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QUANTIFICATION: A CROSS-LINGUISTIC PERSPECTIVE

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NORTH-HOLLAND LINGUISTIC SERIES: LINGUISTIC VARIATIONS

The goal of this collection is to put at the disposal of the linguistic community studies which contribute to a deeper understanding of the nature of language and linguistic variation within the lines that have now been established after fifty years of generative inquiries, often building bridges in the spirit of earlier cognitive traditions, such as the classic work of Plato, the Cartesian view of the mind, and others.

While the series will pay particular attention to the traditional tension between descriptive and explanatory adequacy, it will also address many old and new issues, such as the tensions raised at the level of linguistic design through new lines of inquiries often referred to as 'physiological linguistics' or, more dominantly, 'biolinguistics', in particular in the domains of macro- and micro-variations.

It is indeed curious that, while the issues at stake are accepted or praised at a rhetorical level, the data that bear on the relevant issues or even the argument at stake are often difficult to access in print, or are often not addressed at all in the form of monographs or dedicated collections.

This series will in particular study internal and external factors which bear on the nature of linguistic variation proper, focusing on properties of the Language Faculty and its interface with other domains of the Mind/Brain, as defined within the Minimalist Program, the predominant direction current generative inquiries take and further develop.

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1

INTRODUCTION

Lisa Matthewson

1 RATIONALE AND OVERVIEW

When Pierre Pica and Johan Rooryck invited me to edit a volume on quantification for this series, I decided to collect papers from linguists working on (relatively) understudied languages. My decision to target understudied languages arose out of a belief that what the field of quantification research most needs at the present time is in-depth analysis of data in as wide a range of languages as possible.

There are two main reasons why cross-linguistic work on quantification is required. First, the topics and the questions which have preoccupied us for the past two and a half decades are partly, or even largely, specific to Indo-European; second, the available descriptive literature is highly inadequate in the domain of quantification.

With respect to the first point, it is becoming increasingly clear that our collective research agenda has – for natural and obvious reasons – been driven by problems which may be non-existent in most of the world's languages. Conversely, there must be many interesting problems we have not even considered yet because the relevant languages have not been examined in any detail. We could cite the field's focus on generalized quantifier theory as one example here. Work on generalized quantifiers presupposes a correspondence between a certain syntax (being a 'noun phrase', containing a determiner) and a certain semantics (being of generalized quantifier type). This syntax-semantics correspondence is not only not universal (see several papers in Bach et al. 1995), it may not even be cross-linguistically very common. For example, the small typological survey reported on in Matthewson (2004) suggests that most languages do not display overt evidence for the link between determiners and

argumenthood which is often assumed for Indo-European (cf. Longobardi 1994 and much other research). Many languages lack determiners altogether; others have optional ones. (Demonstratives, on the other hand, appear more likely to be universal, a fact which foregrounds questions about the difference between definite articles and demonstratives). This cross-linguistic tendency for an absence of determiners suggests that the problem of how to analyse (non-generic) bare nouns should be accorded prime importance in the field.

Another theme which emerges from the survey in Matthewson (2004) is that many languages have more than one universal quantifier. There is a fairly substantial literature on the differences between English *all, every* and *each*, but we do not know whether the properties of these elements are replicated cross-linguistically. Obvious unanswered questions include what the semantic differences are between the different universal quantifiers in other languages, and whether (and why) there are systematic correspondences between the syntax of different types of universal quantifier and their semantics. Several of the papers in the current volume contain discussions of multiple universal quantifiers (Bruening for Passamaquoddy; Faller and Hastings for Cuzco Quechua; Keenan for Malagasy; Zimmermann for Hausa).

As mentioned above, the second reason we need more formal semanticists to work on quantification in understudied languages is that the descriptive literature is inadequate in this domain. Descriptive grammars typically include one or two pages of information about quantification, consisting of an English gloss for each quantifier, and maybe two or three examples of quantifiers in sentences, without any discourse contexts. This level of description is clearly insufficient as a source of information one could use to construct an explicit semantic or even syntactic analysis.

The goal of this volume, then, is to present work by formal linguists on quantification in a range of different languages. Of course, there is an existing volume which already fulfills that same goal: Bach et al. (1995). The Bach et al. collection is an ideal example of how to apply formal tools to the investigation of quantification cross-linguistically. The current collection is an effort to continue with the agenda set by Bach et al.'s work.

The current collection does differ in a couple of respects from Bach et al. (1995). First, this volume includes *only* papers on (relatively) understudied languages. This was an affirmative action decision, and the reasons for it were outlined above.[1] Second, the current volume does not revolve largely around a central leading idea, as did the Bach et al. volume (D-quantification vs. A-quantification, and the validity or otherwise of Barwise and Cooper's NP-Quantifier Universal). Instead, authors were merely invited to discuss any aspect of quantification in their respective languages, with a focus primarily on quantification in the nominal domain. Several of the papers offer systematic overviews of the syntax and semantics of quantification in particular languages. These papers offer valuable contributions to the documentation of understudied languages, and importantly, they provide enough information to inspire further theoretical research on different aspects of the systems presented. In all, the papers in the volume present and discuss original data from nine different language families (Eskimo-Aleut, Algonquian, Na-Dene (Athapaskan), Austronesian, Basque, Quechua, Otomanguean, Bantu, and Chadic), as well as discussing additional data from further languages based on secondary sources.

[1] As Etxeberria notes in his paper in this volume, Basque cannot really be considered an understudied language. However, Etxeberria points out that within the generative tradition, work on Basque has concentrated on syntax rather than semantics, and there has been relatively little work on quantification in this language.

2 SUMMARY OF PAPERS

Bittner and Trondhjem argue, on the basis of data primarily from Kalaallisut but also from Polish and Bininj Gun-wok, for the existence of 'Q-verbs'. These are complex verbs containing quantificational roots and/or quantificational affixes; their salient property is that there is no way to create tripartite logical forms from them without violating the Q-verbs' lexical integrity. Bittner and Trondhjem propose that Q-verbs involve discourse reference to distributive verbal dependencies. In other words, a Q-verb introduces a discourse referent for an episode-valued function that sends different semantic objects in a plural domain to different episodes. This approach extends Carlson's (1977) original idea that genericity involves reference to kinds rather than quantification. Evidence for the analysis comes in part from the behaviour of Q-verbs with respect to instantiating anaphora. Bittner and Trondhjem conclude with a speculation that their analysis of Kalaallisut Q-verbs may in fact extend to all quantifiers in all languages.

Bruening's paper presents an overview of the syntax and semantics of Passamaquoddy quantification, primarily but not exclusively focusing on quantifiers in the nominal domain. Among other issues, Bruening discusses cardinal vs. proportional readings of weak quantifiers, wh-indefinites, and the syntactic and semantic properties of three different universal quantifiers. Bruening also discusses scopal interactions, presenting data gathered using visual aids such as picture-stories. He shows that the possibility of inverse scope interacts with the direct-inverse system of the language, a finding which has implications both for the syntactic positions of nominal arguments, and for the correct analysis of the inverse.

Cable argues that in wh-fronting languages as well as in wh-in-situ languages, an interrogative C head attracts a Q-particle to the left periphery of the clause. He thus proposes that even in languages like English, the wh-word itself has no quantificational force but is merely carried along when the Q-particle raises. The evidence for his proposal comes mainly from Tlingit, a wh-fronting language which is argued to differ from English only in the phonological overtness of its Q-particle. The difference between wh-fronting languages (such as English and Tlingit) and wh-in-situ languages (such as Japanese or Sinhala) lies in whether the wh-word is a complement of the Q-particle (and thus is raised along with it), or has the Q-

particle adjoined to it (and therefore remains in situ). Cable outlines several implications of his proposal, including consequences for the correct analysis of pied-piping, which for Cable requires no special mechanisms such as feature percolation.

Chung examines the cross-linguistic validity of, and the source of, definiteness effects; her proposals are based on data from Maori and Chamorro. In particular, Chung investigates possessor dominance (PD), the phenomenon whereby the strength or weakness of a possessed DP can be determined by the strength or weakness of the possessor. Chung shows that although Maori exemplifies both of Milsark's (1974) definiteness effects (requiring the pivot of an existential clause to be weak, and the subject of an individual-level predicate to be strong), the language lacks PD; hence, PD is not universal. Chamorro also displays both of Milsark's definiteness effects, but exhibits PD only for the second. Chung argues that Ladusaw's (1994) semantic-pragmatic account of the individual-level predicate definiteness effect can be generalized to PD in Chamorro, but Diesing's (1992) syntactic account cannot.

Etxeberria's paper begins with an overview of the syntax and semantics of determiners and nominal quantifiers in Basque. Etxeberria then shows that (most) strong quantifiers obligatorily co-occur with an overt D, while weak quantifiers may not co-occur with D. He argues that the QP-internal D introduces the contextual domain restriction for the quantifier, and that languages differ with respect to whether they overtly or covertly restrict their quantificational domain. Etxeberria further argues that Basque provides evidence that the contextual domain restrictor can combine either with the quantifier, or with the nominal expression (cf. debate in Stanley and Szabó 2000, Martí 2003, among others).

Faller and Hastings discuss the extent to which Cuzco Quechua data support standard theoretical distinctions between classes of quantifiers based on presuppositionality, cardinality, distributivity, and definiteness. Their discussion focuses on three noteworthy phenomena in Cuzco Quechua. The first is distributive suffixes, including the restrictions they place on the distributive share or the distributive key, and their co-occurrence possibilities with different universal quantifiers. The second is the ability of some quantifiers to take personal inflection – an ability which Faller and Hastings argue correlates with the property of presuppositionality. The third is the quantifier *wakin* 'some', which is excluded from existential sentences and which Faller and Hastings analyse as presuppositional and proportional.

Keenan's paper presents a comprehensive overview of nominal quantification in Malagasy. Keenan documents three main classes of quantifiers: generalized existential quantifiers, generalized universal quantifiers, and proportional quantifiers. Interesting features of Malagasy which are discussed include the plethora of different universal quantifiers (Keenan discusses eight different universals), and the issue of what counts as 'definite' in Malagasy, both for the purposes of taking the 'definite article' *ny* and for being licensed as the sister to the main predicate.

Lee's paper argues that quantifiers in San Lucas Quiaviní Zapotec are not categorially determiners. Lee provides evidence that existential and negative existential elements function as main predicates in SLQZ, and that the universal quantifier *ra'ta'* corresponds to English *all* rather than *each:* following ideas found in Brisson (1998), Lee analyzes *ra'ta'* as a non-quantificational modifier. She further argues that there are no determiners in SLQZ which access the common ground in discourse (i.e., are definite or specific). The inability of SLQZ DPs to access to the common ground is used to explain the absence of quantificational Ds in this language (following ideas found in Matthewson 1998 for Salish).

Zerbian and Krifka's paper provides an overview of quantification in Bantu, concentrating mainly on data from Swahili and Northern Sotho. Zerbian and Krifka document intersective quantifiers, universals and proportionality quantifiers. They observe that Bantu languages have few genuine quantifiers. Instead, a large variety of different grammatical structures are utilized, both in the nominal and the verbal domain. Zerbian and Krifka find no determiner negation in the family; the absence of determiner negation is in fact a property shared by almost all the languages discussed in this volume. Zerbian and Krifka also discuss the Bantu pre-prefix and its relationship with (in-)definiteness.

Zimmermann provides an overview of the syntax and semantics of quantification in Hausa. He discusses the expression of (in-)definiteness, providing an analysis of bare nouns as lacking their own quantificational force, and of the definite article as encoding neither uniqueness, nor familiarity in the common ground, but rather familiarity or givenness in the previous discourse (cf. Newman 2000). Zimmermann shows that syntactically and semantically, adnominal quantifiers in Hausa divide into three classes: syntactic modifiers (weak quantifiers), functional heads (one existential and one universal/free choice quantifier), and nominal heads occurring in complex N-N constructions (proportional quantifiers). He reports on the scopal possibilities of the various quantifiers, and he contrasts two different universal quantifiers, one of which is distributive and one of which is not.

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I would like to express my gratitude to the authors of this collection, who have been highly professional as well as friendly throughout the process. It has been a real pleasure to work with them. I would also like to thank Pierre Pica and Johan Rooryck for the original idea for the volume, and in particular Pierre for his encouragement along the way. Many thanks are due to the reviewers of the papers, who gave very useful and constructive feedback. As usual, I owe a debt of gratitude to Henry Davis for his constant linguistic and personal support.

As a final note, I would like to apologize if I have accidentally offended any semanticists who work on quantification in understudied languages, by not inviting them to participate in the volume. These choices are always somewhat random, and omissions were not badly intended.

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2

QUANTIFICATION AS REFERENCE: EVIDENCE FROM Q-VERBS

*Maria Bittner and Naja Trondhjem**

1 INTRODUCTION

Formal semantics has so far mostly focused on three categories of quantifiers (*Q*)—to wit, *Q-determiners* (e.g. *every*), *Q-adverbs* (e.g. *always*), and *Q-auxiliaries* (e.g. *would*). All three form constructions that can be analyzed in terms of tripartite logical forms (*LF*s), consisting of a quantifier, the restriction, and the nuclear scope. This view has been implemented, with varying details, by most formal theories of natural language quantification, including landmark studies by Montague (1973), Lewis (1973, 1975), Barwise and Cooper (1981), Kratzer (1981), Heim (1982), Kamp and Reyle (1993), Partee (1995), and Matthewson (2001).

Heim (1982) develops a unified dynamic semantics for Q-determiners (1a), Q-adverbs (1b), Q-auxiliaries (1c), as well as what she takes to be a covert universal quantifier (□) in donkey conditionals (1d), by assigning all of these constructions parallel tripartite LFs (1′a–d).

(1) a. *Every* man arrived.
b. If a restaurant is good, it is *always* expensive.
c. If a cat has been exposed to 2.4–D, it *must* be taken to a vet immediately.
d. If a man owns a donkey, he beats it with a stick.

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(1′)

	quantifier	restriction	nuclear scope
a.	$every_2$	[$\__2$ man]	$\exists$[$\__2$ arrived]
b.	$always_1$	[if a restaurant$_1$ is good]	$\exists$[it$_1$ is $\_$ expensive]
c.	$must_1$	[if a cat$_1$ has been exposed …]	$\exists_2$[a vet]$_2$ [it$_1$ $\_$ be taken to $\__2$ immed.]
d.	$\square_{1,2}$	[if a man$_1$ owns a donkey$_2$]	$\exists_3$[a stick]$_3$ [he$_1$ beats it$_2$ with $\__3$]

Assuming LF-based interpretation, Heim formulates semantic rules that predict uniform semantic behavior across all of these constructions—e.g. in relation to anaphoric reference from pronouns in the nuclear scope to indefinite antecedents in the restriction, and variable, but predictable, quantificational force of indefinites in the restriction as well as the nuclear scope.

Heim's uniform and general semantics is theoretically attractive, but subsequent research has shown it to be empirically incorrect. For example, both Q-adverbs (e.g. *usually*, *mostly*) and Q-determiners (e.g. *most*) are predicted to quantify over cases (*n*-tuples of semantic objects). In fact, it has been shown that Q-determiners quantify only over individuals (the proportion problem, see e.g. Partee, 1984; Rooth, 1987; Kadmon, 1987). In view of this problem, as well as crosslinguistic evidence, Partee (1991) distinguishes *D-quantifiers* (our Q-determiners) from *A-quantifiers*, where 'A' is mnemonic for "the cluster of Adverbs, Auxiliaries, Affixes, and Argument-structure Adjusters". She hypothesizes that this binary morpho-syntactic classification has a crosslinguistic semantic correlate: D-quantifiers quantify over individuals, whereas A-quantifiers quantify over "cases, events, or situations".

Partee's hypothesis is not entirely clear because the terms *events, situations*, and *cases* are not synonymous in formal semantics. The phenomena that motivate these three types of semantic objects are different—e.g. temporal anaphora for events (see Kamp, 1979; Partee, 1984; Webber, 1988; etc), counterfactuals for situations (e.g. Kratzer, 1989), and Q-adverbs for cases (e.g. Lewis, 1975; Heim, 1982). It is only for Q-adverbs that all the three types of semantic objects have been used, in different analyses, to capture essentially the same facts (compare e.g. the analysis by Heim, 1982, in terms of cases, with Heim, 1990, in terms of situations, and Kamp and Reyle, 1993, in terms of events). We therefore tentatively interpret Partee's hypothesis as the following empirically testable claim: Crosslinguistically, all A-quantifiers quantify over the same type(s) of semantic objects as English Q-adverbs. That is, it should be possible to paraphrase, or translate, any A-quantifier using an English Q-adverb.

On this empirically testable interpretation, Partee's hypothesis is falsified by some of the very A-quantifiers she cites (in Partee, 1995) as supporting evidence—e.g., the ASL exhaustive suffix in (2), and the Slavic distributive prefix *po-* (our example (3)).[1] In Partee's terminology, the Slavic *po-* is an Argument-structure Adjuster because it imposes a constraint on the object NP (ACC), requiring it to be semantically plural (plural set, plurality, or the like).

[1] The Polish examples were observed and/or constructed by Bittner, who is a native speaker, and checked with a non-linguist consultant. In the glosses lexical categories are in lower case, while grammatical categories are in small caps. The following abbreviations are used for grammatical *tense*: NPST = non-past, PST = past; *aspect*: IPF = imperfective, PFV = perfective; *case*: ACC = accusative, DAT = dative, GEN = genitive, INS = instrumental, LOC = locative; and *gender* (indicated only when semantically significant): F = feminine, M = masculine, N = neuter.

(2) American Sign Language
[*woman*]$_{\text{TOP}}$ *book* 1SG-*give*-***exhaustive***
I gave each woman a book. (Partee, 1995, (11g), citing Klima and Bellugi, 1979)

(3) Polish (Slavic: Poland)
[To support the whaling industry in Greenland, in the late 18th century,…]

Dania	***po-budowa-ła***	*stacje*	*wielorybnicze*
Denmark	[dist-build$^{\text{IPF}}$]$^{\text{PFV}}$-PST.SG	stations.ACC	whaling.PL.ACC
co	*kilka-set*	*kilometrów*	*wzdłuż* *zachodniego* *wybrzeża* *Grenlandii*
dist	few-hundred	km.GEN	along west.SG.GEN coast.GEN Greenland.GEN

Denmark established whaling stations every few hundred kilometers all along the west coast of Greenland.

In ASL (2), judging by the English translation (***each*** *woman*), the exhaustive Q-suffix does not quantify over events, but over individuals—to wit, the topical women. ASL (2) could be rendered with an English Q-adverb, *The women were* {***each***, ***all***} *given a book* (*by me*), but this alternative translation only confirms that the quantification is over individuals, not events.

Similarly, the Slavic distributive Q-prefix *po-* does not quantify over events.[2] Instead, it quantifies over places, individuals or, arguably, subintervals of a bounded period (exemplified in (3), (42iii, iv) and (26b), respectively).[3] In addition, the Q-prefix *po-* has an aspectual, perfectivizing effect (e.g. compare imperfective (26a) vs. perfective (26b); on (im)perfective semantics see Kamp, 1979; Kamp and Rohrer, 1983; and section 2.2 below). For example, in Polish (3) the distributive Q-prefix *po-* quantifies over a set of places located within the topical area (part of Greenland suited to support the whaling industry in the late 18th century) and specified by two optional modifiers: 'every few hundred kilometers' and 'along the west coast of Greenland'. Possible English translations of the distributive effect of *po-* in (3) include a Q-adverb (***all*** *along the west coast*) and a Q-adjective (*along the* ***whole*** *coast*). Both translations confirm that *po-* in (3) quantifies over places, not events.

Another counterexample comes from the polysynthetic Gunwinyguan language Bininj Gun-wok[4] spoken in North Australia. In this language verbal Q-affixes include a pluractional

[2] Filip and Carlson (2001) endorse Partee's proposal for Czech, but in the one example they explicitly analyze they quantify over individuals—as in ASL (2) and Polish (42iii, iv)—not over events.

[3] (26b) contains the so-called 'delimitative' *po-*, which some linguists (e.g. Isachenko, 1962; Filip, 1999; Młynarczyk, 2004) analyze as another prefix, and others (e.g. Stanisławski, 1982; Swan, 2002), as another use of the same prefix *po-*.

[4] This language has also been referred to as *Kunwinjku (Gunwinggu)* or *Mayali*, after two major dialects. According to Evans (2003), all of the dialects share the same grammar, including three patterns of reduplication.

reduplicative affix (forming stems glossed 'stem+stem'), exemplified in (4i, iii, iv):

(4) Bininj Gun-wok (Gunwinyguan: North Australia)
[Today Kodjdjan gathered some fish poison plants and threw them into the water.]

i. *ngarri-**nah+na**-ng djenj dowe-ng kodjka-ng.*
1PL-look+look-PFV.PST fish 3.PST.die-PFV.PST 3.PST-(fish)float.up-PFV.PST
We watched as the fish died and floated up to the surface.

ii. *Kumekke-beh mambard me-y*
there-ABL billycan 3/3.PST-get-PFV.PST
Afterwards she got a billycan,

iii. *wurdurd birri-kuk-**me+me**-y*
child 3PL/3.PST-body-get+get- PFV.PST
and the children picked up all the dead bodies,

iv. *birri-**kurrmeh+kurrme**-ng mambard-kah.*
3PL/3.PST-put+put-PFV.PST billycan-LOC
and put them in the billycan. (Evans, 2003, pp. 703–704)

Newman (1980, 1990), who coined the term *pluractional verb*, cites the following description as a paradigm example of the phenomenon:

> Many languages of the Nigerian Middle Belt display plural [i.e. pluractional] verb roots, which indicate that the verbal action is characterized by one or another kind of multiplicity: it can happen habitually; it can be executed by a certain number of subjects; it can be applied to a certain number of objects; it can continue over a longer period of time; or it can be performed at different places. (Gerhardt, 1984, p. 12])

Pluractional reduplication in Bininj Gun-wok also fits this description, which suggests (at least) two formal analyses. According to Lasersohn (1995), a pluractional verb is a predicate of a plural set of events—like a plural noun, e.g. *dogs* (pace Scha, 1984; Link, 1987). On this view, a pluractional verb says that there is a plural set of such-and-such events. A competing analysis, which we propose, is that a pluractional verb quantifies over a salient plural set of semantic objects (individuals, places, times, or whatever) and maps each object from that set to a different event. On this analysis, a pluractional verb says that for each object in the plural domain set there is a different such-and-such event. This truth condition is

In Evans's data the pluractional (his 'iterative') reduplication is by far the most common. There are also examples of what he calls 'inceptive reduplication', which involves partial reduplication and indicates partial realization (e.g. *yame-* 'spear' > *yah+yahme* 'try to spear'), and 'extended reduplication', which involves epenthetic disyllabic reduplication and indicates spatial distribution (e.g. *wirrkme-* 'scratch' > '*wirri+wirrkme-* 'scratch all over'). For ease of comparison we use the same glosses as for Polish (ftn. 1) and Kalaallisut (ftn. 6). In particular, we regloss Evans's 'augmented' and 'unit-augmented' number as 'plural' (PL) and 'dual' (DU), respectively. This correctly represents the meaning for all persons except the first person inclusive ('me, you, and possibly others').

stronger than Lasersohn's. Discourse (4) shows that at least some instances of pluractional verbs are quantifiers, not predicates—i.e., the pluractional affix in Bininj Gun-wok is a Q-affix.

In (4i) the pluractional affix combines with *na-* 'see, look' to derive *nah+na-* 'watch'. Given the initial context either analysis seems viable. That is, in this context, *nah+na-* could say that there is more than one looking event. Alternatively, it might partition the result time of the aforementioned event (throwing fish poison into the water) into subintervals and say that, for each subinterval, there is a different (plural set of) looking event(s).

In (4iii), on the other hand, the pluractional verb '3PL/3.PST-body-get+get-PFV.PST' quantifies over a contextually salient plural set of individuals—to wit, the set of dead fish evoked in (4i). In this context, the two analyses make different predictions, and only the stronger, quantificational, analysis correctly predicts that for *every* fish, there is an event of one or more of the children getting the body of that fish.

In (4iv) the pluractional verb '3PL/3.PST-put+put-PFV.PST' is likewise quantificational. Here the quantification might be over the contextually salient plural set of fish bodies, evoked in (4iii). Alternatively, it might be over the likewise salient plural set of body-getting events—i.e. for *each* body-getting event there is a different event of putting that body into the billycan by the same agent (one or more of the children).

None of these three instances of the pluractional Q-affix in Bininj Gun-wok corresponds to an English Q-adverb. The instance in (4i) might be rendered by the English iterative verb *keep* v-*ing*, while the instances in (4iii) and (4iv) seem to correspond to English Q-determiners, *all* or *each*.

Thus, (our construal of) Partee's hypothesis, that all A-quantifiers quantify over the same type(s) of semantic objects as English Q-adverbs, is empirically incorrect for Q-affixes. In general, it seems to us problematic to oppose one category (D-quantifiers) to all others (A-quantifiers). As the counterexamples in (2)–(4) illustrate, it is difficult to formulate semantic generalizations about an unnatural syntactic class. Although Partee's notion of 'A-quantifier' is often cited (e.g. Bach *et al.*, 1995; Filip, 1999; Evans, 2003; etc), it has not led to the discovery of any crosslinguistic semantic generalizations that characterize A-quantifiers—i.e. the class of Q-adverbs, Q-auxiliaries, and Q-affixes—as opposed to Q-determiners. Moreover, an unnatural syntactic class, which mixes dissimilar categories, obscures semantic generalizations that characterize each category—e.g. Q-determiners as well as other determiners, or verbal Q-affixes as well as other verbal affixes. We therefore do not use Partee's terminology, opting instead for a terminology that highlights both the morpho-syntactic category (*determiner, adjective, adverb, auxiliary, verbal affix*, etc) and the quantificational semantics (*Q-*).

In pursuit of semantic universals about categories and quantifiers, we focus on a universal category, *verb*, and the quantificational sub-category, *Q-verb*—i.e., a complex verb containing one or more Q-roots and/or Q-affixes. Paradigm examples of Q-affixes include the exhaustive affix in ASL (2), the distributive *po-* in Polish (3), the reduplicative pluractional affix in Bininj Gun-Wok (4i, iii, iv), as well as assorted derivational suffixes used to express

quantification in the polysynthetic Eskimo-Aleut language Kalaallisut[5] of Greenland—e.g., in (5i)[6], the cn\iv-suffix *-kkutaar* 'v in units of cn'[7], the rn\cn-suffix *-gii* 'set of rn-relata'[8], and in (5iii), the rn\cn-suffix *-lliq* '-most'[9].

(5) Kalaallisut (Eskimo-Aleut: Greenland)

i. *Ullumi* *atuartitsigama*
ulluq-mi *atuar-tit-si-ga-ma*
day-SG.LOC study-cause-apass-FCT$_T$-1SG
Today in my class (*lit.* when I was causing some individual(s) to study)
atuartut *marlukkuutaarlutik* *suliqatigiipput.*
atuar-tuq-t *marluk-**kkuutaar**-llu-tik* *suli-qat-**gii**-**g**-pu-t.*
study-iv\cn-PL two-v.in.units.of-ELA$_T$-3PL$_T$ work-mate-set-cn\iv-IND.IV-3PL
the students^T worked together (*lit.* with each other) in pairs.

ii. *Suliqatigiit* *tamarmiullutik*
suli-qat-gii-t ***tamaq**-mik-u-llu-tik*
work-mate-set-PL all-pl$_T$-be-ELA$_T$-3PL$_T$
The groups^T were all$_T$
assigiinngitsunik *sammisaqarput.*
assi-gii-g-nngit-tuq-nik *sammi-gaq-qar-pu-t*
copy-set-cn\iv-not-iv\cn-PL.MOD work.on-tv\rn-have-IND.IV-3PL
working on different (*lit.* unlike each other) tasks.

iii. *Annakkut* *siulliullutik* *inirput.*
Anna-kku-t *siu-**lliq**-u-llu-tik* *inir-pu-t.*
Anna-&co-PL front-most-be-ELA$_T$-3PL$_T$ finish-IND.IV-3PL
Anna's group^T finished first.

[5] Other designations for this language include (*West*) *Greenlandic* (e.g. Kleinschmidt, 1851; Fortescue, 1984; Dahl, 1985; Bittner, 1987; van Geenhoven, 2004), *Inuit* (Bok-Bennema, 1991; Bittner, 1994), and *Eskimo* (Bergsland, 1955; Bittner, 1995). We prefer native speakers' own designation, *Kalaallisut*, because it highlights the political status of this language as the official language—not a regional dialect—of a country, *Kalaallit Nunaat* (Greenland), as well as the linguistic relation to Inuktitut and other languages belonging to the Inuit branch of the Eskimo-Aleut family.

[6] The Kalaallisut examples were observed and/or constructed by Bittner and then checked or translated by Trondhjem, who is native speaker. Kalaallisut has a great deal of fusion. For clarity, line 1 is in the Kalaallisut orthography minus allophonic variants (*e*, *o*, *f* of *i*, *u*, *v*); line 2 is the morphological analysis; line 3 are the glosses; line 4 is a free English translation. Abbreviations in the glosses for *matrix moods*: IND = indicative, IMP = imperative, NEG = negative, OPT = optative, QUE = interrogative; *dependent moods*: ELA = elaborating, FCT = factual, HAB = habitual, HYP = hypothetical, NON = non-factual; *case*: ABL = ablative, EQU = equalis ('as, like'), ERG = ergative, MOD = modalis (modifier), VIA = vialis (path); *centering*: T = topic, ⊥ = background, IV = property of topic; TV = relation of topic to background; *derivation*: prf = perfect aspect, iv = intransitive verb, tv = transitive verb, cn = common noun, rn = relational noun, *a**b* = suffix that attaches to category *a* to form *b*.

[7] E.g. *marluk-* 'two' > *marlu**kkuutaar-* 'v in pairs'; *ilaqutarii-* 'family' > *ilaqutarii**kkuutaar-* 'v in family groups'; *suliqatigii-* 'team' > *suliqatigii**kkuutaar-* 'v in teams'.

[8] E.g. *suliqat-* 'work mate of' > *suliqati**gii-*** 'work mates', *nuliaq-* 'wife of' > *nuli**arii-*** 'husband and wife'.

[9] E.g. *siu-* 'front of' > *siu**lliq*** 'first'; *at-* 'bottom of' > ***a**lliq* 'lowest'; *iluq-* 'inside of' > *ilur**liq-*** 'innermost'.

In general, a Kalaallisut verb consists of a base—root plus any number of derivational suffixes (all in lower case)—followed by the mood inflection (e.g. 'FCT$_T$', for a familiar fact about the topical subject), verbal agreement (e.g. '1SG'), and any number of clitics (e.g. *=lu* 'and' in (22a)). Thus, in addition to any number of derivational Q-suffixes, Kalaallisut Q-verbs may contain Q-roots (e.g. *tamaq-* 'all-' in (5ii)).

English—an isolating language with few affixes—does not have Q-verbs. Since most current theories of discourse dynamics are based on English, the dynamics of Q-verbs has so far received little attention, although we now have formally precise theories of the dynamics of English Q-determiners (e.g., Kamp and Reyle, 1993; van den Berg, 1994; Dekker, 2003; Nouwen, 2003), English modals and attitude reports (e.g. Kibble, 1994; Frank, 1996; Stone, 1997; Geurts, 1999; Brasoveanu, 2007), as well as temporal anaphora by English verbs (e.g. Kamp and Reyle, 1993; Stone, 1997).[10]

The research on the dynamics of English Q-categories and English verbs illuminates the crosslinguistic dynamics of Q-verbs and vice versa. The present paper is an in-depth study of the dynamics of Q-verbs in Kalaallisut discourse, with supplementary evidence from Bininj Gun-wok and Polish. Unlike Partee (1991, 1995), we do not think that semantic generalizations are best stated in structural terms. So instead of LF-based semantics, we opt for direct surface-based interpretation. This is possible using the tools of recent dynamic theories, especially anaphoric presupposition (van der Sandt, 1992; Geurts, 1999; etc.), centering (e.g. Stone and Hardt, 1999; Bittner, 2001; Nouwen, 2003), incremental update (Bittner, 2003, 2007a), and quantification as discourse reference (e.g. van den Berg, 1994; Stone, 1997; Bittner, 2007a).

The basic idea of quantification as reference can be traced to Carlson (1977), who analyzes English bare plurals as reference to a (*global*) *kind*—technically an individual, but in one-one correspondence with a function from all worlds and times to the set of all instantiating objects. Van den Berg (1994) assimilates English Q-determiners (e.g. *every*) to collective transitive predicates (e.g. *jointly collect*), by modeling information states as plural sets of assignments. A Q-determiner relates two discourse referents, each assigned a set of individuals by the set of assignments that constitute the input state of information. Both discourse referents are available for anaphora in subsequent discourse. Brasoveanu (2007) extends van den Berg's approach to quantification and anaphora by English modals. An alternative discourse referential approach has been developed by Stone (1997), who instead of plural information states uses discourse referents for functional dependencies—e.g. modals evoke functions from worlds to various types of objects. Extending Stone's approach, Bittner (2007a) analyzes habitual quantification in Kalaallisut discourses like (6) in terms of reference to modally and spatio-temporally localized habits and kinds. Formally, a (*local*) *habit* is a function that sends each instantiation world and time to the instantiating episode. Similarly, a (*local*) *kind* sends

[10] All of these authors claim to theorize about '(natural) language', but they only present evidence from English—an oddly parochial view of natural language semantics.

each instantiation world and episode to the instantiating nominal object (individual, time, place, or proposition).

(6) i. *Ataataga* *skakkirtarpuq.*
ataata-ga *skakki-r-**tar**-pu-q.*
dad-1SG.SG chess-do-habit-IND.IV-3SG
My dad^{T} plays chess.

ii. *Aqaguani* *uqarajuttarpuq:*
aqagu-a-ni *uqar-**gajut-tar**-pu-q*
next.day-3SG$_{\perp}$.SG-LOC say-often-habit-IND.IV-3SG
The next day he$_{T}$ often says:

iii. *"Ajugaasimavunga."*
"ajugaa-sima-pu-nga"
"win-prf-IND.IV-1SG"
"I won."

iv. *Siullirmik* *uanga* *tamanna* *qularaara.*
*siu-**lliq**-mik* *uanga* *tamanna* *qulari-pa-ra*
front-most-SG.MOD I that doubt-IND.TV-1SG.3SG
The first time I^{T} doubted it$_{\perp}$.

Bittner (2007a) interprets the Kalaallisut discourse (6) directly, by incremental update. More precisely, sentence (6i) *evokes*—i.e. introduces a discourse referent for—a habit instantiated by processes where the currently topical individual (the speaker's father) plays chess. The indicative mood (IND) presupposes current verifiability. To satisfy this, the habit must be instantiated in the speech reality by the time of the speech act. In addition, the evoked habit is required to be current at the *topic time* (aka *reference time*)—here, the speech time, by discourse-initial default.

Sentence (6ii) evokes a real (IND) reporting habit of the topical individual. The reporting events which instantiate this habit occur at times of the currently topical kind. What this amounts to depends on how we resolve the anaphoric presupposition of the quantifier *-gajut* 'often'. On one reading, for many chess games the topical kind of time is instantiated once during the day after the game. On another reading, for each chess game the topical kind of time is instantiated many times during the day after the game. (The English translation is similarly ambiguous.) In either case, in each reporting event the agent expresses a certain kind of proposition. The discourse referent for this propositional kind is elaborated by the direct quote (6iii). In every world where the proposition expressed in the current reporting event is true, the reporting agent at the time of the reporting event is in the result state (evoked by perfect aspect, pace Moens and Steedman, 1988) of winning the previous day's chess game.

Referents for habits and kinds support instantiating anaphora. Thus, in (6iv) the initial NP ('front-most-SG.MOD') evokes the first event that instantiates the aforementioned reporting habit and updates the topic time to the result time of this event. The subject NP 'I' updates the topical individual to the speaker, while the object NP 'that', a modal instantiating anaphor, updates the background to the proposition expressed in this first reporting event (i.e. the

proposition that instantiates the aforementioned kind of proposition in this event). Finally, the verb relates all of these discourse referents: it evokes a real (IND) state of doubt experienced, at the current topic time (the result time of the first reporting event), by the topical individual (the speaker of (6)) in relation to the background modality (the reported proposition).

We propose that not only habituals, but all Q-verbs involve discourse reference to *distributive verbal dependencies*—i.e. functions that send each element of a plural domain set to a different episode. The analysis we outlined for the Bininj Gun-wok discourse (4) could be implemented in these terms. For Kalaallisut (5) this basic idea can be spelled out as follows.

In sentence (5i) the chain of Q-verbs, jointly equivalent to 'work together in pairs', sets up a discourse referent for a pair-dependent process. First, the topic-elaborating Q-verb (ELA$_{T}$) sets up a discourse referent for a pair-dependent episode. The domain of this distributive verbal dependency is a set of pairs that cover the currently topical students. The matrix Q-verb (IND) further specifies this dependency: each pair is mapped to a real (IND) process in which the members of the pair work with each other as team mates.

In sentence (5ii) the subject NP updates the individual topic to the set of the teams. The topic-elaborating Q-verb (ELA$_{T}$) evokes a team-dependent state that all the teams experience at the same time. The matrix verb (IND) specifies this dependency: each team is mapped to a state of the team working on a task that differs from the task of any other team.

The instantiating anaphora in (5iii) can then be analyzed along the same lines as in (6iv). The subject NP updates the individual topic to Anna's group. The topic-elaborating Q-verb (ELA$_{T}$) presupposes an ordered set of states. In (6iv) this anaphoric presupposition can be linked to final sub-states of the aforementioned team-dependent states of the teams working on their respective problems. The Q-verb evokes the first of these final sub-states and updates the topic time to its duration. It also identifies the experiencer of this state as the currently topical (plural) individual—Anna's group. This, in turn, requires Anna's group to be in the domain of the presupposed team-dependent final sub-states. The matrix verb (IND) further specifies this state of the topical group as the time when the group finishes its work. The overall effect is similar to the English *be the first to finish*, except that the syntactic dependency is reversed.

In general, we propose that Q-verbs are a natural semantic sub-class of verbs. In terms of discourse reference, what characterizes verbs is that they evoke episode(-valued function)s (Bittner, 2003, 2007a, b). Q-verbs are the sub-class of verbs that evoke *distributive* episode-valued functions—i.e, functions that send each element of a plural domain set to a different episode. In terms of tripartite structures, our domain set corresponds to the restriction (domain of quantification). This need not consist of episodes, but can be of any type (contra Partee, 1991, 1995). Our range set corresponds to the set of verbal episodes that get existentially bound ($\exists$) in the nuclear scope. In Heim's dynamics there is no discourse referent for this set. Therefore, it cannot be correlated with the domain set or anaphorically referred to in any way in subsequent discourse. In our dynamics it can be (as in Stone, 1997, and related work).

The paper is structured as follows. In section 2 we present a crosslinguistic discourse referential theory of verbs (extending Bittner, 2007b). In section 3 we apply this theory to Q-verbs, by factoring in distributivity. We then show that discourse anaphora to distributive verbal dependencies explains some otherwise puzzling characteristics of Q-verbs—to wit, scope behavior (section 4), quantificational domain and force (section 5), and instantiating anaphora (section 6). Section 7 presents our conclusions and predictions for other Q-categories.

2 Discourse Referents for Verbs

Of the three languages in our sample, Kalaallisut, which has no grammatical tense (Shaer, 2003; Bittner, 2003, 2005, 2007a, b), has the most explicit aspectual system. In addition to *events* and *states*—basic aspectual types, familiar from binary perfective/imperfective systems (see Kamp, 1979; Kamp and Rohrer, 1983)—the aspectual system of Kalaallisut distinguishes two functional types, *processes* and *habits*. Processes are complex episodes that support stage-anaphors (e.g. *next*).[11] To represent this, we model processes as functions that send each discourse-transparent stage (event), except the end, to the next stage. Habits support predictions and instantiating anaphors (e.g. *the first time*). To capture these phenomena, we model habits as functions that send each instantiation world and time to the instantiating episode. In Kalaallisut, discourse anaphora aligns these four aspectual types with corresponding nominal types—*events* with *atomic animates*; *states* with *atomic inanimates*; *processes* with *pluralities*; and *habits* with *kinds* (contra e.g. Mourelatos, 1978; Bach, 1986). Section 2.1 briefly introduces this discourse-referential theory of Kalaallisut verbs, which is developed more fully in Bittner (2003, 2005, 2007a, b).

In section 2.2 we use centering—i.e. prominence-ranking of discourse referents (Grosz *et al.*, 1995; Stone and Hardt, 1999; Bittner, 2001, 2007a)—to extend this theory to Polish and Gun-wok, both of which have a binary perfective/imperfective system.[12] In Polish this grammaticalized aspectual system does not distinguish *episodes* from *habits* (Klimek, 2006). Moreover, in episodic contexts it gives primary prominence to the two basic aspectual types, *events* (perfective) and *states* (imperfective) (cf. Kamp and Rohrer, 1983, on French), and only secondary prominence to functional types, such as *processes*. A semantic universal that holds across this linguistic diversity is that the most prominent discourse referent of a verb is an episode (event, state, or process) or an episode-valued function (pace Bittner, 2003, 2007a).

[11] In Aristotelian/Vendlerian theories the term *process* is restricted to atelic activities (e.g. Mourelatos, 1978; Bach, 1986; Parsons, 1990). We follow ordinary English, where *process* implies stages but not (a)telicity.

[12] The terminology *perfective/imperfective* was originally introduced for Slavic (by Miklosich, 1926–73, reprinted from 1868–1875) but has since been used for a variety of other aspectual contrasts (see Dahl, 1985, for a sample). We analyze Polish as a paradigm example (Bininj Gun-wok seems similar) and leave other varieties of (im)perfective systems for future research.

2.1 Kalaallisut

The inflectional system of Kalaallisut distinguishes three categories of words: *nouns*, which inflect for case and nominal agreement (for possessor and number, e.g. *-ga* '1SG.SG' in (6i)); *verbs*, which inflect for mood and verbal agreement (for subject and object, e.g. *-ra* '1SG.3SG' in (6iv)); and *particles*, which do not inflect. In the theory of incremental update developed by Bittner (2003, 2007a) the categories *noun* and *verb*—distinguished by all languages at the sentence level, albeit not necessarily the word level (see Jelinek, 1995)—have semantic import. The most prominent discourse referent of a verb is of a verbal type: an episode or episode-valued function (e.g. a habit). Analogously, the most prominent discourse referent of a noun is of a nominal type: a nominal object (individual, time, place, or proposition) or nominal object-valued function (e.g. a kind). Verbal inflections presuppose that the most prominent referent of the base is of a verbal type, while nominal inflections presuppose that it is of a nominal type.

As already mentioned, Kalaallisut does not have any grammatical tense. Instead, verbs are lexically typed for aspectual type—the type of the most prominent referent of the verbal base—which can be a *state*(-valued function), *event*(-valued function), *process*(-valued function) or *habit*(-valued function). Verbal inflections relate the topmost referent of the verbal base, in accordance with its aspectual type, to the currently topical referents—individual, modal, and temporal. Of these, individual and modal topics are constrained by the anaphoric presuppositions of the verbal inflections for agreement and mood. In effect, not only individual and modal reference, but also temporal reference, is as precise as in English (see Bittner 2003, 2005, 2007a, b, for detailed evidence and analysis).

We now turn to describe the Kalaallisut system of verbal inflection (section 2.1.1) and lexical aspect (2.1.2), and outline an analysis of both in terms of discourse reference.

2.1.1 Verbal inflection. Kalaallisut verbs inflect for mood and agreement with the subject as well as the object. There are two separate mood paradigms, one for matrix verbs and another for dependent verbs. Matrix moods relate the speech event—more precisely, the current perspective point—to the topical modality. The *indicative* mood (7a) identifies the speech event as a report of a fact; the *negative* mood (7b) identifies it as a report of a non-fact; and the *interrogative* mood (7c), as an act of asking a question. The topical modality for all of these epistemic moods is the speech reality. In contrast, future-oriented moods concern the speaker's desires rather than beliefs. The *optative* mood (7d) identifies the speech event as an expression of a wish, while the *imperative* mood (7e) identifies it as a request that the adressee realize the topical modality the speaker desires during the result state of this speech act. In each case the subject agreement identifies the currently topical individual (T), while the object agreement identifies the most prominent individual in the background ($\perp$).[13]

[13] In the English translations, the introduction of a new topic or background is marked with the superscript $^{\top}$ or $^{\perp}$,

(7) a. *Juunap* *asavaanga.*
Juuna-p *asa-**pa**-anga*
Juuna-SG.ERG love-IND.TV-3SG.1SG
Juuna^{T} loves me$_{\perp}$.

b. *Juunap* *asanngilaanga.*
Juuna-p *asa-nngit-**la**-anga*
Juuna-SG.ERG love-not-NEG-3SG.1SG
Juuna^{T} doesn't love me$_{\perp}$.

c. *Juuna,* *asavinga?*
Juuna *asa-**pi**-nga.*
Juuna love-QUE-2SG.1SG
Juuna^{T}, do you$_{T}$ love me$_{\perp}$?

d. *Juuna* *sinilli.*
Juuna *sinig-**li**-Ø*
Juuna be.asleep-OPT-3SG
Let Juuna^{T} sleep.

e. *Juuna,* *sinilluarit!*
Juuna *sinig-lluar-**Ø**-t*
Juuna be.asleep-well-IMP-2SG
Juuna^{T}, sleep well!

The dependent moods classify the background circumstances of the matrix situation as *factual* (8a, b), *non-factual* (9), *hypothetical* (10a, b), *habitual* (11a, b), or *elaborating* (12a, b). In addition, dependent mood inflections encode the centering status of the dependent subject, which can be either topical ($_{T}$)—i.e. anaphoric to the matrix subject—or backgrounded ($_{\perp}$).

(8) a. *Ole* *angirlarami* *ulapilirpuq*
Ole *angirlar-**ga**-Ni* *ulapig-lir-pu-q*
Ole come.home-FCT$_{T}$-3SG$_{T}$ be.busy-begin-IND.IV-3SG
When/because Ole^{T} came home he$_{T}$ got busy.

b. *Ataata* *angirlarmat* *Ole* *ulapilirpuq.*
ataata *angirlar-**mm**-at* *Ole* *ulapig-lir-pu-q*
dad come.home-FCT$_{\perp}$-3SG$_{\perp}$ Ole be.busy-begin-IND.IV-3SG
When/because Dad$^{\perp}$ came home Ole^{T} got busy.

(9) *Ole* *itissanani* *sinippuq.*
Ole *itir-ssa-**na**-Ni* *sinig-pu-q*
Ole wake.up-prospect-NON$_{T}$-3SG$_{T}$ be.asleep-IND.IV-3SG
Ole^{T} is fast asleep. (lit. without prospect of waking up)

(10) a. *Ole* *angirlaruni* *ulapilirumaarpuq.*
Ole *angirlar-**gu**-Ni* *ulapig-lir-jumaar-pu-q*
Ole come.home-HYP$_{T}$-3SG$_{T}$ be.busy-begin-be.sure-IND.IV-3SG
When/if Ole^{T} comes home he$_{T}$ is sure to get busy.

b. *Ataata* *angirlarpat* *Ole* *ulapilirumaarpuq.*
ataata *angirlar-**pp**-at* *Ole* *ulapig-lir-jumaar-pu-q*
dad come.home-HYP$_{\perp}$-3SG$_{\perp}$ Ole be.busy-begin-be.sure.to-IND.IV-3SG
When/if Dad$^{\perp}$ comes home Ole^{T} is sure to get busy.

(11) a. *Ole* *angirlaraangami* *ulapilir(ajut)tarpuq.*
Ole *angirlar-**gaanga**-Ni* *ulapig-lir(-gajut)-tar-pu-q*
Ole come.home-HAB$_{T}$-3SG$_{T}$ be.busy-begin(-often)-habit-IND.IV-3SG
When Ole^{T} comes home he$_{T}$ (often) gets busy.

b. *Ataata* *angirlaraangat* *Ole* *ulapilir(ajut)tarpuq.*
ataata *angirlar-**gaang**-at* *Ole* *ulapig-lir(-gajut)-tar-pu-q*
dad come.home-HAB$_{\perp}$-3SG$_{\perp}$ Ole be.busy-begin(-often)-habit-IND.IV-3SG
When Dad$^{\perp}$ comes home Ole^{T} (often) gets busy.

(12) a. *Olep* *uqarvigaanga* *ulapinnirarluni*
Ole-p *uqar-vigi-pa-anga* *ulapig-nirar-**llu**-Ni*
Ole-SG.ERG say-to-IND.TV-3SG.1SG be.busy-say-ELA$_{T}$-3SG$_{T}$
Ole^{T} told me$_{\perp}$ he$_{se}$ was busy (i.e. Ole said to me: "I am busy.")

b. *Aanip* *uqarvigaanga* *Ole* *ulapittuq*
Aani-p *uqar-vigi-pa-anga* *Ole* *ulapig-**tu**-q*
Ann-SG.ERG say-to-IND.TV-3SG.1SG Ole be.busy-ELA$_{\perp}$.IV-3SG$_{\perp}$
Ann^{T} told me$_{\perp}$ Ole$^{\perp}$ was busy.

Topic-elaboration (ELA$_{T}$) is of particular importance for this study because Q-verbs often play this role (as in (5i, ii, iii)). Unlike other dependent verbs, topic-elaborating verbs do not evoke situations of their own. Instead they are anaphoric to the verbal head they elaborate, forming a verbal chain whose elements evoke and further specify the same situation.

Thus, in (12a) the matrix verb (IND) introduces an event in which the topical individual (Ole) speaks. This event is the antecedent for the following topic-elaboration (ELA$_{T}$), which further specifies it as an event of claiming to be busy. The indicative mood on the matrix verb marks this event as a fact—i.e. according to the current beliefs of the speaker of (12a), it is an event that has actually happened.

In Kalaallisut topic-elaborating dependent clauses can either follow the head verb, as in (12a), or precede it, as in (13). Typical semantic relations between a topic-elaborating dependent verb and the elaborated head verb include identity (as in (12a)) or concurrence (as in (13)). In general, the modal and temporal location of the head situation is determined directly, by the morphological marking on the head verb, while the location of the dependent situation is determined indirectly, via its semantic relation to the head.

and anaphora to the input topic or background, with the subscript $_{T}$ or $_{\perp}$, to give some idea of the discourse function of the grammatical (re)centering system in the Kalaallisut original.

(13) *Nuannaarluni* *angirlarnirarpaa.*
*nuannaar-**llu**-Ni* *angirlar-nirar-pa-a*
be.happy-ELA$_T$-3SG$_T$ come.home-say-IND.TV-3SG.3SG
A. He$_T$ reported him$_\perp$ to have come home happy.
B. He$_T$ happily reported him$_\perp$ to have come home.

Modulo distributivity, topic-elaborating Q-verbs instantiate the same generalizations. For example, in (5i) and (5ii), the topic-elaborating Q-verbs ('two-v.in.units.of-ELA$_T$-3PL$_T$' and 'all-be-ELA$_T$-3PL$_T$') specify the same verbal referents as their respective matrix verbs. That is, the semantic relation is identity—parallel to (12a), modulo distributivity. (12a) evokes a single episode (an event), whereas in (5i) and (5ii) the topic-elaborating Q-verbs evoke distributed episodes—pair-dependent processes in (5i), and pair-dependent states in (5ii). In (5iii) the topic-elaborating Q-verb ('front-most-be-ELA$_T$-3PL$_T$') is concurrent with the head verb ('finish-IND.IV-3PL'). That is, this topic-elaboration is analogous to (13), modulo distributivity. In this case the Q-verb evokes a distributive verbal dependency via an anaphoric presupposition. More precisely, the elaborating Q-verb in (5iii) presupposes a distributive state-valued dependency. This anaphoric presupposition is linked to the aforementioned pair-dependent state evoked by the stative Q-verb ('all-pl$_T$-be-ELA$_T$-3PL$_T$') in (5ii).

In general, topic-elaborating verbs may enter into anaphoric verbal chains as either antecedents or anaphors. The anaphoric link may involve the semantic relation of identity or concurrence, and the antecedent verb may be either in the same sentence or in prior discourse. In particular, these generalizations hold for topic-elaborating Q-verbs, as discourse (5) attests.

2.1.2 *Lexical aspect and temporal anaphora.* Temporal anaphora in Kalaallisut relies on lexical typing of verbal roots and derivational verbal suffixes for aspectual type. In episodic discourse, temporal anaphora in Kalaallisut distinguishes three aspectual types: *states*, *events*, and *processes*. Of these, states and events have no discourse-transparent proper parts, whereas processes consist of two or more discourse-transparent stages (events). Each aspectual type behaves in a distinctive way in relation to temporal anaphora—a complex of phenomena that determine, e.g., temporal defaults, temporal location, and temporal update (see Bittner, 2007b).

For example, in relation to temporal location, Kalaallisut exhibits a three-way contrast, which extends the familiar two-way contrast found in perfective/imperfective systems (Kamp, 1979; Kamp and Rohrer, 1983; see also section 2.2 below). As expected, states hold at the currently topical period (14a, b), while events fall within the topical period (15a, b). Extending this pattern, processes have a designated stage (event) which falls within the topical period (16a, b). The designated stage depends on the discourse relation (Lascarides and Asher, 1993). A causal relation favors stage one (i.e. process begins during the topical period), while a non-causal relation may favor a later stage (process already in progress).

(14) a. *Ataata* *angirlarmat,* *sinippunga.*
ataata *angirlar-mm-at* ***sinig**-pu-nga*
Dad come.home-FCT$_\perp$-3SG$_\perp$ be.asleep-IND.IV-1SG
When Dad$^\perp$ came home I^T was asleep.
b. *Ataata* *angirlarmat,* *anisimavunga.*
ataata *angirlar-mm-at* *ani-**sima**-pu-nga*
Dad come.home-FCT$_\perp$-3SG$_\perp$ go.out-prf-IND.IV-1SG
When Dad$^\perp$ came home I^T was out.

(15) a. *Ataata* *angirlarmat,* *anivunga.*
ataata *angirlar-mm-at* ***ani**-pu-nga*
Dad come.home-FCT$_\perp$-3SG$_\perp$ go.out-IND.IV-1SG
When Dad$^\perp$ came home I^T went out.
b. *Ataata* *angirlarmat,* *sinilirpunga.*
ataata *angirlar-mm-at* *sinig-**lir**-pu-nga*
Dad come.home-FCT$_\perp$-3SG$_\perp$ be.asleep-begin-IND.IV-1SG
When Dad$^\perp$ came home I^T fell asleep.

(16) a. *Ataata* *angirlarmat,* *allakkat* *allappakka.*
ataata *angirlar-mm-at* *allagaq-t* ***allag**-pa-kka*
Dad come.home-FCT$_\perp$-3SG$_\perp$ letter-pl write-IND.TV-1SG.3PL
When Dad$^\perp$ came home I^T {wrote, was writing} a letter (pl).
b. *Ataata* *angirlarmat,* *tiiliurpunga.*
ataata *angirlar-mm-at* *tii-**liur**-pu-nga*
Dad come.home-FCT$_\perp$-3SG$_\perp$ tea-make-IND.IV-1SG
When Dad$^\perp$ came home I^T {made, was making} tea.

According to the theory of Bittner (2007b), the first clause of (14)–(16) updates the topic time to a (*discourse*) *period*: the time of a *state* (here, result state of the home coming). Discourse-initially, the topic time is a (*discourse*) *instant*, the time of the speech *event*, by default. The distinction between topical (discourse) periods and topical (discourse) instants makes no difference for locating states. States hold at the topic time, be it a period (14a, b) or an instant (17). But the difference is important for other episodes. Relative to topical instants, events and processes are not located directly, but via result states. That is, discourse-initially, an event is located so that its result state holds at the speech instant (18) (cf. (15a, b)); and a process, so that the result state of the designated stage holds (19) (cf. (16a, b)).

(17) *Ataata* *sinippuq.*
ataata ***sinig****-pu-q*
Dad be.asleep-IND.IV-3SG
Dad is asleep.

(18) *Ataata* *anivuq.*
ataata ***ani****-pu-q*
Dad go.out-IND.IV-3SG
Dad is out.

(19) *Ataata* *tiiliurpuq.*
ataata *tii-****liur****-pu-q*
Dad tea-make-IND.IV-3SG
Dad {is making, ??has made} tea.

Turning now to habitual discourse, habits are understood to be current at the topic time. In this respect, they behave like states and some processes. But in contrast to both of these episodic types, habits need not be instantiated at the topic time, as (20) and (21) attest:

(20) {*Niaqunguvunga,* *Niaqungusarpunga.*}
{*niaquq-****ngu****-pu-nga,* *niaquq-****ngu-tar****-pu-nga*}
{head-have.aching-IND.IV-1SG head-have.aching-habit-IND.IV-1SG}
{I have a headache (***state***), I have headaches (***habitual states***)}

(21) *Ole* {*skakkirpuq,* *skakkirtarpuq.*}
Ole {*skakki-****r****-pu-q* *skakki-****r-tar****-pu-q*}
Ole {chess-do-IND.IV-3SG, chess-do-habit-IND.IV-3SG}
Ole {is playing chess (***process***), plays chess (***habitual processes***)}

Moreover, habits, unlike episodes, can be temporally located not only in relation to topical periods and instants, but also in relation to topical kinds of time. For each instance of the topical kind of time, the episode instantiating the habit is located in accordance with its aspectual type (see (6) and (11a, b) above, as well as (22a) and (23a) below).

Kalaallisut explicitly distinguishes habits from episodes. Habituality is marked by the habitual mood inflection ('-HAB' in (11a, b)) or a habitual derivational suffix (e.g. *-tar* 'habit'). A habitual suffix is required in unambiguously habitual contexts. These include the obligatory topic-elaboration of the habitual verbal base par excellence, *iliqquri-* 'be in the habit of' (22a), as well as environments where the temporal topic is a kind of time—usually set by the habitual mood ('HAB' in (11a, b)) or a temporal noun in an oblique case (e.g. 'most-PL.VIA' in (23a)):

(22) *Juunap* *iliqqurilirsimavaa*
Juuna-p ***iliqquq-gi****-lir-sima-pa-a*
Juuna-SG.ERG habit.of-rn\tv-begin-prf-IND.TV-3SG.3SG
Juuna^{T} has formed the habit of
a. *ataatanilu* *skakkirtarluni.*
ataata-ni=lu *skakki-r-****tar****-llu-Ni*
dad-3SG$_{T}$.SG=and chess-do-habit-ELA$_{T}$-3SG$_{T}$
[playing chess with his$_{T}$ father]$_{\perp}$.
b.* *ataatanilu* {*skakkirluni,* *skakkiqattaarluni*}
ataata-ni=lu {***skakki-r****-llu-Ni,* *skakki-r-****qattaar****-llu-Ni*}
dad-3SG$_{T}$.SG=and {chess-do-ELA$_{T}$-3SG$_{T}$, chess-do-cyclic.process-ELA$_{T}$-3SG$_{T}$}

(23) [Ole^{T} plays chess.]
a. *Amirlanirtigut* *ajugaasarpuq.*
amirlaniq-tigut *ajugaa-****tar****-pu-q*
most-PL.VIA win-habit-IND.IV-3SG
He$_{T}$ mostly wins.
b.* *Amirlanirtigut* {*ajugaavuq,* *ajugaaqattaarpuq*}
amirlaniq-tigut {***ajugaa****-pu-q,* *ajugaa-****qattaar****-pu-q*}
most-PL.VIA {win-IND.IV-3SG, win-cyclic.process-IND.IV-3SG}

In discourse referential terms, (22b) is ruled out because an episode is of the wrong type to be anaphorically linked to a habit (function from worlds and times to episodes). Similarly, (23b) is out because an episode cannot be located in relation to a kind of time (function from worlds and episodes to times). A process is still an episode, albeit a complex one (successor function on discourse-transparent stages). Therefore, processes (e.g. 'chess-do-' as well as the *-qattaar* verbs in (22b) and (23b)) are ruled out, just like basic events (e.g. 'win-' in (23b)). Only a properly marked habit (*-tar* or other habitual suffix) will do.

Van Geenhoven (2004) conflates the process suffix *-qattaar* with the habitual suffix *-tar*, misidentifying both as markers of 'temporal pluractionality'.[14] According to her analysis, which is similar to Lasersohn's (1995), but recast in an interval-based semantics, *-qattaar* and *-tar* are alike up to the number of repetitions, which *-qattaar* requires to be 'large', while *-tar* merely requires to be plural. But then it is a mystery why *-tar* is acceptable in habitual contexts (grammatical (22a) and (23a)), whereas *-qattaar* is not (ungrammatical (22b) and (23b)). As we will see (in section 3.3), there are also other problems with van Geenhoven's (2004) theory of 'temporal pluractionality'.

[14] As we understand Newman (1990), 'temporal pluractionality' is a contradiction in terms. What distinguishes a pluractional affix from iterative aspect and the like is that the domain of quantification is underspecified for semantic type (recall Bininj Gun-wok discourse (4)). But then it cannot also be specified as temporal.

Further information on aspect-based temporality in Kalaallisut can be found in Bittner (2003, 2005, 2007a, b). The bottom line is that the lexical aspectual system of Kalaallisut distinguishes three types of episodes—states, events, and processes—as well as habits. The system is tenseless but conveys temporal anaphora as precisely as the English tense system.

2.2 (Im)perfectivity as aspectual centering

Indeed, many generalizations about aspect-based temporal anaphora hold for Kalaallisut as well as English. Bittner (2007b) conjectures that they hold universally (*aspectual universals*) and uses them to construct a crosslinguistic theory of aspect-based temporality. One question that arises is how the binary perfective/imperfective system might fit into this theory.

For example, in relation to temporal location in episodic discourse, Polish (P) exhibits not three patterns, like Kalaallisut, but two (pace Kamp, 1979; Kamp and Rohrer, 1983). Imperfective (IPF) verbs evoke *states*, which hold at the topic time (see (24a), (25a), (26a), (27a)). In contrast, perfective (PFV) verbs evoke (*basic*) *events*, which fall within the topic time (see (24b), (25b), (26b), (27b)).

(24) a. *Jak wróci-li=śmy, Jasia **bola-ła** głowa.*
P when return^{PFV}-PST.PL=1PL Jaś.ACC ache^{IPF}-PST.SG.F head.F
When we got back, Jaś had a head ache.

b. *Jak wróci-li=śmy Jasia **rozbola-ła** głowa.*
when return^{PFV}-PST.PL=1PL Jaś.ACC get.bad.ache^{PFV}-PST.SG.F head.F
When we got back, Jaś got a bad head ache.

(25) a. *Jak wróci-li=śmy, Jaś **zasypia-ł**.*
P when return^{PFV}-PST.PL=1PL Jaś fall.asleep^{IPF}-PST.SG
When we got back, Jaś was falling asleep.

b. *Jak wróci-li=śmy Jaś **zasną-ł**.*
when return^{PFV}-PST.PL=1PL Jaś fall.asleep^{PFV}-PST.SG
When we got back, Jaś fell asleep.

(26) a. *Jak wróci-li=śmy, Jaś (już od paru godzin)*
P when return^{PFV}-PST.PL=1PL Jaś (already from a.few hours.GEN)
***pracowa-ł** nad swoją książką.*
work^{IPF}-PST.SG over own.SG.INS book.INS
When we got back, Jaś {was working, had already been working for a few hours} on his book.

b. *Jak wróci-li=śmy, Jaś (przez parę godzin)*
when return^{PFV}-PST.PL=1PL Jaś (across a.few hours.ACC)
***po-pracowa-ł** nad swoją książką.*
[dist-work^{IPF}]^{PFV}-PST.SG over own.SG.INS book.INS
When we got back, Jaś did a bit of work (for a few hours) on his book.

(27) a. *Jak wróci-li=śmy Adam **robi-ł** herbatę.*
P when return^{PFV}-PST.PL=1PL Adam make^{IPF}-PST.SG tea.ACC
When we got back, Adam was making tea.

b. *Jak wróci-li=śmy Adam **zrobi-ł** herbatę.*
when return^{PFV}-PST.PL=1PL Adam make^{PFV}-PST.SG tea.ACC
When we got back, Adam made some tea.

As these examples illustrate, the binary *state*(IPF)/*event*(PFV) contrast holds regardless of the Aristotelian/Vendlerian class and (a)telicity. Orthogonal aspectual phenomena have led some scholars to propose 'two-component theories of aspect' (Smith's, 1991, term), which distinguish 'grammatical' (or 'view point') aspect from 'lexical' (or 'Aktionsart') aspect (e.g. Vendler, 1957; Comrie, 1976; Dowty, 1979; Dahl, 1985; Smith, 1991). However, Kalaallisut expresses both by means of the same lexical system of derivational aspectual suffixes, which all derive verbal bases that are aspectually typed as *state*, *event*, *process*, or *habit*. This favors a one-component theory (pace e.g. Moens and Steedman, 1988; Krifka, 1992; Kamp and Reyle, 1993). To analyze both systems we need two basic aspectual types, *events* and *states* (pace Kamp, 1979; Kamp and Rohrer, 1983; Partee, 1984), plus an open class of episode-valued functions. *Episodes* comprise states, events and telic as well as atelic *processes* (pace Moens and Steedman, 1988). In discourse, processes support stage-anaphors (e.g. *next*). Accordingly, they are modeled as successor functions on discourse-transparent stages.

One advantage of this theory is an ontology based on intuitive aspectual primitives: *events* and *states*. All languages recognize this aspectual contrast and many grammaticalize it in various ways (see e.g. Kamp and Rohrer, 1983, on *passé simple* vs. *imparfait* in French; Bittner and Hale, 1995, on verbs vs. nouns in Warlpiri; Bohnemeyer, 2002, on verbs vs. stative predicates in Yukatek Maya; etc). In any language basic *events* and *states*, as well as higher aspectual types such as *processes* and *habits*, can be empirically identified by means of diagnostic tests based on aspectual universals of temporal anaphora (Bittner, 2007b). These make universal predictions about temporal location in relation to topical discourse periods (e.g. (14)–(16), (24)–(27)), topical discourse instants ((17)–(21)), and topical kinds of time ((11a, b), (23a), (30)–(32)), temporal update (all of the above), discourse-initial temporal defaults, etc.

In contrast, two-component theories are based on language-specific diagnostics. For instance, in Vendlerian theories the English progressive and temporal *in/for*-phrases provide empirical diagnostics for *states*, *achievements*, *activities*, and *accomplishments* in English.

Unfortunately, other languages have no translation-equivalents with the same aspectual behavior (e.g. the English *for*-phrase corresponds to an *od* 'from'-phrase in Polish (26a), but to a *przez* 'across'-phrase in Polish (26b)). It is therefore not clear what semantic relation, if any, a class A_1 of *verb phrases* that one author (e.g. Dowty, 1979) identifies as 'accomplishments' in language L_1 (English) by L_1-specific diagnostics (good in the progressive; imperfective paradox; good with temporal *in*-phrases; bad with *for*-phrases) bears to a class A_2 of *verbs* that another author (e.g. van Geenhoven, 2004) identifies as 'accomplishments' in language L_2 (Kalaallisut) by L_2-specific diagnostics (unknown). We do not know how to answer such questions. Therefore, we do not see how to identify Vendler's aspectual classes beyond English in absence of empirical diagnostic tests based on universal semantic phenomena.

There is one more reason to base our theory of aspect on the universals of temporal anaphora. The resulting aspectual ontology—set of episode(-valued function)s based on *events* and *states* plus *worlds*, *times*, *places*, and *individuals*—has the right structure to analyze very different aspectual systems. For instance, to get from the four-way lexical system of Kalaallisut to the binary perfective/imperfective system grammaticalized in Polish and Bininj Gun-wok, all we need to do is to factor in *centering*—i.e. prominence-ranking of discourse referents (see Grosz *et al.*, 1995; Walker *et al.*, 1998; Stone and Hardt, 1999; Bittner, 2001, 2007a; Nouwen, 2003; etc). More precisely, we propose that the most prominent referent of an imperfective verb is a state. In contrast, for a perfective verb, it is an event on the episodic reading, and an event-valued habit on the habitual reading. Binary semantic contrasts that correlate with the grammatical perfective/imperfective form (e.g. temporal location in Polish (24a, b)–(27a, b)), target the most prominent discourse referent of the verb (the primary state of the imperfective verb in (24a)–(27a), and the primary event of the episodic perfective verb in (24b)–(27b)).

We assume that each morpheme may contribute up to two discourse referents (Bittner, 2003, based on crosslinguistic text studies available at http://www.rci.rutgers.edu/~mbittner). So in addition to its primary referent, a verb may also have a less prominent referent—e.g. for a real or intended process (chain of events or event concepts; see Bittner, 2007a). This can be used to draw aspectual parallels orthogonal to the perfective/imperfective dichotomy—e.g. about process verbs. By definition, a process verb supports stage-anaphors (e.g. 'next'). In virtue of its primary referent, a perfective verb like 'make$^{\text{PFV}}$' (or imperfective 'make$^{\text{IPF}}$') behaves like a basic event (or state) in relation to temporal anaphora in (27b) (or (27a)). But both (27b) and (27a)—glosses repeated in (28i)—can be elaborated as in (28ii, iii). The stage-anaphors *najpierw* 'first' in (28ii) and *następnie* 'next' in (28iii) are linked to the first two discourse-transparent stages of the secondary (intended) process referent evoked—in addition to its primary event or state referent—by the antecedent verb, 'make$^{\text{PFV}}$' or 'make$^{\text{IPF}}$', in (28i).

(28) [i. when return$^{\text{PFV}}$-PST.PL=1PL, Adam {make$^{\text{PFV}}$-PST.SG, make$^{\text{IPF}}$-PST.SG} tea.ACC]
P ii. ***Najpierw*** *zagrza-ł* *czajniczek.*
first warm.up$^{\text{PFV}}$-PST.SG teapot.ACC
First he warmed up the teapot.
iii. ***Następnie*** *wsypa-ł* *trochę* *dobrej* *herbaty.*
next pour.in(dry)$^{\text{PFV}}$-PST.SG a.bit good.SG.GEN tea.GEN
Next he poured in some fine tea leaves.

That the secondary process of the imperfective 'make$^{\text{IPF}}$' in (27a) is intended (chain of event concepts), not necessarily real (chain of events), is shown by the possibility of further continuation in (28iv, v), which denies the realization of the complete process. Following Bittner (2007a, b), we model an intended process as a function that sends each stage-concept, except the last, to the next-stage-concept. The realization of each successive stage-concept is contingent on the realization of the preceding concept and is temporally located during its result state. Thus, realizing the first two stage-concepts (28ii, iii) is consistent with failure to realize the entire chain (28v). In contrast, the affirmative perfective 'make$^{\text{PFV}}$' in (27b) evokes a secondary process that is actually realized (chain of events). Therefore, (27b) cannot be coherently followed by the denial in (28v), on the pain of contradiction.

(28) iv. *W* *tym* *momencie* *zadzwoni-ł* *telefon*
P in that.LOC moment.LOC ring$^{\text{PFV}}$-PST.SG phone
At that moment the phone rang
v. *więc* *on* *w* *końcu* *tej* *herbaty* *nie=**zrobi-ł***
so he in end.LOC that.GEN tea.GEN not=make$^{\text{PFV}}$-PST.SG
so in the end he didn't make that [pot of] tea.

An imperfective verb with a secondary process-referent does not entail incomplete realization (pace Comrie, 1976; Dahl, 1985; among others). It need not even conversationally implicate it—as (29ii), noted by Labenz (2004), attests:

(29) i. *Wie-m,* *jak* *się* *kończy* *"Effi Briest"*, ii. ***czyta-ł=em.***
P know$^{\text{IPF}}$-NPST.1SG how *se* end$^{\text{IPF}}$.NPST.3SG read$^{\text{IPF}}$-PST.SG=1SG
I know how "Effi Briest" ends, I've read it.

Labenz proposes that, by default, an imperfective verb is interpreted like a perfective. But this fails to explain the temporal contrast between the imperfective (a) versus perfective (b) verbs in (24)–(27). On our analysis, this contrast instantiates an aspectual universal concerning the temporal location of states (a) versus events (b) in relation to a topical period. To extend this account to (29ii), we first note a difference in the context-setting clause—imperfective

present in (29i) versus perfective past in the *when*-clause of (24a)–(27a). This, in turn, implies a different discourse relation—*elaboration* vs. *explanation* (see Lascarides and Asher, 1993). In (24a)–(27a) the past imperfective state *holds at* the topic time set by the past *when*-clause (result time of the home coming). In discourse (29), on the other hand, the context-setting (29i) evokes a present state of knowledge. To anchor the anaphoric presupposition of the past tense in (29ii), the topic time must be updated to a salient past period—just before this state of knowledge. The primary state of 'read^{IPF}' in (29ii) is located in relation to this topical past. Thus, (29ii) evokes a state of the currently topical individual (the speaker) reading the end of "Effie Briest"—a reading-state whose termination *results in* the knowledge-state of (29i).

Last but not least, our theory also accounts for habitual discourse. In a habitual context the primary referent of an imperfective verb is the state counterpart of a secondary referent for a habit (e.g. habitual events in (30) or habitual states in (32a)). In contrast, the primary referent of a habitual perfective verb is an event-valued habit (i.e. habitual events as in (31) and (32b)).

(30) [There is no point in giving Johnny any new toys.]

P i. *Jak tylko mu **się daje** nową zabawkę*
when only him.DAT *se* give^{IPF}.NPST.3SG new.SG.ACC toy.F.ACC
As soon as one gives him a new toy

ii. *zaraz jq **gubi**.*
immediately her.ACC lose^{IPF}.NPST.3SG
he immediately loses it.

(31) [There is no point in giving Johnny any new toys.]

P i. *Jak tylko mu **da-sz** nową zabawkę*
when only him.DAT give^{PFV}-NPST.2SG new.SG.ACC toy.F.ACC
The moment you give him a new toy

ii. *zaraz jq **zgubi**.*
immediately her.ACC lose^{PFV}.NPST.3SG
he'll immediately lose it.

(32) a. *Jeśli kogoś dobrze **zna-m** to go na ogół **lubi-ę***
P if sbd well know^{IPF}-NPST.1SG then him usually like^{IPF}-NPST.1SG
If I know somebody well, I usually like him.

b. *Jeśli kogoś dobrze **pozna-m** to go na ogół **polubi-ę***
if sbd well know^{PFV}-NPST.1SG then him usually like^{PFV}-NPST.1SG
If I get to know somebody well, I usually get to like him.

Some habitual imperfective/perfective pairs, e.g. (30) and (31), have similar meanings. The imperfective (30) highlights the temporal correlation (hold at) and the overall state of affairs. The perfective (31) suggests a causal correlation (result in) and perhaps for this reason sounds more like a prediction: if such-and-such event happens, such-and-such event will follow in its wake. For other pairs the meanings are clearly different—e.g. the imperfective (32a) correlates habitual states, whereas the perfective (32b) correlates habitual events.

To summarize the results so far: We have presented a discourse referential theory of verbs that provides a unified account of temporal anaphora in languages with very different grammatical systems. The surface form of each language is taken at face value. Instead of the controversial level of LF, semantic generalizations are captured by means of semantic tools. These include a universal ontology, based on *events*, *states*, *times*, *worlds*, *places*, and (*animate* or *inanimate*) *individuals*. They also include centering, i.e. prominence-ranking of discourse referents, and last but not least, universal constraints on basic meaning assignment.

Universally, a morpheme may introduce up to two discourse referents. If the morpheme is a verb or verb-forming affix then its most prominent referent must be an episode(-valued function). *Episodes* comprise basic *events* and *states* as well as higher-order *processes*. The latter support discourse anaphora to stages (events) and are formally modeled as successor functions on discourse-transparent stages.

This universal framework allows for considerable crosslinguistic variation. For example, Kalaallisut has two grammatical centering systems—one for individuals (e.g. '3SG$_T$' vs. '3SG$_\perp$'), and one for topical modalities (grammatical mood). In addition, it has a lexical aspectual system, which types each verbal base according to the aspectual type of its primary referent, as *state*, *event*, *process*, or *habit*. This draws an anaphoric parallel between verbs and nouns—*state*::*atomic inanimate*, *event*::*atomic animate*, *process*::*plural*, and *habit*::*kind*. In contrast, Polish and Bininj Gun-wok grammaticalize (re)centering for topic times (grammatical tense) and basic aspectual types (event-prominent perfective vs. state-prominent imperfective). This binary aspectual system provides empirical support for distinguishing two basic aspectual types, *events* and *states*, from an open class of episode-valued functions. The latter (*processes*, *habits*, etc) can still be introduced, as less prominent verbal referents. Thus, even very different linguistic systems can be communicatively equivalent.[15]

3 DISTRIBUTED REFERENTS FOR Q-VERBS

In this section we apply the discourse referential theory of verbs to the special case of Q-verbs by factoring in distributivity. We propose that Q-verbs evoke referents for *distributive* episode-valued functions. For instance, Q-verbs may refer to *processes*—functions that send each discourse-transparent stage (event), except the end, to the next stage; or to *habits*—functions

[15] Bittner (2007b) applies this theory to English. She argues that English verbs are lexically underspecified for aspectual type, which is first determined by anaphoric interactions at a higher level (e.g. VP, pace Dowty, 1979).

that send each instantiation world and time to the instantiating episode. In addition to events, worlds, and times, the distribution may be over other semantic domains, e.g. individuals or places. That is, Q-verbs may refer to *distributed states* (e.g. (5ii)), *distributed events* ((2), (4)), (*distributed*) *processes* ((3), (5i)), or (*distributed*) *habits* ((6i, ii), (11a, b)). The exact type depends on the base and the affix that jointly form the Q-verb. Either of these elements, or both, may be distributive. If the base is verbal, its primary referent may be aspectually typed, e.g. in Kalaallisut, as a state(-valued function), event(-valued function), process(-valued function), or habit(-valued function). In Kalaallisut verbal suffixes that form Q-verbs are also aspectually typed if they evoke verbal referents of their own; otherwise, they preserve the aspectual type of the base. These various options give rise to a wide variety of Q-verbs, which we now proceed to illustrate.

3.1 Distributed states

Stative Q-verbs evoke discourse referents for distributed states, i.e., state-valued distributive dependencies. The domain can be of any type, e.g. entities (33), places (34), or times (35).

(33) [A: What's your weapon? B_1: A bow. A: And yours? B_2 replies:]
Pingasuulluta *pisissimik* *sakkuqarpugut.*
***pingasu-u**-llu-ta* *pisissiq-mik* *sakku-qar-pu-gut*
three-be-ELA$_T$-1PL bow-SG.MOD weapon-have-IND.IV-1PL
The three of us$_T$ are (each) armed with a bow.

(34) [Canada^T is unlike Greenland.]
Kujataani *narsaatiqartitirpuq.*
kujata-a-ni *narsaq-ut-**qar-titir**-pu-q*
south-3SG$_\perp$.SG-LOC plain-owned-have-dist-IND.IV-3SG
In the south^T there are fields (*lit.* owned plains) everywhere$_T$.

(35) *Sapaatip* *akunnira* *kingulliq*
sapaat-p *akunniq-a* *kingu-lliq-q*
Sunday-SG.ERG interval-3SG$_\perp$.SG rear-most-SG
Last week
arlaliriarlunga *niaqunguvunga.*
***arlalik-riar**-llu-nga* *niaquq-**ngu**-pu-nga*
several-v.cn.times-ELA$_T$-1SG head-have.aching-IND.IV-3SG
I had a headache several times.

Morphologically, the distributivity may be due to a plural nominal item (e.g. 'three-' in (33)), distributive verbal item ('-dist' in (34)), or both (e.g. 'several-' and '-v.cn.times' in (35)). Stativity may stem from an adjacent stative item (e.g. '-be' in (33), '-have' in (34)), or from a more distant stative item (e.g. '-have.aching' in (35)), whose anaphoric link to the Q-verb forces the Q-verb to refer to the same state-valued distributive dependency.

In discourse referential terms, the topic-elaborating Q-verb (ELA$_T$) in (33) evokes an individual-dependent state. The domain of this distributive dependency consists of three individuals, including the current speaker (B_2), all of whom experience their respective states at the same time. The matrix verb (IND) further specifies this distributive dependency: each individual in the domain is mapped to a state of being armed with a bow. In (34) the Q-verb refers to a place-dependent state with a field. These dependent states, with their respective fields, are distributed over a set of places that jointly constitute a cover of the currently topical area (south of Canada). Similarly, in (35) the topic-elaborating Q-verb (ELA$_T$) evokes a time-dependent state of the topical individual (the speaker). The states are distributed over several times within the currently topical period (last week). The matrix verb (IND) further specifies that each time in the domain is mapped to a different state of the topical individual having a headache.

Most distributive verbal suffixes in Kalaallisut are aspect-preserving, like *-titir* (34) and *-riar* (35). The aspectual type of the distributed episodes is determined via anaphoric chains with aspectually typed verbal items (here, with stative *-qar* 'have' in (34) and *-ngu* 'have aching' in (35)). The semantic type of the domain of the distributive dependency may also be underspecified and determined by anaphora. Thus, the suffix *-titir* may distribute either over places (as in (34)) or individuals (as in (36)). Typically, the domain of the distribution is topical (as in (34) and (36)), but it can also be backgrounded (e.g. plural object NP in (67iii)).

(36) *Ndolami* *inuit* *tamangajammik* *marlunnik* *atiqartitirput*
Ndola-mi *inuk-t* *tamaq-ngajak-mik* *marluk-nik* *ati-**qar-titir**-pu-t*
N.-SG.LOC person-PL all-almost-PL$_T$ two-PL.MOD name-have-dist-IND.IV-3PL
In Ndola, almost all the people^T have two names each$_T$
aappaa *zambiamiutut* *aappaalu* *tuluttut.*
aappa-a *Zambia-miu-tut* *aappa-a=lu* *tuluk-tut*
mate-3SG$_\perp$.SG Zambia-inhabitant-EQU mate-3SG$_\perp$.SG=and Englishman-EQU
one in the language of Zambia, and the other one (*lit.* its mate) in English.

Finally, recall that topic elaboration may involve either identity (12a) or concurrence (13). The latter relation allows a distributed state evoked by a topic-elaborating Q-verb to antecede a collective matrix verb. In (37) the narrator is a musher in a trans-Alaska race. In (37iii) the topic-elaborating stative Q-verb (-be-ELA$_T$)—similar to the Q-verb in (33)—evokes a state-valued distributive dependency. The domain of distribution is a salient plural set of

individuals who all experience their respective states at the same time. In (37iii) the domain set consists of all of the speaker's dogs at this point in the race. To satisfy the collective matrix verb (IND), the image set of the simultaneous states of being somewhere is taken to be part of a hypothetical state (*-gunar* 'be likely') where the dogs on one side of a scale are weighed against the bull moose on the other side.

(37) [i. The bull moose$^{\top}$ was big.]

ii. *Qimmikka tamarmik immikkut*
qimmi-kka tamaq-mik immi-kkut
dog-1SG.PL all-PL$_{\top}$ self-SG.VIA
My dogs$^{\top}$ each$_{\top}$ (*lit.* all individually)
30 kiilut sinnirlugit uqimaatsigipput.
30 kiilu-t sinnir-llu-git uqimaag-tsigi-pu-t
30 kilo-PL exceed-ELA$_{\top}$-3PL$_{\perp}$ weigh-that.much-IND.IV-3PL
weighed over 70 pounds,

iii. *pannirsuarlu taanna*
panniq-rsuaq=lu taanna
bull-big.SG=and this
and this great bull$^{\perp}$
qimmima tamarmiullutik uqimaaqatigunarpaat.
*qimmi-ma **tamaq-mik**-u-llu-tik uqimaag-qat-gi-gunar-pa-at*
dog-1SG.PL.ERG all-pl$_{\top}$-be-ELA$_{\top}$-3PL$_{\top}$ weigh-mate-rn\tv-be.likely-IND.TV-3PL.3SG
probably weighed as much as all of my dogs$_{\top}$ put together.

Similarly, in Bininj Gun-wok (BG) the pluractional reduplicating Q-affix combines with stative verb stems (e.g. 'lie', 'be high', 'stink', 'hang') to evoke distributed states:

(38) a. *Bene-red-ngalke-ng wirlarrk bokenh **yongo-yo**-y.*
BG 3DU.PST-nest-find-PFV.PST egg two 3PST.lie+lie-PFV.PST
They found a nest with two eggs. (Evans, 2003, (10.361))

b. *Kabirri-**barnh+barndi** kardab.*
3PL-be.high+be.high.NPST spider
There are spiders up [on the wall]. (Evans, 2003, (10.370))

c. *Ka-kord-nud-**bana+banj***
3-shit-rotten-stink+stink.NPST
It stinks of rotten shit all around. (Evans, 2003, (9.151))

d. *Ka-karrme marlakka ka-**welh+welme** kore ku-kom ngalengarre.*
3-have.NPST bag 3-hang+hang.NPST loc LOC-neck her
She has a bag hanging from her neck. (Evans, 2003, (10.270))

The distribution can be over a contextually salient plural set of individuals (38a), places (38b, c), or subintervals of the topical period (38d).

In sum, stative Q-verbs are structurally diverse but are nonetheless amenable to a unified semantic analysis in terms of discourse reference. They all evoke referents for distributed states—i.e. state-valued dependencies that send each semantic object in a contextually salient plural domain to a different state.

3.2 Distributed events

In Kalaallisut eventive Q-verbs are structurally parallel to stative Q-verbs. In discourse referential terms, eventive Q-verbs evoke referents for distributive event-valued dependencies, which send different objects in a contextually salient plural domain—e.g. salient pluralities (39), places (40), or times (41)—to different events.

(39) *Marlukkuutaarluta aallaqatigiippugut.*
*marluk-**kkuutaar**-llu-ta **aallar**-qat-**gii-g**-pu-gut*
two-v.in.units.of-ELA$_{\top}$-1PL set.out-mate-set-cn\iv-IND.IV-1PL
We$_{\top}$ set out in pairs.

(40) *Kangirluarsuk iluliarujussuanitsitirpuq.*
*kangirluarsuk iluliaq-rujussuaq-**nig-titir**-pu-q*
fiord.SG iceberg-huge-acquire-dist-IND.IV-3SG
All over the fiord$^{\top}$ there appeared huge icebergs.

(41) i. *Ullumi marluriarlunga puurtugarsivunga,*
*ullu-mi **marluk-riar**-llu-nga puurtur-gaq-**si**-pu-nga,*
day-SG.LOC two-v.cn.times-ELA$_{\top}$-1SG wrap.up-tv\rn-get-IND.IV-1SG
Today I$_{\top}$ got presents (*lit.* wrapped things) twice,

ii *siullirmik maani, taavalu uqaluvvimmi.*
siu-lliq-mik maa-ni taava=lu uqaluvvik-mi
front-most-SG.MOD here-LOC then=and church-SG.LOC
first here, and then in the church.

In (39) the topic-elaborating (ELA$_{\top}$) Q-verb is aspectually neutral. It evokes an episode-valued dependency from a set of pluralities (pairs) that jointly cover the current individual topic ('we'). The anaphorically linked matrix verb (IND) further specifies this dependency: each pair is mapped to an event in which the pair sets out. The matrix verb is aspectually typed by the event-root, *aallar-* 'set out', whose aspectual type is preserved by the next three suffixes.

The nominal suffixes, *-qat* 'mate' and *-gii* 'set of rn-relata', form plurality-valued kinds instantiated in events of departure, while the aspect-preserving verbalizer *-g* forms a departure-valued dependency from the currently topical set of such pluralities (cf. stative (33)).

Similarly, in (40) the Q-verb refers to a place-dependent event of one or more huge icebergs appearing in that place. These appearing-events, with their respective icebergs, are distributed over a set of places that jointly cover the currently topical fiord (cf. stative (34)).

Finally, in (41) the speaker is a child at home on Christmas Eve. In (41i) the topic-elaborating Q-verb (ELA$_T$) evokes a time-dependent episode centered on this topical individual. The episodes are distributed over two (disjoint) times within the topical period (day of the speech event). As usual, the matrix verb (IND) further specifies this dependency: each time in the domain is mapped to a different event, within this temporal frame, when the topical participant (the speaker) gets one or more presents (cf. stative (35)). The post-posed ellipsis (41ii) specifies this dependency still further, by repeated instantiating anaphora.

Bininj Gun-wok exhibits similar patterns. For instance, recall discourse (4), where three pluractional event-verbs distribute their events over contextually salient times (4i), individuals (4ii), or other events (4iii). In each case, the reduplicating pluractional Q-affix combines with an event-base: *na-* 'look, see' in (4i), *me-* 'get' in (4ii), or *kurrme-* 'put' in (4iii).

In Polish (P) the input to the distributive Q-prefix *po-* must be an imperfective (state-prominent) verbal base with a non-stative secondary referent (e.g. *budowa-* 'build^{IPF}' in (3), *gubi-* 'lose^{IPF}' in (42iii), *oddawa-* 'give.away^{IPF}' in (42iv)). The output is a *po-*perfective (event-prominent) base with a secondary referent for a distributive event-valued function (42iii, iv) or a distributive process-valued function (recall (3)).

(42) i. *Jaś dosta-ł mnóstwo nowych zabawek na gwiazdkę.*
P Jaś get^{PFV}-PST.SG tons.ACC new.PL.GEN toys.GEN on Christmas.ACC
Jaś got tons of new toys for Christmas.

ii. *Bardzo się cieszy-ł ale*
very *se* be.happy^{IPF}-PST.SG but
He was very happy, but

iii. *wkrótce większość* ***po-gubi-ł*** *u różnych kolegów*
soon majority.ACC [dist-lose^{IPF}]^{PFV}-PST.SG at various.PL.GEN friends.GEN
he soon lost most of them, in quick succession, at various friends

iv *a resztę* ***po-oddawa-ł*** *innym kolegom.*
and rest.ACC [dist-give.away^{IPF}]^{PFV}-PST.SG other.PL.DAT friends.DAT
and gave the rest away, one after another, to other friends.

In (42iii) the *po-*perfective Q-verb presupposes a salient plural set. This presupposition is linked to the object NP 'majority.ACC', which evokes a set containing most of the aforementioned toys. The Q-verb partitions this plural set into several subsets with one or more

toys in each subset. The secondary referent of the *po-*perfective Q-verb is a distributive event-valued dependency that maps each subset of toys to a different losing event. The primary event referent is an atomic event corresponding to the entire set of toy-losing-events. That is, it is an event in which the same agent (Jaś) loses the entire set of toys, temporally located in the minimal period that includes all of the losing-event times, and spatially located in the minimal place that includes all of the losing-event places. It is the primary referent of the *po-*perfective Q-verb, i.e. the atomic event, which is temporally located by the tense within a brief period after the aforementioned Christmas. But it is the secondary referent, for the distributive event-valued dependency, that is further specified by the modifier 'at various friends'. This modifier evokes a distributive house-valued dependency, which maps each losing-event to the house of a different friend or friends of Jaś. That is, 'various' receives a dependency-internal reading. Since there are several losing events, there are also several houses—hence the plural number.

Similarly, in (42iv) the *po-*perfective Q-verb presupposes a salient plural set—this time, linked to the remaining set of toys ('rest.ACC'). Again, the Q-verb partitions this plural set into a plural domain of quantification, consisting of several subsets with one or more toys, and maps each subset to a different giving-away-event. The set of the experiencers (DAT) is a plural set of Jaś's friends, disjoint from the plural set evoked in (42iii).[16]

Thus, eventive Q-verbs are structurally heterogeneous, just like stative Q-verbs. But they, too, are amenable to a unified crosslinguistic analysis in terms of discourse reference. The only difference is that they evoke distributed events instead of distributed states.

3.3 (Distributed) processes

In the present ontology processes are episodes consisting of at least two discourse-transparent stages, where each stage is an atomic event. Formally, a process-chain is a distributive event-valued dependency that sends each discourse-transparent stage, except the end, to the next stage (and temporally locates the latter during the result state of the former). This accounts for the fact that process-verbs pattern like plural nouns in relation to discourse anaphora. In particular, both processes and pluralities support anaphora to discourse-transparent atomic parts (by stage-anaphors like *next*, or nominal atomic-part-anaphors like *one of them*).

The inherent distribution over stages implies that any verb with a process-suffix is a Q-verb. In Kalaallisut a case in point is the suffix *-qattaar*, which evokes cyclic processes (like *keep* v-*ing*, *one by one*, *up and down*, etc., in English). In (43ii) the topic-elaboration with *-qattaar* evokes a cyclic kissing process concurrent with the matrix event of Pippi bidding

[16] Filip (1999) and Filip and Carlson (2001) propose alternative analyses of the Slavic distributive *po-*. Both analyses only consider the combination of a *po-*verb with its 'incremental theme' (ACC). It is not clear to us what they predict for (42) and other discourses in this study, so we do not attempt any theory comparison.

farewell to the sailors on her father's ship (43i). The cyclic kissing process in (43ii) is further specified by the object Q-NP, 'all-PL$_\perp$', and a path-modifier, 'forehead-3PL$_\perp$.PL-VIA'.

(43) i. *Ullut* *ilaanni* *Pippip* *inuulluaqquai*
ulluq-t *ila-at-ni* *Pippi-p* *inuu-lluar-qqu-pa-i*
day-PL.ERG part-3PL$_\perp$.SG-LOC Pippi-SG.ERG live-well-tell-IND.IV-3SG.3PL
One day Pippi$^\tau$ bid them$_\perp$ farewell

ii. *tamaasa* *qaavisigut* *apaqattaarlugit.*
tamaq-isa *qaa-isi-gut* *apa-**qattaar**-llu-git*
all-PL$_\perp$ forehead-3PL$_\perp$.PL-VIA kiss-cyclic.process-ELA$_\perp$-3PL$_\perp$
kissing them all$_\perp$ one by one on the$_\perp$ forehead.

In discourse-referential terms, the object Q-NP 'all-PL$_\perp$' specifies that the experiencers of the successive kissing events that constitute the stages of this cyclic process add up to the entire plural set of sailors referred to in (43i). Given world knowledge, this suggests as many kissing events as sailors. The path-modifier (VIA) quantifies over the kissing events—i.e. stages of this cyclic process—mapping each kissing event to the forehead of its experiencer (the current sailor). The plurality of the kissing events accounts for the plurality of the foreheads.

Both of these NP-dependents of the *qattaar*-verb in (43ii) present problems for van Geenhoven (2004). On her analysis, 'kiss-*qattaar*-' denotes a relation that holds between a time interval t, a set-property P, and an individual a, just in case there is a P-set B and 'many' non-overlapping subintervals $t_1, \ldots t_n \subseteq t$ such that at each t_i, a kisses some individual $b \in B$.[17] This is adequate for bare NP arguments, which is all that van Geenhoven considers. But it fails for quantified NPs, such as 'all-PL$_\perp$' in (43ii). Interpreted as a set-property (as in Partee, 1986; Link, 1987), 'all-PL$_\perp$' presumably holds of the entire set of sailors evoked in (43i). But then van Geenhoven's analysis is too weak: it only requires many times when Pippi kisses some sailor or other, possibly the same sailor every time. This is not a possible interpretation of (43ii). In addition, the path-NP (VIA) presents a compositionality problem. In van Geenhoven's terms, 'forehead-3PL$_\perp$.PL-VIA' modifies the kissing-relation that holds between a time and two atomic individuals, which is how she models events. Compositional modification would require rebracketing (43ii) at LF. This would violate lexical integrity, which some syntactic theories would consider sufficient reason to reject this analysis (e.g. HPSG, LFG). There is also a semantic reason to reject it because it fails to explain the plural agreement ('3PL$_\perp$.PL')—i.e. not

[17] As van Geenhoven (2004) notes, this is an adaptation of Carlson's (1977:90–92) kind-based analysis of the scope contrast between *kill dogs for a year* vs. #*kill* {*a dog, some dogs*} *for a year*. Van Geenhoven's version in terms of properties is less general—it only accounts for bare NPs, not e.g. *some dogs*. Also, unlike Carlson's (1977) formally explicit and correct implementation, the few translations van Geenhoven (2004) spells out are formally incorrect, e.g. she conflates times with sets of times, writing '*dial*(x, y) *at* t' as well as '*number*$(t) > 1$'. We ignore her implementation and focus on the basic idea, which is intuitively coherent but empirically incorrect.

with one forehead, as rebracketing would predict, but with the entire plural set of foreheads. None of these problems arise in our surface-based analysis in terms of discourse reference to distributive dependencies.

In addition to the process-internal distribution over stages, entire processes can be distributed just like atomic events and states. Thus, (5i) evokes a set of processes (*suli-* 'work') distributed over groups, parallel to the set of events (*aallar-* 'set out') distributed over groups in (39). Similarly, (44) evokes a spatially distributed set of processes (*-liur* 'make'), formed by the suffix *-titir*, which can also distribute basic events (40) as well as states ((34), (36)).

(44) [Denmark$^\tau$ wanted to support the whaling industry in Greenland. So…]
1700-kkut *naalirniranni*
1700-kku-t *naa-lir-nir-at-ni*
1700-&co-PL end-begin-v\n-3PL$_\perp$.SG-LOC
at the end of the 18th century
Kalaallit *Nunaata* *Kitaani*
kalaalliq-t *nuna-ata* *kita-a-ni*
Greenlander-PL.ERG land-3PL$_\perp$.SG.ERG west-3SG$_\perp$.SG-LOC
arvanniarnirmut *nunami* *stationiliurtitilirpuq.*
arviq-niar-nir-mut *nuna-mi* *stationi-**liur-titir**-lir-pu-q*
whale-hunt-v\n-SG.DAT land-SG.LOC station-make-dist-begin-IND.IV-3SG
it$_\tau$ began to build land-based whaling stations all over West Greenland.

The Polish sentence (3), with the distributive Q-prefix *po-*, is almost equivalent to Kalaallisut (44), but not quite. In both sentences an initial temporal modifier updates the topic time to a period in the late 18th century. The primary referent of the Q-verb—*po*-perfective in Polish (3), *-titir* verb in Kalaallisut (44)—is located in relation to this topic time. The most prominent referent is an atomic event, so it is located within the topic time (i.e. within the late 18th century). However, it is not the same event. In Polish (3) the primary event is evoked by 'PFV'—i.e. it is the event-counterpart of the entire set of building events in the range of the spatially distributed dependency evoked by the Q-prefix *po-* ('dist-build$^{[PF]}$'). Thus, Polish (3) is about the whaling stations that were established within the topical period at the end of the 18th century. In contrast, in Kalaallisut (44) the primary event is evoked by the last aspectual suffix, *-lir* 'begin'. So it is only the first of the spatially distributed building events, evoked by the Q-suffix *-titir*, that is required to fall within the topical period (cf. 'began to build' in the English translation). Some of the whaling stations evoked in (44) could be built later.

In Kalallisut (44) as well as Polish (3) the nominal argument of the Q-verb refers to a kind of whaling station planned in the context of this particular building project. In the present ontology this modally and spatio-temporally localized kind is a partial function that sends each pair of, one, a world where the building project is successfully realized and, two, a completed

building-process, to the whaling station that comes into existence in the final stage of this process.[18] This predicts, correctly, that the whaling stations that instantiate this local kind are available for discourse anaphora. Kalaallisut (44) was found in a natural history book where the next sentence made precisely such an anaphoric reference (*Many of* ***these land-based stations*** *later grew into towns that we know nowadays in Greenland*).[19] Polish (3) likewise supports such discourse anaphora to an aforementioned local kind.

Discourse reference to processes is also found in Bininj Gun-wok (BG). One construction that seems to set up a referent for a process combines verb incorporation (exemplified in (45a, b)) with pluractional reduplication, as illustrated in (46a, b). Semantically, the incorporated verb and the pluractional verb co-specify the same process—in (46a) a process in which the topical individual walks back and cries, in (46b) a process in which the topical individual whines while lying down. The perfective past inflection evokes a related atomic event and locates it in the topical past.

(45) a. *Birri-kanj-yi-lobm-i-durnd-i.*
BG 3PL.PST-meat-with-run-v\v/v-return-PFV.PST
They ran back with the meat. (Evans 2003, (12.37))
b. *Ga-nalk-gi-wokdi.*
3-cry-v\v/v-speak.NPST
She's crying and talking at the same time. (Evans 2003, (12.45))

(46) a. *Nalk-kih-**durn**+**durnd**-i*
BG 3.PST.cry-v\v/v-return+return-PFV.PST
He went all the way back crying. (Evans 2003, (12.36))
b. ***Ngiwkmih**+**ngiwkm**-i-yo-y.*
3.PST.whine+whine-v\v/v-lie-PFV.PST
He lay down, whining and whimpering. (Evans 2003, (12.42))

Thus, the hypothesis that Q-verbs evoke discourse referents for distributive episode-valued dependencies extends to processes. Because of the internal distribution within a process, the distributed episodes can be either the discourse-transparent stages of the process (as in Kalaallisut (42) and Bininj Gun-wok (46)) or entire processes (as in Kalaallisut (43) and Polish (3)).

[18] Recall that Carlson (1977) models an intuitively different notion of a *global kind*—e.g., the kind instantiated by all possible whaling stations—as a total function that sends each world and time to the set of all instantiating objects in that world at that time. This implementation (or the neo-Carlsonian version in Chierchia, 1998) is not suited for the analysis of creation verbs proposed here in terms of Bittner's (2003, 2007a) theory of *local kinds*—e.g., in (44), a kind of whaling station referred to in the context of a particular building project.

[19] Heide-Jørgensen, M. and K. Laidre. (2006). *Kalaallit Nunaanni ukiumi arferit* ('Greenland's Winter Whales'), p. 6. Ilinniusiorfik.

3.4 (Distributed) habits

Habits, like processes, have internal distribution, but their anaphoric behavior in discourse is different. Processes support discourse anaphora to atomic events that constitute their discourse-transparent stages. In contrast, (local) habits support predictions and anaphora to instantiating episodes, which can be of any aspectual type (state, event, or process). Accordingly, we model processes as successor functions on discourse-transparent stages, and (local) habits, as partial functions from instantiation worlds and times to the instantiating episodes. On this analysis, Q-verbs include verbs with habitual suffixes—e.g. the habitual mood inflection *-gaang(a)* as well as derivational habitual suffixes such as *-tar* 'habit', *-gajut* 'often, *-llattaar* 'sometimes', etc.

For example, in (47) the initial topic-setting clause (47i) evokes a habitual state experienced by the aforementioned plurality in which the entire plurality is located within the aforementioned igloo. The plurality is promoted to topical status ($3PL_T$) and the temporal topic is updated to the kind of time instantiated, in each of these states, by the duration of the state. The matrix verb (47ii) evokes a correlated habitual state, instantiated at each time of the topical kind, by a state of the topical plurality being very cramped.

(47) [Their$_\perp$ igloo^T was small.]
i. *Tamarmiugaangamik* ii. *tattunngajattarpaat.*
*tamaq-mik-u-**gaanga**-mik* *tattug-ngajag-**tar**-pa-at*
all-pl$_T$-be-HAB$_T$-3PL$_T$ not.fit.in-almost-habit-IND.TV-3PL.3SG
When they^T were all [there], they$_T$ almost couldn't fit in.

Habits can also be instantiated by distributed episodes, evoked by any combination of Q-verbs. In discourse (48) the matrix verb (48iii) refers to a habit (*-tar*), which is co-specified by three anaphorically linked topic-elaborations (48i, ii, iv).

(48) [The little auk^T is a sea bird.]
i. *Immami* *ataatsimuurlutik* ii. *katirsakkuutaarlutik*
imaq-mi *ataasiq-mut=Vr-llu-tik* *katirsa-**kkuutar**-llu-tik*
sea-SG.LOC one-SG.DAT=IV-ELA$_T$-3PL$_T$ flock-v.in.units.of-ELA$_T$-3PL$_T$
Gathering into flocks on the sea
iii. *mitsimagajuttarput* iv. *alluqattaartarlutik.*
*mit-sima-**gajut**-**tar**-pu-t* *allur-**qattaar**-**tar**-llu-tik*
land-prf-often-habit-IND.IV-3PL dive-cyclic.process-habit-ELA$_T$-3PL$_T$
they$_T$ often settle down and dive again and again.

The first two topic-elaborations, in (48i) and (48ii), form an anaphoric chain that evokes and further specifies a habitual plurality-dependent event in which the plurality gathers on the sea

(48i) into a flock (48ii). For each world and episode where the currently topical little auk-valued kind is instantiated, the pluralities in the domain of this distributive dependency cover the set of birds of this local kind. The temporal topic is updated to the kind of time instantiated, for each gathering event, by the time of the result state. The matrix verb (48iii) evokes a correlated habitual state, whose temporal distribution includes many of the result times of the topical kind. For each flock, this correlated state is the result state of landing on the sea. Finally, the post-posed topic-elaboration (48iv) evokes a correlated habitual cyclic process in which the flock dives, over and over, in search of food.

We have argued that a local kind is a semantic object available for discourse reference (e.g. in Polish (3) and Kalaallisut (44)). This predicts that it should be possible to quantify over local kinds. And indeed it is, as shown by the following example of a set of local habits distributed over a plural set of local kinds of whales. That each kind is mapped to a different habit is shown by the possibility of continuing e.g. with *The most common kind is the narwhal.*

(49) *Arvirit* *assigiinngitsut* *femtenit* *missaat*
arviq-t *assi-gii-g-nngit-tuq-t* *femten-t* *missa-it*
whale-PL.ERG copy-set-cn\iv-not-iv\cn-PL.ERG fifteen-PL.ERG vicinity-3PL$_{\perp}$.PL
About fifteen different kinds of whales
Kalaallit *Nunaata* *imartaani* *siumurniqarajupput.*
kalaaliq-t *nuna-ata* *imaq-taq-i-ni* *siumur-niqar-**gajut**-pu-t*
Greenlander-PL.ERG land-3PL$_{\perp}$.SG.ERG sea-of-3SG$_{\perp}$.PL-LOC see-passive-often-IND.IV-3PL
are commonly seen in the seas around Greenland.

In the present ontology local kinds are anaphorically and formally parallel to local habits. Both support predictions and instantiating anaphora (see section 6, and Bittner, 2007b). Another anaphoric parallel is quantification over local kinds (49) as well as local habits (50):

(50) [Some people just hate foreigners.]
Qanurluunniit *iliurtaraluaruma*
qanuq=luunniit *iliur-**tar**-galuar-gu-ma*
how=or do-habit-…but-HYP$_{T}$-1SG
No matter how I behave
iliqqura *tamanna* *pissutigalugu* *saassuttuassavaannga*
iliqquq-ga *tamanna* *pissut-gi-llu-gu* *saassut-**tuar**-ssa-pa-annga*
habit-1SG.SG that cause-rn/tv-ELA$_{T}$-3SG$_{\perp}$ attack-always-prospect-IND.TV-3PL.1SG
they will always attack me because of that pattern of behavior.

In an (im)perfective system, which does not explicitly mark habits, habitual readings are instead induced by the context. For instance, in Polish (P) the Q-adverb ('sometimes') in (51i)

sets up a topical kind of time, inducing a habitual reading of the *po*-perfective verb in (51iv). This refers to a habit instantiated by distributed wounding events, where the distribution can be over individuals (as in episodic (42iii, iv)) and/or places (as in episodic (3)). In (51i) there is an anaphoric reference to this local habitual pattern ('that') as well as a related local kind ('mates'):[20]

(51) [The artillery bombardment would go on like that for half an hour, or an hour.]
P i. *Wpadnie* *czasem* *kula* *armatnia* *do* *okopu*
fall.in^{PFV}.NPST.3SG sometimes shell artillery.SG (in)to trench.GEN
Sometimes a canon shell would land in a trench
ii. *i* *tu* *wybuchnie* iii. *położy* *paru* *ludzi*
and here explode^{PFV}.NPST.3SG put.down^{PFV}.NPST.3SG couple people.GEN
and explode here—it would kill a couple of people
iv. ***po-kaleczy*** *kilku.*
[dist-wound^{IPF}]^{PFV}.NPST.3SG a.few.ACC
and wound a few more.
v. *Ale przyzwyczajeni już* *nic* *sobie z* *tego* *nie=robią* *towarzysze.*
but accustomed.PL already nill *se* of that not=make^{IPF}.NPST.3PL mates
But their mates, already used to it, wouldn't make much of that.

Imperfective verbs can have secondary referents for habits—e.g., in Bininj Gun-wok (BG), habitual events (52a), (distributed) habitual states (52b), or habitual processes (52c):

(52) a. *An-h-**djawa+djawa**-n* *munguih* *an-me-ga.*
BG 3/1-PRS-ask+ask-NPST always CL-food-GOAL
He's forever asking me for food. (Evans, 2003, (5.71))
b. *Gabarri-h-**ningi+nin*** *munguih* *gu-bolk-gudji.*
3PL-PRS-sit+sit.NPST always LOC-place-one
They always stay in one place (Evans, 2003, (9.148))
c. *Na-kudji* *na-marladj* ***ngiwkmih+ngiwkm**-i-re-y.*
MSC-one CL-orphan 3.PST.whine+whine-v\v/v-go-IPF.PST
An orphan was always [going around?] crying. (Evans, 2003, (12.34))

In sum, Q-verbs are a natural semantic class of verbs. What characterizes Q-verbs is discourse reference to *distributive* episode-valued dependencies, which map different elements of a contextually salient plural domain to different episodes. We now turn to show that this discourse referential analysis explains the characteristic behavior of Q-verbs in discourse.

[20] Korczak, J. (1957). *Król Maciuś Pierwszy* ('King Matt the First'). Nasza Księgarnia, Warszawa.

4 SCOPE OF QUANTIFICATION

In the nominal domain Q-NPs participate in scope interactions, whereas names and other referential NPs do not. On the present analysis, all NPs involve discourse reference. The difference is that Q-NPs evoke (i.e. introduce or are anaphoric to discourse referents for) distributive nominal-valued dependencies, which can interact scopally, whereas name-like NPs evoke atomic nominal types, which cannot. Similarly, in the verbal domain we predict a parallel distinction between Q-verbs, which evoke distributive episode-valued dependencies, and atomic episodic verbs, which evoke basic events or states.

4.1 Scopal independence

Two Q-verbs, or Q-affixes, may co-specify the same distributive dependency. In that case they are scopally independent, that is, neither is in the scope of the other.

For example, in Kalaallisut habitual Q-suffixes presuppose that the verbal base evokes a habit (Bittner 2007a). Two habitual Q-suffixes may occur in sequence (e.g *-gajut-tar* 'often-habit' in (6ii), (11a, b), (48iii); or *-llattaar-tar* 'sometimes-habit' (53ii)), in which case they co-specify the distribution of the base habit. The first habitual Q-suffix (*-gajut* 'often' or *-llattaar* 'sometimes') locates the episodes instantiating the base habit at Q-many instances of the aforementioned kind of time (in discourse (53), evoked in (53i)). The second Q-suffix (*-tar* 'habit') sets up a new discourse referent for this temporal distribution—i.e. a new kind of time.

(53) i. *Ataataga* *sapaatikkut* *isirtarpuq.*
ataata-ga *sapaat-kkut* *isir-tar-pu-q.*
dad-1SG.SG Sunday-SG.VIA enter-habit-IND.IV-3SG
My dad drops in on Sundays.

ii. *Skakkirlattaartarpugut.*
*skakki-r-**llattaar-tar**-pu-gut*
chess-do-sometimes-habit-IND.IV-1PL
Sometimes we play chess.

Alternatively, a co-specifying anaphoric chain may consist of a topic-elaborating Q-verb and the elaborated Q-verb. Thus, (54) is truth conditionally equivalent to (53) but differs in information structure. The topic-elaborating Q-verb (54ii) evokes a habit of the topical plurality (the speaker and his father) that is instantiated at Q-many times of the aforementioned kind (54i). The matrix verb (54iii) further specifies that each episode instantiating the aforementioned habit (54ii) is a process in which the topical plurality plays chess.

(54) i. *Ataataga* *sapaatikkut* *isirtarpuq.*
ataata-ga *sapaat-kkut* *isir-tar-pu-q.*
dad-1SG.SG Sunday-SG.VIA enter-habit-IND.IV-3SG
My dad drops in on Sundays.

ii. *Ilaanniiriarluta*
***ilaanni-Vriar**-llu-ta*
sometimes-v.with.cn.frequency-ELA$_T$-1PL
Sometimes we play chess.

iii. *skakkirtarpugut.*
*skakki-r-**tar**-pu-gut*
chess-do-habit-IND.IV-1PL

Anaphorically linked Q-verbs may co-specify any distributive verbal dependency. In (54ii, iii) the dependency is a habitual process, i.e. a set of processes (range of the dependency) is distributed over worlds and times (plural domain). In (23a), a set of atomic events is distributed in this way; in (5i), a set of processes is distributed over pluralities; in (35), a set of states is distributed over times; in (48iii, iv), a set of processes is distributed over pluralities, worlds, and times; and so on, and so forth. Anaphorically linked Q-verbs can also co-specify distributive verbal dependencies quantifying over places (55ii, iii) or individuals (56ii, iii):

(55) [i. The next day we saw another island.]

ii. *Qattunirasaarlunilu*
*qattuniq-**gasaar**-llu-Ni=lu*
hill-have.everywhere-ELA$_T$-3SG$_T$=and
There were hills and trees everywhere.

iii. *urpiqartitirpuq.*
*urpik-qar-**titir**-pu-q.*
tree-have-dist-IND.IV-3SG

(56) [i. At once the Great Spirit called all the birds together.]

ii. *Timmissat* *tuusintilikkuutaarlutik*
timmiaq-t *tuusinti-lik-**kkuutaar**-llu-tik*
bird-PL thousand-with-v.in.units.of-ELA$_T$-3PL$_T$
Birds by the thousands

iii. *sumit* *tamaanga* *aggiapput.*
su-mit *tamaq-anga* *aggir-**at**-pu-t*
what-SG.ABL all-ABL approach-simultaneously-IND.IV-3PL
came flying, all at once, from everywhere.

An anaphoric chain that co-specifies a distributive verbal dependency may contain any number of Q-verbs and may affect the interpretation of the subsequent discourse. For instance, a habitual speech event or a multi-stage speech process—such as (6ii) or (57iii)—may induce a similarly distributed interpretation of a direct quote—i.e. an instance-dependent reading of (6iii) or stage-dependent reading of (57v). The instance-dependent interpretation of the quote in (6iii), induced by the habitual speech event of (6ii), has already been discussed (section 1).

(57) i. *Ilitsirsuutit* *malittariniartillutigit.*
ilitsirsuut-t *malittari-niar-tit-llu-tigit*
instruction-PL follow-try-state-ELA$_T$-1PL.3PL
As we$_T$ worked our way through [the instructions]$^{\perp}$

ii. *Jimmip* *Tommillu* *tulliriiaarlutik*
Jim-p *Tom-p=lu* *tulliq-**giiaar**-llu-tik*
Jim-SG.ERG Tom-SG.ERG=and next-V.in.many.rn.pairs-ELA$_T$-3PL$_T$
[Jim and Tom]^{T} by turns

iii. *apiriqattaarpaannga* iv. *ilungirsuraluttuinnarlutik*
*apiri-**qattaar**-pa-annga* *ilungirsur-**galuttuinnar**-llu-tik*
ask-cyclic.process-IND.TV-3PL.1PL struggle-increasingly-ELA$_T$-3PL$_T$
kept asking me$^{\perp}$ with increasing desperation:

v. "*Tullianik* *sussaanga*?"
tulliq-a-nik *su-ssa-pi-nga*
next-3SG$_{\perp}$.SG-MOD do.what-prospect-QUE-1SG
"What do I do next?"

In the episodic discourse (57) the initial topic-elaboration (57i) updates the topic time to the duration of an attempt by the topical plurality (we$_T$) to follow a set of instructions. The second topic-elaboration (57ii) promotes the sub-plurality of Jim and Tom to topical status (3PL$_T$) and evokes a cyclic process, with many cycles, each consisting of two events—an action by Jim followed by an action by Tom. The matrix verb (57iii) further specifies this distributive dependency: each stage of this cyclic process is an event whose agent asks the speaker a question. In addition, the post-posed topic-elaboration (57iv) specifies that at each successive stage the agent ranks one notch higher on a scale of increasingly desperate kinds of individuals (analyzing degrees as local kinds; see Bittner, 2003). In the context of this multi-stage speech process the direct quote in (57v) receives a stage-dependent interpretation—analogous to the instance-dependent interpretation of the quote in (6iii) induced by the habitual speech event of (6ii). In (57v), for each stage of this speech process, the interrogative mood refers to the time of the current inquiry; the first person refers to the current speaker; and the stage anaphor 'next-3SG$_{\perp}$.SG' refers to the currently next stage—temporally located during the result time of the current inquiry—of the aforementioned process of trying to follow a set of instructions.

Similarly, in Bininj Gun-wok (BG) and Polish (P) Q-verbs can enter into co-specifying chains. The grammatical marking varies, but within each chain the antecedent Q-verb (e.g. (58iii) or (59iii)) is scopally independent of co-specifying anaphors in the same chain ((58iv) or (59iv)). In Bininj Gun-wok anaphoric chains with a pluractional and an incorporated verb co-specifying the same process (e.g. (46a, b)) also instantiate this general phenomenon.

(58) BG i. *Worhna+worhna-ng* ii. *bi-na-ng* *na-ne*
3.PST.watch+watch-PFV.PST 3/3.PST-see-PFV.PST M-that
iii. *ka-m-**kud**+**kudme*** iv. *ka-m-**re**+**re*** v. *bebme-ng.*
3-hither-run+run.NPST 3-hither-go+go.NPST 3.PST.emerge-PFV.PST
He kept watch until he saw him come running home. (Evans 2003, p. 688)

(59) P [i. A terrorist broke into a school and took ten hostages. ii. As it turned out later,]
iii. *wkrótce* *ich* ***po**-zabija-ł*
soon them.ACC [dist-kill^{IPF}]^{PFV}-PST.SG
he soon killed off every single one of them
iv. *codziennie* *wykańcza-jąc* *po* *dwóch* *albo* *trzech*
daily finish.off^{IPF}-IP dist two.ACC or three.ACC
finishing off two or three a day
w *coraz* *bardziej* *okrutny* *sposób.*
in ever more cruel.SG.ACC manner.ACC
in an increasingly cruel manner.

In sum, scopally independent Q-verbs can be understood in terms of co-specifying anaphora to a distributive verbal dependency. In contrast, it is not clear how to represent this phenomenon, which is common in natural language discourse, in terms of tripartite LFs.

4.2 Scope dependencies

In discourse referential terms, a Q-verb takes scope under (over) another element if the distributed episodes it evokes depend on the values (determine the arguments) of a functional referent evoked by that element.

In Kalaallisut (60iii) a temporal quantifier (oblique Q-NP or topic-elaborating Q-verb) is anaphorically linked to a habitual suffix (*-tar*) in the matrix verb. Together, they co-specify the temporal distribution of a habit—world- and time-dependent victory. The habitual suffix, and hence the entire anaphoric chain, is in the scope of a *de se* report suffix (*-nirar* 'say'). The report suffix evokes a real (IND) speech event in which the topical individual (the speaker's father) expresses a certain proposition. That is, in addition to the referent for this speech event, the report suffix evokes a modal referent for the class of worlds where the reported proposition is true. The reported winning habit is located in this class of worlds. Since the report may be false, this class need not include the speech reality, even though the reported winning habit is temporally correlated with a real chess playing habit (cf. habitual report in (6)).

