbial subordination, a

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causative marker, and two morphemes in the stem, namely the root and the refactive suffix.

	[w-jə-]$_A$	[mə-]$_B$	[ʁe-]$_C$	[λeʁ^{w}ə-ž’]$_D$	[-ew]$_E$			
(7)	2SG.IO-3SG.ERG-NEG-CAUS-	see-	RE-	ADV				
	‘while it does not let you see (it)’							

Adyghe morphology displays several features that are relevant for polysynthesis. De Reuse (2007, 2009) argued that polysynthetic languages of the Eskimo type display a kind of morphology called “productive noninflectional concatenation” (PNC) and characterized by high productivity, variable morpheme order, and the possibility of recursion (among other features). Much of Adyghe morphology fits neatly into this type. The order of the zones is strict, but the morpheme order within them varies. For example, the past suffix -*ʁ(e)*//-*ʁ(a)* and the assertive suffix -*p(e)* //-*p(a)* ‘definitely’ can change their order, as is shown in (8):

(p. 954)

	ə-txə-pa-ʁe		//	ə-txə-ʁa-pe				
(8)	3SG.ERG-write-	ASRT-	PST	3SG.ERG-write-	PST-	ASRT		
	‘He has already written this.’							

Some morphological elements allow recursion, although it may differ for different zones (Lander and Letuchiy 2010).

In (9), we find two suffixes of the simulative *ŝ^w(a)*- ‘seem’, one of which may be used with attenuative semantics, so the literal meaning is something like: ‘it seems to seem to be yellow’).

	a-r	ʁ^{w}ež’ə-ŝ^{w}a-	ŝ^w					
(9)	that-ABS[1]	yellow-	SEEM-	SEEM				
	‘It looks yellowish.’ / ‘It is paler than yellowish.’							

1

Finally, much of Adyghe morphology seems to be highly productive, and there is indirect evidence that polysynthetic words can be easily constructed in the course of speech (such as the possibility of word-internal pauses) and are not all stored in long-term memory. Most importantly, we observe variability in speakers’ use of specific morphemes and potential to construct longer and longer words, which makes it unlikely that these words always belong to any common lexicon. However, speakers of Adyghe usually do not recognize either grammatical morphemes or their sequences in isolation, so they can hardly be thought to function similarly to words in syntax.

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De Reuse contrasts PNC with non-productive derivation and inflection, which normally do not allow recursion and variability of affix order. In addition to PNC, Adyghe also possesses affixes that represent canonical inflection (e.g. case markers) and canonical derivation.

However, it is not always possible to demarcate derivation, inflection, and PNC. First, some categories that are basically inflectional such as tense may be employed in "word-internal" syntax, allowing recursion and combinations of various affixes—see Section 44.3. Second, even productive affixes often enter combinations that become non-compositional and lexicalized. For example, in (10) we find a verb that contains highly productive reflexive, benefactive, and causative affixes, and should literally mean 's/he made herself die for it', but has rather different semantics:

(10)
zə-f-jə-ʁe-λ̣a-ʁ
RFL.ABS-BEN-3SG.ERG-CAUS-die-PST
'S/he deprived herself/himself of it.'

Adyghe can show more than one "heavy" (lexical) morpheme in a stem. This is more restricted for verbs, which usually only allow a combination with a limited number of semi-grammaticalized roots like 'carry', 'go out', and 'go in', whose semantic contribution (p. 955) is typically non-compositional. In (11), the root 'go' combines with the transitivizing root 'carry', which results in a stem 'walked through':

(11)
č'ə-le-r q-ə-k̩^{w}ə-ha-ʁ
village-ABS DIR-3SG.ERG-go-carry-PST
'He walked through the village.'

Combinations of several lexical parts are more elaborate with nouns. In particular, adjectives and non-referential nominal attributes modify nouns within *nominal complexes* like 'other's (not mine) small boys' (12), see Lander (2017) for details.

(12)
[s-jə]$_{A}$-[mə]$_{B}$-[č̣'ə-le-çək̩^{w}ə]$_{D}$-[xe-me]$_{E}$ aχš'e-r ja-wə-mə-t
1SG.IO-POSS-NEG-boy-small-PL-OBL:PL money-ABS 3PL.IO+DAT-2SG.ERG-NEG-give(IMP)
'Don't give money to small boys that are not mine!'

Nominal complexes behave like single words as regards their morphological and morphophonological properties. A nominal complex may display most of the zones listed above: the one in (12) demonstrates the argument structure zone represented by the morphology indexing the possessor, the pre-stem zone manifested with the negation, the endings zone represented with the plural suffix and the case marker, and the stem.

