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HISTORICAL
PHONOLOGY



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TO MY TEACHERS

Jay Jasanoff
Jochem Schindler
Calvert Watkins

FOREWORD

It has now been more than a quarter-century since the last systematic exposition of Hittite historical phonology by Kronasser (1966). More than forty years have passed since the last such treatment in English (Sturtevant-Hahn, 1951). The time seems appropriate for a new synthesis, and indeed soon two such efforts will be available: the present work and the *Handbook of Hittite Historical Phonology* by Sara Kimball, to appear in *Innsbrucker Beiträge zur Sprachwissenschaft*.

Professor Kimball and I obviously are well acquainted with each other's work and have had opportunity to discuss many matters personally. We naturally have not hesitated to adopt the other's analyses where we thought appropriate. However, it seems worth noting explicitly that we have refrained from reading each other's book manuscripts prior to publication, thus affording readers the chance to compare two essentially independent systems.

As the title indicates, my work is expressly Anatolian in orientation. I have gradually come to the conviction over the past decade that only this perspective can fully illuminate the history of Hittite in the current state of our knowledge. A pan-Anatolian approach requires breaking new ground. My goal in what follows is thus twofold. First, I have tried to codify the gains of recent collective scholarship, pointing out at the same time those areas where major controversies or unsolved problems remain. Second, I have not hesitated, particularly in the case of the languages other than Hittite, to offer entirely new proposals, sometimes in response to questions not previously asked.

Juxtaposition of well-established facts with new hypotheses (the latter in some cases necessarily speculative) carries some risk. I have tried to distinguish carefully between the two, and I earnestly ask readers to give full weight to all qualifiers and to take careful note of the opposing views cited.

In crediting etymologies, I have made grateful use of the published portions of the dictionaries of Tischler (1977ff) and Puhvel (1984ff). For remaining cases I have made an honest attempt to survey the secondary literature, but some omissions are inevitable, for which I ask indulgence. Non-specialists should note that in the case of the "minor" languages, Anatolianists have often thought it sufficient to identify a word with its Hittite cognate, without citing a PIE root etymology.

Even in the case of Hittite, sometimes only a root etymology is available. Since my phonological analyses often depend on assumption of a particular morphological preform, I have thought it best not to impute to my predecessors claims which they did not make: hence the frequent distinction between "identification" and "preform".

I am most grateful to all colleagues who have assisted me by sending offprints, preprints and personal bibliographies and by answering my questions by post or e-mail. I wish to thank in particular Heiner Eichner, Harry Hoffner, Jay Jasanoff, Sara Kimball, Günter Neumann, Norbert Oettinger and Calvert Watkins. My special thanks go to Andrew Garrett and Donald Ringe, who kindly read through a preliminary version of the manuscript and offered a number of useful suggestions and criticisms. Any remaining infelicities naturally are my responsibility. Finally, I want to express my gratitude to the late Warren Cowgill, who in 1982 with characteristic generosity sent me the unpublished manuscript (ca. 1970-71) of the Anatolian chapter of a projected Indo-European *Lautlehre*. The many insights cited as "W. Cowgill, pers. comm." testify to how much I have profited from his kind assistance.

Chapel Hill
May, 1994

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CHAPTER ONE: INTRODUCTION

1.1 General Methodological Considerations

1.1.1 I take the goal of a historical phonology to be to account for how the phonological system of a given language came to be the way it is. Ideally, one would first establish the synchronic phonology of various stages of the language and then determine the changes which took place from one to the other.

In practice such a procedure is virtually never possible in the strict sense, and certainly not in the present case. As is typical, the starting point for our account is not directly attested, but merely reconstructed. Furthermore, part of the basis for this reconstructed stage is the very set of languages whose attested form we are trying to explain. In this instance, even the attested stages of those languages are only available in written records. These records are at best incomplete, and at worst fragmentary, employing writing systems which are far from optimal. We must deduce the synchronic phonologies of these languages from the texts, and in doing so we are unavoidably influenced by among other things our expectations based on the initial reconstructed stage from which we assume these languages are derived (cf. Čop, 1963: 22).

The dangers of near-circularity in such a procedure are evident, but we do have some controls available. One may judge the following proposals (and competing ones) first of all on the basis of the typological plausibility of both the synchronic systems and the diachronic changes assumed. One may also evaluate the overall scheme in terms of its internal consistency and coherence.

1.1.2 The focus of this study is phonology, but one cannot neatly separate this from other components of a language. I cannot follow Eichner (1980: 125ff) or Van Windekens (1976: v) in basing historical phonology mainly on individual lexical etymologies. I contend rather with Pedersen (1938: 13) that a thorough understanding of historical phonology depends crucially on one's interpretation of morphology. This is particularly true of vocalism, given the peculiar system of morphologically conditioned ablaut in PIE. A mere root etymology will never be able to establish whether, e.g., a case of Hitt. /u/ continues PIE */ew/, */ow/ or */u/. It is true, of course, that we must base our first rudimentary historical phonology on a few evident root etymologies. We can then begin the morphological analysis, which in turn leads to refinements in the phonology,

and we continue the process, moving back and forth between the two components. Once again we face the problem of near-circularity and must resolve it in the same fashion. Most of the morphological analyses which I assume in the following have appeared in print, but by no means all of them have won general acceptance. Obviously, I cannot justify here my choice in each instance. I have tried to make my assumptions explicit and to refer the reader to their source and to significant opposing views.

1.1.3 I make full use in what follows of the principle of economy or "Occam's razor". This not only means that I posit the fewest elements necessary in reconstructed pre-stages of the languages involved. I also assume the simplest synchronic phonological system permitted by the orthography. My procedure thus differs explicitly from that of Eichner (1974: 3), who first seeks a linguistic explanation for any orthographic variation, while admitting that not all such variation reflects linguistic reality. I prefer rather to seek first an orthographic motivation (cf. Rosenkranz, 1964b: 168f & 1978: 28) and to admit linguistic variation only when absolutely necessary. Obviously, we must be prepared to change our minds, but I believe it is safer to build up from an under-differentiated system than to try from the beginning to give a linguistic account for every orthographic variant. See 1.2.6 for a discussion of some specific cases.

1.1.4. It is self-evident that study of the phonology of written languages is inextricably tied to analysis of the orthography. For purposes of exposition I have tried to treat strictly orthographic matters in the respective sections of the introduction and to reserve phonological analysis for the chapters on the individual languages. A strict separation of these topics is obviously impossible, and considerable cross-referencing and some repetition are inevitable.

Since interpretation of cuneiform orthography is considerably more complex and controversial than that of the alphabets involved, I have had to devote substantially more space to the former. I wish to state explicitly that I fully share the view of current scholars such as Eichner (1974: 5), Oettinger (1979a: 533ff), Kimball (1983: 16ff), and Starke (1990: 11) that one must take cuneiform orthography seriously. Any advances in our understanding of the phonology of the cuneiform languages depend crucially on improved analyses of the orthography. However, we must bear in mind that progress in this area has in turn been made possible only by the veritable revolution in the chronologization of cuneiform manuscripts and

texts from Boğazköy which has taken place in the last quarter century (1.2.3, end): see the clear realization and justified reserve of Kammenhuber (1969: 174).

We must judge the work of past generations in the field on the basis of the resources available to them. Forced to treat the entire Hittite corpus as an essentially undifferentiated mass, they could hardly avoid attributing alternations such as *pí-ti*, *pí-e-ti*, *pí-e-te*, *pí-di* and *pí-e-di* to "arbitrary variation" (Willkür). Eichner (1980: 141) is clearly correct in insisting on the importance of beginning orthographic and phonological analysis with cases of invariance. However, it is grossly unfair to criticize earlier researchers for sometimes(!) failing to sort out the invariant examples from the welter of variation before them. I must repudiate Eichner's implication (1974: 2; 1980: 128ff) that scholars such as Pedersen, Sturtevant and Kronasser for some reason failed to apply recognized reconstructive and analytic techniques to the cuneiform languages. It is truly grotesque to fault them for properly refusing to posit phonetically absurd "sound laws" for every orthographic variation (pace Eichner, 1980: 147f). They did apply correct methodology with their usual rigor, within the limitations of the data available to them, and they achieved far-reaching and valid results, some of which we can now confirm and amplify—not because of superior technique, but based on additional knowledge. The cooperative and cumulative nature of scientific enterprise is manifest in the pages which follow.

1.1.5 In relating the Indo-European languages of Anatolia to the rest of the Indo-European family, I assume a form of the traditional "family-tree" model. The irrealties and limitations of this model are well-known, but it has proven to be a most fruitful means of explicating linguistic relationships. I am not yet persuaded that a temporal-spatial model such as that advocated by Meid (1975) can be realized in a meaningful way. I consider it an open question whether the non-Anatolian Indo-European languages underwent a period of common development after "separation" of the Anatolian group (as noted by Cowgill, 1979: 27, whether one terms this hypothesis "Indo-Hittite" or not is immaterial). However, I reject any form of this hypothesis which claims that the common source of the non-Anatolian languages is essentially the unmodified PIE of Brugmann. Of the two choices offered by Neu (1976: 253f), I thus choose the first alternative: a traditional family-tree model of PIE with substantial revisions required to integrate the new facts of the Anatolian languages (as well as those of Tocharian) and to reflect other contributions of recent decades of Indo-European scholarship.

On the other hand, I find the family-tree model unsuitable for describing the relationships among the Anatolian languages themselves, which without doubt were in direct contact with each other for considerable periods (and in a variety of sociolinguistic conditions): cf. Rosenkranz (1978: 113). I consider all prior attempts at subgrouping the Anatolian languages premature, since the criteria (isoglosses) used were mostly invalid or incomplete. This includes the assumption of a special subgroup consisting of Luvian and Lycian (Puhvel, 1966: 238ff; Kammenhuber, 1969: 122; Oettinger, 1978: 75, et al.): cf. Gusmani (1989/90: 78). I believe we must take up this topic again from the beginning, without preconceptions. I have thus refrained from making any "dialect" subgroupings within Anatolian, but have merely cited apparent isoglosses when they occur. The reader should view even these as tentative and subject to revision.

1.1.6 After a description of the Anatolian family, I will present first the phonological system which I assume for Proto-Indo-European (PIE) and then that for Proto-Anatolian (PA), followed by an explicit description of the changes which took place between PIE and PA. I will then describe the synchronic phonology of each Anatolian language in turn and the changes from PA to each. For obvious reasons, the account of Hittite will be considerably more complete and detailed than that for the other languages. Nevertheless, I believe it is crucial to treat the languages in strictly parallel fashion and to attempt an explicit reconstruction of the Proto-Anatolian system, no matter how tentative and fragmentary the result. It is as much the goal of this work to point out what is not known as it is to present what has been achieved. I am convinced that such an attempt, even where it fails, will lead to further substantial progress.

1.2 The Anatolian Family of Indo-European Languages

1.2.1 General Background

It has been known since the earliest days of Hittitology that Hittite was not the only Indo-European language of ancient Anatolia. Already Forrer (1919) identified Palaic and Luvian among the cuneiform documents of Boğazköy. After a brief false start he recognized that CLuvian was closely related to Hittite (Forrer, 1922: 215-223), as already seen by Hrozný (1920: 39). Forrer (1922: 241-247) also tentatively added Palaic to the family, but its affiliation was firmly established only by Otten (1944) and Bossert (1944: 77ff & 90). It was also clear by the thirties that the language of the "Hittite

hieroglyphs" belonged to the same group (Meriggi, 1932: 10 & 42ff; Hrozný, 1933: 77ff), although the correct position of this language within the family was not fully clarified for another forty years. Due chiefly to the pioneering work of Meriggi (1936a, 1936b), the Indo-European character of Lycian and Lydian and their special affinity with the Hittite-Palaic-Luvian group were also established, though by no means universally acknowledged.

It is therefore no exaggeration to say that the concept of an Anatolian family of Indo-European languages has existed for at least fifty years (cf. e.g. Pedersen, 1945: 4). Nevertheless, very little work has been done to date on reconstructing the features of Proto-Anatolian. Works such as Meriggi (1980a) and Rosenkranz (1978) are for the most part merely useful compendia comparing the features of the attested Anatolian languages. Comprehensive historical grammars of Hittite, from Sturtevant (1933 and 1951) and Kronasser (1956 and 1966) to Oettinger (1979a), generally derive Hittite from PIE, treating the other IE languages of Anatolia in appendices or asides. A notable exception to this approach has been the work of Heiner Eichner, but he has not yet published his views on Proto-Anatolian in a systematic fashion (for an extremely concise and incomplete summary of phonological matters see Eichner, 1986a: 12f, and 1988b: *passim*). The most serious attempt to date to define the features of Proto-Anatolian is that of Kammenhuber (1969), but the constraints of her assigned topic limit her to the Hittite-Palaic-Luvian group, and at the date of composition (1962/3) the chronologization of Hittite manuscripts and major reevaluation of Luvian had scarcely begun. She also attributes far too much to "substrate" influence (1969: 266ff).

We thus find the ironic situation in which the concept of an Anatolian family (including at least Hittite, Palaic, Luvian and Lycian) is taken for granted, but in practice virtually ignored. To cite one egregious example, virtually the entire debate over the "Indo-Hittite" question (NB the name!) has focused on which features are (or are not) present in Hittite.

The reason for the undue concentration on Hittite is hardly obscure. We have far less evidence for the other languages, and until recently our understanding of them was quite limited. Therefore the Hittite-oriented approach of the works cited above was fully justified (Kronasser, 1956: 26f). However, a number of breakthroughs in the past twenty years has dramatically altered the situation, and we are now in a position to take the concept of Proto-Anatolian seriously.

Nevertheless, one still finds in the literature doubts about a Proto-Anatolian unity (Gusmani, 1965b: 70f, Rosenkranz, 1978: 2, Faucounau, 1982) or minority views explaining shared features of the Anatolian group explicitly in terms of convergence rather than common development: see Lazzeroni (1960) and the summary of literature in Fronzaroli (1957: 119ff). It therefore seems appropriate to cite some of the evidence pointing to a "common intermediate stage" which we may term Proto-Anatolian, rather than taking this concept for granted. I explicitly take this reconstructed language to be the source of at least Hittite, Palaic, Luvian (Cuneiform and Hieroglyphic), Lycian (and Milyan), and Lydian (for this use of the term "Anatolian" see Gusmani, 1965b: 69, and Carruba, 1969c: 51). I am now convinced that Carian, Pisidian, and Sidetic also belong to this same group, but our knowledge of these languages is far too limited to permit a systematic description. They will thus not be mentioned in this work outside the introduction.

1.2.2 Defining Isoglosses of Proto-Anatolian

Since the subject of this work is phonology, a complete list of PA phonological isoglosses will be found in Chapter 4. I cite here only three highly marked and thus strongly characterizing examples. I have in general preferred to give a very short list of assured PA isoglosses rather than a longer one including more dubious cases. It is worth noting here that in most instances it is Lydian which stands apart and keeps the list so short. The number of assured features shared by all the other languages is considerably higher. It is not yet clear whether the special status of Lydian is due to peculiar circumstances of its development or merely to the inadequacies of our documentation.

1.2.2.1 Phonological Isoglosses

(1) "Lenition" of PIE voiceless stops and $*h_2$ after a PA long accented vowel or diphthong (Eichner, 1973: 79ff et aliter). Note Hitt. *wēk-* 'ask for' < PIE $*wēk-$, Pal. *kītar* 'lies' < $*kēytorī$, Luv. *īti* 'goes' < $*h_1ēyti$, Lyc. *tadi* 'puts' < $*d^hēh_1ti$, Lyd. *taac-* 'votive offering' < $*d^hēh_1ti-$ 'putting' (for the last example see Melchert, 1994b).

(2) "Lenition" of PIE voiceless stops and $*h_2$ between PA unaccented vowels (Eichner, 1973: 100⁸⁶; 1980: 146⁸⁹ et aliter; Morpurgo Davies, 1982/3; Melchert, 1992a: 190f). Note Hitt. pret. 1Sg mid. $-hhaḥat$ = Lyc. $-zagā$ < (virtual) PIE $*-h_2e-h_2e+$ (Eichner, 1975a: 77); CLuv. abl.-inst. $-ati$ (&

HLuv. *-ari*) = Lyc. *-a/edi* (and perhaps Lyd. *-ad*) < **-Vti* (cf. Hitt. abl. *-azzi* with unlenited ending restored). For further examples in Lydian present third person endings in *-d* < **-di* see Melchert (1992b: 46ff). Pal. *malitannas* 'sweet, honied' (ult. < **mélit-* 'honey') probably shows an indirect example (see 8.1.4.1). Likewise the Palaic adjectival suffix *-ik(V)-* probably reflects lenited **-ik-*.

(3) Gemination of single consonants after PA word-initial accented short **ē* with concomitant change of **ē* to **a* (see 4.1.4 (1) and Melchert, 1994d). Note Hitt. obl. *amm-* 'me' and Lyd. *ēm(i)-* 'my' < PA **āmmV-*, CLuv. *ānnan* = Lyc. *ēnē* 'below' < PA **ānnem*, Hitt. *anna/i-* = Pal. *ānni-* = Lyd. *ēna-* 'that' < PA **ānno/i-*.

1.2.2.2 Morphological Isoglosses

(1) Development of an ergative case marker **-anti* from the ablative-instrumental of neuter *r/n-*stems (Garrett, 1990, pace Carruba, 1992c).

(2) Analogical spread of the *u* vocalism from 2nd sg. nom. **tū*, acc. **tu* 'you' to 1st sg. 'I, me'. Note Hitt. *ūg*, *ammug*, HLuv. *amu*, Lyc. *amu/ēmu*, Lyd. *amu*, and Pal. enclitic *-mu*. This remains the only viable explanation, pace Rosenkranz (1978: 66).

(3) Univerbation of preverb **pē* 'hin-' with **ay-* 'give, take' to produce oppositional 'give' (Melchert, 1989a: 44f, w/ refs.): Hitt. *pāi*, *pianzi*, Pal. iter. *pīša-*, Luv. *pīya-*, Lyc. *pīje-*, Lyd. *bid-*.

(4) Creation of a demonstrative/anaphoric stem **ob(ʰ)ō/i-*: Hitt. *apā-*, Pal. *apa-*, CLuv. *apā-*, HLuv. *(a)pa-* 'that; he/she', Lyc. *ebe-* 'this; he/she', Lyd. *bi-* 'he/she' (but this may be a preservation instead: cf. Jasanoff, 1976: 130).

(5) Fixing of the deictic particle **-u* as marker of the imperative (at least in the third person): Hitt. inv. 3rd sg. *-t/du* = Pal. *-t/du* = Luv. *-tu* = Lyc. *-(t)u*. The absence in Lydian is surely due to loss.

1.2.2.3 Syntactic Isoglosses

(1) "Split" Ergativity (see 1.2.2.2 (1) above).

(2) Development of "chains" of enclitic particles and anaphoric pronouns after the first accented word in the

sentence. Despite considerable variation among the languages, at least the beginnings of this system must be PA. See Rosenkranz (1978: 93, with ref.).

(3) Virtually obligatory use of overt markers (sentence-initial and enclitic) to connect all but the first sentence in a discourse. Once again the languages vary in the specifics, but the morpheme **mō* (marking new information, often lightly adversative) is pan-Anatolian, while **-Ho* (< PIE **-h₂o*) 'also' is attested everywhere but in Lydian.

For distinguishing features of the Anatolian subgroup cf. Kammenhuber (1969: 248-261) and Rosenkranz (1978: 125ff).