(60) [i. My dad^{T} plays chess.]
ii. *Siurna* *arnami* *uqaluqatigimmani*
siurna *arna-mi* *uqalu-qat-gi-mm-ani*
last.year mother-3SG$_{T}$.SG.ERG talk-mate-rn\tv-FCT$_{\perp}$-3SG$_{\perp}$.3SG
Last year when his$_{T}$ mother$_{\perp}$ spoke with him$_{T}$
iii. {*ilaannikkut*, *ilaanniiriarluni*}
{*ilaanni-**kkut*** *ilaanni-**Vriar-llu-Ni***}
{sometimes-VIA, sometimes-v.with.cn.frequency-ELA$_{T}$-3SG$_{T}$}
ajugaasarnirarpuq.
*ajugaa-**tar-nirar**-pu-q*
win-habit-say-IND.IV-3SG
he$_{T}$ said he$_{se}$ sometimes won.

In Kalaallisut a temporal NP in the path-case (VIA) refers to a kind of time (e.g. (60iii), (53i)). An NP in the modifier-case (MOD) can refer to any kind. Depending on the nominal base, it can be a kind of time or place (e.g. a kind instantiated with small intervals, see (61iii)), a kind of animate (e.g. 'woman-SG.MOD' in (62ii)), a kind of inanimate (e.g. 'torch-SG.MOD' in (64iii)), or a kind of proposition (e.g. a kind that is instantiated in states of intent and sends any such state to the proposition that the experiencer of this state is currently in the result state of an event of getting one or more bears, evoked by 'bear-get-prf-v\n-3SG$_{T}$.SG-MOD' in (64iv)).

(61) [i. My dad^{T} plays chess.]
ii. *Siurna* *arnami* *uqaluqatigimmani*
siurna *arna-mi* *uqalu-qat-gi-mm-ani*
last.year mother-3SG$_{T}$.SG.ERG talk-mate-rn\tv-FCT$_{\perp}$-3SG$_{\perp}$.3SG$_{T}$
Last year when his$_{T}$ mother$_{\perp}$ spoke with him$_{T}$
iii. *akulikitsumik* *ajugaasarnirarpuq*.
aku**-lik-kig-tuq-**mik *ajugaa-**tar-nirar**-pu-q*
interval-with-have.small-iv\cn-SG.MOD win-habit-say-IND.IV-3SG
he$_{T}$ said he$_{se}$ frequently (*lit.* with small intervals) won.

In (61iii) the temporal modifier-NP sets up a topical sub-kind (instantiated with small intervals) of the aforementioned kind of time when the topical individual (he$_{T}$) plays chess. It thereby specifies the distribution of the winning habit (*-tar*) in the scope of the *de se* report (*-nirar*) just like the temporal path-NP in (60iii), except for a different quantificational force.

In (62ii) the animate modifier-NP ('woman-SG.MOD') evokes a (local) kind of woman, i.e. a function that sends each instantiation world and episode to the woman who instantiates this (local) kind in that episode in that world.

(62) [i. Juuna^{T} is impossible!]
ii. *Sapaatip* *akunnira* *kingulliq* *unnuit* *tamaasa*
sapaat-p *akunniq-a* *kingu-lliq-q* *unnuk-t* *tamaq-isa*
Sunday-SG.ERG interval-3SG$_{\perp}$.SG rear-most-SG evening-PL all-PL$_{\perp}$
Last week every evening
arnamik *allamik* *angirlaassiqattaarpuq*.
arna-mik *alla-mik* *angirlar-ut-**si-qattaar**-pu-q*
woman-SG.MOD other-SG.MOD come.home-with-apass-cyclic.process-IND.IV-3SG
he$_{T}$ came home with a different woman.

This kind-level NP is anaphorically linked to the antipassive suffix (*-si*) in the scope of the cyclic process-forming *-qattaar* on the matrix verb (IND). That is, the evoked process is real (from the point of view of the speech event) and has a cyclic structure consisting of events where the currently topical individual (Juuna) comes home with the woman who instantiates the aforementioned MOD-kind in that event in the speech reality. The modifier 'other' receives a kind-internal interpretation, i.e. the kind is instantiated by different women in different events that constitute stages (cycles) of this process. Sentence (62ii) is thus interpreted as an elaboration of sentence (62i), so this discourse is coherent.

In contrast, in (63ii) the unmarked object NP ('woman-SG') antecedes singular object agreement on the verb ('3SG.3SG'). In episodic contexts—including complex episodes, such as cyclic processes—singular agreement requires the referent to be a particular individual. But if the same woman must be involved in each stage (home-coming event) of the process, then the anaphoric presupposition of 'other' cannot be resolved. Therefore, there is no sensible discourse relation between sentences (63i) and (63ii), so this discourse is incoherent.

(63) [i. Juuna^{T} is impossible!]
ii. # *Sapaatip* *akunnira* *kingulliq* *unnuit* *tamaasa*
sapaat-p *akunniq-a* *kingu-lliq-q* *unnuk-t* *tamaq-isa*
Sunday-SG.ERG interval-3SG$_{\perp}$.SG rear-most-SG evening-PL all-PL$_{\perp}$
Last week every evening
arnaq *alla* *angirlaatiqattaarpaa*.
arna-q *alla-q* *angirlar-ut-**qattaar**-pa-**a***
woman-SG other-SG come.home-with-cyclic.process-IND.TV-3SG.3SG
he$_{T}$ came home with this$_{\perp}$ other woman.

In habitual—especially generic—contexts all NPs can refer to kinds (pace Bittner, 1995; contra Bittner, 1987, and van Geenhoven, 2004). Singular agreement on the verb then favors an individual-dependent reading, distributed over the individuals of the kind evoked by the agreeing (subject or object) NP. Thus, the salient interpretation of discourse (64)—with the

process-forming *-qattaar* in the scope of the habitual *-tar*—evokes a habitual cyclic process distributed over bear hunters.

(64) i. *Kapirlattumi* *piniartuq* *nannussimatilluni,*
kapirlag-tuq-mi *piniar-tuq-q* *nanuq-g-sima-tit-llu-Ni*
be.arctic.night-IV\CN-SG.LOC hunt-IV\CN-SG bear-get-PRF-STATE-ELA$_T$-3SG$_T$
During the arctic night when a hunter^T has killed a bear

ii. *nunaqqatini* *tikikkiarturtillugit*
nuna-qar-qat-ni *tikik-iar-tur-tit-llu-git*
land-have-mate-3SG$_T$.PL arrive-go.to-process-state-ELA$_T$-3PL$_\perp$
and is approaching his$_T$ fellow villagers$^\perp$

iii. *qaammartartumik* *ikitsiqattaartarpuq,*
qaammartartu-mik *ikit-**si-qattaar-tar**-pu-q*
torch-SG.MOD turn.on-APASS-cyclic.process-habit-IND.IV-3SG
he$_T$ keeps flashing a torch,

iv. *kalirrinniarlugit* *nannussimanirminik.*
kalirrig-niar-llu-git *nanuq-g-sima-nir-mi-nik*
alert-intend-ELA$_T$-3PL$_\perp$ bear-get-PRF-V\N-3SG$_T$.SG-MOD
(intending) to alert them$_\perp$ that he$_{sc}$'s got a bear.

That is, for each instantiation world and time, each hunter in the result state of killing one or more bears (initial topic-elaboration (64i)) and in the process of approaching his fellow villagers (second topic-elaboration (64ii)) is mapped to a cyclic process (*-qattaar* under *-tar* in (64iii)). Each cycle of this process is an event in which the hunter turns on the torch that instantiates, in this cycle (kind-anaphor *-si* 'apass' under *-qattaar*), the aforementioned kind evoked by the modifier NP (MOD). World knowledge suggests that the same torch is likely to be used throughout this cyclic process on a given hunting trip, but kind-level reference, generally associated with the modifier-case (MOD) in Kalaallisut, suggests that a given hunter may use different torches in cyclic processes instantiating this habit on different hunting trips. The same holds for the proposition-valued kind evoked by the final modifier-NP (in the post-posed topic-elaboration (64iv)), which specifies the propositional object of the concurrent state of intent.

Mutatis mutandis, this account extends to scope dependencies involving other types of Q-verbs—e.g. habitual place- and plurality-dependent states evoked in (65).

(65) i. *Kalaallit* *Nunaanni*
kalaaliq-t *nuna-at-ni*
Greenlander-PL.ERG land-3PL$_\perp$.SG-LOC
In Greenland
nunakkut *angalasut* *ilaanniiriarlutik*
nuna-kkut *angala-tuq-t* *ilaanni-Vriar-llu-tik*
land-SG.VIA travel-IV\CN-PL sometimes-V.with.CN.frequency-ELA$_T$-3PL$_T$
travelers by land sometimes

ii. *tammartarput*
tammar-tar-pu-t
get.lost-habit-IND.IV-3PL
get lost

iii. *qaqqat* *ilai* *assigiaartitirtarmata*
qaqqa-t *ila-it* *assi-**giaar-titir-tar**-mm-ata*
mountain-PL.ERG part-3PL$_\perp$.PL copy.of-V.in.many.rn.pairs-dist-habit-FCT$_\perp$-3PL$_\perp$
because everywhere there are mountains$_\perp$ that are all alike.

Neither Polish nor Bininj Gun-wok has recursive morphology that would allow one verbal Q-affix to be scopally embedded under another. Although Bininj Gun-wok is polysynthetic like Kalaallisut (i.e. an average word consists of many morphemes; Sapir, 1921), its morphology is not recursive but templatic, i.e. it imposes an upper limit on a well-formed verbal word (twenty slots, according to Evans, 2003, p. 318). The template does not allow for scopal embedding of Q-affixes, only co-specification (as in (46a, b), (52c)). But other languages with productive Q-affixes and recursive morphology provide evidence of scope dependencies parallel to Kalaallisut—e.g. (66a, b, c, d) in ASL (Poizner *et al.*, 1987):

(66) a. $_a$[*student*]$_{TOP}$, *book Ann give*$_a$-***exhaustive***
ASL Ann gave a book to each student.

b. *give*-[[***exhaustive***] ***durational***]
give to each in turn, that action recurring over time

c. *give*-[[***durational***] ***exhaustive***]]
give continuously to each in turn

d. *give*-[[[***durational***] ***exhaustive***] ***durational***]
give continuously to each in turn, that action recurring over time

In sum, scope dependencies involving Q-verbs are amenable to a direct surface-based account. In discourse referential terms, a Q-verb takes scope under (over) another element if the distributed episodes it evokes depend on the values (determine the arguments) of a functional discourse referent evoked by that element.

4.3 Scope ambiguity

We have argued that scope independence as well as scope dependencies can be analyzed in terms of anaphoric relations between discourse referents for functional dependencies. When there is more than one possible relation, this approach predicts ambiguous scope.

A case in point is the Kalaallisut discourse (67), whose interpretation depends on the number of treasures per drawer.

(67) [i. When the children had eaten, they went into the parlor where there was a huge chest with many tiny drawers.]

ii. *Pippip* *amusartuararpassuit* *ammaqattaarpai*
Pippi-p *amusartu-araq-paa-rsuaq-t* *ammar-**qattaar**-pa-i*
Pippi-SG.ERG drawer-tiny-lot-big-PL open-cyclic.process-IND.TV-3SG.3PL
Pippi$_T$ kept opening all the tiny drawers

iii. *irlinnartuutini* *tamaasa* *takutititirlugit*
irlinnar-tuq-ut-ni *tamaq-isa* *taku-tit-**titir**-llu-git*
be.treasured-iv\cn-owned-3SG$_T$.PL all-PL$_\perp$ see-cause-dist-ELA$_T$-3PL$_\perp$
showing all of her$_T$ treasures one by one.

If there is only one treasure per drawer, the Q-verbs in (67ii, iii) are scopally independent. In (67ii) the cyclic process-forming *-qattaar* evokes a function that sends each drawer opening event to the next event. In each event—a stage as well as a cycle of this cyclic process—Pippi opens a different drawer from the aforementioned large set (67i). The whole cyclic process covers the entire set of drawers. In (67iii) the topic-elaborating Q-verb, with the distributive *-titir*, further specifies the aforementioned set of drawer opening events as the range of a different distributive dependency: every opening of a drawer is also a showing of the treasure in that drawer.

Alternatively, suppose there are several treasures in each drawer. The topic elaborating Q-verb in (67iii), with *-titir*, can then elaborate the base 'open-' of the antecedent *-qattar* Q-verb in (67ii) (recall analogous ambiguity in (13)). On this reading, *-titir* is in the scope of *-qattaar*. That is, the distributive dependency that maps treasures to showing events does not specify the entire cyclic process of successively opening all the drawers. Instead, it specifies a cycle—the result state of opening one drawer. Each opening of a drawer results in a different plural set of treasure showing events, distributed over the plural set of treasures in that drawer.

Another scopally ambiguous configuration is exemplified in discourse (68). Here the habitual Q-suffix *-gajut* 'often' can take either wide or narrow scope relative to the kind-level temporal noun 'next.day-3SG$_\perp$.SG-LOC'. The Q-suffix presupposes a salient domain of quantification. On one reading, this domain is identified with the set of days after a chess game, evoked by 'next.day-3SG$_\perp$.SG-LOC'. In effect, the Q-suffix *-gajut* 'often' takes wide scope:

many days after a chess game are reporting days. More precisely, though, 'next.day-3SG$_\perp$.SG-LOC' evokes not just a set of days but a kind of day: in each chess playing world, each chess game is mapped to the next day. This kind-level referent supports a distributed reading, with apparently reversed scope: for each chess game many events the next day are reporting events (see Bittner, 2007a, for a formal implementation).

(68) [i. My dad$_T$ plays chess.]

ii. *Aqaguani* *uqarajuttarpuq*: *"Ajugaasimavunga."*
***aqagu-a**-ni* *uqar-**gajut-tar**-pu-q* *"ajugaa-sima-pu-nga"*
next.day-3SG$_\perp$.SG-LOC say-often-habit-IND.IV-3SG "win-prf-IND.IV-1SG"
The next day he$_T$ often says: "I won."

In sum, our surface-based analysis of Q-verbs in terms of discourse reference to distributive verbal dependencies fully accounts for their scope behavior, unlike the tripartite LF approach. Scopal independence, as well as scope dependencies and ambiguous scope can all be understood in terms of anaphoric interactions between referents for distributive verbal dependencies evoked by Q-verbs and other functional discourse referents in the local context.

5 Domain and Force of Quantification

Heim (1982) implements Lewis's (1975) analysis of English Q-adverbs in an LF-based dynamic semantics and extends this analysis to English modals. On her analysis, both Q-adverbs and modals head tripartite LFs (e.g. (1′b, c)). To account for the universal force of bare generics and conditionals, without any Q-adverbs or modals, Heim posits covert universal quantifiers at LF (e.g. $\Box_{1,2}$ in (1′d)). The tripartite LF approach has been very influential in crosslinguistic work on quantification (not least due to Partee, 1991, 1995, and Bach *et al.*, 1995), but even for English it is problematic. The covert quantifiers in bare generics and conditionals are not motivated on independent syntactic grounds, and their universal force must be stipulated. This problem is aggravated by the fact that elsewhere in the same LFs Heim posits covert existential quantifiers ($\exists$), whose existential force must likewise be stipulated.

Bittner (1995) points out additional problems for the tripartite LF approach, posed by quantification in Kalaallisut. She focuses on Q-verbs formed with the habitual suffix *-tar*, which optionally licenses a temporal Q-noun outside of the Q-verb—e.g. *akulikitsumik* 'interval-with-have.small-iv\cn-SG.MOD' in (61iii), or *ilaannikkut* 'sometimes-SG.VIA' in (69iii). If the habitual verbal suffix occurs alone, without any temporal Q-noun, then the quantificational force is understood to be universal, just as in bare English habituals. That is, in Kalaallisut (61) as well as (69), if the parenthesized temporal Q-noun is left out, then in those

worlds where the report by the currently topical individual (the speaker's father) is true, the reporting agent wins *every* game instantiating the aforementioned real chess playing habit (evoked in (61i) or (69i)). In contrast, if the parenthesized temporal Q-noun is present, then the reporting agent wins the proportion of the games specified by the Q-noun—i.e., *many* games in (61iii), or *some* in (69iii). In either case, the scope of the optional temporal Q-noun is determined by the verb-internal position of the licensing habitual suffix *-tar*. Without a habitual suffix on the verb, a temporal Q-noun is ungrammatical (e.g. recall *(23b)).

(69) i. *Ataataga* *skakkirtarpuq.*
ataata-ga *skakki-r-tar-pu-q*
dad-1SG.SG chess-do-habit-IND.IV-3SG
My dad$_T$ plays chess.

ii. *Siurna* *arnami* *uqaluqatigimmani*
siurna *arna-mi* *uqalu-qat-gi-mm-ani*
last.year mother-3SG$_T$.SG.ERG talk-mate-rn\tv-FCT$_\perp$-3SG$_\perp$.3SG$_T$
Last year when his$_T$ mother$_\perp$ spoke with him$_T$

iii. (*ilaannikkunnguuq*)
(***ilaanni****-kkut=guuq*)
(sometimes-SG.VIA=RPT)
skakkiqqatiminit *isumaliurluarnirulluni*
skakki-r-qat-mi-nit *isuma-liur-luar-niru-llu-Ni*
chess-do-mate-3SG$_T$.SG-ABL idea-make-well-more-ELA$_T$-3SG$_T$
[he$_T$] said that (sometimes) he$_T$ came up with better ideas than the other player and

iv. *ajugaasarnirarpuq.*
*ajugaa-****tar****-nirar-pu-q*
win-habit-say-IND.IV-3SG
won.

Bittner (1995) reports this construction as a compositional challenge for the tripartite LF approach. Partee (1995) seems to disagree, but we still do not see any satisfactory analysis in terms of tripartite LFs. Any such analysis of Kalaallisut (69) would require the same stipulations as the account of English (1). In addition, to derive tripartite LFs for Kalaallisut, we would have to violate lexical integrity—an inviolable principle in crosslinguistically viable and computationally attractive theories of syntax (HPSG, LFG). Compounding the problem, discourse (69) would contain both too few Q-elements and too many. Therefore, we would have to obscure the relation between the actual surface form and the putative tripartite LF still further, by positing covert quantifiers as well as deleting overt material. In the variant of (69) without the temporal Q-noun we would have to posit a covert universal (Heim's □) to account for the understood universal force. And in the variant with the Q-noun we would have a surplus

of items meaning 'say'—to wit, the *de se* report suffix *-nirar* as well as the reportative evidential clitic *=guuq*, construed with this suffix. These two Kalaallisut items are not synonymous, so deleting either one at LF should be ruled out on the pain of losing information.

In contrast, the discourse referential analysis of Bittner (2007a) interprets the actual surface form as is, by incremental update. There is no need for any *ad hoc* stipulations. Bittner (2007a) extends Stone's (1997) analysis of modals as discourse reference to distributive functional dependencies. This approach offers a principled reason why the quantificational force in discourses like (69) (and modal analogues) depends on the presence or absence of a temporal Q-noun. The habitual suffix *-tar* presupposes that the base evokes a habit and identifies the distribution of this habit as a kind of time—the aforementioned kind (as in (69iv)), or else a new kind of time if there is no discourse antecedent (as in (69i)). If there is no temporal Q-noun in (69iii), the habitual suffix *-tar* in (69iv) is anaphoric to the aforementioned kind of time evoked by *-tar* in (69i)—i.e., in the worlds where the father's report is true *every* chess game terminates in a victory. Thus, the universal force is accounted for in a principled way—as a manifestation of distributivity—not by an *ad hoc* stipulation.

The temporal Q-noun, and its construal with a habitual verb, also falls into place. The Q-noun affects kind-level anaphora by evoking a topical sub-kind—in (69iii), a kind of time instantiated in the father's report worlds during *some* of the aforementioned chess games. As a temporal kind-level topic, the Q-noun requires a habitual verb to comment. Therefore, the habitual suffix of the verb must be anaphoric to this Q-noun rather than to any previously mentioned kind of time. This accounts for the shift in quantificational force, which on this view is due to anaphora that restricts the domain of temporal distribution to a topical sub-domain.

Last but not least, the construal of the *de se* report suffix *-nirar* in (69iv) with the reportative evidential clitic *=guuq* in (69iii) can also be understood in terms of anaphora. Since both items evoke speech events, they can form an anaphoric chain co-specifying the same speech event—formally parallel to the anaphoric chain in ***A doctor*** *came in.* ***She*** *looked tired.*, which co-specifies the same individual. The reportative *=guuq* evokes a speech event whose agent is not the current speaker. By default, the agent is the topical individual, as in (69iii). The proposition expressed is set up as a topical modality. In (69iii) this modality is also the domain of the topical kind of time, evoked by the Q-noun hosting the reportative *=guuq*. The topical kind of time induces a kind- and habit-level interpretation of the following animate noun (ABL) and topic-elaborating verb (ELA$_T$) in (69iii). As usual, topic elaboration forms an anaphoric chain with the elaborated head—here, with 'win-habit-' in (69iv), which further specifies the result states of the designated stages of processes instantiating the aforementioned good thinking habit. Finally, the *de se* report suffix *-nirar* in (69iv) further specifies the reporting event evoked by the reportative *=guuq* in (69iii). The new specifications require temporal and individual *de se* (á la Lewis, 1979)—i.e, in the worlds where the proposition expressed is true, the reported winning habit of the reporting agent is current at the time of this speech event.

Both variants of discourse (69)—with or without the optional temporal Q-noun and the reportative evidential clitic—can thus be interpreted directly, by incremental update. The lexical integrity of complex words is respected: roots, suffixes, and clitics are all interpreted exactly where they are. There are no missing temporal or modal quantifiers, so there is no need to posit any covert quantifiers with stipulated force. Neither are there any superfluous items to be deleted. Indeed, all of the transformations required by tripartite LF-based semantics are banned by incremental update, which crucially requires the exact surface form as the input.

In this paper we have extended the surface-based discourse referential approach of Bittner (2007a) to other Q-verbs and other languages. Mutatis mutandis the referential account of the domain and force of temporal and modal quantification in discourse (69) should therefore generalize to all Q-verbs. Examples (70) through (72) below show that other types of distributive verbal dependencies indeed exhibit analogous phenomena—i.e., domain selection by anaphora to a salient, preferably topical, functional referent; default universal force due to distributivity; and non-universal force when the domain of distribution is restricted to a topical sub-domain.

In particular, discourse (70) illustrates all of these phenomena for a set of processes distributed over the currently topical set of (atomic or plural) individuals (cf. (5)).

(70) *Ullumi* *atuartitsigama* *atuartut* *ilai*
ulluq-mi *atuar-tit-si-ga-ma* *atuar-tuq-t* ***ila-it***
day-SG.LOC study-cause-apass-FCT$_T$-1SG study-iv\cn-PL.ERG part-3PL$_\perp$.PL
Today in my class some of the students
(*marlukkuutaarlutik*) *suliqatigiipput.*
(*marluk-**kkuutaar**-llu-tik*) *suli-qat-**gii-g**-pu-t.*
(two-v.in.units.of-ELA$_T$-3PL$_T$) work-mate-set-cn\iv-IND.IV-3PL
worked together (in pairs).

Discourse (71) exemplifies analogous phenomena for spatially distributed states:

(71) *Aqaguani* *qiqirtaq* *alla* *takuarput.*
aqagu-a-ni *qiqirta-q* *alla-q* *taku-pa-rput.*
next.day-3SG$_\perp$.SG-LOC island-SG other-SG see-IND.TV-1PL.3SG
The next day we saw another island.
(*Ilarujussua*) *qattunirasaarlunilu* *urpiqartitirpuq.*
(***ila-rujussuaq**-a*) *qattuniq-**gasaar**-llu-Ni=lu* *urpik-qar-**titir**-pu-q.*
(part-huge-3SG$_\perp$.SG) hill-have.everywhere-ELA$_T$-3SG$_T$=and tree-have-dist-IND.IV-3SG
(On most of it) there were hills and trees everywhere.

Finally, discourse (72) illustrates analogous phenomena for habitual distributed processes—i.e., a set of processes distributed in the speech reality over time periods of the currently salient kind. This temporal kind is evoked by *-llattaar* 'sometimes', if this Q-suffix is present in sentence (72iii); otherwise, by the Q-suffix *-gajut* 'often' in sentence (72i). For each period of the topical kind, the evoked processes are also distributed over the walrus families that instantiate the topical kind evoked by the plural subject NP ('walrus-PL') in (72i).

(72) i. *Aarrit* *ilaqutariikkutaarajuttarput.*
aaviq-t *ilaqutaq-gii-g-kkuutaar-gajut-tar-pu-t*
walrus-PL relative-set-cn\iv-v.in.units.of-often-habit-IND.IV-3PL
Walruses$_T$ often live in family groups.
ii. *Ingirlanirtik* *sivisutillugu*
ingirla-niq-rtik *sivi-su-tit-llu-gu*
travel-v\n-3PL$_T$.SG duration-have.big-state-ELA$_T$-3SG$_\perp$
When they$_T$ are on a long journey$_\perp$
iii. *ilaqutariit* *nukarlirsaat* *arnaata*
ilaqutaq-gii-t *nukarliq-taq-at* *arna-ata*
relative.of-set-PL.ERG youngest-of-3PL$_\perp$.PL mother-3SG$_\perp$.SG.ERG
amaarlugu *ingirlaarut*(*illattaar*)*tarpaa.*
amaar-llu-gu *ingirla-ar-ut*(***-llattaar**)-**tar**-pa-a*
carry.on.back-ELA$_T$-3SG$_\perp$ travel-a.bit-with(-sometimes)-habit-IND.TV-3SG.3SG
the$_T$ mother (sometimes) carries the$_T$ youngster of the$_T$ family piggyback for a bit.

Similarly, in Bininj Gun-wok (73) and Polish (74) the distributive Q-affix (pluractional or *po-*) presupposes a plural domain, and this anaphoric presupposition is resolved to the currently salient plural set of individuals—just as in Kalaallisut (70) (recall also Polish (59)).

(73) BG i. *Birri-buyika minj balemane birri-bebme-ninj* ii. *bonj*
3PL-other NEG where 3PL.PST-emerge-IRR finish
Some of the others had nowhere to get out, and so in the end
birri-ru-y *birri-dowe-ng* *birri-**dukka+rrukka**-rr-inj.*
3PL.PST-burn-PFV.PST 3PL.PST-die-PFV.PST 3PL.PST-coil.up+coil.up-*se*-PFV.PST
they were burned, writhing to death. (Evans 2003, (5.213))

(74) P [i. A terrorist broke into a school and took ten hostages. ii. As it turned out later, …]
iii. *wkrótce* *większość* *z* *nich* ***po**-zabija-ł.*
soon majority.ACC from them.GEN [dist-kill^{IPF}]^{PFV}-PST.SG
he soon killed off most of them, one by one.

We conclude that the hypothesis that Q-verbs refer to distributive verbal dependencies fully accounts for the domain of quantification and the apparently variable quantificational force. In referential terms the domain of quantification is the domain of the distributive dependency. This is determined directly off the surface form by centering-based anaphora—within or across sentence-boundaries—to a discourse referent that provides a plural set of semantic objects of the requisite type. For all types of distributive dependencies, the default universal force follows directly from distributivity, without any *ad hoc* stipulations required by LF-based accounts. Non-universal force arises when centering-based domain anaphora is resolved to a topical sub-domain of some lower ranked domain referent.

6 INSTANTIATING ANAPHORA

So far we have motivated our proposal that Q-verbs evoke distributive verbal dependencies on the basis of well-known characteristics of quantifiers: the scope of quantification, domain, and force. We have argued that all of these phenomena are problematic for tripartite LFs but can be understood in terms of discourse anaphora, within or across sentence boundaries, between distributive verbal dependencies evoked by Q-verbs and other discourse referents for plural sets or functional dependencies in the local context. Our analysis crucially relies on discourse reference to functional types. The set of requisite functional types appears to be open, so we do not see any way to recast our analysis in terms of discourse reference to a finite set of basic types (i.e. in a more restricted framework without discourse referents for functions, e.g. DRT of Kamp and Reyle, 1993, or Plural Compositional DRT of Brasoveanu, 2007).

Our third argument is based on *instantiating anaphora* (Bittner, 2007a, b)—another phenomenon that is characteristic of quantifiers and can be understood in terms of discourse reference to functional dependencies. Instantiating anaphora is common in naturally occurring discourse, mediating transitions from talk about a distributed pattern to talk about a particular instance of that pattern. We have already seen several examples of instantiating anaphora to various types of distributive dependencies: individual-dependent states in (5iii) and (36); time-dependent events in (41ii); and habitual (i.e. world- and time-dependent) events in (6iv). In general, we predict that in virtue of evoking a functional dependency any Q-verb will support instantiating anaphora. Moreover, for all types of functional dependencies, we offer a unified semantic account: instantiating anaphora is anaphoric reference that instantiates an antecedent functional dependency—i.e. sets up a discourse referent for the value (the instantiating semantic object) at a currently salient argument.

In addition to the above examples, which have already been discussed, this unified account applies to anaphora instantiating other types of distributive functional dependencies, for example, spatially distributed events in (75):

(75) [i. Andalaaraq^{T} ran through the thicket after the thieving raven.]

ii. *Tassanngaannaq* *urluvuq* *kimillatsitirluni*
tassanngaannaq *urlu-pu-q* ***kimillag-titir**-llu-Ni*
suddenly trip&fall-IND.IV-3SG get.scratched-dist-ELA$_{T}$-3SG$_{T}$
Suddenly he$_{T}$ tripped and fell and got scratched all over.

iii. *Kiinnammigut* *kimillannira* *annirnarnirpaavuq.*
kiina-mi-kkut ***kimillag**-niq-a* *annirnar-nirpaa-pu-q*
face-3SG$_{T}$.SG-VIA get.scratched-v\n-3SG$_{\perp}$.SG hurt-most-IND.IV-3SG
The scratch on his$_{T}$ face hurt most.

In (75ii) the topic-elaborating Q-verb (ELA$_{T}$) partitions the body of the currently topical individual into a plural set of places and sets up a discourse referent for a function that maps each of these places to an event of the topical individual getting scratched in that place. In (75iii) the initial path-noun (VIA) sets up one of these places as a topical location, while the following verbal base evokes the corresponding scratching event by instantiating anaphora.

In (76) the topic-elaborating (ELA$_{T}$) Q-verb is structurally parallel to (33) and (37iii). Semantically, this topic-elaboration evokes a set of individual-dependent states which all of the individuals in the currently topical set experience at the same time. The matrix verb (IND) further specifies this functional dependency, by evoking a related dependency, distributed over the same individuals, and mapping each of them to a concurrent event of falling through the ice. The indicative mood requires that, from the perspective of the speech event, all of these events are facts (i.e. events that have already happened in the speech reality by the time of the speech event).

(76) *Hansi, Juuna, Kaalilu* *tamarmiullutik* *sikukkut* *nakkarput*
Hans, Juuna, Kaali=lu ***tamaq-mik-u**-llu-tik* *siku-kkut* ***nakkar**-pu-t.*
Hans Juuna Kaali=and all-pl$_{T}$-be-ELA$_{T}$-3PL$_{T}$ ice-SG.VIA fall-IND.IV-3PL
[Hans, Juuna, and Kaali]^{T} all$_{T}$ fell through the ice at the same time.

This analysis predicts, correctly, that (76) (= (77i)) can be elaborated by (77ii), where repeated instantiating anaphora locates these simultaneous falling-through events in different places.

(77) [i. Hans, Juuna, and Kaali all fell through the ice at the same time.]

ii. *Hansi* *Uummannap* *iqqaani* *nakkarpuq,*
Hans *Uummannaq-p* *iqqaq-a-ni* ***nakkar**-pu-q*
Hans Uummannaq-SG.ERG area-3SG$_{\perp}$.SG-LOC fall-IND.IV-3SG
Hans^{T} fell through near Uummannaq,

Juuna *Saattut* *iqqaanni.*
Juuna *Saattu-t* *iqqaq-at-ni*
Juuna Saattut-PL.ERG area-3PL⊥.SG-LOC
Juuna^{T} near Saattut (pl),
Kaalilu *Pirlirviup* *iqqaani.*
Kaali=lu *Pirlirvik-p* *iqqaq-a-ni*
Kaali=and Pirlirvik-SG.ERG area-3SG⊥.SG-LOC
and Kaali^{T} near Pirlirvik.

In contrast, the elaboration in (78ii) is incoherent, because the non-overlapping temporal specifications added by instantiating anaphora conflict with the simultaneity requirement of the antecedent Q-verb in (76) (= (78i)).

(78) [i. Hans, Juuna, and Kaali all fell through the ice at the same time.]
ii.# *Hansi* *siurna* *nakkarpuq.* *Juuna* *ippassaq.* *Kaalilu* *ullumi.*
Hansi *siurna* ***nakkar**-pu-q* *Juuna* *ippassaq* *Kaali-lu* *ullu-mi*
Hans last.year fall-IND.IV-3SG Junna yesterday Kaali=and day-SG.LOC
Hans^{T} fell through last year, Juuna^{T}, yesterday, and Kaali^{T}, today.

Apparent counterexamples involve individual-dependent events that can be construed as stages of a single process, as in (79i). The shared temporal frame evoked by the Q-verb (or its English translation equivalent, *all...simultaneously*) is then the duration of the entire process, so the elaboration in (79ii, iii) (and its English translation) is coherent.

(79) i. *Ilinniartitsisut* *tamarmiullutik*
ilinniar-tit-si-tuq-t ***tamaq-mik-u**-llu-tik*
learn-cause-apass-iv\cn-PL all-pl$_{T}$-be-ELA$_{T}$-3PL$_{T}$
atuagassarpassuarnik *innirsuussipput.*
atuar-gaq-ssaq-paa-rsuaq-nik ***innirsuut-si**-pu-t*
read-tv\cn-prospective-lot-big-PL.MOD recommend-apass-IND.IV-3PL
All the professors^{T} have simultaneously recommended many things to read.
ii. *Ippassaq* *biulugimi* *atuagassarpassuatta*
ippassaq *biulugi-mi* *atuar-ga-ssaq-paa-rsuaq-tta*
yesterday biology-SG.LOC [read-tv\rn-prospective-lot-big-1PL.SG.ERG
allattursimavvia *pivara*
allag-tur-sima-vik-a ***pi**-pa-ra*
write-process-prf-place-3SG⊥.SG] get-IND.TV-1SG.3SG
Yesterday in my biology class I got a long list of things to read,

iii. *ullumilu* *allatursimavviit* *allat* *marluk*
ullu-mi=lu *allag-tur-sima-vik-t* *alla-t* *marluk*
day-SG.LOC=and write-process-prf-place-PL other-PL two
and today, two more lists
tuluttuurnirmut *kalallisuurnirmullu.*
tuluk-tut=Vr-niq-mut *kalaaliq-tut=Vr-niq-mut=lu*
Englishman-EQU=iv-v\n-SG.DAT Greenlander-EQU=iv-v\n-SG.DAT=and
for [my] English class and [my] Kalaallisut class.

Discourse (79) also illustrates another possible complication: instantiating a distributive verbal dependency may involve instantiating a correlated nominal kind. Thus, in (79i) the topic-elaborating Q-verb and the matrix verb jointly evoke a distributive verbal dependency that sends each teacher to a different recommending-event within the topic time set by the Q-verb. The modifier NP—anaphorically linked to the antipassive suffix within the matrix verb—evokes an individual-valued kind instantiated, in each recommending-event, by a long reading list. Hence, instantiating this distributive verbal dependency in (79ii, iii) introduces not only the particular recommending-events (described from the point of view of a student, who receives the recommendation), but also the particular reading list instantiated in each event.

Discourse (80) illustrates verbal and nominal instantiating anaphora in a habitual context. The speaker is a hunter who has accidentally got his kayak cut on sharp new ice. In (80i) he makes an emergency landing on an iceberg. (80ii) describes the next two events. (80iii) relates this particular kayak trip to the speaker's habit of customary kayak use and a correlated habit of carrying a patching kit. (80iv) shifts back to the episodic mode, via an anaphoric demonstrative (*taanna* 'that') referring to the patching kit that instantiates the aforementioned kind in the aforementioned instance of customary kayak use.

(80) [i. I$_{T}$ managed to land on the iceberg just as my kayak began to sink.]
ii. *Niugama* *qajara* *imaarpara.*
niu-ga-ma *qajaq-ra* *ima-ir-pa-ra*
get.out.on.land-FCT$_{T}$-1SG kayak-1SG.SG content.of-remove-IND.TV-1SG.3SG
When I$_{T}$ got out, I$_{T}$ poured out the contents of my kayak$^{\perp}$.
iii. *Qajarturtillunga*
qajaq-tur-tit-llu-nga
kayak-use.as.customary-state-ELA$_{T}$-1SG
When I$_{T}$ am out in a kayak,
ilaassamik *nassartuaannartarpunga.*
ilaaq-ssaq-mik *nassar-**tuaannar-tar**-pu-nga*
patch-prospective-SG.MOD carry-always-habit-IND.IV-1SG
I$_{T}$ always carry something to patch it.

iv. *Taanna* *tiguriarlugu* *tuaviinnaq*
taanna *tigu-riar-llu-gu* *tuaviinnaq*
that take-…and-ELA$_T$-3SG$_T$ hastily
I_T grabbed that$^{\perp}$ and hastily
qaanama *alinnira* *ilaalirpara*
qajaq-ma *alig-niq-a* *ilaar-lir-pa-ra*
kayak-1SG.SG.ERG tear-v\n-3SG$_{\perp}$.SG patch-begin-IND.TV-1SG.3SG
began to patch the tear$^{\perp}$ in my kayak.

In other languages, too, Q-verbs support instantiating anaphors—witness Polish (81) and Bininj Gun-wok (82):

(81) P
i. *W latach* *osiemdziesiątych* *wielu* *z* *moich* *przyjaciół*
in years.LOC eighties.LOC many from my.PL.GEN close.friends.GEN
In the eighties many of my close friends
po-wyjeżdża-ło *z* *kraju.*
[dist-go.away^{IPFV}]^{PFV}-PST.SG from country.GEN
left the country, one after another.
ii. *Najpierw Piotr* ***wyjecha-ł*** *do Stanów, potem Adam do Danii.*
first Peter go.away^{PFV}-PST.SG to States, then Adam to Denmark
First Peter left for the States, then Adam, for Denmark.

(82) BG
[Then the white man said:]
i. *"Ngaben-**wono+wo**-n* *kabirri-**ma-rr**-en,* *yawurrinj* *dja* *yawkyawk."*
1/3PL-give+give-NPST 3PL-marry-rcp-NPST lad and lass
"I will let them marry each other, these lads and lasses."
ii. *Wanjh* *ngokkogen* *bene-bad-**ma-rr**-en* , *bininj* *daluk.*
then at last 3DU.PST-in.due.course-marry-rcp-NPST man girl
So, in due course, two of them get married, a man and a girl.
iii. *Ngarri-wam,* *dird-buyika*
1PL-go.PFV.PST moon-other
We went on, and the next month
ngal-buyika *daluk* *bi-yawoyh-**me**-y* *na-wu* *bininj.*
F-other girl 3/3.PST-again-marry-PFV.PST M-which man
another girl was married to another man.
iv. The white man kept on doing that, *marrying off* whoever grew up at the same time,
v. until at last he had finished *marrying* them all *off.* (Evans 2003, (11.122))

In sum, instantiating anaphora has many different manifestations in natural language discourse. However, in terms of discourse reference, it is a unified phenomenon—to wit, anaphoric reference that instantiates an antecedent functional dependency, i.e. sets up a discourse referent for the value at a currently salient argument. In particular, Q-verbs support instantiating anaphora because they evoke distributive episode-valued dependencies.

7 Conclusions and Predictions

In addition to the quantificational structures formed by Q-determiners (e.g. *every*), Q-adverbs (e.g. *always*), and Q-auxiliaries (e.g. *would*), familiar from research on English, the theory of natural language quantification must allow for Q-verbs—that is, complex verbs containing Q-roots (e.g. Kalaallisut *tamaq-* 'all') and/or Q-affixes (e.g. Slavic distributive *po-*, Bininj Gun-wok pluractional affix, or Kalaallisut *-titir* 'dist', *-tar* 'habit', etc). In languages with recursive morphology a Q-verb may contain any number of Q-affixes. For instance, Kalaallisut has hundreds of derivational suffixes, including many Q-affixes, and its recursive polysynthetic morphology compositionally builds words of any complexity, as productively as English syntax builds sentences. And just like English sentences, polysynthetic Kalaallisut words are transparent to discourse anaphora.

As a consequence, Q-verbs come in many different shapes and sizes. Nevertheless, we have argued for a unified semantic analysis: the most prominent discourse referent of a Q-verb is a distributive verbal dependency—that is, an episode-valued function that sends different semantic objects in a contextually salient plural domain to different episodes. Episodes comprise basic events and states as well as higher-order (telic and atelic) processes. Processes are modeled as successor functions on discourse-transparent stages (events) because they support discourse anaphors to stages (e.g. *next*). The plural domain set may contain objects of any type—including, but not limited to, events (contra Partee, 1991, 1995). In particular, it may contain other distributive dependencies (e.g. local kinds (49) or local habits (50)).

On this analysis, Q-verbs instantiate a semantic universal: the most prominent discourse referent of a verb is an episode(-valued function), while the most prominent discourse referent of a noun is a nominal object(-valued function). In addition, discourse referents for distributive verbal dependencies license anaphoric links that account for some otherwise puzzling characteristics of Q-verbs—to wit, the domain, force, and scope of quantification, as well as the support for instantiating anaphora. In the present empirically oriented paper we have presented these ideas in an informal manner, but they can be formally implemented in terms of surface-based incremental update (see Bittner, 2003, 2007a).

In contrast, the influential analysis in terms of tripartite quantifier-headed LFs—originally proposed for English Q-adverbs, Q-NPs, and Q-auxiliaries (Lewis, 1975; Heim,

1982)—is problematic for Q-verbs. Any derivation of a tripartite LF would violate the lexical integrity of a Q-verb and would therefore be ruled out by computationally attractive syntactic theories such as HPSG or LFG. LF-based semantics would also require positing covert quantifiers with stipulated force as well as deleting 'surplus' elements. And even then it would still fail to capture the interpretation of some Q-verbs—for instance, chains of scopally independent Q-verbs related by co-specifying discourse anaphora, or Q-verbs that serve as antecedents for instantiating discourse anaphors.

While the English-based theory of quantification does not extend to Q-verbs, we conjecture that the crosslinguistic theory of Q-verbs developed in this paper may extend to English Q-categories. A general prediction of our approach is that all Q-categories evoke discourse referents for distributive dependencies, but the values depend on the category. For Q-verbs, the values are of verbal types (episodes); for Q-NPs, the values are of nominal types (individuals, times, places, or propositions); and so on. It is beyond the scope of this paper to develop or test this prediction. We therefore leave it for future research to determine whether our discourse referential approach extends beyond Q-verbs to other Q-categories and other languages.

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3

QUANTIFICATION IN PASSAMAQUODDY[1]

Benjamin Bruening

1 INTRODUCTION

This paper offers a description of how quantificational notions are expressed in Passamaquoddy, a head-marking, free-word-order language of the Algonquian family. I will examine how Passamaquoddy expresses such propositions as *some/many/few/each/every/no girl(s) like horses*. Most of the paper concentrates on quantifiers that have the distribution of or appear within noun phrases (NPs), like these English examples, but the last section (section 6) treats adverbial and verbal quantifiers. For the most part the paper will remain at a descriptive level, but in some cases I will suggest possible analyses. I start with some background on Passamaquoddy, then turn to the inventory of quantificational nominal elements (section 3), their nominal syntax (section 4), their external syntax, including scopal interactions (section 5), and finally adverbial and verbal quantifiers (section 6).

2 BACKGROUND ON PASSAMAQUODDY

Passamaquoddy is an Algonquian language spoken in two communities in Maine, Sipayik (or Pleasant Point) and Indian Township. A mutually intelligible dialect known as Maliseet (sometimes spelled Malecite) is spoken across the border in the province of New Brunswick,

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Canada, and in one community in Maine. The two together are variously referred to as Maliseet-Passamaquoddy or Passamaquoddy-Maliseet; most of the data here come from the Passamaquoddy dialect, so I will refer to the language simply as Passamaquoddy. Passamaquoddy is a head-marking language with complex morphology and agreement. Like many such languages, it has very free word order and makes heavy use of null anaphora.

Quantification is expressed in various ways in Passamaquoddy. I will concentrate on two here: quantifiers that occur in the nominal domain, and, to a lesser extent, quantifiers that are adverbial or verbal morphemes. In presenting the examples, I will try to gloss the morphology in a manner that is as transparent as possible, while not being misleading as to the function of any given morpheme. This means that I will sometimes gloss the same morpheme differently, to capture the fact that it relates the arguments that are present in a particular way. Passamaquoddy verbs make use of a direct-inverse system, so that the agreement morphology always agrees with particular persons, while a direct or inverse morpheme indicates the grammatical function of each. Some slots on the verb (meant only in a descriptive way) agree with first, second, or proximate third persons, while others agree with unmarked third persons, obviative third persons, or inanimates. In (1), the prefix agrees with arguments of the first category (first person in (1a–b), proximate third person in (1c–d)), while the final suffix agrees with arguments of the second (unmarked third person plural in (1a–b), obviative third person in (1c–d)). The use of the direct suffix, generally an *-a-*, indicates that the first, second, or proximate third person is the subject; the use of the inverse, generally an allomorph of *-oku*, indicates that the unmarked, obviative, or inanimate third person is the subject. I gloss the direct or inverse morpheme as indicating what grammatical role the first, second, or proximate third person takes:[2]

(1) a. N-tokom-a-k.
1-hit-1Subj-3P
'I hit them.'

b. N-tokom-oku-k.
1-hit-1Obj-3P
'They hit me.'

c. '-tokom-a-l.
3-hit-3Subj-Obv
'S/he (Prox) hit him/her (Obv).'

d. '-tokom-oku-l.
3-hit-3Obj-Obv
'S/he (Obv) hit him/her (Prox).'

[2] Examples are given in the practical orthography in use in the Passamaquoddy community. Passamaquoddy is a pitch accent language (see LeSourd 1993), but in general I will not mark accent here (also following general practice). Letters have their usual values except that <o> = schwa, <c> = [č], <q> = [kw], and <'> is an initial [h] whose phonetic effect is aspiration of the following stop or tensing of s. Consonants are voiced or tensed intervocalically and initially.

Abbreviations: 1 = first person; 2 = second person; 12 = first person plural inclusive; 3 = proximate third person; 3P = proximate third person plural; Abs = absentative; An = animate; C = complementizer; Conj = Conjunct inflection (subordinate clauses, wh-questions); Ditr = ditransitivizing morpheme; Emph = emphatic particle; Fut = future; IC = Initial Change (ablout); Inan = inanimate; Indef = indefinite argument; Loc = locative; Obv = obviative third person; ObvP = obviative third person plural; N = marker of secondary object; Neg = negative; P = plural; Perf = preverb that usually has perfective or past tense interpretation; Pret = preterite; Prog = progressive; Recip = reciprocal; Refl = reflexive (also middle and other intransitive uses); Sub = Subordinate mode of the Independent Order; Top = (contrastive) topic marker.

So the same morpheme will be glossed slightly differently, depending on what persons the arguments are ("1Subj" vs. "3Subj," and "1Obj" vs. "3Obj"; I gloss proximate and unmarked third persons as "3," vs. obviative and inanimate third persons, which are "Obv" and "Inan," respectively). I hope that this will make it easier to figure out any given example.

Within a certain syntactic domain (roughly, the clause), one third-person NP must be distinguished as *proximate*, and all others must be *obviative*. The proximate NP is unmarked, while the obviative NP is marked with a suffix *-ol* if singular, or a pitch accent if plural (plus suppression of final truncation). If the proximate NP is the subject, the verb is marked with the direct marker, *-a-*, as in (1c); if it is the object, it is marked with *-oku*, as in (1d). The following example illustrates obviative marking on a full noun:[3]

(2) Mahtoqehs 'toli-nuhsuphoqal-ku-l muwinu-**wol**.
rabbit 3-Prog-chase-3Obj-Obv bear-Obv
'A bear (Obv) was chasing a rabbit (Prox).'

Although the inverse involves an apparent reversal of arguments, it is important to note that it is not a passive: there is no argument demotion or change in valence (the verb is still transitive). In section 5.3, I will suggest that the inverse involves a step of movement, of the object over the subject.

There are two main paradigms of verbs, the Independent and the Conjunct. The Conjunct is exclusively suffixal and is more fusional (it is difficult to segment out individual morphemes, so I generally do not attempt to in the glosses), while the Independent is characterized by a prefix and a sequence of suffixes (note that "12" is an inclusive first person, or first and second person together):

(3) a. Conjunct
ciksotu-**linohq**
listen.to-12Obj**Conj**Neg
'he/she/they do(es)n't listen to us (Incl)'

b. Independent
k-ciksota-**ku-wi-nnu-k**
2-listen.to-12Obj-Neg-1P-3P
'they don't listen to us (Incl)'

A verb that is not glossed as "Conj" is Independent.

The Independent is used in main clauses and several other environments, while the Conjunct is generally used in embedded clauses, including relative clauses (see below), and in argument wh-questions. For more on the morphology and phonology of Passamaquoddy, see Sherwood (1986), LeSourd (1993), Leavitt (1996), and Bruening (2001).

[3] Passamaquoddy has various (morpho-)phonological processes of epenthesis and deletion; the *w* is epenthetic here.

3 Inventory of Quantificational Elements

I will first describe quantificational elements that have the distribution of NPs, or occur within NPs, and turn to quantification expressed as adverbial or verbal morphemes in section 6.[4] I begin with nominal elements that can be used as indefinites with an existential import, and then turn to more clearly quantificational elements (on some analyses, such as that of Heim 1982, indefinites are not actually quantificational).

3.1 Bare nouns

Let us begin with bare nouns in Passamaquoddy. Passamaquoddy does not have determiners, so bare nouns are generally ambiguous between definite and indefinite uses (an example of a definite is the noun 'deer' in example (17a)). The following example from a text illustrates a bare noun used as an existential, in the first case asserting existence, in the second denying it under negation:

(4) (Newell 1979, 12)

a. N-ikuwoss na neqt '-toli=nomiy-a-l
1-mother also one.time 3-there=see-3Subj-Obv
wapeyi-li-c-il **ahahsu-wol** qocom-ok,
be.white-Obv-3Conj-Obv horse-Obv outdoors-Loc
'My mother once saw a white horse outside the house,'

b. naka ma yaq ote **ahahs** 't-ihi-wo-n skicinuwi-hku-k.
an Neg Quot Emph horse 3-have-Neg-InanObj Indian-Place-Loc
'and there weren't any horses on the Township.'

Nouns are obligatorily marked for number in Passamaquoddy, so if more than one is meant, a plural noun must be used (*tan* is a special quantificational morpheme that I will describe in section 3.8):

[4] A reviewer wonders whether Passamaquoddy makes use of reduplication in expressing quantificational notions, as some other Algonquian languages do. The answer is that it does not. I have not found any productive reduplication processes in Passamaquoddy.

(5) Kotama **meciki-c-ik** **weyossis-ok**, **wahantu-wok**, naka **kci**
Neg IC.be.bad-3Conj-3P animal-3P devil-3P and big
athusoss[u]-wok toli=mskuw-a-wi-yik tan qihiw
snake-3P there=find-IndefSubj-Neg-3PObj TAN near
eyu-lti-htit pomawsuwinu-wok.
IC.be.located-Plural-3PConj person-3P
'No evil beasts, devils, or great serpents could be found near where men live.' (Mitchell 1921/1976d, 4)

3.2 Numerals

Numerals usually precede the head noun. A noun modified by a numeral (without a demonstrative) is frequently used as an indefinite, to introduce new discourse referents:

(6) a. On yaq [']t-itom-on **pesq** **ehpit**,
then Quot 3-say-Sub one woman
'A woman said,' (W. Newell 1974, 11)

b. Pihce **nisu-wok** **skitapi-yik** tama al tol-luhki-yik.
long.ago two-3P man-3P where Uncertain there-work-3P
'A long time ago two men were working way off (beyond Dana Point)' (Newell 1979, 19)

Numerals plus nouns, or numerals by themselves, are definite when used with demonstratives (7a); they may also be definite without a demonstrative (7b), although such examples are rare:

(7) a. **Nikt** **nisic-ik**, kotama wewinuw-a-wiy-ik wen not miyaw.
that.AnP two-3P Neg recognize-Dir-Neg-3P who that.An exactly
'The two of them cannot be distinguished, one from the other.' (Mitchell 1921/1976b,16)

b. Wot olu mahtoqehs pemipt-aq **nohonu-l** **piyaqtihikon-ol**.
this.An Top rabbit IC.carry-3Conj three-InanP wood.chip-InanP
'This rabbit was carrying the three chips.' (E. Newell 1974, 14)

In (7b), the three wood chips were previously established in the discourse.

3.3 'Few', 'many', 'some'

Passamaquoddy has the elements *ktanaqsu* and *kceyawiw*, meaning 'many', and *wahkehsu*, 'few', which appear to be verbal in nature. These may occur as the main predicate (note that they can take tense morphology, like a verb):[5]

(8) 'Sami pihce **ktanaqsu-pon-ik** motewolonu-wok.
because long.ago be.many-Pret-3P motewolon-3P
'because there used to be a lot of *motewolonuwok*.' (Newell 1979, 3)

The example in (8) might be more literally translated as, 'because *motewolonuwok* used to be numerous'.

If there is another predicate present, what would be the main predicate in English often appears to be in the form of a relative clause, so that a sentence like, 'Many bears eat fish', would have the form, 'The bears that eat fish are many' in Passamaquoddy. Alternatively, the verb meaning 'many' is the relative clause, so that the sentence is, 'Bears that are many eat fish.' (A relative clause can be identified on the basis of morphology: the verb of a restrictive relative clause in Passamaquoddy always appears in a particular morphological form, the Changed Conjunct, or Conjunct morphology plus an ablaut process called initial change, glossed "IC.") Some examples that could be analyzed in this way appear below:

(9) a. **Wahkehsu-wok** ehpic-ik muhsal-a-htit sakoma-l.
few-3P woman-3P like-3Subj-3PConj governor-Obv
'Few women like the governor.' ('Few are the women who like the governor.')

b. N-koti-nomiy-a-k **kehceyawi-c-ik** weyossis-ok.
1-Fut-see-1Subj-3P IC.be.many-3Conj-3P animal-3P
'I want to see a lot of animals.' ('I want to see animals that are many')

However, there are numerous examples that do not fit this characterization so nicely. It appears that the quantifier, whether it appears in the form appropriate for a relative clause or not, can be a modifier forming a constituent with the noun. Consider the following example, where neither 'live' nor 'be many' is inflected appropriately for a relative clause, and yet the latter seems to be part of a noun phrase serving as the object of a preposition:[6]

[5] A *motewolon* is a person (often in the form of an animal) with supernatural power.
[6] It is not clear that Passamaquoddy has real prepositions that take objects, however. Particles like *wiciw* frequently appear separately from what would be their object in English. Nevertheless, neither predicate here is a relative clause.

(10) Koluskap neke wiku-ss monihku-k wiciw **ktanaqsu-wok**
K. then.Past live.3-Pret island-Loc together.with be.many-3P
skicinu-wok,
Indian-3P
'Long ago, Koluskap lived on an island with many Indians,' (Mitchell 1921/1976c, 5)

In some syntactic contexts, like the question below, what would be the main predicate in English is also forced to be the main predicate in Passamaquoddy. In some such cases, the quantifier must appear in the form appropriate for a relative clause, suggesting that analyzing the quantifier as a verb is correct at least in some instances:

(11) Wen-il weli-nuw-a-htit nikt-ok **kehtenaqsi-htit**
who-Obv IC.good-find.looks-2Subj-3PConj that-3P IC.be.many-3PConj
pilsqehsis-ok?
girl-3P
'Who do those many girls like the looks of?'

I will leave open the question of whether these quantifiers are truly verbs; they may be, certainly, but in some cases they could be analyzed like the quantifier 'some', to which we now turn, which is a nominal modifier.

What could be translated as English 'some,' or a plural indefinite marker, is the numeral 'one' with a plural suffix. It typically appears before the noun it modifies, and, unlike 'few' and 'many,' does not appear in the inflection appropriate for a relative clause. It therefore appears to be a nominal modifier:

(12) **Pesku-wok** pilsqehsis-ok macaha-wolot-ukk.
one-3P girl-3P leave-Plural-3P.Abs
'Some of them girls left.' (informant's translation)

3.4 Cardinal and proportional readings

The quantifiers 'many' and 'few' in Passamaquoddy seem to have both cardinal and proportional readings.[7]

[7] Unfortunately, I have only been able to elicit judgments on this issue from one informant so far. It will be important to confirm these judgments with other speakers.

The following example was judged to be true in two different contexts. In the first, there are five girls total, four of whom leave. This means that 'many' has a proportional reading, since four is only many out of the total of five—'few' is said to be around five out of context, and 'many' is a lot more than 'few'.

(13) Elinaqsi-t pilsqehsis-ok macaha-woloti-htit.
IC.be.many-3Conj girl-3P leave-Plural-3PConj
'Many girls left.' (4 out of 5: true; 100 out of 500: true)

In the second context, 100 out of 500 girls leave. 100 is not many out of 500, but the sentence is still judged to be true, because 100 is a large number. It follows that 'many' has both proportional and cardinal readings.

The same holds for 'few.' The following example was judged to be true in the same context where four out of five girls leave, since four is a small number (the cardinal reading); but it was also judged to be true when 100 out of 500 girls leave, since 100 is not many out of 500 (the proportional reading):

(14) Wahkehsu-wok pilsqehsis-ok elomi-ya-woloti-htit.
be.few-3P girl-3P IC.away-go-Plural-3PConj
'Few girls left.' (4 out of 5: true; 100 out of 500: true?)

However, the informant hesitated somewhat in accepting the above sentence for 100 out of 500, because 100 is a large number. She also judged the following to be anomalous in a context where there are one million chickens total, because 100 chickens is still a lot to eat:

(15) % Wahkehsu-wok nekka-hl-uk-ik ehemu-wok.
be.few-3P IC.all-eat-1SubjConj-3P chicken-3P
'I ate (a) few (of the) chickens.' (context: 100 out of 1 million)

But then the same informant accepted the following, where 'few' is a few hundred. What counts as 'few' seems to be heavily dependent on context, since hundreds is not many in terms of human populations:

(16) Wahkehsu-wok wiki-c-ik kelis-k.
be.few-3P live-3Conj-3P Calais-Loc
'Only a few (people) live in Calais.'

In any case, 'many' certainly has both cardinal and proportional readings; 'few' certainly has a cardinal reading, and may also have a proportional reading.

3.5 Wh-words as indefinites

Passamaquoddy uses wh-words as indefinites. These are *wen*, 'who' (more precisely, 'animate'), *keq(sey)*, 'what' (more precisely, 'inanimate'; *keq* and *keqsey* appear to be identical in meaning and occur in free variation), and *tama*, 'where'. These wh-words are used non-interrogatively as indefinites, with the meaning 'someone/something/somewhere' or 'anyone/anything/anywhere'. Some examples are the following:

(17) a. Kesq yaq pemacqim-a-htit otuhk-ol, on **keq** nutom-oni-ya.
while Quot drag-3Subj-3PConj deer-Obv then what (3)-hear-InanObj-3P
'While they were dragging the deer they heard **something**.' (W.Newell 1974, 5)

b. On yaka wesuwiy-apasi-htit, wot yaq **wen**
then then.Fut going.back-walk.away-3PConj this.An Quot who
pemi=sakhiya-t.
IC.along=come.into.view-3Conj
'Then, on their way back, **something** [animate] came into sight.' (Newell 1979, 25)

c. Wot yaq mahtoqehs naka coqols **tama** al kcihk-uk
Dem Quot rabbit and frog where Uncertain forest-Loc
etol-akonutom-ahtit.
IC.Prog-tell.stories-3PConj
'This rabbit and a frog **somewhere** in the woods were telling stories' (E. Newell 1974, 1)

Wh-words as indefinites may take modifiers (and note that *wen* inflects for number and obviation; *keq(sey)* and *tama* are invariant):[8]

[8] Acording to LeSourd (2004), wh-words can also appear as NP modifiers; LeSourd gives the following two Maliseet examples (in LeSourd's transcription, an acute accent indicates a stressed vowel bearing distinctive high pitch, while a grave accent indicates a stressed vowel bearing distinctive low pitch):
(i) a. wèn kótok skicìn
who other Indian
'some other Indian' (Maliseet, LeSourd 2004, (12d))
b. kéqsèy kátõn-èy
what cotton-NF
'something cotton' (Maliseet, LeSourd 2004, (16a))
However, it is also possible to analyze these as the wh-word being the head (ib), or what follows the wh-word as an appositive (ia, as suggested by a reviewer). I have not seen any examples that clearly require treating the wh-word as an NP modifier.

(18) Cuwi=hc **wen-ik** **pil[u]weya-k** naci=qilwah-a-wa-l
must=Fut who-3P different-3P (3)-go.do=look.for-3Subj-3P-Obv
'Some different people must go look for him.' (W. Newell 1974, 6)

Wh-words also combine with other elements to form universal quantifiers, as described in the next section. (For more on the use of wh-words as indefinites in Passamaquoddy, see Bruening 2007.)

3.6 Universal quantifiers

Passamaquoddy has two chief universal quantifiers, *psi*, which very often occurs with the emphatic clitic *te* (*psite*), and *psìw* (*psi* has a high pitch, *psìw* low pitch; henceforth I do not mark them). The only difference that I can find between them is that *psiw* can occur in the phrase *nitte psiw*, meaning 'that's all,' but *psi(te)* cannot. I find *psi(te)* in much more common use than *psiw* among my informants. Both *psi(te)* and *psiw* can occur alone, with an NP, or with a wh-phrase, as described in the next subsections.

There is also a distributive quantifier *yatte wen*, which consists of the remote demonstrative *yat* plus the emphatic clitic *te*, and the animate wh-phrase *wen*. It has a peculiar distribution, as described below.

Psite *and* Psiw, *'All, Every'*.[9] Both *psi(te)* and *psiw* can occur by themselves, as in the following examples. (The sequence *ps* used to be pronounced *ms*.) Note that the quantifier can be modified by *eluwe(te)*, 'almost':

(19) a. On yaq **psite** ul-opu-lti-ni-ya naka wolasoweltomu-lti-ni-ya
then Quot all 3.there-sit-Plural-Sub-3P and give.thanks-Plural-Sub-3P
kisi=pili=nonawo-tu-lti-htit. Nitte **psiw**.
able=new=know-Recip-Plural-3PConj that all
'Then they all sat down and gave thanks for the chance to get to know someone new. The end.' (W. Newell 1974, 11)

b. Nit=te sonuciw **msiw** etoli=cip-hucu-lti-htit.
there=Emph along.edge all IC.there=scare(d)-stand-Plural-3PConj
'There by the water's edge they all stand in a frightened posture.' (Mitchell 1921/1976d, 6)

[9] Note that I render both of these quantifiers in English sometimes as 'all' and sometimes as 'every'. The glosses and translations are meant to be rough guides only, and should not be taken to imply an analysis. I do not think either of these is exactly 'all' or 'every'. They are quantifiers with universal force whose properties must be determined.

c. **Eluwete** **msiw** 't-ihi-ni-ya piluwitposuwakon.
almost all 3-have-InanObj-3P supernatural.power
'Almost all had supernatural power.' (Mitchell 1921/1976c, 5)

d. **Msite** wekihtu-ni-ya-l.
all (3)-break-InanObj-3P-InanP
'They have ruined them all.' (Mitchell 1921/1976a, 18)

They can also both occur with an NP, where the NP forms the restriction on the quantifier:

(20) a. Wespasahkiwik **msiw** **skitapi-yik** kotunka-htu-wok.
in.morning all man-3P hunt-Plural-3P
'In the morning, all the men go hunting.' (Mitchell 1921/1976e, 17)

b. Yukt tokec **msite** **skinuhs[u]-wok** **Piktu-k** '-pawatomo-ni-ya-l yuhtol
these now all young.man-3P Pictou-Loc 3-want-N-3P-Obv this
naksqiyi-l.
young.woman-Obv
'Now the youths at Pictou all want this girl.' (Mitchell 1921/1976e, 8)

c. 'T-ali yaq qecimul-a-wa **psite** **Skicinu** cipotute wen
3-around Quot ask-3Subj-3P.ObvP all Indian.ObvP maybe who
nomiy-a-l yu[h]tol kukec-ol, not olu
(3)-see-3Subj-Obv this.Obv warden-Obv this Top
palitahamsi-t.
think.highly.of.self-3Conj
'They're going around asking all the Indians if someone saw this warden, the one who thinks highly of himself.' (W. Newell 1974, 6)

They may also occur to the right of the NP they are associated with, much like floating *all* in English; this may be an adverbial use (see section 6):

(21) a. K-moc-k-ul-pon=c Espons, ipocol nilun **msiw**
2-bad-affect-2Subj/1Obj-1P=Fut Espons because.of.course 1P all
Psulimin-ok.
Chokeberry-3P
'We would affect you badly, Espons, because we are all choke-berries.' (Mitchell 1921/1976a, 22)

b. On yaq Skicinu-wok **psi** maciy-apasi-ni-ya.
then Quot Indian-3P all leave-walk-Sub-3P
'Then the Indians all left.' (W. Newell 1974, 11)

They also both occur with the wh-words *wen*, *keq(sey)*, and *tama* (in the first example, *yaq* is a second-position clitic that freely disrupts constituents):

(22) a. **Psi**=yaq=**ote** **wen** itom, "Kotama."
all=Quot=Emph someone say.3 no
'Everyone said, "No." ' (W. Newell 1974, 6)

b. Eluwe nokka=kcicihtu-n **psiw** **wen-il**
almost (3)-completely=know-InanObj all who-Obv
el-omahtu-li-t
IC.thus-behave-ObvS-3Conj
'He knows how almost everyone behaves.' (Francis and Leavitt 1995, line 250)

(23) a. Tokec olu **msite** **keq** '-kiwacehtu-n.
now Top all what 3-make.lonely-InanObj
'But now, he makes everything feel lonely.' (Mitchell 1921/1976d, 7)

b. Kehtaqs kahk **psite** **tama** kisi=yali-ye, peci te lampeq.
ghost Emph all where able=around-go.3, even Emph underwater
'A ghost can go anywhere—even under water.' (Newell 1979, 21)

With a wh-word the quantifier is almost always *psi(te)* rather than *psiw*; (22b) is one of the few examples I have of *psiw* plus wh-word. In discussing this combination, I will therefore refer only to *psi(te)*.

The sequence *psi(te) wh-word* appears to form a constituent of a nominal type. One argument for this constituency comes from dislocation. Passamaquoddy has a "raising to object" process, whereby a higher verb may agree with an argument of its complement clause. In addition, this argument may dislocate to a position immediately to the left of CP-elements (the complementizer *eli* and wh-phrases) in the lower clause (see Bruening 2001, Ch. 5). In the following, we see that *psi(te) wen* may dislocate to this position:

(24) a. N-kosiciy-a **psite** **wen** eli kselm-iht w-ikuwoss-ol.
1-know-1Subj all who C love-3ObjConj 3-mother-Obv
'I know that everyone$_i$ is loved by his$_i$ mother.'

b. Ma=te n-wewitaham-a-w **psite** **wen** tama
Neg=Emph 1-remember-1Subj-Neg all who where
't-li-kis-onuw-a 't-akom.
3-there-Perf-buy-3Subj.ObvP 3-snowshoe.ObvP
'I don't remember where everyone$_i$ bought his$_i$ snowshoes.'

This and other facts, like the fact that *psi(te)* and the wh-word almost always occur adjacent (except when disrupted by second-position clitics) and in the order *psi(te) wh-word*, indicate

that they together form a constituent (and, moreover, this constituent has the distribution of an NP).

Note that agreement on the verb is generally singular with *psi(te) wen* or *psi(te) keq(sey)*, but it is often, but not always, plural with *psi(te)/psiw* by itself or *psi(te)/psiw NP*. In addition, the NP following *psi(te)/psiw* can be either singular or plural (with the choice determining agreement). The following examples illustrate both singulars and plurals:[10]

(25) a. **Msiw** **skicin** nuto-k akonutom-akon, msiw wolitahasu.
all Indian hear-3Conj tell.story-Nominal all be.happy.3
'Every Indian who heard the news, every one was happy.' (Leavitt and Francis 1990, 53)

b. Wespasahkiwik **msiw** **skitapi-yik** kotunk-ahtu-wok.
in.morning all man-3P hunt-Plural-3P
'In the morning, all the men go hunting.' (Mitchell 1921/1976e, 17)

The most common case is for *psi(te)/psiw* to be followed by a plural noun that agrees on the verb as a plural. The singular appears to be limited to certain grammatical positions (subject of intransitive is the most general) and depends on the predicate (only certain transitive verbs permit the singular, like 25a; I do not know what, if anything, they have in common). Speakers report intuitions that the singular and the plural sometimes have different interpretations, but further investigation reveals that they have the same *range* of interpretations (though different ones may be preferred in any given context). For instance, the singular is often reported to have a distributive, "one at a time" interpretation, while the plural may have that reading or a collective one:

(26) a. Psite wasis kisi-ntu.
all child Perf-sing.3
'Every child sang.' (separately)

b. Psite wasis-ok kisi-ntu-ltu-wok.
all child-3P Perf-sing-Plural-3P
'Every child sang.' (prefers group, but can be separately)

Nevertheless 'sing' is inherently distributive; even when singing as a group, every child is singing individually. Moreover, plurals are compatible with other types of predicates that cannot have group or collective interpretations, as in (27a), while, conversely, singulars are compatible with collective predicates that normally require plural subjects (27b):

[10] Intransitives in Passamaquoddy make a dual-plural distinction: with the plural stem marker (glossed "Plural") in addition to plural subject agreement, the subject is signaled to be plural; without it, dual.

(27) a. Psite wasis-ok 'tawi-pokom-ultu-wok.
all child-3P know.how-skate-Plural-3P
'All the children know how to skate.'

b. Psite skicin naci-mawsqesu.
all Indian go.do-gather.3
'Every Indian is going to gather.'

Further evidence that the singular-plural distinction does not encode anything like distributivity comes from pairs like the following, with *psite* and *psiw* occurring alone. In (28a), agreement is singular, while in (28b), agreement is plural; nevertheless both are psychological predicates and are inherently distributive:

(28) a. Msiw wolitahasu.
all be.happy.3
'Every one was happy.' (Leavitt and Francis 1990, 53)

b. Msite aqami-musqitahas-ultu-wok.
all more-hate-Plural-3P
'[They all hate (him) more].' (Mitchell 1921/1976e)

Note that it is not the case that *psiw* takes singular agreement and *psite* plural; compare (25a–b) and (26a–b).

While I do not fully understand the difference between singular and plural, or the constraints on the use of the singular, I think we can conclude that the singular–plural distinction is probably not relevant to the denotation of *psite* as a quantifier. The sentence in (27b) further shows that *psite* plus singular NP is semantically plural, since 'gather' requires a semantically plural subject.[11]

[11] In Passamaquoddy, wh-words can be suffixed with the plural morpheme, as in the following question:
(i) Wen-ihi tepitaham-oc-ik ketuw-ewestuwam-a-c-ihi?
who-ObvP think-2Conj-3P IC.Fut-talk.to-3Subj-3Conj-ObvP
'Who all do you think he'll talk to?'
However, the plural morpheme appears only very rarely on a wh-word following *psite/psiw*; the two text examples I have are the following:
(ii) a. Skitkomiq, **msite wen-ihi** '-siwaciy-a-wa,
earth all who-ObvP 3-make.tired-3Subj-3P.ObvP
etuci-mili-wapol-oluk-hoti-htit.
IC.X.extent-varied-wrong-do-Plural-3PConj
'On earth they have made everyone tired because of their many evil acts.' (Mitchell1921/1976b)
b. Neke Koluskap nekoto-k skitkomiq, nokka-hpawol-a-sopon-ihi
then.Past Koluskap IC.leave-3Conj earth (3)-completely-scare-3Subj-Pret-ObvP
cipi-naqs-ulti-li-c-ihi **msi wen-ihi**.
evil.looking-appear-Plural-ObvS-3Conj-ObvP all who-ObvP
'At the time when Koluskap left the earth, he had scared away all evil-looking creatures.' (Mitchell1921/1976d,4)

Yatte Wen. *'Each'. Yatte wen*, which consists of the remote demonstrative *yat*, the emphatic clitic *te*, and the animate wh-word *wen*, is strongly distributive. There does not appear to be an inanimate version with *keq* (nor can *yatte wen* be used with inanimates), and it is not clear whether the whole can inflect as an obviative (see below).

Yatte wen can appear by itself or with an NP. All the text examples I have (there are only three) involve *yatte wen* by itself:[12]

(29) a. On **yatte wen** 't-oloqi-ya-n 't-utene-k.
then each 3-that.direction-go-Sub 3-village-Loc
'Then each one goes toward his own village.' (Mitchell 1921/1976d, 18)

b. Msite '-pawatom-uw-a-ni-ya '-peciya-li-n **yatte wen** w-ik-uwa-k.
all 3-want-Ditr-3Subj-N-3P 3-come-Obv-N each 3-house-3P-Loc
'Each one desires him to visit at her wigwam.' (Mitchell 1921/1976e, 5)

c. Kenoq olu **yatte**=hc **wen** 't-uwehkah-a-l
however Emph each=Fut 3-use-3Subj-Obv
't-epeskom-akonu-m-ol
3-play.ball-Nom-Poss-Obv
'But each one will use his own ball.' (Mitchell 1921/1976b, line 55)

When *yatte wen* co-occurs with an NP, this NP does not appear to form a constituent with it (although they may be adjacent); instead *yatte wen* seems to have the syntax of a floated quantifier or an adverb of some kind. The NP that *yatte wen* occurs with can be either singular or, more commonly, plural. A common pattern is for a plural NP (sometimes with *psite*, 'all') to appear first, followed by the floating *yatte wen* and singular agreement on the verb:

(30) a. Pahtoliyas-ok **yatte wen** mokosew-sewe.
priest-3P each black-dress.3
'The priests are each dressed in black.'

b. Nisu-wok muwinu-wok **yatte wen** '-kihceyawi-pokehl-a skitapi.
two-3P bear-3P each 3-many-bite-3Subj.ObvP man.ObvP
'Two bears each bit a lot of men.'

c. Psite kiyahq-ok **yatte wen** '-tehsaq-opi-n-ol oposih-il.
all seagull-3P each 3-on.top.of-sit-N-Obv tree-Obv
'All the seagulls are each sitting on a tree.'

It may be significant that both of these are objects, but I have not investigated this issue.

[12] Phil LeSourd (p.c.) notes that 'house' is almost always inflected for a nonsingular possessor, even when the overtly expressed possessor is singular; this makes (29b) consistent with *yatte wen* generally triggering singular agreement, as described below.

As stated above, it is not clear whether *yatte wen* can inflect as an obviative (and/or modify an object, whether that is proximate or obviative). The expected obviative form would be *yehtol=te wen-il*, and that form does occur occasionally, but what occurs more frequently is the unexpected *yatte wen-il*, where the wh-word is obviative but the remote demonstrative is in its proximate form. One example is the following:

(31) Skitap **yatte wen-il** 't-otol-ahsom-a-l putepiy-il nomehs-ol.
man each-Obv 3-Prog-feed-3Subj-Obv whale-Obv fish-Obv
'The man is giving each whale one fish.' (one man, many whales each getting a fish)

This example, and others I have collected, make it look like *yatte wen* can distribute over an object (most often, the first object of a ditransitive). However, I have also received very mixed judgments on this form from informants. Quite often they are reluctant to produce it, and the interpretation is often different from what would be expected. I suspect that *yatte wen* is a fixed form that much prefers to distribute over a *subject*, although speakers will occasionally extend it to an obviative object by suffixing the whole with the obviative suffix *ol* (actually, its allomorph *il*). However, much more work needs to be done here.[13]

As stated, *yatte wen* is strongly distributive. If it occurs with a group-denoting predicate, a special interpretation is required. For instance, the preverb *mawi* means to do things together, collectively. If *yatte wen* is used with it, *yatte wen* forces strong distributivity, so that, even though all the people are engaged in the activity together, each has to be acting individually as well:

(32) Yatte wen mawi-pkon-a pskihqimins.
each (3)-together-pick-3Subj.ObvP strawberry.ObvP
'Each one picked strawberries together.'

The informant commented here that each strawberry picker would have their own cup and be picking their own strawberries, although the pickers are all working together.

[13] One of many odd examples is the following. This sentence has a null subject and a null object, both singular according to the verbal agreement. Nevertheless, according to the informant who produced it, there is more than one object. *Yatte wen* apparently distributes the adverbial 'one hand' (which is inanimate) over each object:
(i) Yatte wen pesqon 'pihtin moccoki-ptin-ehl-a-l.
each one.Inan 3-hand (3)-dirty-hand-make-3Subj-Obv
'He made one of each person's hands dirty.'
So the interpretation is something like 'One hand each, he made his/her hands dirty,' with the action being repeated on more than one person. Note that even though the object is obviative (as marked by agreement on the verb), *yatte wen* is not; and 'hand' is inanimate, while *yatte wen* is animate. I would guess that *yatte wen* is distributing the action of the verb over temporal slices of the subject, according to the object (one hand per object). But again, I confess that I do not really understand what exactly *yatte wen* does.

3.7 Negation and negative quantifiers

Sentential negation in Passamaquoddy is expressed by one of several preverbal particles (*ma*, *kotama*, *kat*, *skat*), plus negative morphology (a suffix) on the verb.[14] Negative quantifiers consist of sentential negation plus an existential (wh-word, bare noun):

(33) a. Peciya-t, **kotama**=te olu **wen** macessi-w.
come-3Conj Neg=Emph Top who move.3-Neg
'When she gets near them, none of them moves.' (Mitchell 1921/1976a, 13)

b. **Kat**=op **keq** kt-ol-essi-w.
Neg=would something 2-thus-happen-Neg
'Nothing shall happen to you.' (Mitchell 1921/1976c, 11)

c. **Ma**=te **tama** k-nomiy-a-w mahtoqehs yut tuciye-w?
Neg=Emph where 2-see-2Subj-Neg rabbit here go.by.3-Neg
'Haven't you seen a rabbit anywhere going by here?' (E. Newell 1974, 3)

The examples in (4b) and (5), above, illustrated negation with bare nouns. For more information on wh-words with negation, see Bruening (2007).

3.8 The element *tan*

One particularly interesting quantificational element in Passamaquoddy is *tan*, an element that generally appears at the left edge of the clausal constituent it appears in (what might be analyzed as CP). In one use *tan* is a question word, combining with what is known in the Algonquian literature as a *relative root* (Bloomfield 1946) to produce an adjunct question:

(34) a. **Tan** '-kisi-**qoni**-tuwiya-n cihpolakon 'kekiw?
TAN 3-able-X.length-fly-Sub eagle day
'How far can an eagle fly in a day?'

[14] Note that in (33c), an additional negative suffix appears on the verbal complement of the verb that is actually negated. This seems to optionally occur with perception verbs (Bruening 2001, 51).

b. **Tan** op '-kisi-**li**-tuwiya-n cihpolakon?
TAN would 3-able-thus-fly-Sub eagle
'How would the eagle fly?'

c. **Tan** k-**tut**-alokiqa-n?
TAN 2-X.extent-eye-Sub
'How big are your eyes?'

For more on these types of questions in Passamaquoddy, see Bruening (2004, 2006).

In another, probably related, use, *tan* does not form a question, but something like a free relative or a quantificational structure. *Tan* may again quantify over a relative root, or over an indefinite wh-word. Some examples are the following:

(35) a. **Tan** oc wot **wen** qiluwih-it, pesqon=c **tan** wen
TAN Fut this.Anwho search.for-1ObjConj one.Inan=Fut TAN who
eli-pawato-k nt-oli-mil-a-n pskuw-it, **tan** tehpu **keq**.
IC.thus-want-3 Conj 1-thus-give-1Subj-N find-1ObjConj TAN only what
'Whoever seeks me, I shall give one thing that he wants when he finds me, whatever it may be.' (Mitchell 1921/1976d, 10)

b. Kollu na kotama apc kisi-piskapotasu-hke-w **tan**
Kollu also Neg again able-get.dark-make-Neg TAN
etuci-sipelehl-a-t wonoski.
IC.X.extent-spread-3Subj-3Conj (3)-wing.ObvP
'Kollu never again could bring darkness by spreading his wings.' (Mitchell 1921/1976d,4)

c. Wiwisay, wiwisay, wiwisa-hul-an **tan** te
hurry hurry hurry-take.by.boat-2Imp TAN Emph
kisi-**tuci**-ya-yin!
able-X.extent-go-2Conj
'Hurry, hurry, hurry him across as fast as you can go.' (Mitchell 1921/1976c, 11)

Informants will generally translate English free relatives by using *tan*:

(36) a. **Tan** te nekom **eli**-ya-t, nil te=hc ona.
TAN Emph 3 IC.there-go-3Conj 1 Emph=Fut also
'Wherever he goes, I'll go too.'

b. **Tan** te **keq** kisi-ht-aq mecimi=te woli-kon.
TAN Emph what Perf-make-3Conj always=Emph good-be.II
'Whatever he makes is good quality.'

c. **Tan** tehpu **wen** k-naci-kotunke-pa, kamot=te nihtaw-hika-n.
TAN only who 2-go.do-hunt-2P better=Emph (3)-know.how-shoot-Sub
'Whoever you go hunting with better know how to shoot.'

d. **Tan** te **eci**=nomiy-ot muwin, k-macephuwa-n.
TAN Emph when=see-2Conj bear 2-run.away-N
'When you see a bear you should run away.'

In other examples, *tan* plus *wen* can mean 'everyone' or 'each one':

(37) Nit **tan** te **wen** eli-wewi-phuwe-t: yat=te nekom pesq oloqi-ye,
then TAN Emph who IC.there-?-run-3Conj that=Emph 3 one away-go.3
apc kotok tetta.
again other that.direction
'Then each one runs off on his own; that one goes one way and another that way.' (Mitchell 1921/1976d, 7)

3.9 Summary

This section has illustrated various kinds of quantifiers that quantify over nominal elements. Some appear to be part of a noun phrase (*psi(te)*, 'some', 'few', etc.), while others are more like floating 'each' in English (*yatte wen*) or some kind of wh-element in CP (*tan*). I turn now to the nominal syntax of those quantifiers that are part of a noun phrase.[15]

4 NOMINAL SYNTAX

I turn now to the syntax of these nominal quantifiers within the NP. As discussed in section 3.1, Passamaquoddy does not have determiners, and bare nouns can be used as either definites or indefinites. Demonstratives are often used with discourse-old NPs, and quantifiers may co-occur with demonstratives. With many quantifiers any order seems to be possible, but it appears that the unmarked order is *psite niktok*, 'all those,' but *niktok peskuwok*, 'those some', and *wot pesq*, 'this one'.

[15] One question that might be asked about this inventory of quantificational elements is whether they divide up into "strong" and "weak" categories (Milsark 1974). I have not found any phenomena in Passamaquoddy that divide up quantifiers in this way. (There is no dedicated existential construction in Passamaquoddy, for instance.)

(38) a. psite niktok pilsqehsis-ok yut 'c-eya-woltu-wok
all those.3P girl-3P here from-be-Plural-3P
'all the girls from here'

b. niktok psite pilsqehsis-ok yut 'c-eya-woltu-wok
those.3P all girl-3P here from-be-Plural-3P
'all the girls from here'

(39) a. Niktok pesku-wok pilsqehsis-ok macaha-wolot-ukk.
those.3P some.3P girl-3P leave-Plural-3P.Abs
'Some of them girls left.'

b. Niktok pilsqehsis-ok peskuwok macaha-wolot-ukk.
those.3P girl-3P some.3P leave-Plural-3P.Abs
'Some of them girls left.'

c. Peskuwok niktok pilsqehsis-ok macaha-wolot-ukk.
some.3P those.3P girl-3P leave-Plural-3P.Abs
'Some of them girls left.'

The unmarked order also appears to have 'few' or 'many' following the demonstrative (but they can also precede the demonstrative, not shown):

(40) a. Niktok wahkehsossu-wok pilsqehsis-ok keti-peciya-htit.
those.3P be.few-3P girl-3P IC.Fut-come-3PConj
'Those few girls are going to come.'

b. Wen-il weli-nuw-a-htit niktok kehtenaqsi-htit
who-Obv IC.good-find.looks-3Subj-3PConj those.3P IC.be.many-3PConj
pilsqehsis-ok?
girl-3P
'Who do those many girls like the looks of?'

Universals may co-occur with numerals:

(41) a. psite newonul kotok-il wikuwam-ol
all four.InanP other-InanP house-InanP
'all four other houses'

b. newonul psite (kotok-il) wikuwam-ol
four.InanP all (other-InanP) house-InanP
'all four (other) houses'

c. Psite nihtol newonul wikuwam-ol ankuweht-asi-k-il.
all those.InanP four.InanP house-InanP sell-Refl-InanConj-InanP
'All four of those houses are on sale.'

Quantifiers may co-occur with possessors:

(42) a. Psite wot skitap '-qoss koti-peciya-wolotu.
all this.3 man 3-son.ObvP Fut-come-Plural.ObvP
'All that man's sons are going to come home.'

b. Katolu not skitap psite '-qoss peciya-wolotu.
of.course that.3 man all 3-son.ObvP come-Plural.ObvP
'Of course all of that man's sons are coming.'

c. Pesku wot skitap '-qoss koti-peciya-wolotu kenoq mate
some.ObvP this.3 man 3-son.ObvP Fut-come-Plural.ObvP however Neg
psite.
all
'Some of that man's sons are coming but not all.'

All may co-occur with pronouns:

(43) a. Psite nekomaw mokesew-sew-hotu-wok.
all 3P black-dress-Plural-3P
'All of them are dressed in black.'

b. Peskuwok nekomaw mokesew-sew-hotu-wok.
some.3P 3P black-dress-Plural-3P
'Some of them are dressed in black.'

c. Wahkesu-wok nekomaw mokesew-sew-hoti-htit.
few-3P 3P black-dress-Plural-3PConj
'A few of them are dressed in black.'

d. Ktenaqsu-wok nekomaw mokesew-sew-hoti-htit.
many-3P 3P black-dress-Plural-3PConj
'A lot of them are dressed in black.'

e. Pesq nekom/*nekomaw skat mokesew-sewe-hq.
one 3/*3P Neg black-dress-3ConjNeg
'One of them isn't dressed in black.'

f. Nuhu-wok nekomaw mokesew-sew-hoti-htit.
three-3P 3P black-dress-Plural-3PConj
'Three of them are dressed in black.'

In summary, all quantifiers appear to be able to combine with any element within the NP. Although other orders are possible, the unmarked order within NP seems to be *Universal Demonstrative Numeral/Some/Few/Many Modifier Noun*. (For more on the structure of the NP, see LeSourd 2004.)

5 External Syntax

Most of the quantifiers described above, those that appear within NP, have the distribution of an NP when used alone, or their containing NP does when they appear within one (at least as far as I can tell, given the generally free word order of Passamaquoddy; but they do trigger agreement on the verb when they are arguments). However, there are a few tendencies to point out that distinguish quantified NPs from other NPs.

First, wh-words used as indefinites tend to appear immediately before the verb, as in most of the examples given above. This tendency appears to be close to absolute when negation is also present; the wh-word usually immediately follows the negative particle, and precedes the verb. When associated with *tan*, wh-words almost always immediately follow *tan*, although they may be separated by emphatic particles or *tehpu*, 'only', which in combination with *tan* means something like 'no matter which'. *Tan* itself is almost always initial, which suggests that it occurs at the left edge of CP, like wh-words in wh-questions.

When they occur alone, the universal quantifiers *psite* and *psiw* generally also come right before the verb. When they combine with a wh-word, they also often come right before the verb, although this tendency is not as strong as for a bare wh-word or for the quantifier by itself (as a look at the examples above will attest).

As for the distributive quantifier *yatte wen*, I believe it to be some kind of adverbial element. It generally appears close to the verb, but may appear on either side of it. Much more research needs to be done to understand how *yatte wen* works.

5.1 Discontinuous constituents

Discontinuous constituents are very frequent in Passamaquoddy, but they all conform to a specific pattern. This is for a quantifier or demonstrative to occur preverbally, while the rest of the NP occurs postverbally. Some examples follow:

(44) a. **Msite**=hc 't-iy-ulti-ni-ya **naksqi-yik**.
all=Fut 3-be.located-Plural-Sub-3P young.woman-3P
'All the young girls will be there.' (Mitchell1921/1976e, 5)

b. On yaq apc macephoqa-n, wot olu mahtoqehs pcossol
then Quot again follow-Subord this.An Top rabbit last
pesqon eyi-t **piyaqtihikon**.
one.Inan IC.have-3Conj wood.chip
'And he took off again—this Rabbit had only one chip left.' (E. Newell 1974, 6)

c. Malom=ote moskuw-a-wa-l '-kihci-sakoma-m-uwa-l, not
finally=Emph (3)-find-3Subj-3P-Obv 3-great-chief-Poss-3P-Obv this
msiw sakomawam-a-t **skitapiyi** **naka** **weyossis**.
all govern-3Subj-3Conj man.ObvP and animal.ObvP
'At last they find their great chief, the one who governs all men and animals.' (Mitchell1921/1976d,12)

d. Nutom-on eli **newwok** pson-ot **coqols-ok**.
(1)-hear-InanObj C four.3P catch-2Conj frog-3P
'I heard that you caught four frogs.'

e. [']sami wisokolamson, naka **psite** puscokpe **piwsokul**
because wind.blows.strongly and all be.wet.Inan firewood
etol-[u]wehke-c-il.
IC.Prog-use-3Conj-InanP
'because of the wind and the fact that all the firewood he uses is wet.' (W. Newell 1974, 2)

f. Ipocol **msite** k-nacitaham-ku-k **skinuhsis-ok** **yut**, kt-oqeci=hc
because all 2-hate-2Obj-3P young.man-3P here 2-try=Fut
nehpuhu-ku-k.
kill-2Obj-3P
'Since all the young men here hate you, they will try to kill you.' (Mitchell 1921/1976e,12)

I have been unable to find any interpretive differences between split and non-split quantifiers. For instance, both patterns are felicitous as answers to wh-questions (questioning either the full NP or just the quantifier/demonstrative); both are felicitous as both old and new information (either part, or the whole); both have the same scopal properties (see below).

5.2 Use as predicate

'Few', 'many', and numerals may serve as predicates, but other quantifiers may not. The division is not between those that are verbal, like 'few' and 'many', and those that are not, since numerals are not verbal. This is also not a strong-weak distinction, since 'some' and 'all' pattern alike in not being able to be predicates:

(45) a. Nikt-ok pilsqehsis-ok wahkehsu-wok.
that-3P girl-3P be.few-3P
'These girls are few.'

b. Wahkehsu-wok nekomaw.
be.few-3P 3P
'They are few.'

c. Nikk pilsqehsis-ok ktenaqsu-wok.
that.3P girl-3P be.many-3P
'Those girls are a lot.'

d. Neww-ok nekomaw.
Four-3P 3P
'They are four.'

(46) a. * Nekomaw psite.
3P all
'They are all.'

b. * Nekomaw psiw.
3P all
'They are all.'

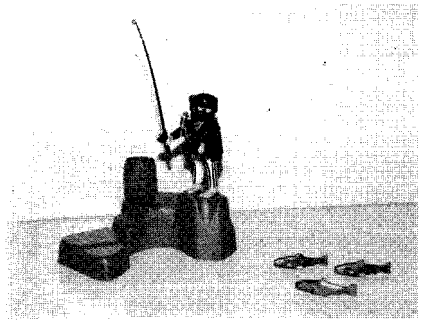
c. * Pesku-wok nekomaw.
some-3P 3P
'They are some.'

As mentioned above, *psiw* can be a predicate, but only in the fixed expression *nitte psiw*, 'that's all'.

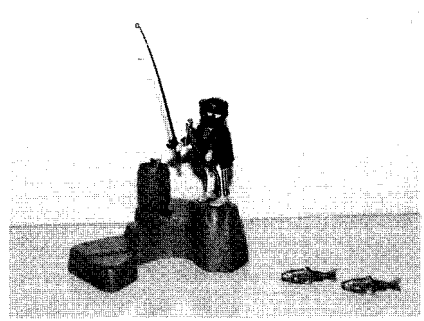
5.3 Scope

I have argued elsewhere (Bruening 2001, chapter 2) that scope interactions among quantifiers in Passamaquoddy reveal much about the clause structure of the language and the proper analysis of the direct-inverse opposition. Data collected since then, elicited using pictures created for the purpose and illustrated below, have confirmed the generalizations of Bruening (2001); I illustrate these generalizations here using the new data. The facts appear to be quite robust. Before showing the data with more than one quantifier, I illustrate the interaction between quantifiers and negation.

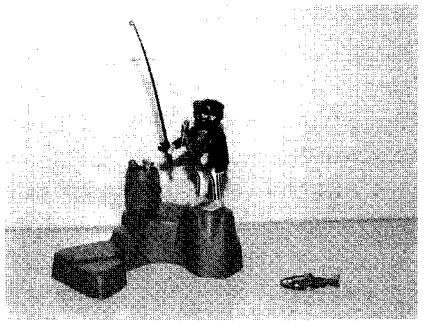
Negation. In order to test the interaction between universal quantifiers and negation, I created picture stories like the one illustrated below. In this story the man catches three out of four fish, and then leaves. Both of the sentences in (47a–b) are appropriate descriptions of what happened in this story, indicating that negation may take scope over a universal quantifier as object. In another picture story, not shown, the man does not catch any fish, but the same sentence (repeated with a continuation in 48) is also an appropriate description, meaning that the universally quantified object may also take scope over negation:



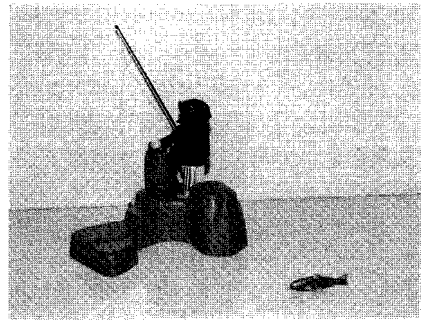
A: Man catches one fish;



B: Catches second fish;



C: Catches third fish;



D: Goes home, leaving one fish.

(47) a. Ma=te '-poth-a-wi psite nomehsu.
Neg=Emph 3-hook-3Subj-Neg.ObvP all fish.ObvP
'He didn't catch all the fish.' (Neg over all)

b. Ma=te psite '-poth-a-wi nomehsu.
Neg=Emph all 3-hook-3Subj-Neg.ObvP fish.ObvP
'He didn't catch all the fish.' (Neg over all)

(48) Story: Man doesn't catch anything, goes home:

a. Ma=te psite '-poth-a-wi nomehsu on macaha-n
Neg=Emph all 3-hook-3Subj-Neg.ObvP fish.ObvP then go-N
wikuwa-k.
home-Loc
'He doesn't catch all the fish and then he goes home.' (all over Neg)

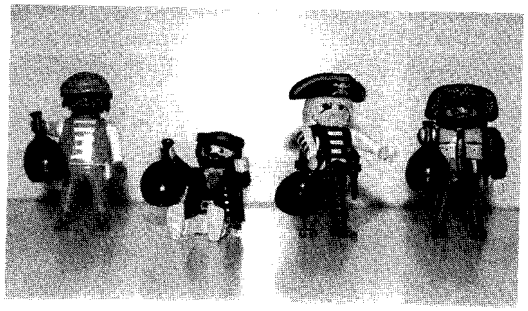
That is, a universal quantifier as object may take scope above or below negation.

However, as Bruening (2007) shows, wh-words that are used as indefinites can only take scope *below* negation:

(49) Ma=te wen '-kisi-tomh-a-wi-yil Piyel-ol.
Neg=Emph who 3-Perf-beat-3Subj-Neg-Obv P.-Obv
'No one beat Piyel.' (*'There is someone who didn't beat Piyel.')

Interactions among Quantifiers. I also constructed single pictures and asked whether sentences were appropriate descriptions of the situation they depicted. I give one example below, which illustrates that subjects can easily distribute over objects, whether the subject is singular or plural:

(50)



a. Psite skitapi-yik '-sakolon-a-wa puhtaya.
all man-3P 3-hold.onto-3Subj-3P.ObvP bottle.ObvP
'All the men are holding bottles.' (one each, distributive)

b. Psite skitap '-sakolon-a-l puhtaya-l.
all man 3-hold.onto-3Subj-Obv bottle-Obv
'Every man is holding a bottle.' (one each, distributive)

A universal quantifier as subject does not need to distribute over the object; one informant offered this sentence as a description of a picture where everyone hooked the same fish simultaneously:

(51) Psite '-poth-a-wa-l peskuw-ol nomehs-ol.
all 3-hook-3Subj-3P-Obv one-Obv fish-Obv
'Everyone hooked one fish.' (all hook same fish)

Similarly for *yatte wen*; this sentence can describe a case where all the whales are biting down on the same fish:

(52) Putepi-yik yatte wen 't-askikom-a-l nomehs-ol.
whale-3P each 3-bite.clamp-3Subj-Obv fish-Obv
'Whales are each biting a fish.' (distr, or non-distr, biting same one)

This is not true for object quantifiers. An object may not take scope over a subject. The following sentences are not true where several men are each holding a bottle, or where several whales are each biting a fish, respectively:

(53) a. Skitap psite '-sakolon-a puhtaya.
man all 3-hold.onto-3Subj.ObvP bottle.ObvP
'A man is holding all the bottles.' (only one man total)

b. Pesq putep psite 't-askikom-a nomehsu.
one whale all 3-bite.clamp-3Subj.ObvP fish.ObvP
'One whale is biting all the fish.' (only one whale total)

Instead, these sentences only describe pictures where a single man is holding all the bottles, or where a single whale has all the fish in its mouth.[16]

However, this is only true when the direct voice is used (with the morpheme *-a-* described above). When the inverse is used, suddenly the object takes scope over the subject:

(54) Psite puhtaya-k '-sakolon-oku-wa-l peskuw-ol skitapi-yil.
all bottle-3P 3-hold-3Obj-3P-Obv one-Obv man-Obv
'One man is holding all the bottles.' (distributive, several men each holding one, or non-distributive, one man holding all)

Importantly, an asymmetry arises between the direct and the inverse. In the former, the subject may take scope over the object, but the object may not take scope over the subject. In the inverse, the object may take scope over the subject; but the subject may also take scope over the object. The following sentence can describe two different pictures. In one, a single man is being attacked by all the whales, but in the other, different men are being attacked, one per whale:[17]

[16] The same subject-object asymmetry holds with other kinds of transitive verbs, such as those that only take inanimate objects and those that only take secondary objects (the class sometimes called "AI+O," meaning an intransitive verb with an animate subject ("AI") that takes an object despite being formally intransitive). Neither of these classes has an inverse.

[17] The pictures actually involved sharks, but the informant could not remember the word for shark (*sikolat*) and called them whales instead.

(55) Skitap psite '-qilta-ku putepiyi.
man all 3-attack-3Obj.ObvP whale.ObvP
'All the whales are attacking a man.' (distributive or non-distributive)

Note that the word order of this sentence is identical to that of (53a), but the possible interpretations are different. The only difference between them is that (53a) uses the direct voice, while (55) uses the inverse voice. The difference in possible interpretations could not be due to word order or to the discontinuous object. The generalization, stated in Bruening (2001, chapter 2), is that, in the direct voice, subjects rigidly take scope over objects, but in the inverse voice, objects most naturally take scope over subjects but subjects may also take scope over objects.

Bruening (2001) draws several important conclusions from this generalization. First, Passamaquoddy arguments, or quantificational ones at least, must be generated in argument positions, and not in adjoined (or nonhierarchical) positions as in various accounts of free-word-order languages (e.g., Hale 1983, Jelinek 1984, Baker 1996). This is so because their possible scope interpretations are determined by their relative argument positions: subject over object, for instance. If they were simply adjuncts, their scope should be free, since adjuncts can be adjoined in any hierarchical order.

Second, this finding argues for a movement analysis of the inverse. To account for the scope facts, Bruening (2001) argues that the object undergoes a step of movement across the subject in the inverse voice. Generally, scope is strictly limited by the argument hierarchy: subjects are higher than objects. But by crossing over the subject, the object may now take scope over it. In addition, it may reconstruct, permitting it to take scope below the subject as well. This analysis also accounts for why weak crossover is missing in Algonquian languages in the inverse (Dahlstrom 1986); see Bruening 2001, chapter 2. The scope facts rule out other possible analyses of the inverse: If the arguments were simply base-generated in the opposite order in the inverse, scope should be rigid in the inverse just like it is in the direct, but it is not. (No one that I know of has actually advocated such a theory, but it is important to rule it out nonetheless.[18]) Similarly, if the direct-inverse opposition were purely morphological, with the arguments generated in the same syntactic positions in both cases (as in Aissen 1997), we would expect no differences between them in possible scope interpretations.[19]

[18] A reviewer suggests that the analysis of Rhodes 1976, 1994, and Perlmutter and Rhodes 1988 has this character; but that theory, couched within a Relational Grammar framework, involves simultaneous demotion of the subject and promotion of the object. The derivational nature of this analysis could potentially be exploited to give the scope facts, as in the movement theory I am advocating.

[19] Ives Goddard (p.c.) suggests that a purely morphological theory of the inverse can be maintained, if the scope facts are only about the interaction between proximate and obviative NPs. I interpret this idea as a requirement that proximate NPs must c-command obviative NPs; in the inverse, the object would be required to raise over the subject, leading to the scope patterns reported here. While I do not have definitive data distinguishing this suggestion from the theory presented in the text, I believe that this alternative would miss the connection between the availability of syntactic movement and the morphological form of the verb. Where there is no morphological inverse available (between two objects of a ditransitive, with so-called "AI+O" verbs, among others), scope is simply rigid.

Note that these judgments are quite robust, and do not vary from speaker to speaker (that I have found) or from time to time or context to context. It appears to be very strongly grammatically conditioned. In addition, word order very often mirrors scope, but not always, as the pair above showed. When word order is different, scope is determined not by word order but by the grammatical hierarchy (subject over object in the direct, object over subject over trace of object in the inverse). (In ditransitives, scope is rigidly subject > first object > second object in the direct voice, but scope between the subject and first object becomes free in the inverse.) In addition, as we saw above, the relative scope of a universal quantifier and negation is free, so it is not the case that scopal elements are simply fixed in Passamaquoddy. This is also shown by locative adjuncts, which can take either scope:

(56) a. Psite possaqhenomakon ekhutetu/kolomu oposi-hkuk.
all lantern hang.Inan/be.stuck.Inan tree-Loc.P
'Every lantern is hanging in a tree.' (distributive)

b. Psite oposi-hkuk kolomu possaqhenomakon.
all tree-Loc.P be.stuck.Inan lantern
'In every tree is stuck a lantern.' (distributive)

c. Possaqhenomakon kolomu psite oposi-hkuk.
lantern be.stuck.Inan all tree-LocP
'A lantern is stuck in every tree.' (distributive)

In summary, quantificational NPs interact with the syntax of the direct-inverse opposition to produce only a limited range of interpretations.

6 Adverbial and Verbal Quantifiers

The preceding sections concentrated on nominal quantifiers, including floating *yatte wen* which associates with a nominal argument, and the CP-element *tan*, which may quantify over wh-words used as indefinites. This section turns to adverbial quantifiers and to quantificational preverbs.

6.1 *Psi(te)* and *psiw* as adverbs

Both *psi(te)* and *psiw* can appear without quantifying over a nominal argument, much like English *all* (in both languages this is clearest with a singular subject, where *all* could not be quantifying over the subject). In this use they typically (but not always) appear right before the verb, and again they may be modified by elements like 'almost':

(57) a. Pahtoliyas **psiw** wap-sewe.
priest all white-dress.3
'The priest is all dressed in white.'

b. Pahtoliyas **eluwete** **psite** wap-sewe.
priest almost all white-dress.3
'The priest is almost all dressed in white.'

c. **Psite** pahtoliyas wap-sewe.
all priest white-dress.3
'The priest is all dressed in white.'

(58) a. Espons nit wilitpan **msite** nutehte[h]m-uw-a-n.
Espons that brain all (1)-knock.out.from-Ditr-1Subj-N
'That is Espons' brain that I have [completely] spattered.' (Mitchell 1921/1976a, 15)

b. Koluskap 't-oqimu-m, '-kotunkew-ku,
K. 3-loon-Poss.ObvP 3-hunt.for-3Obj.ObvP
wiwnasi-pomi-tuwiya-wolotu-wok **msite** noluwiw skitkomiq.
aimless-along-fly-Plural-3P all everywhere earth
'Koluskap's loons, his hunters, fly aimlessly all over the earth.' (Mitchell 1921/1976d, 9)

In this use the universal quantifiers appear to be some kind of adverbial element.

6.2 Preverbs

Passamaquoddy has a large inventory of preverbal elements that attach more or less loosely to the verb stem.[20] Some of them were illustrated in section 3.8, where they were quantified over by *tan*. Many preverbs are quantificational in nature. Some also have freestanding forms. For instance, the stem for 'few' that we saw above, *wahkehs*, can be used as a quantificational preverb:[21]

(59) Pahtoliyas **wahkehsi**=wap-sewe.
priest few=white-dress.3
'The priest is partially dressed in white.'

Similarly, the stem *kehs*, 'X many, X much', has a free form inflected like a verb (this sentence might literally be, 'How many are the bicycles that you have?'):

(60) **Kehsu-wok** paysihkol-ok tepelom-oc-ik?
X.many-3P bicycle-3P IC.own-2Conj-3P
'How many bicycles do you have?'

But it also appears as a bound prefix or a preverb:

(61) a. **Tan** te=hc **kehs**-alk-iyin naka **tan** **kehsi**=ksomon-ot
TAN Emph=Fut X.much-dig-2Conj and TAN X.much=push-2Conj
wot opos, kat=te=hc k-moson-i-w.
this.An tree Neg=Emph=Fut 2-catch-2Subj/1Obj-Neg
'However much you dig and however much you push on this tree, you will not catch me.' (Mitchell 1921/1976a, 8)

b. Nil kat op apc nit n-toli=komoqi-w-on, **tan** te
I Neg would again there 1-there=dive-Neg-Sub TAN Emph
kehsi=mil-iyeq man.
X.much=give-2PSubj/1ObjConj money
'I'm not going down there again, no matter how much money you give me!' (Mitchell 1979, 20)

c. Nt-assokitahas **tan** **kehsi**=pson-a-t coqols.
1-be.surprised WH X.many-catch-3Subj-3Conj frog.ObvP
'I'm surprised at how many frogs he caught.'

d. **Kehsi**=koti-pson-uk sikiliyem-ok.
X.many-Fut-catch-1Conj cricket-3P
'I'm going to catch a lot of crickets.'

Note that in such cases, the preverb may quantify over the verb itself (amount of digging and

[20] In some cases the preverb seems to be tightly bound, as a prefix, to the verb stem (because the verb stem is itself a bound morpheme, and requires something to its left); in other cases it can be separated, either by overt material or by what sounds impressionistically like a word boundary. I transcribe preverbs rather inconsistently here, sometimes with a morpheme boundary (I try to use this only for cases of bound verb stems), sometimes with a clitic boundary ("=," when I do not hear a word boundary but the verb stem is not bound), sometimes as separate words (as they are often written in texts; I use this when it is my impression that there is a word boundary). I do not have the phonological expertise to be able to describe what exactly is going on, and the reader should use these transcriptions with caution. Note that, even when separated from the rest of the verb stem, the agreement prefix on the verb attaches to the preverb, and Initial Change affects the first vowel of the preverb.

[21] Many preverbs are derived from stems by addition of the vowel *-i*.

pushing in (61a)) or over one of its arguments (second object in (61b), sole object in (61c–d)).

There is also a series of preverbs that, when used with a singular argument, mean something like 'completely', but when used with a plural argument X, quantify over that argument and mean 'all X'. These include *nokka* and *'kihka*:[22]

(62) a. **Nokka**=kuwh-a-l oposi-hil.
(3)-all=chop.down-3Subj-Obv tree-Obv
'He chopped the tree down completely.'

b. **Nokka**=kuwh-a oposi.
(3)-all=chop.down-3Subj.ObvP tree.ObvP
'He cut all the trees down.'

(63) a. Keka te **'kihka** saputiy-alokotom-on khakon,
almost Emph (3)-all through-eat-InanObj door
'He had just about gnawed his way completely through the door. . . ' (Gabriel 1979, 32)

b. **'Kihka** yaq ote macephu-wolotu-wok.
all Quot Emph run.away-Plural-3P
'Every one of them ran out.' (Newell 1979, 14)

These preverbs do not mean 'completely' with a plural argument; the only requirement is that every member of the quantified-over argument be affected. Consider the following pair of sentences, for instance, involving a morphologically complex verb meaning 'knock the teeth out of'. All the teeth have to be knocked out with a singular object, but with a plural object, the number of teeth does not matter; all that matters is that at least one tooth is knocked out of each member of the object set:

(64) a. **Nokka**=mon-apit-ehtah-a-l.
(3)-all=off-tooth-strike-3Subj-Obv
'He knocked all the teeth out of him.'

b. **Nokka**=mon-apit-ehtah-a.
(3)-all=off-tooth-strike-3Subj.ObvP
'He knocked a tooth/teeth out of all of them.'

Because the preverb quantifies over a plural argument, and does so as a universal quantifier, no incompatible quantifier may be used with that argument:

[22] *Nokka* and *'kihka* are historically allomorphs. *Nokka* appears when the verb stem has a prefix (because of a regular phonological rule, only the prefix *k-* is actually pronounced before the *n* of *nokka*), *'kihka* when it does not. However, my informants do not always treat them this way, and I have found a few text examples that do not follow this rule, either (such as 63a). It is possible that some contemporary speakers are treating them as distinct but synonymous elements.

(65) % **Nokka**=mil-a-n-ol skinuhsis **pesqonu-l** ponapsku-l.
(1)-all=give-1Subj-N-InanP boy some-InanP rock-InanP
'I gave the boy all some rocks.' (contradiction)

Quantificational preverbs fall under the scope of sentential negation:

(66) a. 'Kihka=kisacu-ltu-wok.
all=be.ready-Plural-3P
'They are all ready.' (everybody)

b. Ma=te 'kihka=kisacu-lti-wi-yik.
Neg=Emph all=be.ready-Plural-Neg-3P
'They are not all ready.' (some are not ready, the rest are)

I have so far been unable to get clear judgments on whether these preverbs can interact scopally with quantificational arguments. The following type of example would be relevant, but I do not have a clear judgment regarding possible interpretations. I do know that this sentence can refer to just one man total (and the informant did interpret it that way), meaning that the preverb, perhaps by default, takes scope below the subject:

(67) Pesq skitap nokka=psehl-a kiwhosu.
one man (3)-all=skin-3Subj.ObvP muskrat.ObvP
'One man skinned all the muskrats.'

But I do not know if the other interpretation is possible, where there is one man per muskrat.

One interesting fact about *'kihka* and *nokka* is that, under appropriate conditions, they can quantify over an implicit argument. Passamaquoddy has indefinite subject forms, where the only argument that appears is the object, and the agreement indicates that the subject is unspecified, as in the following:

(68) Litahasu-ltu-wok, Koluskap **'kihka=nokol-ut** monihku-k, cu
think-Plural-3P Koluskap all=leave-IndefSubj/3ObjConj island-Loc surely
mehcine,
die.3
'They thought that if Koluskap were left behind on the island, he would die,' (Mitchell 1921/1976c, 6)

In discussing this sentence with an informant, it turned out that *'kihka*'s role in the sentence is to specify that many people, not just one, are leaving him behind.

This interpretation does not arise automatically, however. If the object is plural, the

most natural interpretation is that the preverb quantifies over that, and not over the indefinite subject, which is just unspecified:[23]

(69) Kiwhosu-wok nokka=psehl-a-k.
muskrat-3P all=skin-IndefSubj/3Obj-3P
'Someone skinned all the muskrats.'

Or if the verb is one that can be modified naturally by 'completely', the preverb is interpreted in that way with a singular object and indefinite subject:

(70) Kiwhos 'kihka=psehl-ut, . . .
muskrat all=skin-IndefSubj/3ObjConj
'If the muskrat is skinned completely, . . . ' (possibly just one person skinning it)

But in cases where that modification does not make sense, like with the verb 'see', and the object is singular, the preverb again quantifies over the indefinite subject:[24]

(71) Muwin nokka=nomiy-ut, nitte macaha-woloti-ni-ya.
bear all=see-IndefSubj/3ObjConj then (3)-leave-Plural-Sub-3P
'If the bear is seen (by all of them), they will leave.'

Passamaquoddy has numerous other quantificational preverbs. I will do no more than illustrate a few here. There is *mili*, meaning 'many, various':

(72) a. Motahkomikuk kete mecimiw eci psi keq **mili**
Motahkomikuk for.example formerly very all what various
nomihtu-hti-htit.
see-Plural-3PConj
'At Peter Dana Point (Motahkomikuk), you know, it used to be that people saw a lot of strange things.' (Newell 1979)

b. Laks kisi **mili** pomawsu,. . .
Laks able variouslive-3
'Laks can live in many different ways. . . ' (Francis and Leavitt 1995, line 250)

The preverbs *aqami* and *piyemi* mean something like 'more' and 'most', respectively, and appear in comparatives:

[23] The expected form in (69) is *'kihka* (see footnote 21), as in (70); I do not know if *nokka* is a mistake.
[24] The expected form in (71) is again *'kihka*.

(73) a. Nit eli-peciya-k, msite **aqami**=musqitahasu-ltu-wok.
then IC.thus-come-InanConj all more-hate-Plural-3P
'So it comes to pass that they hate him all the more.' (Mitchell 1921/1976e, 17)

b. **Aqami** ketokomahtu katok kotok-ik kcihku-k toli weyossis-ok; **aqami** more be.cunning-3 than other-3P forest-Loc ? animal-3P more nehkatomahtu katok psite kehsi-htit.
be.dreadful.3 than all be.many-3PConj.
'He's [more cunning] than any other kind of animal in the woods, and crueler than all of them put together.' (Francis and Leavitt 1995, line 154)

(74) a. Yuhtol **piyemi** te woli-nuw-a-c-il not te
this.Obv most Emph good-find.looks-3Subj-3Conj-Obv that.3 Emph
tomk tetomihk-ahc-il;
first IC.catch.up.to-3ObjConj-Obv
'The one he thinks is prettiest catches up with him first.' (Francis and Leavitt 1995, line 51)

b. Yaka Kollu '-peciya-n; not yaka **piyemi** sikiki-t psi
that.Abs Kollu 3-come-Sub that.3 that.Abs most be.fierce-3Conj all
kehsi-htit pomaws-ulti-c-ik.
be.many-3PConj live-Plural-3Conj-3P
'Now Kollu himself comes—assuredly the most fearsome of all living creatures.' (Francis and Leavitt 1995, line 277)

For more on comparatives in Passamaquoddy, see Bruening (2006).

Pehki and *sesomi* appear to be very similar to *nokka* and *'kihka* (at least in meaning 'completely'); *mawi*, meaning 'together, as a group', was illustrated above (32); *(co)cepi* means 'separately'; *memhuwi* means 'as much as possible'; *possoni* or *psoni* means 'fully'; *'sami* means 'too much, excessively'; *sawe* indicates that the action of the verb takes place many times; *tepi* means 'enough'. There are many other preverbs in Passamaquoddy, expressing a variety of concepts. I have tried here to list the ones that seem to me to be of relevance to a discussion of quantification, but I am sure there are some that I have missed.

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4

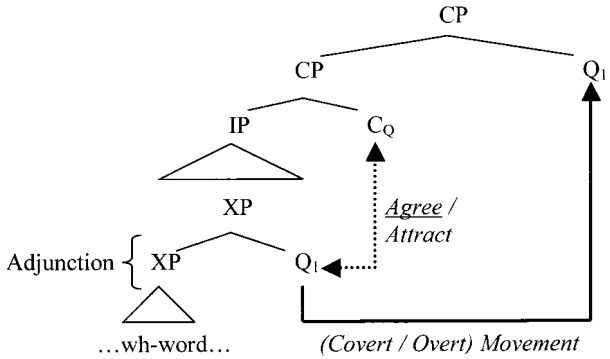
Q-Particles and the Nature of Wh-Fronting [1]

Seth Cable

1 Introduction

An operation of 'Q-movement' has been argued to be central to the formation of wh-questions in several wh-*in-situ* languages (Hagstrom 1998; Kishimoto 2005). Under this analysis, the formation of wh-questions in these languages proceeds as indicated in (1).

(1) **Q-Movement in Wh-In-Situ Languages**



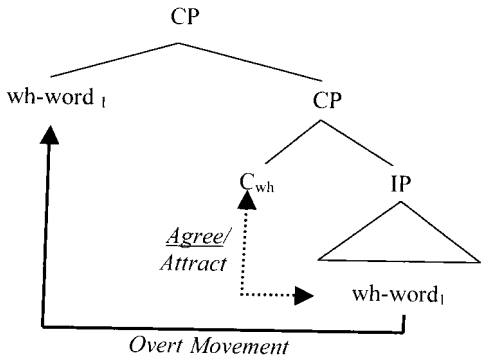
The structure in (1) represents the following claims. A wh-word is obligatorily c-commanded by a Q(uestion)-particle, which adjoins to some phrase containing the wh-word. Under this

[1] Please see Footnote 75 for a full list of acknowledgments.

analysis, it is the Q-particle, *and not the wh-word itself*, which is probed by and Agrees with the interrogative C head of the wh-question. More concretely, the interrogative C head bears an uninterpretable instance of the interpretable Q-feature born by the Q-particle. The interrogative C must therefore probe for an interpretable instance of the Q-feature. Upon reaching the adjoined Q-particle, the interrogative C Agrees with the particle, eliminating its own uninterpretable instance of Q. This Agreement then triggers movement of the Goal, the Q-particle, into the projection of C. In some languages (Sinhala), this movement is usually covert; in others (Japanese), this movement is always overt.[2]

The analysis in (1) would seem to entail that wh-questions in these wh-*in-situ* languages are syntactically quite different from wh-questions in wh-fronting languages like English. After all, it is commonly assumed that the left-peripheral position of wh-words in wh-fronting languages reflects some syntactic relationship between the interrogative C and the wh-word itself. That is, under the most common assumptions, the derivation of wh-questions in wh-fronting language proceeds roughly as follows.

(2) **Wh-Movement in Wh-Fronting Languages**



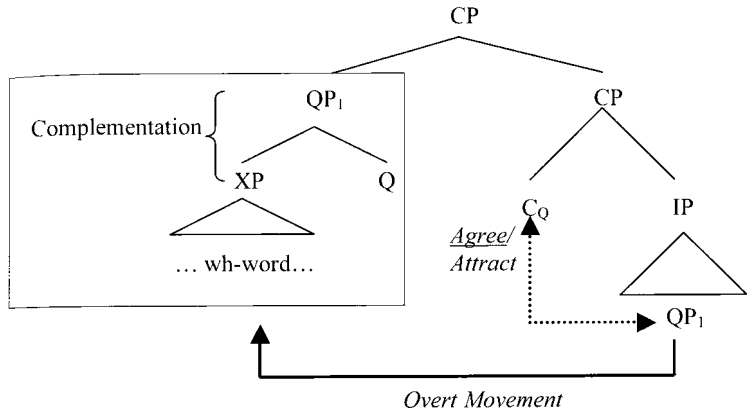
Thus, under one particular view, the interrogative C head probes and Agrees with a wh-feature of the wh-word itself. Since the wh-word is the Goal, the wh-word is then subsequently moved into the projection of the interrogative C.