Verbal stems may "incorporate" their dependents within a nominal complex as well, which, however, makes the whole combination function as a nominal describing individuals characterized by habitual actions denoted by the stem; cf. *aχš'e-ʁebəλ* 'one

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who always hides money' < *aχš'e* 'money', and *ʁebəλ* 'hide'. Notably, when such nominal complexes function as predicates, they look similar to nominal incorporation, otherwise unattested in Adyghe:

wə-weredə-ʔʷe
(13) 2SG.ABS-song-say
'You sing songs'/ 'you are a singer.'

44.3 The Morphological Content of the Predicate

As we have seen, both nominals and verbs can function as clausal predicates, while in argument position they have some semantic restrictions. This correlates with another fact: there are suffixes whose function is to derive nouns from verbs (bearing semantics such as 'place of', 'manner of'), but there is no dedicated morphology that derives verbs from nouns: all the affixes that may accompany the use of the noun / nominal complex as a predicate can appear with non-nominal stems as well. Given that the basic word structure is the same for nominals and verbs, the predicate morphology is only restricted by its semantics.

In this section, we discuss the semantic filling of the predicate. The primary information that can be encoded within the predicate includes the argument structure, causation, and various aspectual and modal characteristics.

(p. 956) The Adyghe predicate is consistently ergative. It distinguishes between three series of cross-reference markers: the absolutive series, the ergative series, and the indirect object series. The series are distinct both in paradigms and in the position within the argument structure zone: the absolutive cross-reference prefix occupies the first position in the word, the ergative prefix is found in the position closest to the stem, while indirect object prefixes are placed between them. Third person absolutives and third person singular indirect object do not get overt cross-reference. An example of a transitive verb displaying both absolutive and ergative series is given in (14):

sə-qe-w-e-λeʁʷ-a
(14) 1SG.ABS-DIR-2SG.ERG-DYN-see-Q
'Do you see me?'

The cross-reference series also include reflexive, reciprocal, and relative prefixes, which are mostly homophonous but differ in distribution. In (15), for example, the reflexive marker *z-*occupies the position intended for the absolutive cross-reference, which here

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means that the absolutive argument is co-indexed with the ergative, and in (16) the prefix *zə-* that marks relativization of the ergative argument takes the position of the ergative series—see also Sections 44.4 and 44.5.

z-jə-ʁe-hazərə-ʁ
(15) RFL.ABS-3SG.ERG-CAUS-ready-PST
'S/he prepared himself/herself.'

wə-zə-wəbətə-re-r
(16) 2SG.ABS-REL.ERG-catch-DYN-ABS
'the one who catches you'

Indirect object prefixes are accompanied by applicative prefixes within *applicative complexes*. See (17), where applicative complexes are bracketed:

(17)

mez-c^{w}ənə-m	qə-[Ø-š'ə]-[s-a]-ž
forest-thicket-OBL	DIR-[3SG.IO-LOC]-[1SG.IO-DAT]-wait(IMP)

'Wait for me in the forest thicket.'

Note that applicatives do not transitivize verbs, and in fact, Adyghe possesses manifold multivalent intransitive verbs which express undergoers as applicative objects, such as 'wait' in (17).

There are two kinds of applicatives: the dative applicative and special applicatives.

The role of the argument introduced with the dative prefix *(j)e-/(j)a-* as shown in (17) is usually implied by the semantics of the stem: for example, it introduces the recipient of 'give', the addressee of 'tell', the goal of 'look at', the causee in causatives derived from transitive bases, etc. The dative prefix is also the only applicative morpheme that may become non-overt due to the morphophonology—presumably because the role of the indirect object can be easily recovered.

(p. 957) Special applicatives specify the role of the indirect object and include benefactive, malefactive, comitative markers, the alienable possessive marker (used primarily with nouns but also with the verb 'be'), and dozens of locative markers. The following examples illustrate the benefactive and locative applicatives:

qə-[p-fe]-s-š'eč'ə-š't
(18) DIR-2SG.IO-BEN-1SG.ERG-weigh-FUT
'I will weigh it for you.'

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[a-xe]-wəc^{w}a-ʁ
(19) 3PL.IO-LOC-stand.up-PST
'He stood among them.'

Occasionally, the complex may contain several applicative morphemes or a body-part root, which may also specify the location of the event. This may be represented as a kind of morphological embedding, like in (20), where the combination of the root 'head' with the reflexive prefix (here 'head of myself)' is introduced with the locative applicative 'on':

qə-[[zə-ŝha]-tje]-z-ʁe-ṭəs-ha-ʁ
(20) DIR-RFL.IO-head-LOC-1SG.ERG-CAUS-sit.down-go.in-PST
'I put it on my head.'