1.2.3 Hittite

The language we call Hittite was the chief administrative language of the Hittite empire. It is attested in cuneiform documents which, with the exception of one magnificent bronze specimen (see Otten, 1988), are written on baked clay tablets. The great majority of these have been found at the ancient Hittite capital Hattuša, near modern Boğazköy (now Boğazkale), ca. 90 miles east of Ankara. However, there have also been significant finds at Maşat Hüyük, Ugarit (Ras Shamra), and most recently near Çorum, as well as scattered examples elsewhere (see Laroche, 1971). The documents date from the 16th to the 13th centuries B.C.E..

The Hittites themselves called their language *nešili*, i.e. the language of Neša (= Kanesh). When a Nesite dynasty conquered Hattuša and adopted it as their capital, they took their language with them, and with the ascendancy of Hattuša this language became the official language of the Hittite Empire. This latter role has also led to the modern usage of calling the language "Hittite". We may safely assume that this language was once the spoken language of at least the ruling class in Neša and at an early date also in Hattuša. To what extent it was the spoken language of the general population in Hattuša or other parts of the Empire is a controversial question which is at present unanswerable and which may remain so. The oft-repeated suggestion (e.g. Kronasser, 1966: 32f, w/refs., Carruba, 1981b: 134ff) that Hittite is merely a written "chancellery language" no longer spoken by anyone at the time of our texts has some plausibility, but must be regarded as unproven. One should in any case guard against assuming that the Hittite language is coterminous with the Hittite polity or Hittite culture.

The bulk of our texts deal with various aspects of the state religion: cultic administration and practice and related mythology. There are also many rituals of a more personal application, which are a mixture of sympathetic magic and practical medical treatments. We also have a number of historical texts (annals of kings, treaties and protocols, land-grants) and a most significant set of legal provisions, as well as a few examples of other genres (for an overview see again Laroche, 1971).

The Hittite policy toward religion was inclusive, and consequently the Hattuša archives preserve texts in the non-Indo-European languages Hattic and Hurrian, as well as bilinguals in these languages and Hittite. Many more Hittite cultic and ritual texts contain Hattic or Hurrian material, in the form of either genuine loanwords or foreign words in Hittite contexts. However, there is no evidence that these languages had any effects on Hittite phonology, and indeed any influence outside the lexicon is dubious, despite earlier claims to the contrary.

It had been known since the earliest days of Hittitology that the texts in our possession do not all come from the same era, and already Sommer (1938: 206f) was able to summarize some of the linguistic features which distinguish "Old Hittite" from the language of the later Empire. However, it was only the discovery of a tablet fragment in an assured Old Hittite archaeological stratum and recognition of its highly characterized sign shapes and other external features which led to a new ability to distinguish older from newer Hittite manuscripts (see Otten, 1964: 12f; Otten-Souček, 1969: 1f&42f; Rüster, 1972; and Neu-Rüster, 1975). Despite some lingering controversy, there is now a broad consensus that we may demarcate three successive stages of the Hittite language: Old Hittite (ca. 1570-1450), Middle Hittite (ca. 1450-1380), and Neo-Hittite (ca. 1380-1220). Work on the chronology of Hittite manuscripts continues, and further refinements and some reassignment of individual texts may be expected, but the general validity of the system is no longer in question. Any study of the Hittite language must now distinguish carefully between Old and Middle Hittite compositions in contemporary manuscripts, such compositions in later copies, and Neo-Hittite compositions. Our new ability to chronologize texts and manuscripts has already shown that many of the orthographic variations which baffled earlier investigators (see the allusion in 1.1.5 above) become comprehensible when the proper order of their attestation is recognized. The phonological analysis of Hittite given here rests on the division of the corpus given in Melchert

(1977), with minor revisions as per Neu (1980a: xiiiiff) and Tischler (1992).

Texts: Laroche (1971). Grammar: Friedrich (1960). Lexicon: Friedrich (1952ff), Friedrich-Kammenhuber (1975ff), Güterbock-Hoffner (1980ff). Historical phonol. and morphol.: Sturtevant (1933&1951), Pedersen (1938), Kronasser (1956&1966), Oettinger (1979a). Etymology: Tischler (1977ff), Pnhvel (1984ff).

1.2.4 Palaic

Palaic was the language of the land of Palā, which for a number of reasons may be localized in north central Anatolia, north of the Hittite heartland in the central plateau. In all likelihood Palā lay to the northwest across the Halys River in classical Paphlagonia, and the general resemblance of Palā and Paphlagonia is probably not fortuitous. It is clear that by Neo-Hittite times (14th–13th centuries B.C.E.) Palā no longer existed as a distinct unit, and it is generally assumed that Palaic was already extinct as a spoken language by that time. It is in fact possible that the spoken use of Palaic had already ceased by the time of our earliest texts in the 16th century.

Our evidence for Palaic comes from a handful of partially preserved cuneiform documents written by the Hittites and preserved at Hattuša. Some manuscripts are contemporary with OH, others are from the NH period. The texts are religious in nature, containing both ritual and mythical passages, most relating to the cult of the god Zapparfa. The Palaic we have is much influenced by the autochthonous language Hattic in its lexicon (more so than Hittite), but this impression may be misleading, being due merely to the restricted nature of our evidence. In any case, Palaic is not only clearly Indo-European but often more conservative than Hittite. However, our knowledge of the language is severely limited by the miniscule corpus. One should note in particular that the absence in Palaic of an otherwise pan-Anatolian linguistic feature may very easily be due to chance.

Texts, lexicon, & grammar: Kammenhuber (1959a&b), Carruba (1970a, w/ref. to prior works). Historical phonol. & morphol.: Kammenhuber (1969), Watkins (1978), Wallace (1983a&b), Melchert (1984a).

1.2.5 Cuneiform Luvian

The cuneiform documents from Boğazköy also contain texts in a form of Luvian (called *luwili* in the texts themselves). The new edition of the Cuneiform Luvian corpus by Starke (1985) has shown that with a handful of fragmentary exceptions the fairly extensive cuneiform corpus represents variations on less than a dozen distinct textual compositions. The texts are mainly rituals, both religious and therapeutic in nature. A few of the manuscripts are contemporary with Old Hittite, but most are from the 14th and 13th centuries.

In addition to the Cuneiform Luvian texts, we also find a number of Luvian words within Hittite texts (often, but not always, marked with the so-called "Glossenkeil"). Some of these are genuine loanwords (with Hittite inflection), others unassimilated foreign words (with Luvian inflection). Since Hittite and Luvian are closely related languages with a number of shared features in their lexicon and nominal inflection, it is not always easy in individual cases to decide whether a given word is Luvian or Hittite. I have tried to base my description of Luvian phonology on words which occur in assuredly Luvian contexts. Any exceptions are explicitly noted.

It is now clear that Cuneiform Luvian and Hieroglyphic Luvian (1.2.7) are closely related dialects of the same language, but their relationship to one another is problematic. The Hieroglyphic material suggests that some form of Luvian was spoken over large areas of the Hittite Empire at least at some period, perhaps including Hattuša itself. However, there is no evidence at all to suggest that Cuneiform Luvian is the "Hattuša dialect" of Luvian, despite the place of its discovery. Given the nature of our documentation (a very restricted corpus from a site with an undoubtedly complex sociolinguistic situation), it seems prudent to follow the majority of scholars in treating Cuneiform and Hieroglyphic Luvian as two parallel and independent dialects whose precise geographical and chronological relationship remains to be determined. Readers should not forget, however, that most of our HLuvian texts are half a millennium later than our CLuvian evidence. I must also mention one further potential complication. It is quite possible, but not yet demonstrable, that one portion of the CLuvian texts, the "Istanuvian Songs", represents a different dialect from the rest of the CLuvian corpus (and different from HLuvian as well): cf. Kammenhuber (1969: 122), Rosenkranz (1978: 6) and Carruba (1981b: 136).

Texts: Starke (1985) (also still useful is Otten, 1953c). Grammar and lexicon: Laroche (1959a), Melchert (1993b). Historical grammar: Starke (1980a, 1981, 1987 & 1990).

1.2.6 Cuneiform Orthography

The documents we have in Hittite, Palaic and Cuneiform Luvian were written by the same scribes working in the same tradition. I believe therefore that without counterevidence we may and should assume that the principles of orthography are the same for all three languages (cf. Kammenhuber, 1969: 174, and Meriggi, 1980a: 248, contra Kimball, 1986: 87). The burden of proof falls on anyone who wishes to demonstrate the contrary. I am not aware of any convincing examples of fundamental differences in the use of cuneiform for Hittite, Palaic and Luvian (minor differences will be noted below).

The cuneiform system adopted by the Hittites is a complex one, mixing logographic and phonetic spellings. Words may written entirely logographically in Sumerian (transliterated in Roman capitals) or in Akkadian (italic capitals) with no indication of the Hittite pronunciation. One also finds Sumerian with Akkadian "phonetic complements" (e.g. DINGIR^{LUM} = Akk. *ilum* 'god'). Words may also be spelled entirely phonetically. Finally, a word may be written with a Sumerian logogram (with or without an Akkadian complement) plus a Hittite phonetic complement: e.g. DINGIR.MEŠ-*uš* = /syúnus/ or DINGIR^{LIM}-*iš* = /syúnis/. For obvious reasons the focus here will be on words spelled out phonetically. Non-specialists should note that the reason for my not citing what would otherwise seem obvious items of inherited vocabulary is that the phonetic shape of many common words is hidden behind consistently logographic spellings.

The phonetic system of cuneiform is syllabic, including V, CV, VC and CVC signs. The orthography can thus directly indicate final consonants and internal clusters of two consonants, but initial or final consonant clusters or internal clusters of three or more consonants must be represented using "empty" vowel signs: e.g., *wa-al-(a)h-ta* = /wáHta/. While there are some internal clues (see further below), we as non-native speakers must often deduce which vowels are "empty" by indirect means, including etymology. However, since original clusters may potentially be broken up by anaptyxis or prothesis, the risk of circularity here is especially acute.

1.2.6.1 Stops

1.2.6.1.1 Interpretation of Hittite stop orthography has been and remains a topic of great controversy. It thus seems prudent to begin with those points which may be regarded as established facts and then proceed to more debatable aspects of the problem.

The Akkadian syllabary adopted by the Hittites is itself not perfectly consistent in the spelling of stops. In *VC* signs the contrast between voiceless and voiced stops is never indicated: e.g. *IB* may spell /ib/ or /ip/, and so forth. The Akkadian syllabary has a great number of homographs. E.g., Labat (1976: 270) lists twenty-one signs for /çe/. By convention the most frequently used or basic sign is transcribed unmarked (*ŠE*), the second and third variants with acute and grave accent marks respectively (*ŠE'*) and (*ŠE''*), and any further homographs with subscript numbers (*ŠE₁*, *ŠE₂*, etc.). Furthermore, Akkadian was both spoken and written over vast stretches of time and space, including by non-native speakers. It is not unusual for a sign which usually spells a voiceless stop to be used for the homorganic voiced stop, and vice-versa: e.g., *BA* regularly represents /ba/, but may also be used for /pa/. I purposely have taken this example from Boğazköy Akkadian: see Durham (1976) for many more instances.

Nevertheless, there is generally in Akkadian a clearly preferred sign for spelling each sequence of stop plus vowel. It is an undisputed fact that the Hittite scribes do not take advantage of this system in spelling stops in Hittite, Palaic and CLuvian. E.g., it is clear from usage in Boğazköy Akkadian and in logograms in Hittite texts that the Hittite scribes know very well the signs *BA*, *BE*, and *GU*. However, they never employ these in spelling Hittite words to contrast with *PA*, *PE*, and *KU*. With a single exception (*pa-an-gu-uš* at *KBo XVI 71 Ro 9*), the sign *GU* is never used in spelling Hittite (pace Rüster-Neu, 1989: 242), while *BE* functions only in its alternative use as /pVt/ or /pVd/ (see 1.2.6.7 (1) refuting the contrary claim of Puhvel, 1979a&1982). The sign *BA* appears very rarely in Hittite words and even then does not contrast with *PA*.

Even in those cases where the Hittites employ the signs for both the voiceless and voiced stops, they do not use them contrastively. While a great number of words are spelled consistently with either the voiceless or voiced sign, this usage does not correspond in any meaningful way with the voicing quality of the sounds being indicated, based on their expected

inherited values: even the limited claim of Oettinger (1979a: 551ff) to the contrary is not supported by his own data, as already noted by Hart (1983a: 112). Nor can any plausible combination of sound changes account for the distribution of orthographic voiceless and voiced stops in Hittite.

Furthermore, the number of cases where the signs for voiceless and voiced stops are used interchangeably is considerable. I cite here merely examples for initial *KA* and *GA*: *ka/ga-an-kV-* 'hang' (< PIE **ke/onk-*), *ka/ga-ne-eš-* 'recognize' (< PIE **gñēh₂s-*), *ka/ga-ra-u-wa-ar* 'horn' (< PIE **kreh₂-*), *kam/ga-mar-š(-)* 'defecate' (< PIE **gʰod-*), and so forth. Similar examples in medial position and for the pairs *GI/KI*, *TA/DA* and *TI/DI* are easy to find.

Attempts to explain these alternations as linguistically real are hopelessly implausible: see e.g. Eichner's truly desperate account of *pētanti/pētan* vs. *pēdan* (1974: 21f) or of *dān/tān* (1992: 57). Any interpretation of Hittite stop orthography must explain in some way the failure to use *PA/BA*, *TA/DA*, *KA/GA* etc. contrastively.

On the contrary, there can no longer be any reasonable doubt that the Hittites do distinguish consistently between orthographic single and geminate stops in intervocalic position. The validity of this synchronic aspect of "Sturtevant's Law" (Sturtevant, 1932a; Pedersen, 1938: 5; Crossland, 1951: 126ff) is independent of the phonetic realization or historical development one assumes.

It is undeniable that there is considerable variation in *-V-TV-* and *-VT-TV-* spellings. However, consistent variants such as 3rd sg. *a-ki* 'dies' vs. 3rd pl. *ak-kán-zi* 'die' or *e-ku-/a-ku-* 'drink' vs. iter. *ak-ku-uš-kV-* point to genuine morphophonemic alternation and support rather than falsify the claim of a linguistic contrast. Other apparent counterexamples involve what we may term "simplified spellings", a concept whose importance was first pointed out to me by W. Cowgill (pers. comm.), but see also Rosenkranz (1964b: 168f & 1978: 30), with reference to von Soden (1952: 9-10), and Friedrich-Kammenhuber (1988: 42). We may illustrate this principle by the spellings of the conjunction-enclitic sequences */nu=ta/* 'and (to) you' and */nu=kan/* 'and' + particle. Except for a handful of cases of *nu-uk-kán* in OH, the latter is always spelled *nu-kán*, while the former is always *nu-ut-ta*. It would be absurd to claim that the */k/* of */nu=kan/* is somehow "lenited" or weakened while the */t/* of */nu=ta/* is not. The motivation for the difference in spelling is

purely (ortho)graphic: the sign *UD/T* is very simple, while *UG/K* is relatively complex. Since the geminate quality of the /k/ in this extremely common sequence is well-known to the scribes, they simply do not bother to indicate it at the cost of writing out the long sign *UG/K*. This graphic interpretation of the spelling *nu-kán* is confirmed by the consistent spelling of /nu=ta=kan/ as *nu-ut-ták-kán*. Once again, it is simply not credible that a change would affect the /k/ of /nu=kan/ and not that of /nu=ta=kan/. The scribes choose to express the geminate here because the *CVC* sign *TAK* is available to replace the more complex *TA-AK*. Likewise, in "agent" nouns in *-(a)ttalla-*, the geminate (voiceless) *-tt-* is frequently spelled when the simple sign *KAT* is available (14x of 20x in my sample), but more often omitted when *-Ca-at-* with the complex *AT* would be required (only 24x of 63x). The geminate is assured by *pal-wa-at-ta-al-la-* (OH ms.). Contra Oettinger (1986b: 43ff) a reading */-adalla-/* is unnecessary and quite unlikely given 38 geminate spellings. The relative complexity of the signs *AT* and *IT* also accounts for the statistics cited by Jucquois (1972: 114), which despite his claim have no linguistic significance.

The "simplified" spelling is regular in /nu=kan/, which is not only ubiquitous in NH texts but also involves a morpheme boundary (for the reinforcement of simplified spelling at morpheme boundary cf. the remarks on *-(uz)-zi-* in 1.2.6.3). The absence of geminate spellings in compounds (*šalla=kartatar*, *katta=kurant-*) and cases of total reduplication (*tarpa=tarpa-*, *kalli=kalli-*), all of which are poorly attested, is thus non-probative, and they are useless for determining the quality of word-initial stops (contra Jucquois, 1972: 116ff). Within lexical morphemes the appearance of *-V-TV-* for expected *-VT-TV-* is predictably less consistent. However, when we find occasional *la-lu-ki-ma-* for regular *la-lu-uk-ki-ma-* or *na-aḫ-ša-ra-ta-za* for *na-aḫ-ša-ra-at-tV-*, we should not necessarily conclude that such spellings are "errors". We must bear in mind that for native speakers writing systems are merely mnemonic devices which need give only enough information to assure the correct interpretation on the part of the reader. This holds true even more for the present case where the readers are members of a small elite professional class.

It is true that for some poorly attested words we may not be able to decide whether a *-V-TV-/-VT-TV-* variation marks a genuine morphophonemic alternation or is merely a case of simplified spelling. The existence of such indeterminate cases (even in substantial numbers) does not invalidate the claim that *-V-TV-* vs. *-VT-TV-* spellings are regularly contrastive in Hittite.

The concept of "simplified" spellings also accounts for the inconsistency with which the scribes indicate the geminate quality of stops in clusters: the geminate in a cluster can only be indicated at the cost of an extra sign. It is obviously easier to write *ši-pa-an-* than *ši-ip-pa-an-* for /sp-/ or *ḥar-ta-ga-* instead of *ḥar-ta-ag-ga-* for /Hartk-/ (but *ḥar-tág-ga-* is relatively easy and hence also quite frequent). Once again, the native speaker has no difficulty in interpreting the simpler spelling correctly.

1.2.6.1.2 There is now a considerable body of evidence to suggest that the historical portion of "Sturtevant's Law" is also correct: i.e., in general cuneiform -VT-TV- spellings are used for inherited voiceless stops and -V-TV- for inherited voiced or voiced aspirate stops. This applies to Palaic and CLuvian as well as Hittite. Systematic deviations from this pattern reflect conditioned sound changes in PA or in the individual languages (see 4.1.1.1; 4.1.1.3; 4.1.6.1.1,1; 10.1.1.3). See already the careful demonstration of Čop (1963: 23ff).

We are thus faced with the following questions: (1) if Hittite has inherited a contrast between voiceless and voiced stops, why do the scribes not use the available contrasting Akkadian signs to indicate it? (2) in the one position where the scribes do seem to indicate the contrast (intervocally), why do they choose to do so by simple vs. geminate spellings?

I cannot review here the entire history of this issue, but in general the reaction has been as follows. If the synchronic distinction in Hittite were voiceless/voiced, the scribes would simply employ the available Akkadian signs to mark the contrast. Therefore, the inherited voiceless/voiced contrast must have been shifted to something else. This "something else" is indicated in intervocalic position by simple vs. geminate spellings, perhaps on the model of Hurrian, which in its cuneiform version appears to show a similar pattern (see Derooy, 1966: 26ff; Laroche, 1976: 22; and Hart, 1983a: 10, all w/refs.). For reasons just cited, the simple/geminate device would be applied to clusters only sporadically. Furthermore, there is obviously no way to extend this pattern to initial stops. The scribes simply deal with the fact that the contrast cannot be indicated in word-initial position (as suggested above, this would not present an insurmountable problem for native speakers). While they use this or that sign in certain words by convention, the scribes do not use the signs for voiceless and voiced stops contrastively in initial position, since the relevant contrast to be expressed is not voicing anyway.