The primary claim of this paper is that the analysis of wh-fronting in (2) is incorrect. Rather, wh-questions in wh-fronting languages are formed in a manner nearly identical to that represented in (1); their only difference from wh-questions in wh-*in-situ* languages is in the relationship between the Q-particle and its sister. Specifically, I will argue that, in all wh-

[2] It should be noted that the Q-particle in (1) is not part of the functional projection of the wh-word itself. As we will see, the sister of Q may contain lexical heads selecting for the wh-head. Thus, the analysis in (1) must be distinguished from the competing claim that wh-*in-situ* involves pure 'feature-movement' of [+wh] up to the projection of C.

fronting languages, the fronting of wh-words in wh-questions has the structural character represented below under (3).

(3) **Wh-Fronting as a Secondary Effect of Q-Movement**



The structure in (3) represents the following claims. As with wh-*in-situ* languages, a wh-word in a wh-fronting language is associated with an obligatory Q-particle, which c-commands the wh-word. In a wh-fronting language, however, this Q-particle takes *as complement* a phrase containing the wh-word, and thus projects the category of the phrase minimally dominating Q and Q's sister. As with wh-*in-situ* languages, the interrogative C head probes for an interpretable instance of the Q-feature born by the Q-particle, *and not any feature of the wh-word itself*. In a wh-fronting language, however, the first node which the C encounters bearing this feature is the QP projected by the Q-particle, and so the C head must Agree with this QP. As with wh-*in-situ* languages, this Agreement then triggers movement of the Goal into the projection of C. In a wh-fronting language, however, since the Goal is QP, the entire QP is moved into the periphery of the clause. Because the wh-word is necessarily contained within the QP, the wh-word is fronted into the periphery along with everything else inside the QP.[3]

We find, then, that even in wh-fronting languages there is no direct syntactic relationship between the interrogative C and the wh-word itself. The obligatory left-peripheral position of the wh-word is a mere epiphenomenon, a by-product of the real syntactic relationship between the interrogative C and the c-commanding Q-particle.

[3] Again, it should be noted that, just as in (1), the Q-particle in (3) is not part of the functional projection of the wh-word, as its sister could contain a lexical head selecting for the wh-word. Thus, the proposal in (3) must be distinguished from the less interesting claim that the wh-feature of a wh-word heads its own projection within the functional projection of the wh-word. Similarly, the proposal in (3) must be distinguished from the competing proposals in Watanabe (1992), which though similar in outline, differ substantially from the account offered here in their treatment of wh-fronting languages.

The principal evidence for the analysis in (3) is taken from Tlingit, a Na-Dene language of Southeast Alaska and Northwest British Columbia. Given its special morpho-syntactic properties, the analysis in (3) is highly motivated for wh-fronting in Tlingit. Given the strong similarity of wh-fronting in Tlingit to wh-fronting in more familiar languages, the extension of the analysis in (3) to all wh-fronting languages is thereby motivated. This analysis of wh-fronting suggests a novel typological theory of wh-questions, under which wh-*in-situ* may have two quite different structural natures.

It will be shown that the analysis in (3) has important consequences for the theory of pied piping. In brief, all apparent instances of 'pied piping' may be analyzed as cases in which the complement of Q properly contains the wh-word. Pied-piping structures may thus be straightforwardly derived from general principles of phrasal movement, and one need not appeal to special mechanisms of feature-percolation.

We will see that the analysis in (3) entails a particular view regarding the quantificational structure of wh-questions in wh-fronting languages, one in which *no* wh-words are scope-bearing logical operators, a view common in the literature on wh-questions in wh-*in-situ* languages (Cheng 1991, Hagstrom 1998, Shimoyama 2001). This view has the interesting consequence that reconstruction is not necessary for the proper interpretation of wh-questions containing pied piping.

Finally, there exists in Tlingit an independently visible condition preventing the phrasal projection of the Q-particle from intervening between functional heads and phrases selected by those functional heads. It will be shown that this limit on the placement of Q-particles is sufficient to derive both (i) the apparent island-hood of certain positions (e.g. complement of P, specifier of D), and (ii) the inability for certain phrasal projections to be pied-piped (e.g., VP and any other projection along the 'functional spine' of the clause). Moreover, it is shown that the proposed theory of wh-*in-situ* correctly predicts that certain wh-*in-situ* languages allow Q-particles in environments not tolerated by wh-fronting languages.

2 The Nature of Wh-Fronting in Tlingit

In this section, I argue that the structure in (3) provides the best analysis of several features of wh-fronting in Tlingit. I begin by providing the reader with relevant background information regarding the Tlingit language. I then demonstrate that the wh-words in Tlingit wh-questions are obligatorily fronted into the left-periphery of the clause. Given the paucity of descriptive work on Tlingit syntax, this is an original claim regarding the structure of the language's wh-questions. I therefore take care to defend this claim at length, as it is so central to the primary theoretical claims that follow.

Next, I argue that the Tlingit particle *sá* – which obligatorily co-occurs with the language's wh-words – is most plausibly categorized as a Q-particle. This categorization is based upon strong formal parallels between *sá*, the Japanese Q-particle *ka* and the Sinhala Q-particle *da*.[4] One such parallel is the requirement that a wh-word of Tlingit always be c-commanded by the particle *sá*. This relationship is shown to follow from a particular semantic analysis of Q-particles and wh-words, one which views Q-particles as operators 'closing off' focus alternatives introduced by the wh-words (c.f., Hagstrom (1998), Shimoyama (2001)).

Finally, I argue that the interrogative C head of a Tlingit wh-question probes and Agrees with only the Q-particle *sá*, there being no special syntactic relationship between the interrogative C and the wh-word itself. That the wh-word is nonetheless fronted with the Q-particle in a Tlingit wh-question motivates the notion that the Q-particle *sá* takes its sister as complement and projects the category of the resulting phrase. Further evidence that the Tlingit Q-particle *sá* takes its sister as complement will be provided in Section 4.

2.1 Relevant Background Concerning the Tlingit Language

The Tlingit language is spoken in the Southeast panhandle of Alaska and Northwest British Columbia by at most 845 individuals out of an ethnic Tlingit population of approximately 10,000. The youngest native speakers of the language are typically in their early fifties, and there is no known native speaker of the language below the age of 40 (Dauenhauer & Dauenhauer 1987)[5]. Tlingit is the sole member of the 'Tlingit' language family, a branch of the Na-Dene language phylum, and thus is related to the more widely studied Athabaskan languages.[6] Pioneering grammatical studies of Tlingit can be found in Boas (1917), Naish (1966), Story (1966), Story & Naish (1973), Leer (1991), D&D (2000), *inter alia*.

Tlingit is a head-marking language with extensive pro-drop. The complex verbal morphology of Tlingit is remarkably similar to that of its Athabaskan relatives, and many cognate morphemes are visible. Given this morphological system, a particular surface verbal form of Tlingit may underlyingly contain a sizeable number of prefixes. For this reason, and because this chapter principally concerns Tlingit syntax, I will only provide the roughest of glosses for the Tlingit verbs exemplified throughout. I will not provide a full morphological break-down of every verbal form, but will rather gloss only the 'propositional content' of a given verb, as illustrated below under (4). Note that these 'propositional glosses' are merely a notational convenience, and do not represent any serious proposals regarding the morpho-syntax of Tlingit. Thus, although these glosses contain English pronouns, I do not seriously

[4] Since the transliteration conventions for Sinhala tend to vary between authors, let me briefly explain the conventions I follow here. Certain authors variably transliterate the Sinhala character representing the vowel /a/, transliterating it as "ə" in contexts where the vowel is reduced, and as "a" in all other contexts. Thus, certain authors transliterate the Sinhala Q-particle as "də". Throughout this paper, I follow the simpler convention of uniformly transliterating this character as "a"; thus, I transliterate the Sinhala Q-particle as "da". Aside from this, I make no changes in the transliterations of the authors whose data I cite.

[5] To save space, I will henceforth abbreviate the names 'Dauenhauer & Dauenhauer' to 'D&D'.

[6] This language phylum is also often referred to as 'Athabaskan-Eyak-Tlingit', since the term 'Na-Dene' originally denoted a (likely erroneous) grouping that includes the neighboring language Haida.

adopt the 'Pronominal Argument Hypothesis' (Jelinek 1984) for Tlingit. Rather, I hold the view that full DPs in Tlingit can function as verbal arguments, and are not necessarily mere clausal adjuncts.

Like its Athabaskan relatives, Tlingit largely displays a head-final alignment: the language employs post-positions, and no prepositions; possessors and other nominal complements precede the head noun; auxiliaries follow main verbs. In addition to this, the most frequent word order in Tlingit texts is typically SOV (Dryer 1985). Unlike its Athabaskan relatives, however, Tlingit has rather free word order, and freely permits the positioning of major constituents after the verb.[7] Generally speaking, any permutation of S, V, O is an allowable sentence of Tlingit, though there are of course discourse-structural effects associated with particular orders (see Leer 1991; Chapter 2).

(4) **Word Order Freedom in Tlingit** [8]

a. SOV
Wé shaawátch xóots awsiteen.
that woman.erg bear she.saw.it
The woman saw the bear.

b. SVO
Wé shaawátch wusiteen xóots. [9]
that woman.erg she.saw.it bear
The woman saw the bear.

c. VSO
Awsiteen wé shaawátch xóots.
she.saw.it that woman.erg bear
The woman saw the bear

d. VOS
Awsiteen xóots wé shaawátch.
she.saw.it bear that woman.erg
The woman saw the bear

e. OVS
Xóots awsiteen wé shaawátch.
bear she.saw.it that woman.erg
The woman saw the bear

[7] Indeed, in some texts, (S)VO order slightly outnumbers (S)OV order. This is reported in Dryer (1985) and also conforms to my own experience.
[8] Keri Edwards (p.c.) reports that some speakers find the SVO and VSO orders in (4b,e) to be awkward, characterizing them as 'backwards' and only said in moments of great excitement.
[9] The reader may note that the verbal form in (4b) differs from that in (4a). This is due to a morpho-phonological rule that deletes 3rd obviative object agreement when the verb is directly preceded by an NP marked by the optional ergative post-position. The effect of this rule can be seen in many of the examples throughout this paper.

f. OSV
Xóots wé shaawátch wusiteen. [10]
bear that woman.erg she.saw.it
The woman saw the bear

2.2 Fronting of Wh-Words in Tlingit Wh-Questions

The general form form of wh-questions in Tlingit is illustrated below.

(5) **Illustrative Examples of Wh-Questions in Tlingit**

a. Waa sá sh tudinookw i éesh?
how Q he.feels your father
How is your father feeling? (D&D 2000; p. 138)

b. Daa sáwé i éesh al'óon?
what Q.foc-part your father he.hunts.it
What is your father hunting? (D&D 2000; p. 186)

As I will show, in a Tlingit wh-question, the wh-word must precede the main predicate of the clause, and is typically initial in the clause. The wh-word must also be followed by the Q-particle *sá*, which either directly follows the wh-word or a phrase containing the wh-word. As shown in (5b), this Q-particle can form a portmanteau with the 'focus particles' *áwé, áyá, áyú, áhé*, the two surfacing together as *sáwé, sáyá, sáyú, sáhé* .[11] The remaining material in the sentence typically follows the wh-word, with a strong tendency to follow the verb.

Because of the freedom of word order in Tlingit, it isn't obvious upon casual examination whether the language requires wh-words to occupy a left-peripheral position in wh-questions. Indeed, this issue has not yet been addressed in the published grammatical descriptions of Tlingit. Nevertheless, certain facts indicate that such wh-words are left-

[10] Outside of wh-questions, OSV word order seems especially rare in texts. Dryer (1985), for example, reports not a single instance of the order in his textual counts. In my own experience, the order is attested, though vanishingly rare in non-interrogative clauses. Speakers do, however, readily accept constructed OSV sentences, especially when the optional 'ergative' subject marker is used, as in (4d). In general, though, the 'post-verbal field' is where the 'action' lies with respect to word-order flexibility in Tlingit.
[11] I borrow the label 'focus particle' from Leer (1991). It isn't clear to me, however, whether 'focus particle' is the best label for these particles. Story (1995) notes that the particles can serve equally well to either 'background' or to 'foreground' material. My own suspicion is that these particles can simply follow any element in any left peripheral position, whether Topic or Focus. Such a particle has been independently reported for the neighboring language Haida (Enrico 2003), where it actually seems cognate with the Tlingit particle. I should note that such an account of these particles is essentially that proposed in Leer (1991), though it seems out of sorts with the label 'focus particle'. Finally, D&D (1990) take the view that these particles are semantically empty, and can simply be optionally added to any prosodic phrase in the sentence.

peripheral in Tlingit wh-questions.[12]

2.2.1 Obligatory Pre-Predicate Position of Wh-Operators in Wh-Questions. As was shown in Section 2.1, word order in Tlingit is generally free, and any permutation of S, V and O is a well-formed sentence. In a Tlingit wh-question, however, the phrase understood to be the wh-operator *must* appear left of the main predicate of the clause.[13] By the term "predicate" here, I mean either the verb of the clause (if one is present) or the so-called 'focus particles' *áwé, áyá, áyú, áhé* in their 'copular use'. Examples of copular use of a focus particle are given in sentences (6 a, b) below.

(6) **Copular Use of So-Called 'Focus Particles'**

a. Tás áyá.
thread foc-part
This is thread. (D&D 2000; p. 77)

b. Daa sáwé?
what Q.foc-part
What is that? (D&D 2000; p. 77)

The requirement that a Tlingit wh-operator precede the predicate is apparent both from patterns within published texts and from the well-formedness judgments of native speakers. The following chart demonstrates how this pattern emerges across a range of published texts.

[12] Much of the evidence that follows is consistent with an analysis where wh-words in Tlingit wh-questions must be fronted to an immediately pre-verbal focus position, akin to wh-questions in other so-called 'discourse configurational languages' (Kiss 1995). It has been argued by some authors that such immediately preverbal focus positions are not left-peripheral positions (Arregi 2003). Note, however, that sentences such as (5b) indicate that Tlingit does not require wh-words in wh-questions to occupy an *immediately* preverbal position, which entails that wh-fronting in Tlingit is to a left-peripheral CP position.

[13] Throughout this paper, I use the term 'wh-operator' in a purely informal, descriptive sense, as (roughly) 'the wh-word representing the information being sought by the speaker'. As will be clear from the semantics proposed in Section 2.3.5, I do not believe that such wh-words are operators in any real semantic sense. Rather, they are argued to be elements that obligatorily introduce 'focus alternatives' into the meaning of the sentence.

(7) **The Pre-Predicate Position of Wh-Operators in Wh-Questions**

Text	Wh-Questions Containing an Overt Predicate (Either Verb or Focus Particle)	Of Those in First Column, Number in Which the Wh-Operator Precedes the Predicate
D&D 1987	117	117
D&D 1990	31	31
D&D 2000	170	170
D&D 2002	84	84
Nyman & Leer 1993	114	114
TOTAL	**516**	**516**

In this chart, the middle column lists the number of wh-questions in the text that contain an overt predicate. The last column lists the number of those questions counted in the middle column in which the wh-operator of the question precedes the main predicate of the clause. As the chart indicates, all the wh-questions in the selected corpus containing an overt predicate place the wh-operator *before* the predicate.

This pattern is also confirmed by the grammaticality judgments offered by native speakers. As the following data show, speakers reject as ill-formed any wh-question where the wh-operator follows the main predicate.[14] Such sentences are consistently corrected by speakers to ones in which the wh-operator *precedes* the predicate.

(8) **Wh-Operators in Tlingit Must Precede the Main Predicate**

a. **Aadóoch** sá **kgwatóow** yá x'úx'?
who.erg Q he.will.read.it this book
Who will read this book?

b. **Aadóoch** sá yá x'úx' **akwgwatóow**?
who.erg Q this book he.will.read.it

c. Yá x'úx' **aadóoch** sá **kgwatóow**?
this book who.erg Q he.will.read.it

d. * Yá x'úx' **akwgwatóow** **aadóoch** sá ?
this book he.will.read.it who.erg Q

[14] Interestingly, one speaker commented that such sentences sound like 'baby Tlingit'.

(9) **Wh-Operators in Tlingit Must Precede the Main Predicate**

a. **Aadóoch** sá **kawshixít** yá x'úx'?
who.erg Q he.wrote.it this book
Who wrote this book?

b. Yá x'úx' **aadóoch** sá **kawshixít**?
this book who.erg Q he.wrote.it

c. * Yá x'úx' **akawshixít aadóoch** sá?
this book he.wrote.it who.erg Q

(10) **Wh-Operators in Tlingit Must Precede the Main Predicate**

a. **Aadóoch** sá a<u>x</u> sakwnéini **aawa<u>x</u>áa**?
who.erg Q my bread he.ate.it
Who ate my bread?

b. A<u>x</u> sakwnéini **aadóoch** sá **uwa<u>x</u>áa**?
my bread who.erg Q he.ate.it

c. * A<u>x</u> sakwnéini **aawa<u>x</u>áa aadóoch** sá?
my bread he.ate.it who.erg Q

(11) **Wh-Operators in Tlingit Must Precede the Main Predicate**

a. **Daa** sá kéet **a<u>x</u>á** ?
what Q killerwhale he.eats.it
What do killerwhales eat?

b. Kéet **daa** sá **a<u>x</u>á**?
killerwhale what Q he.eats.it

c. * Kéet **a<u>x</u>á daa** sá?
killerwhale he.eats.it what Q

(12) **Wh-Operators in Tlingit Must Precede the Main Predicate**

a. **Waa** sáyá **at <u>k</u>uwanóok**?
how Q.foc-part they.do.it
What are those people doing?

b. * **At <u>k</u>uwanóok waa** sáyá?
they.do.it how Q.foc-part

Of course, one might justifiably wonder whether the ill-formedness of the starred sentences above is due, not to a rule of obligatory wh-fronting, but to independent semantic conditions on post-predicate NPs. Perhaps post-predicate NPs must possess qualities that wh-words inherently lack, such as definiteness? Note, however, that wh-words in Tlingit can function as indefinites in declarative clauses.[15] When a wh-word is used as an indefinite, there is no condition that it appear before the predicate of the clause. This fact is clearly indicated both by textual examination and by the well-formedness judgments of native speakers. The following chart demonstrates that the corpus of texts supports this grammatical generalization.

(13) **Wh-Indefinites May Freely Follow the Main Predicate of the Clause**

Text	Sentences Containing Wh-Indefinite and Overt Predicate (Either Verb or Focus Particle)	Of Those in First Column, Number in Which the Wh-Indefinite Precedes the Predicate
D&D 1987	74	63
D&D 1990	26	24
D&D 2000	0	0
D&D 2002	6	6
Nyman & Leer 1993	205	187
TOTAL	**311**	**280**

[15] In most of the examples of Tlingit wh-indefinites that we will see in this paper, the wh-indefinite is apparently interpreted as an NPI or a free-choice item. Nevertheless, sentences like the following show that it *is* possible for wh-indefinites to appear on their own, interpreted as plain existentials outside the scope of any other logical operators.

(i) ...áwé **daa** sáwé <u>x</u>wasiteen.
foc-part what Q.foc-part I.saw.it
*...and I saw **something**.* (Nyman & Leer 1993; p. 66; line 497)

Cable (2007) collects a variety of further, textual data demonstrating that Tlingit wh-indefinites also admit of these plain (and sometimes 'specific') indefinite readings.

Nevertheless, I do believe that some speakers tend to greatly prefer the NPI reading of the wh-indefinite, to the point that the NPI reading is essentially obligatory in the environments that license it.

In this chart, the middle column lists the number of sentences in the text that contain a wh-indefinite and an overt predicate. The last column lists the number of those sentences counted in the middle column in which the wh-indefinite precedes the main predicate of the clause. As the chart indicates, not all wh-indefinites in the selected corpus precede the main predicate of their clause.

This pattern is also confirmed by comments offered by native speakers. Although sentences such as (8d) and (11c) are not acceptable as wh-questions, speakers note that they can function as declarative sentences containing wh-indefinites.

(14) **Post-Predicative Wh-Indefinites** [16]

a. Yá x'úx' **akwgwatóow** **aadóoch** **sá**.
this book he.will.read.it who.erg Q
People will read this book.

b. Kéet **axá** **daa** sá.
killer.whale he.eats.it what Q
A killerwhale will eat anything.

c. **Yéi uwatee** **x'oon** táakw sá.
he.lived.there how.many winters Q
He lived there for a number of years (= many years).

We see, then, that there is no condition requiring wh-indefinites in Tlingit to appear before the main predicate of the clause; such wh-words may freely appear in the post-verbal field. I conclude that the inability for wh-operators in wh-questions to appear following the predicate is not due to their lacking some inherent semantic property that post-predicate NPs are required to have. Indeed, the only relevant difference between the wh-words in (14) and those in (8) – (12) is that the latter function as wh-operators while the former do not. I conclude that the best explanation for the requirement that wh-operators appear before the predicate of the clause is that such wh-words are fronted into the left periphery. Further evidence for such an obligatory rule of wh-fronting will be provided in the next few sections.

2.2.2 Topic Status of Material Preceding Wh-Operators in Wh-Questions. Additional evidence that wh-operators are left-peripheral in Tlingit wh-questions may be found in the

[16] Keri Edwards (p.c.) reports that some speakers find these sentences to be unacceptable, and require the wh-indefinites to appear before the main predicate. I would hypothesize that for such speakers, there are additional conditions on post-predicate placement that independently rule out the appearance of post-predicative wh-indefinites. It is worth noting that these speakers do seem to exhibit a more restricted post-verbal field (see Footnote 8).

discourse-structural properties of material preceding such wh-words. As shown by sentences like (8c), it is possible for other XPs to precede the wh-word in a Tlingit wh-question. Placement of an XP before the wh-word, however, creates a structure with special discourse properties: the fronted XP must be construed as a discourse topic. This is suggested both by textual examination and by speaker judgments.

Although often accepted by speakers, sentences such as (8c) are remarkably rare in texts. Indeed, the overwhelmingly predominant pattern is for wh-words in wh-questions to precede all other major constituents in the sentence. The following chart illustrates.

(15) **The Initial Position of Wh-Words in Tlingit Wh-Questions**

Text	Wh-Questions Containing Wh-Word and a Second Major, Non-Predicate Constituent	Of Those in First Column, Those in Which Wh-Word is Initial in the Clause	Of Those in Second Column, Those in Which the Initial Position of the Wh-Word Does not Follow From Typical Word Order
D&D 1987	43	43	32
D&D 1990	21	20	11
D&D 2000	27	27	19
D&D 2002	18	18	8
Nyman & Leer 1993	58	58	44
TOTAL	**167**	**166**	**114**

In this chart, the left-hand column indicates the number of wh-questions in the corpus containing some major constituent besides the wh-word and the predicate. The middle column reports how many, from the questions represented in the left column, place the wh-word initially in the clause. Finally, the right column indicates the number of questions in the middle column in which the initial position of the wh-word does *not* follow from more general word-order frequencies in Tlingit, such as the fact that subjects tend to precede objects in the language (Dryer 1985). The totals at the bottom of the chart indicate an overwhelming preference for wh-questions to begin with wh-words.

Consonant with their textual rarity, sentences like (8c) are occasionally judged by speakers to be marginal or ill-formed, a classification that is sometimes revised upon further reflection. The textual rarity of sentences like (8c) would, of course, follow from their possessing special discourse properties, ones that place strong limits on the kind of context in which such structures might be embedded. Such special discourse properties would also account for their occasional rejection by speakers, rejection occurring when the licensing context is difficult for the speaker to imagine or strikes them as far-fetched.

It seems likely, then, that sentences like (8c) possess some special discourse-structural property. That this property is the 'topichood' of the material preceding the wh-word comports

well with a number of other facts. First, in all the naturally occurring instances of non-initial wh-operators I have encountered, the material preceding the wh-operator is a referential expression. The following two examples illustrate the general pattern.

(16) **Textually Attested Examples of the Order [XP ... Wh-Operator ... V]**

a. I kutaaní wáa sá wootee?
your summer how Q it.was
How was your summer?
(SHI; Tlingit Phrase of the Week; September 6, 2005) [17]

b. Wé i sée daakw aa sáwé?
that your daughter which of.them Q.foc-part
Which one is your daughter? (D&D 1990; p. 298; line 10)

Note that this pattern is also evident in sentences (8c), (9b), (10b) and (11b).[18] Indeed, speakers do not allow fully *non*-referential material to precede the wh-operator of a wh-question.

(17) **Non-Referential DPs Cannot Precede Wh-Operators**

a. Aa sáyá l daa sá uxá?
who Q.foc-part nothing he.eats.it
Who ate nothing?

b. * L daa sá aa sáyá uxá?
nothing who Q.foc-part he.eats.it

These data strongly indicate that only *referential* XPs may precede the wh-operator of a wh-question. Of course, one of the core properties of 'topics' is that they can only be denoted by referential expressions (Li 1976), and so these data nicely argue that any material preceding the wh-operator of a Tlingit wh-question must be construed as a discourse topic.

A final suggestive piece of evidence is the translations offered by speakers for sentences like (8c). When these sentences are accepted by native speakers, they are regularly translated into English using hanging topic left dislocation structures, such as the following.

[17] The Sealaska Heritage Institute regularly posts a 'Tlingit Phrase of the Week'. This and others may be found at 'www.sealaskaheritage.org/programs/tlingit_phrase_of_week.htm'.
[18] The appearance of the generic NP *kéet* in sentence (11b) does not necessarily upset the generalization, given that generic NPs are classified by many semanticists as referential terms, denoting kinds (Carlson & Pelletier 1995).

(18) **The Order [XP ... Wh-Operator ... V] Translated as Left Dislocation**

a. Ax éesh daa sá aawaxáa?
my father what Q he.ate.it
Translated as 'My father, though, what did he eat?'

b. Yá xáat aadóoch sá uwaxáa?
this fish who.erg Q he.ate.it
Translated as 'That fish – who ate it?

c. Yá x'úx' aadóoch sá kgwatóow?
this book who.erg Q he.will.read.it
Translated as 'This book – who will read it?'

That speakers use English left dislocation to translate these sentences supports their having a special discourse structure that is not possessed by a simple wh-question and that only left dislocation in English is able to simulate.[19]

There is, then, good reason to conclude that any material preceding the wh-operator of a Tlingit wh-question must be interpreted as a discourse topic. This fact itself would most naturally follow from a syntax in which wh-operators are fronted into the left periphery of Tlingit wh-questions. Under such a syntax, any material occurring to the left of a Tlingit wh-operator would either have to occupy a left-peripheral Topic position (Rizzi 1997), or else would have to simply be a dislocated, hanging topic. Thus, the special discourse-structural properties of sentences with non-initial wh-operators in Tlingit provides further evidence that wh-operators must front in Tlingit wh-questions.

2.2.3 Long Distance Questions in Tlingit Require Long-Distance Movement. Another striking argument that wh-operators in Tlingit undergo obligatory fronting may be found in the language's long-distance questions. In Tlingit long-distance questions, the subordinate clause preferably follows the verb it is complement to (19a), though a pre-verbal order is also possible (19b).[20]

[19] Of course, the possibility exists that these speakers were simply trying to mirror the syntax of the original Tlingit in their English translations. I find this explanation doubtful, however. One speaker who was quite consistent in using left-dislocation in his translations of these sentences would nevertheless translate other non-English word-orders as standard SVO English sentences.
[20] By saying that the post-verbal order is 'preferable', I mean that it is the one most often encountered in texts, and the one most often provided by speakers when asked for translations of English long-distance questions.

(19) **Long-Distance Wh-Questions in Tlingit**

a. Daa sá uwajée wutoo.oowú?
what Q they.think we.bought.it
What did they think we bought?

b. Daa sá wutoo.oowú uwajée?
what Q we.bought.it they.think

For obvious reasons, the activity of an obligatory wh-fronting rule in Tlingit long-distance questions is easiest to detect when the subordinate clause follows the main verb. In such sentences, the interrogative word *must* appear to the left of the main verb, and cannot appear downstairs in its base position. The following sentences illustrate.

(20) **Long-Distance Movement in Tlingit Long-Distance Questions**

a. [**Daa sá**]$_1$ i tuwáa sigóo [t_1 yéi isaneiyí] ?[21]
what Q your spirit it.is.glad you.do.it
What do you want to do?

b. * I tuwáa sigóo [**daa sá** yéi isaneiyí] ?
your spirit it.is.glad what Q you.do.it

(21) **Long-Distance Movement in Tlingit Long-Distance Questions**

a. [**Daa sá**]$_1$ haa k̲oo at latóowu yawsik̲aa [t_1 wutootoowú] ?
what Q our teacher he.said we.read.it
What did our teacher tell us to read?

b. * Haa k̲oo at latóowu yawsik̲aa [**daa sá** wutootoowú] ?
our teacher he.said.it what Q we.read.it

[21] Sentence (20a) illustrates the Tlingit idiom for 'to want'. Since we will encounter this expression many times throughout this thesis, a few words should be said about it here. In Tlingit, one expresses the proposition "X wants Y" – where Y can be a CP or a DP – with an idiom literally meaning "Y is glad in X's mind-face (spirit)" (Leer 1991). This idiom can also be interpreted as "X likes Y", which may in fact be the original meaning. This idiom has undergone a certain amount of grammaticalization and phonetic reduction, but its original structure can be seen in sentences like the following.

(i) Has du tuwáx' g̲u.áwe gé x̲at sigóo gé.
their spirit.at perhaps.foc-part Q I.am.glad Q
I wonder if they like me. (Naish 1966; p. 63)

(22) **Long-Distance Movement in Tlingit Long-Distance Questions**

a. [**Goo**déi **sá**]$_1$ i shagóonich has uwajée [t_1 wutoo.aadí] ?
where.to Q your parents.erg they.think we.went
Where do your parents think that we went?

b. * I shagóonich has uwajée [**goo**déi **sá** wutoo.aadí] ?[22]
your parents.erg they.think where.to Q we.went

The impossibility of the (b)-sentences above strongly indicates that wh-operators in Tlingit must be fronted into the left-periphery of the wh-question.

2.2.4 Superiority Effects in Multiple-Wh Questions. A final piece of evidence for wh-fronting in Tlingit wh-questions comes from the language's multiple wh-questions. As shown in Section 2.1, word order in Tlingit is rather free. For example, both objects and adverbial phrases are generally permitted to precede subjects in a Tlingit declarative clause; see the examples in (4) and (23) below.

(23) **Word Order Freedom in Tlingit**

a. Ax̲ éesh hoon daakahídidéi yaa nagút.
my father store.to he.goes
My father is going to the store.

b. Hoon daakahídidéi ax̲ éesh yaa nagút.[23]
store.to my father he.goes
My father is going to the store.

In multiple wh-questions, however, such relative freedom of order is not available. Interrogative subjects must obligatorily precede interrogative objects and adverbial phrases.

[22] Sentence (22b) can reportedly be interpreted to mean "Your parents wondered where we went." Thus, the asterisk here is intended only to represent that the sentence cannot be interpreted as a matrix wh-question meaning "Where do you parents think we went?"

[23] Keri Edwards (p.c.) reports that some speakers find (23b) to be unacceptable, and prefer the order ADV,V,S to the order ADV,S,V. This is in line with the tendency, noted under Footnote 10, for the post-verbal field to be the locus of word-order freedom.

(24) **Superiority Effects in Tlingit Multiple Wh-Questions**

a. Aa sá daa sá aawaxáa?
who Q what Q they.ate.it
Who ate what?

b. * Daa sá aa sá aawaxáa?
what Q who Q they.ate.it

(25) **Superiority Effects in Tlingit Multiple Wh-Questions**

a. Aa sá goodéi sá woogoot?
who Q where.to Q they.went
Who went where?

b. * Goodéi sá aa sá woogoot?
where.to Q who Q they.went

(26) **Superiority Effects in Tlingit Multiple Wh-Questions**

a. Aa sá waa sá kuyawsikaa?
who Q how Q they.said.to.someone
Who said what?

b. * Waa sá aa sá kuyawsikaa?
how Q who Q they.said.to.someone

The speaker judgments indicated above are consistent with the available textual data. Although I have encountered only one clear example of a multiple wh-question in my collected corpus, its word order conforms to the pattern illustrated above: the subject wh-word precedes the adverbial wh-word.

(27) **Textually Attested Example of Tlingit Multiple Wh-Question**
X'oon waa sákwshei aax aawa.aat.
how.many how Q.dubit. there.from they.went
How many left in what way, I wonder? (D&D 1987; p. 196; line 60) [24, 25]

[24] The translation of this sentence provided by D&D (1987) is "I wonder how many of them and how they got out of there?" I believe the gloss I provide in (27) to be a fair rephrasing of this translation, one that mirrors the syntax of the original Tlingit.

It thus appears that in a Tlingit multiple wh-question, a wh-word subject must precede any wh-word objects or adverbs. This otherwise mysterious requirement would, of course, follow naturally from the Superiority Condition (Kuno & Robinson 1972; Chomsky 1973), but *only* under the assumption that Tlingit wh-words undergo obligatory fronting in wh-questions. I conclude, then, that the apparent activity of the Superiority Condition in Tlingit multiple wh-questions provides further evidence that wh-operators in Tlingit obligatorily front to the left periphery of the clause.

2.3 Q-Particles in Tlingit Wh-Questions: The Formal Status of *Sá*

I conclude from the grammatical patterns described in Section 2.2 that the wh-operator of a Tlingit wh-question must occupy a left peripheral position within the clause. In this section, I argue that the Tlingit particle *sá* – which obligatorily co-occurs with the language's wh-words – is most plausibly categorized as a Q-particle. Thus, wh-questions in Tlingit are of a kind not widely discussed in the literature: they possess overt Q-particles in addition to obligatory overt fronting of the wh-words. [26]

Unfortunately, this argument must be rather indirect, as there is no deep theoretical significance of the term "Q-particle" in the literature, nor are there any stated diagnostics for applying the term. I will therefore argue that *sá* is a Q-particle on the basis of its strong similarity to the particle *da* in Sinhala and the particle *ka* in Japanese. Given that *da* and *ka* are uncontroversial instances of Q-particles, the overwhelming parallels between *sá*, *da* and *ka* will demand that *sá* receive the same categorization.

A general semantics for Q-particles and wh-words is then proposed, based upon prior, independent research into the semantics of Q-particles (Hagstrom (1998), Shimoyama (2001), Beck (2006)). This semantics is shown to provide a compositional treatment of wh-questions and wh-indefinites in all three languages, and to derive some of the major grammatical properties that the three particles share.

2.3.1 The Obligatory Presence of Sá. A wh-question in Tlingit must contain the particle *sá*. If this particle is removed from any of the sentences above, the result is ill-formed.

[25] Note that unlike sentences (24) – (26), sentence (27) contains only a single Q-particle, though it contains more than one fronted wh-word. This presents a rather direct, *prima facie* challenge to our analysis in (3). Note, however, than an analysis along the lines of Grewendorf (2001) may be possible here. Grewendorf (2001) proposes that multiple wh-fronting in some languages is derived by the movement of a lower wh-word into the projection of a higher wh-word, which then subsequently fronts. Sentence (27), therefore, may reflect a structure where the lower wh-word *waa* 'how' has moved into the QP dominating *x'oon* 'how many'. Subsequent fronting of the QP would then derive the structure in (27), in a manner consistent with the core proposal in (3).

[26] Although not widely discussed, languages possessing such wh-question formation strategies are not unheard of. Another prominent example is the Tupí languages of Central and South America (Brandon & Seki 1984). Note that I am speaking here of languages which require *wh-questions* to have particles (in addition to wh-movement); much more widely attested are languages possessing both wh-movement (without particles) in wh-questions and 'yes/no'-question particles in polar questions (Bruening 2004).

(28) **The Obligatory Presence of *Sá* in Tlingit Wh-Questions**

a. Daa *(sá) aawaxáa i éesh?
what Q he.ate.it your father
What did your father eat?

b. Goodéi *(sá) kkwagóot?
where.to Q I.will.go
Where will I go?

As in many languages, wh-words in Tlingit may also function as indefinites. When they do, the particle *sá* is *still* obligatory.

(29) **The Obligatory Presence of *Sá* with Tlingit Wh-Indefinites**

Tlél goodéi *(sá) xwagoot.
not where.to Q I.went
I didn't go anywhere.

The data in (29) demonstrate that *sá* is required not only by the interrogative force of the clause, but by the wh-word itself. Although this may seem to undercut the label "question particle", this property also holds for such prototypical 'Q-particles' as Japanese *ka* and Sinhala *da*.[27, 28]

[27] It should be noted, however, that there are a number of particles besides *da* and *ka* which wh-indefinites in Sinhala and Japanese may appear with. This is not so for Tlingit.

[28] Another salient difference between Tlingit *sá* and the other two particles is that *sá* can *only* appear in sentences containing wh-words. The particle *sá* simply has no use outside of its obligatory co-occurrence with wh-words. This is unlike Japanese *ka* and Sinhala *da*, which can function both as markers of polar questions and as disjunctive operators (Hagstrom 1998).

In this context, however, let us note that polar (yes/no) questions in Tlingit are formed via insertion of the particle *gé*, as illustrated by the following, iconic sentence.

(i) Lingít gé x'eeya.áxch?
Tlingit y/n you.understand.it
Do you speak Tlingit?

Thus, in Tlingit, wh-questions and yes/no questions are formed via two distinct particles. I suspend judgment here as to whether the particle *gé* should also be regarded as an instance of Q. Nevertheless, given the distinction between *gé* and *sá* in Tlingit, I assume that the use of *da/ka* in Sinhala/Japanese polar questions reflects the existence of a separate, homophonous 'yes/no' particle. Thus, the apparent difference noted above might be only apparent, as the actual, underlying correlates of *sá* in Japanese and Sinhala likewise appear only in wh-questions.

(30) **The Obligatory Presence of *Da* in Sinhala Wh-Questions and Wh-Indefinites**

a. Chitra monawa *(da) gatte?
Chitra what Q bought
What did Chitra buy? (Kishimoto 2005; p. 3, 4)

b. Mokak *(da) waetuna.
what Q fall
Something fell. (Hagstrom 1998; p. 23)

(31) **The Obligatory Presence of *Ka* in Japanese Wh-Questions and Wh-Indefinites**

a. John-ga nani-o kaimasita *(ka)? [29]
John-nom what-acc bought.polite Q
What did John buy?

b. John-ga nani-*(ka)-o katta.
John-nom what-Q-acc bought
John bought something.

The data in (30) and (31) lead Hagstrom (1998) to propose a semantic analysis of Q-particles under which they are expected to appear both within wh-questions and with wh-words interpreted as indefinites in declarative clauses. I will later show that this semantic analysis may with minor modification be extended to the Tlingit particle *sá*, and would similarly predict its parallel grammatical behavior. Such a shared semantics would constitute one strong reason to apply the label "Q-particle" to Tlingit *sá*.

2.3.2 The Structural Position of Sá. As can be seen from most of the sentences above, it is common for the particle *sá* to be located directly to the right of a wh-word.

(32) ***Sá* Directly to the Right of a Wh-Word**

a. **Daa sá** aawaxáa i éesh?
what Q he.ate.it your father
What did your father eat?

[29] In highly colloquial Japanese, it is reportedly possible to drop *ka* in matrix wh-questions like (31a) (Lasnik & Saito 1992, Yoshida & Yoshida 1996, Ko 2005). However, there are certain stringent conditions governing this 'particle drop', and under at least one current account, such sentences contain an unpronounced *ka* (Ko 2005).

b. **Daa sá** i tuwáa sigóo [____ yéi isaneiyí] ?
what Q your spirit it.is.glad you.do.it
What do you want to do?

c. **Aa sá daa sá** du tuwáa sigóo [____ wutoo.oowú] ? [30]
who Q what Q their spirit it.is.glad we.buy.it
Who wants us to buy what?

However, this particle can also appear further to the right, detached from the interrogative word. This is evident from sentences such as (14c), (16b), and (22a). More examples illustrating such rightward positioning of *sá* appear below.

(33) ***Sá* Separated From the Wh-Word**

a. [**Goo**déi] **sá** kk̲wagóot?
where.to Q I.will.go
Where will I go to?

b. [**Goo**déi woogoot̲x] **sá** has uwajée i shagóonich? [31]
where.to he.went Q they.think your parents.erg
Where do your parents think that he went?

c. [**Aadóo** yaagu] **sá** ysiteen?
who boat Q you.saw.it
Whose boat did you see?

d. [**Daak̲w** keitl] **sá** ashaa?
which dog Q it.barks
Which dog is barking?

Upon examination of just the sentences in (32) and (33), one might form the simple hypothesis that the particle *sá* can be freely placed *anywhere* to the right of the interrogative word. Although this would be the simplest conclusion, the ill-formedness of sentences (34b) and (35b) demonstrates that it cannot be correct.

[30] Note that sentence (32c) illustrates that possessor-extraction in Tlingit is licensed by pronominal resumption. This construction is further discussed in Footnote 65.
[31] Note that sentence (33b) also demonstrates that subordinate CPs in Tlingit may be pied-piped.

(34) **Tlingit *Sá* Must C-Command the Wh-Word**

a. [**Aadóo** jeet] **sá** wé sakwnéin aawatee?
who hand.to Q that bread he.brought.it
Who did he give the bread to?

b. * [**Aadóo** jeet] wé sakwnéin **sá** aawatee?
who hand.to that bread Q he.brought.it

(35) **Tlingit *Sá* Must C-Command the Wh-Word**

a. [**Goo**déi] **sá** has uwajée woogoot̲x i shagóonich?
where.to Q they.think he.went your parents.erg
Where do your parents think he went

b. * [**Goo**déi] has uwajée woogoot̲x **sá** i shagóonich?
where.to they.think he.went Q your parents.erg

Rather, the correct generalization is that *sá* must appear either directly to the right of the wh-word, or directly to the right of a phrase containing the wh-word. In other words, the particle *sá* has to c-command the wh-word.

The condition that the Q-particle c-command the wh-word also holds of Sinhala *da* (Kishimoto 2005; p. 13) and Japanese *ka* (Yatsushiro 2001; p. 183).

(36) **Sinhala *Da* Separated from the Wh-Word (Kishimoto 2005; p. 13)**

a. Chitra [**mona** pota] **da** gatte?
Chitra what book Q bought
What book did Chitra buy?

b. Chitra [**kaa**-ge amma] **da** daekke?
Chitra who-gen mother Q saw
Whose mother did Chitra see?

c. Chitra [**kauru** ekka] **da** kataa kalee?
Chitra who with Q talk did
Who did Chitra talk with?

(37) **Japanese *Ka* Separated from the Wh-Word (Yatsushiro 2001; p. 182)**

[[**Dare**-no hahaoya]-**ka**-no kaban-wa] koko-ni aru.
who-GEN mother-Q-GEN bag-TOP here-LOC is
The bag of the mother of someone or other is here.

Such identity of distribution further emphasizes the formal similarity between *sá, da* and *ka*. Moreover, it will be shown in section 2.3.5 that this apparently syntactic condition on the placement of these particles follows from a particular semantic theory of Q-particles and wh-words.

2.3.3 Q-Particles and Extraction Islands. One of the most intriguing similarities between Tlingit *sá* and Sinhala *da* concerns their behavior with respect to islands. As described in Hagstrom (1998) and Kishimoto (2005), the wh-operator of a Sinhala wh-question may be contained inside an island if and only if the Q-particle *da* is merged outside the island. In the case of relative clause islands, the Q-particle must be merged to the right of the head of the relative clause. The following data, taken from Kishimoto (2005; p. 29), illustrate.[32]

(38) **Interaction Between Q-Particle and Relative Clause Islands in Sinhala**

a. Oyaa [[Chitra **kaa**-ta dunna $_{CP}$] pota $_{NP}$] **da** kieuwe?
you Chitra who-dat give book Q read
Who did you read the book that Chitra gave?

b. * Oyaa [[Chitra **kaa**-ta **da** dunna $_{CP}$] pota $_{NP}$] kieuwe?
you Chitra who-dat Q give book read

The same condition can be observed in Tlingit. The wh-operator of a Tlingit wh-question may be contained inside an island if and only if the particle *sá* is merged outside the island. When this occurs, the entire island is pied-piped into the left periphery of the interrogative clause. In the case of relative clause islands, the particle *sá* must be merged to the right of the head of the relative clause.

[32] Because Japanese *ka* obligatorily moves to the end of the interrogative clause, it cannot be easily determined whether this property also holds of the Japanese Q-particle. However, Hagstrom (1998; p. 40) argues that the behavior of the emphasis marker *ittai* in Japanese provides indirect evidence that it does.

(39) **Interaction Between Q-Particle and Relative Clause Islands in Tlingit**

a. [[**Wáa** kligéiyi $_{CP}$] x̲áat $_{NP}$] **sá** i tuwáa sigóo? [33]
how it.is.big.REL fish Q your spirit it.is.happy
How big a fish do you want? (A fish that is how big do you want?)

b. * [[**Waa sá** kligéiyi $_{CP}$] x̲áat $_{NP}$] i tuwáa sigóo?
how Q it.is.big.REL fish your spirit it.is.happy

c. * [[**Wáa** kligéiyi $_{CP}$] **sá** x̲áat $_{NP}$] i tuwáa sigóo?
how it.is.big.REL Q fish your spirit it.is.happy

(40) **Interaction Between Q-Particle and Relative Clause Islands in Tlingit**

a. [[**Wáa** yateeyí $_{CP}$] sháx'sáani $_{NP}$] **sá** ash kudlénx̲aa?
how they.are.REL girls Q they.are.tempting.him
What kind of girls are tempting him? (Girls that are how are tempting him?)

b. * [[**Waa sá** yateeyí $_{CP}$] sháx'sáani $_{NP}$] ash kudlénx̲a?
how Q they.are.REL girls they.are.tempting.him

c. * [[**Wáa** yateeyí $_{CP}$] **sá** sháx'sáani $_{NP}$] ash kudlénx̲a?
how they.are.REL Q girls they.are.tempting.him

(41) **Interaction Between Q-Particle and Relative Clause Islands in Tlingit**

a. [[**Wáa** yateeyí $_{CP}$] sháx'sáani $_{NP}$] **sá** sh tuwáa gaa yatee?
how they.are.REL girls Q refl.spirit for they.are
What kind of girls are pleasing to his eye?
(Girls that are how are pleasing to his eye?)

b. * [[**Waa sá** yateeyí $_{CP}$] sháx'sáani $_{NP}$] sh tuwáa gaa yatee?
how Q they.are.REL girls refl.spirit for they.are

[33] Like many languages, Tlingit does not possess a productive category of adjectives, and so most nominal modification is accomplished with relative clauses. Thus, questions regarding the degree to which some NP possesses a given property (e.g. "How ADJ a NP") must in Tlingit be asked using a structure in which the wh-word is buried within a relative clause. This fact greatly aids the elicitation in Tlingit of wh-questions with island-internal wh-words.

c. * [[**Wáa** yateeyí CP] **sá** sháx'sáani NP] sh tuwáa gaa yatee?
how they.are.REL Q girls refl.spirit for they.are

The data above further emphasize the syntactic parallels between Tlingit *sá* and Sinhala *da*. In Section 2.4, we will see that a uniform syntactic account can be provided for these facts, just so long as both these particles share a syntactic categorization as Q-particles.

2.3.4 Q-Particles at the Right Edge of the Matrix Clause. One final interesting parallel between Sinhala *da* and Tlingit *sá* is that neither particle may freely appear at the right edge of the matrix clause.[34, 35]

(42) **Sinhala *Da* Cannot Appear at the Right Edge of a Matrix Clause (Kishimoto 2005)**

a. Chitra **monawa da** gatte?
Chitra what Q buy
What did Chitra buy?

b. * Chitra **monawa** gatta **da**?
Chitra what buy Q (Kishimoto 2005; p. 3, 4)

(43) **Tlingit *Sá* Cannot Appear at the Right Edge of a Matrix Clause**

a. **Daa sá** iyatéen?
what Q you.can.see.it
What can you see?

b. * **Daa** iyatéen **sá**?
what you.can.see.it Q

c. **Aadóo sá** x̲áat aawax̲áa
who Q fish he.ate.it
Who ate fish?

d. * **Aadóo** x̲áat aawax̲áa **sá**?
who fish he.ate.it Q

This is despite the fact that both particles may freely appear at the right edge of *subordinate* clauses, as illustrated below.

[34] This property clearly does not hold of the Japanese particle *ka*.

[35] Hagstrom (1998) and Kishimoto (2005) describe some limited cases where Sinhala *da* may appear at the right edge of a matrix wh-question. I do not know whether similar structures are also allowable in Tlingit.

We should also note here that Sinhala *da* can appear matrix-finally in yes/no questions.

(i) Chitra ee pota kieuwa **da**?
Chitra that book read yes/no
Did Chitra read that book? (Hagstrom 1998; p. 21)

Recall from Footnote 28, however, that I assume that the particles required in yes/no questions are distinct (though possibly homophonous to) the Q-particles appearing in wh-questions and wh-indefinites. Thus, the behavior of *da* in Sinhala yes/no questions does not bear on the identity between Tlingit *sá* and the particle *da* in Sinhala wh-questions.

(44) **Sinhala *Da* Can Appear at the Right Edge of a Subordinate Clause**

Ranjit [**kauru** aawa kiyala] **da** danne?
Ranjit who came that Q know
Who does Ranjit know came? (Kishimoto 2005; p. 13)

(45) **Tlingit *Sá* Can Appear at the Right Edge of a Subordinate Clause**

[**Goo**déi woogootx̲] **sá** has uwajée i shagóonich?
where.to he.went Q they.think your parents.erg
Where do your parents think that he went?

Again, it will be shown later in Section 4 that a uniform account can be provided for these facts, but only if Tlingit *sá* and Sinhala *da* are assumed to be the same formal entity, a Q-particle.

2.3.5 Towards a Semantics of Wh-Words and Q-Particles. In this section, I will quickly sketch a semantics for wh-words and Q-particles that may be applied to wh-questions and wh-indefinites in Tlingit, Sinahala and Japanese. It will be shown that this semantics derives several of the core grammatical features of the particles *sá*, *ka* and *da*. The profitability of a uniform semantic analysis for these particles further argues that they should all be analyzed as ultimately the same formal entity, namely, a 'Q-particle'.

For reasons of space, the discussion here will be rather compact, and will presuppose some familiarity with current work on the semantics of wh-words and Q-particles, particularly Hagstrom (1998), Shimoyama (2001), Kratzer & Shimoyama (2002), and especially Beck (2006). For critical background and a lengthier exposition of the major leading ideas, I refer the reader to the aforementioned works.

Following Beck (2006), I will assume that wh-words in all languages have only a focus-semantic value; their normal-semantic value is undefined. Although wh-words do not have a defined normal-semantic value, they nevertheless have a lexically assigned semantic type and value for animacy. Thus, following proposals originating with Rooth (1985), the focus-semantic value of a focus-marked wh-word is a set of 'alternatives', each of the same logical type and animacy as the wh-word. For example, the wh-words *what* (English), *daat* (Tlingit), *nani* (Japanese) and *mokak* (Sinhala) all have the following characteristic semantics.

(46) **Semantics of WHAT**

normal-semantics: [[*what / daat / nani / mokak*]] = undefined

focus-semantics: [[$what_F$ / $daat_F$ / $nani_F$ / $mokak_F$]]^F = { x_e : x is non-human }

There are several benefits to this particular treatment of wh-words. First, as shown in Beck (2006), it provides an interesting account of various 'LF-' or 'Focus-Intervention Effects' across languages. Furthermore, it provides a clear, straightforward reason why wh-words *must* be structurally focused in so many of the world's languages; if wh-words were not focused, then a semantic crash would necessarily result.[36] It should also be noted that this system, unlike those in Hagstrom (1998) and Shimoyama (2001), identifies the 'alternatives' denoted by wh-words as focus-semantic values. This eliminates the need for special rules of point-wise semantic composition specifically for the values of wh-words, and instead employs the point-wise composition rules which are independently needed for the computation of focus-semantic values. Finally, it will be shown that, given plausible ancillary hypotheses, this treatment predicts several of the core grammatical properties of Q-particles noted above.

Following the proposals of Hagstrom (1998) and Yatsushiro (2001), I assume that the particles *sá*, *ka* and *da* are all variables over choice functions.[37, 38] Since they are variables, Q-particles are consequently assumed to carry indices.[39] Thus, the Q-particles *sá*, *ka* and *da* all have the following characteristic semantics.

(47) **Semantics of Q**

[[$sá_i$ / ka_i / da_i]]^g = g(i) ∈ D_{cf}

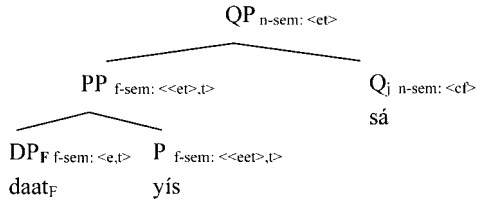
Higher operators can, of course, bind these choice function variables. For example, an existential operator over choice functions can be inserted via an optional rule of existential closure (Reinhart 1992, 1997; Yatsushiro 2001). Finally, Q-particles are assumed to semantically compose with their sisters via a syncategorematic rule specific to Q-particles (c.f. Beck 2006). The normal-semantic value of a Q-particle and its sister is stipulated to be the normal semantic value of the Q-particle applied to the *focus* semantic value of its sister. The rule may be stated as follows.

(48) **Special Composition Rule for Q-Particles**

[[Q_i XP]] = [[Q_i]]([[XP]]^F)

With the semantic machinery thus far introduced, we can provide a compositional semantics for wh-indefinites in Tlingit, Sinhala and Japanese. The following illustrates the semantics derived for the Tlingit phrase *daat yís* $sá_j$ 'for something', which is assumed to have the structure in (49). The reader is invited to confirm that this analysis may be easily extended to the wh-indefinites we've seen in Japanese and Sinhala.

(49) **Semantics of Wh-Indefinites in Tlingit**



[[QP]]^g = [[PP Q_j]]^g	(by Identity)
[[PP Q_j]]^g = [[Q_j]]^g([[PP]]$^{F, g}$)	(by (48))
[[Q_j]]^g([[PP]]$^{F, g}$) = $f_{g(j)}$([[PP]]$^{F, g}$)	(by Lexicon)
[[DP]]$^{F, g}$ = { x : x is non-human }	(by (46))
[[P]]^F = { λy. λx. x is for y }	(by Standard Rules)
[[PP]]^F = { f'$_{<e,t>}$: ∃y. y is non-human & f' = λx. x is for y }	(by P.W. Composition)
$f_{g(j)}$([[PP]]^F) = $f_{g(j)}$({f'$_{<e,t>}$: ∃y. y is non-human & f' = λx. x is for y })	

Thus, relative to a variable assignment *g*, the value of the Tlingit phrase *daat yís* $sá_j$ is calculated to be $f_{g(j)}$({f'$_{<e,t>}$: ∃y. *y is non-human & f' = λx. x is for y* }). However, since $f_{g(j)}$ is a choice function, this entails that the semantic value of the phrase is some particular <*e, t*> relation *f'* = λx. *x is for y*, where *y* is a non-human. Thus, the semantic value of the phrase is equivalent to that of a phrase where the wh-word is replaced with a (non-human) pronoun. For largely this reason, existential quantification over the choice function variable contributed by $sá_j$ is materially equivalent to existential quantification over the domain of (non-human) entities. Thus, the existential interpretation of wh-indefinites in Tlingit (and other languages)

[36] Of course, this accounts renders problematic those languages where it seems that wh-operators needn't be obligatorily focused, as in English. Moreover, as the reader may later see more clearly, difficult questions also arise concerning the tendency for wh-indefinites to be *un*-focused in many languages, such as German.

[37] Throughout this paper, I adopt the label *cf* as a means for abbreviating the logical type of the choice function. Furthermore, I implicitly assume a cross-categorical definition for choice functions, of the kind used in Winter (1997).

[38] Properly speaking, although Hagstrom (1998) considers this proposal, he ultimately rejects it, opting for a theory in which the Q-particles are operators while the *traces* of the Q-particles denote variables over choice functions.

[39] Indexation of Q-particles is also a feature of the analysis in Beck (2006), but for very different reasons. In Beck (2006), the indices on the particles allow the particles to bind focus-semantic variables. Under my proposal, these indices allow the Q-particles to be bound by higher operators.

may be obtained from the proposed semantics via existential quantification over the choice function variable contributed by the Q-particle, the existential operator being provided by an (optional) rule of existential closure. I refer the reader to the literature on choice-functional interpretations of indefinites for a richer discussion (c.f., Reinhart 1992, Reinhart 1997, Winter 1997, Kratzer 1998, Matthewson 1999, Yatsushiro (2001)).

Of course, in cases where the rule of existential closure does not apply, the choice-function variable denoted by Q can be bound by other, higher operators. One such case, to be discussed in a moment, is wh-questions, where the variable contributed by Q is bound by a higher interrogative operator.

However, before I sketch how wh-questions may be treated in this framework, let us return to the argument that the particles *sá*, *ka* and *da* should receive a uniform analysis as 'Q-particles'. We will see that, with the addition of two plausible assumptions, the proposed semantics can derive some of the grammatical properties these particles were observed to share. In particular, it can derive both the fact that wh-words require the presence of these particles, as well as the fact that these particles must c-command their associated wh-word. [40]

The theory of LF/Focus-Intervention Effects put forth in Beck (2006) relies upon two, independently plausible assumptions. The first is the Principle of Interpretability, stated in (50).

(50) **Principle of Interpretability (cf. Beck 2006; p. 16)**

A sentence must have a normal-semantic value.

As stated, this principle entails that any sentence which cannot be computed to have a normal-semantic value is ill-formed. A second assumption made by Beck (2006) is somewhat more complex, but equally as crucial.

(51) **Uniqueness of the Q-Particle (cf. Beck 2006; p. 13)**

The Q-particle is the only focus-sensitive operator whose meaning does not also take as input the normal-semantic value of its sister.

Let us pause to consider what the condition in (51) states. The reader will note that, according to the semantics stated in (48), the meaning of a phrase containing a Q-particle does not at all rely upon the normal-semantic value of the sister of the Q-particle. Of course, this insensitivity is needed for our semantics to work. Given that wh-words are assumed *not* to have normal-

[40] In Cable (2007), I show that our semantics can also predict, given the addition of one further assumption, the need for Q-particles to appear with wh-words. That is, we can correctly predict that wh-questions cannot be asked via structures like the following.
(i) [[DAVE's picture] Q] did John buy? (= *Whose picture did John buy?*)

semantic values, the sister of the Q-particle will never have a normal-semantic value. Thus, if semantic composition required us to compute the normal-semantic value of the Q's sister, the derivation would crash. Although this insensitivity to normal-semantics is required for Q, it is clearly not a property of other focus sensitive operators, such as *only* and *even*. The principle in (51) – which is crucial for the theory of Beck (2006) – states that, in fact, it is *only* the Q-particle which has this peculiar insensitivity to normal-semantic values.[41]

Let us now see why the assumptions in (50) and (51) are sufficient to derive the fact that wh-words must co-occur with Q-particles. Suppose that a wh-word in a given sentence is *not* c-commanded by a Q-particle. By assumption, then, either (i) the wh-word is c-commanded by a focus-sensitive operator *OP* that is *not* Q, or (ii) the wh-word is not c-commanded by *any* focus-sensitive operator. Let us first consider condition (i). Since *OP* is not a Q-particle, principle (51) entails that the semantic computation for the entire sentence requires one to compute the normal-semantic value of the sister of *OP*. However, since *OP* c-commands the wh-word, it follows that the sister of *OP* contains the wh-word. Therefore, computing the normal-semantic value of the sister of *OP* requires one to compute the normal-semantic value of the wh-word, and so the sentence is predicted to be uninterpretable. Now, let us consider condition (ii). Since there is no focus-sensitive operator c-commanding the wh-word at all, computing the normal semantic value for the entire sentence requires that one compute the normal-semantic value of the wh-word. However, since the wh-word does not have a normal-semantic value, the derivation crashes. Resultingly, the sentence cannot be assigned a normal-semantic value, in violation of principle (50).

We find, then, that the principles in (50) and (51) entail that every wh-word must be c-commanded by a Q-particle. We find, then, that the grammatical properties observed to hold of *sá*, *ka* and *da* in Sections 2.3.1 and 2.3.2 follow from a well-motivated theory of the semantics of Q-particles and wh-words. Therefore, the categorization of all these particles – including Tlingit *sá* – as Q-particles is quite well-motivated.

Before we leave this semantic discussion, I wish to provide a somewhat concrete sketch of how wh-questions may treated within the proposed semantic framework. First, I assume that wh-questions in all languages contain an interrogative Force head, Force_Q. This head is semantically an operator, binding the choice-function variable introduced by the Q-particles within the wh-question. As an operator, the Force_Q comes paired with an index. Also paired with this Force_Q head is the following syncategorematic rule.

(52) **Special Composition Rule for Force_Q**

$$[[\ \text{Force}_{Qi}\ \text{XP}\ ]]^g = \lambda p\ [\ \exists f\ .\ p = [[\text{XP}]]^{g(i/f)}\ ]$$

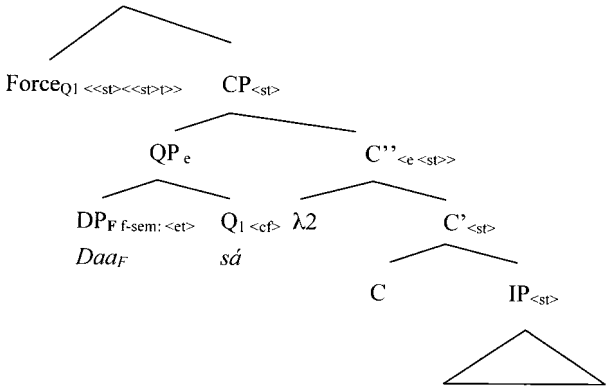
[41] As noted in Footnote 27, it *is* possible for wh-indefinites in Sinhala and Japanese to co-occur with particles other than *da* and *ka*, respectively. Under our current semantics for wh-words, it must be assumed that these particles are also insensitive to the normal-semantic values of their sisters. As such, for the purposes of the following discussion, these other indefinite particles will be assumed to fall under the category of 'Q-particles'.

Now, in order to propose a compositional treatment of wh-questions, some assumptions regarding their syntax must be made. With respect to Tlingit, I conclude from the data in Section 2.2 that the wh-word and its accompanying Q-particle are fronted into the left-periphery of the clause. I assume, for concreteness, that they are fronted into the specifier of a CP complement to the Force_{Q} head.[42] Thus, the surface structure and LF of the Tlingit wh-question in (53a) is given in (53b).

(53) **The Fine Structure of The Left Periphery**

a. Daa sá a<u>x</u> éesh aawa<u>x</u>áa?
what Q my father he.ate.it
What did my father eat?

b. $\text{Force}_{Q}\text{P}_{\langle\langle st\rangle t\rangle}$



a<u>x</u> éesh t_2 *aawa<u>x</u>áa?*

Assuming that the C head here has a trivial semantic value (i.e., [λp. p]), the following derivation demonstrates that our semantics assigns the correct meaning to the sentence in (53a).

[42] Under the theory of the left-periphery put forth in Rizzi (1997), this position may be identified as the specifier of the Focus Phrase.

(54) **Derivation of the Meaning of (53a), Given the Structure in (53b)**

$[[\ \text{Force}_{Q}\text{P}\ ]]^{g}$	=	$\lambda p\ [\ \exists f\ .\ p = [[\text{CP}]]^{g(1/f)}\ ]$	(by Identity, (52))
$[[\text{CP}]]^{g(1/f)}$	=	$[[\ \text{QP C''}\ ]]^{g(1/f)}$	(by Identity)
$[[\ \text{C''}\ ]]^{g(1/f)}$	=	$\lambda x\ .$ my father ate x	(by Standard Rules)
$[[\ \text{QP}\ ]]^{g(1/f)}$	=	$[[\ \text{DP}\ Q_1\ ]]^{g(1/f)}$	(by Identity)
$[[\ \text{DP}\ Q_1\ ]]^{g(1/f)}$	=	$[[\ Q_1\ ]]^{g(1/f)}([[\text{DP}]]^{F,\ g(1/f)})$	(by (48))
$[[\ Q_1\ ]]^{g(1/f)}([[\text{DP}]]^{F,\ g(1/f)}) =$		$f([[\text{DP}]]^{F,\ g(1/f)})$	(by Lexicon)
$f([[\text{DP}]]^{F,\ g(1/f)})$	=	$f(\{\ x : x \text{ is non-human}\ \})$	(by (46))
$[[\ \text{QP C''}\ ]]^{g(1/f)}$	=	my father ate $f(\{\ x : x \text{ is non-human}\ \})$	
$[[\ \text{Force}_{Q}\text{P}\ ]]^{g}$	=	$\lambda p\ [\ \exists f\ .\ p =$ my father ate $f(\{\ x : x \text{ is non-human}\ \})]$	

Thus, the semantics derives as the meaning of the wh-question in (53a), the set of propositions p such that there is some choice function f such that p is of the form "my father ate f({ x : x is non-human })". Again, given that there are at least as many choice functions over a set as there are entities in the set, this set of propositions is equivalent to the set of propositions p of the form "my father ate x", where x is some non-human entity. We see, then, that this semantic system assigns the standard interrogative semantics to the wh-question in (53a). Interestingly, it does so without assigning any inherent quantificational force to the wh-word itself. This point will be expanded upon in our later discussion concerning the extension of our analysis of Tlingit wh-questions to the wh-questions of other, more familiar wh-fronting languages.

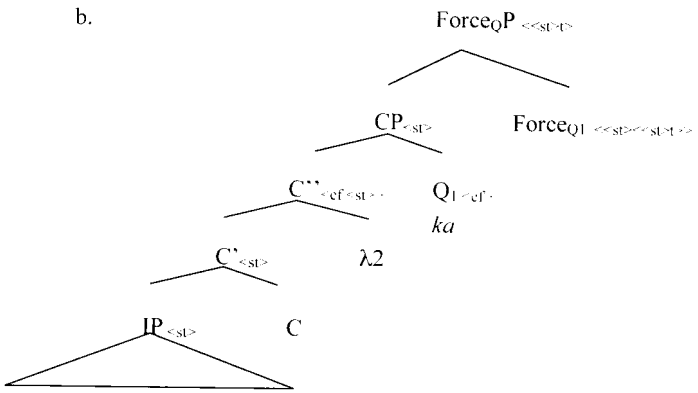
Let us finally see how these assumptions can be brought to bear on the analysis of Japanese wh-questions.[43] I follow Hagstrom (1998) in my assumption that wh-questions in Japanese involve movement of the Q-particle *ka* to a position within the CP projection. In particular, I assume that the wh-question in (55a) has the structure in (55b).

(55) **The Fine Structure of Wh-Questions in Wh-*In-Situ* Languages**

a. John-ga nani-o kaimasita ka?
John-NOM what-ACC bought Q
What did John buy?

[43] Wh-questions in Sinhala are assumed to be identical at LF to either wh-questions in Tlingit or those in Japanese. This point will receive further discussion in sections 3 and 4.

b.



John-ga [*nani*$_1$*-o* t_2] *kaimasita*

The structure in (55b) has the following noticeable difference from that in (53b): the Q-particle has moved, leaving behind a trace in its base position. I assume that the trace of Q-movement is itself also a variable over choice functions, one which is bound by the lambda operator created by movement of the Q-particle. Thus, the C'' in (55b) is interpreted as a function from choice-functions to truth-values. The following derivation demonstrates the empirical adequacy of this analysis.[44]

(56) **Derivation of the Meaning of (55a), Given the Structure in (55b)**

$[[\text{ Force}_Q\text{P }]]^g$	=	$[[\text{ CP Force}_{Q1}\text{ }]]^g$	(by Identity)
$[[\text{ CP Force}_{Q1}\text{ }]]^g$	=	$\lambda p\,[\,\exists f\,.\,p = [[\text{CP}]]^{g(1/f)}\,]$	(by (52))
$[[\text{CP}]]^{g(1/f)}$	=	$[[\text{ C'' }Q_1\text{ }]]^{g(1/f)}$	(by Identity)
$[[\text{ C'' }]]^{g(1/f)}$	=	$\lambda f'$. John bought $f'(\{\text{ x: x is non-human}\})$	(by Standard Rules)
$[[\text{ }Q_1\text{ }]]^{g(1/f)}$	=	f	(by Lexicon)
$[[\text{ C'' }Q_1\text{ }]]^{g(1/f)}$	=	John bought $f(\{\text{ x: x is non-human}\})$	
$[[\text{ Force}_Q\text{P }]]^g$	=	$\lambda p\,[\,\exists f\,.\,p = \text{John bought } f(\{\text{ x: x is non-human}\})\,]$	

Thus, the proposed semantics derives as the meaning of the wh-question in (55a) the set of propositions p such that there is some choice function f such that p is of the form "John bought f({ x : x is non-human })". Given our ontological assumptions, this set of propositions is

[44] The reader will note that there is a small lacuna in the derivation under (56). The syncategorematic rule in (48) only allows Q to semantically compose with the *focus*-semantic value of its sister. However, the derivation in (56) clearly composes the meaning of moved Q with the normal-semantic value of C''. This special composition, however, is only required because the system presently assumes that the traces of Q are interpreted at LF. This assumption is given up in Cable (2007), where it is instead assumed that the traces of Q are deleted by LF. Within such a system, the composition of Q with C'' proceeds via rule (48) as normal.

equivalent to the set of propositions p of the form "John bought x", where x is some non-human entity. We see, then, that this semantic system correctly assigns the standard interrogative semantics to the wh-question in (55a).

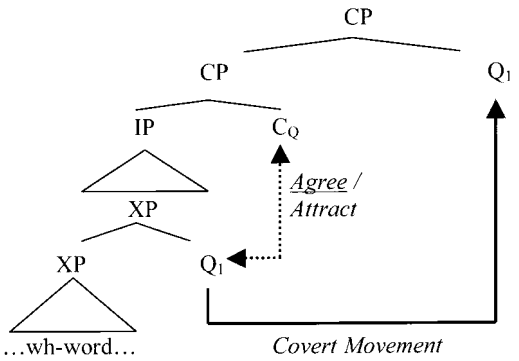
I conclude that it is possible to build a compositional semantics of wh-questions upon the semantic analysis of Q-particles and wh-words proposed above, one which moreover has a fair degree of cross-linguistic validity.

2.4 Movement of the Wh-Word as a Consequence of Q-Movement

In the preceding sections, we have seen that (i) wh-operators obligatorily occupy a left-peripheral position in Tlingit wh-questions, and that (ii) wh-words in Tlingit are obligatorily c-commanded by a Q-particle. In this section, I will argue that the left-peripheral position of wh-operators in Tlingit wh-questions is due to attraction of their c-commanding Q-particle into the left-periphery of the clause. That is, I will argue that there is *no* special relationship between the attracting C head and the wh-operator itself in Tlingit wh-questions. The generalization that the wh-operator is in the projection of C is merely an epiphenomenal consequence of a real grammatical relation between the C head and the Q-particle associated with the wh-operator.

I will begin by noting that various lines of evidence lead Hagstrom (1998) and Kishimoto (2005) to propose the following analysis of wh-questions in Sinhala.

(57) **Hagstrom (1998) and Kishimoto (2005)'s Analysis of Sinhala Wh-Questions**

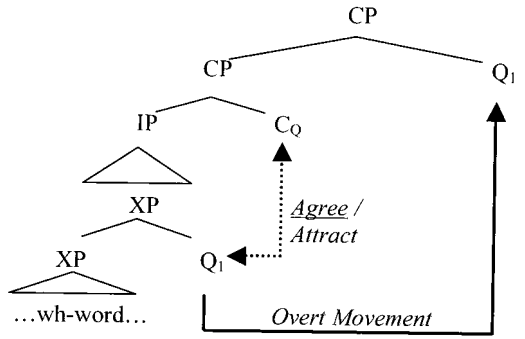


Under this analysis, the Sinhala Q-particle *da* is adjoined to a phrase containing the wh-operator of the question. The interrogative C head of the wh-question then probes for the Q-feature of this Q-particle. Upon reaching the adjoined Q-particle, the interrogative C Agrees with Q. This Agreement triggers movement of the Goal, the Q-particle, into the projection of

C.[45] Because the Q-particle is adjoined to its sister, it may freely detach from its base position. Therefore, its movement into the CP, which is typically covert in Sinhala, leaves the wh-word and the phrases containing it in their base positions at LF.

Other lines of evidence lead Hagstrom (1998) to extend the ideas underlying this analysis of Sinhala to wh-questions in Japanese. Hagstrom (1998) proposes the following as the derivation of wh-questions in Japanese.

(58) **Hagstrom (1998)'s Analysis of Japanese Wh-Questions**

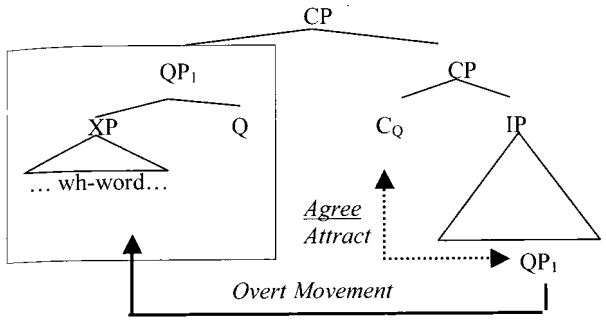


Under this analysis, wh-questions in Japanese are essentially identical to those in Sinhala. The sole difference is that the Q-particle *ka* in Japanese always moves *overtly* into the projection of the C, leaving the wh-word and phrases containing it behind. In both languages, however, interrogative C bears a syntactic relationship *only* with the Q-particle adjoined to (a phrase containing) the wh-operator; no syntactic relationship exists between the C and the wh-operator itself.

Given the formal identity between the Tlingit particle *sá*, the Sinhala particle *da* and the Japanese particle *ka*, the structure in (3) (repeated below) immediately suggests itself as an analysis of wh-questions in Tlingit.

[45] Under the analysis of Hagstrom (1998), the Q-particle undergoes HMC-violating head-movement into the interrogative C head itself. However, I follow Kishimoto (2005) in the assumption that movement of Q targets the specifier of the matrix CP.

(3) **Fronting of Wh-Word in Tlingit Wh-Question as Secondary Effect of Q-Movement**



Under the analysis in (3), wh-questions in Tlingit receive a derivation nearly identical to wh-questions in Japanese. The principle difference is that, in Tlingit, the Q-particle *sá* is not *adjoined* to the phrase containing the wh-operator. Rather, it takes that phrase as complement, thus projecting the category of the phrase minimally containing the Q-particle and its sister. As a projection of Q, it would be natural to assume that this QP also bears the Q-feature probed for by the interrogative C. Furthermore, because this QP properly contains the Q-particle, it is the *first* node bearing the Q-feature to be probed by the interrogative C. The standard algorithm for probing therefore entails that interrogative C in Tlingit must Agree with this QP projection. As before, this Agreement requires the Goal – in this case, the QP – to move into the projection of the interrogative C. Thus, the entire QP is Attracted into the left-periphery of the wh-question. Since this constituent necessarily contains the wh-operator of the wh-question, it follows that such wh-words must occupy left-peripheral positions in wh-questions.

We see, then, that the analysis in (3) nicely links together the syntax of wh-questions in Tlingit, Sinhala and Japanese in a typology of wh-question formation. Besides this, there are a number of empirical considerations which strongly support the analysis in (3) for Tlingit wh-questions.

First, it should be noted that wh-questions in Tlingit are ill-formed if only the wh-word or only the Q-particle is fronted into the left periphery. For example, sentence (59a) becomes ill-formed if *sá* is left downstairs in its base position, as in (59b). One might wonder, however, whether the ill-formedness of (59b) is not due simply to a condition requiring that *sá* not be stranded. Such a condition, however, would be too weak, and would not serve to rule out the ill-formed (59c). In sentence (59c), the Q-particle *sá* is not 'stranded' since its complement is the unmoved subordinate CP, a possibility that is independently witnessed in sentences like (59d).

(59) **No Fronting of Wh-Word Alone** [46]

a. [[**Goo**déi **sá**]$_1$ [has uwajée [t_1 woogootx̲] i shagóonich]]?
where.to Q they.think he.went your parents.erg
Where do your parents think he went?

b. * [**Goo**déi$_1$ [has uwajée [t_1 **sá** woogootx̲] i shagóonich]]?
where.to they.think Q he.went your parents.erg

c. * [**Goo**déi$_1$ [has uwajée [t_1 woogootx̲ **sá**] i shagóonich]]?
where.to they.think he.went Q your parents.erg

d. [[**Goo**déi woogootx̲ **sá**]$_1$ [has uwajée t_1 i shagóonich]]?
where.to he.went Q they.think your parents.erg
Where do your parents think he went?

Moreover, we can see below that the well-formed sentence (60a) becomes ill-formed if the particle *sá* is fronted into the left-periphery without the wh-word, as in (60b). The ill-formedness of (60b) is not simply due to a condition that *sá* follow some phrasal material in the sentence, as sentence (60c) illustrates.

(60) **No Fronting of Q-Particle Alone**

a. **Daa sá** i éesh aawaxáa?
what Q your father he.ate.it
What did your father eat?

b. * **Sá** i éesh **daa** aawaxáa?
Q your father what he.ate.it

c. * I éesh **sá daa** aawaxáa?
your father Q what he.ate.it

On the other hand, all the data in (59) and (60) would follow naturally from the analysis in (3). Under this analysis, a well-formed wh-question in Tlingit *must* have the Q-particle *sá* within its

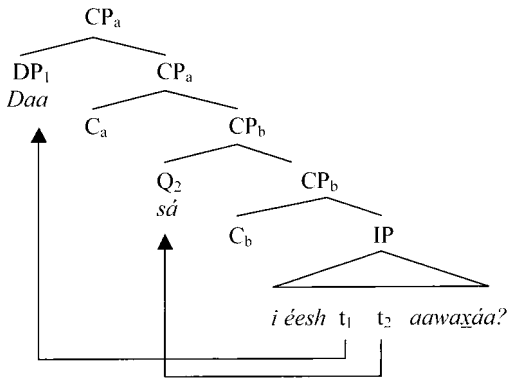
[46] An anonymous reviewer raises the interesting question of whether there is any difference in meaning between (59a) and (59d). To my knowledge, whether a long-distance question in Tlingit is formed via long-distance movement of the QP or via pied-piping of the subordinate clause has no effect on the sentence's meaning. This fact is discussed at more length in Cable (2007), where it is claimed that predicting this synonymy is an achievement of our semantic system.

left periphery, thus ruling out sentences (59b, c). Furthermore, under the analysis in (3), the fronting of the QP necessarily brings with it the wh-word associated with *sá*, as that wh-word is contained within the QP. Thus, sentences (60b, c) are ruled out under the analysis in (3).

Now, one might still attempt to resist the notion that the Q-particle is attracted into the left-periphery of a Tlingit wh-question by supposing that the ill-formedness of sentences like (59b, c) simply reflects the requirement that wh-words in Tlingit be c-commanded by Q-particles. Recall from Section 2.3.5, however, that that this c-command condition follows from the semantics of wh-words and Q-particles. Therefore, LF-reconstruction of the wh-word to its base position should be sufficient to render sentences (59b, c) semantically interpretable. I conclude, then, that the impossibility of (59b, c) is due to something other than the semantic factors which require wh-words to be c-commanded by Q-particles.[47]

Of course, one might conclude from the facts in (59) and (60) that *both* the wh-operator and the Q-particle are Attracted into the left periphery of a Tlingit wh-question, perhaps by separate heads, as diagrammed in (61).

(61) **Wh-Operator and Q-Particle Both Attracted, but by Separate Heads**



An immediate problem for the structure in (61), however, arises in the context of multiple wh-questions. Sentences such as those in (62) demonstrate that all the wh-words of a Tlingit multiple wh-question may front into the left periphery of the clause.[48]

[47] One might also propose that (59c) is impossible because the Q-particle occupies a Spec position in the lower CP, blocking extraction of the wh-word. However, sentences such as those in (62) below demonstrate that Tlingit CPs may have multiple specifiers, and so extraction of the wh-word should not be blocked simply by the presence of Q in Spec CP.

[48] Such multiple fronting, however, does not appear to be obligatory.
(i) [$_{CP}$ [Aadóo sá]$_1$ [$_{IP}$ t_1 yéi uwajée [[daa sá] du jee yéi teeyí]]] ?
who Q they.think what Q their hand.at it.is.there
Who thinks they have what?
It is not yet known, however, whether the wh-word in the subordinate clause lies in its base position, or in the SpecCP of the subordinate clause.

(62) **Multiple Wh-Fronting in Tlingit Multiple Wh-Questions**

a. [CP [Aadóo sá]$_1$ [daa sá]$_2$ [IP t_1 yéi uwajée [t_2 du jee yéi teeyí]]] ?
who Q what Q they.think their hand.at it.is.there
Who thinks they have what?

b. [CP [Aa sá]$_1$ [daa sá]$_2$ [IP du$_1$ tuwáa sigóo [t_2 wutoo.oowú]]]?
who Q what Q their spirit it.is.glad we.buy.it
Who wants us to buy what?

We can also see from the sentences above and those in Section 2.2.4 that the order of wh-words and Q-particles in Tlingit multiple wh-questions is such that each Q-particle immediately follows the wh-word it is associated with. Therefore, if there were separate C heads attracting wh-words and Q-particles in Tlingit, then the left-periphery of a Tlingit multiple wh-question must appear as in (63), where the C_{wh} heads are those attracting wh-words and the C_Q heads those attracting Q-particles.

(63) **Structure Required For Multiple Wh-Fronting, Under the Analysis in (61)**
[CP C_{wh1} [CP C_{Q1} [CP C_{wh2} [CP C_{Q2} …]]]]

Now, we have already seen that the order of wh-words in a Tlingit multiple wh-question is constrained by Superiority; as shown in (64), wh-subjects *must* precede wh-objects.

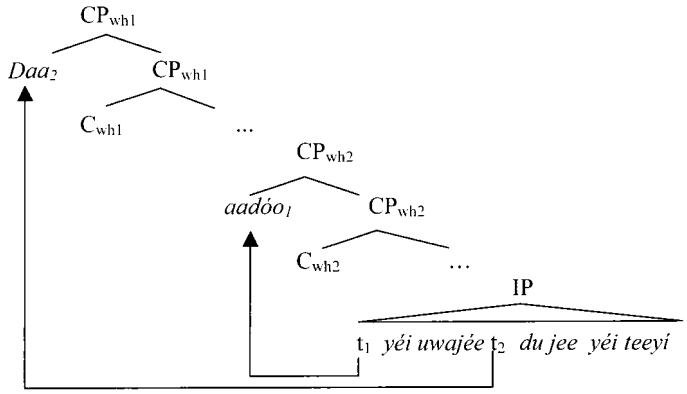
(64) **Multiple Wh-Fronting Constrained by Superiority**

a. * [CP [Daa sá]$_2$ [aadóo sá]$_1$ [IP t_1 yéi uwajée [t_2 du jee yéi teeyí]]]?
what Q who Q they.think their hand.at it.is.there

b. * [CP [Daa sá]$_2$ [aa sá]$_1$ [IP du$_1$ tuwáa sigóo [t_2 wutoo.oowú]]]?
what Q who Q their spirit it.is.glad we.buy.it

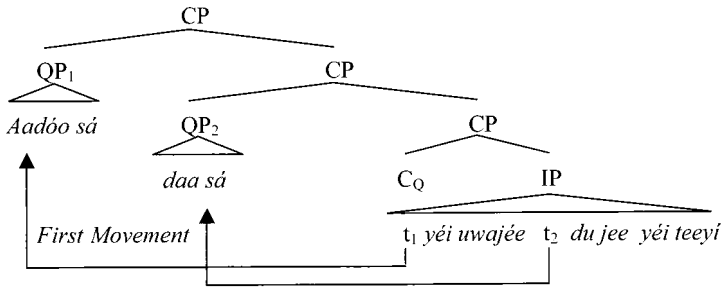
However, if the left periphery of a multiple wh-question had the structure in (63), then the simplest algorithm for probing would incorrectly derive the ill-formed, Superiority-violating orders in (64). The lowest C_{wh} head would probe first, attracting the highest wh-word in the IP. Only later will the higher C_{wh} head probe for a wh-word, and by this time, the only 'visible' wh-word left in the clause will be the lower wh-word not probed by the first C_{wh} head. The structure in (65) illustrates.

(65) **Derivation of the Incorrect Orders in (64), via the Analysis in (61)**



On the other hand, the analysis proposed in (3) can easily derive the targeted word-order, assuming a theory of 'Tucking-In', as in Richards (1997). Under this analysis, a single C_Q head probes for *both* QPs in the multiple wh-question. Following the standard algorithm for probing, this C_Q first probes and attracts the highest QP in the clause. Following this attraction, the C_Q then continues to probe for additional QPs. It subsequently probes and attracts the lower QP, requiring that the QP front into the C_Q projection. However, because of a constraint of 'Shortest Move', that QP has to be merged to as close a position to the C_Q as possible. Resultingly, the QP 'Tucks-In', and moves to a Spec position *lower* than that occupied by the higher wh-word. This derivation is sketched in (66), below.

(66) **Derivation of the Correct Orders in (62), via the Analysis in (3) [with 'Tucking in']**



Second Movement, with Tucking-In

Thus, the view that there is a *single* head attracting the entire wh-word+Q complex as a whole is necessitated by the word-order facts in (62) and (64).

Finally, one might yet resist the analysis in (3) by suggesting that the single C head attracting the wh-word+Q complex *also* probes for features of the wh-word. That is, we have not yet ruled out that the single attracting C head bears a syntactic relation with the wh-operator, in addition to the Q-particle which it attracts. In response, however, one might equally well point out that there is yet no evidence that the C head *does* have such a syntactic relation with the wh-operator. After all, the left-peripheral position of the wh-operator could very well be the result of the already demonstrated relationship between the C head and the Q-particle, as proposed in (3). In the absence of evidence that a relation holds between C and the wh-word, it might be argued, it is simplest to assume that it doesn't.

We can, however, press the issue even further, and argue positively that a syntactic relation *doesn't* hold between the C and the wh-operator. First, let us entertain a comparably strong view of syntactic islands, under which they are domains that *no* syntactic relations may cross, not even probing and Agree. Assuming this view of islands, the acceptability of sentence (67) – where the wh-word is contained within an island – indicates that there is no relation holding between it and the matrix C.

(67) **Wh-Operators in Wh-Questions Can Be Internal to Islands**

[[**Wáa** kligéiyi] x̲áat] **sá** i tuwáa sigóo?
how it.is.big.REL fish Q your spirit it.is.glad
How big a fish do you want?
(A fish that is how big do you want?)

Now, one might attempt to avoid this conclusion by proposing that the wh-word in (67) is accessible to the matrix C head by some means. Perhaps the wh-word is actually adjoined to *x̲áat* 'fish', the head of the relative clause? Perhaps phrases inside islands *are* accessible to probing and Agree? However, any such proposal is immediately subject to the following problem: recall the contrast between (67) and (68).

(68) **The Q-Particle *Sá* Cannot Be Internal to Islands in Wh-Questions**

* [[**Waa sá** kligéiyi] x̲áat] i tuwáa sigóo?
how Q it.is.big.REL fish your spirit it.is.glad

Sentence (68) differs from (67) only in that the Q-particle *sá* is directly adjacent to the wh-word. Therefore, any analysis which holds that the wh-word is syntactically accessible to the matrix C in (67) and (68), must equally well hold that the Q-particle is accessible to the matrix C in these sentences. Therefore, the impossibility of (68) must follow from something other than the fact that the Q-particle in this sentence is located inside a syntactic island. What this could be, however, remains unclear.[49]

The analysis in (3), however, nicely predicts the contrast between (67) and (68), under the assumption that no syntactic relationship may cross into an island.[50] The impossibility of (68) is a straightforward result of the fact that the Q-particle is inside a relative-clause island, and so is inaccessible to the matrix C. When the Q-particle is located outside the island, as in (67), it is accessible to the matrix C, and the sentence is well-formed. The fact that the wh-word in (67) remains inside the island has no bearing on the well-formedness of the sentence, given that the matrix C bears no syntactic relationship to the wh-operator itself. We find, then, that the contrast between (67) and (68) strongly supports what is, perhaps, the most unusual feature of the analysis in (3): the existence of a relationship between the interrogative C and the Q-particle, but not between the C and the wh-word.[51]

The preceding arguments demonstrate that the analysis of Tlingit wh-questions in (3), which is independently motivated by their similarity to the wh-questions of Sinhala and Japanese, receives strong empirical support. I conclude that it is, in essence, the correct analysis of wh-fronting in Tlingit wh-questions.

3 Some Consequences of the Propopsed Analysis

Having presented my case in support of (3) as an analysis of wh-fronting in Tlingit, I will in this section consider a variety of consequences that the analysis holds, particularly those concerning the syntactic and semantic structure of wh-questions across languages.

[49] Note that the contrast between (67) and (68) also effectively refutes the analysis in (61). If the wh-word in (67) is visible to the hypothetical C_{wh} head, then the Q-particle in (68) should also be visible to the hypothetical C_Q head. Thus, the ill-formedness of (68) goes unexplained.

[50] One might object to the notion that no syntactic relationship can cross into an island on the following grounds. Given that wh-words in Tlingit obligatorily co-occur with Q-particles, there is presumably some syntactic relation between them; therefore, the well-formedness of sentence (67) indicates that at least *this* relation may cross into an island. Recall, however, that under the proposals of Section 2.3.5, there is not necessarily any *syntactic* relation between the wh-word and the Q-particle in Tlingit, Sinhala or Japanese, since their obligatory co-occurrence independently follows from the semantics of wh-words and Q-particles.

On the other hand, we might adopt a proposal put forth by Kratzer & Shimoyama (2002), stating that, in languages where the wh-words all share a certain morpho-phonological trait (e.g., English and German), a syntactic Agreement relation *does* hold between the Q-particle and the wh-word. This proposal would correctly predict that in languages like English and German, it is not possible for wh-words to pied-pipe islands. Such pied-piping would, as in Tlingit, require the Q-particle to located outside an island containing its associated wh-word. Since the two elements would be separated by an island, our 'strong' theory of islands would entail that no Agreement relation could hold between them, and the derivation would then presumably crash. This proposal is discussed in slightly more detail in Section 3.2; it receives a complete treatment in Cable (2007).

[51] Similarly, it is the contrast between sentences (38a) and (38b) which most strongly motivates the Hagstrom/Kishimoto analysis of Sinhala wh-questions in (57). In both cases, the fact that *only* the position of the Q-particle affects the well-formedness of the wh-question indicates that *only* the Q-particle bears a relation to the matrix interrogative C.

3.1 Consequences Regarding Wh-Fronting and Wh-*In-Situ* Across Languages

A long-standing question in generative linguistics is what ultimately distinguishes a language like English, which requires wh-words to be fronted in wh-questions, from a language like Japanese, which does not. Although there are countless perspectives on this issue, one commonly held notion is that languages possessing Q-particles do not require wh-words to front (Cheng 1991, *inter alia*). Briefly put, the notion is that, in languages which have them, Q-particles serve the function of marking the sentence as a (wh-)question, the very same function served by wh-fronting in those languages which require it. Thus, languages in possession of Q-particles will (typically) not also have wh-fronting.

Although this continues to be a prevalent view, it has been found that the mere presence of a Q-particle is quite independent of whether a language requires wh-words to front in wh-questions (Bruening 2004). Of course, the presence of the Q-particle *sá* in the wh-fronting language Tlingit further bolsters this conclusion. Nevertheless, the proposed analysis of Tlingit wh-questions in (3) suggests that Q-particles may yet play a role in the determination of whether a language is English-like or Japanese-like.

Let us first note that there are many wh *in-situ* languages whose wh-questions contain no overt Q-particles. For example, although Tibetan yes/no questions contain the yes/no Q-particle *ngas*, no such particle exists in the language's wh-questions.

(69) **Wh-Questions and Yes/No Questions in Tibetan**

a. Khyodras su mthong byung ngas?
you.erg who see AUX Q
Did you see anyone?

b. Khyodras su mthong pa red?
you.erg who see perf. AUX
Who did you see? (Cable 2005; p. 22, 23)

Although this is difficult to establish empirically, it is certainly reasonable to think of such languages as possessing phonologically empty Q-particles in their wh-questions (Cheng 1991). Thus, the form of a wh-question in Tibetan would be nearly identical to that in Japanese, the only relevant difference being that the Q-particles in Tibetan are unpronounced.

With this perspective as background, consider now a hypothetical language nearly identical to Tlingit, but whose Q-particles are unpronounced. That is, suppose that all the *sá*'s were purged from the Tlingit examples above. How would such a language appear, either to the linguist or to the child learner? For all intents and purposes, such a language would look

exactly like a wh-fronting language of the kind we are all familiar with.[52] Thus, having accepted the analysis in (3) for Tlingit wh-questions, as well as the possibility of phonologically empty Q-particles, it is most conceptually economical to view wh-questions in the more familiar wh-movement languages as also having the structure in (3).

Following this line of thought, I conclude that in *no* languages – not even English – do wh-words bear a direct syntactic relationship with interrogative C-heads. Rather, in all languages, the interrogative C heads probe and Agree with Q-particles obligatorily accompanying the wh-words. As in Tlingit, the obligatory left-peripheral position of wh-words in the wh-questions of all wh-fronting languages is an epiphenomenal consequence of the obligatory overt fronting of the QP.

Pursuing these ideas further, we find that whether a language requires wh-words to front in wh-questions ultimately depends upon two parameters: (i) whether the projection of Q overtly moves into the projection of C; (ii) whether the Q-particle takes its sister as complement and thus projects the category label of the phrase minimally dominating it and its sister. Under this view, wh-fronting languages are simply those whose Q-particles move overtly and take their sisters as complement. A third, independent property affecting the surface appearance of a language's wh-questions is whether the Q-particles have any phonological content. The chart in (70) below illustrates the typology emerging from this perspective. As (70) indicates, this perspective invites the notion that (i) Tibetan differs from English only in that its Q-particles adjoin to their sister, (ii) Tlingit differs from English only in that its Q-particles have phonological content, (iii) Tlingit differs from Japanese only in that its Q-particles take their sisters as complement, (iv) Japanese differs from Sinhala only in that its Q-particles undergo overt movement into the projection of C.

(70) **The Emerging Typology**

Language	**Movement of Q-Particle: Covert / Overt**	**Q-Particle Takes Sister as Complement: Yes / No**	**Phonology of Q-Particle: Null / Pronounced**
Tibetan	Overt (?)	No (?)	Null
English	Overt	Yes	Null
Tlingit	Overt	Yes	Pronounced
Japanese	Overt	No	Pronounced
Sinhala	Covert	No	Pronounced

[52] Of course, given the existence of sentences like (67) in Tlingit, it is apparent that the class of 'pied-piping' structures are wider in Tlingit than in languages like English, where structurally parallel sentences are not possible. However, as I observe below and in Footnote 50, this difference may be due to an independent morpho-syntactic difference between the wh-words of English and those of Tlingit.

As we will see throughout the remainder of this paper, the notion that wh-questions in English also receive the analysis in (3) holds a number of interesting analytic consequences.

3.2 Consequences for the Theory of 'Pied-Piping' Structures

In a Tlingit wh-question, the particle *sá* always occurs directly to the right of the constituent fronted into the left periphery. Thus, as we see below, the QP is never properly contained within a larger, fronted constituent.

(71) **Pied-Piping Structures in Tlingit**

a. [$_{QP}$ [**Aadóo** yaagú] **sá**] ysiteen?
who boat Q you.saw.it
Whose boat did you see?

b. * [[$_{QP}$ **Aadóo sá**] yaagú] ysiteen?
whose Q boat you.saw.it

For this reason, our theory of wh-fronting in Tlingit need never appeal to a notion of 'pied-piping', nor any special mechanisms of 'feature percolation' used to derive it.[53] Interestingly, this is despite the fact that the *wh-word* of a Tlingit wh-question may be properly contained inside the fronted constituent. Although such configurations have traditionally motivated the special concept of 'pied-piping' in the theory of English grammar, they have no interesting or remarkable status under our proposed analysis of Tlingit wh-questions. Since it is the QP – and not the wh-word – which is 'targeted for movement' in a Tlingit wh-question, sentences like (71a) do not present structures where 'more than' the targeted constituent has moved into the left periphery. Sentences where the wh-word is properly contained within the fronted constituent are simply ones in which the complement of Q properly contains the wh-word, and nothing challenges the wider linguistic generalization that the phrase fronted into the left periphery bears the grammatical features that motivate said fronting.

Similarly, under the proposal that wh-fronting in all languages operates as in (3), we may derive so-called 'pied-piping' structures in languages like English without weakening this wider syntactic generalization. Thus, an English sentence like (72a) would receive the structural analysis in (72b).

[53] Of course, our theory still assumes that the features of a head may 'project' up to the higher nodes of its phrasal projection. However, as is often pointed out in the literature on pied-piping, this simple operation of featural 'projection' cannot be identified with the much more powerful operation of feature 'percolation', which crucially transfers the features of a head onto phrasal nodes *outside* the phrasal projection of the head.

(72) **Pied-Piping Structures in English, Under the Analysis in (3)**

a. Whose father's cousin's uncle did you meet at the party?
b. [$_{QP}$ [[[[**whose**] father's] cousin's] uncle] **Q**] did you meet at the party?

Under the analysis in (72b), the fronted phrase in (72a) is a QP, and it is the features of that QP which are probed for and Agreed with by the interrogative C of the wh-question. Thus, these sentences are not structures in which the fronted phrase is 'larger' than the phrase lexically associated with the features motivating the fronting.

This analysis thus contrasts sharply with the 'classic' analysis of wh-fronting in (2), under which sentences like (72a) are problematical. Under the analysis in (2), the interrogative C of the wh-question probes for features of the wh-word, and Agreement with a phrase bearing these features results in movement of that phrase into the left periphery. In sentence (72a), however, it appears at first blush that the fronted phrase does *not* bear the features being sought by the interrogative C, since the fronted phrase is not headed by a wh-word. Rather, it appears that the fronted phrase *properly contains* the phrase bearing the features sought by C. Therefore, some augmentation must be made to the basic analysis to permit the derivation of sentences like (72a).

Typically, the derivation of structures like (72a) within the 'classic' analysis is accomplished by one of two means: either (i) special mechanisms of 'feature percolation', which transfer the features of a head onto higher nodes outside the projection of the head (Webelhuth 1992, Grimshaw 2000), or (ii) a weakening of the theory of movement, allowing that moved phrases needn't themselves bear the features motivating the movement (Ross 1967, Heck 2004). Both of these views, however, encounter various conceptual problems.

Heck (2004) puts forth numerous arguments against the mechanism of 'feature percolation', and any analyses of 'pied-piping' structures that appeal to it. One over-arching problem noted by Heck is that the operation of feature percolation cannot be reduced to any other, more widely encountered syntactic operations. Therefore, a theory appealing to feature percolation must admit of an additional, primitive syntactic operation, one which moreover has a number of puzzling properties,[54] and which serves no analytic use outside of pied-piping.

In lieu of 'feature percolation', a few authors propose to analyze pied-piping structures by weakening the theory of movement so that it permits moved phrases not to necessarily themselves bear the features 'motivating' the movement (Ross 1967, Heck 2004).[55] Thus, under such an analysis, the sentence in (72a) is permissible because it satisfies the (weak)

[54] For example, Heck (2004) notes that feature-percolation violates certain otherwise general conditions on movement (Heck 2004; p. 102).

[55] To be precise, Heck (2004) proposes a hybrid theory, where the labor of deriving pied-piping structures is divided between a limited mechanism of feature percolation (identified as 'feature movement', in sense of Chomsky (1995)) and a limited degree of 'non-locality' between the moved phrase and the feature inside it promoting the movement. Such a theory is able to avoid many of the problems faced by theories which appeal to only one of these two general forms of analysis.

condition that the moved phrase contain the Goal somewhere inside it. However, a pervasive problem for this form of explanation is the potential for over-generation. That is, it is not generally the case that *any* phrase containing a wh-word may be fronted in an English wh-question, as the ill-formedness of sentence (73b) illustrates.

(73) **Finite CPs Cannot be Pied-Piped in English**

a. [Which man]$_1$ does Mary believe that Dave likes t_1 ?
b. * [that Dave likes which man]$_1$ does Mary believe t_1 ?

If appeal is made to feature-percolation, then the observed limits on pied-piping may be encoded into the percolation mechanism itself, by placing limits on 'how far' feature-percolation may carry a feature from its lexically associated head. However, without this sort of mechanism, it is difficult to identify the source of anomaly in sentences like (73b), especially since sentences like (73a) establish that such embedded wh-words are in principle accessible to the interrogative C head.

However, if one adopts the QP-based analysis in (3), the problems of both these sorts of analyses may be avoided. As already mentioned, no appeal need be made to special mechanisms of feature percolation placing the targeted features of the wh-words on nodes outside their projection. As regards the observable limits on pied-piping, a number of interesting approaches are possible within the boundaries of the QP-based analysis. For example, I will argue in Section 4 that independently visible constraints on the position of the Q-particle derive the inability for certain phrases to be 'pied-piped'. Moreover, certain other conditions on pied-piping may be derived in a manner similar to what is found in percolation-based analyses. Although space precludes a full discussion here, I will sketch one approach that has proven to be productive. As noted in Footnote 50, Kratzer & Shimoyama (2002) observe that wh-words in English, German and many other wh-fronting languages all share a particular morpho-phonological characteristic (e.g., /w-/ in English, /v-/ in German), and that such a shared morpho-phonological characteristic is not found in the wh-words of Japanese. Kratzer & Shimoyama (2002) propose that in languages where the wh-words all share a morpho-phonological characteristic, there is a morpho-syntactic Agreement relation holding between the wh-word and the c-commanding Q-particle. Accepting this proposal, one can capture constraints on 'pied-piping' in languages like English via constraints on the Agreement relation holding between the Q-particle and the wh-word. For example, given our earlier assumption that Agreement cannot cross into syntactic islands, we easily derive the fact that wh-words cannot pied-pipe islands in English.[56] I refer the reader to Cable (2007) for a broader discussion and richer array of results.

[56] It is of course essential to note here that wh-words in Tlingit do not share any morpho-phonological characteristic, and so may be viewed as *not* bearing an Agreement relation with the Q-particle.

3.3 Consequences Regarding the Quantificational Structure of Wh-Questions

Under the semantics proposed in Section 2.3.5, a wh-word bears no inherent quantificational force. Rather, the semantic contribution of the wh-word is a set of alternatives, which eventually serve as argument to the c-commanding Q-particle. Moreover, the Q-particles themselves likewise have no inherent quantificational force. Rather, they are analyzed variables bound by higher operators, akin to the well-known analysis of indefinites in theories like DRT.

However, the notion that wh-words in wh-questions don't bear quantificational force seems to be a minority view.[57] Indeed, since the seminal work of Karttunen (1977), the prevailing view has been that wh-words are quantifiers bearing existential force, as in (74a). Under this view, the existential force of the wh-word is ultimately contributed to the property description constituting the semantic value of the wh-question; this contribution is highlighted in (74b).

(74) **The View that Wh-Words are Existential Quantifiers**

a. [[what]] = $\lambda P.\ \exists x\ [\ thing(x)\ \&\ P(x)\ ]$
b. [[what did you eat]] = $\lambda p.\ \exists x[\ \mathbf{thing(x)}\ \&\ p = (\lambda w.\text{you eat x in w})\ ]$

A benefit of this analysis is that the fronting of the wh-word in a wh-question has a clear semantic motivation. Since the semantics of a wh-question require there to be an existential operator taking scope above the 'propositional nucleus', and since the wh-word contributes that existential operator, it follows that the wh-word in a wh-question must move to fix its scope outside the propositional nucleus. If the wh-word did not move, then the sentence would not be computed to have the targeted matrix wh-question reading.

Although this analysis still looms large in the popular consciousness of linguists, subsequent study has weakened the notion that wh-words are existential quantifiers. This notion was first challenged in Pesetsky (1987). Pesetsky notes that certain wh-words – those which are D-linked and *in situ* – have, across a variety of languages, properties which suggest that they needn't ever undergo wh-fronting in questions.[58] Pesetsky observes that the differential behavior of D-linked wh-words could be due to their not bearing inherent quantificational force. Pesetsky proposes that such wh-words are instead simply variables bound by the c-commanding interrogative C head. A semantics for such bound *in-situ* wh-

[57] Although currently a minority view, it can be found in the earlier work of Hamblin (1973), and something like it is found in the syntactic work of Baker (1970).

[58] The most well-known and well-studied of these properties is, of course, the fact that such wh-words do not induce Superiority Effects. Thus, the ill-formed sentence in (i) contrasts with that in (ii), where the *in-situ* wh-word is D-linked.
(i) * What did who read?
(ii) Which book did which boy read?

words was subsequently developed by Reinhart (1992, 1997). In this work, Reinhart proposes that the existential force of a wh-question containing non-quantificational wh-words is contributed by the semantics of the interrogative C-head. Thus, under the analysis of Reinhart (1992, 1997), the existential force of a wh-question may originate, not in the wh-word itself, but in higher operators binding that wh-word. For purposes of discussion, I refer to such analyses as 'existential-Q' analyses.

Interestingly, this existential-Q semantics would eventually be found to benefit the analysis of *all* wh-questions in wh-*in-situ* languages like Japanese. The work of Hagstrom (1998), Shimoyama (2001) and Beck (2006), demonstrates that certain phenomena in wh-*in-situ* languages receive elegant analyses if an existential-Q analysis is applied to *all* wh-questions. Furthermore, it is shown in Shimoyama (2001) and Beck (2006) that this existential-Q semantics alone derives many of the data which previous authors had argued to demonstrate the existence of covert wh-fronting in these languages. Thus, under the analyses of Hagstrom (1998), Shimoyama (2001) and Beck (2006), it is possible to maintain that no *in-situ* wh-word bears existential force, and no *in-situ* wh-word undergoes covert movement for the purposes of scope. For this reason, the analyses of Hagstrom (1998), Shimoyama (2001) and Beck (2006) raise anew the question of whether wh-words *ever* have inherent quantificational force, even those wh-words that undergo wh-fronting. The analysis proposed here takes up a negative answer to this question. Under the proposed semantics, even in wh-fronting languages, no wh-word bears inherent existential force; in all cases, the existential force is provided by the interrogative C.

Interestingly, in Cable (2007), I demonstrate that this view regarding the quantificational structure of wh-questions has a particularly advantageous consequence: reconstruction is not needed for the proper interpretation of wh-questions with 'pied-piping'. In his well-known critique of Nishigauchi (1990), von Stechow (1996) effectively demonstrates that within a system where wh-words have quantificational force, one must reconstruct any material pied-piped by the wh-word in order to properly interpret a wh-question. In the system proposed here, however, wh-words do *not* bear quantificational force, and so their movement is semantically vacuous. Thus, in this system, there is no semantic difference between a structure with 'pied-piping' at LF and one with reconstruction of pied-piped material; both structures are assigned the same, correct semantic interpretation. For this reason, syntactic reconstruction is not required for the system proposed here to correctly interpret wh-questions with pied-piping. I refer the reader to Cable (2007) for an extensive discussion of this point.

Since the notion that even fronted wh-words lack inherent quantificational force seems to have advantageous consequences, let us ask whether there *is* any evidence at all that fronted wh-words do (sometimes) bear an inherent quantificational force that in-situ wh-words (sometimes) lack. One of the strongest arguments in favor of the view that wh-words (sometimes) carry existential force comes from the differences between D-linked and non-D-

linked wh-words. The simplest theory of the differential behavior of D-linked and non-D-linked wh-words is that of Pesetsky (1987), described above. By attributing an inherent existential force to non-D-linked wh-words, and by withholding it from D-linked wh-words, one immediately derives the fact that the former must undergo covert movement while the latter needn't. However, if one assumes that *no* wh-words have inherent quantificational force, the grammatical differences between D-linked and non-D-linked wh-words cannot be captured in this manner. Thus, the fact that D-linked wh-words needn't undergo covert wh-movement must be derived from some other property, and it is not immediately apparent what this could be.[59]

Although I have nothing to offer in its place, the notion that a difference in quantificational force underlies the special properties of D-linked wh-words faces difficulties of its own. The least important of these is the fact that it is inconsistent with the view that syntactic movement is ultimately driven by feature-checking and erasure (Chomsky 1995). Under such currently popular models, movement of a phrase is not a 'free option', and only occurs as a result of a featural relationship between units in the structure. Thus, if one adopts such a syntactic model, the differential behavior of D-linked and non-D-linked wh-words would have to be encoded via some featural difference between them, a method that is in principle also available under our proposed syntactic analysis.

A more important issue for the notion that *only* D-linked wh-words lack quantificational force is that it is not clear what this special property of D-linked wh-words would itself follow from.[60] After all, as the analyses of Hagstrom (1998), Shimoyama (2001) and Beck (2006) demonstrate, nothing in the semantics of wh-questions requires that *non*-D-linked wh-words *must* have inherent quantificational force. Similarly, it isn't obvious why D-linked wh-words must *lack* quantificational force. Although the oft-noted fact that D-linked wh-words contain a referential/anaphoric component is suggestive, the notion that this referential/anaphoric component precludes inherent quantificational force has unfortunately never been elaborated in detail. I therefore conclude that, although the 'quantificational analysis' of Pesetsky (1987) is currently the best analysis of the differential behavior of D-

[59] Note that this is also a problem for the analyses of Hagstrom (1998), Shimoyama (2001) and Beck (2006). Nishigauchi (1986) and Pesetsky (1987) argue that various differences between D-linked and non-D-linked wh-words in Japanese also indicate that the latter undergo covert movement while the former do not, even in wh-*in-situ* languages like Japanese.

[60] Another issue is that it weakens the 'classical' view that wh-words front in English because they are existential quantifiers. As noted by Pesetsky (1987), in non-multiple English wh-questions, even D-linked wh-words must front; they cannot remain *in-situ*.

(i) a. Which of the boys did you see?
b. * You saw which of the boys?

Therefore, under the view that D-linked wh-words lack quantificational force, some property other than the existential force of the wh-word must underlie the (overt) fronting of wh-words in English. Thus, one of the major analytic benefits of the 'classic' account in (74) is diminished.

linked wh-words, it is plausible that an equally successful alternative could be developed within the limits set by the semantics of wh-questions proposed here.[61]

We find, then, that the differential behavior of *in-situ* D-linked wh-words needn't indicate that some wh-words possess inherent quantificational force.

4 The Nature of Certain Illicit Extractions

In the previous section, we saw that the analysis of wh-fronting proposed in (3) holds a variety of consequences for the typological theory of wh-question formation, the nature of 'pied-piping' structures, the quantificational structure of wh-questions, and the analysis of LF/Focus-Intervention Effects. In this final section, we will see that it also holds surprising consequences for the theory of movement itself. In brief, an examination of the syntax of Q-particles in Tlingit invites an interesting reconception of what underlies the ill-formedness of certain kinds of extraction.

First, let us observe that there are some further, yet unstated conditions governing the placement of *sá* in a Tlingit sentence. As the following sentences illustrate, the particle *sá* cannot intervene between a post-position and its complement (75), between a possessor and the possessed NP (76), or between a determiner and its NP complement (77).

(75) **No Q Between a Post-Position and Its Complement**

a. **Goodéi sá** yigoot?
where.to Q you.went
Where did you go?

b. * **Goo sá**déi yigoot?
where Q.to you.went

c. **Aadóo** teen **sá** yigoot?
who with Q you.went
Who did you go with?

d. * **Aadóo sá** teen yigoot?
who Q with you.went

(76) **No Q Between a Possessor and a the Possessed NP**

a. **Aadóo** jeet **sá** iyatee?
who hand.to Q you.brought.it
Who did you give it to? *(= Whose hand did you bring it to?)*

[61] One possible analysis, which Cable (2007) works out in detail, is that D-linked wh-words needn't be paired with Q-particles. If this were so, then the analysis in (3) would predict such that wh-words needn't undergo any wh-fronting. As shown in Cable (2007), it also correctly predicts that non-fronting D-linked wh-words are the only ones in English to be widely subject to LF/Focus-Intervention Effects.

b. * **Aadóo sá** jeet iyatee?
who Q hand.to you.brought.it

c. **Aadóo** x̲anx' **sá**yá yéi iyatee?
who area.at Q.foc-part you.are.there
Who are you living with? *(= Whose area are you staying at?)*

d. * **Aadóo sá** x̲anx' yéi iyatee?
who Q area.at you.are.there

e. **Aadóo** yaagú **sá** ysiteen?
who boat Q you.saw.it
Whose boat did you see?

f. * **Aadóo sá** yaagú ysiteen?
who Q boat you.saw.it

g. **Aadóo** x̲'asheeyí **sá** iya.aax̲?
who song Q you.heard.it
Whose song did you hear?

h. * **Aadóo sá** x̲'asheeyí iya.aax̲?
who Q song you.heard.it

(77) **No Q Between a D and its NP Complement**

a. **Daakw** keitl **sá** ashaa?
which dog Q it.barks
Which dog is barking?

b. * **Daakw sá** keitl ashaa?
which Q dog it.barks

c. **X'oon** keitl **sá** ysiteen?
how.many dog Q you.saw.them
How many dogs did you see?

d. * **X'oon sá** keitl yisiteen?
how.many Q dog you.saw.them

e. **X'oon** gaaw **sá**wé?
how.many hour Q.foc-part
What time is it?
(=How many hours is it?)

f. * **X'oon sá**wé gaaw?
how.many Q.foc-part hour

g. **Daat** gaaw **sá** ikgwahaa?
what hour Q you.will.arrive
What time will you get there?

h. * **Daa sá** gaaw ikgwahaa?
what Q hour you.wil.arrive

Of course, the reader will have probably noticed that all the sentences above are wh-questions. Therefore, these restrictions might not seem very surprising, particularly given our analysis in (3). Under that analysis, a Tlingit wh-question requires that the QP be fronted into the left-periphery. Thus, the ill-formed sentences above all involve either extraction of the complement of PP (75b, d), extraction of the specifier of DP (76b, d, f, h), or extraction of the

D head of the DP (77b, d, f, h). Such extractions, however, are ill-formed in many languages of the world. That is, patterns of obligatory pied-piping across a variety of languages suggest that extractions of the kind seen in the ill-formed sentences above are cross-linguistically 'marked' (Ross 1967, Abels 2003, Heck 2004), and the ill-formedness of the sentences above would simply follow from the markedness of those extractions.

Interestingly, however, in the case of Tlingit, this 'common sense' analysis proves to be too weak. As we will see, the generalizations governing the placement of Q in (75) – (77) hold *even when the QP never moves.* First, let us note that these generalizations still hold when the wh-word/QP functions as an indefinite in a declarative clause; the sentences in (78) – (80) illustrate.

(78) **No Q Between a Post-Position and Its Complement**

a. Tléil **goo**déi **sá** xwagoot.
not where.to Q I.went
I didn't go anywhere

b. * Tléil **goo** **sá**déi xwagoot.
not where Q.to I.went

c. Tléil **aadóo** teen **sá** xwagoot.
not who with Q I.went
I didn't go with anyone.

d. * Tléil **aadóo sá** teen xwagoot.
not who Q with I.went

(79) **No Q Between a Possessor and a the Possessed NP**

a. Tléil **aadóo** jeet **sá** xwatí.
not who hand.to Q I.brought.it
I didn't give it to anyone.

b. * Tléil **aadóo sá** jeet xwatí.
not who Q hand.to I.brought.it

c. Tléil **aadóo** xanx' **sá** yéi xat utí.
not who area.at Q I.am.there
I am not living with anyone.

d. * Tléil **aadóo sá** xanx' yéi xat utí.
not who Q area.at I.am.there

e. Tléil **aadóo** yaagú **sá** xwsateen.
not who boat Q I.saw.it
I didn't see anyone's boat.

f. * Tléil **aadóo sá** yaagú xwsateen.
not who Q boat I.saw.it

g. Tléil **aadóo** x'asheeyí **sá** xwa.aax.
not who song Q I.heard.it
I didn't hear anyone's song.

h. * Tléil **aadóo sá** x'asheeyí xwa.aax.
not who Q song I.heard.it

(80) **No Q Between a D and its NP Complement**

a. Tléil **daakw** keitl **sá** ushá.
not which dog Q it.barks
None of the dogs are barking.

b. * Tléil **daakw sá** keitl ushá.
not which Q dog it.barks

c. Yéi uwatee **x'oon** táakw **sá**.
he.lived.there how.many winter Q
He lived there for a number of years.

d. * Yéi uwatee **x'oon** **sá** táakw.
he.lived.there how.many Q winter

Now, let us momentarily entertain the notion that the impossibility of the ill-formed sentences above is due to the impossibility of extraction from the position occupied by the QP; for the purposes of discussion, I will refer to this as 'the extraction analysis'. The extraction analysis would, of course, imply that the formation of the sentences in (78) – (80) requires that the QP be extracted from its base position at some stage of the derivation. The fact that wh-indefinites in Tlingit can remain post-verbal, as in (80c), indicates that the hypothesized extraction does not occur overtly. Therefore, this analysis would require that such wh-word/QPs undergo covert movement of some kind. We must now ask, then, what kind of covert movement could be responsible for the facts in (78) – (80). The positions in question (SpecDP, CompPP) imply that such movement has nothing to do with Case assignment or checking. The declarative force of the sentences in (78) – (80) implies that it is not motivated by the need to check a Q-feature in the matrix C. The only remaining alternative is that it is some kind of QR, a plausible prospect given that these wh-word/QPs might appear to contribute existential force.

I conclude, then, that the extraction analysis must assume that wh-indefinites in Tlingit undergo obligatory QR. Such obligatory QR, however, would imply that wh-indefinites in Tlingit cannot obtain their scope *in-situ*. After all, if wh-indefinites in Tlingit could obtain their scope *in-situ*, there would be no reason for QR to obligatorily target all such indefinites (Reinhart 1997). Therefore, the extraction analysis predicts that wh-indefinites in Tlingit always move to their scope positions via QR. Given the assumption that QR is sensitive to (adjunct) islands (Chomsky 1975, Reinhart 1997), we therefore predict that wh-indefinites should – like strong quantifiers – be unable to scope out of (adjunct) islands.

However, this prediction is incorrect.[62] As discourses like the following demonstrate, it is possible for wh-indefinites in Tlingit to scope out of (adjunct) islands.

[62] The argument that follows is mirrored on those found in Ruys (1992, 1995) and Matthewson (1999).

(81) **A Tlingit Wh-Indefinite Scoping Out of The Antecedent of a Conditional**

a. Ax̲ x̲ooní áwé Dave.
my friend foc-part Dave
Dave is my friend.

b. Shayadihéini du káani tlél du tuwáa ushgú.
they.are.many.REL his in-laws not their spirit it.is.glad
Many of his in-laws don't like him.

c. Du káanich k̲u.aa wusix̲án.
his brother-in-law.erg though he.loves.him
His brother-in-law, though, loves him.

d. Yéi ayawsik̲aa, "Dáanaa káa dulx̲éis' át yax̲wadlaagi, hít i jeeyís
he.told.him money on one.gambles thing I.win.it house your hand.for
kuk̲wa.oo.
I.will.buy.it
He said to him (Dave), "If I ever win the lottery, I will buy you a house."

e. **[[Daak̲w aa du káanich sá] yawudlaagi], hít ayakg̲wadlaak̲.**
which of.them his in-laws.erg Q they.win.it house he.will.get.it
So, if a certain in-law of Dave's wins the lottery, he'll get a house.

The Tlingit discourse in (81) was constructed with the help of a native speaker, who recognized the discourse as a sensible story, and an accurate translation of the English original.[63] Note that if the wh-indefinite in (81) could only have narrow scope inside the antecedent of the conditional, then the discourse in (81) neither would be internally consistent nor would be an accurate translation of the original English story. Rather, the consistency and faithfulness of (81) require that the existential force of the wh-indefinite be located *outside* the antecedent of the conditional.