The order of applicative complexes, if they are more than one, usually reflects their semantic scope (see Caponigro and Polinsky 2011; Lander 2016). This is seen, for example, in (21), where the external position of the benefactive complex with respect to the comitative complex results in the specific (wide scope) interpretation of the beneficiary (recall that 3rd person singular indirect objects are cross-referenced with null prefixes). Yet applicative complexes can mix; see (22), where the overt indirect object prefix cross-referencing the beneficiary immediately precedes, not the benefactive prefix that it is introduced by, but the locative applicative (which can take its own indirect object):

(21)

č'eleježʒ'aḳ^{w}e-pepč	zə	č'elejeʁaʒ'e-g^{w}ere-m	sə-fə-de-g^{w}əŝ^{w}e-š'tə-ʁ
pupil-every	one	teacher-some-OBL	1SG.ABS-BEN-COM-happy-AUX-PST

'I congratulated (lit.: "was happy for") a (certain) teacher together with every pupil.'

q-a-š'ə-f-a-ŝə-ʁa-ʁ
(22) DIR-3PL.IO-LOC-BEN-3PL.ERG-do-PST-PST
'they did it for them there'

Some applicative prefixes only appear in combination with the relative prefix. Examples include the complexes introducing the reason 'which is why' and the manner 'which is how' (23). A similar treatment can even be suggested for the factive subordination marked with *zere-*: it is likely that the variable corresponding to the fact is brought into the argument structure by means of a special applicative marker *-re-* (24).

(p. 958)

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(23)

[ze-re]-məse	ŝə.č'e-r-jə	qə-[z-č'ə]-fe-gʷəbžə-ʁe-r-jə
REL.IO-MNR-guilty	manner-ABS-ADD	DIR-REL.IO-REAS-BEN-angry-PST-ABS-ADD

a-š'	ə-ŝe-n	ə-λeč'ə-š'tə-ʁ-ep
that-OBL	3SG.ERG-know-MOD	3SG.ERG-can-AUX-PST-NEG

'He could not understand the way in which he was guilty and what he had been angry with.'

(24)

asλan	ə-ŝe-r-ep	wə-qə-[ze-re]-kʷa-ʁe-r
Aslan	3SG.ERG-know-DYN-NEG	2SG.ABS-DIR-REL.IO-FACT-go-PST-ABS

'Aslan does not know that you have come.'

Another unusual pattern is related to the fact that applicative complexes can be used, not only for increasing the predicate's valency, but also for decreasing the status of the ergative argument. In particular, there are several constructions where the most actor-like argument of the transitive stem (i.e. a stem that can take ergative arguments) appears as indirect object. The most frequent construction of this kind conveys the potential meaning (mostly in negative and conditional contexts) and introduces the agent with the benefactive prefix. Compare the potential construction (25b) with the usual transitive form (25a) in which the agent is cross-referenced with an ergative prefix.

(25)

a. t-e-ʁe-daʔʷe
1PL.ERG-DYN-CAUS-listen
'We make him/her listen (to us).'

b. t-fe-ʁe-daʔʷe-me
1PL.IO-BEN-CAUS-listen-COND
'if we manage to make him listen (to us)'

For nouns, the argument structure morphology is prominent in the possessive constructions. The possessives with the possessee belonging to the inalienable class whose core is constituted by kinship terms and body part terms cross-reference the possessor with a series of markers homophonous to the ergative series (26), whereas the alienable possessives invoke the possessive applicative marker *-jə-* and cross-reference the possessor with the indirect object series of markers (27):

(26)

s-kʷeč'ə
1SG.PR-knees
'my knees'

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s-jə-meʔʷ
(27) 1SG.IO-POSS-shield
'my shield'

(p. 959) Productive morphological *causatives* are certainly typical both for polysynthetic languages (Baker 1996) and for languages of the area (Daniel and Lander 2011). Naturally, Adyghe causatives interact with the applicative system, see also Letuchiy (2015). While causatives derived from intransitive stems simply add the ergative argument, causativization of transitive stems adds the ergative causer and encodes the causee by means of the dative applicative, as in (28).

(28)
pš'ə-m a ɬ̣ə-r q-a-r-jə-ʁe-š'a-ʁ
prince-OBL that man-ABS DIR-3PL.IO-DAT-3SG.ERG-CAUS-bring-PST
'The prince ordered them to bring the man.'

Double causativisation is possible (29), but it is not always transparent, for the second causative marker sometimes is absent and the causative semantics is only implied from the presence of the "unexpected" dative complex (30) (cf. Smeets 1984: 225, 273; Lander and Letuchiy 2010: 277–327):

(29)
qʷaŝʷe-m r-a-r-jə-ʁe-ʁe-wəcʷa-ʁ
boat-OBL LOC-3PL.IO-DAT-3SG.ERG-CAUS-CAUS-stand-PST
'He asked them to put it (lit., made them make it stand) into the boat.'

qə-s-jə-ʁe-(ʁe-)č'anə-ʁ
(30) DIR-1SG.IO-3SG.ERG-CAUS-(CAUS-)sharp-PST
's/he made me sharpen (it)'

Adyghe possesses manifold **TAM** suffixes which mostly contribute to the tense, modal, and aspectual/aktionsart semantics: these include the refactive/reversive 'again'/'back' (7), the simulative 'seem' (9), the potential 'be able to' (6), the suffixes with the meanings 'easy' and 'difficult', and the like. The following example illustrates the use of the suffix *-ʁʷeŝ.ʷə* 'easy':

səmeǯ'e-ʁʷeŝʷə-ʁ
(32) ill-EASY-PST
'S/he became ill easily (i.e. in a short period).'