Predictably, there has been no agreement on just what the new contrast other than voicing is. The two most popular options have been fortis/lenis (Petersen, 1933: 22; Milewski, 1949: 189ff; Kronasser, 1956: 58) or aspirated/unaspirated (Gamkrelidze, 1968: 94; 1982 passim).

It is difficult to confirm or refute the fortis/lenis conception, in part because the very definition of "fortis" vs. "lenis" is a slippery one. Clear evidence for or against aspiration is also lacking. For that matter, it is by no means clear that fortis/lenis and aspirated/unaspirated are mutually exclusive characterizations.

Čop (1955a: 68ff) and Puhvel (1974: 294) have pointed out examples like iter. *ak-ku-uš-kV-* beside *e-ku-/a-ku-* 'drink'. Since there is ample evidence that *-ku-* here spells a unitary labiovelar (see 5.1.1,2) they infer that the "geminate" *-kk-* in *ak-ku-uš-kV-* is conditioned by contact with the following /s/ (see also Čop, 1953: 175). As noted, orthographic simple stops generally continue inherited voiced stops, while orthographic geminates reflect voiceless stops. When the reflexes of voiced stops change to the reflexes of voiceless stops before /s/, it is hard not to follow Čop and Puhvel in viewing this as merely (inherited!) regressive voicing assimilation of obstruents. Unfortunately, however, aspiration of a voiceless stop next to /s/ is also plausible. Examples of an inherited voiced stop being devoiced (and spelled as a geminate) before a voiceless stop (where only devoicing and not aspiration would be natural) are lacking. Furthermore, if the synchronic distinction in Hittite is still voiceless/voiced, how are we to answer questions (1) and (2) posed above?

First, as A. Garrett has pointed out to me, the examples of devoicing of stops before /s/ in the iterative verbs may well be prehistoric and do not assure that regressive devoicing is a living synchronic rule. Synchronically, alternations like *eku-/aku-* vs. *akku-ške-* may be morphologically conditioned. In fact, if *akkuške-* and *bukkiške-* 'conjure' contain medial anaptyctic vowels which have become underlying (as argued in 6.1.6.3.2), then this must be true. Spellings like pres. 2nd sg. *e-ku-uš-ši* (not **e-ek-ku-ši*) support this view. The consistent single *-k-* of *nana(n)kušš(iye)-* 'grow dark' < **no-nok^{us}-* (Watkins, 1985b: 252) also seems to preclude a synchronic devoicing rule. If the synchronic phonemic contrast is voicing, it is also difficult to explain the absolutely consistent spelling of /nek^wts/ 'evening' as *ne-ku-uz* (over 50x, never **ne-ek-ku-uz*). Note that one cannot explain away this example by appealing to the change of PIE **/k^w/* to PA **/g^w/*

in medial position (4.1.1.1,3). Even if the regular outcome of **nek^w-* was **neg^w-*, by regressive voicing assimilation **neg^w-t-*s should result in [nek^wts]. The same argument applies to positing the PIE root as **neg^w-* (Oettinger, 1979a: 209, & Schindler, 1967a: 290f). Since the verb stem *neku-* 'become twilight' occurs for pragmatic reasons only in the pres. and pret. 3rd singular (i.e. before **-ti/-t*), it also cannot provide any analogical source for a preserved unassimilated **neg^w-*.

Second, there is now solid, though limited, evidence that the orthographically geminate intervocalic stops close the preceding syllable; i.e., they are true geminates! See 6.1.5.24 below and already Čop (1966-68: 50, with different reasons). Furthermore, the treatment of Germanic loanwords in Finnish cited by Sturtevant (1933: 74) and Kronasser (1956: 57) shows that a contrast of voiceless vs. voiced stops may be reinterpreted as long vs. short. Note that the examples include long stops in clusters. This is, of course, a case of sound substitution. However, realization of voiceless stops as geminates and a direct historical development to a fortis vs. lenis system are also possible. Compare the situation in Old Tamil (and Proto-Dravidian), as described by Zvelebil (1970: 82f), where an underlying voiceless vs. voiced contrast is realized as geminate vs. simple in intervocalic position. However, in Modern Tamil the contrast is fortis vs. lenis with fortis stops being long intervocalically (cited also by Deroy, 1966: 28f).

1.2.6.1.3 A historical renalysis in the Anatolian cuneiform languages would have been favored by other developments. We know that voiced stops are generalized in PA in word-final position (see 4.1.6.3.1 (1) and cf. OLatin). The status of voicing in word-initial stops is problematic. We might think to look to univerbations and compounds for information, but there are very few of these (even fewer involving inherited stops). Furthermore, in interpreting what little data there is, we face the problem of "simplified" spellings at morpheme boundary cited above.

We do know, however, that the first millennium languages Lycian and Lydian have generalized voiceless stops in word-initial position: see 12.1.1.2 and 14.1.1.1. There is also some evidence to suggest that HLuvian of the first millennium has done the same: see 1.2.7.2.1 and also Starke (1987: 248²¹). Note furthermore the situation in Hurrian already in the second millennium (Laroche, 1976: 23; Deroy, 1966: 27f).

Direct evidence for the same development in the second millennium Hittite, Palaic and CLuvian is merely suggestive, but

it does exist. First, we find unexpected geminate stops in several reduplicated forms in Hittite. It is now clear that on semantic grounds the stems *titti-* 'install' and *tit(ta)nu-* in the sense 'establish' must be derived from **d^heh₁-* 'put, place' not from **(s)teh₂-* 'stand'. Likewise, *titti-* 'suckle' reflects **d^heh₂(i)-*. Note also perhaps *kikkis-* 'happen; become' < **geis-* (Eichner, 1973: 78, pace Szemerényi, 1942: 391, and Melchert, 1984b: 103), and *dudduwarant-* 'lame' < **d^heu-* (Neumann, 1958: 225) or **d^hwer-* (Čop, 1956a: 35). Oettinger (1979a: 347) tries to explain this discrepancy by a "Verschärfung" after an accented reduplicating syllable, but this is unlikely in view of precisely the opposite development in the same environment in Luvian and Lycian (see below 12.1.1.1). Also against Oettinger's suggestion is the fact that there is no "Verschärfung" in reduplication involving continuants: *šiši-* 'shoot' (vs. iter. *šišša-* 'press'; Oettinger, 1979a: 474), *lilakk-* 'to fell', *laluke-* 'shine', *mēmi/a-* 'speak', *ninink-* 'raise', *nana(n)kušš(iye)-* 'grow dark' (vs. *nanni/a-* 'drive' with suffix *-anni/a-*, as per Kronasser, 1966: 122, contra Oettinger, 1979a: 491). I suggest rather that the reduplicated stems with unexpected geminate stops were formed in the prehistory of Hittite after devoicing of initial voiced stops (thus already Hart, 1983a: 122ff, who also properly rejects the claim of partial devoicing cited below).

Note: Eichner (1980: 160) makes the same argument, using several of the same examples. However, he weakens his case severely by implausibly restricting the devoicing to position before /i/ (see *ibid.* 158ff). He gives no motivation for why devoicing should be conditioned by vowel quality! The suggestion that **di > ti* is to fill a gap in the distribution of /t/ will not work: by his Procrustean interpretation of orthography, the generalization of the *TE* sign in initial position also requires devoicing before /e/ (*ibid.* 147ff), where there is no distributional gap. The attempt by Oettinger (1979a: 450 & 552) to restrict initial devoicing only to **/gi-/* is also preposterous phonetically and unsupported orthographically. Likewise the claim by Eichner (1973: 78 & 1980: 158ff) of a general devoicing of **/gi/* to */ki/*. Contra Riemschneider (1973: 273ff) the sign *GI* is used for */ki/* and */gi/* as well as */ke/* and */ge/*: note *gi-nu-/ki-(i)-nu-* 'break open' and *a-ar-gi/a-ar-ki* cited by Eichner himself (see already Melchert, 1984b: 103).

Obviously, the above does not prove that the second-millennium cuneiform languages had devoiced initial stops, but I believe the assumption is plausible. I know of no credible counterevidence: none of the alleged examples of Anatolian etymological initial voiced stops surviving in Greek and Roman sources is compelling (pace Jucquois, 1972: 115). It is clear that voiced stops persisted after PA: special developments in the various individual languages require their presence (6.1.1.2,

10.1.1.4). However, the differences already shown by Hittite, Palaic and CLuvian during the OH period mean that the period of PA unity must be pushed back into the third millennium: cf. Carruba (1992b: 254ff) and Oettinger (1993a). It seems to me that the subsequent spread of devoicing of word-initial stops as an areal feature across Anatolia is quite possible.

The assumption that word-initial stops are all voiceless in Hittite, Palaic and CLuvian would directly account for the orthography. Because there is no contrast word-initially, there is no contrastive usage of signs for voiceless and voiced stops in that position. It is true that by convention certain words are spelled with initial *DA*, *GA*, and *GI/E*, but there are many cases of alternate spellings with *TA*, *KA*, and *KI/E*. Furthermore, note that what restrictions there are on the use of stop signs are all at the expense of the voiced set. As indicated, *GU* is not used at all in Hittite words, and *BE* only for the value /pVt/, /pVd/. Significantly, both *DI/E* and the rare *BA* are barred from word-initial position (on the first see also Eichner, 1980: 149).

Inherited voiceless/voiced stops would thus contrast only in intervocalic position, where the distinction is realized as geminate vs. simple, and in clusters, where a difference in length is also quite possible (pace Kronasser, 1966: 16f).

There is one more complication in the distribution of stops—the existence of a few secondary geminate voiced intervocalic stops. The gemination of voiced stops across a syllable boundary resulting from "Çop's Law" surely involves no direct phonetic devoicing (see 10.1.1.3): CLuv. *maddu*— 'wine' < PA **médu*— must be in the first instance [mád.du] (so also Oettinger, 1993b: 155). There is also no reason to suppose devoicing in the gemination of voiced non-coronal stops after /r/ in Hittite (6.1.6.1.1.4): **h₂erbh-* > Hitt. *bar(ap)p-* 'change status', although it cannot be excluded. Finally, the double *-pp-* of Hitt. *kappi-* 'small' < **kómbi-* is most plausibly explained as [-bb-], assimilated from **-mb-*.

The distribution of voiceless and voiced stops in the prehistoric cuneiform languages would thus have been: *T*-word-initially, *-D* word-finally, *-TT-* (and a few *-DD-*) vs. *-D-* intervocalically and in clusters. Note that there is no longer any contrast of simple *T* vs. *D*. The operative contrast is one of long vs. short internally. Under these circumstances a reanalysis of the underlying distinction into one of fortis/lenis with a medial realization of long vs. short seems plausible. The few cases of *-DD-*, being long, were unsurprisingly identified

with the fortis set. The voicing quality of both the long and short medial stops would now have been open to free variation, and I see no reason to doubt that such variation took place. Hence the basic indifference to spelling $-TT-$ as $-VT-TV-$ or $-VD-DV-$ and $-T-$ as $-V-TV-$ or $-V-DV-$.

The treatment of borrowings into and from Luvian and Hittite also supports the idea that the contrast in medial stops is long/short, not voiceless/voiced. Luvian *arkamman-* 'tribute' appears in Akkadian as *argammanu*, with the geminate $/-mm-/$ duly indicated, but $/g/$ for etymological $*/k/$. That the voiced pronunciation is already Luvian is likely: cf. the remarks on Lycian, 11.1.1 (1), and Lydian, 13.1.1. Conversely, Akk. *tuppu* 'tablet' is borrowed as Hitt. *tuppi-*, with geminate for geminate, while both *bābilu* 'Babylonian' with single voiced $/b/$ and *a/utuplu* (a garment) with single voiceless $/t/$ appear with single stop: *papilili* and *adupli(t)-* (see already Eichner, 1980: 131, on the first two).

As is evident from the above discussion, the synchronic status of stops in the cuneiform languages is a complex issue, and a definitive solution does not yet seem possible. I believe that the sum of current evidence is best accounted for by assuming that the underlying voicing contrast which still existed in PA was reanalyzed as a fortis/lenis opposition in the cuneiform languages, triggered by the gemination of intervocalic voiceless stops (probably already in PA), plus the prehistoric devoicing of initial voiced stops and the secondary creation of medial geminate voiced stops. The absence of this reanalysis in Lycian and Lydian would be due to their having eliminated all PA geminates and having spirantized intervocalic voiced stops. The above analysis remains merely one interpretation, and it does not seem useful to inflict upon readers a special set of symbols for the putative fortis/lenis contrast. In describing the cuneiform languages, I will for convenience use $/p/$ vs. $/b/$ etc. for the fortis and lenis stops respectively.

1.2.6.2 "Laryngeals"

The Akkadian syllabary has a series of signs for a consonant conventionally transliterated as *ḥ*. The sound in Akkadian is apparently a voiceless velar fricative (Crossland, 1951: 92f; von Soden, 1952: 26). In Hittite words *ḥ* reflects the PIE "laryngeals" $*h_2$ and $*h_3$ (on their possible realization see 2.1, 4). Orthographically, *ḥ* patterns like the stops with contrastive $-bb-$ and $-b-$ between vowels, usually $-ḥ-$ in clusters (but occasionally geminate). Once again regular morphophonemic alternations such as strong stem *nāḥ-* vs.

weak *nabb-* support the assumption that *-bb-* vs. *-b-* is contrastive. One also faces the same problem of occasional "simplified" spellings of expected geminates. For a very useful discussion of the synchronic status of *b* in Hittite see Crossland (1951: 94f) and Puhvel (1965: 80ff).

Historically, geminate *-bb-* is the regular reflex of **h₂*, while all clear cases of medial *-b-* continue "lenited" **h₂*. Hittite *b* apparently represents **h₂* only in word-initial position. Given the probable values of PIE **h₂* and **h₃*, and seeing that **h₂* patterns with the voiceless stops in the "lenition" processes of PA (see 4.1.3.2.1), I assume a development similar to that of the stops. In PA the distinction is probably still voicing, but realization of the voiceless **h₂* medially as a geminate, plus initial devoicing of **h₃* and final voicing of **h₂*, leads to the same reanalysis in terms of fortis/lenis: cf. again Hurrian (Laroche, 1976: 24). In the attested cuneiform languages the synchronic contrast is thus between a fortis pharyngeal fricative /H/ realized medially as a geminate *-bb-* and a contrastive lenis pharyngeal fricative /h/ which occurs medially as *-b-* (cf. Puhvel, 1965: 83). For me initial *b-* represents the generalized fortis (voiceless) pharyngeal /H/, as per above. In final position the voiced **/-h/* of PA has been regularly lost, and final fortis /-H/ restored in some cases by paradigm leveling: see 6.1.6.3.1 (4). Note that my assumption of pharyngeal articulation for PA and the cuneiform languages is not crucial, and velar fricatives instead are quite possible.

1.2.6.3 Sibilants

The Akkadian syllabary as adopted by the Hittites has only two series of signs for sibilants. The one set is used for the Akkadian voiceless palatal fricative /ç/, the other for voiceless alveolar/dental /s/, for "emphatic" /ʃ/ and for voiced alveolar/dental fricative /z/. The use of a separate set of signs for /s/ is relatively rare in Old Babylonian and Old Assyrian (von Soden, 1952: 30), and it is hardly surprising that the Hittites do not employ these signs with phonetic values.

The Hittites use the second set for the voiceless affricate /ts/. Whether this phoneme has a palatal allophone [tʃ] or the like is indeterminate (cf. Čop, 1969: 45f), but there is no good evidence for any other distinctive value (pace Kronasser, 1966: 50f). By convention the transliteration is *z*.

The first set is used for etymological dental/alveolar **s* and for the result of initial **dy/i-*. The conventional transliteration as *š* merely reproduces the Akkadian value.

Evidence from spellings of Hittite names in foreign sources (and vice-versa) generally supports a dental/alveolar articulation: see Crossland (1951: 129, w/refs.), Friedrich (1960: 30) and Edel (1973: 60 et passim). Since the adoption of the second series for /ts/ leaves no other alternative, the mere use of Akkadian *š* per se cannot be taken as evidence that Hittite /s/ has a palatal quality, pace Eichner (1980: 134): cf. Sturtevant (1933: 70), Pedersen (1938: 9) and Hart (1983a: 104ff). There is in any case only one Hittite /s/ phoneme, whatever its realization. Inherited PIE *[z], to the extent that it survives, remains an allophone of /s/, and we would thus expect it to be written like /s/. If initial obstruents are regularly devoiced as claimed above in 1.2.6.1.3, then the result of initial *dy/i- would also fall together with /s/, and there would be no contrastive */z/ phoneme in Hittite.

As per Bergsland (1938: 284), Jucquois (1972: 125), Watkins (1975a: 376), and in further detail Bernabé (1973: 415ff), single vs. double spellings are contrastive for *š*: cf. *āšānt-* = [asá:nt-] 'being' vs. *āššānt-* = [á:ššant-] 'remaining'. See also Eichner (1973: 83) and Oettinger (1979a: 450). Since the synchronic contrast of simple vs. geminate stops is not voicing, there is no reason to interpret *-š-* vs. *-šš-* as /-z-/ vs. /-s-/ (contra Benveniste, 1962: 8).

On the other hand, there is no contrast between intervocalic *-z-* and *-zz-* (I find unbelievable Oettinger, 1979a: 87¹⁰ & 530, and Eichner, 1980: 138⁵⁷). The ratio here is purely graphic (cf. Oettinger himself, 1976a: 27). As first pointed out to me by W. Cowgill, /-e/itsi-/ is regularly written as *-iz-zi-* or *-e-ez-zi-* because the sign *IZ/EZ* is a very simple three-stroke sign, while the sequences /-atsi-/ and /-utsi-/ are very often spelled simply *-(C)a-zi-* and *-(C)u-zi-* because the signs *AZ* and *UZ* are relatively complicated. Since these sequences occur in the same environments in terms of accent and vowel length, it is implausible to suppose a genuine linguistic contrast (in the sense of either Van Brock, 1966: 214, or Jucquois, 1972: 120ff). Unsurprisingly, the simplified spellings are far more frequent at morpheme boundary: in nouns in *-uzzi-* the ratio of *-Cu-zi-* to *-Cu-uz-zi-* is only 1:8 (20:160+ in my sample), but for pres. 3rd sg. *-nu=zzi* the ratio is 7:10 (140+:200+). Given that /ts/ reflects the assibilation of a voiceless stop *t, we would expect the stop portion of the affricate to be geminate between vowels, and I assume that *-V(z)zV-* is phonetically [-Vt.tsV-]. There are also instances in Hittite only (not Palaic or Ocluvian) of a genuine geminate [-ts.ts-], spelled *-Vz-za-(az)-zV-*: see e.g. *e-ez-za-(az)-zi* = [é:ts.tsi] 'eats' (with Pedersen, 1938: 127, and Van Brock, 1966: 210ff). Contra Čop (1966-68: 56) [-ts-] and [-ts.ts-] are not equivalent (it is merely the pre-dental allomorph in [-ts-] which is analogically spread, not [-ts.ts-]).

Addition of the geminating conjunction *-a* 'also' to a final */-ts/* unsurprisingly leads not to *[-ts.tsa]*, but merely to *[-ts.sa]*: *ku-na-an-za-(aš)-ša* 'and slain'. Likewise in clusters of */t+s/* plus obstruent */-tsT-/* becomes *[-ts.sT-]*: *ba-az-za-aš-ta* beside *ba-a-az-ta* 'became dry'. See Sturtevant (1933: 49), Pedersen (1938: 127), Čop (1969: 45) and 6.1.6.1.1.2. As per 1.2.6.6, I reject the idea of a real anaptyctic vowel (contra Eichner, 1981: 60).