Sentences like that in (81) therefore demonstrate that there is some mechanism in Tlingit that allows a wh-indefinite to be interpreted in a position distinct from the position of its associated existential force. The existence of such mechanisms, however, entails that the scope of a wh-indefinite in Tlingit needn't be fixed by movement of that indefinite. Therefore, because wh-indefinites in Tlingit *can* obtain their scope *in-situ*, there is no reason for QR to obligatorily target all such indefinites. I conclude that the hypothetical obligatory covert movement required by the extraction analysis cannot, in the end, be identified as QR.

Since we have eliminated all plausible candidates for the movement hypothesized by the extraction analysis, we find that that analysis must appeal to a yet-unknown form of covert movement. It is therefore most reasonable to conclude that movement of the QP simply isn't what's responsible for the impossibility of the ill-formed sentences in (78) – (80). This conclusion is bolstered by two independent facts. The first is that extraction from within the specifier of DP and the complement of PP *is* possible in Tlingit, and so the impossibility of the ill-formed sentences in (75) – (80) cannot be because the positions in question are islands for extraction.[64] Unfortunately, space precludes the demonstration of this fact here, as it requires a lengthy side-discussion regarding pronominal resumption in Tlingit; I refer the reader to Cable (2007) for the details.[65] The second fact is that there is not a general constraint in Tlingit against *sá* appearing within an island; compare the sentence in (82) to those in (78) – (80).

(82) **Q-Particle Contained Within a Relative Clause Island**

Wáa sá yatee [wé [I **goo**déi **sá** woogoodi] k̲áa]?
how Q he.is that not where.to Q he.went.REL man
How is the man who didn't go anywhere?

[63] Keri Edwards (p.c.) reports that the speaker she consulted finds the translation of (81e) incorrect, and can only interpret the sentence to mean "if *any* of Dave's in-laws win the lottery…". Thus, for this speaker, it may indeed be that wh-indefinites cannot take scope outside of adjunct islands. However, it may also be that this speaker shares the tendency, noted earlier under Footnote 15, to interpret wh-indefinites as NPIs in those environments that would allow such an interpretation, such as the antecedent of a conditional. Although the strong preference to interpret wh-indefinites as NPIs or free choice items should not be taken lightly, and does cry out for its own grammatical account, Cable (2007) shows more extensively that such interpretations are (at least for some speakers) not obligatory.

[64] Abels (2003) also demonstrates that extraction from within CompPP is possible in various other languages that disallow P-stranding. He similarly concludes that the impossibility of P-stranding across languages cannot be due to a condition against *all* extractions from PP, but instead reflects the impossibility of stranding the P-head specifically. I agree with this general conclusion, and will argue below that this condition against P-stranding is due to independent constraints on the placement of Q-particles.

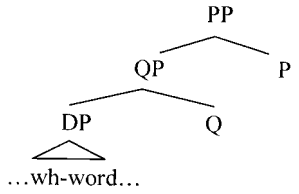
Abels (2003), however, derives this constraint against P-stranding from the assumption that adpositions are phase heads, given a surrounding theory wherein one predicts that phase heads cannot be stranded. It is unclear, however, whether there is a general constraint against phase heads being stranded. Although Abels (2003) notes that an inability to strand C would predict the inability for IP to be extracted, he also notes that IPs are generally 'immovable' in ways not necessarily predicted by the 'unstrandability' of C alone. Furthermore, a certain kind of 'dummy *do*' in English may be a stranded 'little-v' (Cable 2004).

[65] In brief, 'extraction' of a possessor or a complement to P is possible in Tlingit so long as a resumptive pronoun appears in SpecDP or CompP, respectively. Examples of this can be found in sentences (32c) and (62b), above. In such structures, the relationship between the left-peripheral DP and the resumptive pronoun is found to be island-sensitive. This motivates an analysis similar to that proposed by Aoun *et al.* (2001) for such structures in Lebanese Arabic. Under this analysis, the left-peripheral DP is initially merged as an adjunct to the resumptive pronoun, and subsequently undergoes movement into the left periphery. Happily, the postulated base structures – where the full DP is locally adjoined to the pronominal – are independently witnessible as surface forms in Tlingit. Importantly, since the base position of the left-peripheral DP is internal to SpecDP or CompPP, it follows that extraction from these positions is possible in Tlingit.

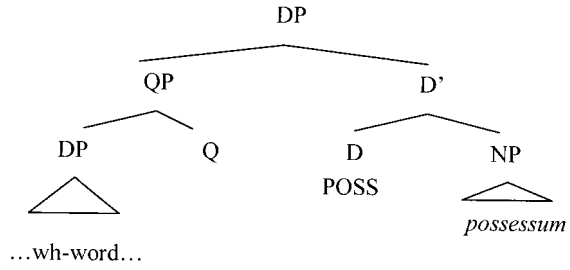
It therefore seems that the impossibility of sentences (78) – (80) is not at all due to the QP being located within an extraction island. What, then, *is* responsible for the ill-formedness of these sentences?

First, let us recall that, due to the special properties of wh-fronting in Tlingit, we have concluded that Q-particles in Tlingit take their sisters as complements, and so project the category of the phrase minimally dominating them and their sisters. It therefore follows from this analysis that the ill-formed sentences in (78) – (80) contain structures akin to the following.

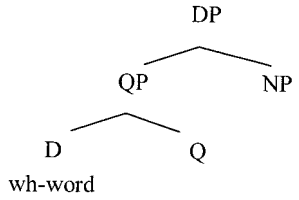
(83) **Structures Where Q Intervenes Between P and its Complement**



(84) **Structures Where Q Intervenes Between Possessor and Possessed NP**



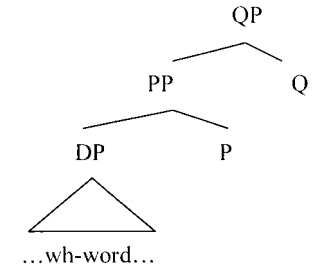
(85) **Structures Where Q Intervenes Between D and NP Complement**



Interestingly, all the structures in (83) – (85) share the following property: in each, a QP intervenes between a functional head and a phrase selected by that functional head.[66] In structure (83), the QP intervenes between the post-position and the DP selected by the post-position. In (84), the QP intervenes between the possessive D head and the possessor DP selected by the possessive D. In (85), the QP intervenes between the D and the NP it selects.

Furthermore, let us note that *none* of the well-formed sentences in (78) – (80) has this special property. In the well-formed sentences of (78), the Q-particle occurs to the right of the post-position, and so the QP it projects does not intervene between the P and its DP complement.

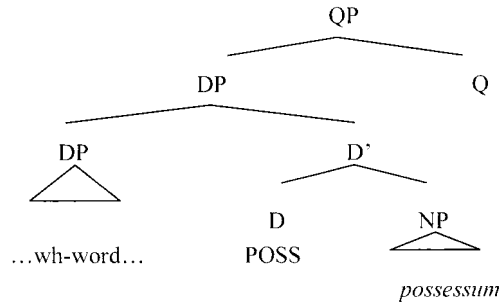
(86) **Structures Where Q Appears to the Right of the Post-Position**



Moreover, the PP complement of Q in these sentences is an adjunct, and so is not selected by any higher functional heads.

In the well-formed sentences of (79), the Q-particle occurs to the right of the possessed NP, and so its projection does not intervene between the D and its specifier.

(87) **Structures Where Q Appears to the Right of the Possessed NP**

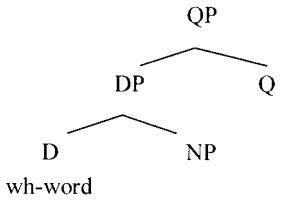


[66] Note that the structure in (85) also has another striking property: the DP projection appears to be exocentric, in as much as it does not immediately dominate a D head. Thus, whatever other problems the structure in (85) might share with those in (83) and (84), the impossibility of exocentric structures would alone rule it out.

Moreover, the complement of Q in these sentences is either an adjunct (79c), or is selected by a *lexical* head. Thus, the QPs in these sentences do not interrupt the selectional relationships of any functional heads.

Finally, in the well-formed sentences of (80), the Q-particle occurs to the right of the NP complement of D, and so its projection likewise does not intervene between D and NP.

(88) **Structures Where Q Appears to the Right of NP Complement of D**



Here again, in these sentences the complement of Q is either an adjunct (80c) or is selected by a lexical head. Thus, the QPs in these sentences do not interrupt the selectional relationships of any functional heads.

On the basis of these observations, let us propose the following as a universal grammatical constraint.[67]

(89) **The QP Intervention Condition**

A QP cannot intervene between a functional head and a phrase selected by that functional head.

As we have already seen, this condition would be sufficient to derive the data in (78) – (80). It also differs from the extraction analysis in that it does not rely upon an otherwise unmotivated form of obligatory covert movement. However, in order to establish that it is actually preferable to the extraction analysis, we must demonstrate that the condition in (89) makes accurate predictions beyond just the facts given in (78) – (80). The remainder of this section is given to showing that it does.

First, let us observe that the condition in (89) derives the fact, noted in Section 2.3.4, that Tlingit *sá* cannot appear to the right of a matrix verb.

[67] Although introduced here as a special stipulation, Cable (2007) describes how the condition in (89) could follow from a particular theory of selection, where so-called "c-selection" is a property only of functional heads.

(90) **Tlingit *Sá* Cannot Occur to the Right of Matrix Predicate**

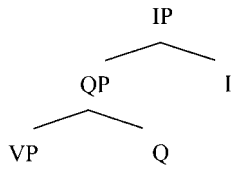
a. **Daa sá** iyatéen?
what Q you.can.see.it
What can you see?

b. * **Daa** iyatéen **sá**?
what you.can.see.it Q

If *sá* were to occur to the right of the matrix verb, then there are two logical possibilities concerning its exact position in the clause, neither of which is consistent with the stated properties of Q in Tlingit. First, it could be the case that *sá* takes the entire matrix CP (ForceP) as complement. However, our semantics in Section 3.2.5 would predict that such a structure could not be interpreted as a wh-question, as there would be no choice-function variable in the scope of the interrogative Force head. Furthermore, if we assume that such a position is outside the domain of existential closure, we would similarly derive the inability for such structures to be interpreted as wh-indefinites. Therefore, placement of *sá* above the highest functional projection in the matrix clause would lead to semantic uninterpretability.

The second possibility regarding the position of *sá* is that it takes as complement either the VP or one of the higher projections along the 'functional spine' of the clause. In either case, however, the condition in (89) would be violated. If *sá* were to take VP as complement, then the QP it projects would intervene between VP and the Infl.[68] This is shown below.

(91) **Tlingit *Sá* Taking Matrix VP as Complement**



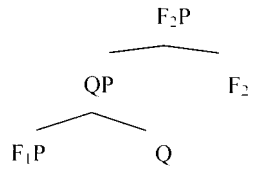
However, Infl is a functional head, and selects for the VP complement of Q. Therefore, the configuration in (91) violates the condition in (89). Similarly, if Q were to take as complement

[68] The exact identity of the first projection dominating VP – whether it is IP or TP – is irrelevant for the purposes of this argument, so long as that projection is a thoroughly functional one. In this context, it should be noted that the analysis proposed here cannot adopt the hypothesis that subjects are introduced by a separate head distinct from V. If such heads were lexical categories, then nothing would prevent Tlingit *sá* from appearing to the right of a matrix verb. On the other hand, if such heads were functional categories, then our theory would predict that subjects could not be dominated by Q in Tlingit and other wh-fronting languages, contrary to fact.

An anonymous reviewer correctly notes that, by this logic, our account might also be incompatible with a 'Larsonian Shell' analysis of ditransitive verbs.

any higher projection F_1 along the 'functional spine' of the clause, the QP it projects would intervene between F_1P and the higher functional projection F_2P above it.

(92) **Tlingit *Sá* Taking as Complement Projections in the Matrix 'Functional Spine'**



Again, though, F_2 is a functional head, and selects for the F_1P complement of Q. Therefore, the configuration in (92) violates the condition in (89).

We have thus ruled out the ability for Tlingit *sá* to appear anywhere to the right of the matrix verb.[69] Nevertheless, our theory does correctly predict that *sá* can appear to the right of a subordinate verb, as we saw earlier under (45). As long as the subordinate CP is either an adjunct or is selected by a lexical head, the condition in (89) will not be violated if a QP takes a subordinate CP as complement. Moreover, since such Qs occupy a position internal to the matrix ForceP, our analysis predicts that sentences like (45) are interpretable, both as wh-questions and as wh-indefinites.

It was just observed that the condition in (89) predicts that in wh-fronting languages, Q-particles cannot take VPs or any higher functional projections as their sisters. Given the theory of 'pied-piping' proposed in Section 3, this condition therefore derives the oft-noted fact that neither VPs nor any of their functional projections may be pied-piped (Heck 2004).

(93) **No Pied-Piping of Matrix Predicates**

a. What did Dave eat?
b. * [$_{VP}$ Eat what] did Dave?

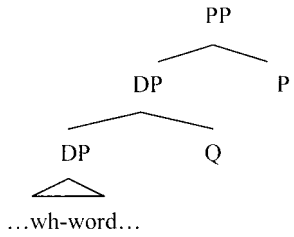
According to the proposal in Section 3.2, any 'pied-piped' constituent is simply a complement of Q. Therefore, a pied-piped VP would have to be complement to Q. However, as already

[69] Of course, the reader may recall that Sinhala *da* shares this property with Tlingit *sá*. Interestingly, for reasons that will be clear in a moment, the inability for Sinhala *da* to occur to the right of a matrix verb is not, under our current proposals, consistent with the view that Q-particles in Sinhala are adjoined to their sisters as in Japanese. Rather, it can only be true if Sinhala is like Tlingit/English in that its Q-particles take their sisters as complements. Under this view, Sinhala differs from Tlingit/English only in that its QPs move covertly, and is otherwise identical to Tlingit/English at LF. Independent evidence for this reconception of Sinhala wh-questions is the fact that *da* is also subject to the constraints witnessed in (75) – (77). As reported in Kishimoto (2005; p. 13), Sinhala *da* cannot in wh-questions intervene between post-positions and their DP complements, possessors and possessed NPs, or Ds and their NP complements. As we will see below, this property is only expected if Sinhala Q-particles take their sisters as complements, as in Tlingit/English, rather than adjoin to them, as in Japanese/Korean.

noted above, a configuration where Q takes VP as complement would violate the condition in (89), as a QP would intervene between the VP and Infl head it is selected by. It follows that neither VP nor any of its higher functional projections may be 'pied-piped' by an internal wh-word.

One final prediction of the condition in (89) concerns the distribution of Q-particles in languages like Japanese, where the Q-particle does not take its sister as complement, but is instead adjoined to it. Since the Q is adjoined to its sister in these languages, our theory predicts that it will not be subject to the constraints witnessed in (75) – (80). For example, in these languages, it should be possible for a Q-particle to come between an adposition and its DP complement, as such structures would receive the structural analysis below.

(94) **Structures Where Q Appears Between P and its Complement in Japanese/Korean**



As the structure in (94) indicates, in Japanese-like languages, the Q-particle is adjoined to its sister, and so does not project the category of the phrase minimally dominating it and its sister. Therefore, in such languages, an adposition may directly take as its complement the DP it selects for, even when a Q-particle comes between them. Since no projection of Q intervenes between the P and the DP in structures like (94), the condition in (89) is respected, and they are predicted to be well-formed. This prediction is accurate, as the sentences in (95) demonstrate.

(95) **Japanese Q Can Appear Between a Post-Position and Its Complement**

a. Taroo-wa doko-**ka**-e itta.
Taro-TOP where-**Q**-to went
Taro went somewhere.

b. Taroo-ga [dono tosi]-**ka**-e ryoko sita-rasii.
Taro-NOM which city-**Q**-to travel did-seems
Taro seems to have traveled to some city.

The Japanese sentences above contain wh-indefinites associated with the Q-particle *ka*. As the particle *ka* is not sentence-final when appearing with wh-indefinites, we can test the accuracy of the aforementioned predictions, and we find that it is accurate. In each sentence the Q-particle *ka* appears in between the post-position *e* 'to' and the DP it selects for.

Similar confirmation can be found in the wh-indefinites of Korean. Like those in Japanese, Korean Q-particles must be sentence-final in wh-questions (96a), but can be sentence internal with wh-indefinites (96b).[70]

(96) **Wh-Questions and Wh-Indefinites in Korean**

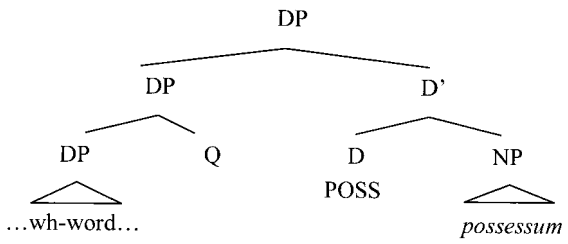
a. Eti-ey sensayng-nim-i ka-si-pni-**kka**?
where-to teacher-HON-NOM go-HON-FORM-**Q**
Where did the teacher go?

b. Ku-nun eti-eyn-**ka**-ey ka-ess-ta.
he-TOP where-link-**Q**-to go-past-DEC.
He went somewhere.

Moreover, we can see from sentences like (96b) that, like Japanese *ka*, the Korean Q-particle *ka* can appear between a post-position and the DP it selects for.

We have seen, then, that our theory correctly predicts that Q may come between P and its DP complement in Japanese and Korean. Of course, our theory also predicts that Q-particles in these languages should be permissible in between possessors and possessed NPs, as it would allow the existence of structures like that in (97).

(97) **Structures Where Q Appears Between Possessor and Possessed in Japanese/Korean**



[70] The reader may note that the Q-particle in (96b) is separated from the wh-word by a 'linking' morpheme *eyn*. This 'linking component' is obligatory in Korean wh-indefinites; unlike Japanese *ka*, Korean *ka* cannot directly combine with wh-indefinites. As the reader will observe below, there are other linking morphemes besides *eyn*, and the choice of morpheme depends upon the syntactic position of the wh-indefinite.

In the structure above, the Q-particle is adjoined to its DP sister, and so no projection of Q intervenes between the possessive D head and the possessor DP which it selects for. Our condition in (89) therefore permits the structure in (97), and we predict that Q-particles in Japanese/Korean should be able to come between possessors and possessa. As the following sentences demonstrate, this is again an accurate prediction.

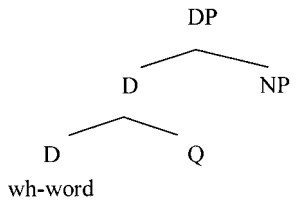
(98) **Japanese/Korean Q Can Appear Between a Possessor and Possessed NP**

a. *Japanese* Taroo-wa [dare-**ka**-no oniisan]-ni atta.
Taro-TOP who-Q-GEN brother-DAT met
Taro met someone's older brother.

b. *Korean* Ku-ka [nwukwu-in-**ka**-uy tongsayng]-ul manna-ess-ta.
he-TOP who-link-**Q**-GEN brother-ACC meet-past-DEC
He met someone's brother.

Finally, let us note that our theory predicts that Q-particles in Japanese-like languages should be able to intervene between wh-determiners and their NP complements. After all, nothing stated thus far would rule out structures like the following.

(99) **Japanese/Korean Q Appearing Between D and its NP Complement**



This prediction, however, is incorrect. Even in Japanese and Korean, a Q-particle cannot intervene between a D and its NP complement, as the following sentences illustrate.

(100) **Japanese/Korean Q *Cannot* Appear Between D and its NP Complement**

Japanese

a. Taroo-ga [dono hito]-**ka**-o hoomon sita-rasii.
Taro-NOM which man-**Q**-ACC visit did-seem
Taro seems to have visited some man.

b. * Taroo-ga [dono-**ka** hito]-o hoomon sita-rasii.
Taro-NOM which-**Q** man-ACC visit did-seem

Korean

c. Ku-ka [enu salam]-in-**ka**-lul manna-ess-ta.
he-NOM which man-link-**Q**-ACC meet-PAST-DEC
He met some man.

d. * Ku-ka [enu-in/eyn-**ka** salam]-ul manna-ess-ta.
he-NOM which-link-**Q** man-ACC meet-PAST-DEC

Of course, our proposed analysis is not necessarily inconsistent with the facts in (100), as the impossibility of the deviant structures above may result from independent factors. To build towards one possible explanation, note that the structure in (99) differs from those in (94) and (97) in that the Q-particle in (99) is adjoined to the head of a phrase.[71] Thus, the D-head in (99) is initially merged with Q, rather than with the NP constituting its internal argument. Let us suppose, however, that selection for the internal argument of a head H must be satisfied no later than at the point where H first externally merges with something.[72] Under this assumption, the ill-formedness of (99) would follow. Since initial merger of D in (99) joins it with Q, and Q does not contain the phrase selected as internal argument by D, a selectional violation ensues, and the structure is ill-formed. Therefore, we find that factors independent of the QP-Intervention Condition may be responsible for the ill-formedness of (99) in even the Q-Adjunction languages.

We find, then, that the condition in (89) accurately predicts that the Q-particles of Japanese/Korean – which do not take their sister as complement – are not subject to the constraints witnessed in (75) – (80) to govern the Q-particles of Tlingit. The sentence-internal Q-particles associated with the wh-indefinites of these languages can (generally) come between functional heads and phrases selected by those functional heads.[73] Of course, we also saw that this condition predicts the inability for a Q-particle to follow the matrix verb in a Tlingit

[71] Another possibility, mentioned by native speakers of both languages, is that Q-particles in Japanese/Korean can only cliticize onto nominal categories, and the words I identify above as D-heads (*dono/enu*) are actually *adjectives*. Note, however, that this restriction on the cliticization of Q wouldn't follow from anything within our analysis.

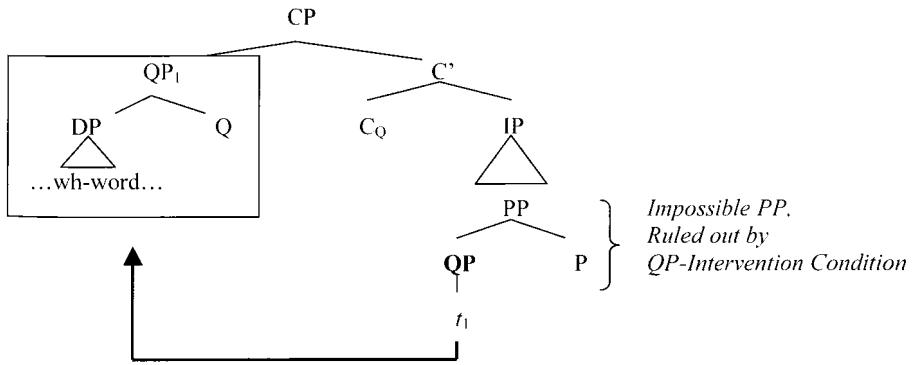
[72] After all, within a Bare Phrase Structure system, some principles must entail that the phrase initially merging with a head H must be the internal argument of H, rather than its external argument. Presumably, these principles could also entail that the *only* thing that may undergo initial merger with a head is its internal argument.

[73] Note, then, that the proposal stated in Footnote 69 that the Q-particles of Sinhala take their sisters as complements would predict that the Q-particles in Sinhala wh-*indefinites* should be subject to the constraints witnessed in (78) – (80), just as the Q-particles of Sinhala wh-*questions* are observed to (Kishimoto 2005; p. 13). Unfortunately, this is incorrect. When appearing with wh-indefinites, Sinhala *da* behaves like Japanese/Korean *ka*, and can intervene between functional heads and phrases those heads select for (Kishimoto, p.c.). I do not at present understand this pattern of data, and it constitutes a strong challenge to the analysis proposed here.

sentence, as well as the universal inability for VPs and their higher functional projections to be pied-piped by wh-words. Given the range of predictions made by the condition in (89), I conclude that, as an explanation of the facts in (78) – (80), it is preferable to any version of the 'extraction analysis.' Thus, the impossibility of the ill-formed sentences in (78) – (80) is due to the activity of the intervention condition in (89), and is not the result of any constraint on extraction.

Let us now turn back to the ill-formed sentences of (75) – (77), which demonstrate that these same conditions on the placement of Tlingit *sá* govern wh-questions, and let us ask whether those sentences should be understood as ruled out by a constraint on extraction *per se*. Clearly, the similarity between the facts in (75) – (77) and (78) – (80) demands that a uniform account be adopted, rather than one attributing the facts in (75) – (77) to a constraint on extraction and the facts in (78) – (80) to the condition in (89). It is fortunate, then, that the condition in (89) can alone account for the facts in (75) – (77) as well. According to our analysis in (3), the left-peripheral constituent of a wh-question is a QP that has been extracted from its base position. Thus, the ill-formed sentences in (75), where extraction of the QP strands a post-position, would at earlier stages of their derivation have a QP intervening between a P and the DP selected by P. This is illustrated by the structure below.

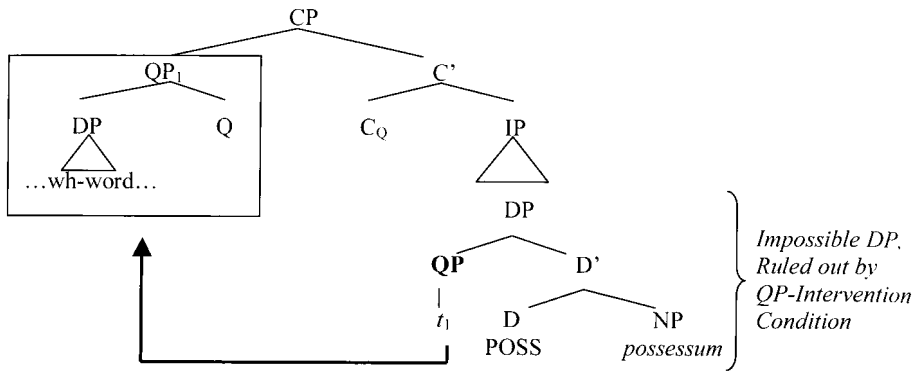
(101) **QP-Intervention Condition Rules Out Tlingit P-Stranding**



We have already seen, however, that such base-structures are impossible in Tlingit, and are ruled out by the condition in (89). As the condition in (89) rules out the base-structure that necessarily underlies P-stranding, it thereby rules out P-stranding in Tlingit, and so no special condition against such extractions need be appealed to in the grammar of Tlingit.

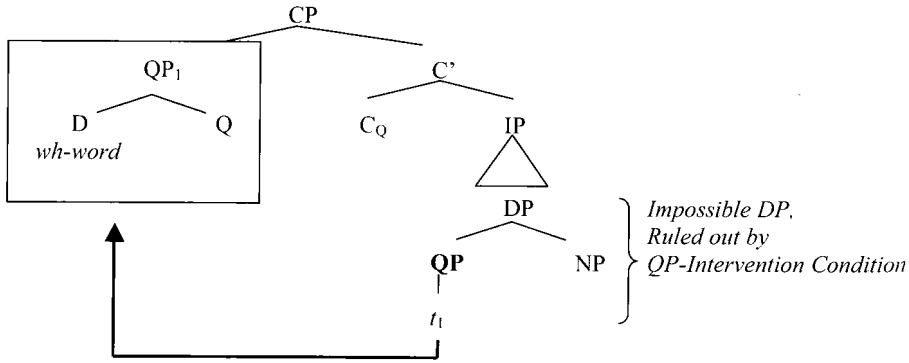
Similarly, the ill-formed sentences in (76) would at earlier stages of their derivation have a QP intervening between a possessor and the possessive D that selects the possessor, a configuration independently ruled out by condition (89), as illustrated below.

(102) **QP-Intervention Condition Rules Out Tlingit Possessor-Extraction**



Finally, the ill-formed sentences in (77) could only be derived from structures where a QP intervenes between the D head and the NP complement of that D, a configuration again ruled out by condition (89).

(103) **QP-Intervention Condition Rules Out Tlingit Determiner-Extraction**



We find, then, that all the ill-formed sentences in (75) – (77) could only be derived from structures that violate condition (89). Thus the condition in (89) is alone sufficient to rule out the ill-formed sentences in (75) – (77), and therefore provides a uniform account for all the data in (75) – (80).

Recall, however, that the impossible extractions of the kind seen in (75) – (77) are found to be ill-formed in many languages of the world, that patterns of obligatory pied-piping suggest that these extractions are cross-linguistically 'marked'. Again, it would be preferable to have a uniform account of these facts across languages, rather than one in which they are due to condition (89) in Tlingit, but to conditions specially governing extraction in other languages. Given the strong case supporting condition (89) in Tlingit, it is most reasonable to conclude that condition (89) must also be responsible for the impossibility of the aforementioned extractions in all other wh-fronting languages. Of course, such an analysis is only possible under the view that wh-fronting in all languages proceeds as represented in (3).

In summary, then, we have found that the constraints on Tlingit wh-extraction witnessed in (75) – (77) are best explained by a condition governing the position of Q-particles. Since these same constraints on wh-extraction are also found in other, more familiar wh-fronting languages, we find further confirmation that wh-fronting in all languages is, as in Tlingit, a by-product of Q-movement. Moreover, we find that the general impossibility of these extractions is ultimately due – not to any constraint on extraction *per-se* – but to independently visible constraints on the placement of Q. Such constraints serve to limit wh-extraction by limiting the structural pre-conditions for wh-extraction, ruling out the base-structures from which the ill-formed extractions must be derived. Thus, rather than explain the impossibility of these extractions in terms of the 'islandhood' of the base positions, we can explain the *apparent* islandhood of those positions in terms of independently visible constraints on the placement of Q. This seems to be a promising direction, as certain of these positions have been independently argued not to be true syntactic islands (Abels 2003; Footnote 64).

5 Conclusion

I have argued that in all languages, the fronting of wh-words in wh-questions is a by-product of the attraction of a Q-particle into the left periphery of the clause. In no language is such fronting the result of a direct relationship between the interrogative C and the wh-word itself, there being no direct syntactic relationship between these elements. This analysis was shown to be necessary for the wh-fronting structures of Tlingit, and its extension to all other wh-fronting languages was defended on conceptual and empirical grounds.

This proposal was shown to entail a number of positive analytic consequences. Besides inviting a fresh perspective on the parametric differences between wh-fronting and wh-*in-situ* languages, it also advances understanding of pied-piping structures, as it permits pied-piping structures to be derived without appeal to special mechanisms of 'feature percolation'. Indeed, in a certain sense, it actually eliminates the concept of 'pied-piping' from the grammar, as there is never a case in which something larger than the 'targeted' constituent is fronted. This analysis therefore calls into question the notion that 'pied-piping' underlies all instances of any

phrasal movement (Chomsky 1995; Matushansky 2006), a notion that is independently challenged by Heck (2004).

Most importantly, however, we have seen that constraints on wh-extraction and pied-piping can be approached in a new light, as constraints on the position of Q-particles. In particular, the single condition on Q-particles in (89) was found to derive (i) the inability for VPs to be pied-piped, (ii) the inability for adpositions to be stranded, (iii) the inability for possessors to be extracted, and (iv) the inability for wh-determiners to be extracted. This 'Q-based' approach to wh-movement receives further application in Cable (2007), and appears to be a productive new way of attacking various grammatical puzzles.[74, 75]

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[74] Besides a richer treatment of the constraints on pied-piping in English, Cable (2007) also presents a treatment of the variation in Superiority Effects and Intervention Effects across languages.

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POSSESSORS AND DEFINITENESS EFFECTS IN TWO AUSTRONESIAN LANGUAGES

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1 INTRODUCTION

The definiteness effects that form the backdrop to this paper were first investigated by Milsark (1974, 1977) in his pioneering work on the syntax and semantics of English existential sentences.[1] Milsark (1977) observed that the pivots of existential clauses must be *weak*. He also observed that the subjects of what are now called individual-level predicates must be *strong* (see also Postal 1969 and Carlson 1977). These definiteness effects, repeated below, will be referred to here as DE1 and DE2.

(1) *Two definiteness effects*
DE1: The pivot of an existential clause must be weak.
DE2: The subject of an individual-level predicate must be strong.

The definiteness effects work in tandem with Milsark's classification of DP's as weak or strong to describe some intricate empirical patterns. To see this, consider the very partial version of his classification that is given in (2), following Ladusaw (1994). The classification

[1] I am indebted to Manuel F. Borja and William A. Ladusaw, each of whose insights greatly influenced this study. Thanks also to Judith Aissen, Pranav Anand, Chris Barker, Junko Itô, Edward Keenan, Maria P. Mafnas, Lisa Matthewson, James McCloskey, Jason Merchant, Maria T. Quinata, Kyle Rawlins, Joseph Sabbagh, and Lisa Travis, and audiences at AFLA 13 (National Tsing Hua University), McGill University, UCSC, and Yale University, for comments. This work was supported in part by NSF Project BSC0131767 to the University of California, Santa Cruz.

identifies some DP's as simply weak (e.g. *sm* NP),[2] others as simply strong (e.g. *every* NP), and still others as weak in one interpretation but strong in another (e.g. bare plurals).

(2) *A partial snapshot of weak and strong DP's in English*

WEAK	STRONG
sm NP	
bare plurals [cardinal]	bare plurals [generic]
many NP [cardinal]	*many* NP [proportional]
few NP [cardinal]	*few* NP [proportional]
etc.	*every* NP
	all NP
	the NP
	pronouns
	proper names
	etc.

What DE1 says is that the pivots of existential clauses must be chosen from the left-hand column of (2); what DE2 says is that the subjects of individual-level predicates must be chosen from the right-hand column. These claims are illustrated by the examples below. In existential clauses, the pivot must be weak. It can, for instance, be a DP headed by *sm* or a bare plural with a cardinal interpretation, but it cannot be a DP headed by *every*; and in the absence of context, it cannot be a proper name.[3]

(3) a. There are sm students at the back of the lecture hall.
b. There are students at the back of the lecture hall. [= at least two students]
c. *There is every student at the back of the lecture hall.
d. %There is Meg at the back of the lecture hall.

In clauses with individual-level predicates, the subject must be strong. It can, for instance, be a bare plural with a generic interpretation, a DP headed by *every*, or a proper name, but not a DP headed by *sm*.

(4) a. *Sm students are neurotic.
b. Students are neurotic. [= the generic student]
c. Every student is neurotic.
d. Meg is neurotic.

[2] *Sm* is Milsark's representation of unstressed *some*.
[3] In (3d), % indicates that context is required for well-formedness. See Ward and Birner (1995) for evidence that in context, the pivot can be a pronoun, proper name, or definite DP.

Elsewhere, when the clause is not existential and the predicate is not individual-level, the weak-strong distinction is irrelevant, as (5) shows.

(5) a. Sm students are available.
b. Students are available. [= at least two students, or the generic student]
c. Every student is available.
d. Joe is available.

Since Milsark's original research, many others have attempted to construct syntactic, semantic, or pragmatic theories from which DE1 or DE2 might follow. But despite the intensity of this research effort, no consensus has emerged on what the ultimate account of either effect might be. (For a sampling of approaches to DE1, see e.g. Safir 1985, Reuland and ter Meulen 1987, Lumsden 1988, Freeze 1992, McNally 1992, Zucchi 1995, Keenan 2003, and Hazout 2004; for DE2, see Carlson 1977, Diesing 1992, Ladusaw 1994, and Kratzer 1995.) The tack I take here will be to try to get at this larger issue by probing one particular corner of the weak-strong distinction—the phenomenon of *possessor dominance*.

Under certain conditions in certain languages, the strength or weakness of a possessed DP is determined by the strength or weakness of the possessor. This phenomenon, which I call possessor dominance (PD), has been investigated in several familiar Indo-European languages; see e.g. Woisetschlaeger (1983), Barker (2000), and Rawlins (2006) on English, and Milner (1982) and Flaux (1992, 1993) on French. However, little is known about PD cross-linguistically, or about what the phenomenon can tell us about the best account of the definiteness effects (but see Rawlins 2006 on DE1). In what follows, I add to the cross-linguistic documentation of PD by exploring possessors and definiteness effects in two Austronesian languages, Maori and Chamorro. I then use the Chamorro version of PD to argue that DE2 does not follow from the syntax of Logical Form, as proposed by Diesing (1992), but rather from a semantics-pragmatics enriched by the Brentano-Marty-Kuroda theory of judgment types, as proposed by Ladusaw (1994).

Section 2 of this paper uses PD in English to raise some initial questions about what one might expect of the PD phenomenon cross-linguistically. With these questions in hand, I turn to the languages under investigation: Maori, a Polynesian language of New Zealand, and Chamorro, a Western Malayo-Polynesian language of the Mariana Islands. Section 4 establishes that Maori has both of Milsark's definiteness effects, but no PD; hence, PD is not universal. Section 5 establishes a more intricate pattern for Chamorro. This language has both of Milsark's definiteness effects, plus a third, language-particular definiteness effect, but it exhibits PD only for the purposes of DE2. Section 6 argues that the Chamorro version of PD cannot be dismissed as some completely different phenomenon. In section 7, I show that Ladusaw's (1994) semantic-pragmatic account of DE2 can be generalized to PD in Chamorro,

but Diesing's (1992) syntactic account of DE2 cannot. This provides the argument in favor of a semantic-pragmatic explanation of this definiteness effect. Finally, Section 8 concludes.

2 POSSESSOR DOMINANCE IN ENGLISH

The idea that the strength or weakness of possessed DP's in English is determined by the strength or weakness of the possessor goes back to Woisetschlaeger (1983), who attributes the observation to Ray Jackendoff. Consider the existential clauses in (6), in which the pivot is a possessed DP. What Jackendoff noticed is that exactly when the *possessor* of the pivot is weak, the existential clause is well-formed. For instance, the possessor can be a DP headed by *sm* (6a) or a bare plural with a cardinal interpretation (6b), but it cannot be a DP headed by *every* (6c); and in the absence of context, it cannot be a proper name (6d).

(6) a. There are [sm students]' notebooks at the back of the lecture hall.
b. There are [students]' notebooks at the back of the lecture hall. [= at least two students]
c. *There are [every student]'s notebooks at the back of the lecture hall.
d. %There are [Meg]'s notebooks at the back of the lecture hall.

To restate Jackendoff's observation in the terms used here, English has PD in existential clauses. (For further discussion, see Barker 2000 and Rawlins 2006.)

Although it appears not to have been noticed before, English also has PD in clauses with individual-level predicates. Consider the clauses in (7), in which an individual-level predicate has a subject that is a possessed DP. These clauses are well-formed exactly when the possessor of the subject is strong. For instance, the possessor can be a bare plural with a generic interpretation (7b), a DP headed by *every* (7c), or a proper name (7d), but it cannot be a DP headed by *sm* (7a).

(7) a. *[Sm students]' parents are neurotic.
b. [Students]' parents are neurotic. [= the generic student]
c. [Every student]'s parents are neurotic.
d. [Joe]'s parents are neurotic.

PD is thus quite general in English; it holds for both of Milsark's definiteness effects.[4]

[4] As a reviewer observes, PD-like effects can also be observed in other English constructions that have been claimed to involve semantic scope or syntactic c-command. For instance, bound variable pronouns can be anteceded not only by subjects (as in *No girl$_i$ thinks she$_i$ will lose*) but also by possessors of subjects (as in *No girl$_i$'s parents think she$_i$ will lose*; see Reinhart, 1987; Barker, 1991). Negative polarity items can be anteceded not only by downward-entailing operators that are subjects (as in *No current student has ever been to Moscow*) but also by downward-entailing operators that are possessors of subjects (as in *No current student's parents have ever been to Moscow*; see Barker, 1991; Keenan, 1996).

These patterns raise the larger issue of how the strength or weakness of possessed DP's is determined more generally in natural language. Although it would be impossible to list all the imaginable scenarios, they certainly include the following.

On the one hand, it might be that all languages—or, at any rate, all languages with definiteness effects—calculate the strength or weakness of possessed DP's from the strength or weakness of their possessors. (This idea may be implicit in Baker 2006.) If so, PD would be universal.

On the other hand, it is conceivable that PD emerges only when certain design features are exhibited by the syntax and semantics of possession. Such characteristics must, obviously, be present in English, since English has PD. If we concentrate for the moment on *'s*-possessors in English (the so-called Saxon genitive), we can easily identify some candidates for the relevant design features.

'S-possessors are well known to be in complementary distribution with determiners, and have been treated semantically as determiners by Keenan and Stavi (1986). Since Abney (1987), *'s*-possessors have been assumed to occupy a high syntactic position within DP—the specifier of D. Further, it is often claimed that DP's with an *'s*-possessor in their specifier are understood as definite (for detailed discussion of this claim and a more nuanced view, see Peters and Westerståhl 2006). Putting these observations together, we might speculate that a possessor determines the strength or weakness of the possessed DP only when one or more of the following conditions holds (but which one(s)?).

(8) *Some conjectures concerning necessary conditions for PD*
a. The possessor and determiner are in complementary distribution;
b. The possessor is syntactically 'high' (e.g. in the specifier of D);
c. The possessed DP is interpreted as definite.

We might speculate further that when a possessor determines the strength or weakness of the possessed DP, it does so for the purposes of both of Milsark's definiteness effects. In other words, PD is not selective.

(9) *A further conjecture*
When PD occurs, it holds across the board (i.e. for DE1 and DE2).

How plausible are these conjectures? We do not have to go far to encounter evidence that some of them cannot be right. In a discussion of English existentials and the semantics-pragmatics of determiners, Rawlins (2006) shows that the pivot can routinely be a relational

DP headed by *the*, as long as the relational noun has a weak possessor introduced by the preposition *of* (see also Poesio 1994; Barker, to appear). The examples in (10) make the point that it is the strength or weakness of the *of*-possessor, not the determiner, that governs well-formedness here. In other words, this is another instance of PD.

(10) a. There were the tops of [sm jam jars] on the counter.
b. There were the tops of [jam jars] on the counter. [= at least two jam jars]
c. *There were the tops of [most jam jars] on the counter.
d. %There was the top of [the jam jar] on the counter.

Obviously, the possessor in these examples is not in complementary distribution with the determiner (*the*); nor is it located particularly high within DP, given that it is realized to the right of the relational noun. The fact that PD nonetheless occurs reveals that even in English, the necessary conditions for this phenomenon do not include (8a) or (8b). Similar sorts of evidence can be found in French; see Milner (1982) and, for some complications that arguably do not detract from the overall point, Flaux (1992, pp. 29-31; 1993, pp. 126-127).

It is not quite as straightforward to assess the other conjectures just presented—(8c), (9), and the speculation that PD might be universal. What is needed is evidence from a wider range of languages concerning the syntax and semantics of possessors and their interaction with Milsark's definiteness effects. With this goal in mind, I turn next to Maori and Chamorro.

3 SOME BACKGROUND AND A PREVIEW

The two languages to be investigated below, Maori and Chamorro, belong to different branches of the Austronesian family, which is one of the world's largest language families, both in terms of number of languages and the geographical area over which these languages are dispersed.

Despite this vastness, there are some morphosyntactic characteristics that recur throughout the family. Most Austronesian languages are head-initial and permit the predicates of clauses to be of any major category type. In many of the languages, the unmarked word order of clauses is predicate-initial (e.g. verb-initial); null arguments are possible; and the voice system is 'symmetric', meaning that there appears to be more than one pragmatically neutral voice.[5] In Austronesian languages with determiners, the determiner typically precedes the noun, whereas the possessor typically follows. This word order makes it *a priori* unlikely that possessors and determiners would be in complementary distribution. (I will show later that possessors and determiners are not in complementary distribution in either Maori or Chamorro.) The languages are diverse in other respects; for instance, in their determiner

[5] Because the voice system in e.g. Maori is 'symmetric', clauses that are structurally passive are often most naturally translated into active clauses in English.

systems, in the expression of quantification and negation, in the means by which grammatical relations are signaled, and in the form of their existential clauses.

Along all of these dimensions, Maori and Chamorro are typical Austronesian languages. Maori, a Polynesian language of New Zealand, is an endangered but extensively documented language that has been the focus of intense revitalization efforts since the early 1980's. Chamorro, a Western-Malayo-Polynesian language of the Mariana Islands, is an under-documented language with little written literature whose percentage of younger fluent speakers is rapidly declining.

Both languages have a predicate-initial word order not easily handled by the Principles and Parameters toolkit. Nonetheless, it can be shown that their clauses and DP's have essentially the same hierarchical syntactic organization as in more familiar languages. Readers will find it most convenient to assume 'standard' hierarchical clause structures for Maori and Chamorro and to suppose that precedence relations are determined post-syntactically (so that the left-to-right order of words in the examples is not syntactically significant). For an investigation of Chamorro clause structure that attempts to represent precedence relations in the syntax, see Chung (1998).

I show in the following sections that Maori and Chamorro exhibit both of Milsark's definiteness effects. Maori does not have PD at all; hence, PD is not universal. Chamorro does have PD, but only in clauses with individual-level predicates, not in existential clauses. This is evidence against the conjecture that when PD occurs, it holds across the board.

4 POSSESSORS AND DEFINITENESS EFFECTS IN MAORI

4.1 Basics

Maori is a head-initial, null argument language. Clauses are projected from a tense-aspect-mood category which occurs at the left. Then comes the predicate, which can be of any major category type, followed by the predicate's arguments and adjuncts. The word order of arguments and adjuncts following the predicate is flexible, but the unmarked word order is Predicate Subject Complements Adjuncts.[6]

[6] Many of the Maori examples cited are from twentieth-century written sources, including grammars, pedagogical materials, a traditional history of the Tainui people (Jones & Biggs, 1995) and an English-Maori dictionary (Ngata, 1994). Examples not attributed to any source were generously provided by Te Haumihiata Mason, J. W. Milroy, T. S. Karetu, and Tamati Reedy, whose insightful engagement with the linguistic issues I gratefully acknowledge.

Examples are presented in the orthography of the original sources, except that long vowels are represented as vowels with a macron, not as double vowels. The following abbreviations are used: aforem 'aforementioned', DO 'direct object', Ident 'identificational', Nmlz 'nominalization', Pass 'passive', Pers 'personal article', pl 'plural', Pred 'predicate', T 'tense-aspect-mood'.

(11) Ka hari-a atu te kōrero e Tū-whakahekeao ki a Maniapoto.
T take-Pass away the news by Tū-whakahekeao to Pers Maniapoto
'Tū-whakahekeao took the news to Maniapoto.' (Jones & Biggs, 1995, p. 187 [25.7])

Subjects (e.g. *te kōrero* 'the news' in (11)) are not accompanied by any special morphology; nonsubjects are generally realized as the complements of prepositions.

DP's are projected from a determiner that occurs at the left. Because quantification in Maori is expressed outside the determiner system, there are few if any determiner quantifiers (see Bauer, 1997). Among the determiners are the definite article *te* (plural *ngā*) and various demonstratives, plus two indefinite articles, *tētahi* (plural *ētahi*) and *he*.

(12) a. te kaumātua / he kaumātua
the old.person a old.person
'the elder / an elder'
b. nga tāngata / tētahi tangata
the.pl men a man
'the people / a person'

Exactly what the contrast is between the two indefinite articles has been the subject of lively debate. Elsewhere, William A. Ladusaw and I have proposed that *he* and *tētahi* signal different modes of semantic composition: *tētahi* signals that the property content of the indefinite is composed with the predicate by function application, whereas *he* signals that the property content of the indefinite is composed by the nonsaturating operation we call Restrict (see Chung and Ladusaw, 2004, henceforth C&L). Although our theory is not directly relevant here, four observations documented in C&L will prove useful below.

First, *tētahi* can occur immediately after a preposition, but *he* cannot (C&L, 28-30).

(13) a. I haere ia ki tētahi kura i Ākarana.
T go he to a school in Auckland
'He went to a school in Auckland.' (Waititi, 1969, p. 57)
b. *Ka haere a Mere ki he whare.
T go Pers Mere to a house
('Mere went to a house.')
c. Tuhi-a rānei he kōrero mō tētahi pūrākau taniwha e mōhio ana koe.
write-Pass or a story T.of a legend taniwha T know you
'Or write a story about a taniwha legend that you know.' (Karetu, 1974, p. 57)

Second, indefinites headed by either *he* or *tētahi* can serve as the subjects of episodic sentences (C&L, 31).

(14) a. Tae noa mai he tāngata.
arrive freely to.here a people
'Some people arrived.' (Jones & Biggs, 1995, p. 81 [8.4])
b. Ka tae mai tētahi taraka tino nui.
T arrive to.here a truck very big
'A huge truck came.' (Waititi, 1969, p. 43)

Third, indefinites headed by either article can have narrow scope with respect to semantic operators. One such operator is sentential negation, which in Maori is typically expressed by a higher negative verb (C&L, 36-37). The negative verbs in (15) are *kāore* and *kore* (*tētehi* in (15b) is a dialectal form of *tētahi*).[7]

(15) a. Kāore he tangata i āta-kite.
T.not a person T clearly-see
'No one actually saw it.' (Jones & Biggs, 1995, p. 85 [8.10])
b. Kore rawa tētehi o t-a-na ope i wehi.
not at.all a of the-of-him war.party T afraid
'None of his war party showed fear.' (Jones & Biggs 1995, 285, p. [45.13])

Fourth and finally, as will be shown in a moment, *he* is sometimes weak, but *tētahi* is always strong.

4.2 Definiteness Effects

To show that a language exhibits Milsark's definiteness effects, one must give a weak-strong classification of the language's DP's, and show that the pivots of existential clauses and the subjects of individual-level predicates respect that classification. I do this now for Maori.[8]

Consider (16), which gives a partial classification of Maori DP's as weak or strong. The most noteworthy aspect of this classification is that the indefinites are split: DP's headed by

[7] However, only *tētahi* can have wide scope with respect to semantic operators; *he* cannot (see C&L, 33-41 for discussion).

[8] Importantly, at this initial stage, the investigation need not involve any *a priori* commitment to an independent semantic characterization of weak and strong DP's. Given how little is currently known about the empirical profile of definiteness effects across languages, this strikes me as appropriate.

tētahi are simply strong, whereas DP's headed by *he* are weak when interpreted existentially, but strong when interpreted generically.

(16) *A partial snapshot of weak and strong DP's in Maori*

WEAK	STRONG
he NP [existential]	*he* NP [generic]
	tētahi NP
	te NP
	pronouns
	proper names
	etc.

The classification claims that the pivots of existential clauses in Maori are headed by existential *he*, but not by any of the strong determiners. This is indeed so, although some syntactic complexity must be sorted through before the facts can emerge. Affirmative existential clauses in Maori consist simply of a pivot DP headed by existential *he*, which I analyze as the pivot of a null existential predicate. The construction occurs in its most minimal form in (17a), and accompanied by locative and temporal modifiers in (17b-c).[9]

(17) a. He taniwha.
a taniwha
'There are taniwhas.' (Bauer, 1997, p. 34)

b. He aitua i runga i te huarahi i te ata nei.
an accident on top DO the road at the day this
'There was an accident on the road this morning.' (Ngata, 1994, p. 3; entry for *accident*)

c. He tuna no roto i nga awa.
a eel T.of inside DO the.pl river
'There were eels in the rivers.' (Jones & Biggs, 1995, p. 195 [27.3])

Negative existential clauses consist of a negative verb whose internal argument, the pivot, is a DP headed by existential *he*.

[9] The claim that affirmative existential clauses have an (unpronounced) existential predicate makes them structurally parallel to negative existentials; see (18). Importantly, the predicate of these clauses is *not* the DP headed by *he*. Maori uses a special form of sentential negation (i.e. the negative verb *ēhara*) for clauses with DP predicates. For instance:

(i) Ehara a ia i te ākonga noa iho.
T.not Pers she Pred learner freely down
'She is no mean scholar.' (Ngata, 1994, p. 273; entry for *mean*)

Existential clauses do not employ this special form of negation, but instead use the negative verbs appropriate for predicates that are verbs or locative prepositional phrases (e.g. *kāore* and *kore*).

(18) a. Kāore he wāhine o runga i t-ō rātau waka
T.not a women of top DO the-of them canoe
'There were no women on their canoe.' (Pōtatau, 1991, p. 10)

b. ānō kāore he kino i waenganui i a rātou.
as.if T.not a bad in between DO Pers them
'As if there were no quarrel between them.' (Jones & Biggs, 1995, p. 285 [45.12])

c. Kāore he take i tua atu i tēnā?
T.not a reason at behind away DO that
'Isn't there any reason beyond that?' (Karetu, 1974, p. 165)

Neither type of existential allows the pivot to be a DP headed by *tētahi*, *te*, or any other strong determiner. In affirmative existentials, this might conceivably be because the construction, for whatever reason, must exhibit *he* at its left edge (see e.g. Bauer, 1997, p. 34). The pattern is more revealing in negative existentials, given that these clauses display an overt (negative) verb that is clearly distinct from the pivot.

(19) a. *Kāore tētahi take i tua atu i tēnā?
T.not a reason at behind away DO that
('Isn't there any reason beyond that?')

b. *Kāore ētahi taniwha.
T.not a.pl taniwha
('There are no taniwhas.')

c. *Kāore t-ā-ku mahi.
T.not the-of-me work
('I don't have anything to do.'/'There isn't my work.')

The classification in (16) claims further that individual-level predicates in Maori have strong DP's as their subjects, but not DP's headed by existential *he*. And indeed, the subjects of individual-level predicates can be chosen from the full range of strong DP's, as the examples below are intended to suggest.

(20) a. Kei te tika ano nga kupu.
T correct exactly the.pl word
'The words are exactly right.' (Williams, 1971, p. 416)

b. He pōhara ētahi kaumātua.
Pred.a impecunious a.pl old.person
'Some old people are impecunious.' (Ngata, 1994, p. 217; entry for *impecunious)*

c. Rite tonu koe ki te poaka ki te kai.
similar quite you to the pig at the eat
'You're just like a pig at eating.' (Waititi, 1962, p. 75)

d. Ka mōhio-tia e Pita tētahi mahi toi.
T know-Pass by Pita a practice art
'Peter will know a craft.'

Subjects of individual-level predicates can also be headed by *he* in its generic interpretation.

(21) a. Ka makariri he tangata.
T cold a person
'People (in general) get cold.'

b. Ka moata he pahi, ki te reri mai koutou.
T early a bus if ready to.here you.pl
'Buses will be early, if you're ready.'

But crucially, they cannot be headed by existential *he*.

(22) a. *Ka tika he kōrero.
T correct a story
('A story is right.')

b. *I rite he rangatira rongonui ki a ia.
T similar a chief famous to Pers him
('A famous chief was like him.')

c. *Ka moata he pahi. Ka whakarere-a mātou.
T early a bus T leave.behind-Pass we
('A bus was early. We were left behind.')

d. *Ka mōhio-tia e Pita he mahi toi.
T know-Pass by Pita a practice art
('Pita will know a craft.')

(Some of the examples above make the point that many English predicates that are stage-level have Maori counterparts that pattern as individual-level; see C&L, 57-58.)

Maori, in short, exhibits both of Milsark's definiteness effects. Let us turn next to the syntax of possession and to the issue of whether Maori has PD.

4.3 The syntax of possession

Possessors in Maori are realized as complements of the prepositions *a* or *o*. The choice of *a* or *o* is determined by the possessor's semantic relation to the possessed: when the possessor dominates or is in control of the possessed, *a* is chosen; otherwise, *o* is chosen (Bauer, 1997, pp. 390-391). In the unmarked word order, the possessor PP occurs immediately after the possessed N.

(23) a. te waiata [a Horomona]
the song of Solomon
'Solomon's song' (Biggs, 1969, p. 46)

b. taua whaea [ō-na]
the.aforem mother of-him
'that mother of his' (Bauer, 1997, p. 406)

However, given the right choice of determiner, the possessor PP can instead occur to the left of N, in which case the preposition *a* or *o* fuses phonologically with the determiner.[10] This option is preferred when the possessor is pronominal but possible more generally, as long as the possessor is not too complex (see Bauer, 1997, pp. 404-405).

(24) a. t-ā Horomona waiata
the-of Solomon song
'Solomon's song' (Biggs, 1969, p. 46)

b. ō-na whakaaro
of-him thought
'his beliefs' (Ngata, 1994, p. 356; entry for *private*)

The word order in (24) provides one indication that possessor PP's are merged higher than other PP's within the structure of DP. Although complements and adjuncts to N in Maori are also realized as PP's, none of these other PP's can occur to the left of N. Taking these precedence relations to be revealing of hierarchical structure, I will assume that possessor PP's are merged as the specifier of some head below D—perhaps N—and that this word order is reflected transparently in (24). The analysis of the N-initial word order in (23) then poses essentially the same syntactic challenge as the analysis of Maori's verb-initial clauses (see (11) and, for further discussion, Bauer, 1997 and Chung, 1998, pp. 170-172).

[10] The word order shown in (24) is allowed only when the determiner is the definite article or, I claim, the indefinite article *he*. Its morpho-phonological consequences include the following: (i) The vowel of the preposition lengthens. (ii) When the determiner is definite singular, the fused complex of determiner plus preposition begins with *t*; otherwise, the determiner is not pronounced.

Observe, finally, that in examples like (23), the possessor is not in complementary distribution with the determiner. Just as important, the possessor and the determiner can co-vary freely: it is possible for an indefinite possessed DP to have a definite possessor (see (25b-c)), and vice versa (25d).

(25) a. nga wā [o te pakanga]
the.pl time of the war
'the times of war' (Ngata, 1994, p. 11; entry for *ally*)

b. tētahi wāhi [o te whenua]
a part of the land
'a part of the land' (Ngata, 1994, p. 17; entry for *appropriate*)

c. he kōpaka [o te kai]
a shortage of the food
'a shortage of food' (Ngata, 1994, p. 426; entry for *shortage*)

d. ngā kupu [o tētahi waiata]
the.pl word of a song
'the words of a song' (Karetu, 1974, p. 76)

The only systematic gap in this pattern of co-variation involves the indefinite article *he*. Because possessors are realized as complements of prepositions, but *he* cannot occur immediately after a preposition (see (13)), it is impossible for a possessor in Maori to be a *he*-indefinite.

4.4 Possessor dominance

We are now ready to ask whether Maori has PD. The issue is whether, for the purposes of Milsark's definiteness effects, a weak possessor can cause a possessed DP to count as weak, or a strong possessor can cause a possessed DP to count as strong. Now, because Maori has no possessors that are *he*-indefinites, and therefore no weak possessors at all, we can perform the experiment only for possessors that are strong. Nonetheless, the results of this half of the experiment are revealing.

A strong possessor cannot prevent a possessed DP from serving as the pivot of an existential clause. Consider the existential clauses in (26-27), which illustrate one common way of expressing existential 'have' in Maori. If the strength of the possessor dictated the strength of the entire possessed DP, all of these clauses should be ungrammatical, because all of them have a pivot whose possessor is strong. What actually happens is that the strength or weakness of the pivot is determined in the usual way, by the content of D. Pivots headed by existential *he* count as weak.

(26) a. He mana tipua [o Māui].
a power abnormal of Māui
'Māui possessed abnormal powers (lit. There were abnormal powers of Māui).' (Ngata, 1994, p. 1; entry for *abnormal*)

b. Kaore he reo [o te kararehe].
T.not a language of the animal
'Animals lack speech (lit. There is no speech of animals).' (Ngata, 1994, p. 443; entry for *speech*)

c. I tēnei ra, kāore he hara [o tēnei tangata].
on this day T.not a sin of this man
'On this day, this man is blameless.' (Waititi, 1969, p. 74)

d. Kāore kē he tamaiti ake [a Te Puea].
T.not instead a child own of Te Puea
'Te Puea had no child of her own.'

Pivots headed by *tētahi* and other strong determiners count as strong.

(27) *Kāore kē tētahi tamaiti ake [a Te Puea].
T.not instead a child own of Te Puea.
('Te Puea had no child of her own.')

Further, a strong possessor cannot 'empower' a possessed DP to serve as the subject of an individual-level predicate. In the clauses in (28-29), the subject of an individual-level predicate has a strong possessor. If the strength of the possessor dictated the strength of the entire subject, all of these clauses should be grammatical. Instead, the strength or weakness of the subject is determined once again by the content of D. Subjects headed by existential *he* count as weak.

(28) *Ko Kawiti he tino rangatira [o Ngā Puhi].
Ident Kawiti a very chief of Ngā Puhi
('A true chief of Ngā Puhi was Kawiti.')

Subjects headed by strong determiners, such as *tētahi*, count as strong.

(29) a. Ko Kawiti tētahi [o ngā tino rangatira [o Ngā Puhi]].
Ident Kawiti a of.the.pl very chief of Ngā Puhi
'One of the true chiefs of Ngā Puhi was Kawiti.' (NTTR, 32)

b. He whakamatemate anō tētahi taha [o te āhua tangata].
Pred.a curious again a side of the character person
'A part of human nature is curiosity.' (Ngata, 1994, p. 211; entry for *human nature*)

c. He tōnui ētahi wāhi o Te Tairāwhiti mo te kaimoana.
Pred.a prolific a.pl part of the East.Coast for the sea.food
'Some parts of the East Coast are prolific in sea food.' (Ngata, 1994, p. 359; entry for *prolific*)

The conclusion seems clear that Maori does not have PD. This in turn suggests that PD is not universal.

A natural question to raise at this point is whether the absence of PD in Maori might be connected to any other properties of the language. If PD were to emerge only when possessed DP's are interpreted as definite (see (8c)), we might be able to attribute the absence of PD in (28) to the fact that it is impossible to give a definite construal to a DP headed by *he*. It is not clear to me at present how to explore this possible connection further in Maori. But because the issue also arises, ultimately, in Chamorro, let me turn to that language next.

5 POSSESSORS AND DEFINITENESS EFFECTS IN CHAMORRO

5.1 Basics

Like Maori, Chamorro is a head-initial, null argument language. Clauses are projected from a tense-aspect-mood category which occurs at the left, but is often unrealized. This category is followed by the predicate, which can be of any major category type, and then by the predicate's arguments and adjuncts. Although the relative order of arguments and adjuncts is flexible, the unmarked word order of clauses containing verbs is Verb Subject Complements Adjuncts.[11]

[11] Most of the Chamorro examples cited were generously provided by Manuel F. Borja, Maria T. Quinata, and others acknowledged in Chung (1998). I owe a continuing debt to these speakers for their insights, help, and friendship. Other examples cited are from oral narratives collected by Cooreman (1982, 1983), news articles, or stories and essays (Borja, Borja & Chung, 2006).

All Chamorro examples are cited in the orthography used in Chung (1998). The following abbreviations are used: agr 'agreement', AP 'antipassive', Comp 'complementizer', Imperf 'imperfect', L 'linker', Loc 'locative morphological case', nom 'nominative', obj 'objective', Obl 'oblique morphological case', Prog 'progressive', Q 'question', WH 'Wh-Agreement'. Note that infixes are italicized.

(30) Ha-po'lu tä'lu tatti si nana-hu i lata gi päpa' i hägu-n galak.
agr-put again back mother-agr the can Loc under.L the leaf-L galak
'My mother put the can back again under the *galak* leaf.' (Borja, Borja & Chung, 2006, p. 98)

Unlike Maori, Chamorro has a fair amount of inflectional morphology, including case marking, subject-verb agreement, and possessor-noun agreement. Both subjects and direct objects appear in the unmarked morphological case. Other arguments appear in the oblique or locative morphological cases, or are realized as complements of prepositions (see Chung, 1998).

DP's are projected from a determiner that occurs at the left. Among the determiners are the definite article *i*, the null indefinite article, the indefinite article *un*, and various quantifiers, including *käda* 'each', *todu* 'all', *meggai* 'many', and *bula* 'much, many'.

(31) a. i gima' / guma' / un guma'
the house house a house
'the house / a(ny) house / a house'

b. käda palao'an / meggai na famalao'an
each woman many L women
'each woman / many women'

The contrast between Chamorro's null indefinite article and the indefinite article *un* is different from what we saw earlier for Maori's two indefinite articles. The null indefinite article is the Chamorro counterpart of Maori *he*: it signals that the property content of the indefinite is composed by Restrict. But Chamorro *un*—like English *a*—signals nothing at all about how the property content of the indefinite is composed. As a result, *un* and the null indefinite article pattern alike in many respects, but not all.

First, indefinites headed either by the null indefinite article or by *un* can serve as subjects of episodic sentences.

(32) a. Änai ma-bäba, h*um*uyung patgun.
when agr-open agr.out child
'When they opened it, a child emerged.' (Cooreman, 1983, p. 107)

b. Mimilalak ginin i kännat un balutan magagu.
agr.float.Prog from the channel a bundle.L clothes
'A bundle of clothes came floating from the channel.' (Cooreman, 1983, p. 107)

Second, indefinites headed by either article can have narrow scope with respect to quantifiers and other semantic operators.[12]

(33) a. Käda taotao ginin *gum*aigi gi otru guma'.
each person Imperf agr.be.at Loc other house
'Each man was in a different house.'

b. Käda taotao ginin *gum*aigi gi un difirentis na guma'.
each person Imperf agr.be.at Loc a different L house
'Each man was in a different house.'

Third, as will be shown immediately, the null indefinite article is always weak, whereas *un* is sometimes strong.

5.2 Definiteness effects

In the chart in (34), I give a partial classification of Chamorro DP's as weak or strong. Notice that the indefinites are split: DP's headed by the null indefinite article are simply weak, whereas DP's headed by *un* have both weak and strong interpretations. (It remains to be determined whether DP's headed by the quantifiers *meggai* 'many' and *bula* 'much, many' have strong as well as weak interpretations; the obscuring factor is discussed later in this section.)

(34) *A partial snapshot of weak and strong DP's in Chamorro*

WEAK	STRONG
ø NP	
meggai NP	
bula NP	
un NP ['a, one']	*un* NP ['one']
etc.	*käda* NP
	todu NP
	i NP
	pronouns
	proper names
	etc.

[12] One complication that is irrelevant here: *un* is an affirmative polarity item (see C&L, 100-103), so it cannot have narrow scope with respect to sentential negation.

This classification can be seen at work in the expected way in existential clauses and clauses with individual-level predicates. In existential clauses, the pivot must be weak. It can, for instance, be a DP headed by the null indefinite article (see (35a) and (35d)) or by any other weak determiner (35b-c), but it cannot be a DP headed by *käda* 'each', *todu* 'every, all' (35e), or the definite article *i* (35d).[13]

(35) a. Guäha hotnu na hotnu-n antigu.
agr-exist oven L oven-L ancient
'There was an oven that was a traditional oven.' (*I Dibota*, 4)

b. Guäha un peskadót na'an-ña si Orasima'.
agr.exist a fisherman name-agr Orasima
'There was a fisherman whose name was Orasima.'

c. Taya' dos pat tres simana disdi ki um-ätungu'.
agr.not.exist two or three week since agr-know.each.other
'There weren't (even) two or three weeks since they got to know each other.'
(Cooreman, 1982, p. 7)

d. Guäha (*i) góf-bunita na palao'an gi kläs-hu.
agr.exist the very-pretty L woman Loc class-agr
'There is a/*the most beautiful woman in my class.'

e. *Guäha todu man-malangu.
agr.exist all WH[nom].agr-sick
('There was everyone who was sick.')

In clauses with individual-level predicates, the subject must be strong. It can, for instance, be a definite DP headed by *i* (36a-b) or an indefinite headed by *un* (36c), but it cannot be an indefinite headed by the null indefinite article (see (36d-g)).

(36) a. Kao chächaflek? Ti ha-tungu' i asagua-hu.
Q agr.quiver.Prog not agr-know the spouse-agr
'Was she dying? My wife didn't know.' (Cooreman, 1983, p. 180)

b. Man-dángkulu i näpu.
agr-big the wave
'The waves were big.'

c. Mu-mäguf un patgon-ña si Julia.
agr-happy one child-agr Julia
'One child of Julia's was happy.'

[13] Very occasionally, I have come across examples in narrative discourse in which the pivot is a definite DP headed by *i* or the demonstrative *ädyu* 'that (near third person)'. However, these constructions are far less frequent than their English counterparts, and they are firmly rejected by speakers in elicitation.

d. Ha-tungu' hit *(i) ma'estra.
agr-know us the teacher
'The/*A teacher knows us.'

e. *Mu-mäguf patgun.
agr-happy child
('A child was happy.')

f. Á'paka' *(i) floris.
agr.white the flower
'The/*A flower is white.'

g. Hayu *(i) siya.
wood the chair
'The/*A chair is wood.'

Chamorro, in other words, exhibits both of Milsark's definiteness effects.

Perhaps less expected is the fact that in addition to DE1 and DE2, Chamorro has a third, language-particular definiteness effect. To see this, notice first that when the subject of an individual-level predicate is realized inside the clause, to the right of the predicate, it cannot be headed by a quantifier, where the quantifiers include the strong determiners *käda* 'each' and *todu* 'every, all' as well as the weak determiners *meggai* 'many' and *bula* 'much, many'.[14] Over and above DE2, that is, Chamorro demands that when the subject of an individual-level predicate is realized to the right of the predicate, it must specify a referential argument, and in this sense must be specific (Chung, 1998, pp. 111-115).[15] This requirement, which is evaded by subjects that have been topicalized (see 7.3) or displaced by wh-movement, is illustrated below.

(37) a. *Ha-tungu' meggai na taotao si tata-hu.
agr-know many L people father-agr
('Many people know my father.')

b. *Che'lu-n Carmen käda lahi gi kuattu.
sibling-L Carmen each boy Loc room
('Each boy in the room is a brother of Carmen's.')

[14] The subject can be realized at the right edge of the clause, in what I take to be the (right) specifier of Infl, or else lowered to right-adjoin to any projection of a verbal or adjectival predicate (Chung, 1998). One could think of the subject as *in situ* whenever it follows the predicate, as long as *in situ* is understood to encompass all the syntactic positions just described.

[15] The DP's that count as specific for the purposes of this restriction are: pronouns, proper names, DP's headed by the definite article *i* or by a demonstrative, and indefinite noun phrases headed by the indefinite *un*, a numeral, or *pälu* '(contrastive) some'. In addition, some speakers permit DP's headed by *todu* 'all' to count as specific, but only when cross-referenced by plural agreement; a smaller number of speakers permit DP's headed by *käda* 'each' to count as specific, but only when cross-referenced by plural agreement (see Chung, 1998, pp. 113-114). I assume that in such cases, what counts as specific is not the entire quantified DP, but rather the (plural) set that supplies its restriction.

Importantly, the patterns illustrated in (36-37) are not limited to individual-level predicates, but also hold for all transitive and unergative predicates in the language. Following Kratzer (1994), Chomsky (1995), and others, let us assume that verbs that are transitive or unergative have a subject that originates in the specifier of the abstract verbal head v and then raises to the specifier of Infl (henceforth, an *external argument*). In Chamorro, when an external argument is realized to the right of the predicate, it must be strong (= chosen from the right-hand column of (34)). It can be headed by the definite article *i*, for instance, but not by the null indefinite article.

(38) a. Ha-akka' yu' *(i) ga'lagu.
agr-bite me the dog
'The/*A dog bit me.'

b. Ginin ha-istótotba yu' *(i) díkiki' na patgun.
Imperf agr-disturb.Prog me the little L child
'The/*A little child was disturbing me.'

c. Mañ-áchalik *(i) lalahi.
agr-laugh.Prog the boys
'The boys/*Boys were laughing.'

Moreover, when an external argument is realized to the right of the predicate, it cannot be headed by a quantifier.

(39) a. *Hafa ha-tätaitai käda patgun?
what? WH[obj].agr-read.Prog each child
('What was each child reading?')

b. *Mañ-échefla bula famagu'un gi sanhiyung.
agr-whistle.Prog many children Loc outside
('Many children are whistling outside.')

In contrast, passive and unaccusative predicates have subjects which are not external arguments, and which can be headed by the full range of determiners in the language. For instance, the derived subject of a passive can be headed by the null indefinite article (see (40a)) or by a quantifier (40b), even when it is realized within the clause, to the predicate's right. So can the subject of an unaccusative predicate (40c-e).

(40) a. Ma-hatsa dángkulu-n mákina pära i tupu.
agr.Pass-build big-L machine for the sugar.cane
'A big machine was built for the sugar cane.' (Cooreman, 1983, p. 36)

b. Ma-na'sinmagagu käda patgun.
agr.Pass-make.be.without.clothes each child
'Each child was made to undress.'

c. K*um*ahulu' dángkulu na häggan.
agr.rise.up big L turtle
'A large turtle rose up.'

d. Änai man-mattu todu siha i man-gäi-asagua.
when agr-arrive all Pl the WH[nom].agr-have-spouse
'When all those who had wives came.' (Cooreman, 1983, p. 65)

e. Lao ti apmam man-mattu meggai hasuli yan tilapia.
but not long agr-arrive many eel and fish.species
'But not long afterwards, many eels and freshwater fish arrived.' (*Pito Nganga'*, 11)

These patterns led me to propose in earlier work that Chamorro has yet another definiteness effect, which I called the External Argument Restriction (EXAR; see Chung, 1998, pp. 100-107). Taking the predicate to mark the left edge of the clause, I state this effect, which is highly reminiscent of DE2, as follows.

(41) *A Chamorro-particular definiteness effect*
DE3: An external argument that is realized inside the clause must be both strong and specific.

Some hard questions arise at this point. What precisely is the theoretical notion of specificity that is relevant to DE3? Are there any Chamorro DP's that are weak but nonetheless count as specific for the purposes of DE3? And if not, might it be that DE3 is not really separate from DE2, but simply represents the way that DE2 happens to be instantiated in Chamorro?

It lies beyond the scope of this study to account for the specificity at play in DE3 (though see Chung, 1998 for a few more details). Accordingly, the discussion below largely ignores the half of DE3 that demands that external arguments must be specific. I will, however, be able to show that Chamorro draws a distinction between DE2 and the other half of DE3, which demands that external arguments must be strong. I will therefore continue to maintain that these two definiteness effects are separate, and that DE2 is (potentially) universal whereas DE3 is Chamorro-particular.[16] The reasons for adopting this stance will become apparent shortly.

[16] As it happens, Maori also has a language-particular definiteness effect similar to DE3 (see Chung, Mason and Milroy, 1995 and C&L for discussion). This effect is not discussed in the text, because it contributes nothing to the understanding of (the absence of) PD in Maori.

Now, on to the syntax of possession.

5.3 The syntax of possession

Possessed DP's in Chamorro contain not only a determiner at the left, but a possessor at the right. The possessor, which appears in the unmarked morphological case, either triggers possessor-noun agreement on the possessed N (see (42a)) or else is 'joined' to N via the inflectional morphology known in Austronesian linguistics as the linker (42b).

(42) a. i nana-ña [i neni]
the mother-agr the baby
'the mother of the baby'

b. i nana-n [i neni]
the mother-L the baby
'the mother of the baby'

Generally speaking, the syntactic categories in Chamorro that trigger morphological agreement come to occupy specifiers that are syntactically 'high' (Chung, 1998). The subject, which triggers subject-verb agreement on verbal or adjectival predicates, is lodged in the highest specifier of the clause, which I take to be the specifier of Infl. Phrases displaced by wh-movement, which trigger Wh-Agreement, are lodged at the left periphery, in what I take to be the specifier of C. The fact that possessors too trigger morphological agreement argues that they too come to occupy a specifier that is syntactically 'high'—presumably, the specifier of D.

Finally, in Chamorro much as in Maori, the possessor and the determiner of a possessed DP coexist and can covary freely. The covariation is, in fact, freer in Chamorro than in Maori. Although possessors in Chamorro are typically strong and specific (i.e. not headed by quantifiers), this is a tendency rather than an absolute requirement. Compare the strong, specific possessors in (43a-d) with the weak possessors in (43e-g).

(43) a. i familiä-nña [esti as Mrs Johnston]
the family-agr this Obl Mrs Johnston
'the family of this Mrs Johnston' (Cooreman, 1982, p. 19-20)

b. pao-ña [i sädduk]
smell-agr the river
'a(ny) odor of the river'

c. dos haga-ña [*pro*] yan unu lahi-ña [*pro*]
two daughter-agr and one son-agr
'two daughters of his and one son of his' (Cooreman, 1982, p. 8)

d. käda saina-n [i famalao'an siha]
each parent-L the women pl
'each parent of the girls'

e. taotao [otru tanu']
person.L other land
'a person of another country' (*Marianas Variety*, 4/15/83)

f. i gapitulu-n [patgon-ña [*pro*]]
the hair-L child-agr
'the hair of her child (lit. of a child of hers)'

g. che'lu-n [tata-ña [si nana-hu [*pro*]]]
sibling-L father-agr mother-agr
'brother of my mother's father (lit. of a father of my mother)' (Borja, Borja & Chung, 2006, p. 100)

To be sure, some examples of possessed DP's with weak possessors can also be analyzed as constructions that do not involve possession at all. (43e), for instance, has an alternative analysis as a complex NP in which the head N *taotao* 'person' has a NP modifier *otru tanu'* 'other country' (compare English compounds of the sort *[foreign visitor] status*). But other examples of weak possessors are not susceptible to this sort of reanalysis. In (43f), the possessor *patgonña* 'her child' is clearly a DP headed by the null indefinite article, not an NP modifier, because it itself contains a possessor—the null pronoun that triggers possessor-noun agreement on *patgun* 'child'. (The location of this morphological agreement reveals that the possessor here is associated with *patgun*, not with the higher N *gapitulu* 'hair'.) Similarly, in (43g), the possessor *tataña si nanahu* 'my mother's father' is a DP headed by the null indefinite article, not an NP modifier, because it itself contains a possessor—the possessed DP *si nanahu* 'my mother'. In short, it is quite clear—and crucial for current purposes—that possessors in Chamorro can be headed by weak or strong determiners.[17]

5.4 Possessor dominance

With this information in hand, let us raise the issue of whether Chamorro exhibits PD. The answer is yes, but with a difference: the definiteness effects that we have been examining diverge.

[17] Readers who are concerned that in (43g), the possessor *tataña si nanahu* 'my mother's father' seems to have a unique referent should see sections 5.4 and 6.

In broad outline, the situation is this. Chamorro does not have PD for the purposes of DE1 or DE3. But the language *does* have PD for the purposes of DE2. Further, because of the confounding factor that transitive individual-level predicates must also conform to DE3, this version of PD emerges only for individual-level predicates that are *intransitive*. Schematically:

Definiteness Effect	Predicate Type Affected	PD?
DE1	existential	no
DE2	individual-level [intransitive]	yes
DE3	transitive / unergative	no

The details, which are rather intricate, are laid out in what follows.

As far as DE1 is concerned, Chamorro does not have PD. A strong possessor does not prevent a possessed DP whose determiner is weak from serving as the pivot of an existential clause. Consider

(44) a. Guäha da'magas-ña [i ayuyu].
agr.exist claw-agr the coconut.crab
'The coconut crab has a claw (lit. there is a claw of the coconut crab).'

b. I taotao mo'na guäha tanu'-ñiha [*pro*] yan lugat-ñiha [*pro*].
the person first agr.exist land-agr and place-agr
'The first men have their lands and places (lit. The first men, there are lands and places of theirs).' (Cooreman, 1982, p. 1)

c. Guäha famagu'un-ñiha [käda taotao gi kuattu].
agr.exist children-agr each person Loc room
'Every person in the room has children.'

d. Taya' kareta-ña si Antonio.
agr.not.exist car-agr Antonio
'Antonio doesn't have a car.'

e. Yänggin esta taya' salappe'-ña [i taotao].
if already agr.not.exist money-agr the person
'If the person has no more money.' (Borja, Borja & Chung, 2006, p. 127)

Nor can a weak possessor enable a possessed DP whose determiner is strong to serve as the pivot of an existential clause. Importantly, this holds true even when the strong determiner is the definite article *i*, as (45) shows.

(45) a. *Guäha i da'magas-ña [un ayuyu].
agr.exist the claw-agr a coconut.crab
('There is the claw of a coconut crab.')

b. Guäha (*i) kustumbre-nña [un patgun] sén-maolik.
agr.exist the habit-agr a child WH[nom].agr.very-good
'There is (*the) character of one child that is very good.'

The ungrammaticality of Chamorro examples of this type offers a striking contrast with the English examples seen earlier in (10).

Further, Chamorro does not have PD for the purposes of the Chamorro-particular DE3. When an external argument that is a possessed DP is realized inside the clause, its strength or weakness is determined by the content of D, not by the strength or weakness of the possessor. Consider the clauses in (46), in which the external argument is a possessed DP whose possessor is strong. These clauses are grammatical when the possessed DP is headed by the definite article *i*, but not when it is headed by the null indefinite article.

(46) a. Ha-ispanta i famagu'un *(i) kätu-n [Dolores].
agr-frighten the children the cat-L Dolores
'The/*A cat of Dolores' frightened the children.'

b. *Ha-na'ma'a'ñao yu' taklalo'-mu [*pro*].
agr-make.afraid me anger-agr
('Anger of yours frightens me.')

c. Kumékuentus ?*(i) atungu'-ñiha [i famalao'an].
agr.speak.Prog the friend-agr the women
'The/?*A friend of the girls was speaking.'

Similarly, when the subject of a *transitive* individual-level predicate is a possessed DP, its strength or weakness is determined by the content of D, not by the strength or weakness of the possessor. Consider (47), in which the subject of such a predicate has a possessor that is strong. Here too, the outcome is well-formed when the possessed DP is headed by the definite article *i*, but not when it is headed by the null indefinite article.

(47) a. Ha-sén-agradesi hit *(i) nana-n [i famagu'un].
agr-very-appreciate us the mother-L the children
'The/*A mother of the children appreciates us.'

b. Ha-tungu' i ansa *(i) ma'estra-n [i famagu'un [Jose]].
agr-know the answer the teacher-L the children Jose
'The/*A teacher of Jose's children knows the answer.'

This makes sense: given that Chamorro's transitive individual-level predicates are transitive verbs, their external arguments must conform to DE3, and as far as DE3 is concerned, there is no PD.

The fact that Chamorro lacks PD for these definiteness effects might seem little different from what was shown earlier for Maori. However, the surprise is that Chamorro *does* have PD for the purposes of DE2. As promised, this phenomenon emerges in exactly one circumstance: when the individual-level predicate is *intransitive*.

To get a feel for this version of PD, consider the clauses in (48-49). Here, the individual-level predicate is intransitive and the subject is a possessed DP headed by the null indefinite article. The point of interest is that despite this weak determiner, the subject DP counts as strong because its possessor is strong—a null pronoun in (48a-b), a proper name in (48c-f), or a DP headed by a strong determiner in (48g-j).

(48) a. Dángkulu kapiya-ña [*pro*] giya Tumon.
agr.big chapel-agr Loc Tumon
'His chapel (lit. a chapel of his) at Tumon is big.' (Cooreman, 1982, p. 45)

b. Hafa na mämpus amariyu kulot-mu [*pro*]?
what? Comp so agr.yellow color-agr
'Why is your color (lit. color of yours) so yellow?' (Borja, Borja & Chung 2006, p. 81)

c. Kohu adeng-ña [si Tun Pedro].
agr.lame leg-agr Tun Pedro
'Tun Pedro has a lame leg.'

d. Chamoru amigu-ña [si Julia].
Chamorro friend-agr Julia
'A friend of Julia's is Chamorro.'

e. Tres añus esta tiempo-nña [si Joaquin] giya Hawaii.
three years already time-agr Joaquin Loc Hawaii
'Joaquin had already spent three years in Hawaii (lit. time of Joaquin's in Hawaii was three years).' (Cooreman, 1983, p. 30)

f. Á'paka' chinina-ña [si Carmen].
agr.white shirt-agr Carmen
'Carmen's shirt is white.'

g. Sa' ti parehu gramatika-nñiha [i dos].
because not agr.similar grammar-agr the two
'Because (the) grammars of the two (languages) are not similar.' (Borja, Borja & Chung, 2006, p. 119)

h. An nuebu kareta-ña [esti i taotao], sessu malägu' na u-fam-a'nu'i
if agr.new car-agr this the person often agr.want Comp agr-AP-show
gi pumälu.
Loc other
'If a man has a new car, he usually wants to show it to others.'

i. Maolek kustumbre-nña [un patgun].
agr.good habit-agr one child
'One child has a good character (but most of the others do not).'

j. Hayu guma'-ña [i nana-n [Maria]].
wood house-agr the mother-L Maria
'Maria's mother's house (lit. a house of Maria's mother) is wood.'

Especially noteworthy are the clauses in (49), in which the subject is a possessed DP whose possessor is itself a possessed DP. Despite the fact that each possessed DP is headed by the null indefinite article, the entire subject counts as strong, because the most deeply embedded possessor is strong.

(49) a. Áttilung gapitulu-n [amigu-n [Jose]].
agr.black hair-L friend-L Jose
'Jose's friend's hair (lit. hair of a friend of Jose's) is black.'

b. Kalaktus päpakis [kätu-n [i famagu'un]].
agr.sharp claw.L cat-L the children
'The children's cat's claws (lit. claws of a cat of the children) are sharp.'

In other words, the PD phenomenon in Chamorro is recursive. (PD in English is likewise recursive; consider examples such as *There was [[someone's] daughter's] umbrella on the porch* and [[*Every linguist's] children's] friends are intelligent*.)

At this point, it is important to pause and consider whether some aspect of possession besides the strength of the possessor might contribute to the grammaticality of (48-49). One might wonder whether the particular subtype of possession is relevant—and indeed, in clauses with PD, the possessed noun is often inalienably possessed (see e.g. (48b, c, g, i)). But closer examination reveals that inalienable possession is not required: the possessed noun can also be a relational noun (48d) or can involve some completely different sort of possession (see e.g. (48a, e, f, h, j)).

One might also wonder whether the interpretation of the possessed noun matters; specifically, whether uniqueness is involved. In clauses with PD, it often happens that the referent of the possessed DP is unique or maximal (see e.g. (48b) and (48g)). If possessed DP's headed by the null indefinite article invariably had referents that were unique, and if DP's with unique referents were always strong, the examples in (48) would straightforwardly satisfy DE2, and PD would be epiphenomenal. However, it is a fact that in Chamorro, possessed DP's headed by the null indefinite article need not have referents that are unique. In some instances, a possessed DP headed by the null indefinite article clearly has a non-unique referent: for instance, (48c) is consistent with Tun Pedro's having one lame leg and one healthy leg; (48d) is consistent with Julia's having friends who are not Chamorro; (48f) is consistent with Carmen's having shirts that are not white (as long as she is wearing a white shirt); and so on. In other instances, a possessed DP headed by the null indefinite article cannot have a unique referent, because it has no referent at all; see the negative existential sentences (44d-e). Finally, possessed DP's headed by the null indefinite article cannot invariably be strong, given that they do not count as strong for the purposes of DE3 (recall (46-47)). There is doubtless more to say about the issue of uniqueness in some of these examples. But for the moment, what matters is that in general, the possessed DP's in (48) count as strong not because of any uniqueness, but because their possessors are strong.

To recapitulate, Chamorro has PD for the purposes of just one definiteness effect—DE2. The contrast between DE2 and the highly similar DE3 makes this especially clear. If DE2 and DE3 really were 'the same effect' in Chamorro, one would expect examples like (48), on the one hand, and (46), on the other, to uniformly manifest, or fail to manifest, PD. The fact that PD occurs in (48), but not in (46c), provides a straightforward argument that these two effects cannot be collapsed.[18]

Further, the Chamorro version of PD emerges only for individual-level predicates that are *intransitive*. This limitation can be traced to a confounding factor: individual-level predicates that are transitive must also conform to DE3, and there is no PD for DE3. I will return later to this idea, in section 7.4. Meanwhile, in the interests of full disclosure, it may help for me to bring together all the patterns involving DE2 and DE3 that have been presented up to this point.

The two charts in (50) summarize how these definiteness effects play out for the various types of Chamorro clauses. In each chart, the cells represent particular combinations of subject and predicate, which are identified as grammatical (√) or ungrammatical (*); in key cases, examples are cited. The columns correspond to types of subjects, e.g. unpossessed subjects with a weak D; the rows correspond to types of predicates, e.g. intransitive individual-level predicates.

(50) a. *A snapshot of the impact of DE2*

	SUBJECT		
PREDICATE	*STRONG D*	*WEAK D AND NO POSSESSOR*	*WEAK D AND STRONG POSSESSOR*
INTRANS INDIVIDUAL-LEVEL	√	* (36e-g)	√ (48-49)
TRANS INDIVIDUAL-LEVEL	√	–see below–	–see below–

[18] Speakers do not find examples like (46c) to be as thoroughly ungrammatical as their transitive counterparts (46a-b). I have no explanation for this.

b. *A snapshot of the impact of DE3*

	SUBJECT		
PREDICATE	*STRONG D*	*WEAK D AND NO POSSESSOR*	*WEAK D AND STRONG POSSESSOR*
W EXTERNAL ARGUMENT	√	* (38, 36d)	* (46-47)
W/O EXTERNAL ARGUMENT	√	√ (40)	√

Together, the charts show that predicates of all types permit subjects whose determiner is strong (see the left column of each chart). Individual-level predicates, and predicates whose subject is an external argument, do not generally permit subjects whose determiner is weak. This holds true without exception when the subject is unpossessed (see the middle column of each chart).[19] It also holds true when the subject is possessed, with one exception: when the individual-level predicate is intransitive, the subject can have a weak determiner—the null indefinite article—as long as its possessor is strong (see the top row of the right column of (50a), which is underlined). In what follows, I zero in on the analysis of this 'exceptional' pattern, which I claim constitutes the Chamorro version of PD.

6 AFFIRMING THAT CHAMORRO DOES HAVE PD

Why does Chamorro have PD for just (one subcase of) one of Milsark's definiteness effects? One way of answering this question would be to try to reduce the Chamorro version of PD to some completely different aspect of the syntax and semantics of (48-49). I have already discussed one such attempt—to derive PD from a uniqueness requirement on possessed DP's headed by the null indefinite article. This section surveys some of the other possible approaches to PD, and the reasons for rejecting them.

6.1 Are possessed DP's definite?

As mentioned in section 2, it has been suggested that English DP's with *'s*-possessors are interpreted as definite. Recalling this, one might think of making a similar proposal for possessed DP's in Chamorro that are headed by the null indefinite article: perhaps these DP's systematically have the option of being interpreted as definite. (Notice that it cannot be that these DP's *must* be interpreted as definite, since they must also be able to count as weak for the purposes of DE1. See (44-45), and compare (45b) with (48i).) Such a hypothesis could

[19] As mentioned earlier, the impact of DE2 on clauses whose individual-level predicates are transitive cannot be determined independently of the impact of DE3.

describe the ability of these DP's to count as strong for DE2 in (48-49). However, it would wrongly predict that DP's of this sort should be able to count as strong wherever they occur. It would therefore leave unexplained the fact that they do not count as strong for DE3 at all (46-47).

6.2 Are nonverbal predicates special?

Another option would be to try to identify some special, language-particular property associated with the Chamorro predicates in (48-49), from which the grammaticality of these clauses might follow. Observing that the predicates in these examples are either adjectives or nouns, one might think of proposing that they are individual-level unaccusatives (see Kratzer, 1995; Rosen, 1997) or perhaps not individual-level at all. Either way, the consequence of whatever special property was posited for these predicates would be that DE2 would somehow be suspended. Such a hypothesis could perhaps deal with (48-49). However, it could not account for examples of the type (36e-g), which argue that in general, predicates that are adjectives or nouns require their subjects to be strong.

6.3 Possessor raising?

Here is yet another, initially rather appealing option. Suppose we make the assumption that the predicates in (48-49) are individual-level unaccusatives. Then one might think of proposing that the possessor has raised out of the possessed DP—a complement of the predicate—to become the subject of the clause. Because the possessor in these sorts of examples is strong, possessor raising would bring the clause into conformity with DE2, and the outcome should be well-formed.

Such a hypothesis dovetails interestingly with what is known about the accessibility of Chamorro possessors to movement. Possessors in Chamorro can be extracted from the possessed DP—for instance, by wh-movement—but only when the possessed DP is headed by the null indefinite article (see Chung, 1998, pp. 286-288). We have already seen that the possessed DP is headed by the null indefinite article in examples of the type (48-49). Further, the hypothesis would enable us to explain the ungrammaticality of (46-47) in terms of the inability of the possessor in these sorts of examples to raise. Crosslinguistically, possessors raise out of the complements of predicates, not out of external arguments (see e.g. Perlmutter and Postal, 1983; much work in Relational Grammar; Massam, 1985; Baker, 1988). Because the possessors in (46-47) are lodged inside external arguments, they should be inaccessible to possessor raising and therefore unable to bring the clause into conformity with DE2.

Tempting though such a hypothesis might be initially, it has two fatal flaws. First, all the morphosyntactic evidence argues that the possessor in examples of the type (48-49) is *not* the subject of the clause. The possessor cannot trigger subject-verb agreement, for instance. Compare (51a), in which the predicate *puti* 'hurt' agrees with a second person singular subject, with the ungrammatical (51b), in which it agrees with the second person singular possessor of the subject.

(51) a. Ti un-puti kumu d*um*iskansa hao.
not agr-hurt if agr.rest you
'You wouldn't hurt if you had rested.'
b. *Ti un-puti ilu-mu [*pro*] kumu d*um*iskansa hao.
not agr-hurt head-agr if agr.rest you
('Your head wouldn't hurt if you had rested.')

The possessor also cannot be spelled out as a weak pronoun, even though this morphological realization is routinely available for subjects of intransitive clauses. Compare the weak pronoun subject in (52a) with the weak pronoun possessor in (52b).

(52) a. Puti yu'.
agr.hurt I
'I hurt.'
b. Puti (*yu') ilu-hu.
agr.hurt I head-agr
'My head hurts.'

The constituent that the morphosyntactic evidence identifies as the subject in these sorts of examples is, instead, the possessed DP. Thus, in (53), the predicate visibly agrees with the possessed DP, which is third person singular in (53a) and third person plural in (53b).

(53) a. Ti u-puti ilu-mu [*pro*] kumu d*um*iskansa hao.
not agr-hurt head-agr if agr.rest you
'Your (sg) head wouldn't hurt if you (sg) had rested.'
b. Mang-alaktus nifen-mu [*pro*].
agr-sharp teeth-agr
'Your (sg) teeth are sharp.'

Second, the hypothesis crucially assumes that in every instance of (what I have been calling) PD, the possessed DP originates as a complement of the predicate. But there are clauses for which such an assumption is untenable. Consider clauses with a prepositional predicate, such as the naturally-occurring instance of PD below.

(54) Disdi i apuya' pära hulu' patti-n [i matlina].
from the belly.button to up part-L the godmother
'The godmother's part was from the belly-button up.' (Cooreman, 1983, p. 41)

In order for the possessed DP *pattin i matlina* 'the godmother's part' to originate as a complement of the preposition *disdi* 'from', the preposition would have to select *two* complements: *i apuya'* 'the belly button' as well as the possessed DP. But given the standard assumption that syntactic branching is binary, such a scenario seems highly unlikely.

Consider next clauses with a nominal predicate, such as (48d-e), (48j), and the following instance of PD, in which the predicate is the noun *Chamoru* 'Chamorro'.

(55) Chamoru asagua-ña [si Jose].
Chamorro spouse-agr Jose
'Jose's wife is Chamorro.'

Now, NP's—and predicate NP's in particular—are known to be islands in Chamorro (see Chung, 1998, pp. 285, 330-331). This means that even if the N *Chamoru* were unaccusative and the entire possessed DP, *asaguaña si Jose* 'a wife of Jose's' were to originate as its complement, there would be no (legal) way for the possessor *si Jose* to become the subject of the clause. To do so, it would need to raise both out of the possessed DP *and out of the predicate NP*; but the latter is an island.

All this argues that possessor raising does not, in the end, provide a viable analysis of clauses of the type (48-49).

6.4 Is it just possessors?

Observe, finally, that if the phenomenon illustrated in (48-49) genuinely is an instance of PD, it should be activated by possessors alone. No other phrasal subconstituent of the subject should be able to bring the clause into conformity with DE2. This prediction turns out to be correct. In (56a), for instance, the subject counts as strong for the purposes of DE2 because its possessor, *i chi'luhu* 'my sister', is strong. But in (56b), the subject counts as weak despite the fact that it contains *i chi'luhu* as well, because that DP does not serve as the possessor, but rather is contained within a PP modifier.

(56) a. Anakku' katta-nña [i chi'lu-hu].
agr.long letter-agr the sibling-agr
'My sister's letter (lit. a letter of my sister) was long.'
b. *Anakku' katta ginin [i chi'lu-hu].
agr.long letter from the sibling-agr
('A letter from my sister was long.')

The only way that a clause like (56b) can conform to DE2 is for the subject to have a strong determiner, as in

(57) Anakku' i katta ginin [i chi'lu-hu].
agr.long the letter from the sibling-agr
'The letter from my sister was long.'

In sum, there is no evading the conclusion that for the purposes of DE2, Chamorro *does* have PD.

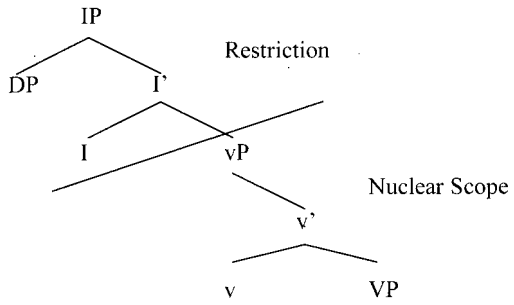
7 In Search of an Account

Having affirmed this, we can take the Chamorro version of PD as an invitation to revisit the theoretical accounts that have been given of DE2. I will focus on two such accounts: Diesing's (1992), which appeals to the syntax of Logical Form, and Ladusaw's (1994), which invokes the Brentano-Marty-Kuroda theory of judgment types.

7.1 Diesing's account

Diesing's (1992) account of DE2 is couched in terms of the Mapping Hypothesis, her theory that there is a single, universal mapping from the Logical Form of the clause to the tripartite semantics of quantification. According to the Mapping Hypothesis, syntactic material outside the category (now called) vP is mapped into the quantifier's restriction; material inside vP is mapped into the nuclear scope.

(58)



Following Heim (1982), Diesing assumes that indefinites and other weak DP's are interpreted as free variables that must acquire their quantificational force from a quantifier or other operator that (unselectively) binds them. She further assumes that the binder of a variable must c-command it in Logical Form. Among the possible binders is the existential quantifier introduced by the LF operation of existential closure, which Diesing claims is adjoined to vP.

These assumptions set the stage for Diesing's explanation of why the subjects of stage-level predicates can be weak, but the subjects of individual-level predicates must be strong. The account runs as follows. Subjects of stage-level predicates originate inside the domain of existential closure, in the specifier of v (or lower). Although these subjects must raise to the specifier of Infl, they can be reconstructed in Logical Form to their vP-internal position, where they can become existentially closed. Hence, they can be weak. But subjects of individual-level predicates originate outside vP, in the specifier of Infl, where they are too high to be caught by existential closure. Hence, they must be strong.

It is obvious that such an account will not generalize to DE2 in Chamorro, precisely because of the Chamorro phenomenon of PD. Here is the problem: Just as in English, individual-level predicates in Chamorro cannot have subjects that originate within vP. If they could, subjects with weak determiners would be able to reconstruct and become existentially closed, and clauses of the type (36e-g) would be wrongly predicted to be grammatical. But if individual-level predicates instead had subjects that originated in the specifier of Infl, subjects with weak determiners but strong possessors would be positioned too high to be caught by existential closure. Clauses of the type (48-49) would therefore be wrongly predicted to be ill-formed.

There seems to be no convincing way out of this dilemma for a Logical Form approach to DE2. In fact, most of the potential exit strategies must be rejected for reasons that have already been discussed.

For instance, it will not work to stipulate that possessed DP's in Chamorro can be definite and therefore do not have to be existentially closed. Such an analytic move would wrongly predict that clauses of the type (46-47) should be grammatical; see the discussion in 6.1.

Nor would it work to suggest that clauses of the type (48-49) are *impersonal* unaccusative clauses. Such a suggestion could potentially bring clauses like (48-49) into conformity with the Mapping Theory: if the possessed DP were to remain within vP and the possessor were to raise covertly to the specifier of Infl in Logical Form, the possessed DP would be caught by existential closure. However, evidence against such a scenario has already been presented; see the discussion around examples (54-55). An additional argument is supplied by subject-verb agreement. Chamorro does, of course, have one classic type of impersonal unaccusative clause—the existential construction. In existential clauses, it is impossible for the internal argument to trigger subject-verb agreement. Agreement is triggered instead by the null expletive subject, which is invariably third person singular.

(59) a. (*Man)-guäha famagu'un gi giput.
agr-exist children Loc party
'There was/*were children at the party.'

b. Pära u-guäha famagu'un gi giput.
Fut agr-exist children Loc party
'There will (sg.) be children at the party.'

However, as was shown earlier in (53), the possessed DP in clauses like (48-49) *must* trigger subject-verb agreement. This contrast with existential clauses argues that the possessed DP is not, after all, the internal argument of an impersonal unaccusative clause: either the clause is not impersonal or the possessed DP is not an internal argument. But then the preconditions no longer obtain for possessor raising in Logical Form.

I conclude that once PD is factored in, Diesing's theory cannot account for DE2 in Chamorro.[20]

7.2 Ladusaw's account

In a brief but influential discussion, Ladusaw (1994) suggests a way of deriving DE2 from the theory of judgment types developed by the philosophers Franz Brentano and Anton Marty and revisited from a modern linguistic perspective by S.-Y. Kuroda. (See also Kuroda, 1972; Horn, 1997; Jäger, 2001; and for a more nuanced view, Kuroda, 2005.) This theory recognizes two fundamental types of judgments—mental or cognitive acts expressed by the utterance of a sentence. Here is how Kuroda (1972, p. 154) describes them.

> ...unlike either traditional or modern logic,...there are two different fundamental types of judgments, the categorical and the thetic. Of these, only the former conforms to the traditional paradigm of subject-predicate, while the latter represents simply the recognition or rejection of material of a judgment. Moreover, the categorical judgment is assumed to consist of two separate acts, one, the act of recognition of that which is to be made the subject, and the other, the act of affirming or denying what is expressed by the predicate about the subject. With this analysis in mind, the thetic and the categorical judgments are also called the simple and the double judgments (*Einfache Urteil* and *Doppelurteil*).

[20] See also Jäger (2001), who argues that Diesing's theory cannot account for the facts of German word order.

In Ladusaw's (1994) terms, *categorical judgments* first present an individual and then affirm or deny a property of that individual. *Thetic judgments* simply affirm or deny the presentation of an individual or eventuality; for Ladusaw, they affirm or deny a description. The DP that expresses the 'psychological subject' of a categorical judgment, as Horn (2001[1989], p. 511) calls it, is often but not always the syntactic subject. For instance, in Japanese, according to Kuroda (1972), this DP is the left-peripheral topic marked by *wa*.

Ladusaw's proposal for deriving DE2 from the theory of judgment types goes like this: Individual-level predicates denote properties, and properties always form the second part of the basis for a categorical judgment. Strong construals of DP's can denote individuals, whereas weak construals cannot. (Weak construals denote descriptions.) Only individuals can form the first part of the basis for a categorical judgment. Therefore, subjects of individual-level predicates must be strong.

Can this account be generalized to DE2 in Chamorro? I believe it can. The key lies in the imperfect fit between syntactic subjects, on the one hand, and the psychological subjects of categorical judgments, on the other.

Consider the Chamorro sentences with individual-level predicates that were discussed in 5.2 and 5.4. In Ladusaw's world, these sentences express categorical judgments. The question of interest is how the individual that forms the first part of the basis for the judgment is supplied. Suppose we claim that in Chamorro, this individual can be supplied by the syntactic subject *or* by the possessor of the subject, if there is one. Then most of the patterns summarized in the chart in (50a) fall into place.[21]

When there is no possessor, the individual that forms the first part of the basis for the judgment must be supplied by the syntactic subject. The subject must therefore be strong—it cannot be headed by a weak determiner (see (36)). The property that forms the second part of the basis for the judgment is supplied, as expected, by the individual-level predicate.

When the subject has a possessor, the individual that forms the first part of the basis for the judgment can, in principle, be supplied by the syntactic subject (= the entire possessed DP) or by the possessor. The second option provides the explanation of the 'exceptional' pattern in (48-49). In these sentences, the possessed DP cannot supply an individual, since it is headed by

[21] For simplicity, I ignore the fact that the possessor must be defined recursively to handle (49). The absence of PD when the individual-level predicate is transitive (47) is discussed later, in 7.4.

the null indefinite article—a weak determiner—and consequently denotes a description. (Recall from 5.1 that these Chamorro indefinites must be composed by C&L's nonsaturating operation Restrict.) It is, instead, the possessor that must supply the individual; therefore, the possessor must be strong. The property that supplies the second part of the basis for the judgment is the (complex) property denoted by the rest of the sentence (see e.g. Partee, 1999). The result is a categorical judgment similar to the judgments expressed by English sentences formed with individual-level *have* (see Schafer, 1995). Note, in this connection, that most of the examples in (48-49) can be given English translations with *have*; 'He has a big chapel at Tumon' (48a), 'Why do you have such a yellow color?' (48b), and so on. Another English parallel, observed by Lisa Travis (personal communication), can be found in sentences with complex past participles of the type *She is short-waisted / open-minded / cold-blooded.* Significantly, these participles are usually formed from adjectives that are individual-level, not stage-level; compare *long-toed, black-eyed*, and *brown-haired* with **warm-toed*, **sick-eyed*, and **dirty-haired.*

The upshot is that Ladusaw's theory succeeds in deriving DE2 in Chamorro, including the Chamorro version of PD. The crucial claim is that in this language, the psychological subject of a categorical judgment can be expressed by the syntactic subject or by its possessor.

7.3 Further evidence

This crucial claim receives some independent support from the patterning of Chamorro topics.

Chamorro permits the clause to have a left-edge topic that is adjoined to IP and resumed by a (null) pronoun that occurs somewhere to the right of the predicate (see Chung, 1998, pp. 262-268). Consider the following, in which the topic is italicized.

(60) Pues *si Chungi'* ha-kumbíbida [*pro*] si Kanariu pära u-piknik i dos.
so Chungi' agr-invite.Prog Kanariu Fut agr-picnic the two
'So Chungi' invited Kanariu (for the two of them) to have a picnic.' (Borja, Borja & Chung, 2006, p. 83)

The topic must be familiar. I claim that clauses with topics express categorical judgments, and the topic supplies the individual that forms the first part of the basis for the judgment. This is essentially what Kuroda (1972) proposed for Japanese.

Now, the topic in Chamorro typically corresponds to the syntactic subject; it cannot correspond to a direct object or oblique. What is significant is that the topic can also correspond to *the possessor* of the subject. This occurs routinely when the clause also manifests PD.

(61) a. *I eskobiya*, ti géf-dangkulu trunko-nña [*pro*].
the eskobiya not agr.very-big stem-agr
'The broom plant does not have very large stems (lit. The broom plant, stems of it are not very large).' (Borja, Borja & Chung, 2006, p. 123)

b. Ya *esti na bihu* si Juan na'an-ña [*pro*].
and.then this L old.man Juan name-agr
'And this old man's name was Juan.' (Cooreman, 1983, p. 65)

c. Pues *ädyu i dos* bunitu magahit magagu-nñiha [*pro*].
so that the two agr.pretty truly clothes-agr
'So those other two had really beautiful clothes.' (Cooreman, 1983, p. 65)

But it also occurs, occasionally, in other sorts of intransitive clauses (see Chung, 1998, p. 265). In (62), for instance, the predicate is a stage-level unaccusative verb and its subject is a definite possessed DP.

(62) Un tiempu *esti i dos umäsagua* mattu i minalagu'-ñiha [*pro*] na
one time this the two spouses agr.arrive the desire-agr Comp
pära u-gäi-patgun.
Fut agr-have-child
'One time the desire came to these two married people to have a child (lit. these two married people, their desire arose).' (Cooreman, 1983, p. 74)

The fact that the topic can correspond to the possessor of the subject in clauses with PD provides further evidence that the possessor in such clauses expresses the psychological subject of the judgment. Moreover, the fact that the topic can correspond to the possessor *even without* PD reveals that in general, Chamorro permits either the syntactic subject or its possessor to fulfill this function.

7.4 On the limitations on PD in Chamorro

Finally, it is time to return to two questions that have been lurking in the background. Why does Chamorro fail to exhibit PD for the purposes of DE1? And why is PD absent when the individual-level predicate is transitive (see (47))?

The first question can be answered rather simply. The account just given of PD in terms of Ladusaw's theory claims that in Chamorro, the psychological subject of a categorical judgment can be expressed by the syntactic subject or by its possessor. Nothing about this would lead one to suppose that in this language, *the description* affirmed or denied by a thetic judgment ought to be able to be expressed by, say, the possessor of the pivot of an existential

clause. In other words, the account provides no reason at all to expect Chamorro to exhibit PD for the purposes of DE1. This is the result we want.[22]

The answer to the second question has already been suggested. From the standpoint of the theory of judgment types, a sentence with a transitive individual-level predicate, such as (63), ought to be able to express a categorical judgment just as successfully as sentences of the type (48-49). In (63), the possessor *i famagu'un Jose* 'Jose's children' should supply the first part of the basis for the judgment, and the rest of the sentence should supply the second part. The fact that this sentence is nonetheless ill-formed suggests that some other restriction is being violated.

(63) *Ha-tungu' i ansa ma'estra-n [i famagu'un [Jose]].
agr-know the answer teacher-L the children Jose
('A teacher of Jose's children knows the answer.')

Indeed, a good candidate for this restriction has already been introduced: DE3, the Chamorro-particular effect that requires an external argument to be both strong and specific when it is realized within the clause (see (41)). As observed earlier, all transitive individual-level predicates in Chamorro are transitive verbs, and all transitive verbs in the language have an external argument. This means that there is no way that a clause like (63) could exhibit PD and simultaneously conform to DE3.

What is needed to make this story concrete is some account of the language-particular DE3. As an initial gesture in this direction, I now restate DE3 in terms of the theory of judgment types, as follows.

(64) *DE3 (second pass)*
An external argument that is realized within the clause must provide the first part of the basis of a categorical judgment.

(64) guarantees that when an external argument is realized within the clause, it must be strong. Depending on how quantification is handled in the theory of judgment types—a controversial matter, as Kuroda (1972) and Ladusaw (1994) observe,—(64) might also ensure that when an external argument is realized within the clause, it must specify a referential argument. Notice, finally, that this restatement makes it clearer just what the difference is between DE2 and DE3. DE2 follows from the theory of judgment types, as Ladusaw showed, whereas DE3—even when phrased in terms of judgment types—requires an additional stipulation.

[22] Something further must be said, then, to explain why English exhibits PD for the purposes of DE1 as well as DE2. The explanation—whatever it is—should also extend to the PD-like effects found in bound variable anaphora and negative polarity items in English; see note 4.

This concludes my account of the Chamorro version of DE2 in terms of Ladusaw's theory. The fact that it succeeds in handling PD provides a strong argument in favor of a semantic-pragmatic explanation of this definiteness effect.

8 CONCLUSION

Let me bring this investigation to a close by first pointing to some questions that could be asked next and then saying something about where we have arrived.

8.1 Other possible sightings of PD

The idea that a possessor can express the psychological subject of a categorical judgment is not new. For instance, Aissen (1999) claims that the Mayan language Tz'utujil has a designated position in the clause's left periphery for the DP that expresses the psychological subject of a categorical judgment. She then establishes that a possessor can occupy that position. In a much earlier discussion of 'subjectivization' in Japanese, Kuno (1973) shows that the possessor of the subject can be realized as a left-peripheral topic marked by *wa*. When Kuno's observation is reinterpreted in light of Kuroda (1972), what emerges is the claim that in Japanese, the possessor of the subject can express the psychological subject of a categorical judgment. (Thanks to Junko Itô for this observation.) Finally, Keenan and Ralalaoherivony (2000) investigate an extraordinarily productive possessor raising construction in Malagasy that can occur when the predicate is both intransitive and individual-level. In this construction, when the predicate's lone argument is possessed, the possessor surfaces as the subject, and the possessed noun incorporates into the predicate. If one takes seriously the idea that Malagasy 'subjects' are actually topics (see Pearson, 2005), then this Malagasy construction might well provide an unusually close parallel to the Chamorro pattern seen in (48).

Here, however, the focus has not been exclusively on the claim that possessors can express psychological subjects, but rather on what this claim can contribute to an understanding of PD and, ultimately, the definiteness effects—in particular, DE2. From this perspective, a natural question to raise is whether Tz'utujil, Japanese, and Malagasy also exhibit PD. As far as I can tell, this question has not yet been investigated for any of these languages. The answers might well reveal to what extent the account given here of DE2, and the Chamorro version of PD, can be extended to a broader range of languages.

8.2 Why *possessor* dominance?

Although a serious crosslinguistic survey of PD remains to be undertaken, the investigation here suggests some preliminary remarks about the typology of PD.

Crosslinguistically, PD is not limited to languages in which the possessor and the determiner are in complementary distribution (contra (8a)). The Chamorro evidence makes this quite clear. Nor is PD uniformly associated with possessors in any one designated syntactic position, such as the specifier of D or a left-peripheral topic position (contra (8b)); see especially English examples of the type (10). Finally, PD is not limited to languages in which possessed DP's are always interpreted as definite (contra (8c)); recall the discussion of Chamorro in 6.1. More generally, PD does not seem to be associated with any uniform semantics—an unsurprising point, given the range of semantic contributions made by possessors. What, then, explains why it is specifically *possessors* that can be dominant?

One conceivable approach to the issue is suggested by Keenan's (1974) Functional Principle. This principle, which constrains the logical structure of certain natural language expressions, states that functions may vary according to the choice of argument, but the interpretation of an argument expression must be determined independently of the function applied to it. In clauses, according to Keenan, the subject serves as the argument and the predicate, as the function; in possessive constructions, the possessor serves as the argument and the possessed, as the function. The claim that the possessor has an interpretation determined independently of the interpretation of the possessed might well help to explain why it is the possessor, and not any other subconstituent of the possessed, that stands in for the possessed in instances of PD. The fleshing out of this speculation remains a project for the future.

8.3 Where we are

The evidence from Austronesian languages presented here expands the typological profile of PD in various ways. The Maori evidence shows that PD is not universal. The Chamorro evidence reveals, among other things, that PD need not hold across the board, but instead can target a particular definiteness effect—here, DE2.

I have proposed that in Chamorro, the PD phenomenon follows from (a) the ability of certain possessors to express the psychological subject of a categorical judgment, plus (b) Ladusaw's (1994) account of DE2 in terms of the theory of judgment types. Overall, the analysis supports Ladusaw's semantic-pragmatic theory of DE2 over Diesing's (1992) syntactic approach to this definiteness effect. And it invites us to see the theory of judgment types as ultimately responsible for DE2 not just in Chamorro, but in all languages. Whether this view of DE2 can survive the test of further crosslinguistic investigation remains to be seen.

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6

On Basque Quantification and on How Some Languages Restrict their Quantificational Domain Overtly

Urtzi Etxeberria

1 Introduction*

The Basque language, or *euskara*, which is the way Basques refer to their own language, is spoken by about 600,000 people in the northcentral area of Spain and southwest area of France.

Despite various attempts to relate Basque to languages such as ancient Iberian,[1] and many other languages from Europe, Africa, Asia, even with languages of the Pacific and of North America, there is no clear evidence in favour of any such link and Basque remains a language isolate with no known relatives and uncertain origins. In fact, Basque is the only known language that remains of those that were spoken in Europe before the Roman conquest

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Abbreviations used in glosses: aux = auxiliary; ABL = ablative; ABS = absolutive; BEN = benefactive; COM = comitative; DAT = dative; ERG = ergative; GEN = genitive; IN = inessive; LOC = locative; REL = relational; D.sg = singular definite determiner; D.pl = plural definite determiner; ep = epenthetic; COMP = comparative; SUP = superlative; FUT = future.

[1] A language that disappeared in the 1st century BC, which was formed in the eastern and south eastern regions of the Iberian Peninsula and that spread along the Mediterranean coast even north of the Pyrenees reaching south of France. The theory that tries to relate these two languages is called the Basque-Iberian hypothesis (cf. Trask 1995 and references therein).

(cf. among many others Mitxelena 1968, 1979, Trask 1995, 1997). The Aquitanian language, which was spoken in the south western part of present day France and in part of the Pyrenees at the time of the Roman conquest, is taken to be the ancestral form of Basque (for much more detailed accounts, cf. Gorrochategui 1995, Zuazo 1995, Trask 1995, 1997, Lakarra 2005).

Currently, Basque is one of the two official languages (together with Spanish) in the Autonomous Community of the Basque Country which consists of three provinces: Bizkaia, Gipuzkoa, and Araba. In the region of Navarre, the official status is a bit more limited in that only in some parts is Basque treated as an official language (together with Spanish). Of all these four provinces, i.e. the Spanish part of the Basque Country, Gipuzkoa and Bizkaia are the provinces with most Basque speakers. Basque is also spoken in the south of France, in the occidental part of the Pyrenees Atlantiques Departement (Lapurdi, Low Navarre, and Zuberoa are the Basque provinces), but has no official status there.

Although the number of speakers is not that big compared to many of the languages in this volume, Basque cannot be said to be in an immediate risk of disappearance. Actually, the number of speakers has increased within the last generation and many people are learning it nowadays as a second language. Nor is it possible to say that Basque, being a minority language, is linguistically under-studied; quite on the contrary, it is a relatively well-studied language: in the 19th century Basque called the attention of many linguists and since then, there are many grammars written in French (e.g. Lecluse 1826, Darrigol 1827, Ithurry 1896, Lafitte 1944, Oyharçabal 1987), Spanish (e.g. Campión 1884), Basque (e.g. Goenaga 1978, Txillardegi 1978, Euskaltzaindia 1985, 1987a, 1987b, 1994, 1999), or English (e.g. Saltarelli 1988, King 1994, Laka 1995, Hualde and Ortiz de Urbina 2003a). From the 1970's on we find a considerable amount of work (again, for a minority language) in the generative perspective (cf. among many others de Rijk 1969, 1998, Goenaga 1978, Eguzkitza 1986, Ortiz de Urbina 1989, Laka 1990, Rebuschi 1997, Fernandez 1997, Elordieta 2000). However, this generative tradition has mainly concentrated on theoretical syntax and not so much on formal semantics.

Furthermore, Basque generativists have mostly concentrated on a few typologically salient aspects of the language such as ergativity, discourse configurational properties, or pro-drop. Despite some exceptions (e.g. Goenaga 1991, Eguzkitza 1993, Laka 1993, Artiagoitia 1997, 1998, 2002, 2003, 2004, Eguren 2005, 2006) very little effort has been devoted to analysing the structure of the Basque noun phrase, even less of nominal quantificational expressions (cf. Etxeberria 2001, 2002a, 2002b, 2005). The main goal of this paper is to present as thoroughly as possible (based on Etxeberria 2005) Basque nominal quantificational expressions, and to explore and contribute to the understanding of their internal structure both semantically as well as syntactically.

Let me give a brief overview of what is to come. Section 2 provides a thorough and detailed description of the phenomenon. It presents the possible meanings and uses of the Basque definite and indefinite determiner together with the most representative Basque nominal quantificational elements: numerals, quantifiers meaning 'some', 'many', 'few', and

the Basque universal quantifiers. The data shows that while some Basque quantifiers (strong ones) must necessarily appear with the definite determiner, others (weak ones) are not allowed to do so unless exceptionally (and when this happens, they do not behave as quantifiers).