Speakers may use long strings of TAM suffixes ordered according to their scope: a suffix has scope over the whole part of the stem that precedes it (Korotkova and Lander 2010).

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In (33a), for example, the refactive suffix *-žʼə* (‘again’) modifies the sequence of the root and the debitive suffix *-pχe* (‘have to’), while in (33b) the debitive modifies the base consisting of the root and the refactive:

(33)

a. a-ʂ̣ə-pχe-žʼə-ʁ
3PL.ERG-do-DEB-RE-PST
‘they again had to do that’

b. a-ʂ̣ə-žʼə-pχa-ʁ
3PL.ERG-do-RE-DEB-PST
‘they had to do that again’

(p. 960)

Given such semantically based variation in order, it is unlikely that these suffixes serve as exponents of strictly paradigmatically organized grammatical categories. Importantly, this also holds true for suffixes that are traditionally taken to express the tense category. There are three basic tense suffixes, namely *-ʁe* past, *-šʼt* future (also used in some irrealis contexts), and *-n* modal (used in some future contexts as well as marking the action nominals). These affixes may co-occur (34), and the past suffix allows recursion (35).

(34)

λeməǯʼə-r tər-a-λ-ha-ʁe-šʼt
bridge-ABS LOC-3PL.ERG-lie-carry-PST-FUT
‘They should have established the bridge.’

(35)

a waχte-m s-λeʁʷə-ʁe-pa-ʁ nəwe-r
that time-OBL 1SG.ERG-see-PST-ASRT-PST grandmother-ABS
‘That time I definitely had already seen (my) granny.’

There is a clear tendency for tense affixes to appear at the very end of the stem and group together. Yet other suffixes can occur both before and after them, as shown in (35), where *-pe* ‘definitely’ is found between two past suffixes. If tense markers represent inflection proper, this runs counter to the principle according to which inflection should occur in the periphery of the word form.

Negation is expressed morphologically, either in the pre-stem zone or in the endings zone. The choice of the marker depends roughly on the scope of negation: the suffix expresses the negative truth-value of the whole utterance, while the prefix expresses other kinds of negation. See (36), taken from Smeets (1984), where the first example shows simple negation of the whole proposition and the second example illustrates an oath, which is itself naturally not negated, hence the narrow scope of negation. Note also that both markers can occur simultaneously (37).

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(36)

a. sə-qə-b-de-ḳ^{w}e-n-ep
1SG.ABS-DIR-2SG.IO-COM-go-MOD-NEG
'I will not marry you (lit. "go with you").'

b. sə-b-de-mə-ḳ^{w}e-n
1SG.ABS-2SG.IO-COM-NEG-go-MOD
'(I swear that) I will not marry you!'

(37)

sə-mə-dax-ep	səd-ep!
1SG.ABS-NEG-beautiful-NEG	what-NEG

'It is not the case that I am not beautiful, not at all!'

(p. 961) Pre-stem elements and endings also partly provide information on *illocution*. In particular, there is a prefix indicating the optative mode and several suffixes used in questions and exclamations.

(38)

q-j-ere-ne-ž'
DIR-LOC-OPT-remain-RE
'Let it remain there.'

(39)

ŝ^{w}ə-z-e-zewe-š'-t-a
2PL.ABS-REC.IO-DAT-fight-FUT-Q
'Will you fight with each other?'

(40)

ə-ʔ^{w}e-ʁa-ʁe-ba
3SG.ERG-say-PST-PST-EMP
'Didn't he say this?!'

44.4 Division of Labour between Syntax and Morphology

It can be seen that Adyghe morphology conveys much information that is expressed syntactically in such languages as English. Yet it does not need to do so. In fact, many meanings (including benefactive, potential, location, etc.) can be conveyed either with a combination of morphemes, or a combination of words, or even by means of syntax and morphology simultaneously. Compare the three ways of realizing causative semantics—with the causative prefix (41a), with the verb *ŝ́ə-* 'make' (41b), and with both (41c):

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(41)

a. wəzəʁətxəʁ
2SG.IO-DAT-1SG.ERG-CAUS-write-PST

b. ptxənew wəsʂəʁ
2SG.ERG-write-MOD-ADV 2SG.ABS-1SG.ERG-make-PST

c. wəzəʁətxənew wəsʂəʁ
2SG.IO-DAT-1SG.ERG-CAUS-write-MOD-ADV 2SG.ABS-1SG.ERG-make-PST
'I made you write this.'