1.2.6.4 Sonorants

The letters *m*, *n*, *r*, *l*, *y* and *w* have their expected values. As in the case of *s*, simple versus geminate spellings are in general also contrastive for *m*, *n*, *r*, and *l* (see the references in the preceding section beginning with Bergsland). As in the case of the stops, one does occasionally find simple spellings for expected geminates (but not vice-versa). Once again, in the case of poorly attested words determination of the correct spelling may be difficult, but such cases do not falsify the general contrast.

The situation with *m* vs. *mm* is much less clear than for the other sonorants. This is due to the fact that "mimation" (word-final */-m/*) was lost in Akkadian during the period from Old to Neo-Hittite (see Durham, 1976: 187f&483ff, and von Soden 1952: 32&80). However, grammatical endings which had once ended in */-m/* continued to be spelled with *-Vm* and *-CVm* signs. The Hittites were thus aware that such signs could be used for syllables which did not end in */-m/*. This is proven by examples such as the use of *TUM (TU₄)* to spell the Hittite 3rd person imperative ending */-tu/*. As a result, in NH manuscripts (the bulk of our corpus) neither *-CVm-mV-* nor *-Vm-mV-* spellings are compelling evidence for a real geminate */-mm-/*. When OH manuscripts show consistent single *-m-*, one should take NH spellings in *-CVm-mV-* as further examples of *CV_x* (see Melchert, 1991b: 126). Likewise, the hapax *la-a-am-ma-a-mi-it* in a NH copy for correct *la-a-ma-an* 'name' has no probative value, and the ad hoc "explanation" of Eichner (1980: 144⁶⁴) may be safely ignored. Once again, this problem affects only individual examples. The basic contrast is assured by such absolutely consistent spellings as *am-mu-ug* 'me' and *wemiye-* 'find'.

Separate signs for */w/* and */y/* exist only for *WA* and *YA*. There is no evidence to suggest that the Hittites use these signs in any other value. In particular, there is not the slightest justification for ever reading *YA* as disyllabic *[i_a]*, pace Eichner (1984: 204f). Nor are *WA* and *YA* ever used for

[we/i] and [ye/i], contra Kronasser (1966: 72&75), who wrongly denies *e/o ablaut in Hittite. The Hittites' acrophonic use of GĒSTIN 'wine' (= /wiyan(a)-/) as *wi*, (Hrozný, 1917: 5⁵) is secondary and inconsistent. Sequences of /w/ and /y/ with other vowels must thus be indicated by combinations of the vowel signs U/Ū and I respectively or by Cu and Ci signs. This situation creates considerable ambiguity, since in principle a spelling Ci-u may indicate /Cyu/, /Ciw/ or /Ciyu/. Resolution of this problem requires the use of alternate spellings, allomorphic variation, and (unavoidably) etymology. See Melchert (1984b: 48ff, 83ff). Several problems involving /w/ and /y/ spellings remain outstanding.

The need to express /w/ before /e/ and /i/ by use of U/Ū and /y/ before /e/ and /u/ by I leads also to pleonastic use of u/ū-wa for /wa/ and i-ya for /ya/, including word-initially: see Melchert (1984b: 13, 20f, 30f, 47f) and already Sturtevant (1929a: 363ff & 1951: 20ff), Pedersen (1938: 7), Kronasser (1966: 71ff) and Meriggi (1980a: 257). I remain totally unpersuaded by the arguments of Eichner (1984: 204f).

1.2.6.5 Vowels

1.2.6.5.1 Vowel Quality

1.2.6.5.1.1 The cuneiform syllabary used by the Hittites was developed for a language (Akkadian) with a four-vowel contrast: /a/, /e/, /i/, /u/. However, the system is deficient in e-value signs. For a number of consonants there is a single sign for the values /Ce/ and /Ci/ or /eC/ and /iC/. The vowel quality may be disambiguated by using the so-called "scriptio plena" (i.e. using a V sign in conjunction with the CV or VC sign, as in e-e/id or le/i-e). However, since the principal function of the scriptio plena is to indicate vowel length (see 1.2.6.5.2), this device is obviously not suitable for all cases. In a number of words in Hittite we cannot yet determine whether the vowel is /e/ or /i/, and the evidence of Palaic is too meager to be absolutely sure that e and i spell distinct vowels in the language, although this seems likely. In CLuvian, where we have reason to believe there is no /e/ distinct from /i/, the most common spelling is with i, but the existence of so many signs with either e or i value leads to a few hypercorrect spellings with e-signs. I know of no contrastive use of e and i spellings which would justify a phoneme /e/ in Luvian (thus with Mittelberger, 1964: 67f, contra Neumann, 1992b: 40).

The situation is further confused by the convention of transliterating ambiguous Ce/i or e/iC signs consistently with

the *i*-values unless accompanied by an *e*-vowel sign. This leads to pairs like Hitt. *pí-dí* beside *pé-e-dí*, which appear to show a vowel alternation which does not exist: we should read *pé-dí* and *pé-e-dí* for [pé:di]. In reality, however, it is only etymology which inclines us to read *pé-(e)-dí* and not *pí-(e)-dí* (which is equally possible in principle). Given the use of *Ci* to indicate /Cy/ (see the preceding section), the ambiguities of spellings *Ce/i-e(C)* are multiple. See again Melchert (1984b: 83ff) for a discussion (also Pedersen, 1938: 8). Readers should be aware that any "bound" transcription of Hittite (or Palaic or CLuvian) unavoidably involves interpretation, and there is not always a one-to-one correspondence between the bound and narrow transcriptions. See the cogent remarks of Kimball (1983: 32ff).

A careful examination according to the chronology of the manuscripts has shown that alternation between unambiguous *e*- and *i*-signs is quite rare in original manuscripts of all periods. In OH the very few cases all have some chance of reflecting linguistically real alternation (Melchert, 1984b: 112ff). However, there are some unexpected uses of *e*-signs in MH and NH manuscripts (of contemporary compositions) which are too frequent to be labeled errors and yet unlikely to be real cases of /e/ for /i/. I therefore conclude that these represent a permissible use of these signs for /i/ vocalism, which would not be unparalleled in Akkadian. As per Melchert (1984b: 136f), I interpret *hu-u-ma-an-te-ya* and *pít-te-(ya)-an-tX* as normal /Hu:manti=ya/ and /pityant-/ , with *TE* as *TI*. A reading /pite(y)ant-/ < *peth_zéye/o- (Zucha, 1988: 129) is phonologically impossible (cf. 6.1.4.2.2). Likewise the famous *wa-<ar>-ri-iš-ša-at-te* /warrissati/ in the NH Šaušgamuwa Treaty. Since this verb ending is spelled exclusively as *-(t)ti* in OH and MH, a genuine archaism in the sense of Eichner (1980: 142⁶², w/refs.) is excluded. I would now also assume that sporadic NH spellings of /in/ as *-Ci-en-* (Melchert, 1984b: 147) represent a real alternate use of *EN* as *IN*.

1.2.6.5.1.2 Contrary to a number of claims (Weidner, 1917: 2ff; Held-Schmalstieg, 1969: 105ff; Eichner, 1980: 156; cautiously Hart, 1983a: 124ff), there is no good evidence that the Hittites use the signs *u* and *ú* to indicate phonemically distinct vowels. These two signs are in general used equivalently for /u/, /u:/ and /w/. The only exception is word-initially before an unlike vowel, where *u* indicates /u-/ and *ú* marks /w-/: see Melchert (1984b: 13 & 1992d: 186ff) and already Hrozný (1917: 195ff), Sturtevant (1933: 53f & 1951: 20), Kronasser (1966: 19), Friedrich (1960: 24) and Rosenkranz (1978: 36f).

1.2.6.5.1.3 It is quite likely that the cuneiform languages have nasalized vowels in certain environments (see 6.1.4.1.3), but the claim of Rosenkranz (1964a: 322f) and Meriggi (1980a: 273) that *-Vm-CV-* is used to spell *[-V]* in CLuvian is false. For preservation of **-ms-* in Luvian see Melchert (1988b: 211ff).

1.2.6.5.2 Vowel Quantity

For reasons set out in Melchert (1992d: 186), I now follow Kimball (1983), Eichner (1980: 150ff), Georgiev (1983: 16ff), Zucha (1988: 370f) and others in assuming that the "scriptio plena" in Hittite (*V-VC* and *CV-V* spellings) marks vowel length and only vowel length in most cases (thus already Hrozný, 1917: xii!). In the absence of contrary evidence I further extend this assumption to Palaic and Cuneiform Luvian. The only clear exception to this involves sequences of *Cu-u/ú* or *Ci-i*, some of which mark the presence of a glide /w/ or /y/ (see Melchert, 1984b: 48ff). As already stressed by Hrozný, the use of scriptio plena is quite inconsistent (so also Kimball, 1983: 4f&43ff). Rosenkranz (1964b: 168) points to the fact that scriptio plena is often omitted due to space limitations as evidence for its essential optionality. While its appearance establishes vowel length, its absence does not necessarily preclude that a given vowel is long. Examples such as rare *ga-a-an-ki* for usual *ga-an-ki/gán-ki* 'hangs' (/ka:nki/) falsify the claim of Rosenkranz (1959: 425 & 1978: 34f) that consistent *Ca-aC* spellings implies an overshort [ə] vowel (cf. Kronasser, 1966: 32). It is clear that scribes tend to omit scriptio plena more often in closed syllables than in open ones. That is, since a closed syllable already requires two signs *CV-VC*, they often do not bother to write *CV-V-VC* with three, while *CV-V* in open syllables requires only two and is hence more regular (though by no means uniform). One should in any case avoid overhasty conclusions based on a too narrow data base: e.g. there is no shortening before a cluster *-mn-*, contra Zucha (1988: *22&156) (cf. *ṣarāmnaz(a)* at *KBo V 2 ii 19* & *XVI 1 iv 29*). I should note explicitly here that interpretation of scriptio plena as marking only vowel length synchronically does imply very widespread lengthening of historically short vowels under the accent (cf. Čop, 1964: 63118; Hart, 1980: 14ff; Carruba, 1981; Lindeman: 1983; Catsanicos, 1984: 145ff).

The interpretation of initial spellings in *a-a-* such as *a-ri*, *a-a-ra*, and *a-a-an-ta* remains problematic. As pointed out by Hart (1980: 1), "scriptio plena" in Akkadian itself is generally taken to mean only *CV-V* sequences, not initial *V-VC-*. The latter is typically used to indicate the

presence of an initial aleph. It seems clear, however, from the work of Kimball (1983) and others that the Hittites use initial *V-VC-* to indicate vowel length, just like *CV-V* (contra Hrozný, 1917: xiii; Pedersen, 1938: 4; and Rosenkranz, 1978: 45). But the Hittites in general do not use *scriptio plena* in words with an initial long vowel in an open syllable. That is, beside *e-es-mi* = [é:smi] 'I am' one finds only *e-su-un* = [é:sun] 'I was', never **e-e-su-un* (see Kimball, 1983: 680ff). Likewise the usual spelling of [á:ri] 'arrives' is *a-ri* beside *a-ar-ḫi* = [á:rHi] 'I arrive' (cf. Oettinger, 1979a: 402⁶, and Hart, 1980: 3). However, there are some examples of *a-a-ri* which clearly mean 'arrives'. Furthermore, the adverb *a-a-ra* 'proper' should on etymological grounds be [á:ra], with accented long initial vowel. The issue is complicated by the example of *a-a-ri* 'is warm' and *a-a-an-ta* 'are warm'. Here the sequence *a-a-* reflects an etymological **[a_a-]* < **ayó-* with loss of intervocalic **/y/* (see Eichner, 1974: 60, et al., contra Friedrich-Kammenhuber, 1975-84: 45). Since the *a-a-* spelling in *a-a-ri* 'is warm' is consistent vs. the very occasional *a-a-ri* 'arrives', one must consider the possibility that *a-a-* in the former is marking a hiatus sequence [a_a-] (so Melchert, 1984b: 38). That initial *a-a-* actually spells /aya-/ with preserved /y/, as per Rüster-Neu (1989: 274) is highly implausible. The assumption of hiatus would also explain the "hyper-plene" spelling of *a-a-an-ta*, which is difficult to motivate to mark simple vowel length (*a-an-ta* would seem to be sufficient for the latter). Eichner (1974: 60) argues that the hyperplane shows that contracted long vowels are longer than original long vowels or vowels lengthened under the accent, but this fails to explain *a-a-ri* 'arrives'.

Perhaps the practice of Hittite scribes in writing Luvian can clarify the status of initial *a-a-* in Hittite. In CLuvian we find the weak stem of the verb 'do, make' spelled often *a-a-ya-* (beside *a-i-ya-*). Here there can be no question of an interpretation [a_aya-]. The spelling *a-a-ya-* is for expected [á:y-], where the long vowel is taken from the strong stem [á:-] (spelled *a-a-*). We also find the verb stem for 'treat; carry out' spelled with hyperplane *a-a-an-ni-(i)-* beside *a-an-ni-(i)-*. Once again we are surely dealing with merely [á:nni:-]. The verb stem 'to go', which we know has a long accented vowel, is also spelled once *i-i-ta* 'went'. In none of these cases is there any possibility of hiatus or contraction. I therefore conclude that the restriction against initial *V-V-* spellings by Hittite scribes is not absolute. Note also the hapax *a-a-an-si* for [á:nssi] 'wipes' beside usual *a-an-si* cited by Oettinger (1979a: 436). Likewise *a-a-ru-na-as* (KBo V 3 i 59) mentioned by Eichner is hardly "emphatic lengthening".

While these spellings are unusual in Hittite, I cannot follow Oettinger in terming them "scribal error". Since Luvian examples show that it is not inconsistent with overall Hittite scribal practice, and it permits by far the simplest account of the linguistic facts, I now prefer to interpret initial *a-a-* as merely [á:-] in all cases.

1.2.6.6 Consonant Clusters vs. Anaptyxis and Prothesis

I treat these topics together because the syllabic nature of the cuneiform script often presents us the choice of assuming a consonant cluster with an "empty" graphic vowel or a real vowel which is a secondary development historically.

There are several clues that a given written vowel is "empty" and not linguistically real (cf. Sturtevant, 1933: 47f, Kronasser, 1956: 28f). I emphasize, however, that none of these is used with complete consistency. First, if a word is spelled sometimes with a vowel on one side of a consonant and sometimes on the other, then it is likely that neither vowel is real. We have simply alternate ways of indicating a consonant cluster. E.g., *ki-iš-sar-ta* beside *ki-iš-sar-at* 'with the hand' = /kissard/. Second, if a word is spelled sometimes with one vocalic value and sometimes with another, it is likely that neither is real: e.g. *ma-li-it-tu-* and *mi-li-it-tu-* 'sweet' = /mlitu-/ (Oettinger, 1982b: 162, vs. 1979a: 104³⁵). Third, if a word is sometimes spelled with a vowel, and sometimes not, the vowel is not likely to be real: e.g. *ki-iš-sa-ra-az* and *ki-iš-ra-az* = /kissrats/, *bat-tal-wa-aš* and *bat-ta-lu-aš* = /Hatalwas/, *ku-ut-ru-ú-e-* and *ku-tar-ú-e-* /kutruwe-/, *li-in-kat-ta* and *li-ni-ik-ta* /linkta/ (for the last two see Oettinger, 1982b: 164). Sometimes, one finds both the second and third alternations together: note also *ki-iš-se-ra-az*. The motivation for bothering to write *ki-iš-sa/e-ra-az* at all beside simple *ki-iš-ra-az* is to indicate the geminate quality of the /s/: see 6.1.6.1.1.2. Fourth, there is a preference for "broken" spellings in writing consonant clusters. That is, in spellings of VC-VC or CVC-VC the second vowel is usually empty. If it were real, the spelling would be V-CV-C(V) or CV-CV-C(V): e.g. *wa-al-aḫ-zi* = /walHtsi/ and *kar-aš-zi* = /karstsi/, but *da-ma-aš-zi* = /dmastsi/. There are exceptions to this: one finds (though less commonly) also *wa-la-aḫ-zi* = /walHtsi/. Nevertheless, a consistent spelling like *a-ra-aḫ-za* (never **ar-aḫ-za*) strongly suggests a real second vowel: /araHts/ (so also Zucha, 1988: 12).

I must state explicitly that I prefer to interpret all cases of contemporaneous alternate spellings of the above types as

orthographic representations of a preserved cluster, rather than assuming competing historical changes (cf. Kronasser, 1966: 15). For example, given alternate spellings *tar-aš-ke-ez-zi* and *tar-ši-(ik)-ke-ez-zi* in contemporary manuscripts, I read both as /tarskétsi/. Likewise *zi-(ik)-ke-ez-zi* and *za-aš-ke-ez-zi* = /tskétsi/ and *ti-iš-ke-/ti-iš-ši-ke-/ti-iš-ša-ke-* = /tis.ské-/ (with spelling of the geminate [-ss-] as per above). For opposing views see Eichner (1969: 28&41⁴⁹; 1970: 11&172²) and Oettinger (1979a: 318ff & 1982b: 163).

In regard to anaptyxis, one must distinguish between prehistoric anaptyxis where the inserted vowel has become "underlying" synchronically and synchronic anaptyxis whereby underlying consonant clusters are broken up by insertion of a surface vowel. The first type is generally made clear by the fixed spelling of the inserted vowel and is non-controversial. The second is problematic, especially given the well-known sporadic nature of anaptyxis as a process. Once again, I prefer to assume anaptyxis *only* when the spelling cannot be motivated otherwise. For example, I read *pa-ra-a* and *ša-ra-a* as /prā/ and /srā/ despite the lack of any of the indications listed above, because the spelling is consistent with an initial cluster, and I know of no compelling positive evidence for assuming an anaptyctic vowel.

Contra Houwink ten Cate (1965: 24), followed by Kimball (1983: 124 & 1986: 99), Lycian ***pere* does not exist, only *perepā*, whose segmentation is quite uncertain.

However, we also find cases like *ga-ra-pí* and *gi-ri-pa-an-zi* beside *ga-a-ra-pí* with scriptio plena. The first two variants point to an underlying /kra/eb-/, but it is hard to accept the last form as containing no vowel between the consonants. I am therefore compelled to believe that at least some speakers pronounced this word with an anaptyctic vowel (which was then stressed, as in the case of other anaptyctic vowels in this position, and thus even lengthened: [ká:rab-]). Note also perhaps hapax *ka-a-ru-ú* for usual *ka-ru-ú* 'formerly' (Neu, 1980b: 46ff) and hapax *dāluga-waš* 'long' (KUB XXXVII 67 ii 40.iii 44). Compare further *šarap-* beside *š(a)rap-* 'sip' < **srob(ʰ)-* and the remarks of Poetto (1974: 436f), Oettinger (1979a: 421&426) and Tischler (1980: 497). Oettinger's suggestion that this phenomenon is a NH development cannot be affirmed or denied, since the few examples thus far are in NH manuscripts of either old or undatable compositions.