Once we observe the differences and similarities of Basque quantifiers; section 3 first presents how they are divided among strong and weak quantifiers, and then puts forward a novel compositional analysis of Basque strong quantifiers where the Quantifier Phrase internal definite determiner is argued to act as the quantificational domain restrictor (cf. Giannakidou 2004, Etxeberria 2005). It is shown that Basque quantificational data provides clear evidence for the possibility of the contextual domain restrictor appearing with the quantifier (Westerståhl 1985, von Fintel 1994, Martí 2003) or with the nominal expression (Stanley and Szabó 2000, Stanley 2002). This variation depends on whether the quantifiers are lexically strong (§3.1.1) or partitives (§3.1.2) respectively. Crucially in Basque, the D domain restrictor only appears with strong quantifiers, but it is excluded from weak quantifiers. This is evidence in favour of the fact that these elements are neither quantifiers nor contextually restricted (cf. Milsark 1979, Partee 1988, Cooper 1996, von Fintel 1998). The paper also presents the compositional behaviour of Basque weak quantifiers, which are proposed to be cardinality predicates which are base generated as being of predicative type ⟨e, t⟩ (§3.2). Furthermore, if the analysis for strong quantifiers is on the right track and the definite determiner acts as a contextual domain restrictor inside Quantificational Phrases, this provides extra evidence in favour of the standard analysis of Generalized Quantifiers where the quantifier combines with a property type element of type ⟨e, t⟩, rather than with an element of type *e*, as proposed by Matthewson (2001). Note that the D domain restrictor does not change the type of the nominal expression and their combination gives an ⟨e, t⟩ type element (cf. Giannakidou 2004, Etxeberria 2005, Etxeberria and Giannakidou in prep.). Section 4 presents the conclusions of this paper.

2 DATA PRESENTATION

2.1 The definite determiner

The Basque definite determiner (D) is a bound morpheme that takes the phonetic forms *-a* and *-ak*.[2] In western varieties there is also a proximate plural D *-ok*.[3]

[2] Some authors argue that the plural form of the Basque D (*-ak*) is a single element (cf. Goenaga 1978, 1991, Euskaltzaindia 1993, Artiagoitia 1997, 1998, 2002, 2003, 2004, Rodriguez 2003, Trask 2003). Etxeberria (2005), on the other hand, defends the view that there exists a functional head (NumP) situated in between the DP and the NP (cf. also Artiagoitia 2002), where the singularity (*-∅*) or plurality (*-k*) of the Basque D is marked. The reason why number markers appear after the D in the overt syntax is due to the fact that number markers are suffixes and as such phonologically and categorically dependent on another element, the D in this case; hence, the final

One very interesting property of Basque is that bare nouns (BN) cannot appear as arguments and the overt presence of the Basque definite (or indefinite, see section 2.2) determiner is obligatory for sentences to be grammatical, as the examples in (1) show (cf. Laka 1993, Artiagoitia 1997, 1998, 2002, among others).[4]

(1a) Mutil-**a** berandu etorri zen
boy-D.sg-ABS late come aux.sg
'The boy came late.'

(1b) Mutil-**ak** berandu etorri ziren
boy-D.pl-ABS late come aux.pl
'The boys came late.'

The Basque D is of broader use than the D of languages like English or Romance languages. In addition to the usual referential interpretation that we get both in (1a) and (1b) it also appears in contexts where other languages typically present bare nouns.

To begin with, just as in Romance languages,[5] when the Basque definites combine with kind level predicates (e.g. *evolve*, *become extinct*, *be common*, etc.), the usual specific interpretation disappears and they adopt a kind reading where the DP makes reference to the whole species.

(2a) Dinosauru-**ak** aspaldi desagertu ziren.
dinosaur-D.pl-ABS long time ago become extinct aux.pl
'Dinosaurs became extinct a long time ago.'

(2b) Nitrogeno-**a** ugaria da gure unibertsoan.
nitrogen-D.sg-ABS abundant is our universe
'Nitrogen is abundant in our universe.'

Apart from this, when the Basque definite DPs (plurals and masses)[6] fill the direct object slot, the definite DP can but need not make reference to a specific set and can obtain the so-called existential interpretation.[7, 8]

movement to the position after the D will be due to morphology (cf. Etxeberria 2005). However, for ease of exposition, I will refer to them as the singular (*-a*) and the plural (*-ak*) D.

[3] Although there is no singular proximate singular in modern Basque, *-ori*, *-or*, *-au* or *o* are attested in early texts; it is still possible to find *-o* in actual Bizkaian in *hemen berton* 'right here', along with *hemen bertan*.

[4] The absolutive marker is ∅.

[5] Romance languages make use of the D to express kind readings. I exemplify with Spanish.

(i) [Los peces] aparecieron hace 390 millones de años.
[the fishes] appeared ago 390 millions of years

[6] Etxeberria (2005) argues that mass terms are number neutral in that they do not bear number morphology at all and that the singular agreement with the verb and with other elements is the result of the default status of the singular (see Delfitto and Schrotten 1991, Doetjes 1997, Dayal 2004, Krifka 2004 among others). This is the

(3a) Amaia-k goxoki-**ak** jan ditu.
Amaia-ERG candy-D.pl-ABS eat aux.pl
'Amaia has eaten (the) candies.'

(3b) Aritz-e-k ardo-**a** edan du.[9]
Aritz-ep-ERG wine-D.sg-ABS drink aux.sg
'Aritz has drunk (the) wine.'

Note that in the examples in (3), the DP lacks the kind interpretation and gets an existential reading that seems to be interpreted by means of an existential quantifier (the referential reading is available too as the glosses in (3) show).[10]

Apart from plurals and masses, singular definite DPs can also obtain an existential-like interpretation as exemplified in (4). Cf. Rodriguez (2003), Etxeberria (2005) or Eguren (2006) for possible analyses.

(4) Julen-e-k auto-a erosi zuen.
Julen-ep-ERG car-D.sg-ABS buy aux.sg

Specific: 'Julen bought the car'
Existential: 'Julen bought (a) car'

reason why they pattern with plural count nouns when in object-level contexts. Etxeberria (2005) provides a unified analysis for the behaviour of Basque plurals and mass terms.

[7] Romance languages make use of different strategies to obtain this existential interpretation. Both Spanish and Italian are able to use BNs (just like English or other Germanic languages). On the other hand, French makes use of the so-called partitive determiner *des*/*du* and no BNs are allowed (Italian also has a partitive determiner). See among others Chierchia (1998b), Zamparelli (2000, 2002a, 2002b), Kleiber (1990), Bosveld-de Smet (1997), Heyd (2003), Bosque (1996a, 1996b), Laca (1996). (Cf. Etxeberria (2005) for an analysis where the existential interpretation of English BNs, French partitives and Basque definites is explained in a unified manner following the Neocarlsonian approach).

Sp.:	Juan ha bebido [café].	Fr.:	Pierre a mangé [des sucreries].
	Juan has drunk [coffee]		Pierre has eaten [of-the sweets]
	'Juan has drunk coffee'		'Pierre has eaten sweets.'

[8] Auxiliaries in Basque show agreement with both the subject and the object (cf. Hualde and Ortiz de Urbina 2003).

[9] When a merger involves a consonant-ending word and a consonant-initial case marker, the epenthetic vowel *-e-* is inserted. Hence, the ergative case marker in the subject *Aritz-e-k* in (3b) is *-k*, the *-e-* is the epenthetic vowel. See Euskaltzaindia (1993: 191).

[10] According to Artiagoitia (2002), the ambiguity of the Basque "definite" DP can be explained by proposing that the Basque D when existentially and generically interpreted does not fill the D position but the intermediate NumP position; hence Basque [-a/-ak] won't be a D, but just a (singular or plural) number marker. See Etxeberria (2005) for arguments against Artiagoitia's analysis as well as for a proposal (following the Neocarlsonian approach) where the Basque D [-a] is argued to be always definite (base-generated in [Head, DP]), but very flexible in its ability to type-shift which allows its various interpretations. In other words, the D is "definite" morphologically (always a D head); semantically, the typical function of D is to do *iota* (or *max* in the plural, type ⟨⟨e, t⟩, e⟩), but it can also be a domain restrictor as section 3 will make explicit.

However, singular count nouns (in object position) cannot obtain existential-like interpretation as easily as plurals or mass terms can and need specific contexts to be interpreted existentially. They obtain this reading only in so-called stereotypical contexts, usually related to verbs of possession such as 'buying a car', 'buying a house', 'having a husband', 'having a wife', 'having a baby', 'wearing a hat', etc. Usually, a singular count noun in the object position of an object-level predicate is interpreted specifically: *liburua erosi* 'lit.: book-D.sg buy' always means 'to buy the book', *mutila ikusi* 'lit.: boy-D.sg see' always means 'to see the boy', *aldizkaria irakurri* 'lit.: magazine-D.sg read' always means 'to read the magazine'.

One other property of the Basque D is that it can also appear in predicative positions. The sentences in (5) happen to be ambiguous between an identifying (equative) and a predicative interpretation.

(5a) Miren ikasle-a da.
Miren-ABS student-D.sg is
'Miren is [the/a] student.'
(5b) Miren eta Peru ikasle-ak dira.
Miren and Peru-ABS student-D.pl are
'Miren and Peru are [the] students.'

There are two copula verbs in Basque: *izan*, which selects individual-level predicates, and *egon*, which selects stage-level predicates.[11] The presence-absence of the D *-a(k)* is directly related to this distinction; in fact, *-a(k)* only appears with predicates that combine with the auxiliary *izan*, that is, with individual-level predicates (cf. Zabala 1993, 2003, Artiagoitia 1997, Eguren 2005, 2006, Matushansky 2005 for possible analyses of these facts). The sentence in (6a) with an individual-level predicate is ambiguous between an identifying and a predicative interpretation.

(6a) Miren mediku*(-a) da
Miren-ABS doctor-D.sg is.izan
'Miren is [the/a] doctor.'
(6b) Miren mediku(*-a) dago
Miren-ABS doctor-D.sg is.egon
'Miren is working as a doctor.'

Note that the ambiguity presented in (5) or in (6a) can only be obtained when the copula used is *izan*, not when the copula is *egon*.

[11] There is dialectal variation with respect to the use of *izan* or *egon*. Cf. Etxepare (2003a).

The Basque D is also obligatory with individual-level adjectives in predicative position. As was the case with predicate nominals, their interpretation is ambiguous between an identifying and a predicative reading as shown by the following examples.

(7a) Miren altu-a da.
Miren-ABS tall-D.sg is
'Miren is [the/a] tall.'
(7b) Miren eta Peru altu-ak dira.
Miren and Peru-ABS tall-D.pl are
'Miren and Peru are [the] talls.'

When, on the other hand, adjectives are instantiated as stage-level predicates (with the copula *egon*), some adjectives are unacceptable with the D as shown in (8a), whereas some others are acceptable both with or without the D as the example in (8b) shows (cf. Zabala 2003 for more details).

(8a) Peru urduri(*-a)/lasai(*-a)/gaixo(*-a) dago
Peru-ABS nervous-D.sg/calm-D.sg/sick-D.sg is
'Peru is nervous/calm/sick.'
(8b) Peru lodi(-a)/gazte(-a)/polit(-a) dago
Peru-ABS fat-D.sg/young-D.sg/pretty-D.sg is
'Peru is fat/young/pretty.'

From what we've seen so far it seems as though the Basque D always appears in the DP final position; and this is generally so when the D is combined with nominals (or modified nominals). However, there are some situations, e.g. partitive constructions, where the plural form of the D is combined with the nominal expression, that is, it appears just before the postposition *-tik* 'of' which is then followed by the quantificational element (cf. section 3.1.2 for more on this and for a possible analysis). In some other situations the D also appears combined with the nominal (just before the quantifier) but in these situations the quantifier does not appear to be behaving as a real quantifier, but as an adverbial or as a modifier (cf. section 2.4.2 or section 3.1.3).[12] Thus, it can be said that under some circumstances Ds can appear on different parts of a complex DP in Basque and that it is not the case that there is one single position for D, e.g. not DP-finally, or not on the head noun, or anything like that, but that in principle, the D can appear in different positions. However (as I said before), note that

[12] There is a quantifier that apart from combining with the bare nominal can also combine with a whole DP: *franko* 'many' (cf. section 2.4.2). Apparently this element behaves as a quantifier when combined with a singular DP. I don't have anything interesting to say about it right now (cf. Etxeberria (in prep.) and Etxeberria and Etxepare (in prep.) for a possible analysis).

when this happens, the quantificational element does not usually behave as such, except for the partitive constructions. The information about the position where the Basque D can appear inside DPs comes in gradually when the various quantifiers and their behaviour are presented.

2.2 The indefinite determiner

The Basque indefinite determiner is *bat* 'one' which is identical to the numeral *bat* 'one'. It is possible to differentiate these two through accentuation; when we focus *bat* the interpretation we get is that of the numeral.

(9) Jon-e-k txakur bat ikusi du kale-a-n.
Jon-ep-ERG dog one-ABS see aux.sg street-D.sg-IN
'Jon has seen a dog in the street.'

Note that the indefinite determiner is in complementary distribution with the D *-a*.[13]

(10) * Jon-e-k txakur bat-a ikusi du kale-a-n.
Jon-ep-ERG dog one-D.sg-ABS see aux.sg street-D.sg-IN
'Jon has seen the one dog in the street.'

There is only one situation where *bat-a* 'the one' is grammatical: explicit contrastive contexts, as in (11a). Once you eliminate the element creating the contrast (*beste-a* 'the other'), the result is ungrammatical as the example in (11b) demonstrates.

(11a) Bat-a-k oilaskoa jan zuen, beste-a-k patata frijituak.
one-D.sg-ERG chicken eat aux.sg other-D.sg-ERG potato fried
'The one ate chicken, the other chips.'
(11b) * Bat-a-k oilaskoa jan zuen.
one-D.sg-ERG chicken eat aux.
'The one ate chicken.'

The indefinite determiner can appear following a nominal expression that carries the genitive case *-en*, in such a case, the interpretation we get is 'some x or other'.[14]

[13] The reason why the D attaches to the numeral and not to the nominal expression *txakur* 'dog' in the example in (10) (as suggested by one of the reviewers) is because *bat* is base generated in NumP, i.e below DP, which is the syntactic position where the Ds in general, and Basque *-a* in particular, are base generated. Cf. Etxeberria 2005.

[14] Note that if we don't use the genitive case marker on the nominal expression (as in (i)) the interpretation we get is ambiguous between specific and non-specific. The use of the genitive makes the indefinite DP be interpreted always non-specifically.

(12) Ricardo-k zuhaitz-en bat ikusi du desertu-a-n.
Ricardo-ERG tree-GEN one-ABS see aux.sg desert-D-IN
'Ricardo has seen some tree or other in the desert.'

It is also possible to use another *bat*-marked genitive to express 'some or other' when the noun is made silent. The interpretation will depend on the noun which is salient in the context.

(13) Antton-e-k bat-en bat ikusi du baso-a-n.
Antton-ep-ERG one-GEN one-ABS see aux.sg wood-D.sg-IN
'Antton has seen some or other in the wood.'

The genitive can be combined with a numeral to express 'approximately', although we can also get the same reading without actually using the genitive.

(14) Hogeitabost(-en) bat urte pasa zituen Jamaica-n
twentyfive(-GEN) one year spend aux.pl Jamaica-IN
'She/He spent about twenty-five years in Jamaica.'

The plural form of the indefinite determiner *bat* is *batzuk* 'some' (cf. section 2.4.1).

2.3 Numerals

In general, Basque numerals appear to the left of the head noun they combine with. The only exception is *bat* 'one' (cf. previous section) which must necessarily appear following its head noun; in the Bizkaian dialect *bi* 'two' can also optionally appear after the noun as shown in (15b) and (15b').[15]

(15a) emakume bat (15b) emakume bi (15b') bi emakume
woman one woman two two woman

All of the ordinal numerals (except for those that express 'first' and 'last', see below) are constructed by adding *-garren* to the numerals: *bigarren* 'second', *bederatzigarren* 'ninth',

(i) Ricardo-k zuhaitz bat ikusi du desertu-a-n.
Ricardo-ERG tree one-ABS see aux.sg desert-D-LOC
'Ricardo has seen a tree in the desert.'

[15] Nouns are unmarked for number in Basque (cf. Euskaltzaindia 1993, Laka 1995, Artiagoitia 1997, 2002, among many others).

hamalaugarren 'fourteenth'. The Basque ordinal to express 'first' is *lehen* or its variants *lehenengo*, *lehenbiziko*, or *lehendabiziko*, which take the genitive suffix *-ko* 'of'. On the other hand, 'last' is expressed by ordinal *azken* or its variants *azkeneko*, *azkenengo*, formed with the genitive suffix *-ko*.

One way to express 'approximately' is by adding the genitive case marker plus *bat* as in (14) above, but there are three other ways to express the same meaning. All the examples in (16) mean 'three or four'.

(16a) hiru edo lau — lit.: 'three or four'
(16b) hiru lau — lit.: 'three four'
(16c) hiru-z-pa-lau — lit.: 'three not if four'

Numerals higher than six cannot use the construction in (16c), but they can use the ones in (16a-b), and alternatively can also add *bat* at the end to something like (16b): *hamar hamaika bat* 'ten or eleven'.

Distributive numerals are formed by suffixing the distributive particle *-na* to the cardinal numerals (with no exception). The sequence [numeral+*na*] occupies the same syntactic position (with respect to the nominal) as the corresponding numeral.

(17a) liburu bat → liburu ba-na
book one book one-na
'one book' 'one book each'
(17b) lau liburu → lau-na liburu
four book four-na book
'four books' 'four books each'

When the numeral the particle *-na* combines with is *bat*, the distributive numeral can only appear in direct object position and it will not be able to appear in subject or indirect object position.[16]

(18a) Ikasle-ek irakasle-a-ri **lan ba-na** aurkeztu zioten.
student-D.pl-ERG teacher-D.sg-DAT work one-na-ABS present aux.sg
'The students presented one work each to the teacher.'
(18b) * **Ikasle ba-na-k** irakasle-a-ri lan bat aurkeztu zioten.
student one-na-ERG teacher-D.sg-DAT work one-ABS present aux.sg
(18c) * Ikasle-ek **irakasle ba-na-ri** lan bat aurkeztu zioten
student-D.pl-ERG teacher one-na-DAT work one-ABS present aux.sg

[16] When the ergative marker attaches to the plural D *-ak*, the resulting form is *-ek*.

However, when the distributive particle *-na* combines with any other numeral, the distributive numeral is able to appear in direct object position or in indirect object position, although never in subject position.

(19a) Ikasle-ek irakasle-a-ri **zazpi-na lan** aurkeztu zizkioten.
student-D.pl-ERG teacher-D.sg-DAT seven-na work-ABS present aux.pl
'The students presented seven works each to the teacher.'
(19b) * **Zazpi-na ikasle-k** irakasle-a-ri lan bat aurkeztu zioten.
seven-na student-ERG teacher-D.sg-DAT work one-ABS present aux.sg
(19c) Ikasle-ek **zazpi-na irakasle-ri** lan bat aurkeztu zioten
student-D.pl.ERG seven-na teacher-DAT work one-ABS present aux.sg
'The students presented one work to seven teachers each.'

We can form adverbs adding the suffixes *-ka* or *-n* (the second one asks for reduplication) to these distributive numerals: e.g. *bina-ka* or *binan-binan* 'two at a time'.

Except for *bat* 'one', which shows some restrictions (see section 2.2), the rest of the Basque numerals can easily combine with the D just like in Germanic or Romance languages, a combination that results in a definite and referential interpretation (cf. Etxeberria 2005).

(20) Zazpi ikasle-**ek** goxoki-ak jan zituzten.
seven student-D.pl.ERG candy-D.pl.ABS eat aux.pl
'The seven students ate (the) candies.'

2.4 Quantifiers[17]

2.4.1 Quantifiers meaning 'some' (and related). The Basque quantifiers meaning *some* are *batzuk*, *zenbait*, and *hainbat*. Despite their similar meaning, these quantifiers vary in their placement with respect to the nominal expression they combine with. Thus, *batzuk* can only appear in postnominal position as the example in (21a-21a') shows, *zenbait* can appear both prenominally as well as postnominally as exemplified in (21b-21b'), and *hainbat* can only appear in prenominal position as shown in (21c-21c').

[17] For ease of exposition this section makes no difference between the strong and weak quantifiers, and names them all "quantifiers". However, as will be made explicit in §3.4, this paper does not treat weak quantifiers as real quantifiers (cf. also Partee 1988, Diesing 1992, van Geenhoven 1996, Landman 2002, Etxeberria 2005).

(21a) Ikasle **batzuk** berandu etorri ziren.
student some-ABS late arrive aux.pl
'Some students arrived late.'

(21a') * **Batzuk** ikasle berandu etorri ziren.
some student-ABS late arrive aux.pl

(21b) **Zenbait** ikasle berandu etorri ziren.
some student-ABS late arrive aux.pl
'Some students arrive late.'

(21b') Ikasle **zenbait** berandu etorri ziren.[18]
student some-ABS late arrive aux.pl
'Some students arrived late.'

(21c) **Hainbat** ikasle berandu etorri ziren.
some student-ABS late arrive aux.pl
'Some students arrive late.'

(21c') Ikasle **hainbat** berandu etorri ziren.
student some-ABS late arrive aux.pl
'Some students arrive late.'

As already mentioned in section 2.2, *batzuk* is the plural form of the indefinite *bat* 'one' and as a consequence it always agrees with the verb in plural.

(22) Mikel-e-k goxoki **batzuk** jan ditu/*du.
Mikel-ep-ERG candy some-ABS eat aux.pl/aux.sg
'Mikel has eaten some candies.'

Both *zenbait* and *hainbat* on the other hand have a phrase-like flavour: they derive from the combination of the genitive forms **zeren* (of it) and **haren* (of it) respectively and the numeral *bat* 'one'.[19] In opposition to what happens with *batzuk*, these two quantifiers can agree with the verb both in singular as well as in plural.[20] Note that despite agreement facts, the set they make reference to must always be plural.

[18] In the examples in (21), the subjects bear absolutive case and this is why they are unmarked. However, note that when the word order is [noun+quantifier] as in (21b'), the quantifier is the element that is case marked.
(i) Ikasle zenbait-**e-k** goxoki-ak jan zituzten.
student some-ep-ERG candy-D.pl-ABS eat aux.pl
'Some students ate candies.'

[19] The '*' in **zeren* and **haren* means that although the forms that appear after it have not been found they are taken to be the forms from where the present-day forms *zein>zen* and *hain* derived.

[20] This variation yields differences with respect to the strong (proportional) or weak (cardinal) readings of these quantifiers as well as with respect to the collective or distributive interpretations that these quantifiers force. Due to lack of space, these differences as well as their motivation will not be treated in this paper; for more information cf. Etxepare (2000), Etxeberria (2001, 2002a, 2005, in prep.), Etxeberria and Etxepare (in prep.).

(23a) Izaro-k **zenbait** goxoki jan ditu/du.
Izaro-ERG some candy-ABS eat aux.pl/aux.sg
'Izaro has eaten some candies.'

(23b) Izaro-k **hainbat** goxoki jan ditu/du.
Izaro-ERG some candy-ABS eat aux.pl/aux.sg
'Izaro has eaten some candies.'

Zenbait does also have a plural counterpart formed by adding *-zu*; in such a case, the agreement with the verb must be plural.

(24) Izaro-k **zenbait-zu** goxoki jan ditu/*du.
Izaro-ERG some-pl candy-ABS eat aux.pl/aux.sg
'Izaro has eaten some candies.'

Another difference between these quantifiers is that while *batzuk* can be used to make reference to a set of just two members, the other two seem to necessarily make reference to a bigger plurality.

(25a) Lagun **batzuk** etorri dira, Julen eta Mattin hain zuzen ere.
friend some-ABS come aux.pl Julen and Mattin so correctly too
'Some friends have come, precisely Julen and Mattin.'

(25b) * **Zenbait** lagun etorri dira, Julen eta Mattin hain zuzen ere.
some friend-ABS come aux.pl Julen and Mattin so correctly too
'Some friends have come, precisely Julen and Mattin (intended)'

(25c) * **Hainbat** lagun etorri dira, Julen eta Mattin hain zuzen ere.
some friend-ABS come aux.pl Julen and Mattin so correctly too
'Some friends have come, precisely Julen and Mattin (intended)'

However, they also show some similarities when it comes to the nominal expression they are able to combine with. All three of *batzuk*, *zenbait*, and *hainbat* when combined with mass terms (no matter whether they agree with the verb in singular or plural) can only make reference (in the examples in 26) to different types or to different glasses (more than one) of wine. Thus, the mass interpretation of the common noun is eliminated and it is interpreted as a count term.

(26a) Jon-e-k **ardo batzuk** dastatu zituen taberna-n.[21]
Jon-ep-ERG wine some-ABS taste aux.pl bar-D.sg-IN
'Jon tasted (different types of/glasses of) wines in the bar.'

(26b) Jon-e-k **zenbait ardo** dastatu zituen/zuen taberna-n.
Jon-ep-ERG some wine-ABS taste aux.pl/aux.sg bar-D.sg-IN
'Jon tasted (different types of/glasses of) wines in the bar.'

(26c) Jon-e-k **hainbat ardo** dastatu zituen/zuen taberna-n.
Jon-ep-ERG some wine-ABS taste aux.pl/aux.sg bar-D.sg-IN
'Jon tasted (different types of/glasses of) wines in the bar.'

Another similarity between these quantifiers is that they cannot be combined with the D if the sentence is going to be grammatical; it does not matter whether the determiner is placed on the nominal expression or on the quantificational element.

(27a) [Politikari(*-ak) **batzuk**(*-ak)] berandu iritsi ziren.
[politician(-D.pl) some(-D.pl)] late arrive aux.pl
'The some politicians arrived late.'

(27b) [**Zenbait**(*-ak) politikari(*-ak)] berandu iritsi ziren.
[some(-D.pl) politician(-D.pl)] late arrive aux.pl
'The some politicians arrived late.'

(27c) [**Hainbat**(*-ak) politikari(*-ak)] berandu iritsi ziren.
[some(-D.pl) politician(-D.pl)] late arrive aux.pl
'The some politicians arrived late.'

Note also that these three quantifiers can create partitive forms by combining with an NP that has had the plural D added plus the partitive postposition *-tik* 'of'. When in partitive constructions, these quantifiers cannot occupy the prenominal position and must necessarily appear postnominally.[22] Singular or plural agreement with the verb is not optional either and only plural agreement is allowed.

(28) [Ikasle-**eta-tik** batzuk/zenbait/hainbat] berandu iritsi ziren.
[student-D.pl-ABL some-ABS/some-ABS/some-ABS] late arrive aux.pl.past
'Some of the students arrived late.'

[21] The locative morpheme *-n* is attached to the singular D *-a* that is attached to the word *taberna* 'bar'; hence, the underlying form is *taberna-a-n* (lit.: bar-D.sg-IN). Phonological processes that we will not consider here turn the underlying form *tabernaan* into *tabernan*.
[22] Cf. section 3.1.2 for an explanation of the behaviour of (the plural form of the D) *-eta*.

Although 'some' is the only interpretation available for *batzuk* and *zenbait*, there is another interpretation that *hainbat* can get: 'as many as that'. Note that the previous examples given with *hainbat* cannot get this interpretation.

(29) Amaia-k **hain-bat** urte ditu/du.
Amaia-ERG this.GEN-one year aux.pl/aux.sg
'Amaia is as old as that.'

Another prenominal Basque quantifier formed from the same stem as *hainbat* (that is **haren* 'of it') also has the same meaning: *hainbeste* 'as many as that -distal-'. This is a construction that can also be formed using the other demonstratives plus *beste* 'other', that is, *honenbeste* 'as many as this' (from *hau* 'this' marked genitive *honen*) and *horrenbeste* 'as many as that' (from *hori* 'that' marked genitive *horren*). These quantifiers can agree with the verb in singular or in plural as the following example shows (the same applies to *hainbat*).

(30) Amaia-k **honen-beste/horren-beste/hain-beste** urte ditu/du.
Amaia-ERG this.GEN-other/that.GEN-other/that.GEN-other year aux.pl/aux.sg
'Amaia is as old as this/as that/as that.'

2.4.2 'Many' and 'few'. Among those Basque quantifiers that could be translated as 'many' (or 'abundant') we can mention the following: *asko* 'many', *ugari* 'abundant, copious', *franko* 'many', *anitz* 'many', *pila bat* 'lots of'. On the other hand, among those Basque quantifiers meaning 'few' (or 'a few') we find the following: *gutxi* 'few' (and its variant *guti*), *gutxi batzuk* 'a few', *piska bat* 'a little'.[23]

As was the case with those quantifiers presented in the previous subsection, these quantifiers also vary in whether they are preposed or postposed with respect to the nominal expression they combine with. Thus, *asko* 'many', *franko* 'many', *anitz* 'many',[24] and *pilo bat* 'lots of', can appear both in prenominal as well as postnominal position as the following examples show.

(31a) **Asko** nerabe berandu iritsi ziren.
many teenager-ABS late arrive aux.pl
'Many teenagers arrived late.'

(31b) Nerabe **asko** berandu iritsi ziren.
teenager many-ABS late arrive aux.pl
'Many teenagers arrived late.'

[23] Thanks to Javi Ormazabal for helping me collect part of the data offered in this section.
[24] The prenominal use of these three quantifiers is almost exclusively limited to the eastern dialects.

(32a) **Franko** ehiztari ikusi nituen atzo.
many hunter-ABS see aux.pl yesterday
'I saw many hunters yesterday.'

(32b) Ehiztari **franko** ikusi nituen atzo.
hunter many-ABS see aux.pl yesterday
'I saw many hunters yesterday.'

(33a) **Anitz** langile gaixo daude gaur.
many worker-ABS sick be.egon today.
'Many workers are ill today.'

(33b) Langile **anitz** gaixo daude gaur.
worker many-ABS sick be.egon today.
'Many workers are ill today.'

(34a) Soldadu-ek **pila bat** astakeria egin zituzten.
soldier-D.pl.ERG pile one nonsense-ABS make aux.pl
'The soldiers carried out a lot of foolish acts.'

(34b) Soldadu-ek astakeria **pila bat** egin zituzten.
soldier-D.pl.ERG nonsense pile one-ABS make aux.pl
'The soldiers carried out a lot of foolish acts.'

Ugari 'abundant, copious' can only appear in postnominal position.

(35a) Perretxiko **ugari** ikusi ditut baso-a-n.
abundant mushroom-ABS see aux.pl wood-D.sg-IN
'I have seen many mushrooms in the wood.'

(35b) * **Ugari** perretxiko ikusi ditut baso-a-n.
abundant mushroom-ABS see aux.pl wood-D.sg-IN
'I have seen many mushrooms in the wood.'

Both *gutxi* 'few', *gutxi batzuk* 'few' and *piska bat* 'a bit' are grammatical only when in postnominal position.

(36a) Politikari **gutxi** iritsi ziren berandu.
politician few-ABS arrive aux.pl late
'Few politicians arrived late.'

(36b) * **Gutxi** politikari iritsi ziren berandu.
few politician-ABS few arrive aux.pl late

(37a) Politikari **gutxi batzuk** iritsi ziren berandu.
politician few some-ABS arrive aux.pl late
'A few politicians arrived late.'

(37b) * **Gutxi batzuk** politikari iritsi ziren berandu.
few some politician-ABS arrive aux.pl late

(38a) Garazi-k ardo **pixka bat** edan du.
Garazi-ERG wine little one-abs drink aux.sg
'Jon has drunk a little wine.'

(38b) * Garazi-k **piska bat** ardo edan du.
Garazi-ERG little one wine-abs drink aux.sg

Except for *gutxi batzuk* 'lit.: few some', which can only agree with the verb in plural, and for *piska bat* 'a little', which can only agree with the verb in singular, all of the other quantifiers mentioned in this section can agree with the verb both in singular and in plural regardless of their position with respect to the nominal. Hence, the examples in (31-35) and (36a) would also be grammatical with singular agreement as the following examples show.[25]

(31a') **Asko** nerabe berandu iritsi **zen**.
many teenager-ABS late arrive aux.sg
'Many teenagers arrived late.'

(31b') Nerabe **asko** berandu iritsi **zen**.
teenager many-ABS late arrive aux.sg
'Many teenagers arrive late.'

(32a') **Franko** ehiztari ikusi **nuen** atzo.
many hunter-ABS see aux.sg yesterday
'I saw many hunters yesterday.'

(32b') Ehiztari **franko** ikusi **nuen** atzo.
hunter many-ABS see aux.sg yesterday
'I saw many hunters yesterday.'

(33a') **Anitz** langile gaixo **dago** gaur.
many worker-ABS sick be.egon today.
'Many workers are ill today.'

(33b') Langile **anitz** gaixo **dago** gaur.
worker many-ABS sick be.egon today.
'Many workers are ill today.'

[25] Cf. footnote 20.

(34a') Soldadu-ek **pila bat** astakeria egin **zuten**.
soldier-D.pl.ERG pile one nonsense-ABS make aux.sg
'The soldiers carried out a lot of foolish acts.'

(34b') Soldadu-ek astakeria **pila bat** egin **zuten**.
soldier-D.pl.ERG nonsense pile one-ABS make aux.sg
'The soldiers carried out a lot of foolish acts.'

(35a') Perretxiko **ugari** ikusi **dut** baso-a-n.
abundant mushroom-ABS see aux.sg wood-D.sg-IN
'I have seen many mushrooms in the wood.'

(36a') Politikari **gutxi** iritsi **zen** berandu.
politician few-ABS arrive aux.sg late
'Few politicians arrived late.'

With the exception of *gutxi batzuk*, which can only be combined with count terms, all of the quantifiers discussed in this section can also combine with mass terms. Hence, these quantifiers are ambiguous between count 'many' and 'few' and mass 'much' and 'a little'. As expected, in order for these quantifiers to permit mass readings, they must agree with the verb in singular (an agreement that *gutxi batzuk* does not accept), since agreement in plural eliminates mass interpretations.

(39) Begoña-k ardo asko / ugari / franko / anitz / pila bat gutxi / *gutxi batzuk / piska bat edan zuen.
Begoña-ERG wine drink aux.sg
'Begoña drank much / much / much / much / much wine.'
little / *a few / a little

Just in the opposite situation of *gutxi batzuk* we find *piska bat* which must be translated as 'a little' and can only be combined with mass terms, hence its ungrammaticality when combined with counts (40).

(40) * Angel-e-k goxoki **piska bat** jan ditu.
Angel-ep-ERG candy little one-ABS eat aux.pl
'* Angel has eaten a little candies.'

Contrary to what happens with the quantifiers meaning 'some', some of the quantifiers in this section accept the addition of a D.[26] *Asko* 'many' is one of these quantifiers that can combine with the D as the example in (41) demonstrates.

(41) Polit **asko-a** zen opari-a![27]
nice many-D.sg was present-D.sg
'The present was very nice.'

This *asko-a* however, seems to be working more as a degree modifier meaning 'very' than as a quantificational element as we can observe in the English gloss in (41). The construction in (41) is equivalent to another construction (more commonly) used to express degree, given in (42). Note that in fact, the presence of the D is obligatory in Adjectival Phrases if the sentence is going to be grammatical (cf. section 2.1).

(42) Oso polit*(-a) zen opari-a!
very nice-D.sg was present-D.sg
'The present was very nice.'

In fact, *asko* with the meaning of 'very' is found in some 17th century texts in preadjectival position just as the present form *oso* 'very', where it appears to be modifying the whole AdjP *fraide deboten* 'devout friars' (example from Etcheberry Ziburukoa 1697).

(43) **Asko** fraide debot-e-n Aita buruzagi-a.
many friar devout-D.pl-GEN father superior-D.sg
'The superior Father of very devout friars.'

Franko 'many' may be used as a degree modifier meaning 'very' as well, although its position must be pre-adjectival.

[26] However, when this happens their behaviour (except maybe for *franko* and *gutxi*) is not that of quantifiers. Cf. the discussion in examples (49-50).

[27] *Aski* 'enough' (which will not be treated in this paper) can also be used in this kind of construction.
(i) Gizon jator **aski-a** da hori! (Euskaltzaindia 1993: 107)
man nice enough-D.sg is that
'That is quite a nice guy!'
Aski can also appear in preadjectival position.
(ii) **Aski** polit-a da opari hori!
nice many-D.sg is present that
'The present is very nice.'
Note that formerly *asko* meant 'enough' in the eastern dialects.

(44) **Franko on-a** da!
many good-D.sg is
'[She/He/It] is very good!'

Another quantificational element that has been used as a degree modifier combined with adjectives is *gutxi* 'few', its meaning being 'not very' (example from Elissamburu 1890).

(45) Bere hitz-eta-n da **guti sinhesgarri-a**, bere agintz-eta-n **guti leial-a**.
her/his word-D.pl-IN is few credible-D.sg her/his order-D.pl-IN few loyal-D.sg
'She/he is not very credible in her/his words, not very loyal in her/his orders.'

Ugari 'abundant' can also appear with the D. In such a case, it is clearly behaving as an adjective (example (46a) is taken from Añibarro 1820).

(46a) Zure-tzat Jainkoa beti da franko-a, **ugari-a**, prestu-a...
you.sg-BEN God-D.sg always is frank-D.sg abundant-D.sg reliable-D.sg
'God will always be frank, abundant, reliable [...] for you.'
(46b) Hiztun ederr-a eta **ugari-a** da gizon hau.
speaker beautiful-D.sg and abundant-D.sg is man this
'This man is a beautiful and abundant speaker.'

This adjectival usage is available for *gutxi* 'few' although it is not very productive nowadays (example from Izagirre 1970).[28]

(47) Gauza **gutxi-a**
thing few-D.sg
'The small thing'

Despite the possibility these 'quantifiers' have to appear with the D, observe that when this happens they completely lose their quantificational meaning and function as adjectives or

[28] A reviewer suggests that it could be the case that the reason why these quantifiers can, while the 'some' ones cannot, appear with the D is because these quantifiers can function as adjectives, in opposition to the 'some' ones. This would bring out the similarity of Basque with many other languages in that while other weak quantifiers can be predicates, the form for 'some' cannot. However, the parallelism is not total because in those other languages, the weak quantifiers when being predicates do not have to change to a 'very' meaning (as far as I know); in Basque, the only quantifier that keeps its meaning is 'ugari'. Furthermore, I think there is definitely something interesting to say about the co-ocurrence of these quantifiers with D as the examples in (48) show. Cf. also section 3.2 where weak quantifiers are argued to be cardinality predicates (not adjectives). The reason why weak quantifiers do not appear with the D is due to the fact they are syntactically base generated in Number Phrase, below the DP projection.

degree modifiers. In fact, in all of the examples in (31-38)[29] (some of them repeated here for convenience as (48)) the D cannot combine with the quantifier, no matter whether it is placed on the nominal expression or on the quantifier.[30]

(48a) Nerabe(*-ak) asko(*-ak) berandu iritsi ziren. (=31b)
Teenager(-D.pl) many(-D.pl) late arrive aux.pl
'Many teenagers arrive late.'
(48b) Perretxiko(*-ak) ugari(*-ak) ikusi ditut baso-a-n. (=35a)
mushroom(-D.pl) abundant(-D.pl) see aux.pl wood-D.sg-IN
'I have seen many mushrooms in the wood.'
(48c) Politikari(*-ak) gutxi(*-ak) iritsi ziren berandu. (=36a)
politician(-D.pl) few(-D.pl) arrive aux.pl late
'Few politicians arrived late.'

There are two quantifiers that apparently maintain their quantificational meaning when combined with the D (either singular or plural[31]): *franko* 'many', exemplified in (49), and *gutxi* 'few' in (50).[32, 33]

(49a) Unaiek **ehiztari-a franko** ikusi du gaur.
Unai-ERG hunter-D.sg many see aux.sg today
'Unai has seen many hunters today.'
(49b) Unaiek **ehiztari-ak franko** ikusi ditu gaur.
Unai-ERG hunter-D.pl many see aux.pl today
'Unai has seen hunters many times today.'
(50a) Helmuga gurutzatu zuten **txirrindulari gutxi-ak** leher eginda iritsi ziren.
finish line cross aux.pl cyclist few-D.pl-ABS burst done arrive aux.pl
'The few cyclists that crossed the finish line did so completely exhausted.'
(50b) Afaltze-ko edan dudan **ardo gutxi-ak** logura eman dit.
dinner-GEN drink aux.sg wine few-D.sg-ERG sleep-will give aux.sg
'The little wine I've drunk for dinner made me sleepy.'

[29] Except for *franko* 'many' which accepts appearing with the D but only when this is combined with the nominal expression. See ex. (49).
[30] Although I don't give examples here, the singular form of the D (+singular agreement with the verb) does not improve the sentence at all.
[31] Note that when *franko* combines with a plural DP as in (49b) its interpretation is that of an adverbial; see below.
[32] The Basque Corpus of the XXth Century [http://www.euskaracorpusa.net/XXmendea/Konts_arrunta_fr.html] shows that the use of *franko* with a D, as in (49), is much more reduced statistically than that of *franko* with no D, as in (32b-b'). Thanks to Patxi Goenaga for pointing this out to me.
[33] Some speakers do not accept *gutxi+ak*, but do accept the construction if instead of the D a demonstrative is used. Thanks to Ricardo Etxepare for pointing this out to me.

However, note that the way in which the D combines with these two quantifiers is different: with *franko* 'many', it is the nominal expression that appears with the D; with *gutxi* 'few', the D combines with the quantificational expression.

Both these quantifiers show some specific behaviour when they are used in these contexts:

Gutxi plus the D must always be used inside relative clauses and there is no other way in which the D can combine with *gutxi*, as the ungrammaticality of (48c) already demonstrated.[34]

Franko on the other hand shows differences depending on whether the D is singular or plural. When it is plural, *franko* seems to be functioning not as a quantifier but as an adverbial and the sentence in (49b) would be interpreted as 'Unai has seen hunters many times today'.[35] When the D is singular, *franko*'s use is restricted to some specific syntactic contexts, and this differentiates it from the other quantifiers that are being analysed in this section: it is grammatical in direct object position as in (49a) as well as in the subject position of unaccusative sentences as in (51a); but quite unexpectedly, it is ungrammatical in the subject of transitive sentences such as (51b) and as the subject of individual-level predicates as in (51c).[36,37]

(51a) **Ikasle-a** **franko** etorri zen.
student-D.sg many-ABS come aux.sg
'Many students came.'

(51b) * **Ume-a-k** **franko** goxoki bat jan du.
child-D.sg-ERG many candy one eat aux.sg
'Many children ate a candy.' (intended)

[34] At first sight, it seems as though the D that appears with *gutxi* in sentences like (50) is the D related to the relative clause. However, this does not appear to be correct because if this was the case other quantifiers should also allow the D when in relative clauses, but they do not.

(i) * Helmuga gurutzatu zuten txirrindulari **asko-ak** leher eginda iritsi ziren.
finish line cross aux.pl cyclist many-D.pl burst done arrive aux.pl
'The many cyclists that crossed the finish line did so completely exhausted (intended)'

Further, the fact that *gutxi* appears with the D when in relative clauses is not a must condition since it can also appear without it.

(ii) Helmuga gurutzatu zuten txirrindulari **gutxi** iritsi ziren leher eginda.
finish line cross aux.pl cyclist few arrive aux.pl burst done
'Few cyclists that crossed the finish line did so completely exhausted'

Another possibility is that *gutxi*, just like numerals, can be definite and referential (cf. §2.3). This explanation could be correct since the denotation of [*NP+gutxiak*] seems to be indeed referential (cf. Etxeberria 2005 for discussion on this).

[35] Thanks to Ricardo Etxepare for discussion of this point.

[36] See Etxeberria (in prep.) for a possible analysis of the behaviour of *franko* when combined with a singular DP.

[37] Sentence (51c) would be grammatical if *franko* was interpreted as a degree modifier meaning 'very' modifying the adjective *itsusi* 'ugly' that follows it (cf. example (44) above). However, this is not the interpretation that interests us here.

(51c) * **Modelo-a** **franko** itsusi-a da.
model-D.sg-ABS many ugly-D.sg is
'Many models are ugly.' (intended)

Now, all of these quantifiers (except for *piska bat* 'a little' that must combine with mass terms, cf. (40)) can create a partitive construction by combining with an NP plus the D plus the partitive postposition *-tik* 'of'. Again, as was the case with the quantifiers meaning 'some', these quantifiers must necessarily occupy postnominal position.

(52) [**Ikasle-eta-tik** **asko/gutxi/gutxi** **batzuk**...] zinema-n daude.
[student-D.pl-ABL many-ABS/few-ABS/few some-ABS] cinema-IN be.egon
'Many/few/few... of the students are in the cinema.'

These quantifiers can also be used as adverbials. In such a case, (i) they can appear just by themselves as in (53a-c) -except for *franko* 'many', *piska bat* 'a little' and *gutxi batzuk* 'a few'- or, (ii) they are added to the indefinite locative marker *-tan* as in (53d-f), a construction that is available to all of these quantifiers.

(53a) Soineko hon-e-k **asko/pila bat/gutxi** balio du.
dress this-ep-ERG many/manyfew cost aux.sg
'This dress costs a lot/little.'

(53b) **Ugari** ikusi ditu horrela-ko-ak.
many see aux.pl that way-REL-D.pl
'She/he has seen that kind of thing many times'

(53c) Ez da **anitz** luzatu exekuzioa.
no is many extend execution
'The execution did not take long.'

(53d) **Franko-tan** gertatu da hori.
many-LOC happen aux.sg that
'That has happened many times.'

(53e) **Piska bat-ean** itxaron beharko duzu.
litte one-LOC wait must aux.sg
'You'll have to wait for a little while.'

(53f) **Gutxi batzu-tan** bakarrik izaten dira ordu murrizketak.
few some-LOC only be.prog aux.pl hour restriction-D.pl
'Only few times are there time restrictions.'

Before moving to describe the behaviour of Basque universal quantifiers, it appears to me interesting to comment briefly on two other issues: (i) the comparative and superlative forms of *asko* 'many', (ii) the specific property of the changing word order of *gutxi* 'few'.

In order to form the comparative and superlative forms of *asko* 'many', the element that is taken as the stem is *gehi*, which is also used express addition. To this stem, we can add the comparative suffix *-ago* as in (54a) to create the comparative form *gehiago* 'more'. For the superlative form on the other hand, the suffix *-en* is used; and to this construction it is possible (though not necessary) to add the D as shown in (54b-b'). Note that the example in (54b'), with a D attached to the superlative morpheme, is ambiguous between a superlative and a quantificational use.[38]

(54a) Liburutegi hone-tan beste har-tan baino **liburu gehi-ago** daude.
library this-LOC other that-LOC than book plus-COMP aux
'There are more books in this library than in that one.'
(54b) Liburutegi hon-e-k ditu **liburu gehi-en**
library this-ep-ERG has book plus-SUP
'This library has the most books.'
(54b') Liburutegi hon-e-k ditu **liburu gehi-en-ak**
library this-ep-ERG has book plus-SUP-D.pl
'This library has most (of the) books.'

Note that in situations where the superlative interpretation is not allowed, the presence of the D is obligatory as the sentences in (55) clearly demonstrate (cf. Hualde and Ortiz de Urbina 2003b and Etxeberria 2005 for discussion).

(55a) **Diputatu gehi-en*(-ak)** berandu iritsi ziren
M.P. plus-SUP-D.pl late arrive aux.pl
'Most of the MPs arrived late.'
(55b) Mikel-e-k **ikasle gehi-en*(-ak)** goxoki-ak jaten ikusi zituen.
Mikel-ep-ERG student plus-SUP-D.pl candy-D.pl eating see aux.pl
'Mikel saw most of the students eating candies.'

Now, as mentioned above, *gutxi* 'few' has one specific property that makes it different from the rest of Basque quantifiers: it behaves similarly to focus operators in that it induces a change in the basic word order of the clause (cf. Etxepare 2003b, Etxeberria 2001, in prep.).[39] Note that focus phrases must appear in the immediately preverbal position, which produces a change in the basic SOV Basque word order (cf. among others Eguzkitza 1986, Ortiz de Urbina 1983, 1989, 1999, Uriagereka 1999, Arregi 2003, Irurtzun 2006).

(56a) * [Julen-e-k]$_F$ erraket-a hautsi du.
Julen-ep-ERG racket-D.sg-ABS break aux.sg
'Julen has broken the racket.'
(56b) Erraketa [Julenek]$_F$ hautsi du.
(56c) [Julenek]$_F$ hautsi du erraketa.

If we observe the examples offered in this section (except for those in 50a-b) we will notice that this is exactly what happens with this quantifier. That is to say, *gutxi* must necessarily occupy the preverbal position, irrespective of its grammatical function; and in case it is moved from this position, the sentence becomes ungrammatical as (57b) and (58b) show.[40]

(57a) [**Politikari gutxi-k**] irakurri zituzten Michael Moore-en liburu-ak.
politician few-ERG read aux.pl -GEN book-D.pl-ABS
'Few politicians read Michael Moore's books.'
(57b) * **Politikari gutxik** Michael Moore-en liburuak irakurri zituzten.
(58a) Antton-e-k [**film gutxi**] ikusi ditu aurten.
Antton-ep-erg [film few-ABS] see aux.pl this year.in
'Antton has seen few films this year.'
(58b) * Anttonek [**film gutxi**] aurten ikusi ditu.

2.4.3 Universal quantifiers. The Basque universal quantifiers, that is, those quantifiers that express the totality of the nominal expression they combine with, are: *guzti* 'all', *den* 'all', *oro* 'all', and *bakoitz* 'each'.[41]

[38] *Gutxi* 'few' can also be combined with the comparative and the superlative suffixes as in (ia-b). The difference between *asko* and *gutxi* is that the quantifier reading we just described for *gehi-en* is not found with *gutxi-en*.
(i) a. gutxi-ago 'less' b. gutxi-en 'least'
few-COMP few-SUP

[39] *Numeral baino gutxiago* 'less than numeral' shows exactly this same behaviour, but due to lack of space this quantifier will not be treated in this paper. For more information about this quantifier (as well as quantifiers such as *numeral baino gehiago* 'more than numeral') the reader is referred to Etxeberria (2005, in prep.).

[40] Note that *gutxi batzuk* 'a few' does not share with *gutxi* the restriction of appearing in preverbal position as the following example clearly shows.
(i) Politikari gutxi batzuk Michael Moore-en liburu-ak irakurri zituzten.
politician few some-ERG -GEN book-D.pl-ABS read aux.pl
'A few politicians read Michael Moore's books.'
It seems as though the necessity of appearing in preverbal position is a consequence of the negative nature of *gutxi* (and *numeral baino gutxiago* 'less than numeral). Cf. Etxeberria (in prep).

[41] *Guzti* and *den* have different origins. *Guzti* historically derived from an adjective, *-ti* is a suffix that creates adjectives (see Etxeberria 2005). *Den* derived from the relative form *den*; *dena*, a free relative, would mean 'what there is', implying that we make reference to 'everything there is', probably due to the D. Note also that according to (at least) one variety of Bizkaian (the one spoken in Ondarroa) *guzti* must modify an overt NP (*gizon guztiak ikusi ditut* 'I have seen all of the men' and not **guztiak ikusi ditut*) while *den* cannot (*denak ikusi ditut* 'I have

In opposition to those quantificational elements that have been presented in the previous sections, these universal quantifiers show no variation with respect to being prenominal or postnominal and must always appear in the postnominal position.

(59a) **Ume guzti-ak** goiz iritsi ziren.
child all-D.pl.ABS early arrive aux.pl
'All of the children arrived early.'

(59a') * **Guzti ume-ak** goiz iritsi ziren.
all child-D.pl.ABS early arrive aux.pl

(59b) **Jarraitzaile den-ek** abeslari-a-r-en sinadura nahi zuten.
fan all-D.pl.ERG singer-D.sg-ep-GEN signature-D.sg-ABS want aux.pl
'All of the enthusiastic fans wanted the signature of the singer.'

(59b') * **Den jarraitzaile-ek** abeslari-a-ren sinadura nahi zuten.
all fan-D.pl.ERG singer-D.sg-GEN signature-D.sg-ABS want aux.pl

(59c) **Ikasle oro-k** lan bat egin zuen ikasgai-a gaindi-tze-ko.
student all-ERG work one-ABS make aux.sg subject-D.sg-ABS pass-nom-GEN
'All of the students wrote a paper to pass the subject.'

(59c') * **Oro ikasle-k** lan bat egin zuen ikasgai-a gaindi-tze-ko.
all student-ERG work one-ABS make aux.sg subject-D.sg-ABS pass-nom-GEN

(59d) **Ikasle bakoitz-a-k** abesti bat abestu zuen.
student each-D.sg-ERG song one-ABS sing aux.sg
'Each student sang a song.'

(59d') * **Bakoitz ikasle-a-k** abesti bat abestu zuen.
each student-D.sg-ERG song one-ABS sing aux.sg

Where we do find variation is in the necessity of these quantifiers to appear with the D. Thus, *guzti* 'all', *den* 'all', and *bakoitz* 'each' must necessarily appear with the D (examples repeated from 59 as 60a-61a-62a), and the D must be combined with the quantifier, not with the nominal expression as the following (b) examples show.

(60a) **Ume guzti*(-ak)** goiz iritsi ziren.
child all-D.pl.ABS early arrive aux.pl
'All of the children arrived early.'

(60b) * **Ume-ak guzti** goiz iritsi ziren.
child-D.pl.ABS all early arrive aux.pl

seen all of them' and not **gizon den-ak ikusi ditut*) -thanks to one of the reviewers for pointing this out to me-. It is true that *den* is more commonly used modifying a covert noun; however, both *guzti* and *den* can be used modifying an overt or a covert NP by most Basque speakers with no problem (cf. also Euskaltzaindia 1993).

(61a) **Jarraitzaile den*(-ek)** abeslari-a-r-en sinadura nahi zuten.
fan all-D.pl.ERG singer-D.sg-ep-GEN signature-D.sg-ABS want aux.pl
'All of the enthusiastic fans wanted the signature of the singer.'

(61b) * **Jarraitzaile-ek den** abeslari-a-r-en sinadura nahi zuten.
fan-D.pl.ERG all singer-D.sg-ep-GEN signature-D.sg-ABS want aux.pl

(62a) **Ikasle bakoitz*(-a-k)** abesti bat abestu zuen.
student each-D.sg-ERG song one-ABS sing aux.sg
'Each student sang a song.'

(62b) * **Ikasle-a-k bakoitz** abesti bat abestu zuen.
student-D.sg-ERG each song one-ABS sing aux.sg

The only one that need not appear with the D is *oro* 'all' as exemplified in (59c), repeated here for convenience as (63).

(63) **Ikasle oro-k** lan bat egin zuen ikasgai-a gaindi-tze-ko.
student all-ERG work one-ABS make aux.sg subject-D.sg-ABS pass-nom-GEN
'All of the students must write a paper to pass the subject.'

This quantificational expression [NP Q] can optionally appear with the D. When that is the case, one specific property of this universal quantifier is that the D must obligatorily combine with the nominal expression, not with the quantifier (as happens with the rest of Basque universal quantifiers, cf. 60 to 62), as the examples in (64) demonstrate.

(64a) [**Ikasle-ek oro-k**] lan bat egin zuten ikasgai-a gaindi-tze-ko.
student-D.pl.ERG all-ERG work one-ABS make aux.pl subj-D.sg pass-nom-GEN
'All the students must write a paper to pass the subject.'

(64b) * [Ikasle oro-**ek**] lan bat egin zuten ikasgaia gaindi-tze-ko.
student all-ERG work one-ABS make aux.pl subj.-D.sg pass-nom-GEN

Instead of the D, the noun that combines with *oro* can be helped by a demonstrative, giving rise to examples such as the following. Note that the case marking used in the demonstrative must also appear in the quantifier: ergative in (65a), comitative in (65b).

(65a) [**Ikasle hauek oro-k**] lan bat egin zuten ikasgaia gaindi-tze-ko.
student these.ERG all.ERG work one-ABS make aux.pl subj-D.sg pass-nom-GEN
'All these students must write a paper to pass the subject.'

(65b) [**Lagun hauek-in oro-rekin**] joango naiz.
friend these-COM all-COM go.FUT aux.sg
'I'll go with all these friends.'

A similar construction is also available to the quantifiers *guzti* 'all' and *den* 'all'. The difference between these two quantifiers and *oro* 'all' is that the former must necessarily appear with the D, always creating this sequence [quantifier-determiner] in order for the construction to be grammatical (cf. 60-62). Again, both the demonstrative that combines with the nominal and (in this case) the determiner combined with the quantifier must be case-marked.

(66a) [**Ume hauek guzti-ak**] mozorrotu egin ziren.
child these.ABS all-D.pl.ABS dress up do aux.pl
'All these children dressed up.'

(66b) [**Politikari hauek den-ek**] gezur-r-ak esan zituzten.
politician these.ERG all-D.pl.ERG lie-ep-D.pl say aux.pl
'All these politicians told lies.'

Note that one property of the universal quantifiers that can combine with a [NP+demonstrative] or [NP+D] sequence is that they can also behave as so-called floating quantifiers in that they need not be adjacent to the noun (although as we will see, their behaviour is not exactly the same, see section 3).

(67a) **Ikasle hauek** lan bat egin beharko dute **oro-k**.
student these.ERG work one make must aux all-ERG
'These students must write a paper to pass the subject all.'

(67b) **Ume hauek** mozorrotu egin ziren **guzti-ak**.
child these.ABS dress up do aux.pl all-D.pl.ABS
'These children dressed up all.'

(67c) **Politikari hauek** gezurr-ak esan zituzten **den-ek**.
Politician these.ERG lie-D.pl-ABS say aux.pl all-D.pl.ERG
'These politicians told lies all.'

The forms in (65-66) are the ones mostly used in the Basque literary tradition as well as the ones preferred by the Academy of the Basque Language. However, there is still another way in which the universal quantifier and the demonstrative can be combined, exemplified in (68). In this case, the element that bears the case marking is (only) the demonstrative, that is, the element that appears last in the quantificational phrase. Note that the construction in (68) is available only for *guzti* though.

(68a) [**Ikasle guzti hauek**] berandu etorri ziren.
student all these.ABS late come aux.pl
'All of these students arrived late.'

(68b) * [**Ikasle den hauek**] berandu etorri ziren.
student all these.ABS late come aux.pl

(68c) * [**Ikasle oro hauek**] berandu etorri ziren.
student all these.ABS late come aux.pl

The only universal quantifier that is unable to combine with a demonstrative is *bakoitz* 'each', no matter whether the demonstrative appears postnominally (just before the quantifier) as in (65-66) or adjacent to the quantificational expression as in (68).[42] In order for *bakoitz* 'each' to be grammatical, it must appear with the D as in (69a).

(69a) **Ikasle bakoitz-a-k** goxoki bat jan zuen.
student each-D.sg-ERG candy one-ABS eat aux.sg
'Each student ate a candy.'

(69b) * **Ikasle bakoitz honek** goxoki bat jan zuen.
student each this.ERG candy one-ABS eat aux.sg

(69c) * **Ikasle honek bakoitz** goxoki bat jan zuen.
student this.ERG each candy one-ABS eat aux.sg

The impossibility of appearing with demonstratives is not the only difference between *bakoitz* 'each' and the rest of the Basque universal quantifiers. One other difference between them is that *bakoitz* cannot appear with the plural version of the D and must necessarily combine with the singular form of it.

(70) * Ikasle bakoitz-**ek** goxoki bat jan zuten.
student each-D.pl.ERG candy one-ABS eat aux.pl

[42] It is possible to find *bakoitz* 'each' combined with a demonstrative in the Basque literature tradition, a use that is lost in present-day Basque. However, in such contexts, its meaning is clearly not 'each' as nowadays, but 'unique', equal to the current *bakar* 'unique', which is an adjective.

(i) Hasera-ko hizkuntza bakoitz hura.
beginning-REL language unique that
'That initial unique language.'

Thus, *bakoitz* can be argued to have become a quantifier from an adjective (this has also been argued to be so for *guzti*, *den*, *gehien* -cf. Etxeberria 2005-); in fact, note that that was actually its original use as the following examples also corroborate.

(ii) Jainko-a-ren seme bakoitz-a.
God-D.sg-GEN son unique-D.sg
'The unique son of God'

(iii) Guk dugu sinhesten eta ezagutzen Iainko bat bera, eta hura dela **esentia bakoitz bat**.
'We believe in and know one God, who is **a unique essence**.'

The other universal quantifiers (except for *oro* 'all') are also able to appear with the singular D.

(71a) Jon-e-k **[etxe guzti-a]** garbitu du.
Jon-ep-ERG house all-D.sg.ABS clean aux.sg
Lit.: 'Jon has cleaned up all the house.'
(71b) Jon-e-k **[etxe den-a]** garbitu du.
Jon-ep-ERG house all-D.sg.ABS clean aux.sg
Lit.: 'Jon has cleaned up all the house.'
(71c) * Jon-e-k **[etxe-a oro]** garbitu du.
Jon-ep-ERG house all-D.sg.ABS clean aux.sg

In the examples in (71a-b) the quantificational expressions are interpreted as making reference to the totality of the house, and in order for the sentence to be true no part of this house should be found unclean.[43] This interpretation is not available for *bakoitz* 'each' though, as the ungrammaticality of the following sentence reveals.[44]

(71d) * Jon-e-k **[etxe bakoitz-a]** garbitu du.
Jon-ep-ERG house all-D.sg.ABS clean aux.sg
'Jon has cleaned up all the house (intended)'

The ungrammaticality of (71d) leads us to another difference between *bakoitz* 'each' and the rest of the universal quantifiers. *Bakoitz* 'each' has been described as the Basque inherently distributive quantifier (cf. Etxeberria 2001, 2002a) and in opposition to the other Basque universal quantifiers, which can but need not be interpreted distributively, *bakoitz*

Sentence (ii) would nowadays mean 'each son of God', but its real meaning is 'the unique son of God'. In (iii) on the other hand -example taken from Leizarraga 1571-, *bakoitz* 'unique' combines with *bat* 'one', a usage that is clearly ungrammatical in present-day Basque.

[43] There is another element in Basque that may be used to express the same meaning as the sentences in (71); this element is *oso* 'whole', an element that is commonly used as a degree modifier meaning 'very' (see example (42)).

(i) Jon-e-k etxe oso-a garbitu du.
Jon-ep-ERG house entire-D.sg.ABS clean aux.sg
'Jon has cleaned the entire house.'

Despite the initial similarity, there's a clear cut distinction between the universal quantifiers in (71) and *oso* 'whole'. While *guzti* 'all' and *den* 'all' can be combined with mass terms, this is not possible for *oso* 'whole' as the ungrammaticality of (iib) shows.

(iia) Mattin-e-k ron guzti-a/den-a edan du.
Mattin-ep-ERG rum all-D.sg.ABS/all-D.sg.ABS drink aux.sg
'Mattin has drunk all of the rum.'
(iib) * Mattin-e-k ron oso-a edan du.
Mattin-ep-ERG rum entire-D.sg.ABS drink aux

[44] The example in (71d) is grammatical with the meaning 'Jon has cleaned each house'; but this is not the interpretation that we are interested in in this case.

'each' always forces distributive interpretations as shown in (72b).[45]

(72a) **Ikasle guzti-ek/den-ek** abesti bat abestu zuten.
student all-D.pl.ERG/all-D.pl.ERG song one-ABS sing aux.pl
'All/all of the students sang a song.'
√ distributive √ collective

(72b) **Ikasle bakoitz-a-k** abesti bat abestu zuen.
student each-D.sg-ERG song one-ABS sing aux.sg
'Each student sang a song.'
√ distributive * collective

In fact, quantifier phrases formed with *bakoitz* 'each' can appear neither in the subject position of intransitive sentences (73a) nor in the object position of transitive sentences (73b), nor in the direct object position, that following the basic Basque word order [S-IO-DO-V] appears below the indirect object (73c) (cf. among many others de Rijk 1969, Ortiz de Urbina 1989, Elordieta 2001).[46]

(73a) * Ikasle bakoitz-a berandu etorri zen.
student each-D.sg.ABS late come aux.sg
'Each student came late.'
(73b) * Ikasle bat-e-k liburu bakoitz-a irakurri zuen.
student one-ep-ERG book each-D.sg.ABS read aux.sg
'One student read each book.'
(73c) * Irakasle-a-k ikasle bat-i liburu bakoitz-a eman zion.
Teacher-D.sg-ERG student one-DAT book each-D.sg.ABS give aux.sg
'The teacher gave one student each book.'

What seems to be going on is that *bakoitz* 'each' is grammatical only in those situations where it has an element syntactically deeper in the structure over which to distribute; and this element does not seem to be the event variable (cf. Etxeberria 2001, 2002a). Thus, the intransitive sentence in (73a) with no element to be distributed over cannot be recovered. However, a change in the word or a change in the object (IO or DO) that contains *bakoitz*

[45] Distributive interpretations are closely related to singularity (cf. Gil 1995). Note that those Basque quantifiers that can agree with the verb in singular or in plural (see §2.4.1, 2.4.2) are interpreted only distributively when agreement is done in singular (cf. Etxeberria 2002a, 2005 for details).

[46] According to some Basque speakers, the sentences in (73) are grammatical with a reading where *bakoitz* 'each' is interpreted as 'each and every one of the students'. However, most Basque speakers agree with the judgement I give for (73).

'each' does correct the ungrammaticality of both the sentences in (73b) and (73c), as shown in (74a-a') and (74b) respectively.

(74a) Liburu bakoitz-a, ikasle bat-e-k irakurri zuen.
book each-D.sg.ABS student one-ep-ERG read aux.aux
'Lit.: Each book, one student read.'

(74a') Ikasle bat-e-k irakurri zuen liburu bakoitz-a.
student one-ep-ERG read aux.sg book each-D.sg.ABS
'One student read each book.'

(74b) Irakasle-a-k ikasle bakoitz-a-ri liburu bat eman zion.
teacher-D.sg-ERG student each-D.sg-DAT book one-ABS give aux.sg
'The teacher gave each student one book.'

In all the three sentences in (74), *bakoitz* 'each' is able to find an element (which must be syntactically below *bakoitz*) to distribute over. In the examples in (74a) *liburu bakoitza* 'each book' appears in topic position, a position that is assumed to be considerably high in the syntactic structure. In (74a'), the subject *ikasle batek* 'one student' appears in (preverbal) focus position and *liburu bakoitz* 'each book' is part of the "theme" (cf. Vallduví 1993 and references therein). We could assume that the movement of the subject to the focus position creates an A'-chain that allows reconstruction to a position below the one occupied by *liburu bakoitz* 'each book', allowing the distributive interpretation. As a consequence, in both (74a-a'), *liburu bakoitza* can distribute over *ikasle bat* and the number of students is interpreted as depending on the number of books. In the sentence in (74b), *bakoitz* appears in the IO position, which being structurally higher than the DO position allows us to interpret the number of books as dependent on the number of students.

Despite the various differences between the Basque universal quantifiers mentioned, let me point out one similarity between them. All these quantifiers are unable to combine with a partitive construction (cf §3.1.1 for a possible explanation).

(75a) * ikasle-**eta-tik** guzti-**ak**
student-D.pl-ABL all-D.pl

(75b) * ikasle-**eta-tik** den-**ak**
student-D.pl-ABL all-D.pl

(75c) * ikasle-**eta-tik** oro
student-D.pl-ABL all

(75d) * ikasle-**eta-tik** bakoitz-**a**
student-D.pl-ABL each-D.sg

Up until now, I have presented the basic behaviour of Basque (nominal) quantifiers and have grouped them depending on their meaning. In what follows, I will first present the classification between so-called strong and weak quantifiers and then provide a brief semantic as well as syntactic account (based on Etxeberria 2005) of their behavioural differences.

3 THE CLASSIFICATION OF BASQUE QUANTIFIERS: STRONG AND WEAK QUANTIFIERS

Considering properties such as symmetry, intersectivity, presuppositionality or the possibility to appear in existential sentences, the division we get between Basque strong (proportional) and weak (cardinal) quantifiers is the following:[47]

- Strong quantifiers: *guzti* 'all', *den* 'all', *oro* 'all', *bakoitz* 'each', *gehien* 'most'

- Weak quantifiers: numerals, *batzuk* 'some', *zenbait* 'some', *hainbat* 'some', *asko* 'many', *ugari* 'abundant, copious', *franko* 'many', *anitz* 'many', *pila bat* 'lots of', *gutxi* 'few', *gutxi batzuk* 'a few', *piska bat* 'a little'

Strong quantifiers are those that (i) are neither symmetrical nor intersective, (ii) express a proportion of the nominal, (iii) are presuppositional in that the set denoted by the NP they appear with is presupposed to be non-empty, and (iv) cannot appear in existential sentences.[48] Weak quantifiers on the other hand, show exactly the opposite properties (cf. Milsark 1979).

Apart from these differences, one crucial difference between Basque strong and weak quantifiers is that the strong ones (except for *oro*, see below) must necessarily appear with the D (cf. examples (55), (60), (61), (62); (60a) is repeated below as (76a)),[49] while the weak ones do not appear with it (cf. examples (27), (48); (48a) is repeated below as (76b)), except for the

[47] Cf. Etxeberria (2002b, 2004, 2005) for an extended presentation of how Basque quantifiers behave with respect to these properties.

[48] Where A is the set denoted by the NP and B is the set denoted by the VP (definitions taken from de Hoop 1992),
(i) Symmetry refers to the following equivalence: [D(A)(B) ↔ D(B)(A)]
(ii) Intersectivity refers to the following equivalence: [D(A)(B) ↔ D(A∩B)(B)]

[49] Some authors maintain that the strong quantifiers that form sequences [quantifier+D] are not quantifiers but simple adjectives (cf. Trask 2003, Artiagoitia 2003). I do agree that what I described as Basque strong quantifiers (except for *oro*) have been historically used as adjectives (it could even be the case that at some point these elements were ambiguous between an adjectival and a quantificational meaning), but I have shown elsewhere that this usage is nowadays completely lost (cf. Etxeberria 2005 for extensive discussion on this, see also footnotes 41, 42 and example (52)).

numerals, *franko*, and *gutxi*.[50]

(76a) **Ume guzti*(-ak)** goiz iritsi ziren. (=60a)
child all-D.pl.ABS early arrive aux.pl
'All of the children arrived early.'

(76b) **Nerabe(*-ak) asko(*-ak)** berandu iritsi ziren. (=48a)
teenager(-D.pl) many(-D.pl) late arrive aux.pl
'Many teenagers arrive late.'

Note that following a crosslinguistic pattern, the Basque quantifiers that have been classified as weak above can also obtain proportional readings. In such a case they must appear with both the D and the partitive *-tik* 'of', that is, they must form partitive constructions (cf. section 3.1.2 for more on *-etatik*). The weak quantifier must always appear postnominally (cf. examples 28, 52).

(77) **[Ikasle-eta-tik asko]** berandu iritsi ziren.
student-D.pl-ABL many late arrive aux.pl.past
'Some of the students arrived late.'

These partitive quantifiers are necessarily proportional (hence, strong quantifiers) and the partitive *NP-eta-tik* (lit.: NP the.pl of) denotes the set of contextually relevant *x*-s (cf. Ladusaw 1982). Furthermore, these partitive constructions show the same behaviour as strong quantifiers when it comes to the aforementioned properties.

To account for the differences between Basque strong and weak quantifiers, I take as correct the assumption that quantification in natural languages must always be contextually restricted. In fact, there is a general assumption that all quantifiers have a (hidden) domain argument (at LF) whose value is contextually supplied. Let us observe a situation like the one in (78).

(78) [Speaker A is relating to speaker B the experiences of last night, when A and some of her students went out for a pizza]

A: Everybody$_C$ had a great time (von Fintel 1994: 28)

[50] I have argued elsewhere (Etxeberria 2005) that when numerals are combined with a D they create referential expressions, rather than quantificational ones (cf. also §2.3). *Gutxi* seems also capable of creating referential readings when combined with Ds (cf. fn.34). On the other hand, remember from section 2.4.2 that the behaviour of *franko* when the NP it combines with appears with the D shows some specific characteristics (compared to those other quantifiers that can or must appear with the D) and that it could even be possible to treat it not as a quantifier but as an adverbial element (cf. Etxeberria (in prep.) and Etxeberria and Etxepare (in prep.) for discussion).

In (78), the speaker A does not intend to convey the idea that everybody, literally, had a great time; instead, a sentence like (78) says something about a contextually restricted set of individuals, those who went out for a pizza last night with A.

One other general assumption is that quantificational domain restriction is always encoded syntactically (the 'explicit strategy' of contextual restriction in Neale 1990).

With these two assumptions in mind, I propose, in line with Giannakidou (2004), that the QP internal D introduces the contextual domain restriction (cf. also Etxeberria 2005) and that languages differ with respect to whether they overtly or covertly restrict their quantificational domain. If this analysis is on the right track and the D acts as a contextual domain restrictor inside QPs, this provides extra evidence in favour of the standard analysis of Generalized Quantifiers where the quantifier combines with a property type element ⟨e, t⟩. Note that the D domain restrictor does not change the type of the nominal expression; it just gives a contextually restricted nominal. The proposal that I'm putting forward in this paper goes against Matthewson (2001), who based on her analysis of St'át'imcets quantifiers, proposes that quantification in natural languages must proceed in two steps, rather than in one (as proposed by the standard analysis of GQs): first, the D combines with the NP predicate to create an entity-denoting element of type *e*, and in a second step, the created object is taken as an argument by the Q-det (of type ⟨e, ⟨⟨e, t⟩, t⟩⟩, according to Matthewson) to yield a GQ of the desired type ⟨⟨e, t⟩, t⟩.[51]

What's more, the behaviour of Basque strong quantifiers sheds light on the theoretical debate about whether the contextual domain restrictor is placed in the nominal expression (Stanley and Szabó 2000, Stanley 2002; cf. also Matthewson 2001) or in the quantifier (von Fintel 1994, Martí 2003). Those Basque strong quantifiers that are formed by adding the D show quantificational domain restriction (cf. §3.1.1), while the ones that need the partitive constructions to create strong quantifiers show nominal domain restriction (cf. §3.1.2). Hence, both options will be needed to account for quantification across languages. Furthermore, cross linguistic data show that the default is to implement the contextual variable (implicitly or explicitly) on the nominal; restriction on the quantifier on the other hand, will only be assumed if there is evidence for it (e.g. the use of a D).[52]

Finally, I take the fact that the D is excluded from weak quantifiers as evidence for the idea that these elements are neither quantifiers nor contextually restricted (cf. §3.2 where weak quantifiers are treated as cardinality predicates), in agreement with what has been standardly defended in the literature (cf. Milsark 1979, Partee 1988, Diesing 1992, Cooper 1996, van Geenhoven 1998, von Fintel 1998).

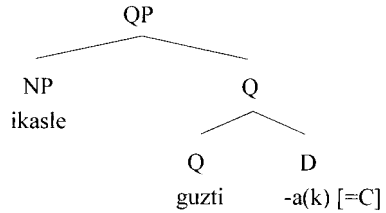
[51] See Giannakidou (2004), Etxeberria (2005, to appear), or Adams (2005) for arguments against Matthewson's analysis. See Giannakidou (2004) for a reanalysis of St'át'imcets data. Cf. also Matthewson (2005) where it is argued that the reanalysis of St'át'imcets data offered by Giannakidou does not account for the facts since Giannakidou (2004)'s analysis predicts that DPs in St'át'imcets are definite, and according to Matthewson they are not. Cf. Giannakidou (2004) and Matthewson (2005) for discussion.

[52] The reader is referred to Etxeberria (2005, to appear) for a detailed analysis.

3.1 Strong quantifiers

3.1.1 Strong quantifiers plus the D: Quantificational domain restriction. The syntactic structure of quantificational phrases formed with *guzti* 'all', *den* 'all', *bakoitz* 'each', and *gehien* 'most' will be as in (79a).

(79a) ikasle guzti-ak
student all-D.pl



(79b) ikasle guztiak = (ikasle) [guzti (C)]
(79c) [[guzti]] = $\lambda P\, \lambda Q\, .\, \forall x\, P(x) \rightarrow Q(x)$
(79d) [[-ak] = $\lambda Z_{et, ett}\, .\, \lambda P_{et}\, \lambda Q_{et}\, .\, Z\, (P \cap C)\, (Q)$; Z the relation denoted by Q-det
(79e) [[guzti-ak]] = $\lambda P\, \lambda Q\, .\, \forall x\, (P(x) \cap C(x)) \rightarrow Q(x)$

The result is that we restrict the first argument of Z, the NP: so, as it is expressed in (79c), if $Z = \lambda P\, \lambda Q\, .\, \forall x\, P(x) \rightarrow Q(x)$, then after *-ak* application we get (79e) which contains a C-restricted P domain (compare 79c with 79e) (cf. Etxeberria and Giannakidou in prep.).

Then, these strong quantifiers suggest that the quantifier and the D compose together by means of an adjunction procedure (or by incorporating the D to the quantifier) as it has been argued for Greek quantifiers of the same kind in Giannakidou (2004). Hence, the domain restriction introduced by the D creates a new complex quantifier which contains the contextual variable *C* and is contextually restricted.

Note that when contextualisation happens at the quantifier level (as is the case with these Basque strong quantifiers), the addition of another definite results in ungrammaticality.

(80) * ikasle-**ak** guzti-**ak**
student-D.pl all-D.pl

This ungrammaticality cannot be explained in terms of type mismatch since the partitive form is also out as shown in (81). Apparently, the partitive *ikasleetatik* (lit.: student

the.pl of) would yield the correct argument ($\langle e, t \rangle$ type predicative argument) for the quantifier to quantify over; but still, the constructions in (81) are out.

(81) * ikasle-**eta-tik** guzti-**ak** (=75a)
student-D.pl-ABL all-D.pl

Thus, the reason these sentences are ungrammatical must be due to the fact that domain restriction is already fulfilled through the D that composes with the strong quantifier. The reason why contextual restriction cannot happen more than once should be considered a case of redundancy. What would it mean to contextually restrict more than once? Not much, since contextually restricting does not add any descriptive content, unlike e.g. adjectival or other modification which adds a different description with each application and narrows down the NP domain in an informative way. Notice in this respect that modifying a noun with the same adjective is also redundant unless a different meaning is created:

(82) An old old book

In (82) only one of the adjectives is interpreted as a restrictor. The other is interpreted as a degree modifier like 'very', yielding a meaning equivalent to *a very old book*. Hence reduplication of identical modifiers is also prohibited in the usual case; it is then only normal to expect it with contextual restriction. Only here we have ungrammaticality because there is no other available lexical meaning for D.[53]

(83a) Jon-e-k txakur polit polit guzti-**ak** erosi zituen.
Jon-ep-ERG dog cute cute all-D.pl.ABS buy aux.pl
'Jon bought all of the cute, cute dogs.'
(83b) * Jon-e-k txakur polit polit-**eta-tik** guzti-**ak** erosi zituen.
Jon-ep-ERG dog cute cute-D.pl-ABL all-D.pl.ABS buy aux.pl
'Jon bought the all of the cute, cute dogs.'

In (83a) only one of the *polit* 'cute' adjectives is interpreted as a restrictor; the other is interpreted as a degree modifier meaning 'very'. Following Etxeberria 2005, contextual restriction will be introduced via the D (which acts as a modifier when it plays the role of contextual domain restrictor). Now, since Ds (or the partitive constructions as we will see below) supply no descriptive content other than the context set *C*, they cannot apply more than

[53] Thanks to Anastasia Giannakidou (p.c.) for discussion of this point.

once without redundancy; hence, the ungrammaticality of (83b).[54]

3.1.2 Partitives: Nominal domain restriction. In opposition to what happens with the quantifiers in the previous sub-section, the strongly interpreted weak quantifiers must appear with partitive forms to be interpreted proportionally (cf. §3.2 though). The proposal is that Basque nominal restriction occurs by means of the D plus the partitive *-tik* 'of' (cf. Etxeberria 2005, in press).

(84) [**Ikasle-eta-tik asko**] berandu iritsi ziren. (=52)
[student-D.pl-ABL many] late arrive aux.pl
'Many of the students arrived late.'

In Basque, the overt partitive form *-etatik* (which necessarily forms strong quantifiers) is composed of the D *-a* that is not seen due to assimilation with the plural marker *-eta* (the usual plural marker is *-k*),[55] and the ablative marker *-tik*.[56] Thus, the compositin of a partitive quantifier will be the one in (85) where the partitive *-etatik* is taken to be providing the nominal domain restriction. First, the combination of the NP and the D creates an object of type *e* which is taken as an argument by the Basque partitive suffix *-tik* and to return an element of type ⟨e, t⟩ so that the quantifier takes the proper type argument. From this last combination, we get a GQ of the usual type ⟨⟨e, t⟩, t⟩.

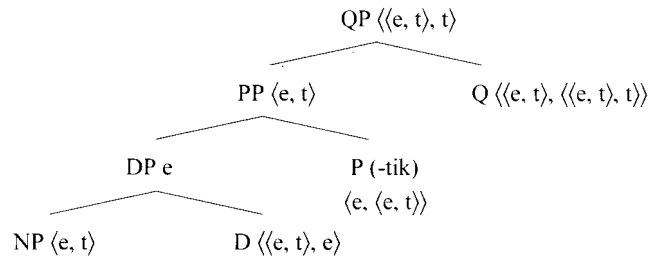
[54] One of the reviewers suggests that it could be possible to argue that what the Basque lexically strong quantifiers create are DPs with the structure in (i), rather than Quantifier Phrases (as in (79a)).
(i) [$_{DP}$ [$_{QP}$ NP Q] D]
If this was the case, it should be possible to conjoin two QPs, that is, two [NP+Q] sequences in (i), under the same single D in the same way that it is possible to conjoin two NPs or two Adjectival Phrases (AdjP) under the same D as shown in (ii) and (iii) respectively.
NP conjunction
(ii) [$_{DP}$ [$_{NP}$ Ikasle] eta [$_{NP}$ irakasle]-ak] azterket-a garai-a-n daude.
[[student and teacher]-D.pl.ABS] exam-D.sg period-D.sg-IN aux.pl
'The students and teachers are in exams period.'

AdjP conjunction
(iii) Maiak [$_{DP}$ [$_{AdjP}$ zaldi haundi] eta [$_{AdjP}$ elefante txiki]-ak] ikusi ditu.
Maia-ERG [[horse big and elephant small]-D.pl.ABS] see aux.pl
'Maia has seen the big horses and small cats.'
But contrary to what this alternative analysis predicts, conjoining two strong quantifiers under the same D is completely unaccepted as the ungrammaticality of the following Basque example clearly shows.
(iv) * [$_{DP}$ [$_{QP}$ Ikasle gehien] eta [$_{QP}$ irakasle guzti]-ak] goiz iritsi ziren.
[[student most and teacher all]-D.pl.ABS] early arrive aux.pl
'Most of the students and all of the teachers arrived early (intended).'
Then, what these sentences come to show is that (i) Basque lexically strong quantifiers create Q-detPs and not DPs headed by the D, and that (ii) the Basque D (at least in quantificational phrases) is behaving as a contextual variable that composes together with the Q-det, its function being that of contextually restricting the quantificational domain (cf. Etxeberria 2005 for extensive discussion on this).

[55] See Azkarate and Altuna (2001) for the historical analysis of the plurality marker *-eta*. See also Manterola (2006).

[56] See Eguzkitza (1997).

(85)



As evidence for the fact that D is actually included in the partitive form *–etatik*, note that in Basque, case is marked by means of suffixes and it is possible to distinguish between the indefinite and the definite paradigms morphologically. *Etxe* means 'house'.

(86)

	indefinite	definite sg.	definite pl.
ergative	*etxe-k*	*Etxe-ak*	*etxe-ek*
ablative	*etxe-ta-tik*	*Etxe-tik*	***etxe-eta-tik***

It is known that partitive constructions like the ones we are considering denote the set of all contextually relevant houses (in this case) and we are arguing that for such constructions the definite determiner is necessary. Now, in principle it would seem possible to create a derived strong quantifier with the indeterminate form of the ablative, but as the example in (87a) shows, this is completely impossible.

(87a) * etxe-ta-tik asko
house-pl-ABL many
(87b) etxe-eta-tik asko
house-D.pl-ABL many

Thus, *-eta* must be taken as a portmanteau morpheme that marks both number and definiteness features in a single morpheme.[57]

As was the case with those Basque strong quantifiers that combine with the D, and as predicted by the fact that these quantifiers are also contextually restricted (by means of the overt partitive), further definites will not be allowed.

(88) * Ikasle-eta-tik asko-ak
student-D.pl-ABL many-D.pl

[57] Cf. Etxeberria (2005) for an extended explanation of these facts.

The fact that Basque possesses an overt partitive form excludes the possibility of covertly type shifting the DP.

(89) * Ikasle-ak ∅ asko.
student-D.pl many

This covert partitive restriction is available in languages with no overt *of* such as St'át'imcets by BE (cf. Giannakidou 2004).[58, 59, 60] But in languages with overt partitive forms the covert shift will be blocked since overt type shifters block covert shifts (Chierchia 1998a). This correctly predicts that in languages with overt partitives direct embedding of DP under quantifiers will not be possible and that quantificational domain restriction will be taken care of by overt partitive constructions.

3.1.3 The case of oro 'all'. As we have seen in §2.4.3, *oro* 'all', in contrast with the rest of the strong quantifiers, need not appear with the D.

(90) gizon oro
man all

Actually, the behaviour of *oro* 'all' seems to be problematic. On the one hand, it is a strong quantifier and as such must be contextually restricted; this restriction is filled through the D in Basque. But on the other hand, *oro* does not need to appear with the D.

The behaviour of this quantifier comes to show that Basque does also have room for covert contextual restriction and that just like English *every* or Spanish *todo* 'every', Basque *oro* restricts its quantificational domain covertly in the nominal. One crucial argument in favour of this solution is that *oro* does not allow the partitive to appear with the NP.

[58] BE: $\langle\langle e, t\rangle, t\rangle \rightarrow \langle e, t\rangle$: $\lambda P_{et,t}$ [λx [{x}$\in$ P]]. A functor that applies to a generalized, quantifier finds the singletons that are contained in it and collects their elements in a set.

[59] Matthewson (2005) argues against the possibility of having the covert type-shifter BE in St'át'imcets because according to her there is no language-internal evidence for it, and claiming that BE exists in the language makes incorrect predictions, e.g. that main predicates could have Ds on them, which they cannot. However, claiming that BE doesn't apply in St'át'imcets would be a strange gap in the language. The type shifting approach (including the modifications by Chierchia in terms of covert versus overt type shifters) would allow BE and block it only if there is an overt element doing what BE does. The question to answer then is: do we have evidence that some overt element does this in St'át'imcets?

[60] Lisa Matthewson (p.c.) mentions that in St'át'imcets there is a preposition that may perform (alongside other functions; there are only four prepositions in this language) the function that a designated prepostion (*of*) or a case-marker assumes in other languages. However, this preposition is not required (as *of* is in English, *de* 'of' in Spanish, or the ablative case in Basque). The examples that are cited in the literature as St'át'imcets partitives (see Matthewson 1998, 2001) resort to the familiar structures 'D weak NP'. Hence, it seems safe to continue to assume that St'át'imcets lacks a partitive *of* element (and a partitive structure) of the English, Romance, Greek, Basque type.

(91) * gizon-eta-tik oro (=75c)
man-D.pl-ABL all

Neither does it accept a D in the quantifier (cf ex. 64b).

(92) * gizon oro-ak
man all-D.pl

This provides more evidence for the fact that (i) once the quantificational expression is contextually restricted no more restriction is needed, and (ii) the default is to restrict the quantifier in the nominal and restriction on the Q-det is only postulated if we have evidence for it (e.g. the use of a D, or other kind of marking).[61]

However, this is not the only use that this quantifier can be given (cf. §2.4.3) and *oro* can also appear with a nominal combined with a D as well as with a nominal combined with a demonstrative, exemplified in (93a) and (93b) respectively.

(93a) ikasle-**ak** oro
student-D.pl.ABS all
(93b) ikasle **hauek** oro
student dem.ABS all

To assume a covert type shifting of the DP *ikasle-ak* 'the students' from an individual to predicative type is problematic (see §3.1.2).[62] There is an alternative analysis though; we can assume that *oro* is ambiguous between a real quantificational nature (as in ex. (90)) and a DP modifier with the semantics of an exhaustivity operator (exactly what Brisson (1998) argues to be the case for English [*all+DP*] sequences).[63] Note that in constructions such as those in (93) the quantifier can be floated away from the DP it modifies; this is a necessary property to be interpreted as an exhaustivity operator.[64]

[61] Note that English *every* and Spanish *todo* do not accept either a partitive restricting the noun or a D restricting the quantifier.

[62] If, as predicted by the GQ analysis, quantifiers combine with elements of type $\langle e, t\rangle$ and not with elements of individual type, the DP in (93) should type-shift from individual to predicative type. But this covert type-shifting is problematic if what we're arguing in this paper is correct (cf. §3.1.2).

[63] English *all* is also ambiguous between these two interpretations. *All* in *all the NP* is not a Q-det but a DP modifier with the semantics of an exhaustivity operator. In *all of the NP* on the other hand *all* behaves as a Q-det and this is why it needs the partitive construction.

[64] The same behaviour is also available for *guzti* and *den*; in (i) the quantifier and the nominal are adjacent while in (ii) the quantifier appears floated away from the nominal expression. This shows that these quantifiers are also ambiguous between a real quantifier (as explained in §3.1.1) and a modifier with the semantics of an exhaustivity operator (à la Brisson).

(94) Ikasle-**ek** / **hauek** lan bat egin beharko dute **oro-k**.
student-D.pl.ERG / these.ERG work one-ABS make must aux.pl all-ERG
'The/these students must write a paper to pass the subject all.'

3.2 Weak (unrestricted) quantifiers[65]

Up until now, we have argued that natural language quantifiers must be contextually restricted and shown that this restriction is realised overtly by means of the D in some languages, e.g Basque. Now, the fact that Basque weak quantifiers do not appear with the D shows in the overt syntax (cf. Etxeberria 2005) that in fact so-called weak quantifiers are unrestricted and that as a consequence they are not to be considered (real) quantifiers (cf. Milsark 1979, Partee 1988, van Geenhoven 1998, Landman 2002).

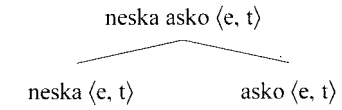
Hence, weak quantifiers are proposed to be cardinality predicates which are base generated as being of predicative type ⟨e, t⟩. As a matter of fact, note that in opposition to strong quantifiers, they are grammatical in predicative position.

(95a) Gonbidatu-ak [**neska asko/batzuk/gutxi**...] ziren.
guest.D.pl.ABS [girl many/some/few...] be
'The guests were many/some/few girls.'
(95b) * Gonbidatu-ak [**neska guzti-ak/oro**] ziren.
guest.D.pl.ABS [girl all-D.pl/all] be
(95c) * Gonbidatu-ak [**nesk-eta-tik asko**] ziren.
guest.D.pl.ABS [girl-D.pl.abl many] be

The proposal is that the combination of a cardinal-weak quantifier like *asko* 'many' with an NP predicate like *neska* 'girl' (which following standard assumptions is also of type ⟨e, t⟩) will be carried out through intersection (cf. Landman 2002), yielding an element of type ⟨e, t⟩ as a result. This is the way they are interpreted when in predicative position.

(i) Ume hauek guztiak/denak mozorrotu egin ziren. (=66a-b)
child these.abs all-D.pl.abs dress up do aux
'All these children dressed up.'
(ii) Ume hauek mozorrotu egin ziren guztiak/denak. (=67b-c)
child these.abs dress up do aux all-D.pl.abs
'All these children dressed up.'

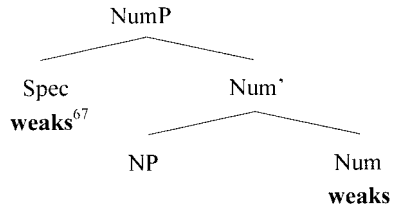
[65] For ease of exposition and following standard terminology, these elements have been and will be referred to as *weak quantifiers* throughout the paper.

(96)


Furthermore, the reason why weak quantifiers do not appear with the D is due to the fact they are syntactically base generated in Number Phrase, below the DP projection.[66] It is precisely this property (together with the fact that they are unrestricted) what prevents weak-cardinal quantifiers from appearing with Ds.

But this cannot be the whole story since we've seen in section 2.3 that numerals (and in some specific constructions *gutxi* 'few' -cf. section 2.4.2 and footnote 34-) can be combined with the D, in opposition to the rest of the Basque weak quantifiers. The difference between pure cardinal words (numerals) and the rest of (Basque) weak quantifiers is semantic in nature: while the former can be definite and referential due to the fact that they're specified for number, the latter cannot. When we utter something like *zazpi ikasle* 'seven students' we are speaking about a set of seven students (not seventy-two) and when we want to refer to them as a plural specific/referential set we make use of the D. On the other hand, the rest of weak quantifiers (both prenominal and postnominal) cannot make reference to a specific set the way numerals can, since their exact number is clearly unspecified (as asserted in Milsark 1977), hence the impossibility to be combined with the D (cf. Etxeberria 2005, to appear, for extensive discussion on this). The only construction where these unspecified weak quantifiers allow the D is the partitive construction where their interpretation is the proportional one and their behaviour is parallel to that of strong quantifiers (cf. section 3.1.2).

Thus, the syntactic structure of a weak-cardinal expression in predicative position is the one (97). This structure is of predicative type ⟨e, t⟩.

(97)


However, the predicative interpretation is not the only interpretation that cardinal weak quantifiers (without overt partitives) may get as they can also appear in argument position. When in argument position, weak cardinal quantifiers can get a cardinal or a proportional

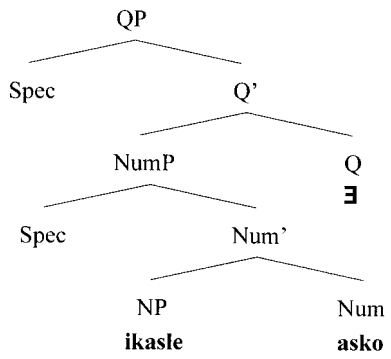
[66] Cf. Etxeberria 2005 for a detailed analysis.
[67] Prenominal weak quantifiers such as *zenbait* 'some' or *hainbat* 'some', which have a phrase-like flavour occupy the specifier position of NumP. Cf. Artiagoitia 2003.

interpretation as the example (98) illustrates (cf. Partee 1988).

(98) Ikasle asko-k goxoki-ak jan zituzten.
student many-ERG candy-D.pl.ABS eat aux.pl
'Many students ate candies.'
√ CARDINAL: many in number
√ PROPORTIONAL: many (of the) students

In order to get the cardinal interpretation we make use of a silent existential quantifier. This existential quantifier (∃) is of quantificational type ⟨⟨e, t⟩, ⟨e, t⟩, t⟩⟩ and in combination with *ikasle asko* (which is of type ⟨e, t⟩) creates a GQ of the usual type ⟨⟨e, t⟩, t⟩. The logical form that we get for the subject of a sentence like (98) is (99).

(99) [[∃x [ikasle(x) & asko(x)]]



Therefore, in argument position the cardinal interpretation of indefinite NPs is derived from predicative interpretations through a type-lifting process by means of the silent existential quantifier (Landman 2002). This operation takes a set of individuals *x* and maps it onto a generalized quantifier, the set of all sets that have a non-empty intersection with *x*.

For the proportional reading on the other hand, I adopt Büring (1996), where the covert partitive phenomenon is approached from a pragmatic point of view. In contrast to the Semantic (Ambiguity) Approach (cf. Partee 1988, Diesing 1992, de Hoop 1992), where the cardinal and the proportional readings are claimed to be fixed from the lexicon, Büring argues that weak quantifiers are not ambiguous: their proportional (and therefore presuppositional) interpretation depends on the Topic/Focus/Background Structure (TFBS) which prevents postulating a covert partitive structure when no partitive is overt.

Büring (1996) extends the alternative semantic approach to focus (cf. Rooth 1985) to quantificational expressions and argues that sentences of the kind in (100a) involve two accents, a contrastive topic accent and a focus accent. Such a sentence triggers the reconstruction of a particular set of potential contexts, the ones obtained by substituting *some* for its contextually relevant alternatives given in (100b).

(100a) Ikasle [BATZUK]$_T$ [GARAGARDO-A]$_F$ edan zuten.
student some.ERG beer-D.sg.ABS drink aux.pl
'SOME students drank BEER.'
(100b) What did some students drink? What did all of the students drink? What did five students drink? What did few students drink? What did many students drink?

No matter which of the previous contexts might have been the actual Discourse-Topic, all of the alternatives in (100b) give rise to elements able to occupy a topic position and as a consequence the existence of a group of students is presupposed. Thus, it is possible to know upon hearing (100a)–even in a discourse-initial context–that it requires a discourse context that has to do with students. The partitive interpretation of *ikasle batzuk* in (100a) results from the fact that the noun, but not the weak quantifier, is part of the background. In other words, the partitive/presuppositional reading emerges as a result of the contexts required by the sentence.

As evidence in favour of this analysis, note that Basque weak quantifiers in non-topic/focus position can only obtain weak cardinal readings.

(101) Jon-e-k irakurri ditu liburu asko.
Jon-ep-ERG read aux.pl book many-ABS
'Jon has read many books.'
√ CARDINAL: many in number
* PROPORTIONAL: many (of the) books

In (101), the subject appears in (preverbal) focus position and *liburu asko* 'many books' is part of the "theme" (cf. Vallduví 1993 and references therein); hence, it is part neither of the topic nor the focus of the sentence.

4 Final Remarks

In this paper I have first thoroughly presented the meaning and the possible uses of the most representative Basque nominal quantificational elements. One interesting property of quantifiers in Basque is that some must, others may and some others cannot appear with the

definite determiner. In a second part (§3), and considering the properties presented before, I have divided Basque quantifiers between strong and weak and then briefly provided an analysis (based on Etxeberria 2005) of the internal structure of these quantificational elements both semantically as well as syntactically.[68]

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[68] The reader is referred to Etxeberria (2005, to appear) for an extended version of this analysis.

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7

CUZCO QUECHUA QUANTIFIERS

Martina Faller and Rachel Hastings

1 INTRODUCTION

Cuzco Quechua (CQ)[1] possesses a variety of markers that encode quantificational functions. There are nominal quantifiers, adverbial quantifiers, distributive suffixes and pluractional verbal suffixes. In this paper we will focus on nominal quantifiers and their distribution across different constructions, including their interaction with quantificational suffixes. The examples in (1) illustrate some of the quantifiers to be discussed.[2,3]

[1] Cuzco Quechua belongs to the A or II branch of the Quechua language family (Cusihuaman 2001[1976]:29). While Quechua as a whole still has an estimated number of 10 million speakers, sociolinguists agree that it is endangered due to the "contraction of Quechua domains and a gradual cessation of intergenerational transmission" (King and Hornberger 2004:1). The data on which this paper is based were largely collected during fieldwork carried out by both authors in 2006 in Cuzco, Peru, and extracted from published texts. We are indebted in particular to our main bilingual consultants Inés Callalli Villafuerte, Natalia Pumayalli Pumayalli and Edith Zevallos Apaza. For insightful comments that helped us to be more precise in our analysis we would like to thank Ed Keenan, Lisa Matthewson, Craige Roberts, Malte Zimmermann, and an anonymous reviewer.

[2] Abbreviations used in glosses (mostly based on labels used by Cusihuaman (2001)): 1,2,3: first, second, third person, ABL: ablative, ACC: accusative, ADV: adverbializer, AG: agentive, COM: comitative, CONT: continuative, CONTR: contrastive, DAT: dative, DEF: definite, DELIM: delimitative, DET: determiner, DIM: diminutive, DISC: discontinuative, DISTR: distributive, EUPH: euphonic, EXCL: exclusive, FOC: focus, FUT: future, GEN: genitive, HORT: hortative, ILLA: illative, INCL: inclusive, INDEF: indefinite, INT: intensive, LOC: locative, NMLZ: nominalizer, NX.PST: non-experienced past, PA: pluractional, PL: plural, POSS: possessive, PROG: progressive, PST: past, REFL: reflexive, TOP: topic.

[3] These examples also illustrate some of the basic properties of CQ, which is an agglutinative language with overt case-marking on nouns and often extensive derivational and inflectional suffixation on verbs to encode a variety

(1) a. T'anta-ta-qa raki-yku **lluy** runa-paq **sapanka** wasi-pi.
bread-ACC-TOP distribute-1EXCL all person-DAT each house-LOC
'We distribute the bread to every person in every house.' (Espinoza 1997:54)

b. **Kinsa**-nti-cha-yku khuyay-ta qoqaw-cha-yku-ta,
three-DEF-DIM-1EXCL sad-ADV packed.lunch-DIM-1EXCL-ACC
hank'a-cha-yku-ta k'utu-ru-ku-sa-ra-yku.
toasted.corn-DIM-1EXCL-ACC eat-HORT-REFL-PROG-PST-1EXCL
'The three of us sadly ate our packed lunch and toasted corn.' (Espinoza 1997:16)

c. **Wakin** chay tusu-q-ni-y-kuna kawsa-sa-nku-raq-mi
some that dance-AG-EUPH-1-PL live-PROG-3PL-CONT-FOC
'Some of those dancers of mine are still alive.' (Espinoza 1997:48)

What we call nominal quantifiers in this paper are those that can appear prenominally, typically appearing before the noun and adjective, if there is one.[4] CQ has no overt definite and indefinite articles,[5] but the demonstratives *kay* 'this', *chay* 'that', and *haqay* 'yonder' are candidates for the category of non-quantificational determiners (Hastings 2004:27). (2) is a list of CQ nominal quantifiers to be discussed.[6] Note that we include the question words *hayk'a* 'how many' and *mayqin* 'which' in this group.

of semantic notions (see Cusihuaman (2001) for an overview). The basic word order is Subject-Object-Verb, but this is highly variable and pronominal subjects and objects are often omitted.

[4] In the terminology of Bach et al. (1995) these quantifiers can be classified as D-quantifiers in as much as they are structurally part of a DP. In this paper we remain agnostic as to whether they actually occupy a determiner position, though see Hastings (2004) for arguments that at least some nominal quantifiers do. Many quantifiers can also be floated, subject to structural restrictions. See Hastings (2004) for discussion.

[5] However, the suffix *-nti* can be used as a definiteness marker, see example (1b). This suffix will be discussed in section 4.2.

[6] This is not a complete list of nominal quantifiers in CQ. We exclude the universal quantifier *q'ala* 'every, all' from discussion because it also has a use as an adjective meaning 'naked', 'without anything', which sometimes interferes with its quantifier use. We also exclude *as* 'a few/little', for which we have only a limited set of data, but which appears to behave similarly to *pisi* '(a) few'. Lastly, we exclude *kuskan* 'half' which sometimes appears to function as a quantifier but which may also be a measure phrase. More research is required to confirm its status as a quantifier. We are also unable to consider negative quantifiers like English *no* in this paper, because these are not expressed by a single lexical item, but require complex interactions between quantificational elements, an indefinite marker, and sentential negation (consisting of *mana* 'not' and the polarity enclitic *-chu* 'NEG'). The examples in (i) and (ii) show how 'nobody' and 'no child' can be expressed.

(i) Mana pi-pis ri-nqa-chu.
not who-INDEF go-3FUT-NEG
'Nobody will go.'

(ii) Mana (mayqin) irqi-pas puklla-ra-n-chu.
not which child-INDEF play-PST-3-NEG
'No child played.'

The absence of simple negative quantifiers is not uncommon cross-linguistically. Hausa, as discussed by Malte Zimmermann in this volume, is another language that lacks them, to mention just one. The expression of negative quantification promises to be a rich area for both language-specific study and cross-linguistic comparison.

(2) a. *huk* 'one', *iskay* 'two', *kinsa* 'three', and other numerals
b. *sapanka* 'each', *llapa(n)* (alternatively *llipi(n)*) 'every/all', *tukuy* 'every/all', *lliw* (alternatively *lluy*) 'every/all'
c. *pisi* '(a) few/little', *askha* 'many', *wakin* 'SOME'
d. *hayk'a* 'how many', *mayqin* 'which'

While these quantifiers can occur prenominally, they often also occur without a head noun, as illustrated in (3).[7]

(3) Hinaspa unu **llapan**-ta apa-ya-pu-q ka-sqa . . .
then water every/all-ACC take-INT-DEF-AG be-NX.PST
'Then the water took everything . . .' (Gow and Condori 1976:9)

When not modifying a head noun, some quantifiers can take person inflection, as shown for example in (1b).[8] The semantics of this construction will be the topic of section 4.

In the next part of the paper, section 2, we will discuss to what extent the empirical distribution of nominal quantifiers can be explained in terms of standard classification criteria such as the weak/strong distinction, presuppositionality, cardinality, and definiteness. In section 3 we look more closely at these issues with respect to distributivity, as encoded in distributive suffixes, as well as at differences in distributivity between the various universal quantifiers. In section 4 we will discuss how the existence presupposition of some quantifiers accounts for their ability to combine with person inflection, e.g. (1b), and in section 5 we will discuss the quantifier *wakin* 'SOME', illustrated in (1c), which, unlike English *some* but like English *SOME* carries an existence presupposition.

[7] This raises the question of whether the quantifier itself functions as the head of NP or whether it modifies a phonologically null head noun in examples such as (3). The first alternative is plausible given that, according to Muysken (1994:190), quantifiers are morphologically nouns. However, based on a study of the inflection and agreement properties of quantifiers, Muysken (1994) concludes that only some quantifiers can be heads, and argues that the others modify a phonologically null element. We do not aim to contribute to further clarifying this issue here, though our conclusion that some quantifiers are essentially relational in Partee's (1995) sense suggests that these quantifiers may indeed be best analyzed as modifying a phonologically null element when occurring without an overt noun.

[8] Some of the quantifiers obligatorily contain a final 3rd person *-n* even when modifying a head noun, e.g. *llapa-n llama* 'all/every-3 llama'. However, as Muysken (1994) already observed, this suffix is semantically empty, and he therefore calls it a dummy 3rd person marker. Support for this claim is provided by the fact that this is the only person marker that can occur in this position: **llapa-y llama* 'all/every-1 llama'. This suffix is morphologically separable, as can be seen by the fact that other suffixes can intervene between it and the root, *llapa-lla-n* 'every/all-LIM-3'. Nevertheless, because of the semantic emptiness of the dummy marker, we treat *llapan* as a unit and do not gloss *-n* separately in the examples. We have not found that the presence of this dummy marker affects the semantics of the constructions we discuss in this paper.

2 EMPIRICAL CLASSIFICATION

In this section we will discuss how the criteria of compatibility with existential constructions, ability to function as adjectival or verbal modifiers, and ability to function as predicates, serve to group CQ nominal quantifiers into distinct classes. Before discussing these groupings, we will lay out our theoretical background assumptions in the next subsection.

2.1 Theoretical background assumptions

In the following, we will make use of certain terms which are used in different ways by different authors, and we therefore start by clarifying what we mean by them in (4).

(4) a. **Strong/weak quantifiers.** We use these terms in purely descriptive terms. Weak quantifiers are those that can occur in existential sentences, and strong ones are those that are excluded from this environment (Milsark 1977).

b. **Proportional quantifiers.** We adopt Keenan's (2002) definition of this term, according to which a proportional quantifier requires that its restriction constitute some proportion or range of proportions of its domain, which may be 0% or 100%.

c. **Presuppositional quantifiers.** Cross-linguistically, quantifiers have been analyzed as carrying a variety of presuppositions. Some CQ quantifiers presuppose that their restriction is non-empty, and we will use 'presuppositional quantifier' to refer to such quantifiers (Diesing 1992).

d. **Definiteness.** We use the term definite NP to refer to NPs that presuppose the existence of a unique referent. We do not take definiteness and strength to be equivalent.

As a general backdrop for our analysis, we assume, following Partee (1986) and much subsequent work, that noun phrases can occur in three different semantic types, a referential type e, a predicative type <e,t>, and a quantificational type <<e,t>,t>. These different types are related to each other by a set of type-shifting operations which are assumed to be universally available. Some of these operations may have overt morphological realization in a language, while others may be applied non-overtly. Moreover, only some quantifiers are "essentially relational quantificational operators" (Partee 1995:560), in the sense that they require an analysis as relations between sets, that is, as necessarily being of type <<e,t>, <<e,t>,t>>. In English, these are primarily the proportional quantifiers, e.g. *all, every, each, most*. The

interpretation of in particular cardinal quantifiers,[9] e.g. *three, many*, "as a relation between sets is always reducible to a property of the intersection of the sets" (Partee 1995:561). That is, a simpler analysis of these quantifiers is as predicates, type <e,t>. This predicts that such quantifiers should themselves be able to occur in predicative positions, and we will see below that this prediction holds true of CQ cardinal quantifiers.

We furthermore assume, following Link (1998), that the domain of individuals contains both singular and plural individuals, and that this domain is structured by the part-of relation $\leq$. For example, the plural individual consisting of John and Mary, represented as $j \oplus m$, has Mary as a singular part, $m \leq j \oplus m$. While it is usually assumed that common nouns in English denote sets of singular individuals, there is evidence that common nouns in CQ have general number and denote sets of singular and plural individuals (Corbett 2000, Rullmann and You 2006).[10] For example, a common noun without the optional plural marker *-kuna* may refer to either a singular or plural individual,[11] as shown in (5). In the context of the narrative from which (5) is taken, *uwiha* is interpreted as plural, but out of context, it could also refer to a single sheep.

(5) Uwiha-q qhepa-n-ta urqo-ta ri-spa-n, . . .
sheep-GEN behind-3-ACC mountain-ACC go-NMLZ-3
'Walking behind the sheep (pl.) to the mountains . . .'
(Valderrama Fernandez and Escalante Gutierrez 1982:26)

Furthermore, common nouns unmarked for plural may freely combine with quantifiers that require their restriction to be semantically plural, e.g., *askha llama* 'many llamas', *kinsa llama* 'three llamas'.

We also assume that Verb Phrases denote sets of singular and plural individuals. Again, this is supported by the fact that verbs without overt plural marking can be interpreted as having either singular or plural subjects as shown in (6).[12]

(6) Puñu-sha-n.
sleep-PROG-3
'(S)he/it/they is/are sleeping.'

[9] We adopt Keenan's (2002:632) definition of cardinal quantifiers as those whose "value depends just on how many objects lie in the intersection of their two arguments."

[10] That common nouns denote sets of both singular and plural individuals has been argued for a variety of languages, including Mandarin Chinese (Rullmann and You 2006) and Hausa (Zimmermann, this volume) amongst others.

[11] The plural suffix *-kuna* restricts the denotation of common nouns to plural individuals (see Faller (2007) for a slightly more detailed discussion of this issue).

[12] Kratzer (2007) argues, following work by Krifka and Landman, that English predicative stems should be analyzed as having plural denotations. Thus, this analysis of CQ verb phrases is not particularly unusual. Note though that in Kratzer's event-based theory, VPs do not denote sets of plural and singular individuals, but sets of ordered tuples of events and singular and plural individuals. We thank Lisa Matthewson for pointing this out.

Analyzing common nouns as denoting sets of both singular and plural individuals requires an adjustment to the meaning of certain quantifiers as well. In particular, the numerals cannot be analyzed as requiring that the intersection of their restriction and domain have a certain cardinality. We propose to analyze numerals as denoting a set of sum individuals, each with the cardinality indicated by the numerals. When occurring attributively, they are shifted to the modifier type <<e,t>, <e,t>>. For example, the denotation of modifier *kinsa* 'three' is shown in (7a). In contrast, the semantics usually given for essentially relational quantifiers such as *llapan* 'every/all' can remain the same, given that their domains also denote sets of both singular and plural individuals. The truth conditions for *llapan* are shown in (7b).

(7) a. $[\![\textit{kinsa}\ A]\!] = \{x|x \in A \ \&\ |x| = 3\}$
b. $[\![\textit{llapan}\ A\ B]\!]$ = true iff $A \subseteq B$[13]

Further evidence for the distinction between predicative and essentially relational quantifiers in CQ will be presented in the following sections.

2.2 Existential constructions

Existential *there*-sentences are the canonical environment for distinguishing between what Milsark (1977) called weak and strong quantifiers. In purely descriptive terms, weak quantifiers are those that can occur in such sentences, and strong ones are those that cannot. For example, *three llamas* can, but *every llama* cannot occur in this construction in English: *There are three llamas in the field, *There is every llama in the field.* The corresponding construction in CQ typically employs the verb *kay* 'be' in its simple third person, non-plural form *kan* which takes a full subject, not a dummy subject like English there.[14]

As in English, some quantifiers can occur in this environment, while others cannot.

[13] As one reviewer pointed out, this semantics for universal quantifiers as it stands does not capture the case of collective predicates. Within the lattice-theoretic approach adopted here, collective predicates such as 'gather' denote sets of plural individuals, that is, a common noun denotation which contains singular individuals could not form the subset of a collective predicate. The semantics required to account for examples like (33a) ("All people gathered") discussed in section 3.2 would have to map the denotation of 'people' onto its maximal sum and require that it is an element in the set denoted by 'gather' (cf. Link's (1998:107f) discussion of *all* with collective predicates). For current purposes we will stick to the simple semantics given here, however.

[14] The verb *kay* 'be' is also used as a copula. Its third person, non-plural form *kan* is obligatorily dropped in copular sentences so there is generally no ambiguity between the two constructions (Hastings 2004:29). However, this rule is violable for some speakers. These speakers allow an interpretation of, for example, (8a) as 'Many llamas are in the field' and accept for example (9a) as grammatical under the interpretation 'All llamas are in the field.' This interference of the copula interpretation of *kan* makes the application of this test somewhat problematic. Nevertheless, the fact that for some speakers there is a clear grammatical difference between the sentences in (8) and (9) constitutes good evidence that we are indeed dealing with an existential sentence effect.

Examples with weak quantifiers are shown in (8)[15] and examples with strong quantifiers in (9) (Hastings 2004).

(8) a. **Askha** llama-kuna chakra-pi ka-n.
many llama-PL field-LOC be-3
'There are many llamas in the field.'
b. **Kinsa** llama-kuna chakra-pi ka-n.
three llama-PL field-LOC be-3
'There are three llamas in the field.'

(9) a. ***Llapan** llama-kuna chakra-pi ka-n.
all llama-PL field-LOC be-3
'*There are all llamas in the field.'
b. ***Wakin** llama-kuna chakra-pi ka-n.
SOME llama-PL field-LOC be-3
'*There are SOME llamas in the field.'
c. ***Kinsa**-ntin llama-kuna chakra-pi ka-n.
three-DEF llama-PL field-LOC be-3
'*There are the three llamas in the field.'

Note that while simple numerals are weak, numerals that carry the suffix *-nti*[16] are strong. As reflected by the translation of (9c), such quantifiers are definite. An account of this construction will be presented in section 4. Another environment that distinguishes between weak and strong quantifiers are existential *have*-sentences with relational nouns (Partee 1999). For example, *Mary has three sisters* is fine, but **Mary has every sister* is bad. The equivalent construction in CQ involves the possessive suffix *-yuq*, as illustrated in (10).

(10) a. Marya-qa **kinsa/pisi** ñaña-yuq-mi.
Marya-TOP three/few sister-POSS-FOC
'Marya has three/few sisters.'
b. *Marya-qa **llapan/wakin** ñaña-yuq-mi.
Marya-TOP all/SOME sister-POSS-FOC
'*Marya has all/SOME sisters.'

[15] An anonymous reviewer suggests that the examples in (8) might be more natural with an evidential/focus enclitic added. These markers are common in CQ–for example, note the focus marker *-mi* at the end of sentence (1c). However, focus/evidential enclitics are not obligatory in CQ, witness, e.g., the naturally occurring examples in (1a,b). We have therefore often not included such an enclitic in our elicited examples in order to keep them simple. Our consultants accept such examples without reservations. We refer to Muysken (1994) for a discussion of the focussing function of these enclitics and to Faller (2002) on their evidential meaning.

[16] We will use *kinsantin* 'the three' as the representative for this class of numerals throughout the paper.

These two existential constructions divide the CQ quantifiers as follows:

(11) a. Weak quantifiers: numerals, *pisi* '(a) few', *askha* 'many', *hayk'a* 'how many'
b. Strong quantifiers: *sapanka* 'each', *llapa* 'every/all', *tukuy* 'every/all', *lliw* 'every/all', *wakin* 'SOME', *mayqin* 'which', *kinsantin* 'the three'

This classification into weak and strong quantifiers is mostly unsurprising, though there are two interesting points to note. First, notice that *wakin* comes out as strong, that is, it is not a translational equivalent of English existential *some*, which is unproblematic in these contexts, but rather of stressed, strong SOME, witness the unacceptability of *There are SOME llamas in the field.*[17] The semantics of *wakin* will be discussed in more detail in section 5.

Second, *mayqin* 'which' is not acceptable in existential constructions when its restriction is interpreted as a set of individuals.[18] This is shown in (12).[19]

[17] In fact, CQ does not possess a quantifier that is equivalent to English *some*. A very common way of expressing existence of an unspecified quantity of individuals in CQ is by means of bare nouns, singular or plural, as in the following:

(i) Llama-kuna chakra-pi ka-n.
llama-PL field-LOC be-3
'There are (some) llamas in the field.'
(ii) Marya-qa ñaña-yuq-mi.
Marya-TOP sister-POSS-FOC
'Marya has a/some sister(s).'

In some cases, the numeral *huk* can be employed in the function of an indefinite article:

(iii) Chay panpa-pi llank'a-q ka-sqa **huk** runa inkarnasyun p'unchay.
this pampa-LOC work-AG be-NX.PST one person Encarnación day
'On the day of Encarnación a man worked in the pampa.' (Gow and Condori 1976:9)

Further study is required to determine under what circumstances *huk* is used this way.

[18] Note, however, that *mayqin* becomes acceptable in existential sentences, at least to some consultants, when the restriction is interpreted as a kind. For example, (i) could be used to ask which kinds of flowers there are in your garden, but not which particular flowers there are.

(i) **Mayqin** t'ika-kuna jardin-ni-yki-pi ka-n?
which flower-PL garden-EUPH-2-LOC be-3
'Which *(kinds) of flowers are there in your garden?'

In fact, even *llapan* becomes acceptable under a kind interpretation. Thus, (ii) is fine.

(ii) Jardin-ni-y-pi **llapan** sacha-kuna ka-n.
garden-EUPH-1-LOC all tree-PL be-3
'In my garden there are all *(kinds of) trees.'

A similar phenomenon can be observed in English. McNally and van Geenhoven (1998:7) offer examples like *There was every sort of complaint imaginable* in which a *there*-sentence with a strong quantifier is rendered felicitous by making explicit the type interpretation of the associated noun. At least in Quechua, this interpretation can apparently be triggered by placing strong quantifiers in an existential context. We therefore clarify here that the existential meanings we are interested in for current purposes are those in which common nouns represent sets of individuals rather than kinds. Very likely the right analysis of these kind-existentials may be similar for Quechua and for English.

(12) a. *Salon-ni-yki-pi **mayqin** irqi-kuna ka-n?
class(room)-EUPH-2-LOC which child-PL be-3
'Which children are there in your class?'
b. ***Mayqin** ñaña-yuq-mi Marya-qa.
which sister-POSS-FOC Marya-TOP
'*Which sisters does Mary have?'

Which semantic property of quantifiers is responsible for the (in)felicity of quantifiers in existential contexts has been the topic of much debate in the literature. It is sometimes claimed that the weak/strong distinction corresponds to (in)definiteness, but this cannot be true of CQ since the indefinite quantifiers *wakin* 'SOME' and *mayqin* 'which' are strong. Others have claimed that the relevant property characterizing strong quantifiers is non-intersectivity (Keenan 1987). Since *mayqin* 'which' comes out as strong but nonetheless intersective, this cannot be the relevant property for CQ either.[20] Yet others have suggested that it is the presupposition that their restriction be non-empty that excludes strong quantifiers from these environments (Zucchi 1995), and we believe that it is this property that accounts best for the strong/weak distinction in CQ. However, there is a growing body of evidence that it might not actually be possible to find a single property that could account for the weak/strong distinction across languages, or even within a single language. Thus, de Hoop (1995) argues on the basis of Dutch data that the weak/strong distinction does not map onto a single underlying semantic property. Similarly, Matthewson (2006) has argued that it cannot be the lack of a presupposition of existence that allows NPs in the St'át'imcets equivalent of *there*-sentences, since the presuppositional element *nukw* is felicitous in this environment. Their respective accounts of elements roughly meaning 'some' in Dutch and St'át'imcets will be discussed in more detail in section 5.