In (41c), causation is expressed twice, which, however, does not result in the semantics of causation of causation. The choice of the strategy depends on such factors as word complexity, stylistics, construction connotations, and even individual preferences of the speaker. However, usually different strategies do not show any clear semantic contrasts. Hence we observe here an instance of redundant expression, which can be explained if we assume that (p. 962) morphology and syntax act independently of each other. This can be taken as evidence for the strong distinction between the two modules.

To be sure, there are many complex meanings that are only provided by complex syntactic utterances. More interestingly, there are also some meanings that are always conveyed morphologically. In particular, almost all interclausal relations are expressed with morphological means. Adyghe lacks syntactically autonomous complementizers, so that such meanings as conditional (42) or various converbial functions (43)–(44) are expressed with affixes—see also Section 44.5.

(42)

wəməwəčʼəme, ʂexew qəsəšʼt
2SG.ERG-NEG-kill-COND hurry-ADV DIR-reach-FUT
'If you will not kill (him), he will come here in a hurry.'

(43) ŝʷəqəsedeʔʷəze ŝʷʂəšʼta
2PL.ABS-DIR-1SG.IO-DAT-listen-WHILE 2PL.ERG-do-FUT-Q
'Will you do this listening to me?'

(44)

zəxewefʔʷəfe wəqəməwəcʷ
RFL.ABS-LOC-2SG.ERG-DYN-pierce-UNTIL 2SG.ABS-DIR-NEG-stop(IMP)
'Do not stop until you pierce yourself into it!'

Coordination is also normally marked with endings like the additive marker *-jə* (45), although occasionally a lexical conjunction *əčʼjə* 'and' is used (46):

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(45)

šəble-r	čəɣə-m	q-je-w-**jə**,	pŝaŝe-r	ə-wəč̣'ə-ʁ
thunder-ABS	tree-OBL	DIR-DAT-hit-**ADD**	girl-ABS	3SG.ERG-kill-PST

'Lightning hit the tree and killed the girl.'

(46)

č̣əfə-be-me	neʔʷase	t-a-fe-χʷə-ʁ	əč̣'jə
person-many-OBL:PL	acquainted	1PL.ABS-3PL.IO-BEN-happen-PST	**and**

t-a-de-gʷəš'əʔa-ʁ
1PL.ABS-3PL.IO-COM-talk-PST
'We got acquainted with many people and talked to them.'

The *"pronominal arguments" hypothesis* (PAH, Jelinek 1984; Baker 1996) predicts that in a polysynthetic language the arguments of a predicate are displayed at the word level, and not at the clause level. Pronominal affixes, not NPs, saturate the argument valencies of the verb and form the familiar subject vs. object asymmetries—either directly, or indirectly, via the silent pronouns associated with them. The hypothesis assumes further that noun phrases in such languages are adjuncts that may be referentially linked to pronominal arguments.

(p. 963) These predictions are partly borne out in Adyghe: like in other polysynthetic languages, overt argument NPs are optional in Adyghe, and, at first sight, subject NPs have no privileged properties that could suggest their structural or relational asymmetry with the object NPs. The consistent ergative alignment in case and cross-reference morphology leave no space for the direct marking of the subject vs. object asymmetry. Apart from the mostly subject-, or agent-oriented morphological reflexive—which conforms to PAH—there is no indirect evidence either: there are no same-subject or different-subject restrictions in the clause-linking strategies, no restrictions on subject realization, or subject reference with nonfinite verb forms.

However, contrary to what is expected under PAH, subject and object NPs in Adyghe do differ in the predictable way with respect to anaphora and crossover. Moreover, along with the morphological reflexive and reciprocal, Adyghe has a lexical reciprocal (*zə-m zə-r* one-OBL one-ABS 'each other') and a lexical reflexive (*-ŝha* 'self')—which is ruled out by PAH.

These asymmetries can hardly be accounted for by the assumption that the verb predicate heads a phrasal category (VP or V') of its own that excludes the subject NP. Like many other "free word order" languages, Adyghe provides no convincing distributional evidence to discriminate between the VP (or V') constituent and the subject NP.

In most cases, the morphological reflexive shows subject orientation: Object NPs with morphological reflexives cannot be expressed:

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Reflexive, transitive:

(47)

a. a-š’ a-r ə-wəč̣’ə-š’t
that-OBL that-ABS 3SG.ERG-kill-FUT
‘He will kill him.’

b. a-š’ z-jə-wəč̣’ə-ž’ə-š’t
that-OBL RFL.ABS-3SG.ERG-kill-RE-FUT
‘He will kill himself.’

Reflexive, intransitive:

(48)

a. pŝeŝeẑəje-r ə-šəpχʷ je-ṗesḳʷə-ʁ
girl-ABS 3SG.PR-sister DAT-pinch-PST
‘The girl pinched her sister.’

b. pŝeŝeẑəje-r z-e-ṗesḳʷə-ž’ə-ʁ
girl-ABS RFL.IO-DAT-pinch-RE-PST
‘The girl pinched herself.’