The spelling of (inherited) initial **sT-* clusters presents an especially vexing problem. All but a handful of cases are spelled consistently with initial *iš-TV-*. The alleged plene example *i-iš-ta-ma-aš-sa-<an>-du* (KUB VI 46 i 39) cited by Eichner (1980: 140) is highly suspect. The published autograph shows that the *i-* was partially erased and thus an error. The verb stem **spo/ēnd-* is spelled both *iš-pa-an-d/tV-* and *ši-(ip)-pa-an-d/tV-*, including in contemporary (OH) manuscripts. Contra Eichner and Cowgill apud Zucha (1988: *8f) there is no complementary distribution between *iš-pa-* in disyllabic forms and *ši-pa-* in trisyllabic (see the listing of OH examples in Neu, 1983b: 80ff). Hence their already improbable rule of prothesis in disyllables vs. anaptyxis in trisyllables is false. Furthermore, in NH mss. the verb spelling is generalized as *ši-(ip)-pa-an-t/dV-*, while transparent derivatives are always spelled with *iš-pa-*! The alternation *ša/še/ši-* in the noun *ša/še/ši-pí-(ik)-ku-uš-ta-* 'pin, needle' (or sim.) points unambiguously to initial /sp-/ (cf. *ša/še-me-en-* = /sme-n-/ 'withdraw'), and derivation from a PIE **sp(e)ik-* is straightforward: see Poetto (1986a). Finally, the hapax spelling *iš-piš-du-wa-ra-* (KUB XLII 64 Vo 2) for usual *šu-up-pí-iš-du-wa-ra-* suggests that we have one more example of initial /sp-/ not usually spelled *iš-pV-*.

There is no really satisfactory solution. Oettinger (1979a: 416f) treating only the case of *išpand-/sip(p)and-*, takes all the vowels as real (cf. also Kronasser, 1956: 30). That is, all cases of inherited **sT-* receive a prothetic vowel /i-/, including *iš-pa-an-t/dV-* (= /ispá:nd-/). The alternate *ši-(ip)-pa-an-t/dV-* is a dialect variant with a real anaptyctic [i] instead: /sippá:nd-/. In addition to having to invent the "dialect" form /sippá:nd-/, Oettinger's solution faces the problem of explaining how /sippá:nd-/ is generalized as the base verb, while all its transparent derivatives (which are used in similar ritual contexts) retain the form /ispá:nd-/: (*išpantuzzi(yaššar)-*, *išpanduwa-*). On the other hand, if one assumes as I did (Melchert, 1984b: 109ff) that contemporary *iš-pa-* and *ši-(ip)-pa-* point to /sp-/, one then faces the unpalatable choice of supposing either: (1) this one verb stem preserves initial /sp-/, while all others receive a prothetic vowel and are hence spelled consistently with *iš-TV-*; (2) all inherited clusters of **sT-* are preserved, but for some reason only the one verb stem /spá:nd-/ shows the orthographic alternation, while elsewhere /sT-/ is spelled consistently as *iš-TV-*. I have opted for the latter choice, but do not consider the issue settled (the bizarre interpretation of Rosenkranz, 1978: 41, is quite incomprehensible to me). Compare Dressler (1965: 94f), who also denies a real prothetic vowel.

The presence of two more examples of */sp-/ which are not spelled with *iš-pV-* (*ša/e/i-pi-(ik)-ku-uš-ta-* and probably *šu-up-pi-iš-tu-wa-ra-/iš-piš-tu-*) does support the idea that the spelling with initial *iš-TV-* was not absolute. If one is to take the *i-* in the latter spelling as real, then one will now have to explain three apparently unrelated exceptions to the prothesis, not just one. On the other hand, it is mildly unsettling that all three exceptions involve */sp-/. I can offer no examples for */st-/ or */sk-/.

One slight additional piece of support for reading at least /spá:nd-/ with preserved cluster lies in the standard spelling *ši-pa-an-t/dV-*. If the *i* were a real anaptyctic vowel as asserted by Oettinger, then the /p/ would be linguistically intervocalic and by the rules of Hittite orthography (see 1.2.6.1.1 above) should be spelled overwhelmingly as a geminate with only some "simplified" spellings with single *p*. On the other hand, the spelling of a voiceless stop as single in a cluster is standard, while geminate spellings are in the minority (though by no means unheard of: cf. again 1.2.6.1 above). Note finally the stem *išdušduške-* < **išdušdu(wa)-*, a reduplicated form of *išduwa-* 'become known' (so also Puhvel, 1991: 460, contra Puhvel, 1984: 483). The reduplication /*(i)stustu-*/ (not ***/istuwistu-*/) shows that at least when this stem was formed there was no real prothetic /i-/ in the base /*stuwa-*/.

Following the principle stated above, I prefer to assume three unmotivated exceptions to an orthographic rule rather than three equally unmotivated exceptions to a sound change. Therefore I continue to read /spá:nd-/ for *iš-pa-an-t/dV-* and *ši-(ip)-pa-an-t/dV-* and by extension /sT-/ for all initial spellings in *iš-TV-* from inherited **sT-*, but the difference in orthographic practice between the three exceptions and all the others remains worrisome. Note that the persuasive analysis of Pal. *iš-ka* 'be!' as a reflex of **ško* by Watkins (1993a: 477f) means that *iš-TV-* is also the spelling for inherited **sT-* in Palaic, whether one takes this as /sT-/ or /išt-/.

As already seen by Benveniste (1937: 497) the argument that *ši-pa-* must be /spa-/ (because consistent *ši-ip-pa-* would have to be /sippa-/) may also be applied to some initial sequences of *ba-TV-*. The spelling *ba-tu-ga/ki-* for 'frightful, awful' may with him be interpreted as /Ht-/ < **h₂tug-* (contra Puhvel, 1991: 275ff, et al.). Likewise CLuv. *b(a)pī-* / *b(a)pai-* 'bind' < **h₂p-* (Melchert, 1988b: 236ff). Watkins (1982c) also interprets *b(a)puš-* 'shaft; penis' as /hpus-/ <

**h₃pus-*, but the frequent scriptio plena in the first syllable (*bāpus-*) makes this example dubious (cf. Zucha, 1988: 33f). A more likely further example is Luvo-Hittite *b(a)pusš-* 'reclaim, resume' < **h₂p(e)us-* (cf. Puhvel, 1991: 133f). Compare also 5.3 (6).

1.2.6.7 Other Special Problems

(1) It is clear that the cuneiform sign *BE* is used in Hittite in its alternate values *PÁT/D* and *PÍT/D*: e.g. ^D*He-pát* 'Hebat', *pát-tar* beside *pa-at-tar* 'basket', *pít-ta-la-(a)-* beside *pí-it-ta-la-(a)-* 'put to flight'. For the syllables /pe/, /pi/, /be/, and /bi/ the sign usually used is *PE/PÍ*. A much-debated question is whether the sign *BE* is ever used to write /pe/ or /be/ in Hittite. Several early Hittitologists asserted that it is, but this view was generally abandoned for many years. Recently Puhvel (1979a & 1982) has revived the idea, presenting in part new arguments.

The first piece of evidence for the value /pe/ for *BE* is the phrase *akkalan pēdai* in §168 of the Hittite Laws. Interpreting *akkalan* as 'furrow', Puhvel, like others before him, suggests that *pē-e-da-i* here must be a hapax spelling for usual *pē-da-i* (i.e. conventional *pād-da-i*) 'digs'. He supports this claim by pointing to the accepted etymology of the latter, which is cognate with Lith. *bedù* 'dig'. This analysis makes no sense either orthographically or linguistically. First of all, if 'digs' were /pēday/, the accented /e/ in an open syllable would be long (see 6.1.5.5), and it is simply not credible that in over fifty examples we find not a single example of scriptio plena: ***pē-e-da-i* (cf. frequent *pē-e-da-i* beside *pē-da-i* 'carries'). Second, by anyone's analysis the Hittite *hi*-conjugation has *o*-grade in the singular. A *hi*-verb with generalized *e*-grade of the root in the singular would be unique and anomalous (*pēda*- 'carry', of course, contains the preverb *pē-*). Third, if the verb 'digs' were really pronounced [pēday] and were thus homophonous with 'carries' (spelled *pē-(e)-da-i*), then the meaning 'digs a furrow' for *akkalan pē-e-da-i* would surely have been transparent to a Neo-Hittite copyist, despite the unusual spelling. However, he substitutes not *pē-da-i* (*pād-da-i*), but rather *pē-en-na-i* 'drives (away)'. This substitution strongly supports the interpretation of Oettinger (1976a: 14&50) who takes *akkalan* as a kind of plow. It is quite plausible that one might steal a plow by 'driving' it away with a team of animals rather than 'carrying' it off.

As for 'dig', the generally accepted reading *pád-da-i* may easily represent /pá:ta:y/, with expected *a*-vocalism reflecting **ó*. For the unexpected Hittite geminate *-tt-* for etymological **d(h)* see Jasanoff (1979: 27) and 4.1.6.1.1 (1).

Puhvel's only other evidence for reading *pè* instead of *pát/d* comes from the variant *pé-ra-an pád-du-ma-aš* for *pé-ra-an pé-du-ma-aš*, literally 'of carrying in front', a circumlocution for some kind of serving tray. Given the above variants and the fact that the verb is clearly *pēda-* 'carry' in this case, Puhvel reasonably suggests that the two spellings are equivalent and that the first must thus be read *pè-du-ma-aš*. However, there is also a third variant *pé-ra-an pád-du-na-aš*. Puhvel assumes that the latter represents the genitive of an unattested **pedur*, a rare type of Hittite verbal noun represented by *henkur* 'offering'. While this cannot be entirely excluded, it is far more likely that a form in *-unaš* is a Hittitized genitive singular of a Luvian verbal noun (cf. Luvian infinitives in *-una* and *wallunašša/i-* 'of lifting'). Because of "Čop's Law" in Luvian (see 10.1.1.3), *padd(a)-* is the precise expected equivalent of Hittite *pēda-* 'carry' (< **pēdV-*). The full Luvian equivalent of Hittite *peran pēdumaš* would be **parran paddunaš*. The attested *peran paddunaš* and *peran paddumaš* represent compromises between these two. This is not the only such "mixed" form: cf. *kinuntarriyala-* 'present', a remodeled form of proper Luvian *nanuntarriyal(i)-* with the Hittite form of 'now' and *a*-stem inflection, but with the Luvian suffix sequence *-tarra+iya+al(i)-* left intact! Carruba (1970c: 81ff) argues for a value *pè* in the CLuvian verb (*pari*) *PÁT-za-du*, which he interprets as 'carry off' < **ped(ass)du*. I agree with the semantic interpretation, but the change **ē* > *a* in Luvian (10.1.5.2) requires precisely a reading *pát-za-du* = /patstu/, regular with epenthesis from athematic **pēd-tu* (**pēd-* < **pē-dh₂-* > *padd-una* above).

Since both of the above examples can be equally well or better explained with the already established value *pát/d* for *BE*, I reject the proposed alternate value *pè* as thus far unsubstantiated.

(2) Already in Akkadian usage some *CaC* signs may be used for *Ce/iC* and vice-versa: note *pát/d* and *pít/d* above. There is considerable evidence that the Hittites extended this practice to all such *CVC* signs: see Pedersen (1938: 120), Laroche (1952) & Oettinger (1976b: 142²). However, since an *e/a* alternation in Hittite may easily reflect an inherited **e/o* "ablaut" pattern, it is often difficult to decide whether a spelling *CaC* beside *Ce-iC* is to be interpreted as *Ce/iC_x* or as

a genuine morphological variant. Cf. Oettinger (1979a: 317) on the sign *kat/ket*, in *-ške/a-* verbs.

Each individual case must be treated separately. Prudence dictates that we should assume an alternate reading for a *CaC* or *Ce/iC* sign only on the basis of positive evidence, and only then if a morphological alternation does not make sense. I bring this problem to the reader's attention because new evidence may change our interpretation at any time. For example, Rüster-Neu (1989: 269) reasonably interpret *dam-mi-iš-SAR* as *dam-mi-iš-sir*, 'they oppressed', based on the consistent spelling of the preterite third plural ending as *-e-er* or *-e/ir* (so also Oettinger, 1976b: 142). However, new evidence has already falsified this claim and established an allomorph *-ar* for the ending: see Neu (1989: 16ff) and cf. 6.1.6.3.1 (6).

(3) There are a few examples of the use of the *E* sign for */ya/*, a value attested in Akkadian, including probably at Boğazköy: see Durham (1976: 326) and also Kronasser (1966: 78, but with mostly invalid examples). Examples such as *ba-a-li-e-aš* for [Há:liyas] (*KBo* VI 2 iii 48; OH ms.) or *a-ni-e-az* for [aniyats] seem to me incontrovertible. I therefore interpret spellings such as *an-da-e-še* likewise as regular *an-da-ya_x-še*, *ze-i-e-ri* as *ze-i-ya_x-ri*, etc., with Neu (1968a: 35⁵) and Friedrich-Kammenhuber (1975-84: 43f) contra Oettinger (1985: 306, with note 39). Similarly, *-Ca-e-a* is used for */-aya/*: *ka-a-e-a* = */ka:=ya/* 'also here', as per Neu and Friedrich-Kammenhuber, loc. cit., and Weitenberg (1979: 293). For further examples see 6.1.5.12.

(4) The Hittite scribes use the "Glossenkeil" (◀ or ≈) in a way analogous to sic! in modern texts; i.e., to call attention to any word which is unusual, either in form or in its position in the text. For a still valid summary of the use of this device see Schwarz (1938b).

One(!) of the uses of the Glossenkeil is to mark foreign words or loan words in a Hittite text. Most of these are indeed Luvian, but there are exceptions (◀*zinir*, e.g., is Hattic). I reject vehemently the implication of Oettinger (1986b: 51⁵⁰) that words which are in every respect normal Hittite (e.g. ◀*padumazzi=ya* 'and at the feet') should be taken as Luvianisms solely on the basis that they are marked with the Glossenkeil. Each instance must be examined and judged individually (so also Kronasser, 1966: 152ff).

1.2.7 Hieroglyphic Luvian

1.2.7.1 Corpus

It has been known since the 1950's that the language of the "Hittite hieroglyphs" is really a form of Luvian, and the revised readings of signs demonstrated by Hawkins, Morpurgo Davies and Neumann (1974) have confirmed this beyond all doubt.

Most of the preserved Hieroglyphic Luvian documents are inscriptions on stone, either on natural rock faces or in man-made structures. There are also a few inscriptions on household objects and some very important letters and economic texts on lead strips. The first use of the hieroglyphic script is found on personal seals (from the 15th century B.C.E.). However, these contain only names and titles (the latter usually written logographically), so one cannot properly speak of these as texts in a given language. The earliest Hieroglyphic Luvian material is contemporary with the late Hittite empire (13th century B.C.E.). However, the texts of the second millennium reflect the hieroglyphic writing system in an early stage of development when most signs are logographic (see further below), marking of grammatical endings is inconsistent, and there is not yet much standardization of sign shapes. For these reasons our understanding of the second millennium texts is thus far very limited. Thus most of our evidence for Hieroglyphic Luvian comes from texts of the first millennium B.C.E.. These texts are found in sites in western and central Anatolia and in northern Syria.

The content of the texts is quite varied. Many represent decrees (often with historical preambles), others are economic in nature.

1.2.7.2 Orthography

Hieroglyphic Luvian orthography is a mixed logographic/phonetic system. Words may be written entirely logographically (the sign indicating the meaning, with no clue as to pronunciation), entirely phonetically, or with a logogram followed by a phonetic complement. Unlike in cuneiform, in HLuvian the phonetic complement may represent any subpart of the word, not necessarily just the final syllable or grammatical ending (though the latter is certainly most common). One also finds the logogram (functioning as a determinative) followed by the entire word written phonetically. This practice means that in a number of cases we cannot be sure whether a given

sequence following a logogram represents the entire word spelled phonetically or merely a portion of it.

The phonetic portion of the HLuvian system is essentially syllabic, and indeed mostly limited to *V* or *CV* values (*CVC* or *CVCV* signs are rare, and crucially *VC* signs do not exist). This fact means that in addition to there being many "empty vowels" employed in the spelling of internal consonant clusters (e.g. *i+ra/i-ha-* = /irHa-/), HLuvian must indicate word-final consonants with *CV* signs (e.g. *wa/i-wa/i-sa* = /wawis/). In general, only *Ca* signs are used to indicate final /-C/, but there seem to be a few exceptions to this (e.g. *PRAE-ni* beside *PRAE-na* for /parran/ 'in front'), so that both final *-Ca* and *-Ci* are in principle ambiguous spellings. In a few instances scribes also apparently use the option of omitting final consonants in the spelling.

There are a number of systems of transliterating HLuvian signs. I follow here that of Hawkins, Morpurgo Davies and Neumann (1974) (see also Hawkins, 1975), which includes the convention of using Latin equivalents (in capital letters) for logograms. In referring to the hieroglyphic signs by number I follow the system of Laroche (1960b), who gives a convenient conversion table for the system of Meriggi (1962a), which is also widely used. The hieroglyphic script was used for ornamental purposes. This fact is reflected in the very high number of homographs (there are at least seven signs for the syllable /sa/, for example). It is also clear from spellings like *-tu-u* for the enclitic '(to) him' that "scriptio plena" in hieroglyphic spellings has an aesthetic function and does not mark length or accent (thus with Mittelberger, 1978: 3f, contra Starke, 1990: 102). For the above and other reasons it is not useful to attempt any kind of "bound" transcription of HLuvian. I cite HLuvian forms in "narrow" transcription with phonological interpretations explicitly indicated by / /.

The writing system of HLuvian gives the least direct information about phonology of any of the systems employed by the Anatolian languages. It does not indicate gemination of consonants nor possible length in vowels. There is no systematic distinction of voicing in obstruents (for a pair of likely exceptions see below). I must therefore state explicitly here that much of the phonological interpretation of HLuvian depends on comparison with CLuvian (and to a lesser degree with Lycian).

1.2.7.2.1 Obstruents

The signs *p*, *t*, and *k* indicate both voiceless and voiced stops. The signs *ta*₁ and *ta*₂ predominantly (in my view exclusively) represent dental stops which we would judge on independent grounds to be voiced. This interpretation is supported by the fact that these signs never occur in word-initial position in texts of the first millennium (but for second millennium texts note *ta*₂-*wa/i-ni-sa* in Poetto, 1993: 28 et passim). This prohibition is consistent with the independently plausible assumption that Luvian has generalized voiceless stops word-initially (cf. 1.2.6.1.3). However, other signs such as *ta* and *tā* are used for both voiceless and voiced stops, so even here one cannot properly speak of a consistent orthographic voicing contrast.

No early use of the REL sign for /hu/ or /hwV/ is attested. In second millennium texts the sign erroneously labeled "REL₂" is clearly distinct from the true REL sign and never alternates with it. Confusion of the two in later texts may well indicate a change of /hw/ into /kw/, not the opposite, as usually assumed. See Hawkins and Morpurgo Davies (1993).

The sign *z* represents a voiceless dental affricate [ts] (as in the case of cuneiform possibly also with a palatal allophone), and *s* a voiceless dental sibilant. HLuvian *h* is equivalent to cuneiform *b*, on the value of which see above in 1.2.6.2.

1.2.7.2.2 Sonorants

The letters *m*, *n*, *r*, *l*, *y* and *w* have their expected values. Remember that gemination is not indicated in HLuvian orthography.

1.2.7.2.3 Vowels

HLuvian has a three-vowel system *i*, *u* and *a* (with Mittelberger, 1964: 67f & 1978: 3, contra Neumann, 1992b: 40). There is no reason to assume a further schwa [ə], pace Rosenkranz (1978: 25). As indicated above, "scriptio plena" in the hieroglyphic system does not mark vowel length, the existence of which must be deduced by other means.

Texts: Hawkins (1994). Grammar: Marazzi (1990: 45–82) and Werner (1991). Writing system: Laroche (1960b), Meriggi (1962a), Hawkins–Morpurgo Davies–Neumann (1974), Hawkins (1975), Neumann (1992b).