While we cannot go into detail on what causes CQ quantifiers to be excluded from existential environments, the quantifier data that is relevant for this paper can be summarized by identifying presuppositionality as the key factor which excludes strongly quantified noun

[19] It is not clear to what extent the data in (12) differ from English. As mentioned in Keenan (2003:11), English judgments on questions like 'Which children are there in your class?' are variable, as are reported data in the literature. Keenan marks this type of question with one ?, pointing out that adding 'just' improves it substantially ('Just which children are there in your class?') but he cites other authors who have rejected these same types of sentences. Thus, while we take *mayqin* phrases to be unacceptable in CQ existential contexts, we leave open whether this represents some difference from English existentials, or perhaps a difference in the semantics of 'which'.

[20] (Keenan 2003:9) presents a slightly different characterization of weak quantifiers as those which are conservative on their second argument. A quantifier D is conservative on its second argument if:

(i) $DAB = DA \cap B,B$ for all A,B.

This characterization also does not rule out *mayqin* in CQ.

phrases from existential environments. That is, universal quantifiers like *tukuy* as well as other strong quantifiers like *wakin* 'SOME' and *mayqin* 'which' are felicitous only when it is understood that their restrictions are non-empty. (That the true situation is more complicated than this is seen, for example, in the sentences (i) and (ii) in footnote 18.) Also as mentioned above, Diesing (1992) and Zucchi (1995) among others have used presuppositionality as a key to understanding strong quantifiers in English. In fact, whether universals like *all* and *every* are truly presuppositional in English is much debated. In CQ, we find presuppositionality to be relevant to the behavior of this set of quantifiers in other environments as well (see section 4.1) and so assume this relatively inclusive view of presuppositionality is correct for CQ.

2.3 Nominal quantifiers as predicates

Some nominal quantifiers can be used as predicates. Examples are shown in (13).

(13) a. **Kinsa**-n regidor-ni-y-kuna.
three-FOC regidor-EUPH-1-PL
'My regidores[21] are three.' (Espinoza 1997:354)

b. Pay-kuna **pisi**-lla-n (ka-sha-n).
(s)he-PL few-DELIM-FOC be-PROG-3
'They are few.'

The quantifiers that can readily function as predicates are cardinal quantifiers, that is, the numerals, *askha* 'many', *pisi* '(a) few' and *hayk'a* 'how many'. This suggests that CQ cardinal quantifiers are of type <e,t>, which accords well with Partee's claim mentioned above, that cardinal quantifiers are not essentially relational quantifiers but amenable to a predicative analysis.

As shown in (14), the quantifier *sapanka* 'each' is infelicitous in this construction.

(14) *Pay-kuna **sapanka** (ka-sha-n).
(s)he-PL each be-PROG-3
'*They are each.'

However, the data for the other strong quantifiers *llapa, tukuy, lliw* 'every/all', *wakin* 'SOME' and *mayqin* 'which' are not as straightforward. The examples in (15) with *llapan* and *mayqin* are acceptable with and without person inflection, and *wakin* is acceptable at least with person inflection.[22]

(15) a. **Llapan-(chis)**- ña-n ka-nchis.
every/all-1INCL-DISC-FOC be-1INCL
'We are already all (of us).'

b. **Mayqin**-(ni-**n**)-kuna-n (ka-sha-nku).
which-EUPH-3-PL-FOC be-PROG-3PL
'Which (of them) are they?'

c. Pay-kuna **wakin**-ni-nku.
(s)he-PL some-EUPH-3PL
'They are some of them.'

The universal quantifiers *tukuy* and *lliw*, which are incompatible with person inflection (see section 4), are also marginally acceptable with the copula, as shown in (16), though consultants strongly prefer *llapan*.

(16) Kay-lla-n **llapan/tukuy/lliw**.
this-DELIM-FOC every/all
'This is all/everything.'

However, note that the examples in (15) and (16) are not predicational in any simple sense. That is, they do not mean that the subject has the property denoted by the quantifier. Instead these examples appear to be equative, stating that the (sum) individual referred to by the subject is identified with the sum individual referred to by the quantifier phrase.[23] Thus, (15a) means that the group denoted by 'we' is the same group as that denoted by 'all of us'. One of the most accessible interpretations of such a sentence would be locative: the people who are here, that is, 'we', are all of us, that is, all the ones expected to be here. We will leave it for a future occasion to develop an analysis of equative constructions in CQ and the quantifiers that can occur in them. The point for the purposes of the current paper is simply to note that the strong quantifiers that can occur as the argument of the copula do nevertheless not appear to be used as predicates.

In summary, we found that ability to function as a predicate classifies the quantifiers as follows:

[21] *Regidores* are elected local council members.

[22] We lack clear data on *wakin* without inflection in this construction.

[23] An alternative hypothesis of how the meaning of (16) could be derived is to assume that there is a purely predicative, but non-quantificational variant of *llapan* in which it means 'complete', that is, (16) might mean 'This is complete.' Evidence for the existence of such a meaning variant is provided in section 3.1, example 31. Such an analysis would also not invalidate our claim that quantificational *llapan* cannot be used as a predicate.

(17) a. Quantifiers that can function as predicates: the numerals, *pisi* '(a) few', *askha* 'many', *hayk'a* 'how many'
b. Quantifiers that cannot function as predicates: *wakin* 'SOME', *mayqin* 'which', *sapanka* 'each', *llapa* 'every/all', *tukuy* 'every/all', *lliw* 'every/all', *kinsantin* 'the three'

That is, it is the cardinal quantifiers which can be used as predicates, reinforcing our claim that their primary type is <e,t>. Note that these are also the quantifiers that do not presuppose the existence of individuals in their restriction set (see section 2.2 for a brief discussion of presuppositionality as a classifying criterion).

2.4 Nominal quantifiers as adjectival and verbal modifiers

The quantifiers that we have labeled nominal quantifiers do also appear as modifiers in non-nominal phrases. In particular, certain of these quantifiers can appear as adjective and verb phrase modifiers. Here these meanings often overlap with those of certain other modifiers which are limited to non-nominal phrases and will not be discussed in detail here.

Examples of AP and VP modification by nominal quantifiers are shown in (18), along with examples of modification by the non-nominal modifiers *nishu* 'very' and *sinchi* 'very'.[24]

(18) a. **Pisi**-lla-ta sayk'u-ra-ni.
a.little-DELIM-ADV tire-PST-1
'I am a little tired.'(lit.: 'I tired (out) a little.')
b. **Tukuy**-ta sayk'u-ra-ni.
all-ADV tire-PST-1
'I am completely tired.'
c. **Lliw** paya-ña ka-sha-ni.
all old-DISC be-PROG-1
'I am already very old.'
d. **Nishu/Sinchi** paya-ña ka-sha-ni.
very old-DISC be-PROG-1
'I am already very old.'

Adjectival and verbal modification by the nominal quantifiers under discussion in this paper is summarized as follows:

[24] The suffix *-ta*, normally an accusative marker, is also used frequently on VP modifiers.

(19) a. Nominal quantifiers that can appear in Adjective Phrases: *lliw* 'every/all', *tukuy* 'every/all'
b. Nominal quantifiers that can appear in Verb Phrases: *lliw* 'every/all', *tukuy* 'every/all', *pisi* '(a) few', *askha* 'many'

Verb Phrases are clearly somewhat more receptive than Adjective Phrases to (otherwise) nominal quantifiers. A preliminary observation regarding VPs is that quantifiers that necessarily select for count nouns (such as numerals and *sapanka* 'each') are disallowed here. This is perhaps unsurprising, given that CQ has a noun *kuti* equivalent of the English 'time' (as in *We jumped three times*), which allows for numerical quantification of verb phrases (and *kinsa* 'three' on its own will not serve this function). It is also unsurprising that the necessarily relational quantifiers *wakin* 'SOME' and *llapan* 'every/all' are not possible as VP/AP modifiers. What is perhaps surprising is that *lliw* and *tukuy*, also strong quantifiers, are possible in these domains, as shown in (18b) for VPs.

While we do not have a complete understanding of these cases, what is of particular interest in both the AP and VP data is simply that it provides evidence for distinguishing between the universal quantifiers *llapan* on the one hand and *lliw* and *tukuy* on the other. Semantic differences between these quantifiers have been very difficult to tease apart. All three seem to be potentially distributive (like *every*) but not necessarily so, as will be discussed in section 3.2. Now we find that only *llapan* is exclusively compatible with nominal phrases. In section 4.4 we look at these facts again in light of some inflection data which also distinguishes *llapan* from *lliw* and *tukuy*.

This concludes our initial survey of empirical data based on existentials, predicate and AP/VP modification possibilities. In the following we explore in greater depth three topics that we consider most interesting from a cross-linguistic point of view. The first is distributivity in CQ, the second is the semantics of quantifiers taking person inflection, and the third the semantics of *wakin* 'SOME'.

3 DISTRIBUTIVITY

The notion of distributivity is useful for the classification of CQ quantifiers in two ways. First, there are two distributive suffixes which place restrictions on the quantifiers they can co-occur with. Second, the universal quantifiers can partly be distinguished with respect to their distributive properties. These will be discussed in turn.

3.1 Interaction with distributive suffixes

In CQ, distributivity over the members of a plural subject group, the *distributive key*, is expressed by means of one of two distributive markers.[25] The distributive suffix *-nka* marks an object NP as *distributive share*, and may attach either to the quantifier or the head noun when present (Faller 2001, Hastings 2004) as shown in the examples in (20).[26]

(20) a. Irqi-kuna **kinsa** papa-**nka**-(ta) mikhu-nku.
child-PL three potato-DISTR-ACC eat-3PL
'(The) children eat three potatoes each.'
b. Irqi-kuna **kinsa-nka** (papa-ta) mikhu-nku.
child-PL three-DISTR potato-ACC eat-3PL
'(The) children eat three potatoes each.'

While some speakers accept distributive interpretations of sentences with two plural NPs without *-nka*, there is a strong preference for using overt marking. That is, most speakers would interpret (20a) without *-nka* as there being a total of three potatoes even in a context in which there are many children.[27] The addition of *-nka* forces a distributive interpretation.

The suffix *-kama* is used for marking nominal predicates[28] as distributive, as for example in (21).[29]

[25] The terms distributive key and distributive share are adopted from Choe (1987). An exception to the claim that distributivity in CQ is overtly marked are sentences with inherently distributive predicates, where overt markers may be omitted, as in (i).

(i) Irqi-kuna puñu-sha-nku.
child-PL sleep-PROG-3PL
'The children are sleeping.'

[26] Note that the accusative marker is dropped by some speakers in the presence of *-nka*. Faller (2001) also discusses so-called group-forming uses of *-nka*. An example of this use is given in (i).

(i) **Iskay**-ni-**nka**-lla ri-sha-nku.
two-EUPH-DISTR-DELIM go-PROG-3PL
'They are going in twos / two by two.'

Note that while examples like (i) might alternatively be analyzed as distribution over events ('For each going event, there are two goers'), Faller (2001) also presents (stative) examples for which this is not possible. Since the group-forming analysis covers both cases, it is preferable, unless it can be shown that a distribution over events reading is empirically distinguishable from the group-forming reading. We will not discuss this use of *-nka* further in this paper.

[27] As Malte Zimmermann pointed out to us (personal communication), this preference can also be observed in English or German. However, it appears to us that this preference is much stronger in CQ. Even in a context that strongly favors the distributive reading, most speakers reject descriptions that do not contain a distributive marker (see Faller (2001) for discussion).

[28] It is generally assumed in the literature on Quechua that adjectives are morphosyntactically nouns, see for example Weber (1989). We use the term *nominal* to refer to the adjective/noun class.

[29] The suffix *-kama* has another, non-distributive use as a case marker, meaning 'up to/until' or 'during' (Cusihuaman 2001:129). Distributive *-kama* can also attach to argument NPs, but its function is then still to mark a nominal predicate as distributive rather than to establish a distributive relation between two arguments. For example, (i) does not mean that each of us will sell one male llama, but rather that we will sell any llama that is male.

(i) Urqu-ta-**kama** vindi-sunchis.
male-ACC-DISTR sell-FUT.1INCL
'We will sell all the male ones.'

We will not discuss such examples here. Also note that *-kama* cannot occur on verbs to mark distributivity. To our knowledge, it is also not possible for *-kama* to distribute over events.

[30] For Link (1998:120), this includes NPs with the universal quantifier *alle* 'all':

(i) **Alle** Kinder bekamen je drei Äpfel.
'All the children got three apples each.'

Such NPs are not definite according to the definition of definite NPs we have adopted in this paper as presupposing the existence of a unique referent.

(21) Llama-y-kuna yuraq-**kama**.
Llama-1-PL white-DISTR
'My llamas are all white.'

That *-kama* enforces distributivity can be seen by the contrast in acceptability of *-kama* in the following examples.

(22) a. Pay-kuna-qa volley equipo-**kama** ka-nku.
(s)he-PL-TOP volley team-DISTR be-3PL
'They are all volleyball teams.'
b. Chay **suqta** irqi-kuna volley equipu-(***kama**) ka-nku.
that six child-PL volley team-DISTR be-3PL
'Those six children are (*all) a volleyball team.'

(22a) is acceptable to describe a situation in which there are several groups of six people each. In such a situation, *-kama* can distribute the group noun *equipu* over those groups. In contrast, in (22b), there is only one group of the right size, and there is therefore no suitable plurality for *-kama* to distribute over.

It has been observed in the literature that distributive elements may put restrictions on the type of quantifier allowed in either the distributive share or the distributive key. For example, Safir and Stowell (1989:429) state that the distributive key NP with English binominal each is "typically plural and specific." Similarly, Link (1998:117ff) claims that the German distributive particle *je* requires its distributive key NP to be plural and definite,[30] though he also notes that sufficiently specific indefinite NPs are sometimes acceptable. The examples in (23) illustrate this restriction for English binominal *each* (Safir and Stowell 1989:429).

(23) a. They/The men/Those men/The five men saw two women each.
b. Some men/Several men/Many men saw two women each.
c. *The man/*A man/*Someone/*She saw two women each.
d. ?Everyone/*Every man saw two women each.
e. ?All men/?All the men saw two women each. (Safir&Stowell 1989, (9a,c,e,f,g,h))[31]

Safir and Stowell (1989:428) moreover observe that the distributive share of binominal *each* must be cardinal and indefinite, and Link (1998) observes for German *je* that its distributive share has to be indefinite. These restrictions are shown by the contrast in (24).

(24) a. Die Kinder bekamen je drei Äpfel.
'The children got three apples each.' (Link 1998:120, (6a))
b. Die Kinder bekamen (*je) die Äpfel.
'The children got the apples (*each).'

It is therefore to be expected that the study of the interaction of the CQ distributive suffixes with the nominal quantifiers will provide further insights into their classification.

To begin with *-nka*, we have found that it imposes no restriction on its distributive key other than that it has to be plural. Examples are given in (25).[32]

(25) a. **Askha/kinsa/hayk'a** irqi kinsa papa-**nka**-(ta) mikhu-rqa-nku.
many/three/how.many child three potato-DISTR-ACC eat-PST-3PL
'Many/three/how many children ate three potatoes each.'
b. **Sapanka/llapan/wakin** irqi kinsa papa-**nka**-(ta) mikhu-rqa-nku.
each/all/SOME child three potato-DISTR-ACC eat-PST-3PL
'Each child/all/SOME children ate three potatoes each.'
c. ***Huk** irqi/**pay** kinsa papa-**nka**-(ta) mikhu-rqa-nku.
one child/(s)he three potato-DISTR-ACC eat-PST-3PL
'*One child/(s)he ate three potatoes each.'

Thus, CQ *-nka* is not like German *je* or English binominal *each* in this respect, and any analysis of this distributive marker must take this into consideration. However, since the semantics of the distributive markers themselves is not the topic of this paper, we will leave this for another occasion.

CQ *-nka* is however more restrictive with respect to its distributive share. First, bare NPs are disallowed as distributive share. Thus, dropping *kinsa* from the examples in (20) will lead

[31] According to Safir & Stowell (1989:429), the judgments of the sentences with universally quantified plural NPs (23e) "are delicate but the sentences seem basically acceptable."
[32] The quantifiers not exemplified in (25) can also occur in the distributive key.

to ungrammaticality.[33] Second, only cardinal quantifiers can occur in the distributive share marked by *-nka*. We have already seen in (20) that *-nka* combines readily with numerals. The other cardinal quantifiers behave the same way, as is shown for *pisi* '(a) few' in (26a). (26b) shows that non-cardinal quantifiers are ungrammatical in this construction.[34]

(26) a. **Pisi-nka**-lla-ta mikhu-rqa-nchis.
few-DISTR-DELIM-ACC eat-PST-1INCL
'We ate only a few each.'
b. ***Llapa/wakin/mayqin-nka**-lla-ta mikhu-rqa-nchis.
all/SOME/which-DISTR-DELIM-ACC eat-PST-1INCL

Thus, the restriction *-nka* imposes on its distributive share appears to be the same one as those imposed by English binominal *each* and German *je*, namely cardinality.[35] We would like to point out, however, that the set of quantifiers admitted in the distributive share of *-nka* can also be characterized as the set of non-presuppositional quantifiers or the set of quantifiers that are amenable to a predicative analysis. The analysis of the cardinal quantifiers in CQ as predicates is in fact corroborated by the observation made above in connection with (20) that sentences with two plural NPs and no distributive element cannot normally receive a distributive interpretation. This indicates that the cardinal quantifiers (as well as non-quantified NPs) themselves are non-scopal and can only participate in scope relations with the support of a quantificational element such as *-nka*.[36]

In summary we found the following distribution of quantifiers as distributive share and key of *-nka*:

[33] Exceptions are some measure nouns. For example, (i) is fine, though note that it is understood that each recipient received one pack each. That is, the numeral *huk* is implicit.

(i) Q'ipi-**nka**-ta qu-ni.
pack-DISTR-ACC give-1
'I gave (them) one pack each.'

[34] Note that *sapanka* 'each' can also not function as distributive share. It can occur in object position, but is then interpreted as distributive key. For example, (i) does not mean 'each potato per child', but rather that for each potato there was one child (or more) that ate it.

(i) Irqi-kuna **sapanka** papa-ta mikhu-rqa-nku.
child-PL each potato-ACC eat-PST-3PL
'The children ate each potato.'

While this quantifier is composed from *sapa* and *-nka*, the function of *-nka* is not that of the distributive suffix discussed in this section. Instead, its function appears to be to turn the event quantifier *sapa* into a nominal quantifier (Hastings 2004:224).

[35] Link (1998) only requires the distributive share of *je* to be indefinite, though all the examples he gives involve cardinal NPs. Indefiniteness alone is not sufficient for explaining why the CQ indefinite quantifiers *wakin* 'SOME' and *mayqin* 'which' are not permitted in the distributive share.

[36] Adopting the Heim-Kamp treatment of indefinite NPs (Heim 1982, Kamp 1981), we assume that the variables introduced by indefinite NPs will be bound by some general mechanism such as existential closure.

(27) a. Permitted as distributive key of *-nka*: All quantifiers except *huk* 'one'
b. Permitted as distributive share of *-nka*: numerals, *pisi* '(a) few', *askha* 'many', *hayk'a* 'how many'

Turning now to the distributive suffix *-kama*, it differs from *-nka* in imposing a restriction on its distributive key. Only examples with the universal quantifiers *tukuy*, *lliw*, and *llapa* as well as with definite numerals higher than one[37] are uncontroversially acceptable, as illustrated in (28).

(28) a. **Llapa/tukuy** llama-kuna yuraq-**kama**.
every/all llama-PL white-DISTR
'All the llamas are white.' (Each one is white.)
b. **Kinsa-ntin** llama-kuna yuraq-**kama**.
three-DEF llama-PL white-DISTR
'The three llamas are each white.'
c. ***Kinsa/pisi/askha** llama-kuna yuraq-**kama.**
three/few/many llama-PL white-DISTR
'Three/few/many llamas are (*each) white.'
d. ?**Sapanka** llama-(kuna) yuraq-**kama**.
each llama-PL white-DISTR
'Each llama is (*each) white.'

What NPs containing the universal quantifiers *tukuy*, *lliw*, *llapa* and definite NPs have in common is that they focus on the totality of their plural referent, not its individual members or a subset.[38] It appears to be this aspect of totality that is relevant for *-kama*, not specificity. The

[37] Note that some speakers accept numerals in this construction without the definite marker *-nti* but only under a definite interpretation. One of our consultants is moreover rather more liberal than others and accepts all quantifiers with the exception of *huk* 'one' in this construction. Possibly, she is treating *-kama* as equivalent to *-nka*. Regarding (28d), this example is marked with a question mark rather than a star, because some speakers marginally accept examples like it, but comment that they are redundant. Examples with *sapanka* in the distributive key become perfectly acceptable when *-kama* does not mark the main predicate as distributive, but an adjunct phrase, as, for example, in (i).

(i) **Sapanka** yanapa-q ri-n **sapanka** iskina-man wik'uña puku-cha-ntin-**kama**.
each help-AG go-3 each corner-ILLA vicuña bag-DIM-with-DISTR
'Each assistant goes to each corner of the field with his respective vicuña skin bag.'

At this point, we have no explanation for why moving *-kama* to an adjunct phrase should improve acceptability with *sapanka*.

[38] Non-quantified definite NPs can also function as the distributive key of *-kama*, as shown in (i).

(i) Kay sacha-cha-kuna durasnu-**kama**.
this tree-DIM-PL peach-DISTR
'These trees are all peach.'

semantic contribution of *-kama* is to distribute over the members that make up the totality. Support for this hypothesis is provided by examples with *mayqin* 'which' such as (29), which are at least marginally acceptable.

(29) **Mayqin** llama-kuna yuraq-**kama**.
which llama-PL white-DISTR
'Which kinds of llamas are white?'

This example cannot be interpreted as asking which individual llamas in a given group of llamas are white, but only as asking which kinds of llamas are such that all its members are white. Kinds are also totalities, and it is this aspect that licenses *-kama* in (29).

With respect to any restrictions *-kama* places on the distributive share, recall that its function is to mark nominal predicates as distributive. Thus, this issue amounts to the question of which quantifiers can function as predicates. It is therefore not surprising to find that the quantifiers that can be distributed by *-kama* are the same ones that can occur as predicates with the copula, that is, the cardinal quantifiers listed in (17a). Examples are given in (30).

(30) a. Volley equipu-kuna-pi **suqta-kama** ka-na-n.
volleyball team-PL-LOC six-DISTR be-NMLZ-3
'In each volleyball team there must be six.'
b. Futbol equipu-kuna-pi **hayk'a-kama** ka-na-n.
soccer team-PL-LOC how.many-DISTR be-NMLZ-3
'How many must there be in each soccer team?'

As was the case with the copular predicate construction, the universal quantifier *llapa* 'every/all', and to a lesser extent *tukuy* and *lliw*, are also accepted with *-kama* by some consultants, though only marginally. An example is given in (31).

(31) Kay-kuna ña **llapan-kama**-ña.
this-PL already every/all-DISTR-DISC
'These ones are complete.'

In a context in which a school goes on excursion, and the students of each class stand together in clearly identifiable groups, one could point to the groups that are already complete and utter (31). As indicated in the English translation, *llapan* seems to have the meaning of 'complete' in this position,[39] rather than universally quantifying over a context set of individuals. The generalization that only cardinal quantifiers can be used as predicates can therefore be upheld.

Again to summarize the data, we found the following distribution of quantifiers as distributive share and key of *-kama*:

(32) a. Permitted as distributive key of *-kama*: *tukuy* 'every/all', *lliw* 'every/all', *llapa* 'every/all', *kinsantin* 'the three', and marginally *mayqin* 'which (kinds of)'
b. Permitted as distributive share of *-kama*: numerals, *pisi* '(a) few', *askha* 'many', *hayk'a* 'how many', and marginally *llapa* 'every/all' ('complete')

3.2 Universal quantifiers and distributivity

Given that CQ has several universal quantifiers, *sapanka*, *llapa*, *tukuy* and *lliw*,[40] one immediate question is what the differences between them may be, if any. In sections 2.3 and 2.4 we have seen that *sapanka* differs from the other universal quantifiers in not having even marginal uses as a predicate or as a modifier of AP/VP, that *tukuy* and *lliw*, but not *llapa* can be used as modifiers of AP/VP, and that *llapa* is more easily employed as a predicate than *tukuy/lliw*.

Another property that is known to distinguish between universal quantifiers in other languages is distributivity (see for example Roberts (1990, Ch. 3) and Gil (1995), among others). Thus, Gil (1995) observes that some universal quantifiers are necessarily distributive, that is, they do not allow collective interpretations, while others are non-distributive in allowing both distributive and collective interpretations.[41] For CQ, we found that distributivity divides the universal quantifiers into two groups: *sapanka* is necessarily distributive, whereas *llapa*, *tukuy* and *lliw* allow both distributive and collective interpretations. The examples in (33) show that all universal quantifiers except *sapanka* can receive a collective interpretation.[42]

[39] As pointed out in footnote 23 in section 2.3, this might also be the right meaning for *llapan* when appearing with the copula *kay*. To fully understand the non-quantificational use or uses of *llapan* more research is needed.
[40] As well as *q'ala*, which we have excluded from discussion in this paper, see footnote 6.
[41] The term non-distributive should be taken to mean 'not necessarily distributive', not 'necessarily not distributive.' Note that there does not seem to exist a class of universal quantifiers that only allow collective interpretations, at least Gil does not mention it.
[42] Note that Gil also discusses a number of morphosyntactic differences between the two types. For example, number agreement distinguishes between English distributive *every* and non-distributive *all*: *every man carries two suitcases*, *all men carry two suitcases*. Such tests are difficult to apply in CQ, because number agreement is often optional. We are not aware of any morphosyntactic differences that identify *sapanka* as being distinct from the other universal quantifiers. For example, one might expect it, like English *each*, to be incompatible with plural morphology, but this is not the case, as shown by the acceptability of (i).

(i) Sapanka llamakuna puñu-sha-nku.
each llama-PL sleep-PROG-3PL
'Each llama sleeps.'

Having said this, there are morphosyntactic differences between the universal quantifiers, but they do not map onto the distributive/non-distributive distinction. For example, only *sapanka* and *llapa* can take person inflection

(33) a. **Llapan/tukuy/lliw** runa huñu-na-ku-rqa-nku.
every/all person meet-PA-REFL-PST-3PL
'All people gathered.'
b. **Sapanka** runa huñu-na-ku-rqa-nku.
each person meet-PA-REFL-PST-3PL
(i) #Every person gathered.
(ii) 'All families gathered (that is, each family had their own gathering).'

While (33b) is not ungrammatical, it can not receive the interpretation that all people went to a gathering. Instead it can only be construed to refer to groups of people, e.g. families, each of which held their own gathering.

That all universal quantifiers allow distributive readings is shown in (34).[43]

(34) **Sapanka/llapan/tukuy/lliw** runa iskay sacha-(nka)-ta aysa-sha-nku.
each / every/all person two tree-DISTR-ACC pull-PROG-3PL
'Each person/all persons is/are pulling two trees.'

Moreover, only *llapa*, *tukuy* and *lliw* but not *sapanka* can convey the meaning that a single object is affected in its totality.

(35) a. **llapan/lliw/tukuy** sunqu-y-wan
every/all heart-1-COM
'with all my heart'
b. #**sapanka** sunqu-y-wan
each heart-1-COM
'with each of my hearts'

(35b) can only receive the absurd interpretation that the speaker has more than one heart. Similarly, only *llapa*, *tukuy* and *lliw* can combine with mass nouns and then specify the totality of the quantity. In contrast, when *sapanka* modifies a mass noun, it necessarily quantifies over units or kinds.

(36) a. llapan/tukuy/lliw unu
every/all water
'all (the) water'

(see section 4).
[43] Some speakers accept such sentences without the distributive suffix *-nka*.

b. **sapanka** unu
each water
'each bottle/kind of water'

To summarize this section, we have shown that the two distributive suffixes classify the nominal quantifiers in different ways. *-nka* places no restrictions on its distributive key other than requiring it to be plural, but allows only cardinal quantifiers in its distributive share. *-kama* requires its distributive key to refer to the totality of some group, and also allows only cardinal quantifiers as its distributive share. The latter conforms with the observation made earlier that only cardinal quantifiers can easily be used as predicates.

We have furthermore shown that the collectivity/distributivity distinction divides the universal quantifiers into two sets: the necessarily distributive *sapanka*, and the set of *llapa*, *tukuy*, *lliw*, which allow both collective and distributive interpretations.

4 PERSON INFLECTION

Some Quechua quantifiers can be inflected for person and number. The inflection paradigm is that of nominal, and not verbal inflection.[44] When inflection is allowed, the inflection reflects the restriction set over which quantification is taking place. Examples are shown in (37). Also illustrated in (37a) is the fact that in the presence of inflection, overt mention of the restriction is not possible.

(37) a. **Llapa-nku** (*warmi-kuna) ri-sha-nku.
every/all-3PL woman-PL go-PROG-3PL
'All of them (the women) are going.'
b. **Wakin**-ni-**nchis** ri-su-nchis.
some-EUPH-1INCL go-FUT-1INCL
'Some of us will go.'

This construction has been studied previously by Muysken (1994). Muysken points out that different quantifiers exhibit different semantic behaviors in combination with person/number

[44] CQ regularly inflects both tensed verbs, in agreement with their subject, and possessed nouns, in agreement with their possessor. The inflection paradigms are slightly different, and it is the nominal morphemes which can appear on quantifiers. We consider the person markers on quantifiers to be inflection morphologically because they can be followed by case markers, e.g. *llapa-nku-ta* 'all-3PL-ACC'. Lefebvre and Muysken have argued that the case markers are inflectional in CQ, and it is generally assumed in morphology that elements occurring inside inflectional elements are themselves inflection (Lefebvre and Muysken 1988:89). The fact that the person/number markers are morphologically inflectional does not, however, mean that they cannot function like independent pronominal forms semantically, as we conclude below.

inflection. Furthermore, not all quantifiers are compatible with this inflection at all. These facts make person/number inflection a useful tool for probing the syntax and semantics of quantifier classes in Quechua.

The examples in (38) illustrate the incompatibility of some quantifiers with inflection.

(38) a. ***Askha-nku** ri-sha-nku.
many-3PL go-PROG-3PL
Intended meaning: 'Many of them are going.'
b. ***Tawa-nku** ri-sha-nku.
four-3PL go-PROG-3PL
Intended meaning: 'Four of them are going.'

The sentences in (37) and (38) raise the immediate question of to what extent Quechua inflected quantifiers resemble or differ from English partitive constructions. Perhaps the most obvious difference between the two is that English partitives (e.g. 'some of them', 'some of those boys') allow either pronominal or full noun phrase restriction sets, expressed in the post-*of* position. In Quechua, since this set is given through person/number inflection only (and no common noun specifying the restriction set is permitted), there is no inflected quantifier equivalent of a partitive like 'some of those boys'. In fact, we are not aware of any construction in Quechua which replicates the English partitive within a single noun phrase. If the restriction is not evident given preceding discourse or other contextual factors, then an adjunct phrase can supply the missing material, as shown in (39a). Similarly, in cases involving quantifiers which are incompatible with inflection (such as *askha* in (38a)) the same kind of circumlocution gets employed, as shown in (39b).

(39) a. Chay irqi-kuna-manta, **llapa-nku** ri-nqa.
those child-PL-ABL every/all-3PL go-3FUT
'Of those children, all will go.'
b. Chay irqi-kuna-manta, **askha** ri-nqa.
those child-PL-ABL many go-3FUT
'Of those children, many will go.'

In considering quantifier inflection, it is important to distinguish this phenomenon from noun inflection, which follows the same morphological paradigm. One way to distinguish the two is that noun inflection is (optionally) accompanied by the presence of an overt possessor and so can be understood as agreement with a (potentially null pronominal) possessor. This is not the case with most quantifier inflection, as illustrated in (40).[45] A standard example of a

[45] Here we will not discuss the few instances in which quantifiers can be understood as representing possessees in

possessive noun phrase is illustrated in (40a). By contrast, an overt possessor is incompatible with the use of inflected quantifiers illustrated above in (38) as shown in (40b).

(40) a. (Nuqa-nchis-pa) llama-**nchis** mihu-n.
I-1INCL-GEN llama-1INCL eat-3
'Our llama eats.'
b. (*Pay-kuna-q) **llapa-nku** ri-sha-nku.
(s)he-PL-GEN every/all-3PL go-PROG-3PL
'All of them are going.'

Our focus here is on inflection of the type illustrated in (37) and (38) since this construction is, so far as we know, limited to quantifiers. We have found that the following quantifiers are compatible with person inflection:

(41) a. Compatible with inflection:
huk 'one', *iskay* 'two', *sapanka* 'each', *llapa* 'every/all', *wakin* 'SOME', *mayqin* 'which', *kinsantin* 'the three'
b. Incompatible with inflection:
kinsa 'three' and higher numerals, *pisi* '(a) few', *askha* 'many', *hayk'a* 'how many', *tukuy* 'every/all', *lliw* 'every/all'

Despite the chaotic appearance of this classification, which cuts across all previously discussed groupings (numerals, universal quantifiers, strong quantifiers, etc.), we will claim that the primary distinction here is best expressed in terms of presuppositionality. In particular, we claim that quantifiers compatible with inflection presuppose the non-emptiness of their restriction. The case of *huk* 'one' appears to be the one exception to this generalization, as we will see below. Presumably this case needs to be learned separately by Quechua speakers.

Since it is not at all evident from the data in (41) that presuppositionality is a relevant property when it comes to person inflection, we must mention and temporarily bracket several apparent counterexamples to our claim. We will return to these at the end of this section. Specifically, we will discuss why *huk* 'one' and *iskay* 'two' can be inflected while *kinsa* 'three' and higher numerals cannot. Furthermore, we need to consider why *tukuy* 'all' and *lliw* 'all' are incompatible with person inflection, though *llapan* 'every/all' can be inflected. Finally, note that *wakin* 'SOME' is not a counterexample to the presupposition claim. Recall that this version of 'some' is incompatible with existential contexts, roughly the equivalent of stressed SOME in English. In the next section we will discuss its presuppositional nature in more detail.

The remainder of our discussion of person/number inflection will thus be divided into

a possessive noun phrase construction.

section 4.1, in which we provide a semantic analysis of the contribution of inflection, section 4.2, in which we provide additional evidence for our analysis by looking at the suffix *-nti*, which converts indefinite numerals into definite ones, and section 4.3 in which we address the bracketed apparent counterexamples mentioned above.

4.1 On the semantics of quantifier inflection

In this section we provide a semantic analysis of quantifier inflection with the aim of explaining why inflection is associated with presuppositional quantifiers, limiting ourselves to the data in (42). As mentioned above, the other quantifiers from (41) will be discussed separately in section 4.3.

(42) a. Compatible with inflection:
sapanka 'each', llapa 'every/all', *wakin* 'SOME', *mayqin* 'which'
b. Incompatible with inflection:
kinsa 'three' and higher numerals, *pisi* '(a) few', *askha* 'many', *hayk'a* 'how many'

Recall that the examples of inflected quantifiers seen thus far suggest that the meaning of an inflected quantifier is at least roughly aligned with that of the English partitive construction.

(43) a. llapa-nchis
every/all-1INCL
'each/all of us'
b. mayqin-ni-nchis
which-EUPH-1INCL
'which of us'
c. *hayk'a-nchis
how.many-1INCL
Intended meaning: 'how many of us'
d. *pisi-nchis
a.few-1INCL
Intended meaning: 'few of us'

Observe that English partitives are possible in each of the glosses in (43). That is, the presupposition associated with the definite post-*of* noun phrase (in each of these examples, *us*) does not in any way constrain the identity of the quantifier itself (e.g. *few* in 'few of us'). This fact stands in contrast to Quechua, where the person inflection requires that the quantifier it attaches to presupposes the non-emptiness of its restriction. This suggests to us an explanation

for the ungrammaticality of (43c,d) as follows. Let us suppose that person/number inflection, unlike an overt pronoun, does not carry its own presupposition but rather relies on the presuppositionality of the quantifier it is attached to. That is, person/number inflection is licensed only insofar as it agrees with features of the maximal individual in the set presupposed by the quantifier itself. It is this maximal individual that corresponds to the English pronoun in the partitive translations of the sentences in (43). Quantifiers like *pisi* '(a) few' in (43c) which do not presuppose the existence of any particular set of individuals do not come in inflected varieties. If this reasoning is on the right track, then inflection of quantifiers in Quechua can be likened to the features on pronouns that reflect the person and number of the individuals they refer to.

On a more technical level, given that inflected quantifiers are incompatible with an overt common noun restriction, the inflection can be analyzed as playing a semantic role as well as agreeing with a presupposed set. Specifically, the inflected quantifier must be of the type of a quantified noun phrase and not just a quantifier. In Quechua, it is reasonable to adopt a standard account of strong quantifiers as taking type <e,t> arguments, with the entire quantifier phrase denotating a function from predicates (the VP) to truth conditions. We can thus implement the semantics of the person/number inflection by analyzing its semantic contribution as that of a type <e,t> predicate which plays the same semantic role as a common noun restrictor. These ideas are encapsulated in the equation in (44a), with the specific case of *llapan* 'all' and *llapa-nku* ('all-3PL') shown in (44b) and (44c).[46]

(44) a. Contribution of -infl:
⟦QUANT-infl B⟧ is defined only if the maximal element in the set A that is presupposed by QUANT has the person and number features encoded by infl.
If defined, ⟦QUANT-infl B⟧ = ⟦QUANT A B⟧

b. Denotation of *llapan*:
⟦*llapan* A B⟧ is only defined if $A \neq \emptyset$
If defined, ⟦*llapan* A B⟧ = true iff $A \subseteq B$

c. Example: *llapa-nku* (ALL-3PL)
⟦*llapa-nku* B⟧ is defined only if the maximal element in the set A that is presupposed by ALL is 3PL.
If defined, ⟦*llapa-nku* B⟧ = ⟦ALL A B⟧ = true iff $A \subseteq B$

[46] As pointed out by a reviewer, English partitives such as *all of the llamas* presuppose familiarity with the llamas in question. Familiarity may also play a role with inflected quantifiers in CQ in the sense that one could not use *llapanku* 'all of them', for example, to refer to a set of llamas, unless it is understood from the context that one is talking about llamas and which particular ones. More research is required to determine whether familiarity is a necessary requirement in the interpretation of inflected quantifiers, in which case more detail will need to be added to the presuppositions in these denotations.

4.2 Role of the suffix *-nti*

Strong evidence for our analysis of inflected quantifiers comes from a closer look at *kinsa* 'three' (and higher numerals). To fully understand the behavior of these numerals with respect to person inflection, we need to take a brief detour to look at the behavior of another Quechua morpheme, the suffix *-nti*. This morpheme has a number of uses, and we will not investigate the full range here. Our main focus will be instances in which *-nti* attaches directly to the quantifier of a quantified noun phrase. This occurs only in the case of numerals greater than or equal to three. The role of *-nti* in this case is similar to that of the definite article in English, as illustrated in (45).

(45) **Kinsa-ntin** irqi puklla-sha-n.
three-DEF child play-PROG-3
'The three children are playing.'

As suggested by the gloss, sentence (45) is only felicitous in an environment in which there are exactly three contextually prominent children. It is this use of *-nti* which is of particular interest in the context of person inflection.[47] Once this suffix has been added, all numerals greater than two become compatible with person/number inflection. Examples are illustrated in (46).

(46) a. kinsa-nti-nchis
three-DEF-1INCL
'the three of us'

b. isqun-ni-nti-nchis
nine-EUPH-DEF-1INCL
'the nine of us'

[47] There is at least one other version of *-nti* which can attach to quantifiers in certain cases, but with quite a different semantic effect. This alternative *-nti* adds the meaning 'with' or 'accompanied by' and can also attach to other sorts of noun phrases as illustrated in (i). Thus, when this *-nti* appears on quantifiers as in (ii) it is best analyzed as attached to a quantified noun phrase (with no overt noun).

(i) Iirqi-kuna-ntin hamu-nqa.
child-PL-with come-3FUT
'(S)he will come with children.'

(ii) Tukuy-ni-ntin hamu-nqa.
every/all-EUPH-with come-3FUT
'(S)he will come with everything."

It is clear that the *-nti* is licensing person/number inflection in these cases, leading to the acceptability of *kinsa-nti-nchis* despite the unacceptability of **kinsa-nchis*. We therefore analyze *-nti* as adding a definiteness presupposition to numerals like *kinsa* 'three', that is, *kinsantin* presupposes the existence of a unique sum individual with cardinality three. This uniqueness presupposition entails that the restriction is non-empty and therefore puts *kinsantin* on a par with the other strong quantifiers discussed in this paper. These data support our analysis of inflection as licensed only on presuppositional quantifiers. We elaborate this intuition as follows.

Recall that this use of *-nti* is limited to numerals. Its semantic contribution must therefore be one which creates a presuppositional out of a non-presuppositional quantifier. We see two choices for how to implement this notion. If *-nti* can somehow be understood to raise at LF to gain scope over the rest of the quantifier phrase, it may have the semantic contribution of a presuppositional quantifier: schematically, [*-nti* [THREE *llama*]]. On the other hand, an analysis that sticks closer to the surface structure of an *-nti*-containing noun phrase will place *-nti* in the role of converting a numeral to a presuppositional quantifier: [[THREE-*nti*] *llama*]. An argument in favor of the second option comes from our analysis of person/number inflection. Since inflectional morphology can only attach to presuppositional quantifiers, and is presumed to take the semantic role of the common noun, we would predict that *[-nti* [THREE-*nku*]] is not a possible analysis.

In (47) we implement a semantics for *-nti* in which *-nti* combines with a numeral to create a presuppositional quantifier. (Recall from section 2.1, example (7a), that we take THREE to be a set of sums each with three terms.)

(47) [[NUM-*nti* A B]] is defined only if $|A \cap NUM| = 1$
If defined, [[NUM-*nti* A B]] = true iff $A \subseteq B$[48]

Notice that the presupposition in (47) immediately rules out such forms as **askha-ntin* ('many-*nti*') which might otherwise be predicted to be acceptable, meaning 'the many'. This is because the requirement that $|A \cap NUM| = 1$ would, in the case of *askha-ntin* require that $|A \cap MANY| = 1$, which, informally put, entails that only the maximal element of A can contain many individuals. This seems incompatible with the vagueness of 'many'.

When we combine (44) and (47) the denotation of complex quantifiers like *kinsa-nti-nku* 'THREE-nti-3pl' comes out as shown in (48).

[48] A slight variation on the second clause of this definition, making use of a maximality operator, is:
"If defined, [[NUM-*nti* A B]] = true iff max(A) ∈ B." This variation has the advantage that it may be more easily extendable to a related use of *-nti* as a kind of generalized maximality operator as illustrated in *tuta-ntin* (night-*nti*) 'all night'. This version of *-nti* is limited to certain temporal and spatial expressions. We do not attempt an analysis of this use of *-nti* here.

(48) Calculation of *kinsa-nti-nku* 'three-nti-3pl':
[[THREE-*nti*-3pl B]] is defined only if the maximal (i.e., only) element in the set A that is presupposed by THREE-*nti* is 3pl and has cardinality three.
If defined, [[THREE-*nti*-3pl B]] = [[THREE-*nti* A B]] = true iff $A \subseteq B$

In informal terms, this calculation tells us that *kinsantinku* B is defined as long as the quantifier presupposes the existence of a unique 3pl referent with cardinality three. And in that case, *kinsantinku* B is true if all three elements of the restriction have property B.

4.3 First special case: Small numbers

We turn now to the full range of inflection data presented back in (41), which has not yet been fully explicated by our work in the preceding two sections. In particular, it remains to be explained why the numerals *huk* 'one' and *iskay* 'two' are compatible with inflection, and why the universal quantifiers *tukuy* and *lliw* are not.

We begin with the numerals. Consider the data in (49).

(49) a. huk-ni-nchis
one-EUPH-1INCL
'one of us'
b. iskay-ni-nchis/*iskay-ni-nti-nchis
two-EUPH-1INCL/two-EUPH-DEF-1INCL
'the two of us'
c. kinsa-nti-nchis
three-DEF-1INCL
'the three of us'

In light of the work we have just completed on *-nti*, the data in (49a) and (49b) are quite surprising. Note that although we expect *huk* 'one', as a non-presuppositonal quantifier to be incompatible with inflection, in fact *huk* can be inflected. Furthermore, the resulting form is explicitly indefinite as it picks out a single individual from a group. As mentioned earlier, we have no explanation to offer for this case other than the stipulation that speakers must learn this special construction on its own. However, in the case of *iskay* 'two' we are confronted with a rather different problem. Despite the incompatibility of *iskay* with the definite marker *-nti*, the meaning of an inflected construction such as *iskay-ni-nchis* ('two-EUPH-1INCL') is not simply 'two of us' but 'the two of us'. That is, the context set associated with the second person plural inflection must contain two people. We must ask how the definite reading comes about in the absence of *-nti*, since it is certainly not inherent in the meaning of *iskay* 'two'. In particular,

when we consider other weak quantifiers like *askha* 'many', *pisi* '(a) few' and especially *kinsa* 'three' we may wonder why they, too, can't take on the definite reading in the same way that *iskay* 'two' apparently does, and thus be compatible with inflection.

We believe that this state of affairs has arisen through a diachronic change which has rendered *iskay* incompatible with *-nti* while allowing the definite reading of *iskay* to be retained in the presence of person/number inflection. Evidence for this theory can be found in the 1608 dictionary by Holguin (1989[1608]). This dictionary translates "yskaynintin" (which is to say, using modern transcription, *iskay-ni-ntin* 'two-EUPH-nti') as "the two together." In modern Cuzco Quechua, *-nti* can no longer appear overtly on *iskay* but the meaning of inflected *iskay* remains as it would have been in the presence of this suffix. It thus appears that *-nti* has been elided in this case, but the presence of inflection triggers the same definite interpretation as there would be in the presence of *-nti*.

4.4 Second special case: Universals

We now turn to the universal quantifiers, which present another problem for our characterization of inflection as associated with presuppositional quantifiers. In particular, two universal quantifiers (*sapanka* and *llapan*) permit person inflection while two do not (*tukuy* and *lliw*). Our remarks here will be speculative since we do not have a fully satisfactory explanation for this difference. In particular, given our association of inflection with presuppositionality, we would expect that all universal quantifiers should allow person inflection. However, the facts we do have provide a contribution towards our effort to tease apart the semantics of the different universals, and are in line with previously mentioned data which distinguish between *tukuy* and *lliw* on the one hand, and *llapan* on the other.

To review what we know so far about universal quantifiers, the clearest division is between the necessarily distributive *sapanka* and the only optionally distributive *llapan*, *lliw* and *tukuy*, as discussed in section 3.2. In that section we found that the latter three quantifiers were compatible with collective predicates and mass noun restrictions, while *sapanka* was not. We also now have three pieces of evidence which suggest a distinction between *llapan* and *lliw/tukuy*. Of these three quantifiers, only *llapan* can be inflected for person/number (section 4.1); only *tukuy* and *lliw* can be AP or VP modifiers (section 2.4); and, *llapan* has a slightly less restricted distribution in the VP of equative copular sentences (section 2.3).

If we were to focus purely on the inflection data, then one option of course would be to suppose that *tukuy* and *lliw* reject inflection out of some morphological quirk–that they are semantically identical to *llapan* in every way but don't exhibit overt inflection in this case.[49]

[49] That the quirk could not be on the level of phonology is seen in the fact that *tukuy* can be inflected in the event that it is the possessee in a possessive noun phrase, e.g. *tukuy-ni-y* (all-EUPH-1) 'all of my things'.

However, in light of the other distribution data it is compelling to imagine that there is a deeper significance here. One possibility, which we are unable to pursue in detail at this point, is that the AP/VP modification data reveal that in fact the underlying semantics of *tukuy* and *lliw* is that of a maximalizing operator in those domains and that their meaning is paraphrasable by English *completely, to a maximal point*. Under this view, the nominal quantifier meaning of these words is derived, presumably through a type-shifting operation that effectively converts a maximalizer into a universal quantifier. If this is correct, then the incompatibility of *tukuy* and *lliw* with person/number inflection may be due to the fact that they are not nominal quantifiers at the level of their basic meaning. *Llapan* would only have a denotation as a nominal quantifier, consistent with its incompatibility with AP and VP environments.

As a final note on the semantics of universal quantifiers in CQ, it should be clear by now that we are not aware of any evidence, syntactic, semantic or morphological, which allows us to distinguish *tukuy* from *lliw*.

5 PROPORTIONAL *WAKIN* 'SOME'

In the course of our discussion up until now it has become clear that Quechua *wakin* 'SOME' is quite a different quantifier from English *some*. Here is what we have seen of *wakin* so far:

- *Wakin* is incompatible with possessive *-yuq* sentences and existential *kan* sentences, and hence we have classified it as strong and presuppositional. (Section 2.2)
- *Wakin* is incompatible with distributive *-nka* (a sign of being non-cardinal). (Section 3.1)
- *Wakin* is compatible with person/number inflection, consistent with presupposing the non-emptiness of its restriction. (Section 4.1)
- *Wakin* quantified subjects are incompatible with *-kama* predicates, suggesting that *wakin* is neither universal nor definite. (Section 3.1)
- *Wakin* cannot function as an AP or VP modifier, nor as a predicate. (Sections 2.2, 2.3)

Strong or presuppositional versions of 'some', like *wakin*, have been identified in many other languages, and there turn out to be important differences between quantifiers in this general category. In this section we will discuss the semantics of *wakin* in more detail, making particular comparisons to Dutch *sommige*, as studied by de Hoop (1995), and St'át'imcets *nukw* as studied by Matthewson (2006). Our aim will be to clarify and formalize the meaning of *wakin*.

We start by examining the existence presupposition. *Wakin*-quantified noun phrases are felicitous only in contexts where the non-emptiness of the restriction is presupposed. This can

be seen by the contrast illustrated in (50). Each of these sentences mentions a collection of birds. However, the use of 'dodo' (a species believed to be extinct) is judged strange with *wakin*, while the use of *loro* 'parrot' is fine. Note that the contrast here is not due to the surprising nature of finding dodos at all, since without *wakin*, sentence (50a) is fine, though newsworthy.

(50) a. Tari-sqa-ku-raq (#**wakin**) dodo-kuna-ta.
find-NX.PST-PL-CONT SOME dodo-PL-ACC
'They found some dodos.' (Surprisingly...given we had believed them extinct.)
b. **Wakin** loro-kuna rima-nku.
SOME parrot-PL talk-3PL
'Some parrots talk.' (and others are presumed not to talk)

The examples in (50) illustrate another aspect of *wakin*'s presuppositionality. *Wakin* can be used in out-of-the-blue contexts; it does not require familiarity (in the current context) with the particular individuals it is quantifying over. (We do, as stated above, have to be familiar enough with the species (say) to know that it is not extinct and hence can be expected to have existing members.) This is consistent with *wakin*'s status as indefinite but proportional. For instance, in (50b), we do not need to have any parrots in the current context to use this expression felicitously. In this regard, *wakin* is therefore more similar to English stressed SOME than the partitive *some of (the)*.

We now turn to another aspect of the meaning of *wakin*, which is non-universality. This quantifier, while typically translated as 'some' ('algunos' in Spanish), is also often defined by consultants as meaning 'a part'. Thus, when confronted with a situation in which there are only sleeping llamas, consultants will not accept the truth of (51).[50]

(51) **Wakin** llama-kuna puñu-sha-nku.
some llama-PL sleep-PROG-3PL
'Some (of the) llamas are sleeping.' (and some aren't.)

Thus our conclusion is that *wakin* entails not only that 'some are' but also that 'some aren't'. Formally, the denotation of *wakin* is given in (52). Here we capture not only entailments but also the existence presupposition associated with *wakin*.

[50] Here we must be careful about jumping to the conclusion that the non-universality of *wakin* is an entailment and not just a strong implicature, however. For instance, although English *three* is often interpreted as 'exactly three', this is frequently analyzed as a scalar implicature and not an entailment. However, the refusal of our consultants to accept *wakin* other than in situations in which there is a clear communication of a contrast between the individuals included in the predicate and the others, who are not, leads us to analyze the 'not all' aspect of *wakin* as an entailment.

(52) $[\![wakin\ A\ B]\!]$ is only defined if $A \neq \emptyset$
If defined, $[\![wakin\ A\ B]\!] = \text{true iff } 0 < |A \cap B| < |A|$

Having come this far we are able to associate the quantifier *wakin* with the property of proportionality as elaborated in Keenan (2002) and related work. Here, proportional quantifiers are defined as those quantifiers D satisfying the property in (53).

(53) Keenan (2002: 634), Definition (15)
D is proportional iff $DAB = DXY$ whenever $|A \cap B| / |A| = |X \cap Y| / |X|$

Our denotation of *wakin* in (52) makes *wakin* proportional in this sense. This is because any *wakin* sentence of the form [*wakin* A B] will be true just in case the proportion of A's that are in $A \cap B$ is strictly greater than 0 and less than 1.

Before we go on it is worth clarifying this use of proportionality, as this term gets used in different ways in different parts of the literature. In particular, the next two authors we discuss, (de Hoop 1995 and Matthewson 2006) make it clear that for them, the 'not all' aspect of proportionality is paramount. For Keenan, however, what is important is that the proportion of A's in B should determine the truth value of DAB, and this proportion might well be 100%. Thus, *every* is a proportional quantifier for Keenan. In fact, *wakin* fulfills the conditions of both views of proportionality, since it both sets a range of allowable proportions (in fact, anywhere above 0% and below 100%), and contains a strong 'not all' component to its meaning.

We close by briefly comparing *wakin* with two other proportional versions of 'some': Dutch *sommige* 'some' as analyzed in (de Hoop 1995) and St'át'imcets *nukw* as analyzed by Matthewson (2006).

De Hoop's analysis of *sommige* is interesting in the current context because *sommige*, like *wakin* is a version of 'some' that is barred from existential sentences. This is shown in the contrast between (54a) and (54b).

(54) a. **Sommige** eenhoorns zijn wit.
some unicorns are white
'Some unicorns are white.' (de Hoop 1995:426, (17))
b. *Er zijn **sommige** eenhoorns in dit bos.
there are some unicorns in this forest (de Hoop 1995:424, (10))

To summarize de Hoop's analysis in informal terms, for [*sommige* A B] to be true, some but not all elements of A must be in B, and additionally, the members of $A \cap B$ must share a

property P known to the speaker. That is, the collection of elements of A picked out using *sommige* cannot be arbitrary from the point of view of the speaker.

Comparing de Hoop's analysis with (52) we see that *wakin* and *sommige* are similar in that each requires that the restriction of the quantifier strictly contain the (nonempty) set which is a subset of the predicate set. However, *sommige* also requires that the proper subset be united by some additional property. We have not found evidence that this requirement is relevant for Quechua *wakin*. In Dutch, it appears that this property condition is what excludes *sommige* from existential environments. Matthewson (2006) interprets the condition on Dutch existential contexts in terms of familiarity, since partitives that lack a property condition are acceptable in existential contexts. In Quechua, however, *wakin* is excluded from existential contexts despite the fact that it presupposes only the non-emptiness of its restriction set.

We now turn to the case of St'át'imcets *nukw*. According to the analysis in Matthewson (2006), *nukw* carries a presupposition of proportionality, but based on its distribution is not itself a quantifier. An illustration of *nukw* is given in (55), where the glosses indicate the association to the meaning of English some.

(55) q'aylec tu7 [i **núkw**-a sk'wemk'úk'wmi7t]
run.away then DET.PL nukw-DET children
'Some/some other/some of the/the other children ran away.' (Matthewson 2005:1, (2))

Nukw is of interest to us here because it shares with *wakin* the properties of presupposing the non-emptiness of its restriction, and of not requiring familiarity with particular contextually prominent individuals (Matthewson shows that *nukw* can be used in out-of-the-blue contexts). Syntactically, *nukw* is analyzed as an element which combines with a determiner to form a complex determiner. The semantic contribution of *nukw* proposed by Matthewson is that it introduces the presupposition that the individuals picked out by the (simplex) determiner in combination with the noun restriction represent a proper subset of the complete set of individuals satisfying the restriction.

Again we compare with *wakin*: *wakin* is itself quantificational; unlike *nukw* it appears in syntactic positions associated with other quantifiers. Furthermore, we have encoded the 'not all' aspect of *wakin*'s meaning into its truth conditions, while Matthewson analyzes *nukw* as leading only to an implicature of non-universality. On the other hand, both *nukw* and *wakin* presuppose the non-emptiness of their restriction.

One aspect of the meaning of *nukw* that Matthewson focuses on is its ability to translate English 'other' in contexts such as that already shown in (55). *Wakin* is sometimes also used to encode English 'other', as illustrated in (56). Note that in (56b) the first clause shows clearly that a contrast with an already-familiar set is not an aspect of *wakin*'s meaning, as is the case for English 'other'.

(56) a. Qan-kuna qarpa-ychis, **wakin**-taq qurachu-nku.
you-PL water-2PL some-CONTR weed-3PL
'You water, the others weed.' (Here it is only an implicature that we have exhausted all of the individuals available to work. It is possible to continue with further *wakin*-quantified groups, doing other types of work.)

b. **Wakin**-kuna puklla-sha-nku, **wakin**-taq puñu-sha-nku.
some-PL play-PROG-3PL some-CONTR sleep-PROG-3PL
'Some are playing, others are sleeping.'

A final point in connection with *wakin*, *sommige* and *nukw* is that these three elements highlight the ways in which conditions on acceptability in existential contexts differ across languages. We have already mentioned that *wakin* and *sommige* are unacceptable in existential sentences in Quechua and Dutch respectively. The reasons for this are not the same, however, as already mentioned. While Quechua prohibits quantifiers which presuppose non-empty restrictions in existential 'have'-and 'be'-sentences (*-yuq* and *kan* respectively), Dutch appears to prohibit *sommige* due to its shared property requirement. On the other hand, in St'át'imcets, *nukw* is permitted in existential sentences, as shown in (57).

(57) wá7 [i núkw-a sqweyíts] 1-ta lep'cálten-a
be [DET.PL nukw-DET rabbit] in-DET garden-DET
'There are some rabbits in the garden.' (Matthewson 2006, (22a))

Matthewson points out that data like (57) show that, since *nukw* is presuppositional, this condition alone is clearly not enough to rule a noun phrase out of existential contexts in St'át'imcets. Thus, Quechua differs from both Dutch and St'át'imcets with respect to the constraint on noun phrases in existential sentences.

6 Conclusion and Open Issues

This paper has sought to identify classes of quantifiers in CQ by evaluating empirical data in light of some semantic categories known to be relevant cross-linguistically. Table 1 summarizes our main empirical findings (omitting some of the finer points discussed in the text).

	exist. constr.	pred.	AP mod.	VP mod.	distr. key of *-nka*	distr. share of *-nka*	distr. key of *-kama*	distr. share of *-kama*	pers. infl.
llapan 'every/all'	–	–	–	–	+	–	+	–	+
lliw 'every/all'	–	–	+	+	+	–	+	–	–
tukuy 'every/all'	–	–	+	+	+	–	+	–	–
sapanka 'each'	–	–	–	–	+	–	?	–	+
wakin 'SOME'	–	–	–	–	+	–	–	–	+
mayqin 'which'	–	–	–	–	+	–	–	–	+
kinsantin 'the three'	–	–	–	–	+	–	+	–	+
huk 'one'	+	+	–	–	–	+	–	+	+
iskay 'two'	+	+	–	–	+	+	–	+	+
kinsa 'three'	+	+	–	–	+	+	–	+	–
hayk'a 'how many'	+	+	–	–	+	+	–	+	–
pisi '(a) few / little'	+	+	–	+	+	+	–	+	–
askha 'many'	+	+	–	+	+	+	–	+	–

Table 1: The CQ quantifiers in empirical constructions

As in many other languages the division into 'strong' and 'weak' quantifiers based on existential contexts provides an important starting point for our classification. We have characterized the relevant distinction in Quechua as the presence/absence of a presupposition of a non-empty restriction, but other theoretical categories could be used to generate the same

breakdown. In particular, the weak quantifiers in CQ are also the cardinal ones. Empirically, weak quantifiers turn out to be those that can function as predicates and can quantify over distributive shares. Strong quantifiers are those which can receive person/number inflection. Table 2 summarizes our classification of the CQ quantifiers in terms of the semantic properties discussed.

	weak	strong	cardinal	presuppositional	proportional	definite
llapan 'every/all'	–	+	–	+	+	–
lliw 'every/all'	–	+	–	+	+	–
tukuy 'every/all'	–	+	–	+	+	–
sapanka 'each'	–	+	–	+	+	–
wakin 'SOME'	–	+	–	+	+	–
mayqin 'which'	–	+	–	+	–	–
kinsantin 'the three'	–	+	–	+	–	+
huk 'one'	+	–	+	–	–	–
iskay 'two'	+	–	+	–	–	–
kinsa 'three'	+	–	+	–	–	–
hayk'a 'how many'	+	–	+	–	–	–
pisi '(a) few/little'	+	–	+	–	–	–
askha 'many'	+	–	+	–	–	–

Table 2: The semantic properties of CQ quantifiers

However (and also as in many other languages), various subtleties arise upon closer inspection and this is where things get interesting. We conclude this paper by highlighting

some of these cases and pointing out questions that remain open.

To begin with distributivity, we have shown that CQ's two distributive suffixes (*-nka* and *-kama*) are similar to known distributive constructions such as that involving binominal *each* in English in that they place a restriction (in this case to weak/cardinal quantifiers) on the distributive share. However, the two suffixes are quite different in the restrictions they place on the distributive key: essentially none (beyond plurality) in the case of *-nka*, but a restriction to a universal (or definite) distributive key in the case of *-kama*. The precise semantics of these suffixes needs to be analyzed to understand the source of this difference.

In our study of universal quantifiers we have only gone partway towards distinguishing the four universals in this study. *Sapanka* was found to be the only inherently distributive universal, and as such followed standard patterns except in that it is compatible with plural restrictions–another mystery. *Lliw* and *tukuy* could be distinguished from *llapan* on the bases of certain empirical facts (in particular, only *llapan* is limited to nominal uses, and can be inflected for person and number). But we have yet to develop a principled explanation for these differences.

When we compare CQ with English, we find that two quantifiers which are weak in English are classified as strong in CQ. These are *mayqin* 'which' and *wakin* 'some'. Both of these quantifiers presuppose the non-emptiness of their restriction and are excluded from existentials, predicates and distributive shares. We investigated *wakin* in some detail and found that it is proportional, both in the sense that the truth value of [*wakin* A B] depends on the ratio $|A \cap B| / |A|$, and in the sense that it requires some A's to not be in B. Given these facts it becomes unsurprising that it patterns with strong quantifiers. Rather more surprising, and a topic for future research, is the behavior of *mayqin*. This quantifier, too, follows the distribution of a strong quantifier. However, though presuppositional, it is not proportional and in fact we are unaware of differences from English which on the level of basic denotation. Like English *which*, it is intersective. According to Keenan's analysis (2002 and previous work), *which* as an intersective (though not actually cardinal) quantifier is allowed in existential environments, at least under some interpretations of the data. This shows that intersectivity has differing import in the two languages.

To pursue the cases of *mayqin* and *wakin* a bit farther, we close with some intriguing data that further serve to distinguish these two quantifiers from the others. We have seen that in CQ there is an optional plural suffix, *-kuna*, which forces a plural interpretation on nouns. Thus, *irqikuna* unambiguously refers to two or more children. This suffix can also attach to nouns modified by a quantifier as in (58).[51]

[51] Lefebvre (1975:64,66) found that when plurality was already encoded through a quantifier, the associated noun was less likely to be marked overtly with a plural suffix. Our consultants are all happy with both (58) as well as with *kinsa irqi* without the plural marker. Moreover, such examples also occur in natural text, see e.g. (i).

(58) **kinsa** irqi-kuna
three child-PL
'three children'

All quantifiers (with the exception of *huk* 'one', for fairly obvious reasons) allow plural marking on the noun they modify. However, only *wakin* and *mayqin* allow *-kuna* to attach to them directly when they occur without a noun:[52]

(59) wakin-kuna / mayqin-kuna
SOME-PL / which-PL

At this point, our only means to distinguish these two quantifiers from the rest on theoretical grounds is by identifying them as the non-universal presuppositional (strong) quantifiers. This seems unsatisfactory as a characterization of this empirical class. Indeed, these plural facts seem to point to a significant difference in the syntax and/or semantics of these quantifiers, that may also shed light on the contrasts with the behavior of their English equivalents discussed above.

What is perhaps most intriguing about CQ quantifiers from a cross-linguistic perspective is their ability to be inflected. We have shown that this is only possible with presuppositional quantifiers, and that CQ possesses a device, the suffix *-nti*, to turn the non-presuppositional numerals into presuppositional ones and then licenses inflection. Quantifiers in other languages, e.g. German or Dutch, can also be inflected, but to our knowledge, inflection in these languages only serves the purpose of morphological agreement. In CQ in contrast, the inflection has semantic import.

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(i) . . . tawa mula-kuna-n trampia-ta aysa-q . . .
four mule-PL-FOC tram pull-AG
'four mules pulled the tram' (Espinoza 1997:24)

[52] One consultant also suggested that *hukkuna* may be acceptable when *huk* is used as an indefinite marker.

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8

QUANTIFICATION IN MALAGASY*

Edward L. Keenan

1 INTRODUCTION

This paper presents the major expressions of quantification in Malagasy. The description is surface oriented and theory neutral to facilitate cross language comparison. We focus on *D-Quantifiers*, ones that occur within Determiner Phrases (DPs). We classify them semantically and within each class we discuss the distribution of its members and other lexically or morphologically related quantifiers, including adverbial ones. One result of this work of interest to Austronesianists, is a better understanding of the DPs which satisfy the definiteness requirement on 'subjects'. But the more general result is to document the striking breadth and morphological systematicity of the indigenous system of quantification. Regarding breadth, the major classes of quantifiers distinguished mathematically (Keenan 1996, 2007; Peters and Westerståhl 2006) are well represented in Malagasy. It has for example seven widely used universal quantifiers compared with three (*all*, *every*, *each*) in English. Regarding systematicity, Malagasy integrates quantifier morphologies into the interrogative system in a semantically motivated way not realized in English. English can for example query Mary's rank in her graduating class, but cannot use the ordinal *-th* morphology (*fourth*, *fifth*, etc.) to do so: **Which oneth was Mary?* Malagasy can.

This paper is organized as follows. First, some socio-historical background on Malagasy, and then some linguistic background designed to help the reader follow the examples. Then we document three main classes of quantifiers: *Generalized Existential*,

* Thanks to Lisa Travis and Ileana Paul for having organized a two week Malagasy Fest at McGill in summer 2006 which enabled several of us to study and work with Malagasy speakers.

Generalized Universal, and *Proportional*.

2 THE SOCIO-HISTORICAL SETTING

Malagasy is a Western Austronesian language spoken by some 13 million people in about 18 varieties throughout Madagascar. The original settlers from S.E. Borneo (Dahl 1951) arrived in the first millenium A.D., probably early. Malagasy and French are the two official languages and basic government documents appear in both. In consultation with English missionaries (Dahl 1966), writing and printing Malagasy in the Roman alphabet began during the first third of the 1800's (there was limited writing earlier in an Arabic script). By the late 1800's we have two large, excellent dictionaries: Richardson (Malagasy-English, 1885) and Abinal & Malzac (Malagasy-French, 1888). The latter is updated in the very useful Rajaonarimanana (1995). By the early 1900's we have good descriptive grammars, both in English (Cousins 1894, updated in [JR]) and French (Ferrand 1903; Malzac 1908). Malagasy-Malagasy dictionaries date at least from Ramino (1934). Currently few languages can boast of a dictionary-encyclopedia of the magnitude of the *Rakibolana malagasy* (Rajemisa-Raolison 1985, over 1,000 small print pages). (For updates to this work go to Firaketana.org maintained by Jean Marie de la Beaujardière).

Written materials in Malagasy are readily obtainable (in Madagascar): government documents, newspapers, novels, and school books up to university level. These materials are based on 'official Malagasy', itself largely based on the Merina dialect of the region of the capital, Antananarivo, with vocabulary items from regional varieties added in. Malagasy adapted to the onslaught of commercial, scientific, and administrative vocabulary from European contact largely by using its own resources, not borrowing (though some borrowing occurred). Verbs are formed by affixing roots, which may or may not be independent words, and nouns are commonly formed by nominalizing verbs. For example from the root *várotra* 'commerce' we form the verb *(m)ivárotra* 'sells', whose circumstantial form is *ivarótana* 'place (time, means ...) of selling', which nominalizes to *fivarótana*. Malagasy Ns, derived or lexical, may take direct accusative complements, so we form productively nouns such as *fivarotam-panafody* 'pharmacy' (lit.: place of selling of medicine), *fivarotam-boky* 'book store', etc. When the derived form is less precise than intended, a Malagasy newspaper may put the French word in parentheses to make explicit what is meant.

So, while threatened in certain quarters by French, Malagasy is not an endangered language: a significant portion of Malagasy children attend primary and secondary schools in Malagasy. The national radio and television broadcast in Malagasy. Work in the generative tradition in English dates from the 1970s. Currently there are several American, Canadian, German, French and Malagasy scholars pursuing linguistic work on Malagasy. Several

informative publications in French derive from the Institut National des Langues et Civilisations Orientales in Paris.

3 BASIC CLAUSE STRUCTURE

Pragmatically neutral Sentences (Ss) are verb initial. Verbs are extensively marked for voice, as in Philippine languages (Tagalog: Schachter & Otanes 1972; Kroeger 1993) but do not show agreement with arguments in person, number or gender. (1a,b,c) are cognitive paraphrases, the translation of the first then doing duty for all.

(1) a. [$_{P1}$Nanenjika (n+aN+enjika) an'ilay mpangalatra t+amin'ny aoto] Rabe
(pst+AF+chase) acc'that thief pst+with'the car Rabe.dft
Rabe pursued that (aforementioned) thief with the car

b. [$_{P1}$Nenjehin-dRabe (n+enjika+ina+Rabe) t+amin'ny aoto] ilay mpangalatra
(pst+chase+TF+Rabe.gen) pst+with'the car that thief.dft

c. [$_{P1}$Nanenjehan-dRabe (n+aN+enjika+ana+Rabe) an'ilay mpangalatra]
(pst+[AF+chase]+CF+Rabe.gen) acc'that thief
ny aoto
the car.dft

All generative approaches agree with the major constituent break in (1). See Keenan (1976), Paul (1999), Pearson (2005). We use 'P1' for the theory-neutral *one place predicate*. Voice morphology in (1) is glossed AF, TF, CF for *Actor*, *Theme*, and *Circumstantial Focus* respectively. The AF and TF forms are built by directly affixing the root *enjika* 'chase'. The CF form is derived by suffixing the AF form. Voice morphology correlates with the theta role of the DP sister of the P1. Rajemisa-Raolison (1971:112) and [K&P], Keenan and Polinsky (1998), detail many voice morphologies in addition to those noted here. Past and Future tense for all verbs is marked *n-/no-* and *h-/ho-*. Present tense is ∅, though AF verbs obscure this by prefixing a distinctively AF *m*. The DPs in (1a,b,c) illustrate the three grammatical *cases* in Malagasy, ones whose pronominal forms are given in (2). The case of the Agent, *Rabe*, in (1b,c) is *genitive*, a morphophonemically complicated construction. *That thief* in (1a,c) is constructed with *aN-* which marks some (but not all) DPs *accusative*. And the DP sister to the P1 in (1a,b,c) has *default* (dft) case. In the literature that DP is referred to as *subject*, *topic*, *focus*, *external argument*, *pivot*,... We use the cumbersome but purely structural *P1 sister*.

(2)

	Sg		
	1	2	3
gen	-ko	-nao	-ny
acc	ahy	anao	azy
dft	(iz)aho	ianao	izy

Pl			
1+incl	1+excl	2	3
-(n)tsika	-nay	-nareo	-ny
antsika	anay	anareo	azy
isika	izahay	ianareo	izy

The genitive construction is prominent in what follows. It is the most frequently occurring case of DPs in texts (then default, then accusative; Keenan 2000). In addition to possessors and agents of non-AF verbs, genitive is the dominant case of objects of prepositions. See K&P for its formation. Here we note two of its complexities. The possessed N precedes the possessor and if not 'weak' (defined below), is separated from it by a nasal linker, underlined in (3).

(3) a. trano
house

b. ny trano<u>n</u>'i Bao
the house <u>of</u>'art Bao

c. ny trano<u>n</u>-dRabe
the house <u>of</u> Rabe

If the possessor begins with a vowel the linker is simply *n*. (All examples here and later are given in standard orthography). If the possessor begins with a continuant it mutates to the closest non-continuant and prenasalizes. The mutations are: v → b, f → p, h → k, l → d, s → ts, r → dr (= /d^{r}/) and z → j (= /dz/). Upper case 'R' in (3c) is merely orthographic. The hyphen marks a morpheme boundary but the syllabification of (3c) is: /ni.t^{r}a.no.^{n}d^{r}a.be/. t^{r} is a voiceless affricate and ^{n}d^{r} its prenasalized voiced counterpart. The pronominal possessors suffix to the head N. Third person pronouns, all cases, can be interpreted as singular or plural, though singular may be the most usual. But there are many ways to augment them to force a plural reading. Very common is the use of the plural demonstrative *ireo*. Also common are kin terms, such as *mivady*, 'spouses', *mianadahy* 'brothers and sisters', and many others. So *izy ireo* is 'they', *azy ireo* 'them', *izy mivady* 'they spouses', etc. But the stressless suffix *-ny* 'his, her, their', as opposed to stressed *-nay* 'our', cannot host an augment. So augmented third person pronominal possessors present in the default case:

(4) a. ny tranon'izy ireo
the house'of.3 dem.pl
their house

b. ny tranon'izy mivady
the house'of.3 spouses
the spouses' house

c. ny trano+nay mivady
the house'1pl.excl. spouses
my and my spouse's house

Nouns do not mark number. Only the 2nd person pronouns and the elaborate demonstrative series mark plural – by infixing *-re-*, as in *io* 'that' and *ireo* 'those'.

Lastly, when the head N ends in a 'weak' syllable, *-ka*, *-na*, or *-tra*, the ending drops.

but the non-continuant feature of its consonant induces the mutations noted above. No nasal linker is used:

(5) a. ny soroka + Rabe → ny soro-dRabe
the shoulder Rabe Rabe's shoulder

b. ny fetra + fotoana → ny fe-potoana
the limit time the time limit

If the possessor DP is vowel initial just the final vowel of the possessee drops: *soroka + olona → sorok'olona* 'person's shoulder', etc. If the possessor begins with *ny* 'the' then *-ka → -ky*, *-tra → -try* and *-na → n'*: *soroka + ny zaza → soroky ny zaza* 'shoulder of the child', and *tongotra + ny zaza → tongotry ny zaza* 'foot of the child', *orona + ny zaza → oron'ny zaza* 'nose of the child'. In this last case the form is purely orthographic, Malagasy has no geminates.

4 MALAGASY QUANTIFIERS

We treat a quantifier Q as expressing a binary relation between properties. *Some* in *Some poets daydream* says that the intersection of the poets and the daydreamers, POET ∩ DAYDREAM, is non-empty. *All* says that POET ⊆ DAYDREAM, the poets are included among the daydreamers, and *most* says that the number of poets who daydream is more than half the number of poets. These three quantifiers represent the three classes we consider in Malagasy: Generalized Existential, Generalized Universal, and Proportional.

4.1 Generalized existential (intersective) quantifiers[1] and indefinite DPs

Interrogative Dets like *Which?* are intersective, as *Which poets daydream?* just asks us to identify the intersection of POET with DAYDREAM. Similarly Malagasy *iza* in *Dokotera iza?* 'Which doctor?' is intersective. But in both English and Malagasy almost all intersective

[1] The formal definition is: Q is *intersective* iff for all sets A,B,X,Y if A∩B = X∩Y then QAB = QXY. Most usually QAB is a truth value but it may also be a question denotation; our criterion applies in all cases. We note that syntactically simple Dets, such as *some*, *all* and *most* are treated as denoting Q type functions directly. But more complex Dets have internal structure. E.g. (THE FIVE)(A)(B) = True if and only if |A| = 5 and A ⊆ B. *The* here can be interpreted compositionally as a function mapping numbers to Det functions. If it contributed no meaning of its own but had merely a syntactic function it could be the identity function, with *five* interpreted as FIVE(A)(B) = True if and only |A∩B| ≥ 5, which is intersective. Most Malagasy quantifiers are complex in this way, as are many Dets in St'át'imcets (Matthewson 2001). In this paper we are not concerned for a detailed compositional interpretation but rather just with which quantifiers are naturally expressible regardless of how they

quantifiers Q are *cardinal*, meaning that the value of Q(A)(B) is determined just given the number of As that are Bs,[2] noted |A∩B|. In fact *some* is cardinal, since SOME(A)(B) = True iff |A∩B| ≠ 0. So *some* here means *at least one*, and all numerical quantifiers are cardinal. The truth of *Less than ten boys passed the exam* is determined by the number of boys who passed, so *less than ten* is cardinal. (6) lists some cardinal quantifiers in English, and (7) some cardinal ones in Malagasy. In both languages the cardinal Dets are the most extensive and varied of the classes we discuss.

Usually a D-quantifier combines with a single property denoting expression (its *restriction*) to form a DP, which in turn takes a property argument to a sentence meaning. Here we call a DP **indefinite** if it is built from an intersective Det and a property denoting expression. So *Which students?*, *some* students, at *least two students*, and *less than ten students* are indefinite.

(6) **Cardinality quantifiers in English**

a. Basic ∅+pl, some, a/an, no, several, a few, one, two, ..., ten,..., two hundred,...

b. Judgmental (not)(very) many, (very) few, too many, not enough, surprisingly many

c. Modified more than six, at least six, exactly/fewer than/at most/only six, between six and ten, nearly/approximately twenty, practically no, not more than ten, at least two but not more than five, infinitely many, just finitely many, How many?

A *judgmental* Det such as *not enough* is cardinal in the sense that *not enough doctors attended the meeting* concerns the number of doctors who attended. But it makes an additional value judgment based on expected value. Such Dets are *non-extensional* in the sense that if the same number of doctors as lawyers attended it might still be true that not enough doctors attended but more than enough lawyers attended. But in the same circumstances *More than six doctors attended* and *More than six lawyers attended* must have the same truth value, so *more than six* is extensional.

(7) **Cardinality Quantifiers in Malagasy**

a. Basic ∅, *sasany* 'some', *iray*, *roa*, *telo*, ..., *folo*, ..., *roan-jato*, ... 'one', 'two', ... 'ten',..., 'two hundred', *efa* 'finite', *Firy?* '*How many*?'

b. Judgmental *betsaka* 'many', *maro* 'many', *vitsy* 'few', *tsy firy* 'hardly any', *be* 'many', (*tsy*) *ampy* '(not) enough', *be loatra* 'too many', *vitsy loatra* 'too few'

are expressed.

[2] The core definition of *cardinal*, writing |Z| for the cardinality (number of elements) of Z, is: A function Q taking pairs of properties as arguments is *cardinal* iff for all properties A,B,X,Y if |A∩B| = |X∩Y| then QAB = QXY. So Q can't distinguish between pairs of pairs of properties whose intersections are equi-numerous. So it still doesn't matter what kind of semantic object QAB is. Thus *How many?* is cardinal since *How many As are Bs?* has the same true answers as *How many Xs are Ys?* if |A∩B| = |X∩Y|.

c. Modified *maromaro* 'somewhat many', *vitsivitsy* 'fewish', *sasantsasany* 'some', *roan-jato mahery* 'more than two hundred', *maherin'ny roan-jato* 'more than 200', *roan-jato latsaka kely* 'a little less than 200', *telo fotsiny / monja* 'only three', *tokony ho efa-polo* 'about forty', *efa-polo eo ho eo* 'about forty', *eo amin'ny* n *eo* 'about n', *sahabo ho zato* 'around a hundred', (*tsy*) *latsaky ny roan-jato* '(no) fewer than 200', *farafahakeliny roan-jato* 'at least two hundred', *tsiefa* 'infinite (= not finite)', *tsy firy* 'hardly any', *be dia be* 'very many', *vitsy dia vitsy* 'very few', *mihoatra ny zato* 'more than a hundred'

Below we illustrate some of these quantifiers, as well as some other morphologically related ones.

4.1.1 Bare nouns. Bare nouns lack overt articles or determiners. They occur as objects of verbs, (8a), pivots in Existential Ss, (8b), and as predicate nominals, (8c), but not as sisters to P1s, any voice, (8d).

(8) a. [P1Mahare zazalahy ao an-trano] aho
pres+AF+hear boy there in-house I
I hear a boy / boys in the house

b. (Tsy) misy zazalahy (betsaka) ao an-trano
not exist boy (many) there in-house
There are / aren't any (many) boys in the house

c. [P1Zazalahy tsara fanahy] i Koto
boy good spirit art Koto
Koto is a nice boy

d.* [P1Mianatra mafy] zazalahy (betsaka)
AF+study hard boy (many)
(Many) boys study hard

The negative judgment on (8d) is uniform across speakers. Inserting the definite article *ny* or the previous reference marker *ilay* before *zazalahy* 'boy' restores grammaticality, as does framing the N with any of the seven demonstratives, which differ regarding relative distance from Speaker. The singular series from closest to farthest away is: *ito*, *ity*, *io*, *itsy*, *iroa*, *iry*, and *iny* RR[53]. *Ny*+N is indifferently singular or plural, but *ilay*+N is normally singular. Demonstratives mark plural with *-re-* after the initial *i-*. Infixing *-za-* yields a 'less visible' demonstrative series. In a few cases the presence of a dental yields presentatives: *inty*, *indro*

'Here is...', *indreto*, *indreny* 'Here are...'. Even proper noun sisters to P1s are constructed with an article, such as *i* in (8c) or *Ra-* in *Rakoto* which may replace *i Koto* in (8c). Inserting *ny* before the predicate nominal in (8c) is ungrammatical. These data support the standard claim that DP sisters of P1s are definite in Malagasy. DPs that occur naturally as P1 sisters are: default case personal pronouns, demonstratives, proper names (with articles), DPs headed by *ilay* 'the aforementioned' or *ny* 'the' and their conjunctions. Bare Ns or Ns modified with adjectives or cardinal quantifiers do not occur as P1 sisters.

But in light of some further cases we adduce below, a better generalization is that P1 sisters must be (conjunctions of) DPs headed by an article,[3] usually *i-*. Note that demonstratives and all default case pronouns begin with *i-* except *aho* 'I', and it has an *i-*initial strong form *izaho* used in cleft constructions and coordinations. Malagasy also has several *i-*initial familiar or intimate pronouns not given in standard paradigms: *ialahy*, *ise*, *indrý*, as well as another proper noun article *Ikala*. Even *ny* 'the' is historically derived from an Austronesian demonstrative *ini* (Dahl 1951:257; thanks to Ileana Paul for drawing my attention to this reference). As a sign of the productivity of *i-* I note that in mathematics texts, names of numbers, sets and functions (in the textual parts, not in equations or calculations) are constructed with *i-*.

(9) a. Inty fampiharana f an'i E ao amin'i F [RJ:13]
here+is function f loc'art E into'art F
Let f be a function from E into F

b. Raha fotitr'i a i b, dia... [DD:2]
if inverse'art a art b, then...
If b is the inverse of a then...

c. Raha zanaka havian'i '1' i '2' dia... [DD 54]
if off-spring left'art 1 art 2 then...
If 2 is the left daughter of 1 then...

4.1.2 Cardinal quantifiers. Cardinal quantifiers are postnominal and compete for position with adjectives and possessors, all followed by PP and relative clause modifiers. Articles precede the N and demonstratives frame the whole NP. It is not common in texts to find adjectives, possessors and numerals cooccurring. In (10) a relative clause follows a cardinal quantifier, the whole NP framed by a demonstrative.

[3] I owe this idea to Matt Pearson, personal communication.

(10) Ireo fitsipika vitsivitsy izay tena ilaina ireo no [P1hitantsika
those rules few that very needed those Foc see+TF+1incl.gen
amin'ity lesona ity]
in'this lesson this
It is those few rules which are very needed that we look at in this lesson [MF.147]

(10) illustrates the widely used cleft construction. In core cases, the clefted constituent, the one preceding the focus particle *no*, is in complementary distribution with the P1 sister. If definite it may occur as the right sister to the P1 (omitting *no*).

Here are some basic uses of (overt) cardinal quantifiers. In (11a,b,c) they quantify objects of transitive verbs, in (11d) a pivot of an existential, and in (11e) the object of a presentative.

(11) a. [P1Mahita saka kely telo eo an-tokotany] aho
pres+AF+see cat little three there in-yard 1s.dft
I see three little cats in the yard

b. [P1nianatra teny tsy latsaky ny telonjato sy arivo] isika [MF.147]
pst+AF+study word not less.gen the 300 and 1000 1.incl.dft
We have studied no fewer than 1,300 words

c. [P1Efa afaka mampiasa teny roanjato sy roa arivo eo ho eo]
already can pres+AF+use word 200 and two thousand about
ianareo ... [MF.199]
2.pl.nom
You can already use about 2200 words

d. ...misy karazam-bary maherin'ny enina arivo... [JR:43]
...exist type-rice strong'the six thousand...
...there are more than six thousand types of rice...

e. Inty $X = \{x_1, x_2,...,x_n,...\}$ alifabeta efa na tsiefa [DD 29]
here is $X = \{x_1, x_2,...,x_n,...\}$ alphabet finite or infinite....
Let $X = \{x_1, x_2,...,x_n,...\}$ *be a finite or infinite alphabet*

But in at least two cases cardinal quantifiers precede their N. First, with various kin terms:

(12) [P1Lasa] izy dimy mianadahy
gone 3dft five brothers-and-sisters
The five brothers and sisters left

Second, in measuring duration, length, volume or weight the numeral precedes the N measured, (13a). If it follows, (13b), there is a difference in meaning (Rajemisa-Raolison 1971:51). In (13a) we measure duration, in (13b) we merely count days as abstract objects. In (13c) the number precedes the unit of measure, the whole measure phrase following the N modified.

(13) a. Fito andro monja no [P1nipetrahany t+eto]
seven days only Foc pst+sit+CF+3gen pst+here
It was only for a duration of seven days that they stayed here

b. Misy andro fito ao anatin'ny herinandro
exist day seven in'the week
There are seven days in the week

c. [P1Nitondrany ronono roa litatra] aho
pst+carry+CF+3gen milk two liter I
He brought me two liters of milk

On the productive pattern in (13c) a reviewer suggests that cases like *fito andro* 'seven days' in (13a) might be represented with a zero head N, as in *fotoana fito andro* 'time seven days'.

(13a) illustrates an important use of the cleft construction. The cleft constituent *Fito andro monja* 'seven days only' semantically binds the P1 argument but could not, as is, occur as its sister since it is not headed by a definite article or determiner. So this construction is one way of expressing an indefinite P1 argument. The cleft constituent can even be just a single N, (14a), or a single quantifier, (14b), but is often both.

(14) a. ...vehivavy no baboin'ireo olona ratsy fanahy ireo [IKM:21]
...women Foc TF+capture'those people bad spirit those
... It was women that those evil minded people captured

b. Maro no nantsoina fa vitsy no voafidy
many Foc pst+call+TF but few Foc TF+choose
Many are called but few are chosen

c. nefa jirika be no nanaraka avy aoriana, ka... [IKM:21]
but brigands many Foc pst+AF+follow right after, so...
But many brigands followed right after, so...

d. Horakoraka sy tabataba be no nanerana an'i Betafo manontolo
cries and noise much Foc pst+AF+fill acc'art Betafo all [IKM:19]
Cries and much noise filled Betafo (a town) *throughout*

The cardinal interrogative *Firy?* 'How many?' is also built on the pattern in (14a). Observe as well the modified numerical answers, including 'zero'.

(15) a. –Mpianatra firy no tonga androany?
student how+many Foc arrive today+past
How many students came today?

b. –Nisy farafahakeliny / farafahabetsahany roan-jato
pst+exist at+least / at+most two-hundred
(*There*) *were at least / at most two hundred*

c. –Raha be indrindra (mpianatra) dimy
if big most (student) five
At most five (*students*)

d. –Tsy nisy afa-tsy dimy
not pst+exist except five
There were only/exactly five

e. –Tsy nisy mihitsy
not pst+exist at+all
There were none at all

Malagasy has no Det meaning *no*. Non-existence (15e)[4] is expressed by negative existentials. In a common variant of (15e) *misy* governs a tensed predicate (all Malagasy verbs are tensed):

(16) a. Nisy nitady anao
pst+exist pst+AF+seek 2s.acc
Someone was looking for you

[4] Malagasy 'zero' is *aotra*, presumably borrowed from English (*n*)*aught*. It is not used.

b. Tsy nisy niala ny olona
not pst+exist pst+AF+get+off the people
None of the people got off (the bus)

A common reinforcement for negative verbs is the adverbial *na (dia) iray aza* 'or one even'.

(17) nefa tsy nisy olona nety nanampy azy intsony, na dia iray aza
but not pst+exist person pst+agree pst+AF+help him longer, or prt one even
but no one would agree to help him any more, not even one (person) [T8.90]

Of particular interest here is (15d). Despite the common use of *fotsiny*, *monja*, and *ihany* 'only', (13a), (15d) is a very common way to express 'only' or exactitude, a pattern not limited to numbers.

(18) a. [PI Tsy nanana afa-tsy ny talentiny] izy teo am-panombohana [JR:87]
not pst+AF+have except the talent+his he pst+there at-beginning
At the beginning he had only his talent

b. [PI Tsy nivoaka afa-tsy alina] i Manongoabe [GM:88]
not pst+AF+go+out except night art Manongoabe
Manongoabe only went out at night

c. [PI Tsy nahita tanana afa-tsy vitsivitsy] aho
not pst+AF+see village except few I
I only saw a few villages

The existential verb *misy*, like its Tagalog counterpart *may*, also expresses inalienable possession.

(19) a. [PI Misy efitra dimy] ny tranon-dRandria
exist room five the house-Randria
Randria's house has five rooms

b. [PI Tsy misy afa-tsy efitra dimy] ny tranon-dRandria
not exist except room five the house-Randria
Randria's house has just/exactly five rooms

A last and quite distinctive way of expressing *no N* is with the use of a copy construction which has a universal interpretation in non-negative contexts.

(20) [PI Tsy mahita na iza na iza eny an-tsaha] aho
not pres+AF+see or who or who there in-field I
I don't see anyone in the fields

Similarly in such contexts *na inona na inona* 'or what or what' = 'nothing' and *na aiza na aiza* 'or where or where' = 'nowhere', *na oviana na oviana* 'or when or when' = 'no when' = 'never'.

Finally, cardinal quantifiers also occur as predicates – with the exception of *sasany* 'some+pl'.

(21) [PI Maro(maro) / Tsy firy / Enim-polo / *Sasany] ny mpianatra ao an-dakilasiko
many(ish) / not many / six-ten / some the student there in-class+my
*The students in my class are (fairly) many / not many / sixty (in number) / *some*

(22) Dimam-polo (ny isan') ny mpianatra tany
five-ten (the number-of') the student pst+there
The students there were fifty / The number of the students there was fifty

Of the cardinal quantifiers that are not simply (modified) number names, most like *maro* 'many' and *vitsy* 'few' are adjectives: they have intensified forms *maro dia maro* 'very many', superlatives *maro / vitsy indrindra* '(the) most / fewest', accept adverbial modification, (23a), and form comparatives, yielding in effect comparative quantifiers, (23b). *Sasany* has none of these properties.

(23) a. Tena maro / vitsy mihitsy ny olona nanatrika ny lanonana
very many / few polarity the people pst+AF+attend the celebration
The people who attended the celebration were really very many/few

b. Maro / Vitsy ny lehilahy fantatro noho ny vehivavy
many / few the men TF+know+1s.gen than the women
I know more /fewer men than women

Sasany does have some properties in common with *maro* however. Crucially it occurs as a cardinal quantifier, as in (24a) and it forms a full DP with *ny* 'the', (24b), discussed more at length below.

(24) a. ...misy toe-javatra sasany tokony hotandremana [JR:36]
...exist state-of-thing some should fut+be+wary+CF
...there are states of affairs that one should be wary of

b. Manan-karena ny mpivaro-kena hoy ny maro / ny sasany
has-wealth the er+sell-meat say the many / the some
The butcher is wealthy, say many / say some

Etymologically *sasany* is *sasaka* 'half' + *-ny* '3gen'. This *-ny* shows up as well in *faraṇy* 'last' and *voalohaṇy* 'first'. And it survives in reduplication as a prenasalization of the mutated consonant: *sasantsasany*, *faramparany*, and *voalohandohaṇy* which argues that the form with the genitive *n* is now felt as an independent word. *sasaka* itself still exists, as in *sasak'alina 'midnight'* and *antsasak'adiny* 'half an hour'; its reduplicated form is *sasatsasaka* as expected. So an historical speculation for why *sasaṇy* doesn't occur as a predicate is: it is historically built from a proportionality quantifier 'half' (see later) and in general such quantifiers don't occur as predicates. As *sasaṇy* separates morphemically from 'half', Antisynonymy blocks it from being used as a P1 since its meaning would overlap too much with the well established existential verb *misy*. So *sasaṇy* does not occur as a P1 for the same sort of historical reason that *himself* does not occur as a possessor (*John used his (own) pen*, **John used himself's pen*). See Keenan (2002).

4.1.3 Derivatives from number names. As adumbrated above, Malagasy has indigenous systematic ways of naming numbers of many sorts. For the cardinals each power of ten has a unique morpheme up to one million: 1 = *iraṇ*, 10 = *folo*, 100 = *zato*, 1,000 = *arivo*, 10,000 = *alina*, 100,000 = *hetsy*, and 1,000,000 = *tapitrisa*. Only the latter is complex: *tapitrisa* = *tapitra* 'depleted' + *isa* 'number'. Of course today 'ten million' is just *folo tapitrisa*, etc. These number names are not borrowings, and some large ones occur early. (French influence only became large scale during the colonial period 1896 – 1960). The name of the capital, *Antananarivo*, means 'at the town of a thousand' (*aN-* 'loc' + *tanana* 'town' + *arivo* '1,000'). That name was coined by an early 17th century king, Andrianjaka (Brown 1995:102). Second, 'Armed Forces' is *Foloalindahy* = *folo* '10' + *alina* 'ten thousand' + *lahy* 'man', ten ten thousand men, a term of rank coined by king Radama I (d.1828).

4.1.4 Ordinal numerals. Ordinal numerals – second, third, ... are formed from the cardinals by prefixing *faha-* (except 'first' = *voalohaṇy*). Thus *fahatelo* is 'third', *fahatelon-jato* 'three hundredth', etc. This prefix also applies to the interrogative *firy?* 'How many?' yielding *Fahafiry?* 'Which oneth?, What rank?'

(25) Fahafiry ao amin'ny lakilasy izy?
what+rank there in'the class 3dft
What rank is he in the class?

The sequential *faha-* prefix is also used in *at least*, *at most*, etc. *fara* is the root for *last* and *at least* is built from *kely* 'little' as: *fara+faha+kely+ny* 'last+order+little+3gen'. Similarly 'at the worst' *farfaharatsiny* is built in the same way from *ratsy* 'bad'; 'at most' *farafahabetshany* and 'at the longest' *farafahelany* are built similarly from *betsaka* 'many' and *ela* 'long (in time)' respectively. Like their English translations, these numerical modifiers can be used in non-numerical contexts:

(26) Fara-faharatsiny tsy maintsy rosoina mangahazo ireto vahiny... ireto [MF.159]
at least not able+not serve+TF manioc these guest... these
At least we must serve manioc to these guests (of course rice would be better)

4.1.5 Iteratives. Prefixing simple cardinal quantifiers n including *Firy?* 'How many?' with iN-, yields an **event quantifier**, meaning 'n times' (*iN+roa* = *indroa* 'two times').

(27) a. Nanao izany indroa / intelo / imbetsaka aho
pst+AF+do that twice 3 times / many times I
I did that twice / three times / many times

b. Impiry (< iN + firy) no nanaovanao izany?
how+many Foc pst+do+CF+2s.gen that
How many times did you do that?

Prefixing these event quantifiers with *(m)aN-* forms AF verbs meaning 'to do n times': *manintelo* = 'to do three times'. And of course *manimpiry?* 'To do how many times?' is formed accordingly from the interrogative in (27b). And these verbs can be adverbialized with *f-___ -ny* '3gen', meaning 'for the nth time'. Thus *fanintelony* is 'for the third time', and *Fanimpiriny?* is 'For the which nth time?' (So an answer to this question might be *Fanitelony* 'For the third time'). Malagasy also has several lexical event quantifiers (and frequentatives formed with universal quantifiers, later):

(28) Mifoka matetika / foana / indray / indraindray i Soa.
pres+AF+smoke often / always / again / sometimes art Soa
I Soa smokes often / always / again / sometimes

(29) Tsy nifoka na oviana na oviana Rabe
not pst+AF+smoke or when or when Rabe
Rabe has never smoked

4.1.6 Distributive numerals. These are formed by reduplicating a numeral (2 through 10 and

100) and prefixing *tsi-*.[5] The adjective and mass quantifier *kely* 'little' also takes this form, (30b):

(30) a. [P1Nilahatra tsiroaroa] ny mpianatra
pst+AF+line+up two+two the student
The students lined up two by two, in twos

b. [P1Miha+sitrana tsikelikely] izy [JD:147]
pres+AF+become+cured little+little 3dft
He is getting healthy little by little

4.1.7 Are sisters to P1s definite? We have noted that, like *ang* DPs in Tagalog, P1 sisters in Malagasy are considered 'definite' (though Adams and Manaster-Ramer 1988 raise one qualm about Tagalog). And our data are so far consistent with this claim. But to support or refute it, we need a clear definition of *definite*. We adopt essentially the one in Barwise & Cooper 1981: a definite DP F is one which, whenever it holds of anything, holds of just the supersets of some non-empty property A. For example, *the two cats* is definite: if it is true of some property B then it is true of just the supersets of CAT. *John's two cats* is definite since if it holds of anything it holds of just the supersets of CAT WHICH JOHN HAS. But *exactly two cats* is not definite: suppose that CAT = {a,b,c}. Then EXACTLY TWO CAT is true of {a,b} and {b,c}, and there is no non-empty subset of those two sets which it is true of (the only non-empty subset is {b}, which it is not true of). In general the DPs we defined earlier as indefinite are not definite (in accordance with standard usage).

But now recall that intersective quantifiers are post-nominal and so do not compete for position with the definite article *ny* which is prenominal. And it turns out that we can form DPs of the form [ny + N + $Q_{intersective}$], which occur naturally as P1 sisters and receive an indefinite interpretation. Thus *ny mpianatra maro* 'the student many' doesn't have to be interpreted as 'the many students (previously mentioned)'. Here are several examples, either drawn from texts or confirmed by three native speakers.

(31) [P1Mitangorona an-tanan-dehibe] ny miaramila maro [JR:103]
pres+AF+concentrate in-town-big the soldier many
Many soldiers are concentrated in large towns

(31) is from a newspaper article in which the author complains about military costs. The point is that soldiers tend to live in large towns where expenses are greater. There is no previously indicated group of many soldiers to which *ny miaramila maro* 'lit.: the soldier many' refers.

[5] As far as I know this *tsi-* prefix is not related to the negator *tsy*, nor is it in *vitsy* 'few'.

(32) Raha vao tafiditra Rabako dia nitsangana ny
as soon as TF+enter Rabako Top pst+AF+stand+up the
zazalahy anankiray ary ... [CM:28]
young+man one and...
Just as Rabako entered (the bus), one young man stood up (and offered her his place)

In this little story no young man had been previously identified, so this is not a definite reference. Nor is the young man mentioned later in the story (which is about Rabako).

(33) [P1Tsy mety ho sitrana mandrakizay] ny aretina sasany ary... [MF:143]
not can fut cured ever the illnesses some and
Some illnesses can never be cured, and ...

The author here implicates that some illnesses can be cured. Further this example illustrates one property that 'some illnesses' shares with classical definites. Namely it scopes over negation (Keenan 2006). So (33) does not mean that it is not the case that any illnesses can ever be cured. This scope pattern is like that shown later for universals and proportionals, as well as numerals, (34).

(34) Tsy nandeha tany an-tsekoly ny mpianatra telo
not pst+AF+go pst+there at-school the student three
*Three students didn't go to school *It is not the case that three went*

(35) [P1Lasa] ny anikzy anankiray [DR.66]
gone the child one
One child has gone

The use of the marked form *anankiray* instead of *iray* does suggest, however faintly, that the speaker is concerned with who the child was as opposed to the number of children that left.

(36) Raha [S[P1manan-janaka roa na maromaro] ny tendro iray]... [DD:40]
if has-daughters two or many the node one...
If a given node has two or more daughters

(37) Faly aho satria [S[P1tonga] ny olona maro / sasany / be dia be]
happy I because arrived the people many / some / very many
I was happy because many / some / very many people came

(38) ...efa nahita (volamena) 10 grama mihitsy ny olona sasany [JR:53]
...already pst+AF+see (gold) 10 grams emph the people some
...Some people already found 10 grams (of gold)!

(39) ...ary ny firenena sasany aza dia lasa mpanondrana vary. [JR 43]
...and the nations some even Top become exporters rice.acc
...and some nations have even become exporters of rice

(40) Hitantsika eto fa ny tandahatra iray dia [P1mety manana
TF+see+1incl.gen here that the sequence one Top can have
fanitarana...maro] [DD:7]
extension...many
We see here that a given sequence can have many extensions

Such examples show that *ny* +N is not always 'definite'. But when the presence of *ny* contrasts with its absence, as in the Theme position of an AF verb – I saw *alika* 'a dog, dogs' vs. I saw *ny alika* 'the dog(s)' – we find that the presence of *ny* forces a 'definite' interpretation. Similarly *ny* may combine with any P1 to form a DP denoting the object or objects with the property expressed by the P1. So from *ao an-trano* 'there in-house' we form *ny ao an-trano* 'the ones in the house' (*'some in the house'). So we shall continue to call *ny* a definite article, acknowledging that it has a broader range of uses than the term suggests. Ntelitheos (2006) comes to a similar conclusion after extensive consideration of the general nominalizing uses of *ny*. And it does have one definiteness property: the DPs it forms scope over negation (Keenan 2006).

4.1.8 Possessors. Possessors behave like P1 sisters with regard to definiteness, though they are not traditionally cited as definite. (Recall that possessor covers Agent Phrases of non-AF verbs.) A quick check of the first 40 newspaper articles in JR reveals the following distribution of possessors:

(41)

ilay+N	Proper N	Demonstrative	Pers. Pron	*ny*+N	Total Def	Bare N
7	36	91	167	511	812	49

So slightly less than 6% of possessor DPs are bare nouns (possibly modified recall). And the 6% figure is misleading. Most were indefinite possessors of Ns, not Agent Phrases of verbs. Many of those are fixed expressions historically built from genitives but now understood as compounds: *tompon'andraikitra* 'person in charge' < *Andraikitra* 'responsibility', and *tompo* 'master', which forms many compounds: *tompon-trano* 'landlord', *tompon-tany* 'landowner', etc. Other examples are *fe-potoana* 'time limit' < *fetra* 'limit' and *fotoana* 'time', and

foto-tsakafo 'staple' < *fototra* 'basis' and *sakafo* 'food, meal'. Several other of the articleless possessors were abstract nouns governed by prepositions: as in *amy* 'with' + *hafaliana* 'happiness' = *amin-kafaliana.* A not atypical case of definite DP with a bare N possessor is (42).

(42) ...[P1Misondrotra avokoa] ny vidin'entana ... [JR.11]
...rise all the price'thing ...
The prices of things are all going up

The predicate-level *avokoa* 'all' forces the P1 sister to be understood as plural, and the most natural way is to think that there are many *entana* (things) each with its own price, hence many prices. I have however found a few cases of bare N Agent Phrases:

(43) Izaho dia voafaokany nialoha, fa Razay nentin'olona nandositra. [IKM:25]
1dft Top TF+take+3gen first, but Razay pst+carry'people pst+AF+flee
Me, I was captured right off, but Razay was carried by people who were fleeing

(44) Aoka izay ny resatsika, fandrao fantatr'olona, [IKM:25]
enough the talking+1incl.gen, lest TF+know'people
Enough talking, lest (we) be+recognized by people

Despite these two examples it is clear that Agent Phrases of non-AF verbs are overwhelmingly definite. So it is of interest to see that when non-AF Agents occur with a cardinal quantifier they are, again, constructed with a definite Det, usually *ny*.

(45) ...1kg isan'olona, isan-taona monja no mba vary lanin'ny olona
...1kg each'person each-year only Foc emph rice TF+use'the person
iray any Italia [JR 43]
one loc Italy
...On average a person in Italy only eats 1kg of rice each year

(46) araka ny fanazavana nomen'ny 'gardien' iray nanatrika
according the explanation pst+give+TF'the watchman one pst+AF+attend
io loza io...
that accident that
according to the explanation given by the watchman who witnessed that accident

(47) Indreo ry Rainimavo narahin'ny ankizilahy vitsivitsy...
here+are the Rainimavo family pst+follow+TF'the house+boys few... [IKM:232]
Here come the Rainimavos followed by their houseboys

(48) Lalina ny fitiavan'ny Malagasy maro an'ilay antoko ... [RG.90]
deep the nom+love+CF'the Malagasy many acc'that (political) party...
The attachment of many Malagasy to that party was profound (in Fugier 1999:16)

(49) Zava-dehibe eo amin'ny tany iray ny fizahan-tany [JR.36]
thing-big there in'the country one the seeing-country
Tourism is a big thing for a country

(50) Ny fitetezan'ny sampaho iray dia [$_{Pl}$mitsidika ny tendro tsirairay
the nom+cross+CF'the tree one Top visit the node each
indray mandeha ihany]
one go only
The traversal of a tree visits each node exactly once [DD 39]

Note that 'once' is expressed by *indray mandeha* 'one go' (or *indray maka* 'one take').

4.2 Partitive quantifiers

Partitive quantifiers (Paul 1998, 2000; Polinsky 1994) are built from cardinal quantifiers (among others) in constructions of the form in (51), exemplified by the underlined DPs in (52):

(51) ny Q[card] amin' DP[def.pl]
the from

(52) a. ...ary atovana azy ny dimy amin'ireo valopy nampiasaina [LP.40]
...and TF+appended (to) it the five from'those envelopes that+were+used
...and five of the envelopes that were used are appended to it [the official report]

b. Raha tsy manolotra fehin-teny ao anatin'ny fotoana voafetra...
if not offer response in'the time allotted...
ny iray amin'ny mpiady... [LP.58]
the one from the litigants
if one of the litigants does not offer a response within the time allotted ...

c. Misy manipygrenady ny sasany amin'ireo miaramila
exist throw grenade the some from'those soldier
Some of these soldiers throw grenades [RZ.114 < Fugier 1999:116]

In these examples the domains from which we are choosing a part are specified by definite DPs governed by the numerically non-committal *ny* or *ireo*, which functions as a plural definite article when it doesn't frame the NP. But in all cases the entire DP is governed by *ny*, though the sense is indefinite. As with other *ny* DPs they naturally outscope negation. If 'one of the litigants' was under the scope of *tsy* 'not' in (52b) it would mean 'if it was not the case that any of the litigants offered a response...', not the meaning it has. Similarly coordinate P1 sisters scope over negation:

(53) Tsy madio ny rano sy ny trano
not clean the water and the house
Both the water and the house are not clean

We note one further (surprising) way of expressing partitivity in Malagasy, one that does not use quantifiers. Namely, a subcategorized Theme sister to a CF verb is understood partitively:

(54) Dia nanipazany ho azy ny vatsiny [AT Ch II:138]
then threw+CF+3gen for them the travel+provisions+3gen
Then he threw them some of his travel provisions

Normally a sister to a CF verb bears an oblique (instrument, manner, etc.) relation to it. But when, as here, it is a theme/patient, then the CF form forces a partitive reading. Putting the verb in (54) in the AF voice, *Dia nanipy ho azy ny vatsiny izy* = 'Then he threw them his travel provisions' we infer as a default that he threw all his provisions.

4.3 Generalized universal quantifiers[6]

Generalized universial quantifiers abound in Malagasy. We discuss eight such. They differ in distribution and somewhat in meaning, some being more collective, others being more distributive. A given sentence may contain several, all quantifying the same constituent. We begin with *avokoa* and *daholo*, both meaning 'all, without exception' referring to the group determined by the P1 sister. They occur at the right edge of P1 preceding the yes-no question

[6] These quantifiers are often called *co-intersective* and depend on A - B in the same way that intersective Dets depend on A∩B. E.g. ALL(A)(B) = True iff A - B is empty; (ALL BUT 2)(A)(B) is True iff A - B contains exactly 2 members, etc.

particle. Their force may be modified by preverbal *saika* 'almost', (56) or by exception phrases, (57).

(55) Tonga avokoa / daholo ve ny mpianatra (rehetra)
arrived all / all ? the students (all)
Did (all) the students all arrive?

(56) Saika trano vato avokoa no hita teny amoron-dalana [MF:49]
almost house stone all Foc TF+see pst+there side-road
The houses seen on the side of the road are almost all stone houses

(57) Zatra lava resaka daholo *afa-tsy ny vahiny* [MF.95]
used+to long conversations all except the foreigners
Everyone but the foreigners are used to long conversations

Quite exceptionally *avokoa* and *daholo* seem to have the same meaning and similar distributions. The dictionary A&M lists *daholo* as a form of *the whole* (Folk etymology has it coming from a military command during early English influence). The use of the nominal quantifier *rehetra* is natural in (55), but not required. *avokoa / daholo* build a P1 that selects for a plural argument. An independently singular one violates selectional restrictions, analogous to *%John kissed each other*:

(58) * Tsy tongo avokoa Rabe / ilay mpianatra
not arrived all Rabe / that (aforementioned) student
Rabe / that student didn't all arrive

The cooccurrence of *avokoa/daholo* with the DP level *rehetra* argues against the former being derived by an operation of 'Quantifier Float'. They are simply base generated in the P1 and add a degree of emphasis 'without exception' to *rehetra* in the P1 sister. They do not cooccur with *rehetra* external to P1, (59a), though *rehetra* can precede them as an Agent of a non-AF verb, (59b).

(59) a. *[$_{P1}$Nihinana ny akondro] izy rehetra daholo
pst+AF+eat the bananas 3 all all
They all ate the bananas

b. [$_{P1}$[Nohanin'izy rehetra] daholo] ny akondro [JD.543]
pst+TF+eat'3 all all the bananas
All of the bananas were eaten by them

Rehetra occurs in the same postnominal position as the cardinal quantifiers, the general form being [*ny* + N + Quant]. As with numerals its cooccurrence with adjectives and possessors is sometimes felt as awkward. So speakers prefer (60b) to (60a).

(60) a.(?)[$_{P1}$ Hitako] ny tranon-dRabe rehetra
see+TF+1s.gen the house-Rabe all
I see all Rabe's houses

b. [$_{P1}$ Hitako daholo] ny tranon-dRabe
see+TF+1s.gen all the house-Rabe
I see all Rabe's houses

So one utility of the predicate level *avokoa / daholo* is that they allow the universal quantifier not to compete for position with adjectives and possessors. Also *rehetra*, like kin terms, combines with third person pronouns forcing a plural or collective reading.

(61) a. [Mianatra mafy] izy rehetra
pres+AF+study hard 3dft all
They all study hard

b. [Nahita azy rehetra] aho
pst+AF+see 3acc all 1dft
I saw them all

In comparison with English universal quantifiers, *rehetra* lacks the distributive emphasis of *each* and the predilection for general contexts (Matthewson 2001) of *all – All men are mortal, We should distrust all doctors who smoke*, etc. In distinction to *all* and *most* in English we find no lexical quantifiers in Malagasy that select for genericity. But *rehetra* does have collective and mass uses:

(62) [Marary] ny tenako rehetra / manontolo [JD.543]
sick the body+1s.gen all / entire
I ache all over / (My entire body is sick)

manontolo in (62) has only a mass interpretation. But like cardinal quantifiers *rehetra* may occur just with a definite article with a meaning like *everyone* (the range of *one* given in context).

(63) Ilaina ny miaramila. Samy manaiky izany ny rehetra. [JR.102]
need+TF the military. All agree that the all
The military is needed. Everyone agrees with that.

On the other hand in distinction to most cardinal quantifiers *rehetra* does not occur partitively, (64a), nor does it occur as a predicate, (64b):

(64) a. *Ny rehetra amin'ny miaramila
the all from'the soldier
Each/All of the soldiers

b.* Rehetra ny mpianatra
all the student
The students are all

Also, like other *ny* DPs, ones with *rehetra* normally scope over the P1, even when negated, (65a). But it is easy and natural to cleft the universal DP to force it under the scope of negation, (65b):

(65) a. Tsy afa-panadinana ny mpianatra rehetra
not free-exam the student all
All the students didn't pass the exam (**It is not the case that all passed*)

b. Tsy ny mpianatra rehetra no afa-panadinana
not the student all Foc free-exam
It wasn't all the students that passed the exam (some failed)

Negation *tsy* is P1 initial, supporting that the cleft constituent is a predicate (Paul 2001) as both P1s can be negated, (66). Note too that *tsy* is in the scope of *ny* in nominalizations, (67).

(66) Tsy ny manam-boninahitra rehetra no tsy mahay, fa ... [JR:102]
not the have-honors all Foc not able, but...
It is not all the officers who are not able, but ...

(67) ary ny fitombon'ny tsy fisian'ny fandriam-pahalemana no antony...
and the increase'the not existence'the public order Foc reason
and it is the increase of the lack of public order which is the reason... [JR.102]

A second DP level, strongly distributive, universal quantifier is *tsirairay*:

(68) Mahatazana tsara ny solaitrabe ve ny mpianatra tsirairay?
can+see good the slate big ? the student each
Can each student see the blackboard well? [T3.11]

As *tsirairay* is *tsi-* followed by a reduplicated 'one' (*iray*) we expect it to mean 'one by one', but the sense is just 'each', still strong enough to force a distributive reading. Consider:

(69) Inona no [P1 andraikitry ny mpianatra tsirairay]? [T3.14]
what Foc responsibility+gen the student each?
For each student, what is his/her responsibility?
**What is the collective responsibility of the students?*

Tsirairay here forces a distributive reading. If it is replaced by *rehetra* it is more likely that we are asking about either collective responsibility or the responsibility of an arbitrary student, disallowing the case where different students have different responsibilities. In (70) and (71) it is unnatural to replace *rehetra* by *tsirairay* as *vahoaka* and *tambatra* are collective terms. The fixed expression in (72) also illustrates the distributivity of *tsirairay*.

(70) Aza manimba ny fitaovam-pokonolona fa ny
don't pres+AF+damage the tools-of-the-collectivity for the
vahoaka rehetra no tompony
people all Foc owner+its
Don't damage community property for it is all the people who are its owners

(71) ny tambatry ny fatra rehetra ao amin'i P_n dia mira a_n [DD:7]
the sum.gen the coefficients all there in'art P_n Top equals a_n
the sum of all the coefficients in the P_n equals a_n

(72) Ny tsirairay ho an'ny daholobe, ary ny daholobe ho an'ny tsirairay
the each for'the all, and the all for'the each
One for all and all for one

Tsirairay can also quantifiy Themes of AF verbs and Agents of non-AF ones, (73). And unlike *rehetra* at least some native speakers accept it in partitive constructions, (74):

(73) ...ny fikojakojana ilain'ny reniakoho tsirairay [MF.175]
...the care need+TF'the mother+chicken each
...the care each mother chicken needs

(74)(?) Nomenay fanafody ny tsirairay amin'izy ireo
pst+give+TF+1excl.gen medicine the each from'3dft dem+pl
We gave medicine to each of them

A fifth form of universal quantification is expressed with predicate initial *samy*, which as in (63), may cooccur with other universal quantifiers. Triple quantification as in (75a) is not uncommon.

(75) a. Efa samy matahotra daholo ny olona rehetra [T8.90]
already all fear all the person all
All the people are afraid

b. Samy novakin-dRabe ireto boky ireto
all pst+read+TF-Rabe.gen these book these
Rabe read all these books / All these books were read by Rabe

c. #Samy novakin'ny mpianatra rehetra ilay boky
all pst+read+TF.gen'the student all that book
All the students read that book

d.* Samy namaky ireto boky ireto Rabe
all pst+AF+read those book those Rabe
Rabe read all those books

All accepted *samy* with a plural P1 sister regardless of verb voice. Some but not all accepted *samy* related to Agent Phrases of non-AF verbs, (75c), whence the # mark there. None accepted *samy* binding a Theme of an AF verb, (75d) but (75d) is fine with *samy* omitted. *samy* is one of just a few non-verbs to occur preverbally: *efa* 'already', *mbola* 'still, yet', *saika* 'almost' and negation *tsy*. *Samy* precedes *tsy* and *mbola* and follows *saika*. (76) further supports that 'sentence' negation *tsy* occurs within the P1 in a nuclear S. Further, while *samy* does not take voice or tense marking, it does have an imperative form (as does *maro* 'many': *maroa* 'be numerous!').

(76) Samy tsy (* Tsy samy) namaly ny fanontania ireto mpianatra ireto
all not answered the question those student those
All those students didn't answer the question(s)

(77) Samia manatrika ny manamboniahitra! [MF.163]
all+Imp pres+AF+face the officer
Everyone face the officer!

More deeply *samy* often (not always) binds an argument to it (or to the P1 sister).

(78) a. Samy mifidy ny/izay mahafinaritra azy ireo mpianatra ireo
all choose the/what pres+cause+please 3acc those students those
Each of the students chooses what pleases him

b. Aoka samy hilaza ny heviny avy e! [CM:30]
may all fut+AF+say the opinion+3gen each e!
Let everyone have his say!

A sixth type of universal quantifier, perhaps better considered simply as a distributivity marker, is *avy*. It occurs in a bewildering variety of positions. A most natural one is at the right edge of P1, (81a). It often cooccurs with other universal quantifiers, as in (79), especially *tsirairay*, (79b).

(79) a. Samia mibata gony iray avy!
all+Imp AF+pick+up sack one each!
Everyone pick up one sack each!

b. Mila mikarakara ny vatany ny olona tsirairay avy
AF+need AF+take+care+of the body+3gen the person each each
Each person needs to take care of his own body...

Avy also cooccurs with core constituent question words to force a plural interrogative:

(80) Aiza avy no misy azy ireo tsirairay? [T3.11]
where pl Foc exist 3acc dem.pl each?
In which places are each of them (pieces of furniture)?

A seventh widely used universal quantifier is the noun prefix *isaka / isan'*:

(81) a. Ankehitriny dia [[P1manana ny sekoliny avy] ny isam-pokotany]
today top AF+has the school+its each the each fokotany
Today each fokotany (county) has its own school

b. Amin'ny fifidianana dia [[P1mandatsa-bato] ny isam-batan'olona]
in'the elections top AF+drop-stone the each-trunk'person
In elections each individual votes

c. [P1Nahazo vary avy amin'ny fanjakana] ny isan-tokonana
pst+AF+get rice come from'the government the each-household
Each household received rice from the government

The construction with *isaka/isan'* productively forms **rate phrases**, a type of predicate level event quantifier with units of time, cost, weight, etc. as in *isan'andro* 'every day', *isak'asabotsy* 'every Saturday', *isa-maraina* 'every morning'. And these can take further specifiers like *at least*, *about*, etc., (83). They also iterate naturally, (84), and may establish rate relations between expressions other than ones expressed in standard units of measure, (85).