The evidence of the morphological reciprocals is less conclusive because they, even those formed from transitive verbs, are all intransitive. The reciprocal prefix occupies the indirect object slot, taking the absolute subject NP as its antecedent (see Letuchiy 2007 for details):

(49)

a. a-xe-r z-e-že-ž’ə-x
that-PL-ABS REC.IO-DAT-wait-RE-PL

b. *a-xe-m z-e-že-ž’ə
that-PL-OBL RFL.IO-DAT-wait-RE
‘They wait for each other.’

(p. 964)

As we have noted, PAH assumes that with pronominal arguments, only morphological reciprocals and reflexives are available, since the usual binding asymmetries with reciprocals and reflexives cannot occur at the clause level which lacks the subject vs. object structural asymmetry.

However, there is a lexical reflexive *-ŝha* ‘self’ derived from *ŝha* ‘head’, and it is strictly subject-oriented: the reflexive can stand for the object of an intransitive verb as in (50a), and not for the subject in the absolutive case as it does in (50b):

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(50)

a.	a-r	ə-ŝha	fe-ʁə-ž'ə-ʁ
	that-ABS	3SG.PR-self	BEN-weep-RE-PST
b.	*a-š'	ə-ŝha	fe-ʁə-ž'ə-ʁ
	that-OBL	3SG.PR-self	BEN-weep-RE-PST
	'He bewailed himself.'		

The complex lexical reciprocal *zə-m zə-r* one-OBL one-ABS // *zə-r zə-m* one-ABS one-OBL 'each other' is subject-oriented with intransitive verbs (51a), hence in (51b), the indirect object cannot be the antecedent of the subject reciprocal (Letuchiy 2007):

(51)

a.	a-xe-r	zə-r	zə-m	fe-ḳ^{w}e-ž'ə-x
	that-PL-ABS	one-ABS	one-OBL	BEN-go-RE-PL
b.	*a-xe-m	zə-r	zə-m	a-fe-ḳ^{w}e-ž'ə
	that-PL-OBL	one-ABS	one-OBL	3PL.IO-BEN-go-RE
	'They visited each other.'			

With transitive verbs, *zə-m zə-r* is object-oriented, and the reciprocal pronoun stands for the subject NP in the oblique case:

(52)

a.	a-xe-r	zə-m	zə-r	j-e-wəč'ə-ž'ə-x
	that-PL-ABS	one-OBL	one-ABS	3SG.ERG-DYN-kill-RE-PL
b.	*a-xe-m	zə-m	zə-r	a-wəč'ə-ž'ə
	that-PL-OBL	one-OBL	one-ABS	3PL.ERG-kill-RE
	'They kill each other.'			

A semantic effect with anaphoric pronouns bound by operators, Weak Crossover (cf. Ruys 2000 and references there), also suggests the subject vs. object asymmetry. Weak Crossover ensures that no pronoun within a subject phrase can be bound by an interrogative or a quantified object, so (54) cannot mean (54b) 'Who is the person that that person's uncle saw that (p. 965) person?', and (55) cannot mean (55b) 'Every boy is helped by his own mother', although other interpretations in which the pronoun is not bound by the interrogative operator (54a) or by the quantifier (55a) are available for the same sentences. With a pronominal element within an object as in (53), the crossover effect does not occur:

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	xet-a	j-ateše-r	qe-z-λeʁʷə-ʁe-r?
(53)	who-Q	POSS-uncle-ABS	DIR-REL.ERG-see-PST-ABS
	'Who$_i$ saw his$_i$ uncle?'		

	xet-a	j-ateše-m	q-ə-λeʁʷə-ʁe-r?
	who-Q	POSS-uncle-OBL	DIR-3SG.ERG-see-PST-ABS

(54)

a. 'Whom$_i$ did his$_j$ uncle see?'
b. *'Whom$_i$ did his$_i$ uncle see?'

j-ane	ç̣'ale-pepč	d-e-ʔepəʔe
POSS-mother	boy-each	COM-DYN-help

(55)

a. 'His/her$_i$ mother helps every boy$_j$.'
b. *'His$_i$ mother helps every boy$_i$.'

44.5 Cross-Clausal Relationships

As was noted in Section 44.3, Adyghe employs almost no lexical elements that denote cross-clausal relationships. Coordination and various types of subordination are marked with morphological elements that mostly belong to the endings zone. There are several infinitive and nominalization-type markers of argument clause subordination that differ in modality, semantics (e.g. factivity) of the matrix predicate, and other characteristics, e.g:

	se	sə-čəje-**n**	faje
(56)	I	1SG.ABS-sleep-**MOD**	must
	'I must sleep'.		

	xə-m	ḳ^{w}e-**nə-m**	a-r	me-g^{w}əʁ^{w}e.
(57)	sea-OBL	go-**MOD-OBL**	that-ABS	DYN-hope
	'He hopes to go to sea.'			

	asλan	qə-**zere**-ḳ^{w}a-ʁe-**r**	deʁ^{w}ə.
(58)	Aslan	DIR-**FACT**-go-PST-**ABS**	good
	'That Aslan came is good'.		