1.2.8 Lycian and Milyan

1.2.8.1 The Corpus

Lycian designates the native language of Lycia, which in the first millennium B.C.E. lay on the southwest coast of Anatolia, occupying the mountainous region between the Gulf of Telmessos and the Bay of Attaleia (present-day Gulf of Fethiye and Gulf of Antalya).

Aside from a few glosses in Greek sources, our evidence for the language consists of inscriptions in a native alphabet. All of these texts date from the 5th and 4th centuries B.C.E. (with the earliest fragment dated to ca. 500 B.C.E.). We have roughly two hundred very short inscriptions on coins (essentially names) and a handful on other objects. Most important are the more than 150 stone inscriptions found at various sites within Lycia. All but a few of these are found on tombs, and the texts are stereotypical with minor variations. The extensive text on the 'Stele of Xanthos' contains long sections of historical narrative and references to the establishment of cult centers. The 'Létôn Trilingual' (Lycian-Greek-Aramaic), which has significantly advanced our understanding of Lycian, concerns the establishment of a cult of Leto.

The third and fourth sides of the 'Stele of Xanthos' and one other text (TL 55) are composed in a language which differs from that of the other Lycian texts. This dialect is often referred to as 'Lycian B' (vs. 'Lycian A' of the other texts). I follow Pedersen and others in using the term 'Milyan' for 'Lycian B' (for the history of this name see Gusmani, 1989/90: 70f). Unless otherwise specified, 'Lycian' in what follows refers to 'Lycian A'. Our understanding of Milyan is too limited to justify a complete separate treatment. I will describe the phonology of Lycian, noting differences in Milyan where appropriate.

1.2.8.2 Orthography

The Lycian writing system is clearly based on an early form of the Greek alphabet. It is strictly alphabetic with the possible exception of the diamond or lozenge sign, which appears in some cases to have a syllabic value. The approximate values of the letters are as follows (cf. also Chapter 11):

1.2.8.2.1 Obstruents

The letters *p*, *t* and *k* indicate the respective voiceless stops, except after nasals, where they stand for voiced stops (Deeters, 1927: 2287; Pedersen, 1945: 41). Note for the latter value Lyc. *ñte* = Hitt. *anda* and especially *Ñtarijeus* for Darius: cf. with Heubeck (1979: 80) and Bryce (1986) the system of Modern Greek.

In addition to *k*, the signs *q* and *x* also must be viewed as representing some kind of voiceless dorsal stop. The precise phonetic definition of these distinct sounds remains difficult. The tendency of *k* to occur next to front vowels and the rendering of the name *Tikeukēpre-* in Greek letters as *Τίσευσεμβρον* suggest that *k* was a very front velar or perhaps even palatal stop (cf. Arkwright, 1899: 68). Despite the intemperate arguments of Pedersen (1945: 9ff), all evidence from Greek versions of Lycian names indicates that the synchronic value of *x* was that of a voiceless dorsal stop (not a fricative): *Xpparama* = *Κπαραμω*, *Xudara* = *Κοδαρας* plus many more examples. Lycian *x* is never represented by chi in Greek (thus also Arkwright, 1899: 65f, and Meriggi, 1980a: 250)! The preference of *x* for back vowels points to a back velar or even uvular stop. I view *q* as a (mid-)velar voiceless stop lying between *k* and *x*, but a number of scholars interpret *q* as a synchronic labiovelar: for a full discussion see 12.1.3.2. The sign *W* was previously transliterated as *b*, but evidence from the *Létōon Trilingual* argues for some kind of voiceless dorsal stop, and I follow Laroche (1979: 57) in using the cover symbol *K*. This sound occurs in Lycian only in proper names, and the few words in Milyan which contain it do not yet have convincing etymologies, so both its synchronic phonetic value and historical source remain obscure. Finally, the diamond or lozenge *◊* appears to stand for *k* in some instances, for *h* or *he* in others. In any case, there is no evidence that it indicates an additional distinct phoneme.

The letters *b*, *d*, and *g* represent the respective voiced fricatives. Evidence that they are not stops includes the use of *ñt* for foreign *d* (*Ñtarijeus* for Darius) and *Λαπαρας* for Lycian *Dapara*. See already Bugge (1897: 27, following Hübschmann!); Deeters (1927: 2287); Pedersen (1945: 41); Mittelberger (1964: 58); and Bryce (1986) (who means 'fricative' when he says 'aspirate').

Lyc. *s* is a voiceless dental sibilant, and *z* a voiceless dental affricate ([ts]), as per Deeters (1927: 2287), pace Van Brock (1968: 120), but cf. 12.1.6.1 (5). In all clear cases Lyc. *θ*

results from **d+h*, so it is probably a voiceless (inter)dental fricative (the voiceless counterpart of *d*): see Deeters (1927: 2287); Carruba (1978b: 859); and Heubeck (1979: 80 & 1985: 37f). The sign *τ*, which significantly does not occur in Milyan, alternates with *t* and reflects **k^w* before **e*. It must therefore indicate a sound transitional between [k^w] and [t], perhaps [t^w]: cf. Carruba (1978b: 850f). There is no evidence to support the suggestion by Pedersen (1945: 13) that *τ* is a palatal affricate. Based on the fact that it is not reflected in Greek versions of Lycian names, Lyc. *h* is probably just the ordinary voiceless "glottal" fricative ("rough breathing").

1.2.8.2.2 Sonorants

The signs *ṛ*, *ḷ*, *m* and *n* have their regular values. The liquids *ṛ* and *ḷ* may also function as syllabics (Carruba, 1978b: 849, contra *ibid.* 854). Lycian has two further signs transliterated *ṁ* and *ṇ*. In some cases these signs would appear to indicate syllabic nasals (Meriggi, 1926: 2; cf. Neumann, 1969b: 377, and Carruba, 1978b: 849), but this will not account for cases such as *qāṇtti*, which are quite frequent. The only interpretation which is consistent with all the evidence is that *ṁ* and *ṇ* indicate **unreleased** nasal consonants. In addition to the fact that they always occur syllable-finally (see already Deeters, 1927: 2287!), note in particular the contrast between regular *httēmi* and apocopated *httēṁ*. In cases where they occur between non-syllabics, we should undoubtedly take *ṁ* and *ṇ* as standing for [ɐN], i.e. as preceded by an automatic "Murmelvokal". The signs *w* and *j* indicate the usual labial and palatal glides respectively. The suggestion of Bryce (1987: 91f) that the vertical stroke marking yod *j* (clearly < iota) has no phonetic value is without merit.

1.2.8.2.3 Vowels

Lycian has a basic four-vowel system distinguished by height and frontness: high front *i*, high back (rounded) *u*, low front *e* and low back *a* (see further 11.1.5 and Melchert, 1992c: 44f). The vowels *ē* and *ā* are phonemically distinct nasalized forms of *e* and *a* respectively (in all cases, pace Laroche, 1979: 82).

Generalities & grammar: Neumann (1969b). Texts: Kalinka (1901), Friedrich (1932), Mörkholm-Neumann (1978), Neumann (1979b). Lexicon: Melchert (1989c&1993a). Alphabet/orthography: Arkwright (1899), Carruba (1978b), Bryce (1987).

1.2.9 Lydian

1.2.9.1 The Corpus

The country referred to in classical sources as Lydia lay on the west central coast of Anatolia, centering on Sardis (near modern Turgutlu). Aside from a few glosses in Greek sources (of very uneven value), our evidence for the Lydian language consists of something over one hundred texts in the Lydian alphabet. All but a handful of these were found within the confines of Lydia itself, and most indeed in excavations at Sardis. While a few very short inscriptions may date from the end of the 8th century, and others from as late as the 3rd century B.C.E., most Lydian texts of any length are from the 5th and 4th centuries B.C.E., thus roughly contemporary with our Lycian corpus.

There are a number of one- or two-word inscriptions on coins and graffiti on various objects, but the important texts are inscriptions on stone. Their contents are varied, including dedicatory formulae, tomb inscriptions, and decrees. A number of the texts are almost certainly in verse. The dearth of extensive bilingual texts has severely limited our understanding of the lexicon. While we can parse all but a few Lydian texts, our grasp of the meaning ranges from approximate to negligible.

1.2.9.2 Orthography

The Lydian writing system is alphabetical and shows strong affinities to the Old Phrygian and Eastern Greek alphabets (Heubeck, 1969: 399ff; Heubeck, 1978; Gusmani, 1978).

1.2.9.2.1 Obstruents

The letters *b*, *t*, *k* and *q* normally represent voiceless stops. For Lydian *b* as voiceless [p] see Gusmani (1965a: 204ff). However, all the stops are realized as voiced in favorable voicing environments, most notably after nasals: for details see 13.1.1. The sound indicated by the letter *q* is clearly distinct from that of *k*. The determination that *b* = [p] also eliminates a labial value for *q*: for additional arguments against the latter interpretation see Heubeck (1959: 1-50). While Heubeck's positive arguments for a synchronic value [k^w] for *q* are themselves problematic, in several certain cases it does represent a sound which continues a PIE labiovelar stop. Note also the equation of Lydian *laqr̥isa* with the placename *Lakkurissa* by Neumann (1988a: 257f). As justly emphasized by Gusmani (1964a: 33f), the general absence of *q* beside the rounded vowels

u and *o* supports the idea that *q* includes rounding in its articulation. I therefore follow him in transliterating the letter as *q* and tentatively assume a labiovelar [k^w]. Obviously there are other conceivable synchronic realizations, but with Gusmani I reject as totally unsupported the suggestion of a palatal affricate [tʃ] by Haas (1962: 179 & passim). The letter *g* indicates a voiced velar stop, but its use is rare (see Swanson, 1947, and 13.1.1).

The letters *f* and *w* represent respectively voiceless and voiced labial or labiodental fricatives. I use *w* instead of *v* to avoid confusion with *ν*. The sound transliterated *τ* is a voiceless dental affricate [ts]. Note that by an already established convention the letter *š* marks a voiceless dental sibilant and *s* a voiceless palatal or palatalized sibilant. The letter *d* is likely a voiced interdental fricative: see Melchert (1994b, w/ ref.). The sound transliterated as *c* is certainly a voiced coronal affricate or fricative, but its precise value remains debatable.

1.2.9.2.2 Sonorants

The letters *r*, *l*, *m* and *n* have their expected values. Lambda (λ) indicates a palatal or palatalized (voiced) lateral. The phonetic value of *ν* (*nu*) is quite uncertain. In all clear cases the sound results from original word-final nasal. There is no good evidence that it is a palatal: see Gusmani (1978: 842ff).

1.2.9.2.3 Vowels

Lydian has a basic five-vowel system: *i*, *u*, *e*, *o*, *a*. It is likely but by no means certain that *e* and *o* are relatively close rather than open varieties. In addition Lydian has two phonemically distinct nasalized vowels: *ā* (probably nasalized long [ā:]) and *ē* (most likely nasalized short [ē]). There is also a rare vowel *y* which is a variant of *i*. There is no good evidence for phonemic length in Lydian, but cf. 13.1.5 (5).

Generalities and grammar: Gusmani (1964a & 1980), Heubeck (1969). Texts: Gusmani (1964a & 1986a). Lexicon: Gusmani (1964a, 1980, 1982, 1986a). Alphabet: Gusmani (1978), Heubeck (1978).

1.2.10 Carian, Pisidian and Sidetic

I now believe that three more languages of southwestern Anatolia should be added to the Indo-European Anatolian family: Carian, Pisidian, and Sidetic. However, the first is too poorly understood and the others too sparsely attested for them to contribute to our understanding of Anatolian phonology. I make only brief mention of them here.

For Carian there are some texts from Caria itself in extreme southwestern Anatolia, probably dating from the third and fourth centuries, B.C.E.. However, most of the evidence for the language comes from tomb inscriptions and graffiti of Carian immigrants in Egypt (roughly seventh to fourth centuries, B.C.E.). There is still no consensus on the decipherment of the Carian script, but recent developments have confirmed the basic validity of the system of Ray (1981, 1982), who established the value of some signs on an objective basis using Egyptian renderings of Carian names: see Adiego (1990, 1992, 1993) and Schürr (1992). Genuine analysis of the Carian texts and language has scarcely begun.

Our entire present documentation for Pisidian consists of something over thirty tomb inscriptions in an alphabetic script from Northern Pisidia. These contain only names and patronymics. The texts are difficult to date, but second or third century C.E. seems probable. For a recent survey and sober evaluation of the Pisidian evidence see Brixhe (1988).

The language of Side, a city on the coast of Pamphylia, is even more poorly attested: only a half dozen inscriptions from the third century, B.C. Like Pisidian, these are written in an alphabet related to that of Greek. See Neumann (1978) for further information about the script and language.

My claim that these three languages belong to the Anatolian family of Indo-European is based on a single highly characteristic feature: the use of a "relational" adjective to express possession instead of the genitive case: 'paternal house' for 'father's/fathers' house'. This construction, common to Luvian, Lycian and Lydian, employs two suffixes, PA *-asso/i- (> Luvian -assa/i-) and *-VI(i)-. Reflexes of these same suffixes appear in Pisidian, Sidetic and Carian in the very same function. Pisidian *Mousita Tas* 'Musita, (son) of Ta' is directly comparable to Lycian *Xudali Zuhriyah tideimi* 'Xudali, son of Zuhri'. In both cases the original final *-s of the nominative singular has been lost in both noun and following adjective, and the last unaccented vowel has been deleted in the adjective as

well, but the final *-h* of Lycian *Zuhriyah* and *-s* of Pisidian *Tas* still reflect the original **-ss-* of the ending **-assos*. Likewise Sidetic *Poloniw Pordors* 'Apollonius, (son) of Apollodorus' and Carian *Uksmu Lkorš* 'Uksmu (Ὁξαμοας), (son) of Lkor', where in the latter instance the symbol *š* shows that the result of geminate **-ss-* in Carian is somehow different from ordinary single *s*. Carian also has examples with patronymics in *-l* directly comparable with Lydian *-al(i)*. See Ray (1990: 67).

CHAPTER TWO: PIE PHONOLOGY

2.0 The phonological system which I assume for PIE agrees in all important respects with that of Mayrhofer (1986a). This chapter may thus be brief.

2.1 Segmental Phonemes of PIE

Consonants

Stops

Voiceless **/p/* **/t/* **/k̟/* **/k/* **/kʷ/*

Voiced **/b/* **/d/* **/g̃/* **/g/* **/gʷ/*

"Voiced Aspirates" */bh/ */dh/ */ġh/ */gh/ */gʷh/

Fricatives

Voiceless */s/, *[p]

Voiced ***[z]**

"Laryngeals"

 $^*/h_1/, ^*/h_2/, ^*/h_3/$

Sonorants

* /m/, * /n/, * /r/, * /l/, * /w/, * /y/

Vowels

* /i/, (* /i:/)

* /e/, * /e:/ * /o/, * /o:/

*** /a/, * /a:/**

(1) For the assumption of three distinct sets of 'dorsals' see Mayrhofer (1986a: 103ff), Melchert (1987a & 1989a: 23–32) and 10.1.1.1 and 12.1.1.4.

(2) I explicitly retain the traditional definitions of the three series of PIE stops and reject the 'glottalic' reinterpretation of their distinctive features. See among others Meid (1987) and

Garrett (1991: 793ff). On the distinctive features of stops in Proto-Anatolian and Hittite see 1.2.6.1 above.

(3) PIE *[z] is a conditioned allophone of */s/. With Mayrhofer (1982 & 1986a: 150ff) I follow Schindler (1977a) in assuming that *[β] is a conditioned allophone of the dental stops. The "thorn" symbol is, of course, merely conventional for an indeterminate dental obstruent. On the status of *[β] in Anatolian see 4.1.2.3.

(4) The "laryngeals" are certainly obstruents, not sonorants. I personally tend to interpret */h₁/ as either glottal stop or ordinary [h], */h₂/ as a tense/voiceless pharyngeal fricative [ħ], and */h₃/ as a lax/voiced pharyngeal fricative [ʕ]. "Coloring" effects in PIE also seem to require an element of rounding in */h₃/, but there is no trace of this in Anatolian. The only part of this phonetic definition which is crucial for Anatolian is the distinction voiceless/voiced or fortis/lenis between */h₂/ and */h₃. I should note explicitly that I reject direct "vocalization" (=syllabification) of the "laryngeals", viewing their "vocalic" reflexes as the result of anaptyxis (cf. Lindeman, 1987: 98f, w/refs.).

(5) All the sonorants occur of course as both syllabic and non-syllabic allophones. Mayrhofer (1986a: 160f) argues that some cases of */i/ and */u/ are phonemically distinct from the syllabic allophones of */y/ and */w/. This point is not crucial for the history of Anatolian, but cf. 6.1.5.3.

(6) Note that I explicitly assume a phonemic PIE */a/ (and */ā/) distinct from *[a] which is conditioned by */h₂/. See Mayrhofer (1986a: 169f & 172), Eichner (1988b: 132f) and 6.1.5.24. In my view neither */o/ nor */e:/ is colored by an adjacent */h₂/ or */h₃/: see Mayrhofer (1986a: 132ff) and 4.1.3.2.1 & 12.1.3.2.

2.2 Accent

A well-motivated stance towards PIE accent cannot be presented in a few lines. I follow the traditional assumption that each word in PIE had one principal accented syllable (at least at the surface level). Our current knowledge suggests that for the most part Anatolian retained the PIE position of the principal accent. PIE accent is traditionally defined in terms of pitch, but various Anatolian phenomena suggest that it also contained an element of stress: see 4.1.1.1, 4.1.4 (1), 6.1.5.2, etc. and Kimball (1983: 862). Compare on this point Halle and Kiparsky (1981: 161f). The only distinction I will make in

what follows is between the (principal) accented syllable (marked with the acute accent) and unaccented syllables.

2.3 Synchronic Phonological Rules

(1) "Bartholomae's Law"

I tentatively follow Mayrhofer (1986a: 116) in ascribing to PIE the progressive assimilation rule by which a voiceless stop becomes voiced and aspirated after a voiced aspirated stop (*[DhT] > *[DDh]).

(2) Regressive Voicing Assimilation

The first of two consecutive obstruents (stop or fricative) takes on the voicing quality of the second (Mayrhofer 1986a: 110). Since "Bartholomae's Law" applies first synchronically, the regressive assimilation effectively applies only to voiceless and plain voiced stops.

(3) Realization of Sonorants

Several PIE synchronic rules govern the surface realization of the sonorants, which are underlyingly non-syllabic. See on all of these Mayrhofer (1986a: 163ff) with references.

Regular syllabification rule: the sonorants regularly become syllabic between non-syllabics or between non-syllabic and word-boundary. This rule applies iteratively right to left.

"Stang's Law": contrary to the regular rule above, a final sequence */-VwN/ is realized as *[-V:N], likewise final */-VwNs/ as *[-V:s] and final */-Vh₂m/ as *[-a:m].

"Sievers' and Lindeman's Laws": PIE */w/ and */y/ also become syllabic *[u] and *[i] respectively before another syllabic in word-final syllables when they are preceded by a heavy syllable (for the collapsing of these two rules and further restrictions see Schindler, 1977b).

(4) s-Epenthesis

An [s] is inserted into a sequence of two consecutive dental stops. The entire cluster is then subject to rules (1) and (2) above. Cf. Mayrhofer (1986a: 110f).

(5) Laryngeal Metathesis

A sequence of laryngeal plus $*/y/$ or $*/w/$ between consonants undergoes metathesis; i.e., $*/CHWC/ \rightarrow *[CUHC]$. See Mayrhofer (1986a: 175 w/ref.).