(82) [P1Misotro toaka intelo isan'andro / isan-kerinandro / isak'Asabotsy] Rabe
AF+drink liquor three times each'day / each-week / every'Saturday Rabe
Rabe drinks liquor three times a day / three times a week / three times each Saturday

(83) ...mpiasam-panjakana mikarama eo amin'ny 38.000a isam-bolana eo
...worker-government AF+earn about at'the 38,000 ariary each-month about
...government workers who earn about 38,000 ariary per month [JR.132]

(84) ny vahoaka Malagasy dia... mahalany vary amin'ny ankapobeny 133kg
the people Malagasy top... use+up rice in general 133kg
isan'olona isan-taona.
each'person each-year
The Malagasy people in the general case consume 133kg per person per year

(85) dia asio 'eau de javel' indray mitete isaky ny rano iray litatra [JR.27]
then add 'bleach' one AF+drip each the water one liter
then add one drop of bleach for each liter of water

Our eighth and last type of universal quantifiers are structural, not lexical. They are 'Whatever Phrases' of the form Copy(na N Wh_Q), where N is a noun (possibly modified) and Wh_Q is a constituent interrogative word like *Iza?* 'Who?', *Inona?* 'What?', *Firy?* 'How many?', etc.

(86) [P1Mendrika ny hisondratra kilasy] [na mpianatra iza na mpianatra
merit the fut+AF+go+up class or student who or student
iza] afa-panandinana
who free-exam
Whatever student passes the exam merits being promoted to the next class

A variant of this structure which (most) speakers reject as 'heavy' repeats the modifier

afa-panadinana '(who) passed the exam' adjacent to each occurrence of *mpianatra*: *na mpianatra afa-panadinana na mpianatra afa-panadinana*. Going the other way, all speakers consulted accept eliminating one occurrence (either the first or the second) of *mpianatra* in (86). So 'whatever student passes the exam' may become *na iza na iza mpianatra afa-panadinana*, 'however many students pass the exam' may be *na mpianatra firy na firy mpianatra afa-panadinana*, etc.

Curiously it is this structural expression of universal quantification which is widely used in mathematical discourse (though the lexical quantifiers are used as well). From [DD] we have:

(87) a. na iza n na iza 'For all n,...'
b. na iza n >1 na iza 'For all n > 1, ...'
c. na iza A_1, A_2, ..., A_k silak'i E na iza 'For all A_1, A_2, ..., A_k subsets of (art) E,...'

So here the full N occurs between *na* Wh_Q and *na* Wh_Q. We turn now to our last category of quantifiers.

4.4 Proportionality quantifiers

Proportionality quantifiers are ways of expressing the proportion of As that are Bs. Their general form is [ny + Fraction + NPgen]. Again Malagasy is well supplied with such quantifiers.

(88) Afa-panadinana ny antsasaky ny mpianatra / ny roa ampahatelon'ny mpianatra
free-exam the half.gen the student / the two third.gen'the student
Half the students passed the exam / Two thirds of the students passed the exam

The fractions as in the second example are productively formed (and thus infinite in number) by prefixing *ampaha-* to a cardinal number name to form the denominator, the initial number, *roa* 'two' above, being the numerator: 3/42 is *telo ampaha-roa amby efapolony*. *Ampaha* itself is surely formed historically from locative *aN-* and the ordinal former *faha-*. The general form of fractions is in (89). (90) presents one fraction DP as a non-AF agent and one as a direct object.

(89) ny + [Numeral + [ampaha+Numeral] + DPgen]

(90) ny faritanin'Antananarivo izay hitobian'ny ampahatelon'ny Malagasy,
the district'Antananarivo in which overflow+CF'the third'the Malagasy,
dia zara raha manana ny ampahefatry ny solombavambahoaka ao amin'ny
Top barely has the fourth the representatives there in'the
Antenimiera.
Parliament
The district of Antananarivo which has about a third of the population barely has a fourth of the representatives (= replace+mouth+public) in the Parliament [JR 39]

Ampaha- also (unsurprisingly by now) prefixes interrogative *firy?* 'How much/many?' to yield the interrogative *ampahafiry?* 'What portion of?', as in (91):

(91) Ampahafirin'ny mpianatra no afa-panadinana?
What+portion'the student Foc free-exam?
What portion of the students passed the exam?

A second productive way of forming proportionality quantifiers is with percentage phrases, formed with the *isaka / isan'* construction using *zato* 'hundred'. Thus following the earlier pattern, *folo isan-jato* 'ten each-hundred' is[7] 'ten per cent':

(92) a. Afa-panadinana ny enim-polo isan-jaton'ny mpianatra
free-exam the six-ten each-hundred.gen'the student
Sixty per cent of the students passed the exam

b. Tsy ao an-dakilasy androany ny dimy ambin'ny folo
not there in-class today(past) the five and'the ten
isan-jaton'ny mpianatra
each-hundred'the student
Fifteen percent of the students were not in class today
**It is not the case that fifteen per cent of the students were in class today*

So we see that proportionality DPs scope over the P1, as with other P1 sisters headed by *ny*. A last basic way of forming proportionality quantifiers is with nominalizations of various lexical quantifiers to yield expressions translating 'a majority of' and 'a minority of'.

(93) Tsy mianatra Alahady ny ankabeazan'ny mpianatra [T3.55]
not AF+study Sunday the majority'the student
The majority of the students don't study on Sunday

[7] I don't know if *folo isan-jato* is originally a calque 'ten per cent, dix pour cent' as the Malagasy expression is a fully natural pattern independently.

(94) Nandá daholo anefa ny ankabeazan'ny olona, [T8.89]
refused all however the majority'the people,
fa dimy lahy monja no sahy nanolo-tena hiambina eo,...
for five men only Foc bold offer-self fut+AF+guard there
However the majority of the people all refused, for only five men dared to offer themselves to stand guard there...

(95) nandiso fanantenana ny ankamaroan'ny maro izay afa-nanaraka ilay
deceived hope the majority'the many who able-pst+AF+follow that
fanambarana
speech
The majority of the many who were able to attend that speech were disappointed

The proportionality quantifiers here appear to be formed from the cardinal quantifiers *be* 'big, many' and *maro* 'many' by prefixing a largely non-productive causative *(m)anka-* forming a verb *(m)ankamaro*, which is then put in the CF form *ankamaroana*. (*Ny maro an isa* 'the many at number' is also a nominal used to mean 'the majority'). Similarly the CF form of *ankabe* would be *ankabeazana*. This form of derivation is slightly productive. We find: *betsaka* 'many' → *ankabetsahana* 'majority', *vitsy* 'few' → *ankavitsiana* 'minority.' But the verbs forming the middle stages of such derivations are not attested: **mankamaro*, **mankabe*, etc.

Proportionality quantifiers can be modified in ways similar to cardinal quantifiers with items translating *at least*, *at most*, etc.

(96) Maherin'ny valompolo isan-jaton'ny vola natokana [JR 102]
strong.gen'the eighty each-hundred'the money pst+TF+designate
ho an'ny Tafika dia lany amin'ny karama fotsiny
for'the Army Top spent on'the salary alone
More than 80% of the money designated for the Army is spent just on salaries

(97) Afa-panadinana farafahakeliny / farafahabetsany ny folo isan-jaton'ny mpianatra
free-exam at least / at most the ten each-hundred'the student
At least / at most ten percent of the students passed the exam

Again, these modifiers are not specific to overt expressions of proportion (or quantity):

(98) misy fetra ny vazivazy anefa fara-faharatsiny tsy tokony hatahorana ny mitsiky
exist limit the kidding however at+least not should fut+fear+CF the smiles
there is a limit to kidding, but at least smiling shouldn't be the cause of fear [MF.159]

5 Closing Comments

Malagasy clearly has rich means of expressing quantification, of which we have provided a moderately systematic inventory here. But there are many questions we have not even raised. Foremost among these are questions of quantifier scope. Given the range of quantifiers we have covered even a fairly thorough investigation of scope interpretations in Ss built from transitive verbs and two quantified DP arguments is a large undertaking. Questions concerning which DPs, if any, can scope out of islands is another very large topic. But at least the researcher pursuing these questions in Malagasy should now have a concrete range of quantified DPs at hand to use in formulating generalizations concerning relative scope.

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9

On the Absence of Quantificational Determiners in San Lucas Quiaviní Zapotec

Felicia Lee

1 Introduction

San Lucas Quiaviní Zapotec (SLQZ), an Otomanguean language spoken in Oaxaca, Mexico, expresses quantification with grammatical elements that look superficially like determiners, but pattern morphologically and syntactically with verbal predicates. My goals in this paper are twofold. The first goal is to provide a description of quantification in SLQZ and to show that despite surface appearances, SLQZ quantifiers are not determiners. The second goal is to connect this pattern to the absence of quantificational determiners attested in other languages, such as the Salish languages (Matthewson 1998). I will show that SLQZ DPs, like those of Salish, do not have access to the common ground in discourse, a necessity for determiners to encode quantification (Matthewson 1998).

This paper is organized as follows. I will first give a brief grammatical overview of SLQZ. Next, I will outline the basic strategies for quantification used in the language, and show that SLQZ preverbal quantifiers cannot be analyzed as determiners. Then I will show that SLQZ DPs do not encode information from the common ground in discourse. Evidence for this will come from the absence of definite and indefinite determiners in SLQZ, and from the behavior of bare nouns and pronouns in SLQZ discourse.

Unless noted otherwise, SLQZ data in this paper comes from either my own fieldnotes (elicited examples from native speakers), recordings of spontaneous speech by native speakers, or from conversations between native speakers recorded in Oaxaca in 2003 and 2004.

2 SLQZ: A BRIEF OVERVIEW

SLQZ is one of several dozen mutually unintelligible languages called "Zapotec" spoken in and near Oaxaca, Mexico. It is spoken by about 2000 people, a number of whom form a sizeable expatriate community in the Los Angeles area.

Like most Zapotec languages, SLQZ has basic VSO word order, but freely allows focused or topicalized arguments to appear preverbally:[1]

(1) Y-tàa'az Gye'eihlly Li'eb
IRR-beat Mike Felipe
"Mike will beat Felipe."/ * "Felipe will beat Mike."

(2) **Gye'eihlly** y-tàa'az Li'eb
Mike IRR-beat Felipe
"MIKE will beat Felipe."/ "Felipe will beat MIKE."

Consistent with its VSO status, SLQZ is a strongly head-initial language. It has head-initial relatives (3),[2] prepositions rather than postpositions (4), and head-initial possessive constructions (5).

(3) **Studya'aann nih b- inylohoh Pa'amm** n- u'uh rèe'
student REL PERF-see Pam NEUT-exist here
"The student that saw Pam./ that Pam saw is here."

(4) N- ago'-o' **dehts yu'uh**
NEUT-lie-2S.INF back house
"You're lying in back of the house."

(5) x:-ca'rr Gye'eihlly
POSS-car Mike
"Mike's car"

[1] Abbreviations: DEF=Definite, DET=determiner, DIST=distal, HAB=Habitual, INF=informal, INT=intensifier, IRR=Irrealis, NEUT=Neutral, NMLZR=nominalizer, NOM=nominative P=plural, PERF=Perfective, PL=plural, POSS=possessive, PROX=proximal, REL=relative, S=singular. The orthography used here is that developed and used by Munro, Lopez, et al (1999). Diacritics on vowels represent phonation types: grave accents indicate creaky vowels, glottalized vowels are marked with apostrophes, breathy vowels are followed by *h*, and modal vowels are unmarked.

[2] Subjects containing relative clauses and other phonologically heavy subjects (including most quantified ones) tend to appear preverbally, rather than postverbally. This appears to be a prosodic, rather than syntactic, constraint.

Nominal expressions, like other constituents, are also head-initial: adjectives always appear after the nouns they modify:

(6) B-cwàà'ah bùunny **pelo't xnìaa ròo'oh**
PERF-throw person ball red big
"The man threw the big red ball."

Tense and aspect on verbs are marked by verbal prefixes. SLQZ has seven tense/aspect markers, most of which have two or more allomorphs. Below are a few representative examples: the Perfective allomorph *b-*, and the Habitual marker *r-* :

(7) **B**-guhty-a' bzihny
PERF-kill-1S mouse
"I killed a mouse."

(8) **R** -àa'p -a' te'ihby li'ebr
HAB-have-1S one book
"I have one book."

No subject agreement appears on verbs with lexical subjects, as seen in (6). Pronominal subjects are indicated with subject clitics on the right edge of the verb, as seen in (7-8). These clitic forms are distinct from the prosodically independent pronoun forms that appear as objects or as focused subjects. In (9) for instance, the first-person pronoun object is realized as *nàa'* rather than as the subject clitic *–a'* seen in (7). In (10), *nàa'* appears preverbally (along with a verbal clitic marker) as a focused subject:

(9) B-yennlo-ng **nàa'**
PERF-see-3S.PROX 1S
"He/she saw me."

(10) **Nàa'** r- àa'p -a' te'ihby li'ebr
1S HAB-have-1S one book
"*I* have one book."

3 QUANTIFICATION IN SLQZ

SLQZ expresses some quantificational notions with prenominal modifiers. Numbers, for example, always appear before nominals they modify, as do *ra'ta'* 'every/all', *diuzh* 'some/few', and Spanish-derived compound expressions (mostly strong quantifiers) such as *casi ra'ta'* 'most/almost all'. Quantified nominal subjects generally appear preverbally (11-12); quantified objects surface in their usual post-subject position (13):

(11) **Chòonn** **mnìi'ny** ca-gye'eht jweer
three children PROG-play outside
"Three children are playing outside."

(12) **Yra'ta'** **gyìia'** nàa ncyets
every/all flower NEUT.be white
"All the flowers are white."

(13) B-da'uh Carlos **chòonn** **gueht**
PERF-eat Carlos three tortilla
"Carlos ate three tortillas."

The position of these quantificational elements makes them appear, at first glance, like English-type quantificational determiners: they appear to form constituents with the nominals they count (in both subject and object positions, quantifiers appear at the left edge of their restrictors), and their initial position in nominal constructions is consistent with that of determiners in head-initial DPs.

However, these quantificational elements also show predicate-like behavior inconsistent with determiner status. In the next section, I will describe some of these predicate-like morphological and syntactic patterns. These patterns appear most productively on numbers; thus, most of the following examples will show numbers. However, predicate-like behaviors on other quantifiers will be shown as well when possible.

3.1 Verbal morphology on quantifiers

Four of the seven tense/aspect markers used on verbs may also appear on numbers (Munro, Lopez, et al., 1999). A few other prenominal quantifiers may take tense/aspect prefixes as well, but less productively than numbers. These markers, however, contribute meanings other than their standard tense/aspect readings to quantifiers they are affixed to.

The Irrealis tense/aspect marker, which normally encodes future tense or present subjunctive readings when used on verbs (14), contributes an exhaustive reading to numbers it modifies, as seen in the distinction between (15) and (16):[3]

(14) **Y**-tyi'ihs-ëng
IRR-jump-3S.PROX
"He will jump."

(15) **Chòonn** bùunny b-èi'nchìia' yu'uh
three person PERF-build house
"Three people built a house." (out of a larger group of people)

(16) **Y-yòonn-ta** bùunny b-èi'nchìia' yu'uh
IRR-three-INT person PERF-build house
"All three people built a house."

The universal quantifier *ra'ta'/yra'ta'* takes the Irrealis marker optionally. My consultant reports no meaning difference between *ra'ta'* and *yra'ta'*, but notes that some speakers use the form with the Irrealis marker, while others do not. The semantic redundancy of a marker of exhaustivity on a universal quantifier could account for its optionality:

(17) **(y)-ra'ta'** ra nguìu' b-èi'nchìia' teihby yu'uh
(IRR)-all PL man PERF-build one house
"All the men/every man built one house."

Ra'ta'/yra'ta' both allow either collective or distributive readings, as do numbers: (15) and (16) can mean both that all three people built one house together, or that they each built separate houses.

The Habitual marker, which encodes present tense on verbs (18), is used with some numbers to form ordinals (19):

(18) **R**-àa'p-a' te'ihby li'ebr
HAB-have-1S one book
"I have one book."

[3] Numbers have suppletive forms used when tense/aspect markers appear, hence the different forms for 'three' in (15) and (16). For instance, *tyo'p*, 'two', when modified by the Irrealis marker, becomes *yro'p*, 'both'.

(19) Nih **r**-yohnn mnìi'ny n-u'uh la'nyu'uh
REL HAB-three child NEUT-exist in.house
"The third child is in the house."

The Definite marker, used to encode strong speaker presupposition about the outcome of a future event (20), means 'x-more' when attached to a number x, as seen in (22):

(20) **S**-tàa'az Gye'eihlly Li'eb
DEF-beat Mike Felipe
"Mike will definitely beat Felipe."

(21) tyo'p
"two"

(22) Ga'a **s**-tyo'p ra mnìi'iny a b-zehnny
TOP DEF-two PL child already PERF-arrrive
"Two more children just arrived."

When attached to *te'ihby*, 'one', the Definite marker contributes both the literal meaning 'one more' and the related meaning 'another':

(23) **S**-te'ihby-ih c-àa rèe'
DEF-one-3S.DIST PROG-hang here
"Here's another one."

(24) Nàa' r-àa'p-a' **s**-teihby mnìi'iny demas cah bzyaàa'n-a'
1S HAB-have-1S DEF-one child more than sister -1S
"I have one more child than my sister."

The Definite marker can also attach to *dùu'zh* 'some/few' to give the reading 'some more'. In the example below, the Definite allomorph *s-* causes the initial *d-* on the root to be devoiced:

(25) B-nii **s**-tùu'zh comiied nàa'
PERF-give DEF-some food 1S
"Give me more food!"

Finally, the Perfective marker, used to express past tense and perfective aspect on verbs, is used to form what Munro, Lopez, et al. (1999) call "resultative" quantifiers. These

Perfective-marked quantifiers always appear after a wh-expression. Below I show an example of an unmarked number in a wh-question along with a resultative quantifier in a wh-question:

(26) Tu r-àa'p **tyo'p** caba'i?
who HAB-have two horse
"Who has two horses?" (Munro, Lopez, et al. 1999)

(27) Tu a **b-rohp** caba'i r-àa'p
who already PERF-two horse HAB-have
"Who has (gotten) two horses now?" (Munro, Lopez, et al. 1999)

To sum up, SLQZ numbers (and some other quantifiers) may appear with some of the tense/aspect markers that normally mark verbs; these markers contribute readings distinct from those of their normal usage. The Irrealis marker, which normally contributes a future-tense reading, contributes an exhaustive reading to numbers it modifies. The Habitual marker, which normally encodes present tense (and not just habitual aspect), is used to construct ordinals. The Definite marker, which normally encodes strongly presupposed future readings, gives the meaning '*x* more' to any number *x*. The Perfective marker, which normally contributes past-tense readings, is used on numbers in the "resultative" construction shown in (27).

Moreover, SLQZ prenominal quantifiers show other syntactic parallels with verbs. Munro, Lopez, et al. (1999) note that when numbers are used to modify pronouns, the pronouns appear in their subject clitic form (*-rëng*, the third-person plural proximate form, below) rather than in their prosodically independent form (*làa'rëng*) :

(28) Chòonn-**rëng** b-èi'nychie-rëng yu'uh
three-3S.PROX PERF-build-3P.PROX house
"Three of them built a house."

(29) *Chòonn **làa'rëng** b-ei'nychie-rëng yu'uh
three 3P.PROX PERF-build-3P.PROX house
"Three of them built a house."

Certain other quantificational expressions behave similarly. *Dùu'zh,* 'few/a little', for instance, also takes pronominal clitics (as seen below, where it takes the third-person singular distal clitic *–ih*):

(30) B-zìi-a' **dùu'zh-ih**
PERF-buy-1S few-3S.DIST
"I bought a few of them." (Munro, Lopez, et al 1999)

Ra'ta', 'all/every', likewise takes pronoun arguments in clitic form, as do Spanish-derived complex quantifiers (in (32), *masda* is derived from Spanish *mas de* 'more than'):

(31) Ra'ta'-**rëng** r-umbèe'-rëng bxuuhahz
all-3PROX HAB-know-3PROX priest
"All of them know the priest."

(32) Masda ru'all-**ënn** b-da'uh-ënn gueht
more.than half-1P PERF-eat-1P tortilla
"More than half of us ate tortillas."

Also, Munro and Lopez note, the same clitics that attach to the right edges of verb stems (such as the epistemic modal clitic *–zhi'*, 'must') may also cliticize to the right edges of SLQZ numbers:

(33) Chòonn-**zhi** bùunny m-nàa lìng
three-might person PERF-see 3S.PROX
"Three people must have seen him." (Munro, Lopez, et al. 1999)

These behaviors are unexpected of simple quantificational determiners.

The exact syntactic nature of these predicate-like quantifiers, however, is unclear. While it is clear that they are not determiners, it is also clear that they are not fully verbal. While they take some verbal tense/aspect markers, they cannot do so completely productively: only the aspect markers cited previously may appear on numbers, and only with the marked meanings previously described.

Moreover, while numbers can appear as main predicates, they pattern morphologically with non-verbal, rather than verbal, predicates. Like clearly non-verbal predicates, they may appear either with or without overt copulas in present-tense constructions:

(34) Chòonn n-aa'c-ënn
three NEUT-be-1P
"We are three."
(context volunteered by speaker: diners asking for a table in a restaurant)

(35) Chòonn-ënn
three-1P
"We are three."

(36) Gyeht n-aa'c-ëng
squash NEUT-be-3S.PROX
"It's a squash."

(37) Gyeht-ëng
squash-3S.PROX
"It's a squash."

Moreover, in past or future constructions, number predicates, like other non-verbal predicates, require overt copulas, which carry tense/aspect marking:

(38) Chòonn g-uhc-ënn
three PERF-be-1P
"We were three."

(39) Chòonn-ënn
three-1P
"We are/*were three."

(40) Do'ctoor g-uhc Gye'eihlly
Doctor PERF-be Mike
"Mike was a doctor."

(41) Do'ctoor Gye'eihlly
Doctor Mike
"Mike is/*was a doctor."

This suggests that if numbers are verbs, they are defective ones.

It is also unlikely that SLQZ numbers are adjectives. As previously noted, adjectives always appear postnominally in SLQZ, consistent with the language's strongly head-initial status:

(42) B-cwààa'ah bùunny **pelo't** **xnìa** **ròo'oh**
PERF-throw person ball red big
"The man threw the big red ball."

Numbers and other quantifiers, on the other hand, always appear prenominally:

(43) B-naà-a' loh **chòonn** **bèe'cw**
PERF-see-1S at three dog
"I saw three dogs."

(44) *B-naà-a' loh **bèe'cw** **chòonn**
PERF-see-1S at dog three
"I saw three dogs."

These data show that both strong and weak quantifiers in SLQZ show predicate-like behavior, and behave in manners unexpected of either determiners or adjectives.

3.2 Existential quantification in SLQZ

While numbers appear superficially determiner-like, yet show some predicate-like behavior, the expression of existential quantification in SLQZ is centered around an unambiguously predicational element: the verb *nu'uh*, 'exist'.

Nu'uh has three primary uses in SLQZ. It is used to express location; on this use, it may take definite subjects:

(45) Calii n-ùu -u'?
where NEUT-exist-2S.INF
"Where are you?"

It is also used in two separate constructions to assert existence. In the first of these constructions, it asserts the existence of its syntactic subject:

(46) N-u'uh cha'mm
NEUT-exist work
"There is work (available)." (Munro, Lopez, et al. 1999)

It is also used in another, more complex structure to express the notions 'someone', 'something', and 'some x'. This is exemplified in the structure below, where *nu'uh* binds a wh-indefinite pronoun *tu* 'who' to express 'someone'. *Tu* is also used as an interrogative wh-expression, as seen in (48):

(47) N-u'uh **tu** b-da'uh gueht
NEUT-exist who PERF-eat tortilla
"Someone ate tortillas."

(48) **Tu** b-da'uh gueht?
who PERF-eat tortilla
"Who ate tortillas?"

I assume that the wh-expressions in this construction serve as variables bound by the existential quantification contributed by *nu'uh*, 'exist'. This construction is a clear case of quantification being contributed by a non-determiner element.

In existential constructions, *nu'uh*, 'exist' remains unambiguously verbal. It can appear with different tense/aspect markers, which contribute their usual temporal meanings in existential constructions. In the following example, it appears with the Perfective tense/aspect marker, and gets a past interpretation:

(49) Bru'atzi zèèi'ny **g**-u'uh Lohs Aa'nngl
much work PERF-exist Los Angeles
"There was lots of work in Los Angeles."

In this example, a second expression of quantification, *bru'atzi zèèi'ny*, 'much work' appears preverbally: this is consistent with the pattern noted earlier that phonologically heavy subjects (such as relative clauses and quantified expressions) generally appear preverbally in SLQZ.

A number of other quantificational expressions used in existential constructions pattern syntactically like *nu'uh*, 'exist'. The expression *cùuan*, which has several meanings including 'which', 'where', and 'how', for instance, can also be used to express existential quantification.[4] It does not take tense/aspect marking, unlike *nu'uh*, 'exist.' On its existential use, however, it binds a wh-indefinite, just as *nu'uh*, 'exist' does:

(50) Cùuan **tu** b-da'uh ra gueht
where who PERF-eat PL tortilla
"Someone ate the tortillas."

Do'onn , 'if/whether,' behaves similarly in existential constructions:

(51) Ngaista do'onn **xi** g-a'uw-a'
later if what IRR-eat-1S
"Later, I'll eat something." (Munro, Lopez, et al. 1999)

[4] *Cùuan* and *calii* can both be glossed as 'where', but *cùuan* has a much more restricted usage: it can only be used in questions where the questioned location is the main predicate (e.g., "Where are you?"); it cannot be used in non-interrogative contexts or in contexts where the location being questioned is not the main predicate (e.g. "Where are you going?"). *Calii* may be used in all these contexts.

While *cìuan*, 'where', and *do'onnn*, 'if' are not verbal, they clearly show predicate-like morphological and syntactic patterning. I will not address the question of their exact categorial status here, but the fact that they all combine productively with clitic pronouns and wh-indefinites—both of which I assume to be determiners themselves—suggests that they cannot be determiners themselves.

A related issue is how to reconcile the non-determiner status of non-verbal SLQZ quantifiers with the presumption that nominal arguments are necessarily DPs (Stowell 1989, Longobardi 1994, among others). In existential constructions such as (50) and (51), I assume that the quantifiers and wh-indefinites do not combine directly and therefore do not form DPs (see Lee 2006 for details). However, in (30), the quantifier *dùu'zh* 'few' appears to combine with the clitic pronoun to form the direct object, which appears in normal object position.

A possibility I will consider here is that these quantifier expressions (and their DP arguments) are themselves embedded under silent Ds. A second possibility, which Matthewson (1998) proposes for strong Salish quantifiers, is that they are DP adjuncts. This option, however, would be difficult to reconcile with the notion, suggested above, that many SLQZ quantifiers are predicates that take their restrictor DPs as arguments. I will leave this issue aside for later study.

Another quantificational expression that binds wh-indefinites is the existential negation marker *tèe'bag*, to be described in the following section.

3.3 Existential negation

SLQZ has three basic negation constructions, all of which involve sentence-initial negative expressions. Basic clausal negation involves the negative word *cë'ity* before the verb, and the clitic *–dya'* (or its alternate form *–di'*) after the verb stem:[5]

(52) **Cë'ity** ny-àa'z-**dya'** Gye'eihlly Li'eb
neg SUBJ-beat-*dya'* Mike Felipe
"Mike didn't hit Felipe."

Constituent negation involves the sentence-initial negative word *a'ti* before a negated constituent, and the clitic *–dya'* after it:

[5] The clitic *–dya'* is used in a number of non-negative constructions (described in Lee 2006), and does not contribute any negative force of its own. I leave it unglossed in these examples.

(53) **A'ti'** Sann Lu'uc-**dya'** gw-eh Pa'amm
neg San Lucas-*dya'* PERF-go Pam
"Pam didn't go to SAN LUCAS (but rather somewhere else)."

The third negation construction, which I call existential negation, contributes the readings offered by the nominal expressions 'nobody', 'nothing', and 'no x' (as well as 'anyone', 'anything', 'any x') in English. This construction, like the existential *nu'uh* construction, involves wh-indefinites:

(54) **Tèe'bag** **calìi** ch-o'o-**dy**-ënn izhih
no where IRR-go-*dya'*-1P tomorrow
"We won't go anywhere tomorrow."

(55) **Tèe'bag** **tu** b-dau-**di'** ra gueht
no who PERF-eat-*dya'* PL tortilla
"Nobody ate the tortillas."

The wh-indefinites here, as in the *nu'uh* constructions, behave as variables bound by the negative word *tèe'bag*. Note that the clitic *–dya'/di'* in these constructions marks the scope of negation. When the existence of a particular kind of object is negated, *-dya'* cliticizes to the nominal representing the restrictor of the negation:

(56) Tèe'bag xi **gueht-dya'** b-da'uw-a'
no what tortilla-*dya'* PERF-eat-1S
"I ate no tortillas."

When there is no restrictor on the quantification, *-dya'* cliticizes to the verb, as seen in (54-55). Assuming that SLQZ inflected verbs are actually fronted VP remnants (Lee 2000, 2006) and that narrow-scope indefinites reconstruct into VP at LF (Diesing 1992), this gives the semantically predicted result: the negation takes scope over the entire event, giving the reading "there is no event involving some x doing y".

The parallels in form and function between the *nu'uh* existential construction and the *tèe'bag* existential negation construction suggest that *tèe'bag*, 'no', like *nu'uh*, 'exist', may be a predicate. While *nu'uh* 'exist' is unambiguously verbal (it takes tense/aspect markers and receives the expected temporal readings, takes pronominal subject clitics, and can undergo clausal negation like other verbs), the same cannot be said for *tèe'bag*, 'no': unlike *nu'uh* 'exist', *tèe'bag* is invariant in form and cannot take tense/aspect markers or pronominal clitics.

In summary, the expression of numbers and quantifiers such as 'every', 'some', and 'no' in SLQZ involves constituents that behave morphologically and syntactically like predicates, rather than like determiners.

3.4 The universal quantifier *ra'ta'*: 'every' or 'all'?

The preceding sections have shown that many SLQZ quantifiers, including the universal quantifier *ra'ta'*, show predicate-like morphology and in some cases, can be sentential predicates themselves. This raises the question of why *ra'ta'* allows this behavior: as Lisa Matthewson (p.c.) points out, universal quantifers crosslinguistically are thought to be unable to behave as predicates. This seems to hold true semantically in SLQZ as well: while numbers with pronominal clitics can be construed as sentential predicates (as seen in (35)), *ra'ta'*, 'every/all', cannot be:

(57) ra't-ënn
all-1P
"all of us/*we are all"

My consultant notes that a possible context for (57) would be as an answer to the question "how many of you are coming?".

A possible explanation for the sometimes-predicative appearance of *ra'ta'* is suggested by Brisson (1998), who argues that English 'all', unlike 'every', is not a true universal quantifier. Instead, 'all' is a modifier that "place(s) a boundary on the range of contextually available interpretations allowed with definite plurals." This boundary-placing function gives the illusion of universal quantification.

If Brisson's theory is correct, it may offer an acccount for the behavior of *ra'ta'*: *ra'ta'* shows a number of behaviors suggesting it may be more like 'all' than 'every' semantically—thus, not a true universal quantifier.

Brisson notes a number of syntactic and semantic differences between 'every' and 'all', which I will use as diagnostics for the status of *ra'ta'*.

One such difference between 'every' and 'all' is that expressions with 'all', but not 'every', are compatible with what Brisson calls "collectivizing adverbs": expressions such as 'together' and 'at once':

(58) All the planes landed together/as a group/in formation/at once.
(59) *Every plane landed together /as a group/in formation/at once. (Brisson 1998, p. 126)

SLQZ expressions with *ra'ta'*, like English expressions with 'all', can appear felicitously with collectivizing adverbs:

(60) Ra'ta ra bnà b-zehnny lainy ydòo' te'ihby-ihzy ju'nn
all PL woman PERF-arrive in church one-only time
"All the women arrived at the church at once."
(61) Ra'ta ra mnii'iny b-dau te'ihby-isy ju'nn
all PL child PERF-eat one-only time
"All the children ate at once."

A second difference between 'every' and 'all' is their scope-taking possibilities: 'every' in object position may take scope over a subject indefinite, but 'all' in object position may not:

(62) A judge tasted every pie. (a>every, every> a)
(63) A judge tasted all the pies. (a> all, *all> a)

SLQZ *ra'ta'* in object position, like English 'all', may not take wide scope:

(64) Te'ihby bxuuhahzh b-naà loh ra'ta' mnii'ny
one priest PERF-see at all child
"One priest saw all the children." (one> all, *all>one)

In contrast, the borrowed quantifier *caad* (from Spanish *cada* 'each') prefers (but does not require) a wide-scope reading. (65) is identical to (64), except that *ra'ta'* has been replaced with *caad*. In (65), both wide and narrow object scope are possible:

(65) Te'ihby bxuuhahzh b-naà loh caad mnii'ny
one priest PERF-see at each/every child
"One priest saw every child." (one>all, all>one)

Moreover, *caad*, like most borrowed quantifiers, does not take predicate-like morphology: it does not take tense/aspect marking, and it takes pronominal restrictors in their prosodically independent form, rather than their clitic form:

(66) Caad làarëng n-àann-rëng cwënhnn liahz-rëng
each 3P.PROX NEUT-know-3P.PROX with home-3P.PROX
"Each of them oversees their own home." (Munro and Lopez, et al., 1999)

The contrasting morphological and scope-taking patterns of *caad* and *ra'ta'* suggest that *caad* is a true universal quantifier, and thus subject to the crosslinguistic restriction against universal quantifiers as predicates.

These diagnostics show that *ra'ta'* behaves like 'all', rather than 'every'. I will assume Brisson's proposal that 'all' is an adjunct modifier rather than a true universal quantifier: this would account for the ability of *ra'ta'* to pattern morphologically with other predicative quantifiers in SLQZ. I will assume that *ra'ta'* cannot act as a sentential predicate because it encodes definiteness. [6]

4 THE ROLE OF DETERMINERS IN SLQZ

Matthewson (1998) notes that the Salish languages also lack quantificational determiners. She correlates the absence of quantificational determiners in Salish to the inability of Salish determiners to encode hearer, as well as speaker, presuppositions about events—that is, Salish determiners cannot encode information from the common ground of discourse.

The connection between hearer presuppositions and quantification works as follows: Matthewson argues that quantifiers (both weak and strong) are inherently presuppositional: they assume the existence (agreed upon by both speaker and hearer) of the sets of entities being quantified over. The Salish languages not only lack quantificational determiners, but their non-quantificational determiners do not encode information such as definiteness or specificity—both notions directly tied to the common ground. Quantifiers in Salish can be (and are) presuppositional, but they cannot be determiners.

This can be seen by comparing Salish to English, whose determiner system does encode information from the common ground. Consider an example such as the following:

(67) I saw a man yesterday. The man was tall.

The indefinite determiner *a* is used to introduce a new referent into the discourse. The use of the definite determiner *the* in the following sentence marks the referent as familiar to both the speaker and listener. The notions of novelty and familiarity encoded by the determiner choice are from the hearer's perspective: the 'new' referent introduced by the indefinite pronoun must be previously known to the speaker in order for him or her to be discussing it. Thus, the determiner system in English, as proposed by Heim 1982, is both hearer and speaker oriented.

In contrast, the Salish languages use the same determiner for both new and familiar referents in similar contexts, as seen in this Sechelt example:

[6] More precisely, following Brisson's (1998) analysis of 'all', I assume that *ra'ta'* takes only definite nominals as restrictors. This is supported by the fact that *ra'ta* can co-occur with the plural marker *ra*, which, as I will show later in this paper, encodes definiteness itself.

(68) t'i súxwt-as **[lhe** ʔúlhkaʔ slhánay]
FACT saw-he DET snake woman
"he saw a snake-woman..."
(Beaumont 1985, cited in Matthewson 1998, p. 33)

(69) t'i tl'um s-kwal-s **lhe** slhánay]...
FACT then NMLZR-speak-her DET woman
"Then the woman said..."
(Beaumont 1985, cited in Matthewson 1998, p. 33)

The role of the determiner *lhe*, Matthewson argues, is to assert existence, rather than to assume existence. It is used in both sentences because the Salish determiner system does not encode any information about the common ground; that is, Salish determiners cannot make reference to a hearer's perspective.

This determiner can be used with both definite and indefinite readings, and specific and non-specific readings. The fact that its primary role is to assert existence is confirmed by the fact that many Salish languages also have a second determiner used only to modify nouns in contexts where existence cannot be felicitously asserted: that is, in contexts where the referent is assumed not to exist. In St'át'imcets, the determiner used in these contexts is *ku*:

(70) cw7aoz kw-s áz'-en-as [ku sts'úqwaz'] kw-s Sophie
NEG DET-NMLZR buy-TR-3ERG DET fish DET-NMLZR Sophie
"Sophie didn't buy a fish" (St'át'imcets: Matthewson 1998, p. 130)

This sentence can only mean 'There exists no fish such that Sophie bought it', not 'There exists a fish that Sophie didn't buy.'

Thus, while the determiner system in English is both hearer- and speaker-oriented, the system in Salish is speaker-oriented only. The absence of quantificational determiners in Salish, Matthewson argues, is directly correlated with the absence of definite and indefinite determiners, and determiners encoding specificity, in the language.

Matthewson proposes that the distinction between English and Salish can be reduced to a universal two-way parameter: determiner systems either encode information from the common ground (thus allowing quantificational determiners) or they don't (thus blocking quantificational determiners). In the next section, I will investigate whether this prediction holds for SLQZ: if the absence of quantificational determiners is linked to a determiner system's lack of access to the common ground, then we should expect SLQZ to behave like Salish. That is, since SLQZ quantifiers don't appear to be determiners, then whatever determiners SLQZ does have should not be able access the common ground—for instance, SLQZ should not have determiners semantically and syntactically equivalent to English 'the' and 'a'. This prediction appears to be borne out.

4.1 The distribution of bare nominals in SLQZ

SLQZ lacks definite and indefinite determiners equivalent to English 'the' and 'a': bare nouns are freely used with both definite and indefinite readings, and with both singular and plural readings. The following example is from a recording of spontaneous speech. In this passage, the speaker is describing a scene from a picture book:

(71) Z-èe-ta' Li'eb. S-teihby guee'ihzh n-u'uh rèe'. B-dèèi'dy Li'eb.
DEF-go-INT Felipe DEF-one town NEUT-exist here PERF-pass Felipe
"Felipe went on. There's another town here. Felipe passed by."

Rèe' n-u'uh **bùunny**Cay-uhny **bùunny** zèèi'ny loh nyàà'.
here NEUT-exist person PROG-do person work field
"There are people here. The people are working in the fields."

In this utterance, bare nouns are used both to introduce novel elements into the discourse (the people that Felipe sees when he arrives in the town) and to discuss previously introduced elements (as seen in the second half of the utterance, in which the speaker describes what these people are doing).[7]

My consultant interpreted bare nouns with both definite and indefinite readings in similar syntactic and semantic contexts on different occasions:

(72) B-naà-a' loh bxuuhahz la'ny ydòòo'
PERF-see-1S at priest in church
"I saw a priest in the church." ('you have to know the priest')

(73) Li'eb b-inyloh bèe'cw
Felipe PERF-see dog
"Felipe saw a dog." ('could be any dog')

This suggests that bare nouns do not systematically encode definiteness or indefiniteness.

Bare nouns in SLQZ also lack the ability to encode individual concept readings, which Demirdache (1996) argues is a diagnostic for definiteness:

[7] Note that the noun *bùunny* is a count noun in SLQZ: it can be used to refer to a single person as well as to a group of people.

(74) R-àa'p-daàa'n prihste'nn zèe'iny
HAB-have-really president work
"The president has a lot of work (to do)."

This can only be interpreted to mean that the current president (whoever he may be) has a lot of work, not that the position of president in general involves a lot of work. Thus, the bare noun *prihste'nn*, 'president' can refer to the individual who holds this position, but not to the abstract concept of the presidency.

Bare nouns can be used both in contexts where existence of the denoted noun is asserted (as in the previous examples) and in those where it is not:

(75) Li'eb cë'ity r-àa'p-di' ca'rr
Felipe neg HAB-have-*dya'* car
"Felipe doesn't have a car."

This most naturally receives the reading that there is no car owned by Felipe.

Bare nouns can also be used in intensional contexts, allowing both readings in which the bare noun takes scope over the intensional predicate, and under it:

(76) Li'eb r-càa'z s-sìì'ih ca'rr
Felipe HAB-want DEF-buy car
"Felipe wants to buy a car."

This could mean that there is a specific car in the actual world that Felipe wants to buy, or that Felipe has no car in mind at all.

I assume that bare noun arguments in SLQZ are DPs with silent determiners, following standard assumptions (Stowell 1989, Longobardi 1994, among others) that only DPs, and not NPs, can be arguments. The preceding data show that bare nouns in SLQZ do not reference discourse-related notions such as definiteness and specificity, consistent with Matthewson's predictions that languages lacking quantificational determiners will not allow any of their determiners to access the common ground. But this leaves the question of exactly what the silent determiner in SLQZ does.

One possibility is that, like the Salish determiners Matthewson (1998) describes, it encodes either an assertion or non-assertion of existence. However, bare nouns in SLQZ can appear in both factive and non-factive contexts. This suggests that either the null determiner is a semantically empty placeholder that serves only to allow nominals to be realized as arguments, or that if a Salish-like distinction holds in SLQZ, there are two distinct null determiners: one that asserts existence, and one that does not.

By Occam's Razor, the first solution seems best: nothing in Matthewson's proposal forces determiners to encode assertion of existence (or its absence) in languages whose determiner systems lack access to the common ground. Moreover, a system with a single null determiner would be more learnable than one with two: in order for a child to acquire two null determiners with opposite meanings that appear in complementary distribution, he or she would have to have access to sufficient, consistent cues as to their differences.

Do such cues exist in SLQZ? The evidence suggests not. In intensional contexts, bare nouns may be ambiguous between asserting existence (if the bare noun is interpreted with wide scope) and not asserting existence (when the bare noun is interpreted under the scope of an intensional verb), as seen in (77), repeated from above:

(77) Li'eb r-càa'z s-sìii'ih ca'rr
Felipe HAB-want DEF-buy car
"Felipe wants to buy a car."

This could mean that Felipe either has a particular car in mind that he wants to buy, or that he wants to buy a car but doesn't have anything chosen yet. Constructions such as these give no morphological or syntactic cues that two separate determiners might be involved. For this reason, I will assume that SLQZ has only one, semantically empty, silent determiner. Assertion or non-assertion of existence by SLQZ bare nouns, like definiteness and indefiniteness, is inferred by context.

Bare nouns can also be used as predicate nominals:

(78) Li'eb nàa bxuuhahz
Felipe NEUT.be priest
"Felipe is a priest."

Like other SLQZ predicates, predicate nominals may host clitic pronouns:

(79) Gyeht-ëng, èee?
squash-3S.PROX Q
"It's a squash?"

This suggests the possibility that SLQZ predicate nominals may be NPs, rather than DPs. If this is so, then the fixed syntactic contexts in which predicate nominals appear, along with their morphological properties (such as pronoun cliticization), should provide sufficient evidence for learners to distinguish the internal structure of bare noun predicates (NPs) from that of bare noun arguments (DPs).

Another possibility is that SLQZ bare noun arguments are NPs, following Chierchia's (1998) proposal that arguments in languages like Chinese are NPs rather than DPs. Chierchia posited that in Chinese and other languages that freely allow bare noun arguments with both mass and count interpretations, NPs are entities (that is, able to serve as freestanding arguments) rather than predicates: in the ontology of nominal types he proposes, Chinese-type NPs have the features [+arg, -pred].

The behavior of SLQZ bare nominals, however, is inconsistent with the predictions Chierchia makes for [+arg, -pred] NPs. For instance, he predicts that such nominals will not be able to combine directly with quantifiers: quantified NPs will have to appear with particles to mediate the relation between them and their quantifiers. In Chinese, for example, classifiers always appear between quantifiers and nouns:

(80) liang zhang zhuozi
two CL table
"two tables" (Chierchia 1998)

This pattern does not hold in SLQZ, as seen in the following examples, repeated from above. In these examples, numbers are able to combine directly with their nominal restrictors:

(81) B-naà-a' loh **chòon bèe'cw**
PERF-see-1S at three dog
"I saw three dogs."

(82) Tu r-àa'p **tyo'p caba'i**?
who HAB-have two horse
"Who has two horses?" (Munro, Lopez, et al. 1999)

While the plural marker *ra* (whose behavior will be described in detail in the following section) can appear between quantifiers and nouns, it is not always required:

(83) Ra'ta' chòonnn **(ra)** mniny ca-gye'eht fuer
all three (PL) child PROG-play outside
"All three children are playing outside."

When it does appear, it contributes a meaning of definiteness or specificity to the quantified nominal. In contexts where a definite reading is not intended, it does not appear:

(84) B-naà-a' loh chòonn bèe'cw
PERF-see-1S at three dog
"I saw three dogs."

My consultant reported this sentence odd with *ra* inserted between the number and the noun, and suggested it would sound more natural if the sentence were changed to describe three specific dogs:

(85) B-naà-a' loh chòonn **ra** bèe'cw nih nàa nga'as
PERF-see-1S at three PL dog REL NEUT.be black
"I saw the three dogs that are black."

This shows that *ra* serves an independent semantic role here unrelated to mediation of the relation between the nominal and the quantifier.

The fact that a plural marker appears between nouns and quantifiers in SLQZ also goes against Chierchia's predictions for NP-argument languages: one of their hallmarks is the absence of morphological plural markers.

To sum up, bare noun arguments in SLQZ appear to be DPs with silent determiners, and there appear to be no obligatory overt determiners on SLQZ nominal arguments.

4.2 Determiner-like nominal modifiers

While bare nouns appear freely as both arguments and predicates in SLQZ, there are also a couple of nominal modifiers that appear to behave like definite and indefinite determiners, contrary to the predictions put forth earlier. This section will describe the semantic contributions made by these modifiers, and show that they are not determiners.

4.2.1 Te'ihby, 'one'. *Te'ihby*, 'one', is occasionally used to mark singular nominals (86). For the reasons noted in the previous sections (its ability to take tense/aspect markers and subject pronoun clitics), there is good reason to believe it is not a determiner.

(86) Li'eb b-inyloh **te'ihby** bèe'cw.
Felipe PERF-see one dog
"Felipe saw a dog."

(87) Li'eb b-inyloh bèe'cw.
Felipe PERF-see dog
"Felipe saw a dog/dogs."

Bare nouns are unspecified for number; (87) could also mean 'Felipe saw dogs'. There seems to be no consistent difference in definiteness or specificity between bare nouns and those modified by *te'ihby*; my consultant suggests that (86) would be used in a context where several dogs are around and you want to specify that Felipe saw only one of them. It neither forces nor rules out a reading where the speaker has a specific dog in mind. In non-factive contexts, *te'ihby* functions as a cardinal number:

(88) Cë'ity r-càa'z-dy-a' s-sìii-a' te'ihby ca'rr
neg HAB-want-*dya'*-1S DEF-buy-1S one car
"I don't want to buy one car."

My consultant notes that this could be naturally followed up with a retort such as "Oh, so you want to buy TWO cars!" This suggests the primary meaning contributed by *te'ihby* 'one' is cardinality, rather than indefiniteness. While this sentence allows the possibility that there is a certain car the speaker has in mind, this does not have to be the case.

4.2.2 The plural marker ***ra.*** SLQZ has a prenominal plural marker *ra* whose use is optional: bare count nouns can be interpreted as either singular or plural (as seen in (87)). This plural marker can co-occur with numbers and other quantifier expressions:

(89) Chòonnn **ra** mnii'ny ca-gye'eht jweer
three PL child PROG-play outside
"Three of the children are playing outside."

(90) Dùu'zh **ra** mnii'ny ca-gye'eht jweer
some PL child PROG-play outside
"Some of the children are playing outside."

It also seems to denote definiteness. In the sentences below, the nominal *gueht* 'tortilla' without the plural marker *ra* gets a non-presuppositional reading (the tortillas in the context are not presumed to exist). It still allows a plural reading, however. With the plural marker *ra*, however, 'tortillas' is interpreted as definite: it must refer to a kind of tortilla previously mentioned in the discourse. For instance, the speaker may be saying he or she doesn't want to make the small tortillas required for a party, but may be willing to make the larger ones:

(91) Cë'ity r-càa'z-dy-a' g-uhnychìi-a' gueht
neg HAB-want-*dya'*-1S IRR-make-1S tortilla
"I don't want to make (any) tortillas."

(92) Cë'ity r-càa'z-dy-a' g-uhnychìi-a' **ra** gueht
neg HAB-want-*dya'*-1S IRR-make-1S PL tortilla
"I don't want to make (those) tortillas."

Ra cannot normally be used with predicate nominals:

(93) * Li'eb cëhnn Maary nàa **ra** bxuuhahz
Felipe and Mario NEUT.be PL priest
"Felipe and Mario are priests."

My consultant says the above sentence is "incomplete": it would be grammatical if followed up with additional material:

(94) Li'eb cëhnn Maary nàa **ra** bxuuhahz x:tèe'n loh guee'ihzh
Felipe and Mario NEUT-be PL priest POSS at town
"Felipe and Mario are the town's priests."

This suggests that *ra* may be used in equative copular constructions, but not predicational ones. This is consistent with its behavior in (92), and shows that *ra* encodes not only plurality, but definiteness.

As previously seen, *ra* can co-occur (and sometimes must co-occur) with other quantificational expressions. The previous sections have shown that quantificational expressions in SLQZ pattern with predicates, rather than determiners, suggesting that the nominal expressions they take as their restrictors are DPs, rather than NPs. If *ra* can form part of this restriction, is it a determiner itself?

A piece of evidence against the determiner status of *ra* comes from its interpretation in conjoined structures:

(95) B-naà-a' loh **ra** bèe'cw cëhnn **ra** zhye'et ròo'oh
PERF-see-1S at PL dog and PL cat big
"I saw big dogs and cats."

The SLQZ sentence allows an ambiguity in meaning similar to that of its English gloss: it may be interpreted to mean that only the cats are big, or that both the dogs and cats are big.

The possibility of the latter reading—in which *ròo'oh* 'big' takes scope syntactically and semantically over both conjuncts—shows that adjectives take scope over *ra*. This would be unexpected if *ra* were a determiner: I will assume for the moment that it is an NP adjunct.

Evidence for the adjunct status of *ra* comes from its behavior in coordinated possessive constructions. Here, I will briefly describe SLQZ possessives, then their interaction with *ra*.

SLQZ possessive structures, like other basic structures in the language, are head-initial. The possessum is preceded by the possessive marker *x:-*, and followed by the possessor:

(96) **x:**-bu'uhdy Li'eb
POSS-chicken Felipe
"Felipe's chicken"

There is also an alternate possessive construction in which the possessive marker *x:-* attaches to a semantically empty nominal head *tèe'n*, which appears between the possessum and possessor:

(97) bu'uhdy **x:tèe'n** Li'eb
chicken POSS Felipe
"Felipe's chicken"

Possessed nominals may be coordinated under the scope of a single possessor:

(98) B-naà-a' loh **x:-zhye'et** **cëhnn** **x:-yèe'cw** Li'eb
PERF-see-1S at POSS-cat and POSS-dog Felipe
"I saw Felipe's dog and cat."

Possessed nominals modified by *ra* can be coordinated with non-plural possessees under the scope of a single possessor:

(99) B-naà-a' loh **ra** **x:-zhye'et** **cëhnn** **x:- yèe'cw** Li'eb
PERF-see-1S at PL POSS-cat and POSS-dog Felipe
"I saw Felipe's cats and dog(s)."

This sentence allows two readings: one in which *ra* takes scope over both 'dog' and 'cat' (giving the reading that Felipe has multiple dogs and cats), and one in which *ra* takes scope only over 'cat' (giving the reading that Felipe has several cats and only one dog.) The latter reading is of interest because it shows that a possessed nominal modified by *ra* can be coordinated with a possessed nominal with no plural marking. This shows that the nominal containing *ra* and the one that does not are constituents of the same type. This structural parallelism between the two conjuncts can only be accounted for if *ra* is assumed to be an adjunct to the nominal expression it modifies, rather than a head of a higher projection taking the nominal as its complement.

Thus, *ra* is low in the DP structure (under modifying adjectives), and moreover, its presence is optional. This shows that it cannot be a determiner.

To sum up, this section shows that while at least one SLQZ nominal modifier (the plural marker *ra*) can encode specificity and definiteness—notions specifically linked to the common ground—it is not a determiner. So far, this is consistent with Matthewson's predictions: SLQZ lacks quantificational determiners because its determiners cannot access the common ground.

5 PRONOUNS IN SLQZ

Now I will turn to the behavior of SLQZ pronouns, which are potential DP heads. If Matthewson's theory is correct, then SLQZ pronouns—if they are indeed determiners—should not be able to encode information related to the common ground.[8] This seems to be the case.

SLQZ pronouns are marked for person and number, but not morphological or biological gender. Second- and third-person pronouns are marked for level of social formality: second-person pronouns are marked as either formal or informal; and third-person pronouns are marked for one of four levels of social formality: the lowest level is used to refer to animals and children; a respectful level used to refer to other adults in the community; a formal level used to refer to authority figures such as town elders and priests; and a reverential level used to refer to saints and gods.

A second set of third-person pronouns is not marked for level of formality, but for relative physical or metaphysical distance from the speaker. Distal pronouns are used to refer to entities physically removed from the speaker (or in some cases, to refer to people the speaker doesn't know or lacks empathy for (Munro 2002). Proximal pronouns are used to refer to entities physically close to the speaker, or people the speaker feels close to.

There is some speaker variation in the contexts where distal and proximal pronouns are used. Pictures in books and videos, for instance, are referred to with both distal and proximal pronouns by different speakers. (This supports Munro's (2002) view that speaker empathy, as well as physical distance, plays a role in the distal/proximal distinction: speakers can legitimately differ in whether they consider images directly in front of them real or important enough to be referred to with proximal pronouns.)

Proximal and distal forms, however, are not used to distinguish novel and familiar entities. In the following pieces of dialogue, speakers use both forms to refer to just-introduced entities (in these cases, illustrations in children's books):

[8] Déchaine and Wiltschko (2002) propose that pronouns across languages fall into three different categories: those that are full DPs, those that are NPs, and those containing functional heads smaller than DP (pro-φPs). It is not clear which of these categories best predicts the distribution and behavior of SLQZ pronouns, and I leave aside for now the question of their exact internal structure and category.

(100) Bzihny. Xi cay-uhny-**ih**?
Mouse. what PROG-do-3S.DIST
"(It's a) mouse. What is it doing?"

(101) Nden a, xi b-èèi'ny-**ëng** nài'?
This now what PERF-do-3S.PROX yesterday
"Now this one, what did he do yesterday?"

(102) Dùùu' n-u'uh gue'ehcy-**ih**
rope NEUT-exist head-3S.DIST
"There's a rope around his head."

(103) Cùuan a bziloh-**ng**? Cùuan zhi-**ëng**?
where now eye-3S.PROX where nose-3S.PROX
"Now where are its eyes? Where is its nose?"

(104) S-te'ihby-**ih** c-àa rèe'
DEF-one-3S.DIST PROG-be here
"Here's another one."

In (100) and (101), speakers use both distal and proximate pronouns to refer to illustrations just identified by a child—thus, objects already in the discourse. (102) and (103) show that both distal and proximate forms can be used for body part possessors, which are assumed to be presupposed. In (104), a distal pronoun is used to introduce a new entity—a context where a pronoun could not be felicitously used in English. Thus, the proximal/distal choice seems to be linked to the speaker's perception of the distance between himself and the object, rather than its role from the hearer's perspective. This suggests that SLQZ pronouns, like other determiners, do not encode information from the common ground.

6 CONCLUSION

This paper showed that SLQZ quantifiers can be either predicates or DP/NP adjuncts, but not actual determiners. The possible interpretation of bare nouns, pronouns, and other nominal modifiers in SLQZ show that the absence of quantificational determiners in SLQZ can be accounted for by Matthewson's (1998) Common Ground Parameter: languages whose determiner systems encode information from the common ground of discourse will allow quantificational determiners, while languages whose determiner systems do not make reference

to the common ground will not allow quantificational determiners. This paper has shown that SLQZ falls consistently into the latter category.

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10

QUANTIFICATION ACROSS BANTU LANGUAGES*

Sabine Zerbian and Manfred Krifka

1 INTRODUCTION

This article outlines central aspects of quantification in Bantu languages. Our basic observation is that Bantu languages have few genuine quantifiers; this holds for both D-quantifiers, i.e. quantificational determiners in the nominal domain, and A-quantifiers, i.e. adverbial quantifiers in the verbal domain. Rather, Bantu languages display the standard range of nominal modification with quantitative interpretation. Complex morphosyntactic constructions or otherwise marked formatives are used for the expression of the universal quantifier 'every'. Furthermore, adverbial quantifiers are expressed by analytical nominal structures, hence D-modification. As an alternative, verbal forms (both auxiliaries as well as aspectual forms) encode verbal quantification.

Given the size of the Bantu language family (around 500 languages spoken by approximately 240 million people (Nurse and Philippson, 2003: 1)), this paper cannot be an exhaustive treatment. In compiling the data for this article, it became apparent that the two languages mainly treated here, namely Swahili and Northern Sotho, are not always representative for the whole family. Consequently, data from further languages are cited from the literature when necessary in order to stress the diversity found within this language family.

A literature review on quantification in (whatever) Bantu languages reveals that few studies exist which touch upon quantification. The use of the pre-prefix for definiteness and

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specificity is among the issues related to quantification in the broadest sense that has attracted the most attention (for references see section 3). Yet unpublished work by Adams (2005a, b) deals with partitive constructions in Zulu. In descriptive grammars, translations of the various English quantifiers into the target language can only be found for those which have a morphological stem (e.g. the equivalent for 'all' and 'some'). Thus, this article brings up some phenomena that might be interesting in the light of a typology of quantificational expressions.

Bantu languages show SVO word order, agglutinative verb structure, and nearly all are tone languages (with Swahili being an exception). They are spoken south of a line from Nigeria across the Central African Republic, the Democratic Republic of Congo, Uganda, Kenya to southern Somalia. Swahili, one of the languages that receive closer inspection in this article, is an Eastern Bantu language and the official language of Kenya and Tanzania. It is used as a lingua franca in the whole of East Africa. Having been used as a trade language, it has been in intensive contact with Arabic, and more recently English. The influence of these two languages can clearly be seen in the lexicon. More than 30 million people speak Swahili, though most only as a second language. There are comparatively many linguistic works on Swahili. However, the study that comes closest to being a comprehensive reference grammar is still Ashton (1944), which also was designed as a textbook.

The other language, Northern Sotho (Sesotho sa Leboa, also known as Sepedi after its standardized dialect) is a Southern Bantu language and is one of the eleven official languages of the Republic of South Africa. It is spoken in the northern provinces of South Africa by more than 4 million speakers (Statistics South Africa, 2004). According to Guthrie's (1967-1971) classification it belongs to group S30. It is mutually intelligible with the other languages in this group, namely Tswana and Southern Sotho. There are at least two standard reference grammars available for Northern Sotho, Ziervogel *et al.* (1969) and Poulos and Louwrens (1994).

The article is organized as follows: In presenting the data pertaining to quantification in Bantu languages, we follow the basic dichotomy proposed for English by Partee *et al.* (1987) and address D-quantifiers, i.e. quantificational determiners in the nominal domain, and A-quantifiers, i.e. adverbial quantifiers in the verbal domain, separately. Thus, after a short introduction to the nominal domain in Bantu languages, section 2 deals with D-quantifiers. The section is subcategorized along the lines of the typology proposed by Keenan (this volume): Section 2.2 deals with intersective quantifiers such as 'several', 'few', 'many', 'no', as well as the quantifiers 'some' and 'one', 'a/ an'. An additional subsection deals with the counting system of Bantu languages. Section 2.3 treats the universal quantifiers 'all' and 'every'. Section 2.4 addresses the class of proportionality quantifiers such as 'half of'. Section 2.5 reviews the correlations between syntactic position, agreement and quantifier realisation. Section 2.6 summarizes the presentation of data pertaining to quantification in the nominal domain.

Section 3 discusses (in-)definiteness effects in Bantu languages that use the pre-prefix, a prefix that precedes the nominal agreement marker. The absence of the pre-prefix frequently gives rise to indefinite readings similarly to indefinite readings showing up with intersective quantifiers. It is for this reason that pre-prefixes are discussed following the presentation of the intersective quantifiers. However, the presence of the pre-prefix signals definiteness or specificity, interpretative effects that are typically not observed with intersective quantifiers.

Section 4 discusses A-quantification. Given the emphasis on the syntax/semantics relation within (DP)-generalized quantifiers in this collection, the section is considerably shorter. Section 4.1 presents data that show how quantification over events is expressed within the verbal domain by TMA-markers and auxiliary verb constructions. Section 4.2 discusses noun phrases used for quantification. Section 4.3 illustrates reduplication. Section 5 concludes the discussion of quantification across Bantu languages.

2 QUANTIFICATION IN THE NOMINAL DOMAIN

2.1 The nominal domain in Bantu languages

One of the best-known features of the Bantu languages is their noun class system. All nouns are assigned to a noun class, where the number of noun classes varies between 12 and 20. The examples in (1) illustrate the point. The glossing in (1) indicates the agreement pre-prefix (PPF) and the class prefix (CL) on nouns and adnominal modifiers. It also shows the agreement between the subject and the verb (subject concord, SC) referring to the specific noun class.[1] The noun class is indicated by arabic numbers. Odd numbers refer to a class expressing singular, even numbers to a class expressing plural. Semantic principles largely guide the assignment of nominal classes. The role of the pre-prefix in quantification is taken up in detail below in section 3.

(1) (a) O-mú-límí ó-mú-néné ó-mú-kâddé ó-mû a-gênda.
PPF1-CL1-farmer PPF1-CL1-fat PPF1-CL1-old PPF1-CL1.one SC1-go
'One fat, old farmer is going.' [Ganda; Katamba, 2003: 108]

[1] The following abbreviations are used in the examples:
1, 2, 3... arabic numbers refer to noun classes

AFF	affirmative	COP	copula	PART	partitive	PREP	preposition
AGR	unspecific agreement	DEM	demonstrative	PASS	passive	PRES	present tense
APPL	applicative	FV	final vowel	PL	plural	PST	past tense
CL	nominal class	HAB	habitual	POSS	possessive	QP	question particle
COND	conditional	LOC	locative	POT	potential	REL	relative
CONJ	conjunction	NEG	negation	PPF	pre-prefix	SC	subject concord
CONS	consecutive	OC	object concord	PPX	pronominal prefix	SG	singular

(b) A-ba-fana ba-gijim-el-a emithini.
PPF2-CL2-boy SC2-run-APPL-FV tree-LOC
'The boys run to the trees.' [Zulu; Doke, 1927: 142]

With respect to word order, adjectives and demonstratives canonically follow the head noun in Bantu languages. Prenominal appearance is mainly possible for demonstratives (cf. Louwrens, 1985, for Northern Sotho; Krifka, 1995, for Swahili). The syntax of these constructions deserves further investigation (see Machobane, 2003, for an initial exploration of the syntactic structure of DPs in Southern Sotho). In Swahili, preposed demonstratives have a function similar to the English definite article (Krifka, 1995). In Northern Sotho, the prenominal appearance of a demonstrative pronoun results in 'emphasis' of the whole NP (Louwrens, 1985).[2]

Adjectives and demonstratives agree with their heads in noun classes, as shown in (1a). They can do so according to various agreement patterns with different (morpho-)syntactic characteristics.

(2) Concord patterns (Meeussen, 1967: 96f)
- (a) nominal agreement (with nouns, locatives and adjectives) (CL);
- (b) numeral agreement (with numerals for 1-5 and 'how many') (EPX);
- (c) pronominal agreement (with a.o. demonstratives, some quantifiers) (PPX)
- (d) verbal agreement

In Swahili, adjective stems (which include numerals) show nominal prefixes in agreement with the head noun (Krifka, 1995: 1398).

(3) (a) **m**-toto **m**-dogo (b) **ki**-kombe **ki**-dogo
CL1-childCL1-small CL5-cup CL5-small
'small child' 'small cup' [Swahili]

Numeral agreement differs from nominal agreement in morphological form. In Northern Sotho, numeral agreement is formed by inserting a subject concord (SC) between the modified noun and the adjective (Ziervogel *et al.*, 1969: 56). The adjective does not agree in noun class features. Although the name suggests that numeral agreement occurs with numerals, this agreement pattern is not limited to them. Across languages, it is found mostly with the number 'one' (see Kinyamwezi for numeral agreement with the numerals 'two' to 'six', Maganga and Schadeberg, 1992). Numeral agreement is limited to four stems in Northern Sotho, among

[2] 'Emphasis' has to be understood as salience rather than focus, as focused constituents in preverbal subject position are prohibited in Northern Sotho (Zerbian, 2007).

which is *-tee* 'one'.

(4) (a) mo-nna **o** tee (b) kgomo **e** šele (c) ngwana **o** fe
CL1-man SC1 one CL9.cow SC9 strange CL1.child SC1 which
'one man' 'a strange cow' 'which child'
[Northern Sotho]

Pronominal agreement (PPX for pronominal prefix, terminology used in Schadeberg, 1990) differs from both nominal agreement and numeral agreement in morphological form. It is found with demonstratives (5a), in possessive constructions (5b), in genitival constructions (with the morpheme *-a*) (5c), and in Northern Sotho also with adjectives (5d).

(5) (a) (i) ji- we **li**-le [Sw.] (ii) kgomo **ye** [NS.]
CL5-stone PPX5-DEM CL9.cow PPX9.DEM
'that stone' 'this cow'
(b) ji-we **l**-angu [Sw.]
CL5-stone PPX5-mine
'my stone'
(c) (i) ji-we **l**-a Juma [Sw.] (ii) le-ina **l**-a ka [NS.]
CL5-stone PPX5-POSS NAME CL5-name PPX5-POSS mine
'Juma's stone' 'my name'
(d) (i) mo-nna **yo** mo-golo [NS.] (ii) mo-šemane **yo** bo-hlale [NS.]
CL1-man PPX1 CL1-big CL1-boy PPX1 CL14-wise
'a big man' 'a clever boy'

Thus, the category of adnominal modifiers is a heterogeneous category in Bantu languages if based on syntactic characteristics. Very little (if any) research has been done on the different types of agreement. Not even the terminology for the agreement patterns is agreed upon. In some Bantu languages, an interesting correlation of agreement pattern and the semantics of a quantifier can be found: In Swahili, e.g., the stem *-ote* ('all') does not agree with the head noun according to adjective formation in contrast to stems like *-engi* ('many') and the basic number words. Instead, *-ote* ('all') requires, like demonstratives, pronominal concord (Krifka, 1995: 1389), which may point at a different status of these two items, 'all' being more determiner-like, and 'many' being more adjectival. This aspect is taken up again in section 2.5.

However, upon wider comparison, no consistent pattern emerges across languages. In some other Bantu languages, the stem for 'all' requires the same agreement like adjectives (see e.g. Brauner, 1993, for Shona; Poulos and Bosch, 1997, for Zulu; Bentley and Kulemeka, 2001, for Chichewa), and in Northern Sotho the stem for 'all' exhibits an idiosyncratic agreement pattern (see also the pre-prefixes with *-he* 'all' in Mbalanhu, Fourie, 1992). Investigating the

syntax of quantifiers among each other or with relation to demonstratives is thus restricted to those Bantu languages for which agreement patterns have been reported meticulously.

2.2 Intersective quantifiers

2.2.1 Non-numeral intersective quantifiers. Intersective quantifiers are quantifiers whose truth conditions can be given in terms of the intersection of the noun meaning and the predicate meaning. The majority of intersective quantifiers in Bantu languages agrees with the quantifying head noun according to one of the agreement patterns listed in (2).[3] The equivalents for 'many' and 'a certain, other' are among the quantifiers that are best documented in grammatical sketches of respective Bantu languages (this is also true for 'all', see section 2.3). This might be due to the fact that these are all simple morphological stems that agree regularly with the head noun they quantify. Other quantifiers often involve more complex morpho-syntactic constructions. Quantifiers meaning 'many', 'several', 'few' are discussed as examples in the following and exemplify the points just made.

Typically, 'many' is expressed by a morphological stem.[4] It thus agrees with the head noun in noun class features. However, in Swahili, nominal agreement (2a) is used, whereas in Northern Sotho both nominal and pronominal agreement (2a and c) is employed.

(6) (a) Cairo pa-li-kuwa na harakati **nyingi** za kisiasa.
Cairo CL16-PST-be with CL10.movement CL10.many POSS10 politics
'Many political activities were going on in Cairo.'[Swahili; Barwani et al. 2003:32]

(b) Ku-na maji **m-engi** mtoni.
SC17.have CL6-water CL6-many CL3.river.LOC
'There is a lot of water in the river.' [Swahili]

(c) Di-kgomo tše **di-ntši** di fula nage-ng.
CL10-cow PPX10 CL10-many SC10 graze CL9.field-LOC
'Many cows are grazing in the field.' [Northern Sotho]

(d) ma-di a **ma-ntši**
CL6-blood PPX6 CL6-many
'much blood' [Northern Sotho]

The stems *-engi* (Sw.) and *-ntši* (NS.) can also be used with uncountables or mass nouns, as in (6b) and (6d), hence there is no 'many/ much'-distinction.

[3] As opposed to complex syntactic structures, as in (9) or (11).
[4] Languages in which 'many' is not expressed by a stem include Chichewa (Bentley and Kulemeka, 2001) and Lucazi (Fleisch, 2000) in which it occurs with an associative construction as well as Mbalanhu (Fourie, 1992) where it occurs with numeral agreement.

As mentioned above, adjectives and demonstratives canonically follow the head noun in Bantu languages. The same holds for quantifiers. However, in some Bantu languages at least, quantifiers can also precede the head noun, as shown in (7) (example (7b) shows the universal quantifier 'all'). As for the semantics of preposed quantifiers, the Northern Sotho example in (7a) is reported to have an additional meaning of emphasis. The Mbalanhu example is reported not to differ in meaning from the sentence containing a postposed quantifier (Fourie, 1992: 107).

(7) (a) Tše **di-ntši** di-kgomo di fula nage-ng.
PPX10 CL10-many CL10-cow SC10 graze CL9.field-LOC
'Many cows are grazing in the field.' [Northern Sotho]

(b) **A-vi-he** oongombe ova sa.
PPX10-AGR10-all CL10.cow SC10.PST die
'All the cattle died. [Mbalanhu; Fourie, 1992: 107]

In order to express 'several', an indefinite small number but more than a few, Northern Sotho uses the stem *-mmalwa*.[5] It agrees with the head noun in noun class features, involving pronominal agreement (8a). It cannot be used with uncountable nouns (8b).

(8) (a) Di-kgomo tše **mmalwa** di fula nage-ng.
CL10-cow PPX10 CL10.several SC10 graze CL9.field-LOC
'Several cows are grazing in the field.' [Northern Sotho]

(b) * N-tšhel-ele meetse a mmalwa.
OC1ST-pour-APPL CL6.water PPX6 several
Lit. 'Pour me some water.' [Northern Sotho]

In Zulu, the cognate *-mbalwa* roughly translates as 'a few' (Adams, 2005a, b). It is overtly constructed as a relative construction in this language, as shown in (9a).[6] Evidence for the relative construction in (9a) comes from the agreement concord used on the quantifier which is also used in relative clauses (9b).

(9) (a) izin-hlamu ezi-**mbalwa**
CL10-grain REL10-few
Lit. 'grains that are few' [Zulu; Adams, 2005]

[5] According to our consultant it is rendered incorrectly as 'many' in the Northern Sotho dictionary by Ziervogel and Mokgokong (1975).
[6] Pronominal agreement in Northern Sotho (ex. (6c, d) and (7a)) can be argued to also involve a relative construction (cf. Zeller, 2006).

(b) incwadi isitshudeni esi-yi-funda-yo
CL9.letter CL7.student REL7-OC9-read-REL
'the letter that the student is reading' [Zulu; Zeller, 2006]

Among the Bantu expressions for English 'few', variation can be found as to the construction involved. As seen in (9), Zulu uses a construction involving a relative clause. In Swahili, the adjectival stem *-chache* is used, as in (10a). This stem was also elicited for uncountable nouns as in (10b). However, it is not grammatical for all speakers (Schadeberg, p.c.) who would have to use *kidogo*.

(10) (a) Tu-me-rejea hospitali kwa siku **chache.**
1PL-PST-return CL9.hospital PREP CL10.day CL10.few
'We returned to hospital for a few days.' [Swahili; Barwani et al. 2003: 26]

(b) Ma-ji **ma-chache** yanateremka mtoni.
CL6-water CL6-little get.off CL3.river.LOC
'Little water is flowing in the river.' [Swahili]

In Northern Sotho, a complex syntactic construction is employed to express 'few' whose classification remains unclear. This is shown in (11). It consists of a subject concord, a verbal negative marker, and the question word for 'many' *kae*, optionally with pronominal agreement as in questions (*dikgomo tše kae?*- 'how many cows?').

(11) (a) Di-kgomo di **se** **(tše)-kae** di fula nage-ng.
CL10-cow SC10 NEG PPX10-many SC10 graze field-LOC
'Few cows are grazing in the field.' [Northern Sotho]

(b) Ba-setsana ba **se** **(ba)kae** ba raloka ka ntle.
CL2-girl SC2 NEG PPX2-many SC2 play PREP outside
'Few girls are playing outside.' [Northern Sotho]

It is commonly found in Bantu languages that the morphological stem that is used to refer to smallness in size is also used to refer to smallness in quantity if the context allows for this interpretation (also Kinyamwezi *-doó* – 'small, few', Maganga and Schadeberg, 1992). This is illustrated in (12).

(12) (a) Ba-na ba **ba-nnyane** ba raloka ka ntle.
CL2-child PPX2 CL2-small SC2 play PREP outside
'Small/ few children are playing outside.' [Northern Sotho]

(b) Meetse a **ma-nnyane** a ela ka noke-ng.
CL6.water PPX6 CL6-small/few SC6 flow PREP CL9.river-LOC
'Some water is flowing in the river.' [Northern Sotho]

Interestingly, *kgolo* 'big' has not been found reported to refer both to bigness in size and quantity in Northern Sotho or any of the other languages investigated.

For English 'some', an unknown or unspecified quantity, an Arabic loan is used in Swahili. *Kadhaa* does not agree with the head noun in noun class features. It can be used in Swahili as the equivalent of both English 'a few' and 'some, several', but it cannot be used with uncountable mass nouns, as indicated in (13b).

(13) (a) Wa-toto **kadhaa** wa-na-cheza nje.
CL2-child some SC2-PRES-play outside
'Some/ few children are playing outside.' [Swahili]

(b) *Ku-na ma-ji **kadhaa** mtoni.
SC17-have CL6-water some CL3.river.LOC
Intend. 'There is some water in the river.' [Swahili]

The Northern Sotho equivalent for English 'some' is *-ngwe*. It is an adjectival stem and therefore agrees with the head noun in noun class features, involving both nominal and pronominal agreement.

(14) (a) Ba-na ba **ba-ngwe** ba raloka ka ntle.
CL2-child PPX2 CL2-some SC2 play PREP outside
'Some children are playing outside.' [Northern Sotho]

(b) Di-kgomo tše **di-ngwe** di fula nageng.
CL10-cow PPX10 CL10-some SC10 graze CL9.field.LOC
'Some cows are grazing in the field.' [Northern Sotho]

(c) *Me-etse a **ma-ngwe** a ela ka noke-ng.
CL6-water PPX6 CL6-some SC6 flow PREP CL9.river-LOC
Intend. 'Some water is flowing in the river.' [Northern Sotho]

The following two observations suggest that the quantity interpretation of *-ngwe* derives from the plural of the head noun so that the important semantic contribution of *-ngwe* is lack of definiteness: first, alternative translations for *dikgomo tše dingwe* are 'certain (not further specified) cows', or 'other cows'. Second, *-ngwe* can also be used in the singular (just as English 'some') and then too, has an indefinite meaning. This is shown in (15).

(15) ngwana yo **mo-ngwe**
CL1.child PPX1 CL1-some
'some child, a certain child, another child' [Northern Sotho]

Mojapelo (2007) suggests that semantically *-ngwe* indicates that the object talked about is unidentifiable to the hearer unless the pragmatic context suggests otherwise.

2.2.2 Counting system. Numerals are not a coherent morpho-syntactic class in Bantu languages. Synchronic data shows traces of a former quinary counting system. In addition, diachronic evidence comes from the fact that only the first five numbers can be historically reconstructed for Proto-Bantu (Meeussen, 1967: 105).

Morphosyntactically, only the first five cardinal numbers (as well as the interrogative for number) are adjectival in all Bantu languages in displaying the nominal, pronominal or enumerative prefix (for an overview of agreement in Bantu numerals see Stappers, 1965). The other numbers form a more heterogeneous set in being derived from either nouns or verbs, and are formed accordingly. This split in the counting system is especially evident in Chichewa, a Bantu language of Malawi (also in Lucazi, Fleisch, 2000), as shown in (16).

(16) Chichewa (Bentley and Kulemeka, 2001)

1	-modzi	6	-sanu ndi -modzi
2	-wiri	7	-sanu ndi -wiri
3	-tatu	8	-sanu ndi -tatu
4	-nayi	9	-sanu ndi -nayi
5	-sanu	10	khumi

Also Swahili and Northern Sotho show traces of this underlying quinary system: the numbers up to five belong to a homogeneous class of stems that follow the same agreement pattern. For the larger numbers, however, Northern Sotho and Swahili do not use the additive system of Chichewa or Lucazi. In Swahili, the stems do not show agreement except for *-nane* 'eight', and in Northern Sotho they are of verbal or nominal character.[7] Numeral agreement, as stated by Meeussen (1967), is not used (Sw.) or only optional (NS.). In Swahili, borrowings from Arabic can be found in the numeral system, which is common in many Sub-Saharan languages (see e.g. Hausa, Zimmermann, this volume). In the following table, Arabic loans in Swahili are given in italics.

[7] The use of verbal stems for the numbers 6 and 7 in Northern Sotho can be explained by the traditional way of counting: one starts with the small finger of the left hand. When finishing at the thumb of the left hand, one "jumps over" to the thumb of the right hand. Then one proceeds to the indicating finger (Ziervogel *et al.*, 1969: 114).

(17)	Northern Sotho	example (*x* children)	Swahili
1	-tee (adj./ enumerative)	ngwana yo mo-tee/ CL1.child PPX1 CL1-one ngwana o tee	-moja (adj.)
2	-bedi (adj.)	bana ba ba-bedi	-wili (adj.)
3	-raro (adj.)	bana ba ba-raro	-tatu (adj.)
4	-ne (adj.)	bana ba ba-ne	-nne (adj.)
5	-hlano (adj.)	bana ba ba-hlano	-tano (adj.)
6	-selela (verb) 'to jump'	ba-na ba ba selela-go CL2-child REL SC2 jump-REL	*sita* (no agreement)
7	-šupa (verb) 'to point'	ba-na ba ba šupa-go (relative structure)	*saba* (no agreement)
8	seswai (noun)	ba-na ba seswai CL2.child	-nane (4+4)
9	senyane (noun)	ba-na ba senyane	kenda/ *tisa*
10	le-some (noun)	ba-na ba le-some	kumi
11	le-some le e-tee		kumi na -moja
20	ma-some a ma-bedi		*ishirini*
21	ma-some a ma-bedi le pedi		*ishirini* na -moja
30	ma-some a ma-raro		*thelathini*
40	ma-some a ma-ne		*arobaini*
50	ma-some a ma-hlano		*hamsini*
60	ma-some a selela		sitini
70	ma-some a šupa		*sabini*
80	ma-some a seswai		*themanini*
90	ma-some a senyane		*tisini*
100	le-kgolo		*mia*

2.2.3 Negation. Northern Sotho, like many other Bantu languages, does not have a negative quantifier in the nominal domain (see also Malete, 2003). Negative quantification is expressed by negation on the verb, as in (18a, b) for objects. As there is no adnominal negation in Northern Sotho and verbal negation does not have scope over the subject, the subject is negated in an inversion construction, (18c). In (18c), the logical subject can be argued to be in an underlying postverbal object position (Zerbian, 2006).

(18) (a) **Ga** ke bon-**e** ngwana.
NEG 1^{sg} see-NEG CL1.child
'I don't see a child./ I see no child.' [Northern Sotho]

(b) …wa-li-kuwa **ha**-wa-pew-**i** mishahara
CL2-PST-be NEG-SC2-get-NEG CL4.salary
'…and they didn't receive any salary' [Swahili; Barwani et al., 2003: 24]

(c) **Ga** go na ba-na ba ba raloka-ng ka ntle.
NEG SC17 be CL2-child REL2 SC2 play-REL PREP outside
'There are no children playing outside.' [Northern Sotho]

As there is no adnominal negative quantifier in Northern Sotho, negation of quantified logical subjects always involves the use of a syntactic construction that allows the logical subject to be in the scope of verbal negation. This is further exemplified in (19) by the negation of 'many'. The examples shows a cleft sentence (*ga se* is the negated copula) which allows the logical subject to appear following the negated verb.

(19) **Ga** **se** ba **ba-ntši** bao ba rakola-ng ka ntle.
NEG NEG PPX2 CL2-many REL2 SC2 play-REL PREP outside
'Not many (children) are playing outside.' [Northern Sotho]

2.3 Universal quantifiers

For the quantifier expressing totality 'all' and for the universal distributive quantifier 'every', Bantu languages show different morphological stems and constructions with diverging syntactic and/ or semantic properties.

The morpheme for 'all' behaves idiosyncratically with respect to agreement both in Swahili and Northern Sotho. In Swahili, the stems *-ote* 'all' and *-o -ote* 'any' do not agree with the head noun by means of a nominal prefix (in contrast to e.g. *-engi* 'many'). Instead, the stems *-ote* 'all' and *-o -ote* 'any' are formed like demonstratives in Swahili in requiring the pronominal concord (Krifka, 1995: 1389) (pronominal prefix with 'all' also with Chichewa *-nse*, Bentley and Kulemeka, 2001).

(20) (a) Wa-toto **w-ote** wa-na-cheza nje.
CL2-child PPX2-all SC2-PRES-play outside
'All children are playing outside.' [Swahili]

(b) Wa-tu **w-ote** wa-li-uliz-wa…
CL2-person PPX2-all SC2-PST-ask-PASS
'All people were asked…' [Swahili; Barwani et al., 2003: 26]

(c) …si-wez-i ku-kumbukia **w-ote**
NEG.1SG-can-NEG CL15-remember PPX2-all
'…I can't remember all' [Swahili; Barwani et al., 2003: 24]

In Northern Sotho, the stem *-ohle* 'all' occurs with its own concord which resembles neither nominal nor numeral nor pronominal agreement (Ziervogel *et al.*, 1969: 60).

(21) (a) Di-kgomo **tš-ohle** di fula nage-ng.
CL10-cow AGR10-all SC10 graze field-LOC
'All cows graze in the fields.' [Northern Sotho]

(b) Le-rumo **l-ohle** le wetše meetse-ng.
CL5-spear AGR5-all SC5 fall.PST CL6.water-LOC
'The whole assegai fell into the water.' [Northern Sotho]

The totality quantifier can also appear with mass nouns in both Swahili and Northern Sotho.

(22) (a) ma-ji **yo-te**.
CL6-water CL6-all
'all the water.' [Swahili]

(b) ma-di **ohle**
CL6-blood AGR6.all
'all the blood' [Northern Sotho]

For 'all', Northern Sotho also uses *ka moka*. This expression differs from the quantifier *-ohle* in (21) in that it does not agree with the head noun in noun class features. With respect to word order, its distribution is free in the sentence (though it can never separate an object from a verb), thus acting like a floating quantifier that occurs distant from an NP referring to a sum individual, as shown in (23).

(23) (a) Ba-na **ka** **moka** ba raloka ka ntle.
CL2-child PREP all SC2 play PREP outside
'All children are playing outside.

(b) Bana ba raloka ka ntle **ka moka**.

(c) **Ka moka** bana ba raloka ka ntle.

(d) Bana ba raloka **ka moka** ka ntle. [Northern Sotho]

Although *moka* is not used on its own in Northern Sotho (except in connection with the copula *Ké moka–* 'that's all'), the construction *ka moka* is analytical and can be decomposed into the preposition *ka* and a modifier, as shown in (24).[8] Comparable structures are found in other Bantu languages as well.

(24) (a) **ka** moka (b) **ka** di-pedi (c) **ka** di-tharo
PREP all PREP CL10-two PREP CL10-three
'all' 'both' 'all three' [Northern Sotho]

[8] A reviewer points out that 'all' and 'both' are often argued to be semantically alike (cf. Brisson, 1998) so that the observed formal parallelism in (24a, b) does not come as a surprise.

As a general observation, the distributive universal quantifier 'every' is expressed in a morphologically complex way or by a loan word in the Bantu languages under inspection for this article. It often shows morphosyntactic features that diverge from adnominal modifiers. In Swahili, the Arabic loan *kila* is used. *Kila* does not agree with the quantified noun in noun class features, and strictly precedes the noun, as shown in (25).

(25) (a) **Kila** m-toto a-na-cheza na mpira w-ake.
every CL1-child SC1-PRES-play PREP CL3.ball CL3-his
'Every child is playing with his/her ball.' [Swahili]

(b) **Kila** mgonjwa ka-rejesh-wa na majumba-ni mw-ao.
every CL1.sick SC1-go.back-PASS PREP house-LOC LOC-POSS
'Every sick person was sent back home.' [Swahili; Barwani et al., 2003: 26]

Chingoni, spoken in Southern Tanzania, has adopted *kila* as its distributive quantifier from Swahili (Ngonyani, 2003: 46). Like in Swahili, also in Kimyamwezi (Maganga and Schadeberg, 1992), Runyoro-Rutooro (Rubongoya, 1999), and Lucazi (Fleisch, 2000) the distributive universal quantifier 'every' is the only adjectival modifier which precedes the noun, as illustrated by an example from Kinyamwezi in (26).

(26) **Bul'** íídébe úutuula miinzí nhiínda.
each tin 2^{SG}.pour.CONS water half.full
'Each tin you make about half full of water.' [Kinyamwezi; M & S, 1992: 210]

In Swahili, both *kila* and *-ote* can have a distributive reading. This emerges from (25) for *kila* and (27) for *-ote*.

(27) Wa-toto **w-ote** wa-na ma-tunda ma-wili.
CL2-child CL2-all SC2-have CL6-fruit CL6-two
'All children have two fruits [each].' [Swahili]

A semantic difference between *kila* and *-ote* emerges in different acceptability when used with *pamoja-* 'together', as in (28). In light of these data, a reviewer suggests that *kila* is inherently distributive whereas *-ote* is underspecified concerning the distributive/ collective distinction.

(28) (a) Wa-toto **w-ote** wa-na-cheza pamoja.
CL2-childPPX2-all SC2-PRES-play together
'All children are playing together.' [Swahili]

(b) ***Kila** m-toto a-na-cheza pamoja.
each CL1-child SC1-PRES-play together
Lit. 'Every child is playing together.' [Swahili]

In Northern Sotho, 'every' is expressed by the coordinated phrase *-ngwe le -ngwe* (from *-ngwe* 'a certain, some, other'), whereby the quantifier *-ngwe* agrees each time with the quantified noun using both nominal and pronominal agreement. This is shown in (29).

(29) (a) Ngwana **yo mo-ngwe le yo mo-ngwe** o a raloka
CL1.child PPX1 CL1-some CONJ PPX1 CL1-some SC1 PRES play
'Every child is playing outside.' [Northern Sotho]

(b) Ke šoma offisi-ng le-tšatši **le le-ngwe le le le-ngwe**.
1^{SG} work CL9.office-LOC CL5.day PPX5 CL5-some CONJ PPX5 CL5-some
'I work in the office every day.' [Northern Sotho]

In Chichewa, 'every' is expressed in a syntactically complex way by means of a copula construction. The quantified noun is followed by a copula *-li*. The copula *-li* bears an agreement prefix that indicates a relative clause by carrying high tone. The stem *-onse* follows with the appropriate prefix relating to the modified noun. An example is given in (30).

(30) mu-dzi ú-li **wo-onse**
CL3-village REL3-COP AGR-every
'every village'
Lit. 'village which is every' [Chichewa; Bentley and Kulemeka, 2001: 18]

In both Swahili and Northern Sotho, the universal quantifiers also allow for a free choice interpretation, i.e. that the speaker offers the addressee the choice of a referent; the sentence will hold with any choice. However, there is language-specific variation with respect to which of the universal quantifiers fulfils this function, as well as its morpho-syntactic properties. In Swahili, the stem *-ote* 'all' if used with a relative concord allows this interpretation (Schadeberg, 1992), (31a-c). In Northern Sotho, the construction *-ngwe le -ngwe* 'every' allows the free choice interpretation, (31d).

(31) Swahili (Schadeberg, 1992: 19)
(a) CL1: mtu ye **yote** 'anyone'
(b) CL2: watu wo **wote** 'any people whatever'
(c) CL9: nyumba yo **yote** 'any house whatsoever'

Northern Sotho
[reply to a question which of the cows present in the kraal can be slaughtered]

(d) O ka hlaba kgomo **ye** **ngwe** **le** **ye** **ngwe**.
2SG POT slaughter CL9.cow PPX9 CL9.some CONJ PPX9 CL9.some
'You can slaughter any cow.'

2.4 Proportionality quantifiers

Proportionality quantifiers are expressed by complex (morpho)-syntactic constructions in Bantu languages. Data for 'most' and 'half' are given as examples.

'Most' is not a morphological stem in many Bantu languages but is rendered by an analytical morphological construction. In Swahili, this construction involves nouns, in Northern Sotho it involves a preposition. There are three words that refer to parts of a whole in Swahili. *Sehemu* refers to concrete things that can be divided, like cake or tables, but also to more abstract things such as neighborhoods. *Kiasi* refers to parts of liquids. *Idadi* refers to quantity, namely to parts of countable things, and is therefore used in quantification together with a quantifying adjective, as in (32a). However, as is seen in example (32b) (from the Kamusi site: http://www.yale.edu/swahili), its use is wider than English 'most'.

In Northern Sotho we find the *ka* + quantifier construction, already mentioned for the inclusive quantifier in (24). The quantifier used is *-ntši* 'many' together with class 14-agreement, as shown in (32c).

(32) (a) **Idadi** **kubwa** y-a wa-toto wa-na-cheza nje.
CL9.part CL9.big PPX9-of CL2-child PPX2-PRES-play outside
'The majority of children are playing outside.' [Swahili]

(b) **Idadi** **kubwa** y-a vi-fo vy-a kina mama
CL9.part CL9.big PPX9-of CL8-death PPX8-of group women
i-na-yo-kadiri-wa ku-fik-ia 506/100,000.
PPX9-PRES-PPX9.REL-estimate-PASS CL15-arrive-APPL 506/100,000
'a high maternal mortality rate estimated at 506/100,000' [Swahili]

(c) Di-kgomo **ka** **bo-ntši** di fula nage-ng.
CL10-cow PREP CL14-many SC10 graze CL9.field-LOC
'Most cows are grazing in the field.' [Northern Sotho]

The status of the construction that indicates that half of the members from a given set are participating in an event needs further investigation. The English construction can be rendered as in (33a) in Swahili and (33b) in Northern Sotho, and is overheard in everyday speech. For

Northern Sotho, language experts state, however, that *seripagare* is primarily not used for quantification.

(33) (a) **Nusu** ya wa-toto wa-na-cheza nje.
CL9.half POSS9 CL2-child SC2-PRES-play outside
'Half of the children are playing outside.' [Swahili]

(b) **Se-ripagare** sa ba-na se raloka ka ntle.
CL7-half POSS7 CL2-child SC7 play PREP outside
'Half of the children are playing outside.' [Northern Sotho]

Bantu languages also show a so-called associative construction that occurs in noun phrase modification, in possessive constructions and with certain quantifiers. In its use with quantifiers, Adams (2005a, b) redefines this construction as partitive. The exposition of this phenomenon follows her description for Zulu.

The associate construction in Zulu is characterized by a morpheme similar to the pre-prefix in a sequence of two nouns. The morpheme agrees with the noun to its left, the head noun. In partitive constructions, it occurs optionally between an adnominal quantifier and a noun phrase, as shown in (34a, b), but it is obligatory between a quantifier and a DP headed by a demonstrative. Its absence in the latter context results in ungrammaticality, as shown in (34c, d).

(34) (a) Aba-ningi **(b)a**-ba-fana ba-ya-dla.
CL2-many CL2PART-CL2-boy SC2-PRES-eat
'Many (of the) boys are eating.' [Zulu; Adams, 2005]

(b) Aba-nye **(b)a**-ba-fana ba-ya-dla.
CL2-one CL2PART-CL2-boy SC2-PRES-eat
'Some (of the) boys are eating.' [Zulu; Adams, 2005]

(c) ??Aba-ningi laba-ba-fana ba-ya-dla.
CL2-many DEM2-CL2-boy SC2-PRES-eat
Lit. 'Many these boys are eating.' [Zulu; Adams, 2005]

(d) *Ezi-nye lezo-zi-nyoni zi-ya-cula.
CL10-one DEM10-CL10-bird SC10-PRES-sing
Lit. 'Some those birds are singing.' [Zulu; Adams, 2005]

The quantifiers 'many', 'some', 'each', and 'one' can consequently be used both with a proportional and with an absolute interpretation. In the proportional interpretation they need a restriction on the set over which they quantify. This restriction is encoded by means of the associative construction.

Interestingly, however, the universal quantifier 'all' cannot occur in the partitive construction in Zulu, as evidenced in (35).

(35) (a) ***Bo-nke*** b-aba-fana ba-ya-dla.
CL2-all CL2PART-CL2-boy SC2-PRES-eat
Int.: 'All of the boys are eating.' [Zulu; Adams, 2005]

(b) ***Bo-nke*** ba-laba-ba-fana ba-ya-dla.
CL2-all CL2PART-DEM2-CL2-boy SC2-PRES-eat
Int.: 'All of these boys are eating.' [Zulu; Adams, 2005]

Even if modified with a demonstrative, the universal quantifier appears either with modifier agreement, as in (36a), or in a relative construction, as in (36b).

(36) (a) **Bo-nke** laba-ba-fana ba-ya-dla.
CL2-all DEM2-CL2-boy SC2-PRES-eat
'All these boys are eating.' [Zulu; Adams, 2005]

(b) **Bo-nke** aba-laba-ba-fana ba-ya-dla.
CL2-all REL2-DEM2-CL2-boy SC2-PRES-eat
Lit. 'All who are these boys are eating.' [Zulu; Adams, 2005]

One explanation why forms like *b-onke b-aba-fana* 'all of the boys' in (35) are ungrammatical could be that *b-onke* 'all' applies to sum individuals, rendering a quantification over all the parts of the sum individual. The partitive in *b-aba-fana* 'of the boys' applies to a sum individual denoting sums of boys, yielding a set of entities of boys. As *b-onke* requires a sum individual and not a set of individuals, the derivation fails.

2.5 Realisation of quantifiers by syntactic position and agreement

Reviewing the positional variants of the D-quantificational elements discussed so far, it is interesting to note their positional variation and the type of agreement they show.

While many quantificational elements occur postposed, there are some that are realized by prenominal expressions. In Swahili, these are *kila* 'every' and partitive constructions like *idadi kubwa ya* 'a great part of', as well as demonstratives used in the function of a definite article. One can argue that *kila* and expressions like *idadi kubwa ya* naturally would be expected in a Spec-DP position, as they necessarily have to be interpreted as quantificational elements in the sense of Generalized Quantifier theory, of type ⟨⟨e,t⟩, ⟨⟨e,t⟩, t⟩⟩. Other

quantificational elements do not have to be interpreted this way. For example, numerals can be analyzed as restricting the set a noun applies to to sum individuals with a number of atoms as indicated by the numeral, and the totality quantifier *-ote* can be analyzed as constructing the sum individual of all the entities that fall under the noun it applies to (cf. Link, 1983). Also, expressions like *-engi* 'many' and *-chache* 'few' can be interpreted as vague number words, that is, in a way that does not make them generalized quantifiers. The case of *kadhaa* 'some, several' is particularly interesting, as this is an Arabic loan, just as *kila* 'every'. But while *kila* is preposed, *kadhaa* is postposed, which presumably is due to their different quantificational status as true quantifier vs. indefinite expression.

As for agreement morphology, we find that some quantifiers show adjectival agreement in Swahili (like the agreeing number words and *-engi* and *-chache*), while others, like *-ote* 'all', the demonstratives and the possessives, require pronominal agreement. This can be interpreted as indicating a type change: While adjectives and number words do not change the type of nouns (they remain ⟨e, t⟩, and the quantifying force is provided from outside, as in DRT), *-ote* and the demonstratives and possessives do change it to type e. For example, *wa-toto w-ote* refers to the sum individual of all the children, and *wa-toto wa-le* to those children over there.

2.6 Summary

This section has given on overview of the expression of D-quantification in a range of Bantu languages, with special attention to Swahili and Northern Sotho. The basic observation is that Bantu languages have few genuine quantifiers. Rather, these languages display a range of adnominal modification with quantitative interpretation. The classification of the modifiers with quantitative interpretation into different classes according to the agreement pattern they display varies immensely across languages. Only for better documented languages can hypotheses be formulated regarding the relationship between quantifiers and agreement, as has been done for Swahili in 2.5.

Despite the cross-Bantu variation, at least two common properties of quantification in this language family can be established: First, there is no determiner-negation. Negation is always verbal. Second, it is striking that across all the Bantu languages investigated for this article, complex morphosyntactic constructions or otherwise marked formatives are used for the expression of the universal quantifier 'every'. This is in line with diachronic observations that the sources for 'all' are much more homogeneous than the diachronic sources for 'every'. Haspelmath (1995) establishes three possible sources for 'every': free choice indefinite determiners like 'any', distributive prepositions, and 'all'. The study of Bantu languages shows that loan words and syntactic constructions should be added to this list.

For Mohawk (Iroquoian), Baker (1995) observes a total lack of genuine D-quantifiers and relates it to the fact that the language is polysynthetic, which means that arguments have to

be recorded in the verbal head either by cross-reference or by incorporation. While Bantu languages do not incorporate, they do show cross-reference (or head marking; cf. Nichols, 1986) with subjects and various types of objects, and thus exhibit a similar setting of the polysynthesis parameter as Mohawk (cf. Baker, 2003). It is suggestive to correlate the low incidence of true D-quantifiers to cross-reference. A possible explanation for this correlation is as follows: Cross-reference works like resumptive pronouns (*John, he came* or *A man, he came*), but resumptive pronouns are excluded for D-quantifiers (**Every man, he came*), presumably because the remnant constituent "he came" is of the semantic type of a presupposition, whereas D-quantifiers need an expression of the semantic type of a predicate to apply to.

3 THE PRE-PREFIX

Some Bantu languages use so-called pre-prefixes (also called augments) which are prefixes preceding nominal agreement markers (cf. ***o-mu-limi*** in (1)) and which are related to definiteness. The absence of the pre-prefix frequently gives rise to indefinite readings similarly to indefinite readings showing up with intersective quantifiers. It is for this reason that pre-prefixes are mentioned following the presentation of the intersective quantifiers in the previous section. However, the presence of the pre-prefix signals definiteness or specificity, interpretative effects that are typically not observed with intersective quantifiers. This is why they are treated in an independent section.

Bantu languages do not have articles that indicate definiteness or indefiniteness obligatorily. Different morpho-syntactic means are employed to indicate specificity, definiteness, and referentiality. Often definiteness is indicated by the additional use of a demonstrative pronoun or an agreement marker on the verb in Bantu languages. Thus, the absence of such markers can lead to interpreting an NP as indefinite. For Swahili, preposed demonstratives have a function similar to definite articles, but they are not obligatory for definite NPs.

Pre-prefixes are another way to express definiteness. Whereas simple nominal prefixes typically have the phonological shape CV, addition of a pre-prefix leads to the phonological shape VCV, with identical vowels; the initial V is referred to as the pre-prefix, or augment.[9] Typically, CV nouns are indefinite, non-specific, or predicative, whereas VCV nouns are definite, specific, or referential. Hence the pre-prefix has a similar function as the definite article.

The pre-prefix has attracted attention in the literature from the earliest research on (e.g. Bleek, 1869; De Blois, 1970; Bokamba, 1971; Givón, 1978; Hyman and Katamba, 1993).

[9] See Blanchon (1998) for a language where this distinction is made solely based on tone.

Bleek (1869: 150) argued that the prefix in Xhosa evolved from a pronoun into an article. The overview in De Blois (1970) shows, however, that synchronically the use of the pre-prefix differs widely across Bantu languages. The synchronic use of the pre-prefix involves a complicated interaction of phonological, morphological, syntactic and semantic/ pragmatic factors.

Hyman and Katamba (1993: 219) point out that in the Ugandian Bantu language Luganda, speakers volunteer definite translations in English for Luganda forms taking the pre-prefix and indefinite translations for forms lacking the pre-prefix. An example is given in (37).

(37) (a) **e**-bitabo bisátu
PPF-books three
'three books'

(b) **e**-bítábó **é**-bísatú
PPF-books three
'the three books'

[Luganda; Hyman and Katamba, 1993: 219, (12)]

The equation of the pre-prefix with the article in European languages, however, oversimplifies the issue. In actual fact, the two forms in (37) contrast for definiteness only in two syntactic contexts, namely in main clause subject position and main clause object position after an affirmative verb. As an object in a relative clause, as in (38), the pre-prefix must be used independent of the definiteness of the NP.

(38) (a) e-yasóma **e**-bítábó **é**-bísatú
'the one who read (the) three books'

(b) *e-yasóma **e**-bitabo bisátu [Luganda; H & K, 1993: 220, (13)]

Hyman and Katamba consequently argue that neither a purely syntactic account (as proposed by Dewees, 1971) nor a purely semantic/pragmatic account (as argued for in Mould, 1974) can account for the distribution of the pre-prefix. Instead, they show that the semantic contribution of the pre-prefix relates to definiteness, specificity, and focus. Equally important, the syntax has an influence on the distribution of the pre-prefix as well. Whereas a pre-prefix normally occurs on a subject NP in an affirmative, main clause, it might be absent in a dependent clause, or following a negative verb.

Hyman and Katamba (1993) formulate the generalization that non-augmented forms are grammatical if they are licensed by one of two syntactic operators, NEG (negation) or FOC (focus). The examples in (39) from Luganda illustrate this point. In (39a), the non-augmented noun, though in a relative clause, falls under the scope of negation and can thus occur without a pre-prefix. In (39b), the first object, *báànà*, is focused and thus appears without the pre-prefix, even though it is definite, whereas the second, *è-bítábó*, appears with a pre-prefix, even though it is indefinite.

(39) (a) tè-báálàbà báágùlà bìtábó
NEG-CL2.see.PST REL2.CL2.buy.PST books
'They didn't see the ones that bought books.' [Luganda; H & K, 1993: (18b)]
(b) yàgúlìrà báànà **è**-bítábó
he bought children PPF-books
'He bought the CHILDREN books.' [Luganda; H & K, 1993: (25c)]

In Bemba (Givón, 1978) and Kinande (Progovac, 1993), the pre-prefix has been claimed to express specificity, as exemplified by the data in (40): the occurrence of a noun phrase containing the pre-prefix after a negative verb, as in (40a), indicates that the referent is definite and specific (Givón, 1978; Progovac, 1993). If the referent lacks the pre-prefix, as in (40b), it has to be interpreted as indefinite, non-specific. After affirmative verb forms, as in (40c), a pre-prefix on a noun phrase indicates specificity but is neutral as to definiteness. However, after affirmative verbs, the pre-prefix has to occur in Bemba and Kinande, as the ungrammaticality of (40d) shows.

(40) (a) Yohání sí ánzire **o**-mú-kalì. [+def,+spec]
John NEG like PPF-CL1-woman
'John doesn't like the woman.' [Kinande; Progovac, 1993: 258, (2) – (5)]
(b) Yohání sí ánziré mú-kalì. [-def, -spec]
'John doesn't like any woman.'
(c) Yohání ánzire **o**-mú-kalì. [+/-def, +spec]
'John likes the woman.'
(d) *Yohání ánziré mú-kalì. [-def, -spec]

However, it has to be noted that the observation that in generic (=non-specific) sentences, a noun phrase cannot occur without a pre-prefix following affirmative verbs speaks against specificity as the determining factor of the pre-prefix, as shown in (41).

(41) (a) Yohání sí ánzire bá-kalì.
John NEG like CL2-woman
'John doesn't like women.' [Kinande; H & K, 1993: ft.6]
(b) *Yohání ánzire bá-kalì.
John like CL2-woman
Int. 'John likes women.' [Kinande; H & K, 1993: ft.6]

Progovac (1993) proposes to analyse NPs without pre-prefixes as negative polarity items (NPI) in Kinande. She draws evidence for her claim from the observation that NPs without pre-prefixes (the objects in the examples in (42)) occur in the same contexts as 'any' does in English, namely in negatives (42a), interrogatives (42b), and conditional sentences (42c).

(42) (a) **O**-mukali si anzire Yohani.
PPF-woman NEG CL1.like John
'The woman does not like John.' [Kinande; Progovac, 1993: (11)]
(b) **O**-mukali a-na-nzire Yohani(kwe)?
PPF-woman CL1-QP-like John
'Does the woman like John?' [Kinande; Progovac, 1993: (13)]
(c) **O**-mukali a-ma-nza Yohani, inya kandetsema.
PPF-woman CL1-COND-like John is happy
'If the woman likes John, s/he will be happy.' [Kinande; Progovac, 1993: (15)]

Problems for this analysis come from the observation that NPs without a pre-prefix can also be found in the *by*-phrase of passives and in predicative position after a copula (Progovac, 1993: 267). Furthermore, also in SO-reversal structures, (43a), and impersonal inversion (43b), the logical subject must not bear a pre-prefix, as pointed out by Baker (2003).

(43) (a) SO-reversal structure
Olukwi si-lu-li-senya **(*a-)**ba-kali.
CL11.wood NEG-SC11-PRES-chop (PPF)-CL2-woman
'WOMEN do not chop wood.'
(b) Impersonal inversion
Mo-ha-sat-ire **(*o-)**mu-kali muyima.
AFF-there-dance-PST (PPF)-CL1-woman one
'Only one woman danced.' [Kinande; Baker, 2003: 118, (24)]

As this brief review shows, further research is necessary to determine the role of the pre-prefix in the Bantu languages, and the parameters of variation across Bantu languages.

4 QUANTIFICATION IN THE VERBAL DOMAIN

In quantifying an event, the prevalent feature of Northern Sotho is its use of an auxiliary verb construction (Ziervogel *et al.*, 1969; Poulos and Louwrens, 1994). Besides this special syntactic construction, also TMA-markers, adverbial expressions and reduplication are employed for expressing quantification in the verbal domain in Bantu languages. They will be illustrated in turn.

4.1 Verbal quantification

4.1.1 TMA-markers. The morphological structure of the verb in Bantu is complex. The verb stem can be decomposed into a root and suffixes that indicate argument-changing processes, such as applicative and passive. Furthermore, prefixes are used for subject and object agreement (SC, OC) as well as tense, aspect and mood marking. The following Swahili example illustrates this.

(44) Wa-toto wa-li-mw-ona mw-alimu.
CL2-child SC2-PAST-OC1-see CL1-teacher
'The children saw the teacher.' [Swahili]

Swahili has a generic tense that expresses habituality, marked by the prefix *hu-*, exemplified in (45). Formally, it is unique among the TMA-markers in Swahili insofar the subject agreement is dropped, contrary to other TMA-markers; in this it resembles the infinitive marker, *ku-*.

(45) Wa-toto hu-mw-ona mw-alimu.
CL2-child HAB-OC1-see CL1-teacher
'The children usually see the teacher.' [Swahili]

The *hu*-marker often occurs with the auxiliary stem *-wa* 'be'. Cf. the following example, which contrasts a non-habitual (46a) and a habitual sentence (46b).

(46) (a) Ng'ombe a-na-kula nyasi ha-pa.
CL1.cow SC1-PRES-eat CL10.grass DEM16
'The cow is grazing grass here.' [Swahili]
(b) Ng'ombe **huwa** a-na-kula nyasi hapa.
CL1.cow HAB SC1-PRES-eat CL10.grass DEM16
'The cow is habitually/ always grazing grass here.' [Swahili]

Example (47) shows a similar case in Kinyamwezi, where the habitual marker is *búú-*.

(47) Waapí wáá-buukí **búúbaági** buzikú.
collection POSS-honey 14.be.HAB night
'The harvest of the honey always takes place at night.' [Kinyamwezi, M & S: 216]

Habitual sentences can be negated, but only by negating the embedded verb, which expresses the habit that the action expressed is not performed.

(48) (a) Ng'ombe ha-li nyasi hapa.
CL1.cow NEG.SC1-eat.NEG CL10.grass DEM16
'The cow does not graze grass here.' [Swahili]
(b) Ng'ombe **huwa** ha-li nyasi hapa.
CL1.cow HAB NEG.SC1-eat.NEG CL10.grass DEM16
'The cow never grazes grass here.' [Swahili]
(c) **Bakaápág'** úúbuukí búubumála boós' uum-mziinga.
2.NEG.collect.HAB honey 2.14.finish.CONS all LOC-beehive
'They never take out all the honey from the beehive.' [Kinyamwezi; M & S: 220]

Thus, both the universal verbal quantifier 'always' and its negation 'never' are expressed within the verb phrase in languages like Swahili and Kinyamwezi. For 'always' a TMA-marker is used that expresses habituality. Similarly to the nominal domain, Bantu languages do not use a morphological stem for the expression of negative quantification in the verbal domain. Instead, 'never' is expressed as negation plus 'always'. As a reviewer points out, the surface order HAB >> NEG in the examples in (48b) is transparently mapped to the meaning 'never (= always not)'.

4.1.2 Auxiliary verb constructions. The auxiliary verb constructions that are used in Northern Sotho for quantification in the verbal domain differ from the Swahili case presented in (46b) and (48b) as the auxiliary verb shows verbal properties like agreement.

'Always' and 'often' are not distinguished in Northern Sotho. High frequency of an event can be expressed by a variety of auxiliary verbs. It can be expressed by *phela* which means 'to live' if used as a main verb. If used as an auxiliary verb, it expresses 'always' or 'often'.

(49) (a) Ba-na ba ka ba **phela** ba raloka ka ntle.
CL2-child CL2.POSS my SC2 live SC2 play PREP outside
'My children are always/ often playing outside.' [Northern Sotho]
(b) Di-kgomo di **phela** di fula nage-ng ye.
CL10-cow SC10 live SC10 graze CL9.field-LOC DEM9
'The cows are always/ often grazing on this field.' [Northern Sotho]

Another auxiliary verb is *dula*, which if used as main verb, means 'live, stay, sit'. When used in quantification, it means 'often', 'usually'.

(50) (a) Ke **dula** ke bala di-puku.
1SG sit 1SG read CL10-book
'I often/ usually read books.' [Northern Sotho]

(b) O **dula** a hloka mo-diro.
SC1 stay SC1 be.without CL3-work
'He is continually without work.' [N. Sotho; Ziervogel *et al.*, 1969: 93]

The third auxiliary verb used for quantifiying an event with high frequency is *hlwa*, which if used as main verb means 'to spend the day'. When used in quantification, it means 'usually'.

(51) (a) Di-kgomo di **hlwa** di fula nage-ng ye.
CL10-cow SC10 spend SC10 graze CL9.field-LOC DEM9
'The cows are usually grazing in this field.' [Northern Sotho]
(b) Ba-agišani ba **hlwa** ba re etela ka Mokibelo.
CL2-neighbour SC2 spend SC2 us visit PREP Saturday
'The neighbours usually visit us on Saturdays.' [N. Sotho; Louwrens, 1991:50]

Another auxiliary verb construction is used to express 'sometimes'. *Go fela* means 'to finish', when used as a main verb.

(52) Di-kgomo di **fela** di fula mo.
CL10-cow SC10 finish SC10 graze here
'Cows are sometimes grazing here.' [Northern Sotho]

Negative universal quantification over events is expressed by the use of an auxiliary verb construction *ke* in Northern Sotho. This is shown in (53).

(53) (a) Ba-na ba ka ga ba **ke** ba raloka ka ntle.
CL2-child CL2.POSS my NEG SC2 be.NEG SC2 play PREP outside
'My children never play outside.' [Northern Sotho]
(b) Di-kgomo ga di **ke** di fula nage-ng ye.
CL10-cow NEG CL10 be.NEG SC10 graze CL9.field-LOC DEM9
'Cows never graze in this field.' [Northern Sotho]

The status of *ke* as an auxiliary verb is somewhat unclear. Ziervogel *et al.* (1969: 96) describes it as a negative auxiliary verb from *-ka* which probably has the meaning 'be' and which is thus rendered as 'not to be' in the negative. The parallelism to other auxiliary verb constructions is evident. The negation particle *ga* is followed by a subject marker which is followed by the "auxiliary verb" *ke*. The negative auxiliary is followed by the consecutive tense (Ziervogel *et al.*, 1969: 96).

A prevalent feature of verbal quantification in Northern Sotho is thus the use of auxiliary verb constructions in which the auxiliary verb has lost its original meaning and contributes a quantificational meaning instead. The properties of this auxiliary verb construction will be discussed in more detail in the following. The auxiliary + main verb construction is characterized by the double presence of the subject agreement markers both with the auxiliary verb as well as with the main verb. The subject marker of class 1a changes from *o* to *a* before the main verb, as can be observed more generally in subordinate clauses or dependent tenses. The order of the two verbs is fixed and cannot be reversed. The auxiliary verb always precedes the main verb. An object marker (if present) appears on the main verb, as shown in (54).

(54) (a) Ke **phela** ke bo ja.
1^{SG} live 1^{SG} OC14 eat
'I always eat it.' *(borotho-* 'bread') [Northern Sotho]
(b) O **hlwa** a n-thuša ka di-thuto tša ka.
SC1 spend SC1 $OC1^{SG}$-help PREP CL10-homework POSS10 my
'He usually helps me with my studies.' [N. Sotho; Louwrens, 1991: 51]

Interestingly, the auxiliary verbs bear the quantificational meaning only in the Present Tense. None of these verbs can be used in the Past with a quantificational meaning. If the auxiliary occurs in the past tense, it takes on its meaning as a main verb, as shown in (55).

(55) (a) Ba-na ba **hw-ele** ba elwa
CL2-childSC2 spend-PST SC2 fight
'The children spent the day fighting.' [Northern Sotho]
(b) Ke **phed-ile** ke elwa le mo-golo wa ka.
1^{SG} live-PST 1^{SG} fight PREP CL1-brother POSS1 my
'I lived fighting with my brother.' [Northern Sotho]
(c) Ke **dutše** ke bala kuranta.
1^{SG} live.PST 1^{SG} read CL9.newspaper
'I lived reading the newspaper.' [Northern Sotho]
(d) Ke **fed-ile** ke nwa kofi.
1^{SG} finish-PST 1^{SG} drink CL9.coffee
'I finished drinking coffee.' [Northern Sotho]

Only *phela* occurs in the future tense and keeps its quantificational meaning, as shown in (56).

(56) Di tla phela di fula mo.
SC10 will live SC10 graze here
'They will always be grazing here.' [Northern Sotho]

Event quantification with auxiliaries has not yet received any attention in the linguistic literature on Northern Sotho. It reveals itself as a complex field both from the structural as well as the semantic point of view. One complicating aspect is that apparently for the expression of quantification of a past event, the auxiliary verb needs to occur in the continuous aspect in the past (expressed by the analytical form *SC* PST *SC main verb*).[10] However, this field needs to be left for further investigation.

4.2 Adverbial quantification

Also adverbial expressions are used for the quantification over events. In Northern Sotho, 'always' can be expressed by *ka mehla* (cf. *ka moka* 'all' for quantification in the nominal domain).

(57) Di-kgomo di fula nage-ng ye **ka** **mehla**.
CL10-cow SC10 graze CL9.field-LOC DEM9 PREP always
'The cows are always grazing in this field.' [Northern Sotho]

The adverbial expression *nako yengwe le yengwe* can be used to express 'every time' (cf. *-ngwe le -ngwe* 'every' for quantification in the nominal domain), as in (58a). Similarly, *kila mara* is used in Swahili as an adverbial expression for 'always' (cf. *kila* 'every'), as in (58b).

(58) (a) Di-kgomo di fula nage-ng ye **nako** **ye-ngwe** **le** **ye-ngwe.**
CL10-cow SC10 graze CL9.field-LOC DEM9 CL9.time PPX9-some CONJ PPX9-some
'The cows are always grazing in this field.' [Northern Sotho]

(b) Ng'ombe **kila** **mara** huwa a-na-kula nyasi hapa.
CL1.cow every time HAB SC1-PRES-eat CL10.grass DEM16
'The cow is always grazing grass here.' [Swahili]

The adverb *gantši* can be used in Northern Sotho to express 'often' (cf. *-ntši* 'many' for quantification in the nominal domain).

[10] The restriction of the quantificational meaning to the Present Tense and the Continuous Past Tense which emerged from research contradicts Ziervogel *et al.* (1969: 93) who state that auxiliary verbs can be used in all tenses and moods.

(59) (a) Di-kgomo di fula nage-ng ye **gantši**.
CL10-cow SC10 graze CL9.field-LOC DEM9 often
'The cows are often grazing in this field.' [Northern Sotho]

(b) Dikgomo di fula **gantši** nageng ye.

The adverbial expression *nako yengwe* can be employed to refer to 'sometimes' (cf. *-ngwe* 'some' for quantification in the nominal domain).

(60) (a) Ba-na ba ka ba raloka ka ntle **nako** **ye-ngwe**.
CL2-child POSS2 my SC2 play PREP outside CL9.time PPX9-some
'My children sometimes play outside.' [Northern Sotho]

(b) ***Nako yengwe** bana ba ka ba raloka ka ntle.'

4.3 Reduplication

Another morphosyntactic device expresses quantification of events. Reduplication of verb stems often expresses that the action is carried out frequently or that it is repetitive. An example from Kinyamwezi illustrates that in (61).

(61) Úúby' uú**bitáá-bita** kuyílaabila.
2SG.be pass-pass 4.inspect
'You should inspect them [the beehives] frequently.' [Kinyamwezi, M & S, 1992: 216]

5 Conclusion

The investigation of the grammatical means which are employed in Bantu languages to express quantification over entities and events has brought to light a great variety of grammatical structures involved. For quantification in the nominal domain we find different morphological stems that often evoke different agreement patterns. Moreover, we find syntactic constructions such as coordinated structures and copula constructions. For numerals and 'every' we additionally find the adaptation of loan words. With numerals and also with negation we find verbal constructions.

Quantification of events is often encoded in the verbal domain, either by TMA-markers, auxiliary verbs or reduplication. Simultaneously, we find the use of quantified nominal phrases that modify the verbal action.

The variety found among the Bantu languages as well as the gaps in documentation necessitate further detailed work on aspects of quantification.