(p. 966) In (56), the predicate of the subordinate clause is marked with the modal suffix *-n(ə)* used as a nominalizer, in (57) the oblique case ending *-m* is added to the same suffix,

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and in (58), the subordinate clause employs the verbal prefix *zere-* with the factive meaning (‘the fact that …).

Likewise, in adjunct subordinate clauses various adverbial meanings are marked morphologically, for example nominalization marker + adverbial case ending *-ew* has the meaning of purpose (59), and the ending *-me* marks the conditional clause (60):

(59)

we	txəλ	qə-s-e-p-tə-n-ew	se	sə-qe-ḳʷa-ʁ.
you	book	DIR-1SG.IO-DAT-2SG.ERG-give-MOD-ADV	I	1SG.ABS-DIR-go-PST

‘I came in order that you (sg.) would give me a book.’

(60)

wjelwesjəpjed	qə-s-a-tə-me,	sə-nasəpəṣ̂ʷe-š’t.
bike	DIR-1SG.IO+DAT-3PL.ERG-give-COND	1SG.ABS-happy-FUT

‘If they present me with a bike, I’ll be happy.’

Relative clauses can be head-external and head-internal. Head-external relative clauses employ two strategies of relativization: if the absolutive argument is relativized, the strategy of null marking (“zero relativization”) is used:

(61)

a. se wəne-r s-λeʁʷə-ʁe.
I house-ABS 1SG.ERG-see-PST
‘I saw a house.’

b. se s-λeʁʷə-ʁe wəne-r
I 1SG.ERG-see-PST house-ABS
‘the house I saw’

c. se s-λeʁʷə-ʁe-r
I 1SG.ERG-see-PST-ABS
‘that what I saw’

(61c) is a headless free relative clause, and the absolutive case marker *-r* attaches directly to the verbal stem.

If a non-absolutive argument is relativized, this is marked in the predicate with the relative prefix *zə-* in the slot that corresponds to the relativized argument:

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(62)

a. ç̣’ale-m apč’ə-r ə-q^{w}əta-ʁ.
boy-OBL glass-ABS 3SG.ERG-break-PST
‘The boy broke the glass.’

b. apč’ə-r zə-q^{w}əta-ʁe ç̣’ale-r
glass-ABS REL.ERG-break-PST boy-ABS
‘the boy who broke the glass’

c. apč’ə-r zə-q^{w}əta-ʁe-r
glass-ABS REL.ERG-break-PST-ABS
‘the one who broke the glass’

(p. 967) The contrast between the null marking with absolutive arguments and morphological marking with the non-absolutive arguments in the oblique case involves the only syntactic pivot that has been found in the syntax of Adyghe: absolutive and oblique arguments behave differently in more ways than just cross-reference, although these differences are not conspicuous. There are, however, no restrictions in clause combining related to pivots, for example sensitive to coincidence or non-coincidence of subjects and objects, absolutive and oblique NPs, and the like.

Head-internal relative clauses contain the head noun marked with the adverbial ending -*ew*, and the predicate of the relative clause is marked with the case ending that is required for the matrix NP: in (63) it is the oblique case:

(63) aç̣’e ç̣əf-ew ḳ^{w}e-š’tə-m sə-λ-e-χ^{w}ə.
there man-ADV go-FUT-OBL 1SG.ABS-LOC-DYN-seek
‘I am looking for a man that will go there.’

In a number of Amerindian polysynthetic languages, a phenomenon of *cross-clausal Principle C violation* is recorded. It looks like upward NP ellipsis, that is with the antecedent in the subordinate clause and the gap in the matrix clause. Given that the subject agreement inflection requires a null pronominal (*pro*) subject in cases where overt subject NPs are absent, or, under a different assumption, the polysynthetic verb contains a subject pronominal argument, the Principle C of the Binding Theory (Chomsky 1981; Büring 2005), which bans a full NP (‘referential expression’) from being bound by a c-commanding antecedent, is violated. The phenomenon is recorded, for example, in Kadiwéu, Waikurú family, Brazil (Sandalo 1997, 2002), and also in North America: Navajo (Na-Dene; Hale 1983), Passamaquoddy (Algonquian family Brüning 2005), Nuuchahnulth (Wakashan; Davis, Waldie, and Wojdak 2007), Lillooet (Salishan; Davis 2006, 2009), Mohawk (Iroquoian; Baker 1996).