(6) Anaptyxis ("schwa secundum") and Cluster Reduction

It is tolerably certain that PIE had synchronic rules governing the simplification of certain consonant clusters, either by cluster reduction or by anaptyxis (see Mayrhofer, 1986a: 117f&175f). However, it is exceedingly difficult to distinguish with certainty PIE cases of this sort from developments within the history of the individual languages, and systematic investigation of these phenomena has hardly begun. I therefore make no attempt to trace their history here.

(7) "Saussure's Law"

Although it is by no means certain that it is a synchronic rule of PIE (or even a strictly phonological rule at all), this also seems the appropriate place to discuss "Saussure's Law" or "Saussure-Hirt's Law". The following discussion owes much to an unpublished Harvard doctoral dissertation by L. Brockman (1993). However, Dr. Brockman should not be held responsible for the formulation given below, which is my own.

There is evidence in at least Greek, Latin and Hittite and probably elsewhere that a laryngeal is lost next to a sequence of $*/o/$ plus sonorant: i.e., $*Hro- > *Ro-$ and $*-oRH- > *-oR-$. Since outside Anatolian all laryngeals are regularly lost between consonant and following vowel, all the non-Anatolian examples of the second type are specifically $*-oRHC > *-oRC$. I restrict my discussion here to the Anatolian evidence. For examples outside Anatolian see Meillet (1908: 68f), Schwyzler (1939: 1.362f), and Peters (1980: 95).

Eichner (1980: 129⁴¹, following M. Peters) adduces several examples for $*Hro- > Ro-$ in Hittite: *warša-* 'mist, steam' (or sim.) $< *wórso- < *h_2wórso-$ (for $*h_2$ cf. Greek dialectal $\alpha\epsilon\pi\sigma\eta$ 'dew' beside $\epsilon\epsilon\pi\sigma\eta$) to the PIE root $*h_2wers-$ 'rain'; *wawarkima-* 'door-hinge' $<$ redup. $*worg- < *h_2worg-$ 'turn; twist' (cf. Hitt. *hurki-* 'wheel' to the same root): see also Eichner (1982a: 20²¹ & 1988b: 140f). Eichner further derives *uttar* 'word' from an ablauting paradigm $*h_2wódh_2r/h_2udh_2n-$, assuming regular loss of the initial $*h_2-$ in the strong stem and generalization to the weak stem, whose zero-grade vocalism is then generalized. However, this means of connecting *uttar* with

geminate stop to the root of Grk. αὐδῆ 'voice' is precluded by the lack of aspiration in Skt. *vad-* 'speak' (for Indic voiced aspirate from **Dh₂*, see Mayrhofer, 1986a: 135ff with refs.). Furthermore, CLuv. *utar* with single *-t-* vs. Hitt. *uttar* demands a preform **Vut₁/utn-* to a root **eut-*: the preceding diphthong in the strong stem would have voiced the following **t* (4.1.1.1, 1), while Hittite generalized the **t* of the weak stem. The PIE etymon remains unknown. However, Eichner's further suggestion that *watarnabb-* 'enjoin, command' is based ultimately on a **h₂wod₁* to **h₂wed-* 'speak' remains viable: see also Oettinger (1979a: 458), following Sturtevant-Hahn.

Furthermore, Catsanicos (1991) has shown conclusively that Hitt. *wašt(a)-* 'miss the mark; sin' is related to Grk. ἁτῆ 'error; sin' etc. The PIE root is thus **h₂wems-* (pace Puhvel, 1992), and the missing initial *h-* in Hittite is due to the expected *o*-grade in the strong stem of a *hi*-conjugation verb: **h₂wómst-* > **wómst-* > *wašt-*. This treatment was generalized to the weak stem, replacing regular **b₁ušt-* or **b₁wašt-* from **h₂umst-* or **h₂wemst-*. One may also explain by "Saussure's Law" Hitt. *innarā-* = CLuv. *annara/i-* 'forceful' < **en-h₂noró-* 'having manly strength within' (Melchert, 1984b: 103f, after Schindler; likewise Eichner). However, regular loss in Anatolian of **h₂* between two nasals cannot be excluded (Zucha, 1988: 39). See also Zucha (1988: 294) on Hitt. *šuwaiš* 'bird'. Catsanicos' further example of *mitā(i)-* 'fasten' < **h₂moito-* (1986: 154ff) is false, since the verb means 'fasten with red wool' and is derived from *mita/i-* 'red' (Güterbock-Hoffner, 1980ff: 3.304).

For the mirror-image rule, note first of all that only cases with **/h₂/* will be probative, since **/h₁/* and **/h₃/* are lost regularly in Anatolian between consonants (cf. 4.1.3.1,2 and 4.1.3.3.2,3). We may cite first Hitt. *kalmara-* 'ray, beam' < **kolh₂mo-ro-* (Catsanicos, 1986: 168, w/slightly different morphology). It is crucial to point out with Catsanicos that loss of **/h₂/* in this environment is not regular in Hittite: cf. the singular of *walh-* 'strike' < **wélh₂-Ci* (see also 6.1.5.7). Further, Oettinger (1979a: 369ff) shows that Hitt. *palwā(i)-* is clearly a denominative verb meaning 'clap' (pace Badali, 1990, et al.) and makes the evident connection with Lat. *palma* etc. < **pelh₂-*. However, his explanation for the loss of **h₂* in the Hittite word is entirely ad hoc. An underlying noun with *o*-grade **polh₂weh₂-* and loss by "Saussure's Law" produces Hitt. *palwā(i)-* in regular fashion.

Since a sequence **VRh_xV* assimilates to **VRRV* in PA (4.1.6.1.1,3), Hittite could potentially show whether "Saussure's

Law" applies to $*oRh_xV$ as well as to $*oRh_xC$. One suggestive case is Hitt. *šalli*- 'great; adult' beside CLuv. *šalhitti*- 'growth' (or sim.). As per Bernabé (1973: 435) these must reflect respectively $*sVlh_2i$ - and $*s|h_2i$ -. If we extend the pervasive *o*-vocalism of related forms to Hittite (cf. Lat. *sollus* etc.; Pokorny, 1959: 979f), this would show that "Saussure's Law" does not apply: $*solh_2i$ - > *šalli*- with preserved $*h_2$ which then assimilates. However, it is hard to exclude a proterokinetic ablaut $*sélh_2i$ -/ $s|h_2éy$ - for the alternating Hittite paradigm. The noun *memal(l)*- 'groats, grits' should be $*mé-molh_2$ - on structural grounds (for $*h_2$ in this root see Melchert, 1988b: 215f). Attested spellings of the oblique stem show approximately a one-to-one ratio of single and geminate spellings. The former, too numerous to be viewed as simplified spellings, could easily represent analogical leveling from the nom.-acc. *memal*, where the final *-l* is probably single. Unfortunately, the potential analogy from the related verb *mall(a)*- 'grind' makes this example less than compelling. The noun *habball*- 'bush, shrub' has overwhelmingly geminate *-ll*-, but in the absence of a root etymology, we cannot prove that it continues $*h_2é-h_2olh_2$ - (cf. Puhvel, 1991: 5). In the case of all *hi*-verbs, where the present third singular of *TERH* roots would be $*TóRh_xei$, analogical influence of the plural stem $*TéRh_x$ - is always possible. A really convincing example is provided by Hitt. *hanna*- 'quarrel, contend, litigate'. The demonstration by Puhvel (1991: 77ff) that this is the original meaning confirms the comparison with Greek ὀνομαί (ὁνομαί) 'impugn, quarrel with' (Čop, 1966-68: 59; Bernabé, 1973: 440, contra Čop, 1971b: 26ff). As per Puhvel, we must then assume a preform $*h_2énh_2-o$ -. Since this was surely already phonetically $*[honho-]$ in PIE, we have an incontrovertible example of preserved $*h_2$ in $*oRh_2V$, as proven by the geminate *-nn*- in Hittite.

"Saussure's Law" is thus restricted to tautosyllabic sequences of $*HRo$ and $*oRH$. Generalizing the rule to sequences $*h_2o$ and $*oh_2$ does not seem plausible (pace Catsanicos, 1982: 92³). While the reality of the phenomenon is in my view beyond doubt, the mechanics of how it takes place remain open to debate: for one explanation see Brockman (1993).

(8) Following Jasanoff (1988a: 73f¹⁰), I also assume a special development of final $*-oHe\#$ in PIE. When the accent is earlier in the word, the final $*-e$ of $*-oHe$ is apocopated: thus thematic first person singular $*-oh_2e$ > $*-oh_2$ > $*-\bar{o}$ (Lith. *-ũ*, etc.); thematic dual $*-oh_2e$ > $*-oh_2$ > $*-\bar{o}$ (Grk. *-ω*, etc.); thematic allative $*-oh_2e$ > $*-oh_2$ > $*-\bar{o}$ > Lith. *-u* and

PA *-o (Hitt. -a = Lyc. -e). However, when the accent falls on the *ó, the result is *-óHu#: nom.-acc. dual 'two' *dwóh₁e > *dwóh₁u > Skt. dvāu etc.; thematic allative *-óh₂e > *-óh₂u (Lat. hūc, illūc); perfect third singular *d^he-d^hóh₁e > *d^heaóh₁u > Skt. dadhāu (likewise the first person singular with simplification of the double laryngeal cluster: *d^he-d^hóh₁-h₂e > *d^he-d^hóh₂u > dadhāu). From similar perfects to roots in final laryngeal comes the Latin -u- perfect. Since at least some cases of absolute final short *-ē probably reflect earlier *-o (thematic vocative *-e vs. regular *-o-), the rule becomes more plausible phonetically if we project it back to pre-PIE as *-óHo# > *-óHu#.

By this rule PA would have inherited not only the regular form of the first person singular ending *-h₂e, but also an allomorph *-h₂u. The first is preserved in Palaic and CLuvian -bba/-ba, HLuvian -ha and Lycian -xa/ga. In Hittite the outcome -un of the corresponding ending *-m̄ (6.1.6.3.1,7) favors rather the generalization of *-Hu, remodeled as -bhun. Other sound changes lead to a different result in Luvian, Lycian and Lydian: the preform of the Anatolian verb 'stand' in the first person singular would have been not *stóh₂-h₂e but *stóh₂u. "Lenition" after accented long vowel would lead to PA *stóhu (4.1.1.1,1). Addition of the particle -i to form the present produces *stóhwi. The "lenited" laryngeal /h/ is often lost before /w/ in Luvian (10.1.3.2,6), whence attested HLuvian ta/i-wa/i 'I stand' /tá:wi/. From verbs of this shape the ending -wi is generalized in Luvian as the first person singular marker. Nothing precludes assuming that this development is shared by Lycian and Lydian. The generalization of *-(h)wi in the present but *-H/ha in the preterite may seem implausible, but note that *h is regularly lost between accented long vowel and *u in Luvian (10.1.3.2,5), so that preterite *stóhu would lead to *stóu, certain contraction, and loss of integrity of the ending. The favoring of the more common allomorph *-H/ha in the preterite is thus in fact quite understandable. I concede that the handful of monosyllabic bi-verbs in final laryngeal seems a very small starting point for the generalized ending -wi, but the situation of the Latin -u- perfect is quite similar. Since Jasanoff's rule seems independently motivated, I find it a more plausible source of Hitt. -bhun and Western Anatolian -wi than any other thus far proposed.

CHAPTER THREE: PROTO- ANATOLIAN PHONOLOGY

3.0 I assume in what follows the simplest system for PA which is permitted by the facts of the attested Anatolian languages. One cannot in principle prove that further distinctions did not exist.

3.1 Segmental Phonemes of PA

Consonants

Stops

Voiceless	*/p/	*/t/	*/ <u>t̥</u> /	*/k/	*/ <u>k̥</u> /
Voiced	*/b/	*/d/	*/ <u>g̃</u> /	*/g/	*/ <u>g̃</u> /

Affricate

Voiceless **[ts]*

Fricatives

Voiceless	*/s/	*/H/
Voiced	*[z]	*/h/

Sonorants

**/m/, */n/, */r/, */l/, */w/, */y/*

Vowels

* /i/, /i:/ * /u/, * /u:/
 * /e:/
* /e/, * /e:/ * /o/, * /o:/
 * /æ:/
 * /a/, * /a:/

(1) None of the evidence presented thus far for a three-way qualitative distinction in PA stops is persuasive. The claim of Ševoroškin (1982: 212) for a different outcome of */d/ and

*/dh/ in Lycian and Lydian is based on false etymologies or false interpretations. On the alleged different treatment of voiced and voiced aspirate dorsals in Palaic see 8.1.1.4. Formulations of "Çop's Law" which specify voiced aspirates (e.g. Çop himself, 1970: 92) are false: see 4.1.1.3 and 10.1.1.3. The non-assibilation of */dh/ before */i/ is likewise not indicative (contra Eichner, 1980: 136⁵⁵), since *dī also fails to assibilate in interior position in Hittite: see 6.1.1.2. The exceptions to "Sturtevant's Law" in Hittite cited by Çop (1959: 97 w/note 25 & 1963: 44f) also admit of various explanations and do not justify assuming a partial merger of voiced aspirates with voiceless stops in Hittite.

(2) Since there is evidence for at least some secondary stop gemination in PA (see 4.1.1.3), it is likely that the realization of intervocalic voiceless stops as geminates (vs. simple intervocalic voiced stops) is already PA.

(3) For the necessity to assume three distinct sets of dorsal stops see Melchert (1987a and 1989a: 23–32) and 10.1.1.1 and 12.1.1.4.

(4) I tentatively assume that the affricate [ts] resulting from the assibilation of */t/ before */y/ was still a conditioned allophone of */t/ in PA.

(5) Since none of the attested Anatolian languages shows any direct reflexes of */h₁/, nor any of non-initial */h₃/, any evidence for their existence in PA must necessarily be indirect. The strongest such evidence known to me is this: for reasons given in 6.1.4.2.1 (1), I now believe the dissimilation of *w to m next to *u is specifically pre-Hittite. Hittite does have a few attested sequences of uwV, some of which I previously explained (1984b: 28ff) by assuming that the loss of intervocalic *h₁ and *h₃ follows the dissimilation rule. This reasoning would require that intervocalic *h₁ and *h₃ be preserved into pre-Hittite. However, I no longer believe any of the examples cited is compelling. As noted there, *ḫuwant-* 'wind' may represent /Hwant-/ < *h₂wḫ₁nt-. Even if it is to be read as /Huwant-/ < *h₂uh₁ént- with zero-grade in the participle, the preserved /w/ may be analogical to the strong stem *h₂wḫ₁-. The prehistory of the noun *ḫuwīl-* (sic!) 'thread' is wholly obscure (Melchert, 1984b: 119f), and it may be a pre-Hittite creation. The laryngeal loss in *nūwa* 'yet' is a special pre-Hittite rule. That leaves the oblique stem *ḫuwaw-* 'full' < *suh₃-ew-. Note, however, that the loss of *h₃ which produces a hiatus here also makes the strong stem *sū₃-u- < *séwh₃u- (cf. 4.1.3.3.2.1). Contra Melchert (1984b: 29) I would now read

Hitt. *šu-u-ú* as /*súwu-*/ with a hiatus-filling /w/ (cf. 6.1.5.3), not as /*sú_u-*/. Even if this is true, however, we have no way to date the insertion of the /w/. An oblique stem *šu(w)aw-* would be recreatable from strong *šu-* at any time in the pre-history of Hittite (after *parku-/pargaw-*, etc.). The evidence for the relative chronology cited above is thus weak. Furthermore, I am unwilling in principle to posit two additional phonemes for a reconstructed proto-language on the basis of a single relative chronology, particularly since this would complicate the phonology of PA considerably. However, readers should bear in mind the paucity of evidence bearing on this question and accordingly regard the present analysis of PA "laryngeals" as provisional. For another possible, but far weaker, motivation for assuming */*h*₁/ in pre-Hittite see 4.1.3.1 (2).

If we accept the view of */*h*₁ and */*h*₂, expressed in the preceding paragraph, then we may assume only two pharyngeal (or dorsal) fricatives for PA: a voiceless */*H*/ which is the regular reflex of PIE */*h*₂/, and a voiced */*h*/ which continues word-initial */*h*₃/ and "lenited" */*h*₂/. While we have no assurance that these two reflexes were phonetically identical, they were probably phonetically similar and were certainly in complementary distribution. I therefore combine them in a single phoneme. This last step is a procedural simplification which is merely permitted, not required, by the facts, and no specific analysis which follows depends on acceptance of it.

(6) There are various reasons to assume that the syllabic sonorants still existed in PA (i.e. that they had not yet become sequences of vowel plus sonorant): (1) word-final */*-r* is lost in PA after unaccented vowel (4.1.6.3.1.4), but the new final *-r* resulting from */*-r* is not (PA **wódr* > Hitt. *wātar*, **páHwṛ* > Hitt. *pabbur*, CLuv. *pābūr*, etc.); (2) the easiest way to explain the preserved *-lḫ-* of Hitt. *palḫi-* 'broad' and CLuv. *ṣalḫi(an)ti-* 'growth' (the latter vs. Hitt. *ṣalli-* 'large; adult') is to suppose that these words still had */*lHV-* when the assimilation rule **-VRHV- > -VRRV-* operated (similarly Kimball, 1983: 783; for the latter rule as PA see 4.1.6.1.1 (3) below); (3) if Hitt. *-un* reflects **-ṃ* (6.1.6.3.1.7), the contrast with Lyc. *-ā* requires that at least word-final **-ṃ* remained in PA; (4) the apparent fluctuation between *uR* and *aR* as the result of **R* in Palaic (8.1.4.2) and Luvian (10.1.4.2) suggests a late development of an anaptyctic vowel.

Note, however, that the development of **CwRC* to **CuRC* must have been PA and well before that in **CRC* in general: the contrast of **h₂/swl-ne-h₁- > Hitt. bulle-* 'fight'

vs. **h₂/w/h₁-neh₂-* > Hitt. *bulana-* 'wool' requires that the assimilation of **-ln-* to **-nn-* in the former precede loss of **h₁* in the latter, and the assimilation presupposes **-uln-*. See 4.1.3.1 (2) and 4.1.6.1.1 (5) for details. Cf. also 3.3 (2).

(7) For phonemic /i/ and /u/ as distinct from the syllabic form of /y/ and /w/ see above 2.1 (5). This point is not crucial. Long /i:/ and /u:/ were undoubtedly marginal phonemes in PA, but probably more frequent than in PIE. Cf. 4.1.3.1 (6), 4.1.3.3.2 (2), and the next paragraph.

(8) The long vowel **/e:/* represents the monophthongization of PIE **ey/*. Hittite evidence shows that this change must have preceded loss of intervocalic **h₁* and **h₂*. Contrast **pe-ay-* 'give' > **pay-* > Hitt. *pe-* with deletion of **ē* before **a* vs. **néyh₁/s-* 'turn' > **nēho-* > **nē₋o-* > OH *nēa-* (secondarily *nēya-*). If one assumed **néyh₁/s-* > **néyo-*, this should become **ne₋o-* and **na-*. Positing **/e:/* for PA thus rests on the assumption that the just-cited laryngeal loss had already taken place. On the status of this assumption see (5) immediately above. Similar arguments apply to the monophthongization of **/ew/* to **/u:/*: this must precede loss of intervocalic **/h₂/* to explain Hitt. *sū-* 'full': **séuh₂u-* > **sūh₂u-* > **sū₋u-* > Hitt. */sūwu-/*. Loss of **/h₂/* first would lead to **séwu-* whence Hitt. **sēmu-*. It is quite possible in principle that the immediate result of **/ew/* was a long close **[o:]* parallel to **[e:]*. However, since I know of no positive evidence for this vowel being distinct from long **/u:/* from other sources, I identify it with the latter.