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11

QUANTIFICATION IN HAUSA

Malte Zimmermann

1 INTRODUCTION

This chapter discusses the syntactic distribution and interpretation of quantifying expressions in Hausa, the largest of the Chadic languages.* Hausa is spoken by more than 35 million people (Newman 2000: 1), mainly in northern Nigeria and southern Niger, and as a lingua franca through wide parts of the Sahel region. Being a Chadic language, Hausa belongs to the Afro-Asiatic phylum, making it a distant cousin of the Semitic languages Hebrew and Arabic, and raising the interesting question to what extent both language groups show typical Afro-Asiatic traits in their respective quantificational systems.

Hausa is by no means an endangered language. At present, its influence is even increasing, at least in northern Nigeria, with Hausa replacing many smaller (West) Chadic languages. The language is well-researched from a phonological, morphological, and syntactic point of view. There are a number of dictionaries and two excellent reference grammars, which have been recently published, Newman (2000) and Jaggar (2001). Semantic aspects have not been as thoroughly researched from a formal perspective, but a lot of valuable information on the quantificational system of Hausa can be found in the above-mentioned grammars, on which this article frequently draws.

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Hausa does not differ from the Indo-Germanic languages of Europe in exhibiting instances of both adnominal and adverbial quantification. Both types of quantification will be considered in turn. The structure of the chapter is as follows. Section 2 discusses indefinite and definite expressions. Section 3 introduces the three kinds of adnominal quantification that can be observed in Hausa and that give rise to interpretations of the indefinite *some-*, the universal *every-*, and the proportional *most*-type, respectively (see Keenan, this volume). Accordingly, adnominal quantificational elements in Hausa will be grouped as class-A, class-B, and class-C quantifiers, respectively. Section 4 looks at the different ways of expressing universal quantification in Hausa. Section 5 looks at the relative scope behaviour of various quantifiers. Section 6 gives a brief overview of the syntactic and semantic behaviour of adverbial quantifiers and exhaustive focus particles. Section 7 concludes.

The remainder of this section provides some background information on the grammar of Hausa, which will facilitate a better understanding of the data to come. Hausa is a tone language with two register tones, H (unmarked) and L (`). The basic word order is SVO and there is no overt case marking. Nominal arguments of the verb are identified on the basis of their relative order with respect to the verb and by means of an obligatory subject pronoun. The subject pronoun forms a morphological unit, or *person-aspect complex (PAC)* (Newman 2000: 564), with preverbal aspect or mood markers which encode aspectual and modal distinctions such as *perfectivity*, *imperfectivity*, *subjunctive*, or *habituality* (see section 6.1). The subject pronoun is often, but not necessarily accompanied by a full subject NP, cf. (1).[1]

(1) (Audù) yaa tàfi kàasuwaa
A. 3sg.PERF go market
'(Audu) he went to the market.'

Focused and questioned (*wh-*) constituents can be moved to a left-peripheral position, cf. (2ab). With focused and questioned subjects, such focus movement is obligatory. Application of overt focus movement is accompanied by so-called relative morphology on the aspectual marker (in italics) and by the optional presence of the particle *nee/cee* (with polar tone), following the focused or questioned constituent (Tuller 1986, Green 1997).

(2) a. *wàanee nèe* ta àuraa t_1 ?
who PRT 3sg.PERF.REL marry
'Who did she marry?'

[1] The following abbreviations are used in the glosses: sg = singular, pl = plural, f = feminine, m = masculine, DEF = definite, DIM = diminutive, DISJ = disjunction, FUT = future, NEG = negation, PERF = perfective, PROG = progressive, PROG.REL, PERF.REL = relative (the aspectual form used in relative clauses, wh-clauses, and with focus fronting), PRT = particle, REL = relative marker, SUBJ = subjunctive.

b. *Muusaa*$_1$ *(nèe)* ta àuraa t_1 [Newman 2000: 187]
M. PRT 3sg.PERF.REL marry
'It was MUSA she married'

With the exception of the progressive aspect, negation is typically expressed by a negative bracket *bà(a)...ba*, which enconpasses either the VP, or the entire clause (Newman 2000: 357), cf. (3ab). The two kinds of negation are referred to as VP-negation and sentence negation, respectively. Sentence negation occurs with overtly fronted focus constitutents and has the semantic effect of narrowly negating the focus constituent only, cf. (3b):

(3) a. Hàwwa *bà* tà daawoo *ba*
H. NEG 2sg.f.SUBJ return NEG
'Hawwa did not return.'

b. *bàa* Tàlaatù ta zàagee shì *ba* [Newman 2000: 187]
NEG T. 3sg.f.PERF.RELinsult 3sg.m NEG
'It was not TALATU who insulted him.'

Concerning the internal syntax of nominal expressions, nouns and their modifying adjectives can occur in both orders N > A and A > N, cf. (4ab). In the latter case, A and N are linked through the genitive linkers *–n* (masc., pl.) or *–r̃* (f.), which are normally found in possessive or associative constructions, cf. (5), and which show gender (and number) agreement with the element on their left.

(4) a. gidaa *farii*
house white

b. *fari*-**n** gidaa
white-LINK house
'white house'

(5) gida-**n** Audù
house-LINK Audu
'Audu's house'

The obligatory presence of the genitive linker in (4b) suggests that the order A>N in (4b) may be derived by predicate fronting, as discussed in den Dikken (1998), Corver (2001) and others. With this basic information on Hausa, we now turn to the question of how the language expresses various quantificational concepts.

2 The Expression Of (In)Definiteness In Hausa

Hausa has no overt indefinite article, but it has at least two ways of explicitly coding definiteness, namely a definite article, or better *previous reference marker*, and demonstrative markers. We consider bare indefinite NPs, definite NPs and demonstrative NPs in turn.

2.1 Bare indefinites

2.1.1 Existential indefinites. One way of expressing indefiniteness in Hausa is to use bare NP-expressions. Typically, such bare indefinite NPs receive an existential interpretation and refer to unspecified (sets or quantities of) individuals, as illustrated in (6a-c) for bare mass NPs, plural count NPs and singular count NPs, all in object position, respectively.

(6) a. mun shaa *ruwaa* [Ma Newman 1990: 252]
3pl.PERF drink water
'We drank *some water*.'

b. sun kaamà *dawaakii* nè.
3pl.PERF catch horses PRT
'They caught *horses*.'

c. mùtûm yaa ginà *gidaa*. [Newman 2000: 719]
man 3sg.PERF build house
'The man built *a house*.'

The paraphrases show that the bare NPs receive an existential reading, corresponding to the interpretation of *a/some*-NPs in English. The occurrence of bare indefinites in (negative) existential sentences is thus unsurprising (examples from Newman 2000: 178-9):

(7) a. àkwai *ruwaa* 'There is water.'
exist water

b. àkwai *àlbasàa* 'There are onions.'
exist onion.pl

c. baabù / bâ *yâaraa* à gidaa 'There are no children at home.'
not.exist children at home

(8ab) show that bare NP-indefinites are not restricted to the object position of sentences containing transitive verbs, nor to existential sentences. In addition, they can be used to express indefiniteness in subject and adjunct position, even with singular count NPs.

(8) a. wata raanaa *yautai* ya-nàa kiiwòo à baayan gàrii ...
some day nightjar 3sg-PROG feeding at behind town
'one day a nightjar was feeding behind the town...' [Jaggar 1988: 56]

b. *soojà* yaa hàr̃bee shì [Newman 2000: 719]
soldier 3sg.PERF shoot him
'A soldier shot him.'

The evidence in (8) notwithstanding, bare indefinite NPs are not evenly distributed over sentence position and NP-types, where NP-type stands for [+/-human] reference. Jaggar (1988) shows that bare indefinite NPs typically occur in non-initial position and refer to non-humans. As Hausa is strictly SVO, apart from the existential construction in (7), non-initial occurrence is restricted to non-subject NPs in sentences with a full verb. If an NP has a human referent, however, or if it occurs sentence-initially, i.e. in subject (or topic) position, and especially if both is the case, the NP is likely to be realized with an overt indefinite marker *wani*, *wata*, *wa(ɗan)su* 'some, a certain (m., f., pl.)', as witnessed by the frame adverbial *wata raanaa* 'one day' in (8a). We return to the indefinite marker *wani*, *wata*, *wa(ɗan)su* in section 3.2.

Finally, notice that bare NPs can also receive a definite reading, depending on context:

(9) *tùuluu* yaa fashèe [Newman 2000: 143]
pot 3sg.PERF break
'The/ A water pot broke.'

There is thus no strict 1:1-correspondence between bare NPs and an indefinite interpretation.

2.1.2 Generic readings with bare NPs. Apart from indefinite and definite interpretations, bare NPs in Hausa can also be used generically in generic statements. In this case, the bare noun typically occurs in the singular (Newman 2000: 465):

(10) *ƙudaa* ya-nàa kaawoo cùutaa [Newman 2000: 465]
fly 3sg-PROG bring disease
'Flies bring disease.' (lit. 'The/A fly brings disease.')

2.1.3 Interaction of bare (indefinite) NPs and negation. Concerning their interaction with negation, bare indefinite NPs take semantic scope under negation when they occur embedded under a negation marker, e.g. in VP-internal object position (11a) or in negative existential sentences (11b). The bare object NP *hìulaa* 'cap' in (11a) cannot have a specific reading and take scope over negation.

(11) a. Audù **bà**-i sàyi *hìulaa* à kàasuwaa **ba**
Audu NEG-3sg buy cap at market NEG
'Audu didn't buy a cap in the market.'
NOT: 'There is a (certain) cap that Audu didn't buy.'

b. **baabù** *wutaa*
not.exist electricity
'There is no electricity.'

Bare indefinite NPs can take syntactic scope over negation, e.g. the subject NPs in (12a) and (13a) precede and c-command the negation marker, but semantically they are still interpreted in the scope of negation. (12ab) and (13a-c) are logically equivalent on an indefinite construal of *manòomii* 'farmer' and *mutàanee* 'people', at least judging from the intuitions of one consultant, despite the difference in relative order of indefinite and negation marker.

(12) a. *manòomii* **bà**-i zoo **ba**
farmer NEG-3sg come NEG
'Farmers didn't come.' = 'No farmer came.'

b. **baabù** *manòomii* dà ya zoo
not.exist farmer REL 3sg.PERF.REL come
'No farmer came.'

(13) a. *mutàanee* **bà** sù tàfi kàasuwaa **ba**
people NEG 3pl go market NEG
'People didn't go to the market.' = 'Nobody went to the market.'
NOT: 'Some people didn't go to the market.'

b. **bàa** gàskiyaa cèe *mutàanee* sun tàfi kàasuwaa **ba**
NEG truth PRT people 3pl.PERF go market NEG
'It is not the case that people went to the market.'

c. **baabù** *mutàanee* dà su-kà tàfi kàasuwaa
not.exist people REL 3pl-PERF.REL go market
'There are no people who went to the market.'

Semantic judgments for (12) and (13) are hard to obtain and one should not jump to hasty conclusions. Clearly, more research is required in order to establish the well-formedness and the interpretation of sentences such as (12a) and (13a).[2] Despite these uncertainties, though, we can establish one semantic fact with certainty: Hausa differs from English in that (12a) and (13a) have no interpretation on which the indefinite subject NP takes existential scope over negation. For instance, that *mutàanee* 'people' does not take existential wide scope in (13a) shows from the fact that the sentence cannot be used to describe a situation where some people didn't go to the market, while others did, which would be in accordance with a wide scope interpretation for the indefinite. For this reading to arise, *mutàanee* would have to be preceded by the indefinite marker *wa(ɗan)su* (see section 3.2.4). The data in (12) and (13) suggest, then, that syntactic differences have no effect on the relative scope of negation and bare indefinite NPs. It appears that negation always takes scope over bare subject NPs:

(14) NEG >> bare indefinite NP

The absence of relative scope effects with negation and bare indefinite NPs suggests that the latter have no existential force by themselves and thus should not be treated as denoting an existential quantifier à la Barwise & Cooper (1981), cf. e.g. Heim & Kratzer 1998 for discussion of this diagnostic. While so much is clear, there are at least three ways of accounting for the readings observed with the sentences in (12) and (13). First, a possibility suggested by Russell Schuh (p.c.), the singular subject NP could be interpreted generically on a par with the singular generic subject NP in (10). This would work for Schuh's sentence (i) in fn.2, which would be interpreted as *In general, a farmer doesn't die of hunger*, which is more or less equivalent to *No farmer dies of hunger*. However, this account does not extend to the episodic sentence (13a) with a plural indefinite NP. Second, it is conceivable that the plural indefinite NP (13a) gets a specific or definite interpretation, same as the the subject NP in (9), such that there is a specific group of people that did not go to the market.[3] This reading would be more or less equivalent to *Nobody (of the relevant set of people) went to the market* (Russell

[2] For instance, Russell Schuh (p.c.) does not consider (12a) well-formed at all. He suggests the following example in the progressive aspect, instead:

(i) manòomii baa yàa mutuwàa don yunwàa
farmer neg 3sg.prog death for hunger
'No farmer dies of hunger.' NOT: 'Some farmer does not die from hunger.'

[3] The general availability of this reading is confirmed by the following example, taken from a Hausa rendering of the German fairy-tale *The Pied-Piper of Hameln* in the story collection *Magana Jari Ce* by Ihaji Abubakar Imam. In (i), the bare subject *mutàanee* refers to the previously established inhabitants of the city of Hameln.

(i) mutàanee bà su san àbî-n dà su-kà yi dà Sarki ba.
people NEG 3pl know thing-DEF REL 3pl-PERF.REL do with leader NEG
'The people (of the town) didn't know what they did with the Piper.'

Schuh, p.c.). However, this account does not fare too well with respect to (12a) with a singular NP, as *The / A specific farmer did not come* is by no means equivalent to *No farmer came.*

While it is certainly possible that different factors are responsible for the semantic facts in (12) and (13), it is also possible to come up with a unified analysis for indefinite NPs that accounts both for the unmarked existential interpretation of bare indefinite NPs, and for their obligatory scope under negation. On this analysis, bare indefinite NPs are analysed as introducing a restricted variable in the DRT-tradition of Kamp (1981) and Heim (1982). In order to yield an existential reading, this variable is then *existentially closed off* by a covert existential quantifier (Heim 1982), which would have to be situated below the negation marker at the left edge of VP (Diesing 1992). While there is independent evidence that existential closure over event variables and other unbound variables must apply below negation (Zeijlstra 2004), this analysis necessitates the reconstruction of the subject NP to a position below negation in order to yield the logical configuration *[NEG [∃e,x [SUBJ(x) & P(e,x)]]]*. Notice, though, that the reconstruction of indefinite subject NPs is not in the spirit of Diesing (1992) at all. In view of this difficulty, a more promising solution would be to treat bare indefinite NPs as predicates in the spirit of van Geenhoven (1998), following Carlson's (1977) work on bare plurals in English. On van Geenhoven's account, the existential import of sentences containing (bare) indefinites comes from the denotation of the lexical verb, which forms a complex predicate with the indefinite NP. In the case of (13a), the verb *tàfi* would denote a relation between a predicate and an event $\lambda P_{<e,t>}.\lambda e.\ \exists x\ [P(x)\ \&\ go'(x,e)]$. The bare NP provides the value for the predicate P, namely $\lambda x.\ people'(x)$, yielding $\lambda e.\ \exists x\ [people'(x)\ \&\ go'(x,e)]$ as the combined meaning of verb and subject. Given that the verb is in the scope of negation, it follows directly that its associated existential quantifier will also take scope under negation, cf. Carlson (1977). Notice that this solution requires Hausa transitive verbs to have the capacity to form complex predicates both with indefinite objects and with indefinite subjects, a conclusion also arrived at in Zimmermann (2007) for Bura (Central Chadic). In this respect, Hausa transitive verbs appear to be more flexible than their English counterparts, which license an existential construal of bare indefinite subjects only sometimes, as e.g. in *Dogs entered the room* from Carlson (1977), and its negative counterpart *Dogs didn't enter the room* from van Geenhoven (1998: 177) with negation outscoping existential quantification.

Summing up, the semantic analysis of bare NPs in the context of negation in Hausa is hampered by the fact that these NPs allow for an indefinite as well as a specific or definite construal. Nonetheless, it seems fair to conlude on the basis of the data in (12) and (13) that bare NPs in Hausa do not denote existential quantifiers.

2.2 Definite NPs

Definiteness markers in Hausa fall into two subclasses: (i.) bound possessive pronouns, which

are linked to the head noun by the genitive linker *–n/ –r̃*, which shows gender agreement as shown in (15); and (ii.) a definite article *–ˋn/ –ˋr̃*, which cliticizes on the head noun.[4]

(15) a. kudî-n-*kà* 'your (m.) money'
money-LINK.m-2sg.m

b. mootà-r̃-*kà* 'your (m.) car'
car- LINK.f-2sg.m

c. mootà-r̃-sà 'his (m.) car'
car- LINK.f-3sg.m

Here, we will concentrate on the distribution and function of the definite article only.

The definite article *–ˋn/ –ˋr̃* normally occurs right after the head noun. Like the genitive linkers, it agrees with the head noun in gender and number, *–ˋn* being used with masculine singular NPs and all plural NPs, and *–ˋr̃* with feminine singular NPs ending in *–aa*. Please notice that the definite article differs formally from the segmentally identical genitive linker in that it carries a lexical low tone (ˋ). The definite article attaches to both count and mass NPs in all syntactic environments, and it can co-occur both with demonstratives (16a), and with free possessives (16b).

(16) a. wannàn dookì-*n* 'this horse in question' [Newman 2000: 143]
this horse-DEF

b. jàakî-*n* nàawa 'the donkey of mine' [Newman 2000: 143]
donkey-DEF mine

The definite article normally occurs on the semantically definite head noun of a relative clause (17a). Interestingly, in such cases the definite article is frequently doubled and occurs a second time attached to the final element of the relative clause, (17b) (Newman 2000: 146).

[4] There is a third element that is used for anaphoric reference to hearer-old information, namely the postnominal element *dîn* 'the/that one in question' (Jaggar 2001: 321ff.):

(i) yaaròo dî-n
boy DI-DEF
'the boy we were talking about'

As already indicated in the gloss, Jaggar (2001) analyzes this element as a complex expression consisting of a semantically empty host morpheme *dî* plus the definite determiner *–ˋn*. We will therefore treat this way of marking definiteness as a special instance of the definite determiner.

(17) a. yaarò-*n* dà ya tàfi [Newman 2000: 145]
boy-DEF REL 3sg.m.PERF.REL leave
'the boy who went'

b. mutàanê-*n* dà na gayàa musù-*n* [Newman 2000: 146]
men-DEF REL 1sg.PERF.REL tell 3pl-DEF
'the men that I told'

Turning to the semantic or pragmatic function of the definite marker, notice that it combines freely with personal pronouns and even proper names in order to indicate previous reference in the preceding discourse (Newman 2000: 145, Jaggar 2001: 319):

(18) a. shî-*n* [Newman 2000: 145]
3sg-DEF
'he/him we were referring to'

b. kaa ga Audù-*n* [Jaggar 2001: 319]
2sg.m see Audu-DEF
'Did you see (the prementioned) Audu?'

The definite article is also commonly found on clause-initial, topicalized NPs (Jaggar 2001: 318), which are typically discourse-old:

(19) yaarinyà-r̃ dai, taa kai wà Muusaa kudii.
girl-DEF TOP 3sg.f.PERF take to Musa money
'As for the girl, she took the money to Musa.'

At the same time, it is not required on NPs referring to unique individuals by virtue of their lexical meaning, such as *raanaa* 'sun', *watàa* 'moon', *Allàah* 'god' and *sarkii* 'emir' (Jaggar 2001: 319). These findings suggest that the definite article in Hausa does not so much encode uniqueness of the NP-referent, but rather familiarity or givenness in the previous discourse. Because of the anaphoric character of the definite article in Hausa, Newman (2000: 143) suggests the alternative term *previous reference marker* (but see Jaggar 2001 for an alternative view on which the referents of expressions can also be accommodated).

Notice that this analysis comes close to the analysis of the English definite article *the* as a marker of familiarity in Heim (1982). However, while Heim conceives of the notion of familiarity as relative to the *common ground* of the interlocutors, i.e. their mutually shared set of background assumptions (Stalnaker 1978), the familiarity expressed by the Hausa definite article seems to be more directly related to the preceding *linguistic* context, see Newman (2000: 143). A similar deictic use of definite determiners as referring to information in the preceding or following context has been observed in Frisian (Ebert 1971).

2.3 Demonstratives

The definite article must be kept apart form demonstrative elements. There are two kinds of deictic demonstrative expressions in Hausa (Newman 2000: 147ff.): The first occurs prenominally and agrees in gender and number with the head noun (20).

(20) *wannàn* mootàa [Jaggar 2001: 327]
this.sg car

This kind of demonstrative is morphologically complex. It consists of a prefix *wa*, the nominal linker *-n/-r̃*, and a locative adverbial, namely *nân* 'here', *nan* 'there', *cân* 'there (distal)' or *can* 'there (remote)', as schematised in (21) (Jaggar 2001: 324):

(21) wa + LINK + nân/ nan/ cân/ can

Depending on the adverbial, the demonstrative can express various degrees of proximity or remoteness to speaker and/ or hearer, respectively, as shown in (22):

(22) a. wa-n-*nàn* (m., f.), wadà-n-*nân* (pl.) 'this (near speaker)'
b. wà-n-*nan* (m., f.), wàdà-n-*nan* (pl.) 'this (near hearer)'
c. wa-n-*càn* (m.), wa-c-*càn* (f.), wadà-n-*cân* (pl.) 'that (distal from speaker & hearer)'
d. wà-n-*can* (m.), wà-c-*can* (f.), wàdà-n-*can* (pl.) 'that (remote from speaker & hearer)'

The locative adverbials can also function as demonstrative modifiers on their own. These morphologically simple forms occur in post-nominal position, are linked to the head noun by the genitive linker *–n/ – r̃*, and show no agreement with the head noun:

(23) a. dookì-*n* *nân* 'this horse' [Newman 2000: 149]
horse-LINK here

b. taagà-*r̃* *cân* 'that window' [Jaggar 2001: 150]
window- LINK there

Notice that the (a)- and (b)- forms in (22), same as some of the simple adverbial forms can be used as discourse-anaphoric elements (Newman 2000: 149): They can be used to refer back to previously mentioned individuals, similar to the definite determiner. This similarity aside, the two kinds of demonstratives exhibit differences in their syntactic distribution and their semantic interpretation, see Newman (2000: 150ff.) for details.

2.4 The syntax of definite and demonstrative NPs: A unified account?

Based on the discussion so far, the syntactic distribution of definite article and demonstrative elements appears to be quite heterogeneous: The definite article follows the head noun, while the demonstrative precedes it in its long form, and follows it in its short form. These findings are summarized in (24):

(24) a. NP-DEF

b. *wa*+LINK+DEM NP

c. NP- LINK DEM

Apart from their different position relative to the head noun, the definite and demonstrative elements in (24a-c) vary in other important respects: The prenominal demonstrative agrees with the head noun, while the postnominal demonstrative does not. The postnominal demonstrative, in turn is linked to the head noun through the genitive linker *–n/–r̃*, which is known to occur with instances of predicate inversion, cf. (4b) in section 1, and whose segmental skeleton is also found with the definite article.

Given all this, one could think of a unified analysis on which the structure in (25) is taken to be the underlying structure of all three constructions in (24):

(25) [$_{DP}$ D NP]

The D-position would be occupied by the various definite or demonstrative elements, namely by *wan+nan/can*, *nan/can*, or just the falling tone (`), respectively. The differences in word order would be the result of the (non-)application of predicate (NP-) fronting (cf. Longobardi 1994). Such movement will not apply in the case of the long demonstrative (24b), which thus surfaces in its base-generated position, preceding and agreeing with the NP. In (24a) and (24c), however, the NP is moved across the determiner element in D to the DP-initial position. The presence of the genitive linker would then be a morpho-syntactic reflex that indicates the

application of DP-internal movement. The resulting surface structures for the definite NP (24a) and the demonstrative NP in (24c) are given in (26).[5]

(26) i. [$_{DP}$ [NP$_1$*–n/–r̃*] [$_D$ `] t$_1$]

ii. [$_{DP}$ [NP$_1$*–n/–r̃*] [$_D$ *nan/can*] t$_1$]

Notice that the definite article would only consist of a low tone on this analysis, thus paving the way for a principled explanation for the segmental identity of definite article and the genitive linker: The apparent segmental content of the definite article would be nothing else than the genitive linker itself. A unified analysis along these lines also ties in with the historical origin of the two elements, which both derive from the same source, as pointed out by an anonymous reviewer.[6]

Obviously, this potential unified analysis needs to be substantiated by additional data, and a great number of theoretical and empirical consequences would have to be explored. E.g., the simplified analysis in (26) leaves open the question of where additional NP-internal material, such as adjectives and numerals, would be located with respect to the head noun and the determiner in D[7], see section 3.1.1 for some more discussion. Nonetheless, there is good reason to consider the existence of a prenominal D-position in Hausa. As will be shown in section 3.2.1, there are other determiner-like elements, namely certain strong quantifiers, which occur in prenominal position and agree with the NP.

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[5] The construction in (26i) is reminiscent of the structure of definite NPs in Danish (Longobardi 1994), cf. (ia). The construction in (26ii) is reminiscent of certain demonstrative NPs in French, cf. (ib):

(i) a. bil-en 'the car' b. la voiture là 'this there car'
car-DEF the car there

[6] The fact that prenominal demonstratives sometimes occur together with the definite determiner (Jaggar 2001: 328) poses an obvious problem for this line of thinking:

(i) *wannàn* *r̃àhootò-n*
this report-DEF

One way to approach this problem would be to assume a more articulated DP-structure which also contains a DemP-projection headed by a demonstrative element: [D [DemP [NP]]]. The word order facts in (i) will come out right if it is the DemP *wannàn r̃àhootò* that moves to the DP-internal position. Semantically, it would make sense to postulate two functional projection (and possibly even more, cf. (37) in 3.1.1), given that pronominal demonstratives and definite determiners have a slightly different meaning (Lisa Matthewson, p.c.).

[7] In the sources consulted, I could not find a single instance of prenominal adjective and definite determiner co-occurring in the sequence *A –n/–r̃ N–`n/–`r̃*. If the linker *–n/–r̃* is not a functional head, but just a morphological reflex of DP- (or NP-) internal fronting, such structures are predicted to exist. Notice that stacking of linkers is observed in cases of more than one adjective preceding the head noun (Newman 2000: 30):

(i) zungureerìya-*r̃* saabuwa-*r̃* fara-*r̃* mootàa
long –LINK new-LINK white-LINK car

3 ADNOMINAL QUANTIFICATION

This section considers the various ways of expressing adnominal quantification in Hausa. The discussion concentrates on three kinds of adnominal quantifying elements with different syntactic and semantic properties: (i.) weakly quantifying elements, such as numerals and quantity expressions, which follow the head noun and function semantically as modifiers (class A); (ii.) two quantifying elements that come with existential (*some*) and universal (*every*, *any*) force, respectively, and which precede and agree with the head noun (class B); (iii.) proportional quantifiers corresponding to *most*, which also occur prenominally, but which are nominal in nature and combine with the head noun by means of the genitive linker (class C). We will consider each kind of quantifying expression in turn.

3.1 Class-A quantifiers: NP-modifiers

Among the quantifying elements belonging to this class are numerals and quantity expressions such as *dà yawàa*, *màì/màasu yawàa* 'much/many' and *kàɗan* 'little/few', as well as more complex expressions derived from these basic elements. The primary semantic function of this class of quantifying elements is to modify indefinite NPs, such as to restrict their denotations to contain only sets of a particular size.

Syntactically, all class-A expressions typically occur in postnominal position, as illustrated for various numeral expressions in (27a), and for quantity expressions in (27b-d). Unlike in English, the quantity expressions *dà yawàa* and *kàɗan* combine with mass and count nouns alike, giving rise to *much-* and *many-* readings and *little-* and *few*-readings, respectively (Jaggar 2001: 367). As for *màì(sg.)/màasu(pl.) yawàa* in (27bi.ii), the linking element agrees in morphosyntactic number with the head noun. Its form as *sg.* or *pl.* is thus often, but not necessarily, correlated to the mass-count distinction (but see the discussion surrounding (35) below). [8]

(27) a. i. yaaròo *ɗaya*
boy one
'one boy'

ii. ɗàalibai *biyu / ukù*
students two / three
'two / three students'

b. i. lookàcii ***màì*** *yawàa*
time possessor.sg quantity
'much trouble'

ii. mutàanee ***màa-su*** *yawàa*
people possessor-pl quantity
'many people' [Jaggar 2001: 367]

[8] Another quantifying element that often occurs in postnominal position is the collective universal modifier *dukà* 'all', which will be discussed in section 4.1.

c. i. wàhalàa ***dà*** *yawàa*
trouble with quantity
'much trouble' [Jaggar 2001:367]

ii. mutàanee ***dá*** *yawàa*
people with quantity
'many people' [Jaggar 2001: 367]

d. i. kuɗii *kàɗan*
money little
'little money'

ii. birai *kàɗan*
monkeys few
'few monkeys'[Newman 2000: 382]

Like their counterparts in other languages (see e.g. Faller & Hastings, this volume, for Cuzco Quechua, Keenan, this volume for Malagasy, and Zerbian & Krifka, this volume, on Bantu), class-A quantifiers in Hausa exhibit typical properties of non-quantificational modifiers. First, they occur in postnominal position, as do adjectival and PP-modifiers (28a-c). Second, some of them (*dà yawàa*, *màì/màasu yawàa*) employ the same linkers (*dà*, *màì/màasu*) as other modifiers (28bc). Third, they can be followed by other adjectives (29a). And fourth, they can occur in predicative position (29b) (see also Faller & Hastings and Keenan, this volume).

(28) a. gidaa *farii* 'white house' (cf. 27a)
house white

b. yaaròo ***màì*** *hùulaa* 'boy with a cap' (cf. 27b)
boy possessor cap

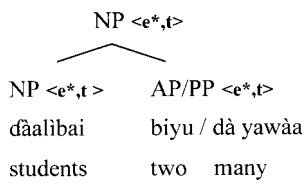
c. yaaròo ***dà*** *sàndaa* 'boy with a stick' (cf. 27c)
boy with stick

(29) a. mootoocii *bìyaɾ̃* jaajàayee 'five red cars' [Newman 2000: 383]
cars five red

b. maata-nsà *huɗu* 'His wives are four.' [Newman 2000: 383]
wifes-his four

The parallels observed in (27) to (29) support an analysis of class-A quantifiers in postnominal position as adnominal modifiers. As modifying elements, they can be analysed as property-denoting expressions of type <e*,t> :

(30)



In (30), the quantificational modifiers *biyu* and *dà yawàa* take a set of plural individuals as their semantic argument, mapping it onto a set containing only plural individuals of a particular size. In the case of *biyu*, these are plural individuals consisting of two's. In the case of *dà yawàa*, these are plural individuals that are big relative to a contextually given standard (Partee 1989). Given that quantity expressions (*dà yawàa*, *màì/màasu yawáa*, *kàɗan*) freely combine with count and mass nouns alike, it also follows that both types of nouns should be treated on a par semantically (Link 1983), the only difference being that the pluralities denoted by mass nouns are not built from a set of clearly identifiable minimal, i.e. atomic elements.

By and large, then, quantificational modifiers of this class have the same semantic impact as the weak quantifiers *a*, (unstressed) *some*, (unstressed) *many* etc. in English indefinite NPs (Milsark 1977). The parallel is further strengthened by the fact that Hausa class-A quantifiers share other properties with English weak quantifiers and with modifying quantifiers in Cuzco Quechua (Faller & Hastings, this volume): They are symmetric (cf. 31), they can serve as (plural) antecedents for anaphoric back-reference across sentence boundaries (cf. 32), and they can occur in existential sentences introduced by *àkwai* 'there is' (cf.33). See also Faller & Hastings (this volume) for more discussion of modifying quantifiers in existential sentences.

(31) a. *ɗàalìbai biyu / dà yawàa* Bùràawaa nèe. [symmetry]
students two many Bura.people PRT
'Two / many students are Buras.'

b. ⇔ Bùràawaa biyu / dà yawàa *ɗàalìbai* nèe.
Bura.people two many students PRT
'Two / many Buras are students.'

c. ⇔ *mùtûm biyu / dà yawàa* Bùràawaa nèe kumaɗàalìbai nèe
person two many Bura.people PRT also students PRT
'Two / a large group of people are Buras and students.'

(32) àkwai *mutàanee dà yawàa* à kàasuwaa. *su*-nàa yî-n cìnikii
exist people many at market 3pl-PROG doing-LINK trading
'There were *many people* at the market. *They* were trading.

(33) àkwai *ɗàalìbai biyu* à ƙauyèe-nàa
exist students two at village-1sg
'There are two students in my village.'

Finally, NPs modified by a numeral can be unselectively bound by a higher quantifier, same as bare indefinite NPs, as witnessed by (34a) and the classic donkey sentence in (34b):

(34) a. kullum in *ɗàalìbai biyu* sun gàmu dà juunaa à cikin gàrii,
always if students two 3pl.PERF meet with each.other at inside town
su-kàn tsayàa, *su*-kàn yi taaɗii
3pl-HAB stop 3pl-HAB do chatting
'Always if two students meet in town, they stop and have a chat.'

b. ìdan *manòomii* ya-nàa dà *jàakii*, sai yà gaanàa *masà* àzaabàa.
If farmer 3sg-PROG with donkey then 3sg.SUBJ cause it anguish
'If a farmer owns a donkey, he treats it badly.' (= all farmers and all donkeys)

Despite these parallels, Hausa class-A quantifiers differ in an interesting way from their English counterparts. This difference concerns the grammatical number of the modified nouns. Unlike in English, these expressions often combine with singular count nouns even though they appear to restrict pluralities of individuals, and even though there exists a grammatically plural form of the noun in question (Newman 2000: 382):

(35) a. kàtiifàa huɗu
mattress.SG four
'four mattress*es*'

b. hùulaa nawà
cap.SG how.many
'how many cap*s*?'

c. kadàa dà yawàa
crocodile.SG many
'many crocodile*s*'

The indiscriminate behaviour of these quantifiers is easily accounted for if one assumes that Hausa singular count nouns do not denote sets of atomic individuals, but sets containing both atomic and plural individuals. Plural count nouns, in contrast, denote sets containing only plural individuals. A parallel claim for Brazilian Portuguese is found in Müller (2002) and for Cuzco Quechua in Faller & Hastings (this volume). On this view, the singular count noun *kadàa* 'crocodile' in (35c) will have the denotation in (36a), while the corresponding plural forms *kàdànni* or *kadoojii* have the denotation in (36b):[9]

(36) a. [[kadàa]] = {x: x is an atomic or plural crocodile individual}

b. [[kàdànni/ kadoojii]] = {x: x is a plural crocodile individual}

[9] The semantic analysis in (36) is supported by the fact that the numeral *ɗaya* 'one' can combine only with singular count nouns, cf. Jaggar (2001: 359).

Semantically plural numeral or quantity expressions in Hausa can operate on the lexical entry in (36a) by singling out plural individuals of the appropriate size.[10]

3.1.1 Numerals. Numerals in postnominal position follow any enclitic determiners or possessives, and also postnominal demonstratives (Jaggar 2001: 359). At the same time, they precede other adjectives, cf. (29a), and relative clauses (Newman 2000: 383), such that the unmarked word order is as in (37):

(37) N > DET/DEM/POSS > *NUM* > ADJ /REL

Notice that the relative word order in (37) necessitates a slight revision of the internal structure of definite and demonstrative DPs that was given in (26i,ii). It appears that it is not the entire NP, including all adjectival and numeral adjuncts, that moves to the DP-initial position, but only a smaller constituent containing the head noun. This movement operation leaves adjectives and numerals stranded in their base position between D and N.

Turning to the inventory of cardinal numeral expressions in Hausa, basing ourselves on Newman (2000: 379ff.), the basic cardinal numerals from one to ten are shown in (38):

(38) *dâya* 'one', *biyu* 'two', *ukù* 'three', *huɗu* 'four', *biyaɾ̃* 'five', *shidà* 'six', *bakwài* 'seven', *takwàs* 'eight', *taɾ̃à* 'nine', *goomà* 'ten'

Numerals from eleven to nineteen are formed by combining *goomà* 'ten' plus the connecting particle *shâ* plus one of the basic numerals:

(39) *(goomà) shâ dâya* 'eleven', *(goomà) shâ biyu* 'twelve' etc.
ten PRT one ten PRT two

[10] The analysis of singular count nouns in (36a) is further supported by the behaviour of the classifier element *gùdaa* 'unit', which can combine both with grammatically singular and plural nouns, as shown in (iab) (cf. also Newman 2000: 381).

(i) a. kujèeraa gùdaa huɗu
chair.sg unit four
b. kùjèeruu gùdaa huɗu
chair.pl unit four
'four chairs'

Given that a classifier typically picks out a set of atomic individuals from a plurality of individuals, the co-occurrence of *gùdaa* and the singular count noun *kùjèeraa* in (ia) is accounted for if the lexical denotation of *kujèeraa* contains plural individuals next to atomic individuals.

Multiples of ten from twenty through ninety are loanwords from Arabic (40a),[11] a hundred is *dâriɪ*, a thousand is *dubuu*, and a million is *miliyàn* borrowed from English. Multiples of hundreds and thousands are formed by adding a subsequent basic numeral as in (40b). Any intermediate numerals are formed using the connector *dà* 'and, with', cf. (40c):

(40) a. *àshiɾ̃in* 'twenty', *tàlàatin* 'thirty', *àɾ̃bà'in* 'forty', …
b. *dâriɪ ukù* 'three hundred', *dubuu takwàs* 'eight thousand', …
c. *àshiɾ̃in dà taɾ̃à* 'twenty-nine', *dàriɪ biyu dà tàlàatin dà takwàs* 'two hundred and thirty eight'

Finally, ordinal numerals are formed from cardinals that are linked to the preceding head noun through the linking element *na* or *ta*, subject to gender agreement (41ab). In predicative position, ordinals can also occur without a head noun, cf. (41c) (Jaggar (2001:365):

(41) a. dookì *na* *biyaɾ̃*
horse LINK five
'fifth horse'

b. mootàa *ta* *ukù*
car LINK three
'third car'

c. nii nèe *na* *farkoo*
1sg PRT LINK first
'*I* am the first.'

To conclude this section, we look at the interpretation of numerals combining with conjoined nouns of the form *N_1 and N_2*. Under certain conditions, such numerals can modify the totality denoted by the two nouns, specifying the total number of individuals denoted by N_1 and N_2 together (Newman 2000: 385, Jaggar 2001: 362). This interpretation is the one referred to as *split reading* by Heycock & Zanmparelli (2005). Like English, Dutch, and Finnish (Heycock & Zamparelli 2005: 209), Hausa allows both plural (cf. 42a) and singular split readings, cf. (42b) from Jaggar (2001: 362).

(42) a. awaakii dà tumaakii *goomà*
goats.pl and sheep.pl ten
'a total of ten goats and sheep'

[11] According to Bargery (1934) and Newman (2000), there are two defunct archaic systems for expressing the numbers twenty through ninety that predate the introduction of the Arabic loanwords. The first system used multiples of ten and was based on the form *gòomiya* 'ten'. The second system used the form *hâuyaa* 'score' (= twenty) as a base, e.g. *hauyaa ukù dà goomà* 'seventy' (= three score and ten).

b. rìigaa dà hùulaa *ukù*
gown.sg and cap.sg three
'a total of three gowns and caps'

Interestingly, the split reading is possible even with the small numeral *three*, unlike in English, where it is ruled out for pragmatic reasons according to Heycock & Zamparelli (2005). Notice, too, that the derivation of the split reading in Hausa must necessarily be different from that in English, as all Hausa count nouns, singular or plural, contain pluralities of individuals in their denotation. As a result, there is no need for assuming a pluralizing operation located in a syntactic head PL(ural) in Hausa. Notice, finally, that the availability of the split reading in Hausa is subject to additional restrictions: the two nouns have to be semantically related, cf. (43); both must be either morphologically singular or plural; and both must not contain a demonstrative nor a definite determiner.

(43) wuƙàaƙee dà [dawaakii takwàs] [Newman 2000: 385]
knives and horses eight
'knives and eight horses'
NOT: 'a total of eight knives and horses'

If the conditions for a split reading are met, as in (42ab), the construction will be structurally ambiguous between this reading and a reading where the numeral only modifies the second noun N_2, i.e. *goats and ten sheep*.

3.1.2 Modifications. It is possible to modify quantificational modifiers, or the NP containing such modifiers, in order to obtain readings corresponding to *about n*, *very many*, *more than n*, *exactly n*, *up to n*, etc. There are various cases of such modifier-modifying constructions.

First, a numeral can be followed by a specifying adverb or an ideophone,[12] giving rise to a *precisely n* or *exactly n*- reading (Newman 2000: 387):

(44) a. lèemoo ɗaya *tak* akà baa nì.
orange one IDEO 3imp.PERF.REL give 1sg
'They gave me precisely one orange.'

[12] According to Newman (2000), following Cole (1955), ideophones form a class of phonaestetic words with a high degree of expressiveness that are 'descriptive of sound, colour, smell, manner, appearance, state, action, or intensity' and which are 'vivid vocal images or representations of vidual, auditory and other sensory or mental experiences' (Cole 1955: 370). Phonologically, they have special phonotactics and special intonational features.

b. awàa biyu *cur̃*
hour.SG two IDEO
'exactly two hours'

Second, the numeral can be modified by a preceding preposition or adverb. Depending on the meaning of the preceding element, various modified numeral readings obtain, such as 'close to, almost' with *kusan*, 'as much as, to the extent of' with *har̃*, and 'more than' with *fiye dà* (Newman 2000: 387):

(45) a. soojoojii *kusan* *ɗàrii* sukà ɓulloo.
soldiers almost hundred 3pl.PERF.REL appear
'Nearly a hundred soldiers appeared.'

b. an kashè mutàanee *har̃* *gùdaa* *tàlàatin.*
3imp.PERF kill people as.many.as unit thirty
'They killed up to thirty people.'

c. sun kaamà ɓàràayii *fiye* *dà* *hàmsin*
3pl.PERF catch robbers more.than fifty
'They caught more than fifty robbers.'

A similar strategy is found with intensifying elements on quantity expressions, e.g. the degree adverbs *gàske* 'truly, really' with *dà yawàa* 'many', or the diminutive *ɗa-n(m.) / 'ya-r̃(f.) / 'ya-n(pl.)* 'quite, very (lit. *child-of (-m./f./pl.)*)' with *kàɗan* '(a) little' (Jaggar 2001: 368). While the adverbial *gàske* follows the adnominal modifier in (46a), the diminutive *ɗan* in (46b) shows the typical syntactic behaviour of diminutives, i.e. it precedes the modified element and combines with it by means of the linker *-n / -r̃*, thus forming a complex XP:

(46) a. naa ga mootoocii *dà* *yawà-n* *gàske* à hanyàa
1sg.PERF see cars with quantity-LINK truly on road
'I saw a really large number of cars on the road.'

b. zâ-n ci àbinci [XP *ɗa-n* *kàɗan*]
FUT-1sg eat food DIM-LINK little
'I will eat a (very) little food.'

The construction type in (46b) is also used to express the negative superlative 'least, fewest' with *kàɗan*, cf. (47a). Alternatively, this reading can be expressed by using the linking element

mafii (< *fi* 'exceed, surpass') 'more, most', cf. (47b). When preceding the quantity expression *yawàa*, *mafii* can also express the positive comparative 'more' and the superlative 'most', cf. (47c). Notice that the comparative or superlative linker *mafii* is also used with non-quantificational modifiers, as is to be expected if the quantifiers *(dà) yawàa* and *kàdan* are semantic modifiers.

(47) a. yaa yi kùràakùrai *'yan kàdan* à aji-n [Jaggar 2001: 369]
3sg.PERFdo mistakes DIM little at class-DEF
'He made the fewest mistakes in class.'

b. kudî-nsà *mafii kàdan* nèe [Ma Newman 1990: 150]
money-3sg more/most little PRT
'He has the least money.'

c. màasu zàngà-zangà *mafii yawàa* [Jaggar 2001: 368]
demonstrators more/most quantity
'the larger / largest group of demonstrators' = 'more / most demonstrators'

So far, we have only encountered instances of additional modifiers attaching to the numeral or quantity expression itself, thus modifying it directly. However, there are also cases where an adverbial modifier combines with the NP containing the quantifying expression as a whole:

(48) a. ya-nàa nan *wajen kàmar̃* [*mîl goomà*] dàgà gàri-n-mù
3sg-PROG there about mile ten from town-LINK-1pl
'It's there about ten miles from our town.' [Newman 2000: 387]

b. *kasà dà* [*shèekaràa ukù*] [Ma Newman 1990: 151]
below P year three
'less than three years'

It seems, then, that at least some additional modifiers do not modify the numeral quantifier itself, but the entire NP containing the quantifier. This is in line with a claim put forward in Krifka (1999), that at least some apparent numeral modifiers in English, such as *at least*, modify the entire NP containing the numeral, rather than the numeral itself.

3.1.3 Partitive Constructions. Next to their postnominal use as modifiers, class-A quantifiers can occur in partitive constructions. There are two basic kinds of partitive constructions.[13] In both constructions, the quantifying element forms (part of) the syntactic head of the construction and precedes an NP, which is often overtly marked for definiteness. In other words, the quantifying element appears to pick out a subset from a specific (contextually given) set of individuals (cf. Ladusaw 1982). The first construction looks like a standard partitive construction where quantifying element and NP are linked by the prepositional expression *dàgà cikin* 'from within, out of' (see also Keenan, this volume, for parallel partitive constructions in Malagasy):

(49) a. *biyu dàgà cikin dâalibâ-n* su-nàa màganàa dà Màrgii
two from within students-DEF 3pl-PROG speech with Margi
'Two of the students speak Margi.'

b. mun ga *dà yawàa dàgà cikin yâarâ-n*
1pl.PERF see many from within children-DEF
'We saw many of the children.'

The second partitive construction is a complex N-N construction, where the quantifying element has nominal traits and is linked to the following definite NP by means of the nominal linker *–n*. This construction is often found with quantity expressions such as *dà yawàa* 'many' and *mafii yawà* 'most', which have a nominal base, cf. (50ac), but it can also be used with numerals, as shown in (50bd):

(50) a. mun ga dà yawà-n yâarâ-n
1pl.PERF see with quantity-LINK children-DEF
'We saw many of the children.'

b. mun ga *biyu-n yâarâ-n*
1pl.PERF see two-LINK children-DEF
'We saw two of the children.'

c. *mafii yawà-n mutàanee* sun san shì. [Jaggar 2001: 368]
more quantity-LINK people 3pl-PERFknow him
'most of the people know him.'

[13] Yet another way of forcing a strong partitive reading of these quantifying expressions is to focus them by moving the entire DP containing them to the focus position, as in (i) (Zimmermann 2005). This strategy corresponds to the strategy of putting stress on the quantifying expression in intonation languages.

(i) [dâalìbai *biyu*]$_1$ nèe t_1 su-kèe màganàa dà Màrgii.
students two FOC 3pl-PROG.REL speech with Margi
'TWO students speak Margi.'

d. *biyu-n* *mutàanê-n* sun san shì.
two-LINK people-DEF 3pl-PERF know him
'Two of the people know him.'

This construction seems to be found with all class-C quantifiers corresponding to English *most (of)*, and will be taken up again in section 3.3.

The use of a partitive construction typically implicates that there are other members in the denotation of the complement NP that do not satisfy the predicate in question. These elements can be referred to in a subsequent statement by means of the NP *sauraa* 'remainder':

(51) *biyu dàgà cikin ɗaalìbân* sunàa màganàa dà Màrgii … (=49a)
'Two of the students speak Margi …

… *saura-n* *ɗàalìbâ-n* su-nàa màganàa dà Hausa.
remainder-LINK students-DEF 2pl-PROG speech with Hausa
… the rest of the students speak Hausa.'

The following minimal pair brings out the semantic effect of the partitive construction quite clearly. Both sequences are identical except for the presence of a non-partitive DP in (52a) and the presence of a partitive construction in (52b).

(52) a. Audù yaa ci *jarr̃àbâawaa* *dà yawàa* kuma yaa gamà kàr̃àatu-nsa.
Audu 3sg.PERF eat exams many also 3sg.PERF finish studies-his
'Audu passed many exams, and (also) he finished his studies.'

b. Audu yaa ci *dà yawàa* *dàgà cikin* *jarr̃àbâawaa*,
Audu 3sg.PERF eat many from within exams
kuma yaa gamà kàr̃àatu-nsa
also 3sg.PERF finish studies-his
'Audu passed many of his exams, and / but he finished his studies.'

The non-partitive (52a) only states that Audu passed a lot of exams and does not give rise to additional implicatures. As a result of this, the subsequent statement is typically interpreted in such a way that Audu's successful graduation is the result of his passing many exams. The use of the partitive construction in (52b), in contrast, suggests that there were exams that Audu failed by way of a scalar implicature, and that consequently the passing of all the exams is not a precondition for graduating. As a result, (52b) should be inappropriate in a situation were all exams must be passed in order to graduate.

3.1.4 Cardinal vs. proportional readings. Just like English *many*, the modifying quantity expression *dà yawàa* 'many, much' can be interpreted either on a cardinal reading, or on a proportional reading (presumably, the same holds for its negative counterpart *kaɗan* '(a) few'). On the cardinal reading, *dà yawàa* simply specifies that the group referred to is rather large relative to a contextually fixed standard. On its proportional reading, it indicates that the ratio of individuals that satisfy the predicate is rather large compared to the ratio of individuals that do not (Partee 1989). According to my consultants, the proportional reading is preferably expressed by using the partitive construction. Thus, (53a) will be preferred over the modifying construction (53b) in the following context:

(53) Context: Four out of a total of six students passed the exam:
a. *dà yawàa* *dàgà cikin* *ɗaalìbâ-n* sun ci jarr̃àbâawaa.
many from within students-DEF 3pl-PERF eat exams
'MANY (of the) students passed the exam.'

b.? *ɗaalìbai dà yawàa* sun ci jarr̃àbâawaa.
students many 3pl-PERF eat exams
'MANY students passed the exam.'

The unmarked reading of (53b) is the cardinal reading, according to which there is a very large group of students that passed the exam. Unfortunately, it is not quite clear whether the proportional interpretation is altogether excluded for (53b). At least for one of my consultants, (53b) may also be used felicitously in the given context, even if it is dispreferred. That postnominal quantity expressions like *dà yawàa* sometimes DO receive a proportional interpretation is also suggested by the felicity of (54) in the following context:

(54) *Context: 60% of all Hausa people, but only 20% of all Fulani people visit a school or university.*

Hàusàa-waa *dà yawàa* ɗàalìbai nèe, àmmaa *Filàanii kàɗan* ɗàalìbai nèe.
Hausa-people many students COP but Fulani few students COP
'Many Hausa people are students, but few Fulani people ares students.'

When used in this context, (54) says that the proportion of Hausa people going to school or university is high when compared to the proportion of Fulani people receiving a formal education, irrespective of absolute numbers.

In light of this, we may conclude that there is no strict correlation between the interpretation of quantity expressions as cardinal or proportional, and their syntactic realization in the modifying construction or the partitive construction. At the same time, there seems to be

a clear preference for proportional readings to be expressed by using the partitive construction. This issue requires more research.

3.1.5 Scope Interaction with Negation. Like their counterparts in other languages (Heim & Kratzer 1998), class-A quantifiers exhibit scope interactions with negation: The truth-conditions of clauses with negative markers and numerals or quantity expressions differ depending on structural factors, namely on whether the quantifying expression c-commands and precedes the negation, or vice versa. In the first case, the quantifying expression takes semantic scope over negation (Q>Neg), in the second case it scopes under negation (Neg>Q), as illustrated in (55) and (56).

Judged against the context in (55), (55a), with negation c-commanding the numeral, is false (marked by '#'), as it asserts that Audu didn't eat two cashew fruit, contrary to fact. A different situation obtains in (55b). Here, the quantified NP *yàazaawaa biyu* 'two cashews' has focus-raised across the negation marker, taking syntactic and semantic scope over negation. The sentence correctly asserts that there are two cashew fruit (left) that Audu did not eat. Finally, the focused quantified NP is narrowly negated in (55c). The ensuing reading, with negation outscoping the numeral, makes the sentence false in the given context.

(55) *Context:* There were four cashew fruits of which Audu has eaten two.

a.#Audù **bà-i** ci yàazaawaa *biyu* **ba** → *false*
Audu NEG-3sg eat cashew two NEG
'Audu didn't eat two cashews.'

b. [yàazaawaa *biyu*]$_1$ nèe Audù **bà-i** ci t_1 **ba** → *true*
cashew two PRT Audu NEG-3sg eat NEG
'There are two cashew fruit that Audu didn't eat.'

c.#**bàa** yàazaawaa *biyu*$_1$ **ba** Audù ya t_1 ci → *false*
NEG cashew two NEG Audu 3sg.PERF.REL eat
'It is not two cashew fruit that Audu ate.'

(56) shows a similar truth-conditional interaction of quantifying expression and negation for the quantity expression *dà yawàa* 'many'. Again, the consultant was asked to specify whether the three conjunctive statements in (56a-c) are appropriate in a given contextual situation. Notice that the effects of the Q-Neg-interaction on the felicity of the three sentences in (56) differ slightly from those observed in (55):

(56) *Context:* Musa has read a hundred books, but there are another hundred books that he has not (yet) read.

a. Muusaa yaa karàanta littàttàafai dà yawàa,
Musa 3sg.PERF read books many
kuma **bà-i** karàanta littàttàafai *dà yawàa* **ba**
and NEG-3sg read books many NEG
'Musa has read many books, and he has not read many books.'

b. Muusaa yaa karàanta littàttàafai dà yawàa,
Musa 3sg.PERF read books many
àmmaa [littàttàafai *dà yawàa*]$_1$ nee **bà-i** karàntaa t_1 **ba**
but books many PRT NEG-3sg read NEG
'Musa has read many books, but many books he didn't read.'

c.*Muusaa yaa karàanta littàttàafai dà yawàa,
Musa 3sg.PERF read books many
àmmaa **bàa** [littàttàafai *dà yawàa*]$_1$ **ba** nee ya karàntaa t_1
but NEG books many read NEG PRT 3sg.PERF.REL read
'Musa has read many books, but there are not many books that he read.'

Both (56a) and (56b) are felicitous utterances in the given context. In both cases, the first clause asserts the positive fact that Musa has read many books, while the second clause acknowledges the fact that there are also many books that he has not so far read. (56c), in contrast, is contradictory, and therefore false, in any context as the negative second clause states the exact opposite of the first clause. Notice, in particular, that (56b) and (56c) only differ in the relative hierarchic order of quantity expression and negation, showing that it is this factor which must be responsible for the truth-conditional difference. Also notice that, somewhat unexpectedly, (56a) differs in acceptability from the structurally parallel (55a). The acceptability of (56a) may have to do with the greater degree of vagueness involved in the interpretation of many/much-expressions, but we will have to leave this issue unresolved here.

Summing up this section, class-A quantifiers show scope interactions with negation that resemble those found in European languages. The truth conditions of sentences with such quantifiers and negation differ depending on which of the two elements is located in a higher structural position relative to the other. This concludes our discussion of class-A-quantifiers.

3.2 Class-B quantifiers: Genuine quantifiers or indefinite expressions?

Apart from modifying quantifying expressions, Hausa has two quantifying expressions that are

descriptively referred to as *indefinites*, and which differ from the former, both syntactically and semantically. The two expressions in question are *wani(m.)/ wata(f.)/ wa(ɗan)su(pl.)* 'some, a certain', which induces existential force, and *koowànè(m.)/ koowàcè(f.)/ koowàɗânnè(pl.)* 'each, every, any', which appears to induce universal force and takes on the character of a free choice (FC)-item in certain contexts. We will look at the syntactic properties of both expressions in 3.2.1, before discussing their semantic behaviour in more detail in 3.2.2 and 3.2.3. Notice that Hausa, like most or all of its Chadic relatives, and like Cuzco Quechua (Faller & Hastings, this volume), has no negative existential quantifiers, corresponding to *no NP*, *nobody*, *nothing*, etc. Instead, the relevant interpretations are expressed by combining either of the two expressions with negation (3.2.4). Section 3.2.5 briefly sketches three possible ways for analyzing these expressions.

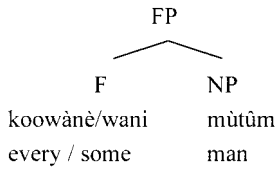
3.2.1 Syntactic properties. Unlike quantifying modifiers, the two indefinite quantifiers always occur in prenominal position. This is shown in (57ab) for the universal and the existential indefinite respectively:

(57) a. *wani / wata / wa(ɗan)su* 'some (other), a certain (m./ f./ pl.)' = ∃
   i. wani mùtûm 'some man'
   ii. wata màcè 'some woman'
   iii. wa(ɗan)su mutàanee 'some men' = 'some people'

   b. *koowànè / koowàcè / koowàɗânnè* 'each, every (m./f./pl.)' = ∀
   i. koowànè ɗaalìbii 'every student'
   ii. koowàcè mootàa 'every car'
   iii. koowàɗânne irìn kaayaa 'all kinds of clothes'

The prenominal occurrence of these expressions is comparable to that of other functional elements, e.g. the demonstrative *wannàn* in *wannàn dookìi* 'this horse' (cf. section 2.3). Like these, they exhibit gender and number agreement, and there is no genitive linker. As pointed out in section 2.4, one way to account for this is to assume that agreeing prenominal elements are functional heads, possibly in D, that take a set-denoting NP as their semantic argument, cf. (58). What remains to be shown is whether these functional elements are ultimately best treated as genuine quantifiers, i.e. as elements of type <et, <et,t>>, or whether a treatment in terms of choice-functions (Matthewson 1999) or indeterminate pronouns (Kratzer & Shimoyama 2002) will prove to be more adequate. (see section 3.2.5).

(58)



Both expressions can combine with singular NPs, but also with plural NPs, in which case the universal quantifier appears to quantify over groups of entities (cf. 57b.iii).[14] Both expressions can also occur on their own, with some minor morpho-phonological modifications, in which case they replace a full NP and function as indefinite pronouns (Jaggar 2001: 372).

(59) a. *koowànnee/ koowaa* ya-nàa saamù-n àlbâshi-n Nairàa bìyar
everyone 3sg-PROG getting-LINK salary-LINK Naira five
'Everyone gets a salary of five Naira.' [Cowan & Schuh 1976: 277]

b. *koomee* yaa yi daidai [Cowan & Schuh 1976: 277]
everything 3sg.PERF do good
'Everything is all right.'

c. *wani* yaa zoo [Bargery –Online]
someone 3sg.PERF come
'Somebody (sg.) came.'

Both expressions can occur in the first part of a partitive construction, with expressions of the existential *wani*-type occurring either alone or together with a full lexical NP. The possibility for universal expressions to co-occur with a lexical head noun remains to be established.

(60) a. koowànnee dàgà ciki-n-sù yaa sàyi mootàa [Jaggar 2001: 373]
each from inside-LINK-3pl 3sg.PERF buy car
'Each of them bought a car.'

b. wani (mùtûm) dàgà ciki-n-sù yaa sàyi mootàa
some man from inside-LINK-3pl 3sg.PERF buy car
'One (man) of them bought a car.'

Besides these similarities, the two expressions differ with respect to the status of their nominal

[14] Another example for the group-distributing nature of plural *koowàɗânnè* is given in (i), where it distributes over the two distinct plural groups of people and animals, respectively.

(i) koowàɗânnè mutàanee dà dabboobii sun mutù
every.pl people and animals 3pl die
'All people and all animals have died.'

complement as definite or indefinite. While universal *koowànè / koowàcè* is restricted to occur with indefinite count NPs only, cf. (61), existential *wani / wata* can also co-occur with the definite marker, as witnessed by (62b), where the presence of the definite marker triggers a specific interpretation.

(61) koowàcè mootàa / *mootà-r̃ taa ɓaacì
every car car-DEF 3sg.PERF break.down
'Every car broke down.'

(62) a. wata mootàa taa ɓaacì
Some car 3sg.PERF break.down
'Some car broke down.'

b. wata mootà-r̃ taa ɓaacì
Some car-DEF 3sg.PERF break.down
'A specific car (previously mentioned?) broke down.'

We will have to leave it open whether this different behaviour argues for a different syntactic status of the two elements. (62b) is interesting for another reason, however: If its specific intepretation is due to the presence of the definite determiner, one might wonder about the semantic contribution of *wata*. Given that singular NPs in Hausa denote sets containing both atomic and plural individuals (see section 3.1), the function of *wata* could consist in filtering out all plural sets from the NP-denotation, such that the entire DP will only contain individual cars in its denotations. Heycock & Zamparelli (2005: 230) locate this semantic effect in a DP-internal functional head $NUM_{[+/-LATT]}$. Now, if the quantifying elements *wani / wata / wa(ɗan)su* were located in NumP below DP, this would automatically account for the co-occurrence of *wata* and the definite determiner in (62b).

3.2.2 The interpretation of existential wani / wata / wa(ɗan)su. The indefinite determiner *wani / wata / wasu* is used in statements with existential force and corresponds to English *some, a, a certain*. As already mentioned in section 2.1.1, these existential indefinites alternate with bare indefinite expressions. As argued by Jaggar (1988), the choice between the two options is largely dependent on discourse-semantic considerations. Unlike bare indefinite NPs, *wani / wata / wasu* is preferably used for introducing new discourse referents that can be anaphorically referred to in subsequent discussion. According to Jaggar (1988), this accounts for their preferred occurrence with [+human] subject NPs. Semantically, this discourse-introducing function can be captured by endowing them with existential force: Their presence asserts the existence of an individual with a particular property indicated by the NP. The

following examples may serve to illustrate the basic discourse-introducing function of *wani*-expressions in a narrative text. Example (63c) shows that these expressions can also occur embedded within larger nominal constituents:

(63) a. sai *wani yaaròo* yaa cêe … [Sauna Jac: 3]
then some boy 3sg.PERF say
'then a/some boy said …'

b. yaa gàmu dà *wani màì* *jàakii* [Sauna Jac: 5]
3sg.PERF meet with some owner donkey
'He met a/some owner of a donkey.'

c. yaa isoo gida-n *wani màì* *ɗaukà-r* *hòotoo* [Sauna Jac: 7]
3sg.PERF reach house-LINK some owner taking-LINK photograph
'He arrived at the house of a / some photographer.'

In addition to their basic use, existential indefinites can also take on a specific interpretation, in which case they are best translated as 'a certain, a specific'. Finally, the presence of *wani/ wata/ wasu* often gives rise to a partitive interpretation, as in (64):

(64) *wasu* sun zoo, *wasu* bà sù zoo ba. [Cowan & Schuh 1976: 152]
some 3pl.PERF come some NEG 3pl.SUBJ come NEG
'Some came, others didn't.'

While the partitive interpretation of (64) seems to follow from the parallel construal of the two clauses, it may also arise as the result of a scalar implicature in other cases. The scalar implicature excludes all stronger readings on which most or all individuals in the particular domain would satisfy the predication expressed.

While the quantificational force of indefinite *wani*-expressions is always existential in declaratives, they exhibit an interesting ambiguity in yes/no-questions. In this clause-type, the indefinite expression can either have an existential reading, cf. (65ab.i), or a more universal free-choice interpretation corresponding to *any-* or *anybody*, cf. (65ab.ii).[15]

[15] In case of subjects and preposed focused objects, the same readings can be alternatively expressed by means of a relative construction involving the existential predicate *àkwai* 'there is' (Cowan & Schuh 1976: 278):

(i) a. àkwai wân-dà ya zoo? b. àkwai àbî-n dà ya fàaru?
there.is someone-REL 3sg.PERF.REL come there.is thing-DEF REL 3sg.PERF.REL happen
'Did anyone / someone come?' 'Did anything / something happen?'

(65) a. Wani yaa zoo? [Cowan & Schuh 1976: 278]
some/any 3sg.PERFcome
i. 'Did someone come?'
ii. 'Did anyone come?'

b. wani àbù yaa fàaru? [Cowan & Schuh 1976: 278]
some/any thing 3sg.PERFhappen
i. 'Did something happen?'
ii. 'Did anything happen?'

It seems as if the existential (i)-reading would correspond to a more specific interpretation of the indefinite expression. Interestingly, the same kind of ambiguity is observed with *wani*-expressions under negation (section 3.2.4).

3.2.3 The interpretation of the generic indefinite koowànè / koowàcè / koowàdânnè. Nominal expressions consisting of or containing the indefinite expression *koowànè/ koowàcè/ koowàdânnè* are traditionally referred to as *generic indefinites* (e.g. Cowan & Schuh 1976) or universals (Newman 2000, Jaggar 2001). They seem to owe this label to the fact that they are interpreted with universal force in episodic affirmative clauses and yes/no-questions, corresponding to *every* or *everyone* in English:

(66) a. *koo-waa* yaa ci jarràbâawaa [Newman 2000: 623]
DISJ-who 3sg.PERF eat exam
'*Everyone* passed the exam.'

b. yaa duubàa *koo-'inaa* àmmaa bà-i sàamee shì ba
3sg.PERF look DISJ-where but NEG-3sg find him NEG
'He looked *everywhere*, but he didn't find him.' [Newman 2000: 623]

(67) a. *koo-waa* yaa zoo ? [Cowan & Schuh 1976: 278]
DISJ-who 3sg.PERF come
'Did everyone come?'

b. yaa ci *koo-mee* ? [Cowan & Schuh 1976: 278]
3sg.PERF eat DISJ-what
'Did he eat everything?'

Notice that the expressions in question are all morphologically complex: They consist of the disjunction marker *koo*, which doubles as a (subordinating) complementizer in yes/no-questions ('whether') (Jaggar 2001: 370), and a wh-expression (Newman 2000, Jaggar 2001).[16] For this reason I will follow Jaggar (2001) in referring to them as *koo*+wh-expressions and gloss them as *DISJ-wh* in the following (Zimmermann 2005).

In addition to the plain universal reading of (66) and (67), a *free choice* (FC) *any*-interpretation is available in modal and in (inferred) intensional contexts: The generic indefinite is embedded under a verb of wishing or wanting in (68a), under a modal auxiliary expressing ability in (68b), it is found inside a (subjunctive) command clause in (68c), and in a generic conditional '*wh*...ever'-clause in (68d):

(68) a. ya-nàa *sôo* yà sàyi wannàn kudî-ntà *koo nawà*
3sg. PROG want 3sg.SUBJ buy this money-its DISJ how much
'He wants to buy this at *any* price.' [Newman 2000: 623]

b. à cân a-nàa iyà kòoyo-n *koo-wànè* harshèe.
there one-PROG can learning-LINK DISJ-which language
i. 'There one can learn any language.'
ii. 'There one can learn every language.'

c. kà buudè *koo-wàcè* ƙoofàa
2sg.SUBJ open DISJ-which door
i. '(You should) Open any door!'
ii. '(You should) Open every door!'

d. *koo-waa* ya yi hakà waawaa nèe.
DISJ-who 3sg.PERF.REL do so fool COP
'Whoever / Anyone who does this is a fool.' [Newman 2000: 624]

It is worth pointing out that there are no modal or intensional contexts in which a *koo*+wh expression would only have an FC-interpretation, as witnessed by the ambiguity of (68bc). Nor do the sentences exhibit *quantificational variability effects* (QVEs), which are identified as characteristic properties of FCIs by Giannakidou (2001). The simultaneous presence of two readings plus the absence of QV effects strongly argues against the existence of an FCI *koo*+wh restricted to modal contexts. Rather, the ambiguity between ∀-reading and FC-reading in (68bc) seems to follow from a scopal ambiguity between the universal quantifier *koo*+wh

[16] The combination of disjunction marker and wh-expression in the formation of a universal quantifier is remarkable from a cross-linguistic perspective: Hausa differs from languages such as Japanese, Malayalam, and Kannada (Nishigauchi 1986, Jayaseelan 2001, Amritavalli 2003), where the quantificational force of the *wh*-DISJ-quantifier is not universal, but existential, while universal quantification is expressed by combining a *wh*-expression with the conjunction marker. Hausa is similar to Korean, however, where *wh*-DISJ-quantifiers likewise come with universal force (Gill 2004). See Zimmermann (2005) for relevant data and discussion.

and the modal element, cf. Zimmermann (2005).[17]

Summing up, *koo*+wh-expressions appear to indicate the existence of alternatives, resulting in a plain universal or free choice interpretation depending on the context. Notice that this may ultimately provide a reason for the presence of the disjunction marker *koo* in the construction, as disjunction markers are frequently used for introducing alternatives (T.E. Zimmermann 2000, Simons 2005). In the next section, it will emerge that *koo*+wh-expressions give rise to yet another interpretation when embedded under VP-negation (but see Jaggar (2001: 371) for an alternative view on which this additional reading falls out naturally from the universal quantifier reading)

3.2.4 Interaction with negation. This section discusses the interaction of both kinds of class-B expressions with negation. A characteristic feature of both kinds of expressions is that they interact with negation, giving rise to negative existential readings corresponding to *no*, *nobody*, *nothing* etc. At the same time, indefinites of the *wani*-type differ from the generic or universal indefinites of the *koo+wh*-type in a number of syntactic and semantic respects.

Indefinites of the *wani*-type can occur embedded under VP-negation, e.g. in object position (69ab). In this case, the presence of the *wani*-expression embedded under negation leads to an ambiguity between the negative existential (¬∃) reading in (i), which corresponds to *no, no-one*, and a *some-not* (∃¬) reading in (ii), where the *wani*-expression takes semantic scope over VP-negation. The *some-not* (∃¬) reading is one of the few instances where the semantic relationship between negation and quantifier is not exclusively determined by syntactic (surface) structure. Depending on lexical content and context, either one of the two readings may be preferred.

(69) a. **bà**-n ga *wani* **ba** [Bargery Online]
NEG-1sg.SUBJ see someone NEG
i. 'I didn't see anyone.' ⇔ 'I saw no-one' → *preferred*
ii. 'There is someone I didn't see (but I saw others).'

[17] The analysis gets additional support from the fact that *koo*+wh expressions are found in a range of environments from which FC-elements are banned (cf. Giannakidou 2001): They can occur in the c-command domain of the exclusive quantifier *only*, cf. (i), and they can occur embedded under factive predicates, cf. (ii):

(i) Muusaa (nee) kawài yaa mai dà amsàa gà *koo-wàcè* tàmbayàa dà maalàmii ya yi
Musa PRT only 3sg.PERF return with answer to DISJ-which question REL teacher 3sg.PERF.REL do
'Only Musa gave an answer to each / *any question that the teacher asked.'

(ii) Naa yii murnàa dà *koo-waa* yaa zoo.
1sg.PERF do gladness with DISJ-who 3sg.PERF come
'I am glad that everybody / *anybody came.'

b. Muusaa **bà**-i kiraa *wani àbookii* liyaafaa **ba**
Musa NEG-3sg.SUBJ invite some friend ceremony NEG
i. 'Musa did not invite any friends.' ⇔ 'Musa invited no friends.'
ii. 'There is some friend that Musa didn't invite (but he invited others).'
→ *preferred*

As indicated in the paraphrases, the ∃¬-reading typically gives rise to a partitive construal. According to Schuh (1998), who discusses a parallel phenomenon in Miya (West Chadic), this partitive interpretation in the context of VP-negation is possibly the result of an exhaustivity inference.

When the *wani*-expression is a subject, taking syntactic scope over VP-negation, the sentence is unambiguous and only allows for the ∃¬-interpretation:

(70) *wasu* **bà** sù zoo **ba**
some.pl NEG 3pl come NEG
'Some did not come.'
NOT: 'Nobody came.'

The interpretation of indefinite *wani*-expressions in subject position is thus opposite to that of bare indefinite NPs, which only have a negative existential reading, cf. (12a, 13a) in section 2.1.3. To express this reading with *wani*, one has to use the relative construction in (71):[18]

(71) **baabù / bâa** *wan* dà ya zoo
not.exist someone REL 3sg.PERF.REL come
'Nobody came.'

Finally, structures in which a focused *wani*-NP_{OBJ} has moved overtly across VP-negation are not ambiguous either, allowing only for the surface reading with *wani* scoping over negation:

(72) *wani àbookii*$_1$ nèe [Muusaa **bà**-i kiraa t_1 liyaafàa **ba**]
some friend PRT Musa NEG-3sg.SUBJ invite ceremony NEG
'It was a certain friend that Musa did not invite to the ceremony.'
NOT: 'He didn't invite any friend.'

Expressions of the *koo*+wh-type share one of the two scopal possibilities with *wani*-expressions. They are interpreted as negative existentials under VP-negation, as shown in (73).

[18] According to Jaggar (2001: 528), the expression *wan* in (71) is not a short form of *wani*, but should be analyzed as *wa-`n* / *wa-`r* = wa-DEF. Notice, though, that on this analysis it remains mysterious why the head noun *wan* in (71) gets an indefinite interpretation.

(73) **bà**-n ga *koo-waa* **ba**
NEG-1sg.SUBJ see DISJ-wh NEG
'I didn't see anyone.' ⇔ 'I saw no-one' = (69ai)
NOT: 'I did not see everyone.'

The two kinds of expressions differ in two respects, though. First, there is no semantic interpretation of (73) that would correspond to the surface relation of negation and *koo*+wh-expression. The expected ¬∀-interpretation, according to which the speaker did not see everyone (but some people), is unavailable for (73). Interestingly, this reading becomes available again, when the *koo*+wh-expression occurs in the scope of sentential negation, e.g. after focus fronting (Newman 2000, Green & Jaggar 2003, Zimmermann 2005):

(74) a. **bàa** [*koo-waa* [$_{VP}$ *kèe* sô-n wannàn jàr̃iidàa]] **ba**. [Newman 2000: 624]
NEG DISJ-who PROG.REL like-LINK this newspaper NEG
'Not *EVERYONE* likes this newspaper.'
NOT: '*NOBODY* likes this newspaper.'

b. [**bàa** *koo-waa*$_1$ **ba**] nèe [Audu [$_{VP}$ *ya* kiraa t_1]].
NEG DISJ-who NEG PRT Audu 3sg.PERF.REL call
'It is not *EVERYONE* that Audu called.'
NOT: 'Audu called NOBODY.'

Again, the structure is unambiguous and the ¬∀-interpretation is the only available reading.

The second difference concerns the impossibility for subject *koo*+wh-expressions to take syntactic scope over VP-negation. Sentence (75) is ungrammatical, according to Newman (2000: 623).

(75) **koo-waa /koo-wànè dâalìbii* **bà**-i ci jar̃ràbâawaa **ba**.
DISJ-who DISJ-which student NEG-3sg.SUBJ eat exam NEG
intended: 'Everybody/ every student did not pass the test:'
= 'Nobody / no student passed the test.'

Instead, the intended reading must be expressed by means of a relative clause that is embedded under the negative existential expression *baabù, bâa* 'there is not', comparable to the relative construction in (71) (Newman 2000: 623).

(76) **bâa** *wân-dà* / **bâa** *dâalìbii dà* ya ci jar̃ràbâawaa
not.exist someone-REL not.exist student REL 3sg.PERF.REL eat exam
'There is nobody/ no student that passed the exam.' ⇔ 'Nobody/ no student passed.'

At present, the reason for the ill-formedness of (75) remains unclear. According to one consultant, the deviant status of (75) may have to do with the fact that a *koo*+wh-expression in sentence-initial position raises a positive expectation, which is then contradicted by the negation. Correct or not, it is interesting to note that comparable restrictions blocking distributive universal quantifiers from taking scope over negation, either overtly or covertly, are observed cross-linguistically, cf. e.g. Beghelli & Stowell (1997), Hintikka (2002), Zeijlstra (2004: 184ff.).

(77) a. ??Every boy didn't leave. [Beghelli & Stowell 1997: 95]
b. ??Each boy didn't leave.

According to Beghelli & Stowell (1997), the acceptability of (77ab) improves when the universally quantified expression is focused. Similarly, *koo*+wh-subjects can take syntactic scope over VP-negation in Hausa, when focused:

(78) *koo-wànè dâalìbii* nèe bà-i ci jar̃ràbâawaa ba.
DISJ-which student PRT NEG-3sg eat exam NEG
'EACH/EVERY student didn't pass the exam.'

(78) can be felicitously uttered in order to emphasize the degree of failure, or in order to contradict a preceding assertion to the effect that (at least) some students passed.

3.2.5 Possible analyses. In this section, we will briefly outline three possible approaches to the semantic analysis of class-B quantifiers in Hausa.

The first option consists in treating class-B quantifiers of the *wani-* and the *koo*+wh-type as genuine generalized quantifiers of type <et,t>, which come with existential and universal force, respectively. Such an account is put forward in Zimmermann (2005). On the quantifier account, the observed ambiguity of *wani*-expressions with negation in (69ab) and the ambiguity of *koo*+wh-expressions in intensional contexts in (68a-d), is reducible to scope ambiguities. What remains unaccounted for is the non-ambiguity of *koo*+wh expressions under VP-negation. Instead, the quantifier account will have to stipulate obligatory LF-movement of *koo*+wh-objects across VP-negation. Likewise, the ungrammaticality of *koo*+wh expressions in subject position of VP-negated clauses receives no principled explanation (though, admittedly,

quantifier analyses have nothing to say on the absence of similar constructions in other languages either).

A second possibility is to treat class-B quantifiers as indeterminate pronouns in terms of Kratzer & Shimoyama's (2002) analysis: *Wani*-NPs would be ordinary indefinites and denote a set of contextually relevant individuals: {x: x is an entity satisfying the NP-denotation in w ∧ x ∈ g(**D**)}, where *g(**D**)* is a contextually bound assignment function from the domain of discourse. *Koo*+wh expressions, in turn, would denote the entire set of all actual or potential individuals of a given kind in a particular world of utterance w, parallel to the treatment of the German indefinite expression *irgendein* in Kratzer & Shimoyama (2002: 15): {x: ∃g'[x is an NP-entity in w ∧ x ∈ g'(**D**)]} = {x: x is an NP-entity in w}, which is the set of all NP-entities. The indeterminate pronoun analysis would seem to account for the often observed FC-interpretation of these expressions. And it would seem to account for the fact that *koo*+wh expressions are interpreted as negative existentials under VP-negation, assuming that they are bound by the negative operator at the VP-level. At the same time, the indeterminate approach provides no principled explanation for the fact that both *wani-* and *koo*+wh-expressions are not necessarily bound by the next highest c-commanding operator, see e.g. the ambiguity of *wani*-expressions under VP-negation in (69), the absence of QV-effects with *koo*+wh- expressions in the scope of modal operators in (68), and the fact that *koo*+wh expressions are bound by VP-negation, but never by sentence negation, cf. (74ab). Finally, a treatment of *koo*+wh expressions as indeterminate expressions parallel to German *irgendein* does not account for their universal reading in affirmative episodic contexts without additional stipulations.

A third approach would analyse the class-B quantifiers *wani* and *koo*+wh as denoting choice function variables, cf. Reinhart (1997) and Matthewson (1999). The choice function associated with *wani*, CF_{wani}, would pick out an atomic individual or a plural group of individuals from a set of individuals. The observed ambiguities of *wani*-expressions in yes/no-questions and in negated clauses could then be made to follow from a difference in the locus of existential closure over the CF-variable, namely above or below Q and NEG respectively. The choice function associated with *koo*+wh expressions, CF_{koo-wh}, in contrast, would pick out the entire set of individuals in a given domain. Whichever way one wants to formally implement this, though, it would still not account for the difference in interpretation between *koo*+wh expressions under VP-negation (negative existential) and under sentence negation (negative universal). Additional factors seem to be required.

In section 4, we will see that universal *koo*+wh expressions are unequivocally interpreted distributively. This would suggest that universal force indeed forms part of their semantic contribution, where the universal force could be due to the denotation of the *koo*+wh expression itself, if it is universal generalized quantifier, or to the presence of a distributivity operator (Link 1983) whose insertion into the logical form is obligatorily triggered by the *koo*+wh expression. See Matthewson (2001) for parallel ideas concerning English *every*.

3.3 Class-C quantifiers: Quantifying nouns

The final class of adnominal quantifying expressions in Hausa corresponds to *most*-NPs in English and differs from the other two both syntactically and semantically. Syntactically, the quantifying expression is nominal: As already seen with the expression *mafii yawà-n* 'more quantity of' in (50c) in section 3.1.3, the quantifying expression must be linked to the quantified NP by the nominal linker *-n/-r̃*. The quantifying effect is due to the lexical meaning of the noun, which seems to correspond to the English abstract noun *majority*, *greater part*. Apart from *mafii yawàn*, there are a couple of (sometimes related) nouns that can be used for expressing the concept of majority. Notice that the aspectual markers in (79a-c) show plural agreement. We will return to this fact shortly.

(79) a. *yawanci-n* dȃalìbai sun ci jarr̃àbâawaa [19]
majority-LINK students 3pl.PERF eat exam
'Most(of the) students passed the exams.'

b. *yawà-yawà-n* mutàanee su-nàa yî-n hakà
quantity-quantity-LINK people 3pl-PROG doing-LINK thus
'Most people are doing this. [Bargery Online]

c. *gaalìbi-n* mutàane-n gàri-n nán su-nàa dà kĩr̃kìi
majority-LINK people-LINK town-LINK this 3pl-PROG with kindness
'Most of the people in this town are kind.' [Hausa English Dictionary: 40]

In many instances, the presence of a class-C quantifier gives rise to a partitive interpretation relative to a contextually specified set denoted by the complement NP. In some such cases, the complement NP is marked overtly for definiteness, e.g. by means of the demonstrative element *nân* in (79c). Such marking is not obligatory, though, as witnessed by (79a). In certain cases, such as (79b), the quantifier can also combine with an unmarked NP in order to quantify over all instances of the kind denoted by the NP, cf. Matthewson (2001).[20]

[19] The expression *yawancii* (< yawa-n-cii, lit.'quantity-LINK-eat') also functions as an adverbial quantifier, see section 6.1.

[20] The minimal pair in (iab) shows that class-C quantifiers with unmarked complement NPs range over instances of a kind in out-of-the-blue-contexts, cf. (ia), whereas class-C quantifiers with definite-marked NPs are preferably interpreted as ranging over a contextually specified subset of the NP-denotation, cf. (ib):

(i) a. mafii yawàn dȃalibai sun ci jarr̃àbâawaa
most students 3pl.PERF eat exam
'Most students passed the exam.'

b. mafii yawàn dȃalibâ-*n* sun ci jarr̃àbâawaa
most students-DEF 3pl.PERF eat exam
'Most of the students passed the exam.'

Class-C expressions can occur as arguments on their own and combine with the definite article or a possessive suffix, underlining their nominal character:

(80) yawanci-nsù / mafii yawà-nsù sun yàrda dà shaawarà-r̃
majority-3pl more quantity-3pl 3pl.PERF approve with decision-DEF
'The majority of them was in favour of the decision.'

Class-C quantifiers have two striking syntactic properties having to do with their distribution and their number agreement. First, according to Ma Newman (1990: 172), class-C quantifiers meaning 'most of' are restricted to – what appears to be – the subject position. In other syntactic environments, quantitative superlative readings are typically expressed by means of a comparative construction involving the comparative verb *fi* 'exceed, surpass', cf. (81), or the comparative postnominal modifier *mafii yawàa* 'more, most' (cf. (47b)).

(81) taa fi duk yawà-n kaayan adoo
3sg.PERF surpasses all quantity-LINK jewellery
'She has the most jewellery of all.' [Ma Newman 1990: 172]

Interestingly, the quantitative superlative constructions in (47b) and (81) differ from those in (79a-c) and (80) in that they only allow for the relative superlative reading, on which several entitites are compared with respect to the degree to which a predicate holds. The proportional *most-of* reading of (79) and (80), on which a predicate is asserted to hold for the greater part of the denotation of the NP-complement, seems unavailable for these constructions, see Hackl (2006) and reference therein for a discussion of the two readings which are exemplified by the minimal pair *John climbed most mountains* (proportional) vs. *John climbed the most mountains* (relative). From a typological point of view, it would be an interesting result if *most-of* readings could only obtain with class-C quantifiers in subject position in Hausa. This problem calls for more research.

The second striking property of class-C quantifiers concerns agreement facts. As already pointed out before (79), class-C quantifiers in subject position require plural agreement on the aspectual marker, although the subject NP appears to be grammatically singular. Compare the sentences in (79ab') with (82), where the subject pronoun agrees with a structurally identical singular subject *teacher of*.

(79) a'. * *yawanci-n* dàalìbai **yaa** ci jarr̃àbâawaa
majority-LINK students **3sg**.PERF eat exam

b'. * *gaalìbi-n* mutàane-n gàri-n nán **ya**-nàa dà kir̃kì.
majority-LINK people-LINK town-LINK this **3sg**-PROG with kindness

(82) maalàmi-n dàalìbâ-n yaa tàfi Jaamùs.
teacher-LINK students-DEF 3sg.PERF go Germany
'The teacher of the students went to Germany.'

It is possible to give a unified account for the peculiar agreement pattern of class-C quantifiers and their restriction to sentence-initial position in (79) and (80) by assuming that these expressions do not function as grammatical subjects, but as topics. Such an analysis is supported by the fact that topics in Hausa are realized in sentence-initial position (Newman: 615ff.), the unmarked position for topics cross-linguistically. The structure of (79a) would then be as shown in (83), with the structural subject position either left unfilled, or else filled by an empty pro-subject that is grammatically plural and co-indexed with the topicalised phrase. Please recall from (1) that subjects need not be overtly expressed in Hausa:

(83) $[_{TopP}$ yawanci-n dàalìbai$_i$ $[_{TP}$ (pro$_{pl,i}$) sun$_i$ ci jarr̃àbâawaa]]

In the case of (83), co-indexation of the topicalised phrase with the plural pro-subject and/or the person-aspect complex will result in the construal of a plurality, which can then serve as the plural subject for predication. By assumption, such co-indexation of plural *pro* and a lexical singular DP is possible if and only if the singular DP denotes a collection of individuals. Incidentally, this treatment of *most*-expressions in Hausa as topics neatly ties up with speculations in Krifka (1998), who argues for an inherent topic status of *most*-NPs in English, too, in order to account for their preference for wide scope interpretations.

The analysis in (83) is supported by an additional semantic fact. Unlike what is sometimes reported for *most*-NPs in English (see e.g. Partee 1995: 564), class-C quantifiers in Hausa need not be interpreted on a distributive construal and can therefore co-occur with collective predicates, such as *keewàyee* 'to surround' and *tàaru* 'to gather', cf. (84ab):

(84) a. mafii yawà-n / yawanci-n soojoojî-n sun /* yaa keewàyee gàrii
most-LINK / most-LINK soldiers-DEF 3pl.PERF 3sg.PERF surround town
'Most of the soldiers surrounded the city.'

b. mafii yawà-n soojoojî-n sun / * yaa tàaru à gàba-n makar̃antaa
most-LINK soldiers-DEF 3pl. PERF 3sg. PERF gather in front-LINK school
'Most of the students gathered in front of the school.'

If the subjects of (84ab) denote plural groups that are construed on the basis of the denotation of the *most*-expression, the availability of a collective interpretation is predicted.

3.4 Summary

Hausa has three classes of quantifying elements with different syntactic behaviour: There are syntactic modifiers (class A), functional heads (class B), and genuine nominal heads occurring in complex N-N constructions (class C). The three classes of quantifying elements also differ semantically. While class-A quantifiers function as semantic modifiers, and while the quantificational impact of class-C quantifiers is part of the lexical meaning of the noun, the exact semantic nature of the quantificational indefinites of class B remains unresolved: They could alternatively be analysed as genuine quantifiers, as indeterminate pronouns, or as denoting choice-functions, but none of these alternatives is entirely without problems.

Finally, the syntactic and semantic tri-partition in the inventory of quantificational elements seems to be typical of Chadic languages in general. In particular, universal class-B quantifiers of the every/any-type are not restricted to Hausa, but attested in many Chadic languages, see e.g. Hoffmann (1963) on Margi, Frajzyngier (1993) on Mupun, Frajzyngier (2002) on Hdi, Haruna (2003) on Gùrùntùm, and even in other languages in the region, such as the Northern Nigerian variety of Fulani (Atlantic, Niger-Congo) (Jungraithmayr & Abu-Manga 1989). The widespread occurrence of these expressions makes a principled theoretical account all the more pressing, so as to get a better understanding of how natural languages express the concept of universal quantification.

4 Universal Quantification

Hausa has two kinds of adnominal universal quantifiers. The first kind is instantiated by distributive *koo*+wh expressions, corresponding to 'each/ every/ any', which were introduced in section 3. The second kind is instantiated by the collective quantifying expression *duk(à)*, corresponding to English 'all'. This section compares the syntactic and semantic behaviour of the two kinds of universal quantifiers. It is shown that the differences between them mirror those observed with *each/every*-type expressions and *all*-type expressions in other languages (see also Wolff 1993, Newman 2000, and Jaggar 2001 for extensive discussion).

4.1 *Duk(à)* 'all' vs. *koo*+*wh* 'every, any': Syntactic Differences

The universal quantifying expression DUK has two allomorphs, *duk* and *dukà*, which differ from *koo*+wh expressions in a number of ways.

First, while *koo*+wh must precede the NP, *duk(à)* can occur before or after the head NP, apparently without a significant change in meaning, cf. (85a-c). Second, unlike *koo*+wh

expressions, *duk(à)* shows no agreement with the head noun (Newman 2000: 388):

(85) a. *duk* faasinjoojî-*n* vs. faasinjoojî-*n* *dukà* [Newman 2000: 388]
all passengers-DEF passengers-DEF all
'all the passengers'

b. *duk(à)* Hàusàwaa vs. Hàusàawaa *dukà*
all Hausa people Hausa people all
'all Hausa people'

c. *duk* àbinci vs. àbinci *dukà*
all food food all
'all the food'

The variation in word order and the absence of agreement effects suggest that *duk(à)* is a modifying element, rather than a functional head in D. The data in (85a-c) also show that *duk(à)* must combine with a plural count NP or a mass NP. It cannot combine with singular NPs, as illustrated in (86):[21]

(86) * naa ga duk *dâalìbii* (OK with *dâalìbai* 'students')
1sg.PERF see all student
Intended: 'I saw all the students'

Third, (85a) shows that *duk(à)* can occur with definite expressions, whereas *koo*+wh expressions are restricted to occur with indefinite NPs. In particular, the ordering DEF < *duk(à)* in (85a) suggests that *duk(à)* modifies an entire definite DP, as shown in (87ab), rather than a bare NP:

(87) a. duk [$_{DP}$ NP-n/-r̃] b. [$_{DP}$ NP-n/-r̃] dukà

If the NP is overtly marked for definiteness, *duk(à)* universally quantifies over a contextually given set denoted by the definite DP, cf.(85a). If the NP is not overtly marked for definiteness, the universal quantification can either range over the entire kind, as in (85b), or – again – over

[21] In sentence-initial position, *duk* sometimes seems to combine with singular NPs, as in (i).

(i) duk (wani) faasinjà yaa fìta
all some passenger 3sg.PERF leave
'Each and every passenger left.'

Notice, though, that the reading changes from plain 'all' to the stronger distributive interpretation 'each and every'. Given the ungrammaticality of (86), I propose that *duk* in (i) does not form a constituent with the following singular NP. Rather, I take it to be an instance of the sentence-initial adverbial *duk*, which has a completive interpretation and will be discussed in section 4.4.

a contextually specified subset of the NP denotation, as in (85c), see also Matthewson (2001).

Finally, unlike *koo*+wh expressions, prenominal *duk(à)* can be linked to a following NP by means of the nominal linker *-n* (plus gemination), thus forming a partitive construction meaning 'all of NP' (Newman 2000: 389).

(88) *dukkà-n* birai [Newman 2000: 389]
all-LINK monkeys
'all of the monkeys'

Summing up, the syntax of *koo*+wh expressions and *duk(à)* differs radically. As argued in section 3.2.1, *koo*+wh expressions are functional heads in D and combine with bare count NPs. *Duk(à)*, in contrast, seems to function as a modifying phrase, as has been proposed for English *all* in Brisson (1998). Like *all*, the universal modifier *duk(à)* typically operates on definite DPs, overtly marked or not, in which case it universally quantifies over a contextually-given set denoted by the DP (see also the data in Jaggar 2001: 376, for additional evidence). When combined with certain bare NPs, *duk(à)* appears to quantify over the entire kind denoted by the NP, again mirroring the behaviour of English *all* (Matthewson 2001). Further work is required to substantiate these claims.

4.2 *Dukà* 'all' vs. *koo+wh* 'every, any': Further semantic differences

Apart from the fact that *koo*+wh expressions combine with bare NPs, whereas *duk(à)* seems to combine with full DPs, the two expressions exhibit a number of semantic differences that support a separate treatment. These differences concern the interpretation of the two kinds of quantifying expressions as collective or distributive quantifiers, their behaviour under negation, and their behaviour with respect to binding.

4.2.1 Collective vs. distributive readings. As pointed out in Jaggar (2001: 370, 375), the interpretation of *koo*+wh expressions and *duk(à)* differs in that the former are inherently distributive, whereas the latter typically gives rise to collective readings. The distributive nature of *koo*+wh expressions is witnessed by their inability to co-occur with inherently collective predicates such as *tàaru dà* 'to gather' or *keewàyee* 'to surround':[22]

[22] When the singular distributive NP in (89a) is replaced by its plural variant *koo-wàɗannè* NP, the result is grammatical and gives rise to a distributive plural interpretation on which each *group* of students gathered in front of the school, cf. fn.14.

(89) a. * *koo-wànè ɗaalìbii* yáa tàaru à gàba-n makarantaa.
DISJ-which student 3sg.PERF gather at front-LINK school
*'Each student gathered in front of the school.'

b. * *koo-wànè soojà* yáa keewàye gàrii.
DISJ-which soldier 3sg.PERF surround town
*'Each soldier surrounded the city.'

The inherently distributive nature of *koo*+wh expressions is further witnessed by their incompatibility with mass NPs.

Dukà-NPs, on the other hand, can freely co-occur with collective predicates, as in (90ab):

(90) a. *duk ɗaalìbâ-n* sun tàaru à gàba-n makarantaa
all students-DEF 3pl.PERF gather at front-LINK school
'All the students gathered in front of the school.'

b. *duk soojoojî-n* sun keewàye gàrii
all soldiers-DEF 3pl.PERF surround town
'All the soldiers surrounded the city.'

Again, this difference in interpretation is in full parallel to the distinction between distributive *each/every* and collective *all*, already pointed out in Vendler (1967), which is also discussed from a more cross-linguistic perspective in Gil (1995). See also Zerbian & Krifka (this volume) for similar distinctions in Northern Sotho and Swahili (Bantu).

4.2.2 Different behaviour under negation. Jaggar (2001: 377) discusses a second difference between the two kinds of universal quantifiers. In section 3.2.4, it was shown that *koo*+wh expressions receive a negative existential interpretation (*no, nobody, ...*) under VP-negation (cf.73), but a negative universal interpretation (*not every, not everybody, ...*) under sentence negation (cf.74). This is unlike what we find with expressions modified by *duk(à)*, which always give rise to the negative universal surface interpretation *not all*. This is shown in (91a) for VP-negation, and in (91b) for sentence negation:

(91) a. bà-n karàntà duk littàttàafâ-n ba [Jaggar 2001: 377]
NEG-1sg read all books-DEF NEG
'I didn't read all the books.'

b. bàa duk bàaƙii su-kà zoo ba
NEG all guests 3pl-PERF.REL come NEG
'Not all the guests have come.'

Again, the interpretive difference argues for a separate treatment of the two universally quantifying expressions.

4.2.3 Binding differences. A third semantic difference between the two kinds of expressions concerns their behaviour with respect to binding: Grammatically singular distributive *koo*+wh expressions can only bind singular pronouns, cf. (92a), whereas grammatically plural *duka*-DPs must be anaphorically picked up by plural pronouns, cf. (92b):[23]

(92) a. *koo-wànè*$_i$ mùtûm yaa sayar̃ dà *gida-n-sà*$_i$ / * gida-n-*sù*$_i$
DISJ-which man 3sg.PERF sell house-LINK-3sg house-LINK-3pl
'Every$_i$ man sold his$_i$ house.'

b. *duk mutàanê-n*$_i$ sun sayar̃ dà * gida-n-*sà*$_i$ / *gida-n-sù*$_i$
all men-DEF 3pl.PERF sell house-LINK-3sg house-LINK-3pl
'All the men$_i$ sold their$_i$ houses.'

With discourse binding across sentential boundaries, the difference is somewhat blurred. Not surprisingly, *duka*-expressions must be anaphorically referred to by plural pronouns, cf. (93a). *Koo*+wh expressions, however, can serve as antecedents for either singular or plural pronouns, even when occurring in object position. This is different from English where distributive universal quantifiers in object position do not make good antecedents for singular pronouns across sentence boundaries as can be seen from the infelicity of the following sequence: *I examined every$_i$ student. #He$_i$ was smart.*. In (93b), the choice of the singular form *ya* leads to a distributive construal, whereas the choice of the plural form *su* emphasizes the collectivity of the action. Here, the ability of the *koo*+wh expression to serve as the antecedent for a plural pronoun can be explained by means of Kamp & Reyle's (1993: 304) semantic operation of *abstraction*, which forms plural groups from the denoation of distributive universal expressions.

(93) a. *duk* dâalìbâ-n$_i$ sun yi murn̂àa ƙwarai. su$_i$-nàa / #ya$_i$-nàa dàariyaa
all students-DEF 3pl.PERF do gladness extremely 3pl-PROG 3sg-PROG laughter
'All the students$_i$ were very happy. They$_i$ were laughing.'

b. Naa gaa *koo-wànè* dâalìbii. ya-nàa / su-naa matuƙa-r̃ farin cikìi
1sg.PERF see DISJ-which student 3sg-PROG 3pl-PROG limit-LINK happiness
'I saw every$_i$ student. They$_i$ were each / all extremely happy.'

[23] As expected, all four possible combinations of the two universal quantifiers and the two possessive suffixes allow for additional interpretations on which the possessive suffix is free and refers to a contextually given (set of) individual(s).

In sum, the discourse binding potential of *koo*+wh expressions in object position seems to be greater than that of English *each-/every*-NPs.

4.2.4 Conclusion. Hausa, as so many other languages (see e.g. Zerbian & Krifka, this volume), has two different adnominal expressions with universal quantifying force, namely *koo*+wh ('every') expressions and *dukà* ('all')- expressions. The two kinds of expressions differ semantically in their interpretation as distributive or collective, in their interaction with negation, and in their potential to serve as (discourse) antecedents for singular or plural pronouns.

4.3 *Dukà biyu* = 'both'

A final interesting fact about the interpretation of *duk(à)* is that it can combine with the numeral *biyu* 'two' to express dual number 'both' quantification (Jaggar 2001: 378).

(94) a. màalàmâ-*n* *dukà gùdaa* *biyu* zaa sù bar̃ aikì-nsù
teachers-DEF all unit two FUT 3pl leave work-their
'Both the teachers will leave their work.'

b. *dukà biyû-n* sun zoo
all two-DEF 3pl.PERF come
'Both have come.'

The semantic status of these *both*-phrases as definite is reflected by the usual occurrence of the definite marker either on the head noun, cf. (94a), or on the numeral expression in case of pronominal uses, cf. (94b). From a theoretical perspective, the use of the expression *duk(à)* 'all' for expressing the concept of 'both' is in line with analyses that treat such items as closely related, based on their syntactic and semantic behaviour in other languages (Barwise & Cooper 1981, Brisson 1998).

4.4 Other sources of universal quantification

Completing the picture, we will briefly list further means of expressing the concept of universal quantification in Hausa. These include: (i.) verbal (grade 4) morphology in form of a totality extension that indicates completeness or thoroughness of the action expressed by the verb (Newman 2000: 647), cf. (95ab); (ii.) adverbial occurrences of *duk* meaning 'completely,

entirely' (Jaggar 2001: 380), cf. (96); and (iii.) numeral reduplication, giving rise to distance-distributive interpretations analogous to binominal *each* (Zimmermann 2002ab), cf. (97):

(95) a. Audù yaa ci àbinci
Audu 3sg.PERF eat food.
'Audu ate (the) food.'

b. Audù yaa cî-*nyee* àbinci
Audu 3sg.PERF eat.up food.
'Audu ate up the food (completely).'

(96) *duk* naa mântaa dà shii [Jaggar 2001: 380]
all 1sg.PERF forget with 3sg
'I completely forgot about it.'

(97) zaa sù baa kù fensir̃ *bìyar̃ bìyar̃*.
FUT 3pl give 2pl pencil five five
'They will give you five pencils each.'

Closer scrutiny shows that the syntactic distribution and interpretation of reduplicated numerals as in (97) is much less restricted than that of English binominal *each* (Safir & Stowell 1988). Instead, reduplicated numerals in Hausa are more similar to German *jeweils* (Zimmermann 2002ab), and to reduplicating numerals in Telugu, a Dravidian language (Balusu 2006). In particular, reduplicated numerals can occur in subject position of intransitive clauses, in which case they distribute over a plural event, cf. (98a). Second, when in object position, they do not require a clause-mate plural antecedent, because they allow for distribution over a contextually given plural event, cf. (98b).

(98) a. yâaraa *bìyar̃ bìyar̃* sun zoo
children five five 3pl.PERF come
'The children came in groups of five.' / 'On each occasion, five children came.'

b. Audù yaa sàyi lèemoo *ukù ukù*
Audu 3sg.PERF buy orange three three
'Audu bought oranges in threes.'

Hausa reduplicated numerals differ slightly from German *jeweils* and Telugu reduplicated numerals when it comes to backwards distribution of a (reduplicated) subject denotation over an object denotation. In (99), the denotation of the reduplicated subject, i.e. groups of two boys, cannot be distributed over the atomic parts of the plural object denotation, a specific group of girls, without the addition of the expression *kungìyaa* 'group, union'. Without it, the sentence means that a specific group of girls was followed by different groups of two boys:

(99) yâaraa *bìyu bìyu* su-nàa bî-n (kungìya-r̃) 'yammaataa
Boys two two 3pl-PROG following-LINK group-LINK girls
i. - : 'A group of three girls was being followed by several groups of two boys.'
ii. +: 'Each of the girls was followed by a group of two boys.'

It seems, then, as if the presence of *kungìyaa* in (99) effects the breaking up of the plural group into its atomic parts, but we will leave this issue for further research. In section 5, we briefly return to the role of reduplication with respect to relative scope.

The final means of expressing universal quantification in Hausa is the use of adverbial quantifiers with universal force ('always') or exhaustive focus particles ('only'). These expressions are the focus of section 6.

5 Relative Quantifier Scope

Evidence on relative quantifier scope in Hausa is scant so far. The following remarks are therefore based on scattered observations in the existing literature and on preliminary elicitations. Much more work is required in this area in order to see whether inverse readings are freely available, or whether the surface sequence of quantifying elements determines their scopal relations at the level of semantic interpretation. Nonetheless, the following tendencies can be observed.

If a universal *koo*+wh expression takes scope over a bare or numeral NP, the universal quantifier takes semantic scope over the existential quantifier. This effects a distribution of pencils over children in (100a) and of donations of two Nairas over men in (100b).

(100) a. koo-wànè yaaròo yaa zoo dà fensir̃ [Ma Newman 1990: 78]
DISJ-which child 3sg.PERF come with pencil
'Each child brought a pencil.'

b. naa bâa koo-wànè mùtûm nair̃àa biyu [Ma Newman 1990: 78]
1sg.PERF give DISJ-which men Naira two
'I gave each man two Nairas.'

If the *koo*+wh expressions in (100) are replaced by a definite plural expression the otherwise unaltered sentences become ambiguous. On the preferred reading, the bare indefinite NPs are interpreted specifically (i-reading), giving rise to a collective interpretation, but a distributive construal is also possible (ii-reading):[24]

[24] The following example from Newman (2000: 381) confirms the availability of the specific interpretation:

(101) a. yâarâ-n sun zoo dà fensir̃
children-DEF 3pl.PERF come with pencil
i. 'The children brought one (specific) pencil.' → *preferred*
ii. 'The children brought a pencil each.'

b. naa bâa mutàanê-n nair̃àa biyu
1sg.PERF give men-DEF Naira two
i. 'I gave the men two Nairas (in total).' → *preferred*
ii. 'I gave each man two Nairas.'

Presumably, the distributive interpretation is due to the same factor that licenses the availability of a distributive reading in comparable English sentences, namely the presence of a covert distributivity operator that is syntactically adjoined to VP (Link 1983).

As *koo*+wh expressions induce a distributive interpretation, they do not easily combine with reduplicated numeral NPs, which also induce distributivity, resulting in redundancy:

(102) ??naa bâa koo-wànè mùtûm nair̃àa biyu biyu?
1sg.PERF give DISJ-which man Naira two two
??'I gave each man two Nairas each.'

As for differences in the scope-taking behaviour of bare indefinite NPs and *wani*-NPs, the following picture emerges: When occurring in the syntactic scope of a distributive universal *koo*+wh expression, both kinds of indefinite NPs can have narrow scope, but the *wani*-expression gets a more specific interpretation:

(103) a. naa bâ koo-wànè mùtûm *gidaa*
1sg.PERF give DISJ-which man house
'I gave each man a house.'

b. naa bâ koo-wànè mùtûm *wani gidaa*
1sg.PERF give DISJ-which man some house
'I gave each man a certain house.'

Unlike bare indefinite NPs, *wani*-NPs can also take wide scope over a syntactically higher *koo*+wh expression. Unlike in (104a), the first sentence of (104b) can be followed up by naming a specific individual, attesting the existence of a wide-scope reading for the *wani*-NP:

(i) zaa sù baa kù fensir̃ biyar̃
FUT 3pl give 2pl pencil five
'They will give you five pencils in toto.'

(104) a. koo-wànè mùtûm ya-nàa sô-n *màcè*, # wàatòo Claudia Schiffer
DISJ-which man 3sg-PROG liking-LINK woman that is C.S.
'Each man likes a (different) woman # namely Claudia Schiffer.' ∀ > ∃

b. koo-wànè mùtûm ya-nàa sô-n *wata màcè*, wàatòo Claudia Schiffer
DISJ-which man 3sg-PROG liking-LINK some woman that is C.S.
'Each man likes a certain woman, namely Claudia Schiffer.' ∃ > ∀

If the syntactic relation of existential *wani*-NP and universal *koo*+wh expression is reversed, the latter can likewise take inverse semantic scope over the former, as shown in (105):

(105) wani mùtûm ya-nàa sô-n koo-wàcè màcè.
some man 3sg-PROG liking-LINK DISJ-which woman
i. 'Some man loves every woman.' ∃ > ∀
ii. 'Each woman is loved by some man.' ∀ > ∃

The last observation concerning the relative scope of two quantifying expressions has to do with sentences containing two numeral expressions. The preferred reading for (106) is not the surface reading, according to which two children bought three chickens each, but a cumulative interpretation, according to which two children bought three chickens between them. This cumulative reading is sometimes also referred to as an *independent reading*, as none of the two quantifying expressions is interpreted in the scope of the other.

(106) yâaraa *biyu* sun sàyi kàajii *ukù*.
children two 3pl.PERF buy chicken.pl three
'Two children bought three chicken (between them).'

Similar empirical findings have been made for English and German cf. Scha (1981), Kempson & Cormack (1981), Zimmermann (1997), among others.

To conclude this section, let us take a brief look at the interaction of universal quantifiers with wh-expressions, which has found some attention in the semantic literature. Looking at the minimal pair in (107ab), it shows that a *koo*+wh expression in subject position can either be interpreted in the scope of a fronted *wh*-object, or – alternatively – it can take scope over the *wh*-object, giving rise to a distributive pair-list interpretation, cf. (107a). Similar effects have been observed for English (May 1985, Krifka 2001). Interestingly, though, and in contrast to English, such a pair-list interpretation also seems possible for (107b), where the *wh*-subject takes syntactic scope over the *koo*+wh expression in object position:

(107) a. mèenee nèe koowaa ya sàyaa?
what PRT DISJ-who 3sg.PERF.REL buy
i. 'What did everyone buy?'
possible answer: Everyone bought a book.
ii. 'For everybody, what did he buy?'
possible answer: Malte bought a book, Katharina bought flowers, …'

b. wàanee nèe ya sàyi koo-wànè àbù?
who PRT 3sg.PERF.REL buy DISJ-which thing
i. 'Who bought everything?'
possible answer: Malte bought everything.
ii. 'For every item, who bought it?'
possible answer: Malte bought the book, Katharina bought the flowers, …'

Clearly, this matter requires further research, cf. also Green & Jaggar (2003).

Summing up, even though a thorough semantic investigation of relative scope phenomena in Hausa is still lacking, a number of trends and tendencies emerge, which by and large mirror the English facts: (i.) bare indefinite NPs take narrow scope under distributive quantifiers; (ii.) indefinite NPs with *wani* can take either narrow or inverse wide scope with respect to a syntactically higher distributive quantifier; (iii.) distributive quantifiers can take inverse scope over a syntactically higher *wani*-NP; (iv.) distributive quantifiers and *wh*-expressions show scopal interaction.

6 Adverbial Quantification & Exhaustive Focus Particles

This section concludes our investigation of quantification in Hausa by giving a brief overview over adverbial (A-) quantification (6.1) and focus particles with quantificational force (6.2). Particular attention will be paid to the interaction of these two kinds of expressions with the focus-background structure of their clauses.

6.1 Adverbial (A-) quantifiers

6.1.1 Basic inventory. There are three ways of expressing adverbial quantification in Hausa. First, there are adverbial expressions with nominal traits, cf. (108a). Second, the habitual aspect marker *–kàn* in (108b) marks the event expressed by the clause as a customary event that usually takes place.[25] Third, the verb *taɓàa* '(not) ever do' is used in negative clauses to express negative event quantification corresponding to English 'never', cf. (108c).

(108) a. *kooyàushè* 'each time, always', *kullum* 'always', *yawancii* 'mostly', *gaalìbàn/ gaalìbii* 'mostly, usually', *wani lookàcii* 'sometimes', *sau dà yawàa* 'often (lit. 'times with quantity')', *bàa sàɗài bà* 'seldom, rarely (lit. 'not times')'

b. mu-*kàn* ci tuwoo dà ƙarfèe shidà [Ma Newman 1990: 9]
1pl-HAB eat dinner at clock six
'We usually/ always eat dinner at six.'

c. *bà*-n *taɓà* hàɗuwaa dà shii *ba*
NEG-1sg do.ever meeting with 3sg NEG
'I have never met him before.'

A first observation to make is that A-quantifiers in Hausa range over event variables, as do their counterparts in English, see e.g. de Swart (1991) and von Fintel (1994). It follows that A-quantifiers cannot co-occur with individual-level predicates, such as *to know*, which do not introduce event variables into the semantic representation (Kratzer 1995):

(109) *kullum Audù ya-kàn san Jaamusancii
always Audu 3sg-HAB know German
'Audu always knows German.'

The inventory of Hausa A-quantifiers in (108a) is not significantly different from that of other languages, apart from the fact that Hausa has no lexicalised expressions corresponding to negative adverbial quantifiers, such as 'never' or 'seldom (= not often)', see Jaggar (2007) for more discussion of negated adverbial expressions. This lexical gap in the adverbial domain mirrors the absence of negative existential quantifiers in the adnominal domain, which was discussed in section 3.2. Just as with negative quantification over individuals, negative quantification over events must be expressed by the use of the periphrastic negation *bàa … ba*, e.g. in *bàa sàɗài bà* 'seldom'.

As for the syntactic position of adverbial A-quantifiers, these tend to occur in sentence-initial position, preceding the position for focus constituents, cf. (110). This position is typical of topics and frame adverbials in Hausa.

[25] At least for some speakers, the habitual marker *–kàn* appears to be obligatory with certain A-quantifiers such as *kullum* 'always' and *yawancii* 'usually'.

(110) *yawancii* dà màgàr̃ibàa$_F$ a-kèe gani-n-sù [Ma Newman 1990: 293]
usually at dusk 3imp-PROG.REL see-LINK-3pl
'Usually you see them at dusk.'

6.1.2 Interaction with focus-background structure. Just like A-quantifiers in English, their Hausa counterparts are sensitive to the focus-background structure of a clause: If a constituent is overtly marked for focus, i.e. by moving it to the focus position, cf. (2) from section 1, then it must be mapped to the nuclear scope of the quantifier (Zimmermann 2006). See Partee (1991), Herburger (2000), and many others for parallel facts in English. Focus marking on different constituents of otherwise identical clauses thus results in different truth-conditions for these sentences, cf. (111a) for object focus, and (111b) for subject focus:[26]

(111) a. yawancii *waakee*$_{F,i}$ (nèe) Hàwwa ta-kàn dafàa t_i
mostly beans PRT Hawwa 3sg-HAB cook
'Most times, Hawwa cooks *beans*.'

b. yawancii *Hàwwa*$_{F,i}$ cèe t_i ta-kàn dafà waakee
mostly Hawwa PRT 3sg-HAB cook beans
'Most times, it is *Hawwa* who cooks beans.'

At the same time, the relation between A-quantifier and focus constituents is not quite as tight as the data in (111) might suggest, and what is assumed in *semantic* approaches to the interaction of focus and A-quantifiers, see e.g. Partee 1991. Zimmermann (2006) shows that A-quantifiers in Hausa do not need a grammatically focus-marked constituent in order to be interpretable. This happens with instances of non-subject focus, which need not be grammatically marked for focus, independent of the presence or absence of A-quantifiers (Hartmann & Zimmermann 2007). In such cases, the focus of the clause must be resolved pragmatically, leading to ambiguity in the presence of an A-quantifier. In (112), the focus constituents in the otherwise identical first conjuncts are pragmatically controlled for by the negative afterclause. As a result, the A-quantifier associates with the direct object in (112a), and with the VP in (112b):

(112) a. *Gaalìbii* Hàwwa ta-nàa dafà [*waakee*]$_F$, baa tàa dafà [*shìnkaafaa*]$_F$
usually Hawwa 3sg-PROG cook beans NEG 3sg cook rice
'Normally, Hawwa cooks beans, she does not cook rice.'

[26] Parallel facts obtain in Gùrùntùm, another West Chadic language, cf. Zimmermann (2006).

b. *Gaalìbii* Hàwwa ta-nàa [*dafà waakee*]$_F$, baa tàa [*shaarèe dàɓee*]$_F$
usually Hawwa 3sg-PROG cook beans NEG 3sg sweep floor
'Normally, Hawwa cooks beans, she does not sweep the floor.'

The data in (112) thus show that A-quantifiers in Hausa can associate with various constituents in the absence of grammatical focus marking. More generally, the fact that the focus associate of an A-quantifier in Hausa is often resolved pragmatically - in the absence of any grammatical clues - suggests that association of AQs with focus is a pragmatic phenomenon, rather than a grammatically hard-wired process in this language, and possibly universally so, see e.g. Beaver & Clark (2003).

6.2 Exclusive focus particles

The final class of quantifying expressions to be discussed are the focus particles *sai*, *kawài*, and *kaɗai*, corresponding to English 'just, only', which exhaustively quantify over the focus domain, thus giving rise to a sub-kind of universal quantification. Syntactically, these expressions differ from focus particles in English and German in that they only combine with nominal or PP-constituents, which both have a categorical specification as [-V].[27]

As for their interaction with focus, Zimmermann (2006) shows that the association of exhaustive focus particles with focus constituents is subject to strict licensing conditions in Hausa, just as it is in English (Beaver & Clark 2003). For instance, the exclusive focus particle *sai* can only combine with overtly focus-moved NPs (Kraft 1970), cf. (113a), and it never combines with *in situ* foci, cf. (113b):

(113) a. Bàashîr *sai* *ruwaa*$_F$ ya kaawoo
Bashir only water 3sg.PERF.REL fetch
'Bashir, he fetched only water.'

b.*Bàashîr yaa kaawoo *sai* *ruwaa*$_F$
Bashir 3sg.PERF fetch only water

Likewise, *kawài* 'just, only' occurs predominantly with focus-moved constituents. Where this

[27] An anonymous reviewer provides the following example of *sai* combining with a PP:

(i) sai dà rawaa na-kèe zuwàa
only with quivering 1sg-PROG.REL coming
'It is only with quivering that I am coming.'

Hartmann & Zimmermann (to appear) report analogous facts for Tangale (West Chadic). They show that the exclusive particle *núm*, corresponding to *only*, must occur adjacent to the object NP even if it semantically associates with narrow verb focus.

is not the case, *kawài* must be at least right-adjacent to the in situ focus, cf. Zimmermann (2006) for relevant data. The fact that Hausa FPs are in need of a clearly identifiable focus constituent thus argues for a syntactic and semantic specification as [+ focus-functional] in their lexical entry, cf. Beaver & Clark (2003). The difference in the syntactic and semantic behaviour of A-quantifiers and (exhaustive) focus particles thus suggests a categorical distinction between the two types of expressions: While FPs are [+ focus-functional], AQs can be analysed as [- focus-functional], following Beaver & Clark (2003).

7 CONCLUSION

The chapter has given an overview of the main quantificational phenomena in Hausa (West Chadic), such as the coding of indefiniteness and definiteness (section 2), the syntactic and semantic behaviour of numeral quantifiers and quantity expressions (*many, much, few*) (section 3.1), quantifying expressions with existential and universal force (section 3.2 and 4), relative scope (section 5), and, finally, adverbial quantifiers and exhaustive focus particles.

Empirically, we have seen robust positive and negative evidence, coming from the literature as well as from additional elicitations, which warrants the formulation of precise hypotheses about the formal analysis of most of the quantificational phenomena discussed. At the same time, a great number of phenomena are in need of additional research in order to put the findings so far on a more robust empirical footing. The phenomena in need of further semantic fieldwork include the interaction of quantifying expressions with negation, the range of readings available with quantitative superlative constructions, the exact status of generic indefinites and their interpretive ambivalence between universal, free choice, and negative existential interpretations, and the question of relative scope between two or more quantified expressions, among others.

Theoretically, we have established that Hausa has three kinds of adnominal quantifying expressions with different syntactic and semantic properties. Adnominal quantification can be expressed by means of modifying elements (numerals, quantitiy expressions), functional heads (in D?), and full lexical nouns selecting for an NP-complement (*most of*-expressions). Second, it has been established that Hausa has two kinds of adnominal quantifiers with universal force: *koo*+wh expressions, which are functional heads and must receive a distributive reading, and the modifying expression *duk(à)*, which typically gives rise to collective readings. Third, the discussion of adverbial quantifiers and focus particles showed that these elements do not behave very differently from their European counterparts when it comes to association with focus.

From a typological point of view, many of the quantificational phenomena in Hausa are found in other Chadic languages as well, pointing at the existence of a set of general

quantificational traits of this language group. These include at least the existence of indefinite NPs, the postnominal placement of definite determiners, the parallels between numeral and quantity expressions and other modifying elements, the existence of two expressions with universal force, the existence of an existential indefinite, and the absence of lexicalised negative existential quantifiers. It remains to be seen to what extent these quantificational phenomena are typical of the class of Afro-Asiatic as a whole.

Finally, it emerged that even though Hausa differs from European intonation languages such as German and English in a great number of typological parameters, the quantificational systems of the two language groups do not differ very much. For instance, both groups have modifying quantifiers, genuine quantifiers in functional head position, and adverbial quantifiers at their disposal. Both groups exhibit scope interactions between quantifying expressions and negation, or between two quantifying expressions. And both groups have two ways of expressing universal quantification in the nominal domain, i.e. distributive quantifiers and collective modifiers. All this suggests, then, that the degree of parametric variation in the domain of quantification is rather limited, in contrast to other grammatical modules.

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