In Adyghe, with all kinds of subordinate clauses, adjuncts (65) and complements (64) alike, what looks like free upward NP ellipsis is available:[2]

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(64)

faj	[pŝaŝe-m	wered	q-ə-ʔʷe-n-ew]
want	girl-OBL	song	DIR-3SG.ERG-say-MOD-ADV

'The girl wants to sing a song.'

(65)

qe-ʁə-ʁ	[pŝaŝe-m	ə-š	qə-z-j-e-λeʁʷə-m]
DIR-cry-PST	girl-OBL	3SG.PR-brother	DIR-REL.TMP-3SG.ERG-DYN-see-OBL

'The girl cried, when she saw her brother.'

(p. 968) That the overtly expressed NP *pŝaŝe-m* 'girl' in (64–65) belongs to the subordinate clause is seen from its case: it is oblique in a clause with a transitive verb, whereas in the matrix clause the intransitive verb would have required the absolutive form.

With free overt pronouns there is no Principle C violation:

(66)

a-r	faj	[pŝaŝe-m	wered	q-ə-ʔʷe-n-ew]
that-ABS	want	girl-OBL	song	DIR-3SG.ERG-say-MOD-ADV

'$(\text{She})_1$ wants the $\text{girl}_{j,*1}$ to sing a song.'

*'The girl wants to sing a song.'

For most speakers, the semantic binder need not c-command the bound anaphoric pronoun if cross-clausal upward ellipsis of the operator-containing NP is involved:

(67)

faj	[a	zə-m	š'ə-tχʷə-n-x-ew]
want	that	one-OBL	LOC-praise-MOD-PL-ADV

a. 'He wants that they praise only him.'

b. 'Only he wants them to praise him.'

With the interpretation (67b), the ellipted (or represented by a null pronoun) quantifier *zə* 'only' binds its variable in the matrix clause, whereby its overt antecedent is in the subordinate clause.

That subordinate clauses in Adyghe are really subordinate can be seen (besides other evidence) from Negative Concord. Negative pronouns must be licensed by the negative form of the verb (68). A negative verb can license a negative pronoun in the same (68a), (69b) or in an embedded clause (69a), but not in the superordinate clause (69c), (70b):

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(68)

a. zjə qe-ḳ^{w}a-ʁ-ep
nobody DIR-go-PST-NEG
'Nobody came.'

b. *zjə qe-ḳ^{w}a-ʁ
nobody DIR-go-PST

(69)

a. [zjə qe-ḳ^{w}a-ʁ-ew] s-ŝ^{w}e-ṣə-r-ep
nobody DIR-go-PST-NEG 1SG.IO-MAL-seem-DYN-NEG
'It seems to me that nobody came.'

b. [zjə qe-mə-ḳ^{w}a-ʁ-ew] s-ŝ^{w}-e-ṣə
nobody DIR-NEG-go-PST-ADV 1SG.IO-MAL-DYN-seem
'It seems to me that nobody came.'

c. *[a-r qe-mə-ḳ^{w}a-ʁ-ew] zjə ŝ^{w}-e-ṣə
that-ABS DIR-NEG-go-PST-ADV nobody MAL-DYN-seem
'It does not seem to anybody that he came.'

(p. 969)

(70)

a. zjə feja-ʁ-ep [a-r səmeǯ'ə-n-ew]
nobody want-PST-NEG that-ABS sick-MOD-ADV
'Nobody wanted him to fall ill.'

b. *zjə feja-ʁ [a-r mə-səmeǯ'ə-n-ew]
nobody want-PST that-ABS NEG-sick-MOD-ADV
'Nobody wanted him not to fall ill.'

The cross-clausal Principle C violation may be due to some recurrent peculiarity of subordination in languages of the polysynthetic type, but its nature still has to be discovered.

Abbreviations

ABS

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absolutive
ADD
additive
ADV
adverbial
ASRT
assertive
AUX
auxiliary
BEN
benefactive
CAUS
causative
COM
comitative
COMP
complementizer
COND
conditional
DAT
dative
DEB
debitive
DIR
directive
DYN
dynamic
EMP
emphasis
ERG
ergative
FACT
factive
FUT
future
IMP
imperative
IO
indirect object
LOC
locative
MAL
malefactive

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MNR
manner
MOD
modal
NEG
negation
OBL
oblique
OPT
optative
PL
plural
POSS
possessive
POT
potential
PST
past
Q
question
RE
refactive / reversive
REAS
reason
REC
reciprocal
REL
relative
RFL
reflexive
SG
singular
TRANS
translative
TRNS
transitive

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Notes:

(1) The demonstrative *a-* marked with case markers may function as a 3rd person pronoun 'he, she, it', or with plural marking 'they'.

(2) The fact was first noticed in closely related Kabardian, but not elaborated, in (Kumaxov and Vamling 1998: 101).

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