(9) The long vowel **/æ:/* is my representation of the PA outcome of PIE (tautosyllabic) **eh₁*. This vowel appears as /a(:)/ in Luvian, Lycian and Lydian, contrasting with inherited long **ē*, which gives /i(:)/ in these languages. On the other hand, in Hittite and Palaic it does fall together with inherited long **ē*. I therefore assume for PA a long, relatively open mid front or low front vowel.

3.2 Accent

I will not attempt to distinguish for PA anything more than the place of the principal (surface) accent.

3.3 Synchronic Phonological Rules

(1) Regressive Voicing Assimilation

It is unlikely that one would want to project back to PIE all iteratives of the type of Hitt. *akkuške/a-* 'drink' or *bukkiške/a-* 'conjure' (and homophonous 'wound'). The devoicing in these examples would thus reflect continued presence of regressive voicing assimilation in PA (cf. 1.2.6.1.2). However, the rule must have disappeared before the PA change of medial **/k^w/* to **/g^w/* (4.1.1.1.3). Otherwise the rule would have turned **neg^wt-* 'evening' back into **nek^wt-*, which is contradicted by Hitt. *nekuz*. In the iteratives cited above and **dek^wso-* > Hitt. *tekkussa-* 'show, give a sign', the voiceless stops have become underlying.

(2) Syllabification of Sonorants

The arguments presented in 3.1 (6) for preservation of syllabic sonorants suggests that the basic PIE syllabification rule between non-syllabics is maintained in PA. The easiest way to account for the exceptional behavior of original **CwRC* is to assume that **CuRC* has become underlying in these cases.

(3) Sievers and Lindeman

In Melchert (1984b: 24ff) I presented several examples of Hitt. */-umV-/* < **/-uwV-/* where I attributed the secondary sequence **/-uwV-/* to a Sievers-Lindeman development. If this analysis is accepted, then at least some of these examples require that Sievers-Lindeman is still operative in PA or even pre-Hittite. Note for example that in Hitt. *ardumēni* 'we cut with a saw' from a root **h₁red-* (cf. Puhvel, 1984: 175), only the secondary change or replacement of **h₁red-* by *ard-* creates the required heavy syllable for the rule to operate.

Eichner (1988b: 136ff) has proposed a different interpretation for several of my examples which invoke an original sequence **CHwV*. He argues that in the environment before a labial, the preceding laryngeal "vocalizes" as PA **/u/*: **dh₃wén* 'we took' > **duwén*. If one prefers as I do to speak in terms of anaptyxis, not vocalization, one may rephrase this as **dh₃wén* > **duwén*, with conditioned rounding of the anaptyctic vowel. For a similar analysis see Bernabé (1983: 40ff).

Either Eichner's analysis or mine will account for many of the examples. His does not address cases where no laryngeal was ever present: **swēs* 'you' (pl.) > **suwēs* > Hitt. *šumēš* (Lindeman, 1975: 568f, & Melchert, 1984b: 26f; cf. Kronasser, 1956: 141), *ard(umēni)* 'cut with a saw' < **h₁red-*, *wašt(umar)* 'sin' < **h₂womst-*. The two verbal forms meet the requirements for Sievers-Lindeman, but they could be analogical to roots with final laryngeal. That leaves only the second plural pronoun, whose derivation I do not regard as assured. Since rounding of an anaptyctic vowel before labial seems to be independently required (4.1.3.3.2,4), Eichner's alternative must be given serious consideration.

As mentioned by Kronasser (1956: 51) and Oettinger (1979a: 355) and discussed at length in Melchert (1984b: 54ff), it is difficult to distinguish with certainty /CyV/ and /CiyV/ in cuneiform orthography. This means that proving Sievers-Lindeman for /y/ is next to impossible. I still find suggestive some of the examples for /CiyV/ which I cited in 1984, but none can be taken as proven. See also Eichner (1974: 19) on voc. *ši-i-ú-ni-mi* vs. dat.-loc. *ši-ú-ni-mi*, and Kimball (1983: 516ff), but I find most of the latter's examples problematic (cf. also 6.1.4.1.5,2). In sum, the status of Sievers-Lindeman in PA remains uncertain.

(4) s-Epenthesis

This is necessarily still an existing synchronic rule in PA, since it is still operative in OH. See below 5.3 (9).

(5) Laryngeal Metathesis

Unless one wishes to project pairs such as Hitt. *šubḫa-* 'pour' and *iṣḫu(wa)-* 'sprinkle' back to PIE, one must assume that this rule operated into PA (see on this pair Melchert, 1984b: 99 with refs, contra Puhvel, 1984: 409). On the other hand, it is possible that Hitt. *taruḫ-* beside *tarḫu-* 'be strong' is inherited (/taruH-/ and /tarHu-/ contra Oettinger, 1979a: 221).

(6) Anaptyxis

The proposal that Lyc. *terihe* is a form of 'three' (Eichner, 1993: 239f) suggests that the insertion of an anaptyctic [e] into an initial */tr-/ cluster is probably PA. Cf. Hitt. *tēri-* and CLuv. *tariyanalli-* also reflecting **tēri-* (Oettinger, 1982b: 171).

It is also likely that the rounded anaptyctic vowel of CLuv. *tumman(t)*- 'ear' < **st(h₂)mn-* is of PA date. Cf. 4.1.3.3.2 (4) and paragraph (3) above.

The status of these as synchronic rules is, of course, indeterminate.

(7) "Lenition"

The rules by which voiceless stops are "lenited" or voiced in PA (4.1.1.1) were undoubtedly introduced as synchronic rules. However, the voicing rule after accented long vowels was no longer operative when **/H/* was lost before stop (4.1.3.2.2,2), which is very likely PA. On the other hand, there is some evidence to suggest that the voicing rule between unaccented vowels still applied in the prestages of Luvian (10.1.6.2.3,2) and Lycian (12.1.6.1.,1), implying that this rule remained a synchronic rule through the end of the PA period.

(8) **/t/* > **[ts]* / *__* **[y]* (4.1.1.2).

CHAPTER FOUR: CHANGES FROM PIE TO PROTO-ANATOLIAN

4.1 Segmental Phonemes

4.1.1 Stops

4.1.1.1 As noted in 3.1 (1) above, I assume that PIE "voiced aspirates" have fallen together with plain voiced stops in PA. I stress again that this assumption is based on the lack of positive evidence for their retention, and in principle new evidence altering this conclusion could be found at any time. For reflexes of both series see the relevant sections on the individual languages below. While the contrast of voiceless vs. voiced stops is retained in PA, their pattern of occurrence has been considerably altered:

(1) Voiceless stops become voiced after an accented long vowel or diphthong. This is the first "lenition" rule established by Eichner (1973: 79ff). Note that the conditioning for this rule includes PA $*\tilde{e}h_1$ < PIE $*\acute{e}h_1$, showing that the latter development must be PA. Examples: CLuv. $\tilde{a}ta$ = HLuv. $a+ra/i$ (/á:ra/) = Lyc. $\tilde{a}de$ 'did' < (virtual) PA $*(y)\tilde{a}do$ < $*y\acute{e}h_1to$; Lyc. $\tilde{tadi}$ 'puts' < PA $*d\tilde{a}di$ < $*d\acute{e}h_1ti$ and Lyd. $\tilde{ta}(a)c-$ 'votive offering' < (virtual) PA $*d\tilde{a}di-$ < $*d\acute{e}h_1ti-$; Pal. $\tilde{k}itar$ 'lies' < (virtual) PA $*\tilde{k}edor$ < $*\acute{k}eytor$; Hitt. $\tilde{e}pur\tilde{a}i-$ 'seize, storm' < (virtual) PA $*\tilde{e}bwr+$ < $*(h_1)\acute{e}pwr$ 'seizing' (with Eichner, 1973: 79, contra Puhvel, 1984: 282f, & Friedrich-Kammenhuber, 1988: 89); $\tilde{m}ut\tilde{a}(i)-$ '(re)move; postpone' < $*m\acute{u}h_1sto+$ (Eichner, 1979: 48¹⁴; contra Puhvel, 1976: 166f).

(2) Voiceless stops become voiced between unaccented vowels. This is the second "lenition" rule of Eichner (1973: 100⁸⁶ & 1980:146⁸⁹), which I interpret simply as voicing. The existence of this rule was established for Luvian and Lycian by Morpurgo Davies (1982/83). For Lydian evidence supporting Eichner's claim that the rule is PA see Melchert (1992b). Examples: CLuvian abl.-instr. $-ati$ = HLuvian $-a-ti/-a+ra/i$ = Lyc. $-e/adi$ (and perh. Lyd. $-ad$) < PA $*-odi$ < $*-oti$ (cf. Hitt. abl. $-az(zi)$ < $*-óti$); CLuv. $\tilde{mallit}-$ 'honey' < PA $*\tilde{m}élid-$ < PIE $*\tilde{m}élit-$ (cf. indirectly also Pal. $\tilde{malitanna}š$ 'of sweetness'); Hitt. middle ending $-(V)t(i)$ < PA $*-Vdi$ < $*-Vti$ (i.e. reflexive $*-ti$ as in Hitt. $-z(a)$, as per Neu, 1968b: 143ff, contra Carruba, 1992a); Lyd. pres. 3rd person $-ad$ = Pal. $-\tilde{a}(ga)ti$ < PA $*-\acute{a}Hyedi$ < $*-\acute{e}h_2yeti$.

Hittite largely levels out the effects of this rule (including *militt*– 'honey', as per Starke, 1990: 192), but isolated examples exist. I take *šāudišt*– (sic! in OH, contra Oettinger, 1986a: 8) as 'of the same year' i.e. 'of this year, new-born' < (virtual) **sóm-wetes-t*– with voicing of the first **-t*– before syncope (see 6.1.6.1.5 (8) & 6.1.6.2.2 and cf. already Hrozný, 1917: 93², for the etymology).

(3) The PIE voiceless labiovelar **/k^w/* is apparently weakened to PA **/g^w/* in medial position: see already Čop (1955a: 68) and Lehrman (1987: 15). This rule is troublesome, because it seems phonetically unmotivated (despite the efforts of Čop, 1963: 35f), but no other explanation seems possible for the first example below, and all other explanations for the word for 'eye' seem even less plausible. Examples: Hitt. *tarku*– = CLuv. *taru*– 'dance' < PA **terg^w*– < PIE **terk^w*– 'twist'; Hitt. *šākuwa*– 'eye' = CLuv. *tāwa/i*– = HLuv. *ta-wa/i*– = Lyc. **tewe*– 'eye' < PA **sók^wo*– **'seeing'* (Čop, 1955a: 69, contra Eichner, 1973: 82; Puhvel, 1974: 294f; Melchert, 1987a: 188; et al.); Hitt. *nekuz* 'of evening' < **nék^wts* (Schindler, 1967a: 290ff); perh. Hitt. *šakutt(a)*– 'upper thigh' < **sak^w(h₂)*– (after Normier apud Kühne, 1986: 103). The Luvian treatment in *taru*– 'dance' demands PA **g^w*, not **k^w* (see 10.1.1.4.1). A lengthened grade **sók^wo*– for 'eye' (Zucha, 1988: 56) is entirely ad hoc and leaves the other examples unexplained.

Starke (1993: 30) tries to avoid the problem of **k^w* to **g^w* > *w* by separating *taru*– 'to rage' from *tarku*– 'to dance', associating the former with Hitt. *tarkuwa(nt)*– 'raging, angry' (of the eyes) < **torg^w*–: see also Oettinger (1979a: 223ff) and Goetze (1939). This semantic interpretation is totally unsupported by the now available evidence. First, as conceded by Tischler (1993: 236) and stressed by de Martino (1989: 46f&83f) and by Neu (1983b: 189&192), *tarku*– and *taru*– are synonymous, being used in virtually identical contexts. Second, *tarkuwa(nt)*– means 'fierce, grim'. There is no basis for supposing 'raging' < **'rolling'* (pace Goetze and Oettinger). The infinitive *tarwauwanzi* < **tarwā(i)*– at KUB XII 63 Vo 11.13 means 'to fetter' and does not belong here (Tischler, 1993: 237). There is thus not a shred of evidence for 'to rage' or 'raging' or for any connection between *taru*– 'dance' and *tarkuwa(nt)*– 'fierce, grim'. We must assume both *tarku*– and *taru*– 'dance' < 'twist'. The latter is surely Luvian, as per Laroche (1958a: 197⁵). The Luvian stem ***tarku*– 'turn' > 'explain' > 'translate' posited by Starke (1993) is a fiction, based purely on an alleged **tarkummanni*– (the source of Akk. *ta/urgumannu* 'translator'), which is morphologically impossible (see 10.1.4.1 on *-nn*–). Pace Tischler (1993: 236), there is no evidence for **k^w* > CLuvian *-ku*– medially, only initially.

Original voiceless **k^w* before **s* is maintained, appearing in the synchronically unanalyzable Hitt. *tekkušša*– 'show' <

**dek=so-* and before the "iterative" suffix *-ske/a-* < **-ske/o-*, where gemination resulting from the devoicing becomes a morphophonemic rule in Hittite (cf. 1.2.6.1.2). The single *-ku-* of Hitt. *nana(n)kuss(iye)-* 'grow dark' is due to the influence of *nekut-* 'twilight; evening' and *neku-* 'become twilight'.

(4) Given the evidence for a "limited Čop's Law" in PA (see 4.1.1.3 & 4.1.4.1), I find it likely that the development of intervocalic voiceless stops into geminates attested for the cuneiform languages is already PA. I concede that this claim is unverifiable and will remain so, since the alphabetic languages clearly simplify other assured PA geminates (see 12.1.6.1 (11) and 14.1.6.1 (9) and cf. 1.2.6.1.3, end).

See also 4.1.6.1.1 (1) and 4.1.6.3.1 (1).

4.1.1.2 PIE */t/ becomes an affricate in PA before *[y]. The result of this change is spelled the same as the outcome of inherited **-t+s* in all the Anatolian languages, and for simplicity I treat both as a voiceless dental affricate [ts]. Obviously the first could easily have been a palatal phonetically. The only example which is assured as PA is the inherited suffix **-tyo-* which forms adjectives from local adverbs or from nouns which are semantically "places". Cf. Hitt. *šarazziya-* and Lyc. *hrzze/i-* 'upper' and Lyd. *armra-* 'of the Moon-god'. Note also Hitt. *hazziya-* 'strike, play' = HLuv. *ha-zi-* 'incise, write' < (virtual) PA **Hatsye/o-* < **h₂étye/o-*. The lack of any examples in Palaic is surely due to chance.

4.1.1.3 I assume that a sequence of **#ē.D(V)-* becomes PA **#ád.D(V)-* (for a full justification of this "limited Čop's Law" for PA see Melchert, 1994d). Thus PIE **h₁édwo-* *'biting' > **é.dwo-* > PA **ád.dwa-* 'evil' > CLuv. *āduwa-* (my analysis follows Watkins, 1982a: 261). The CLuvian stem must be *āduwa-*, not **āddu(i)-*, contra Starke (1990: 62 & passim), because of the nt. nom-acc. sg. *āduwan=za*. As this example shows, it is not necessary that the consonant involved be intervocalic—the crucial conditioning for Čop's Law is that the accented short **ē* be in an open syllable. I would also explain Hittite *aki/akkanzi* 'die' as regular by this rule from **ógei/égñti*: cf. for the root Lat. *egeō* 'lack' and for the semantic development Skt. *das-* 'lack; languish; be extinguished'.

4.1.2 Fricatives

4.1.2.1 PIE */s/ is generally preserved unchanged in PA. Note in particular the following points.

(1) Even if one interprets Hittite initial spellings in *iš-TV-* as showing a genuine prothetic *i*-vowel (see 1.2.6.6 for discussion), the loss of the initial *s- in Luvian (e.g. *tumman(t)*- 'ear' < PA **st₂mn-*) shows that PA still has */sT-/.

(2) Milyan *-z-* < *-(V)*nsV-* (12.1.6.1.9) and the hapax Lycian spelling *xāhb* < **Hónsu+* 'grandson, descendant' argue that *-(V)*nsV-* remains in PA. The assimilation to *-VssV-* is an innovation of Hittite, Palaic and Luvian.

(3) I assume that in PA an initial sequence of *#*ē.C₁V* becomes *#*āC₁.C₁V*, where *C* equals a voiced stop or any continuant. This is a limited form of "Čop's Law", for details of which see Melchert (1994d). In my view this rule accounts for the *-ss-* of Hitt. *āššu-* 'good', a blend of PA **āssu-* < **ēsu-* < PIE **h₁ésu-* and PA **āsu-* < **ósu-* (contra Puhvel, 1980). Likewise CLuv. *āššiwantattar* 'poverty' (Starke, 1990: 448ff) reflects a PA **āssi-* < **ēsi-* vs. Hitt. *aši-* < **ósi-* in *ašiwant-* 'poor' (details in Melchert, loc. cit.).

(4) Eichner (1973: 100⁸⁸) proposes that PIE */s/ becomes [-ss-] before (and in some cases after) an accented short vowel (cf. also Eichner, 1980: 161ff). He has never presented evidence for the posttonic portion of the rule. In any case, counterexamples in Hittite and elsewhere are easy to find. Clear counterexamples in Palaic (8.1.6.1.1) show that pretonic gemination cannot be PA. For a discussion of the Hittite facts see 6.1.6.1.1.2.

4.1.2.2 PIE *[z], a voiced allophone of */s/, must have been rare in PIE itself, since it would only have occurred in clusters of */s/ plus voiced stop. Evidence in Anatolian is thus far limited to the cuneiform languages, which makes it impossible to determine the synchronic voicing quality. I see no reason not to assume a voiced *[z] in PA. Examples: Hitt. 1st pl. mid. *-wašta* < (virtual) **-we/osa^hh₂* (Oettinger, 1976b: 115, & 1979a: 259 w/note 2); Hitt. *bašduēr* 'twigs, brush' < (virtual) **h₂o-zd-wēr*; prob. Hitt. and Pal. *kist-* 'be extinguished' < **gez-d(h)-* (8.1.3 w/refs.); Hitt. *iškis-* 'back' < **izg^his-* (cf. Grk. ἰσχία); perh. Hitt. *šisd-* 'rest' (?), if from a dethematized **si-zd-e-*, as per Carruba apud Friedrich (1966: 28f) and Oettinger (1979a: 216).

4.1.2.3 There is no trace in Anatolian of PIE *[p], which I take with Mayrhofer (1982 & 1986a: 150ff) and Schindler (1977a) as an allomorph of the dental stops. This absence can be interpreted in one of two ways. First, one could assume that *[p] is a "late" PIE feature which never existed in the precursor of the Anatolian group (in traditional terms, *[p] would be an innovation of the extra-Anatolian languages after the separation of the Anatolian group): thus Mayrhofer, 1986a: 158.

However, once again *[p] would have been a relatively rare sound in PIE, and one could also suppose that what few examples were inherited by PA were eliminated. I know of only three words in Anatolian where we might expect reflexes of *[p]. One is Hitt. *bart(tag)ga-* /Hartka-/ 'bear', putatively from PIE **h₂érkpo-*. Schindler (1977a: 32f) accounts for Hitt. *bart(ag)ga-* by assuming that it is the regular reflex of **h₂ért.ko-*, while those reflexes pointing to *[p] continue **h₂érkpo-* < **h₂ér.tko-*. Mayrhofer (1982: 246f) argues alternatively that the Indic and Greek forms of 'bear' may be accounted for without *[p], while other reflexes remain problematic even with *[p]. In either case, this word seems unsuited to deciding whether PA inherited *[p] or not.

There seems little doubt that certain forms of PIE 'earth' contained *[p]: see Schindler (1977a: 31f) and Mayrhofer (1982: 246). However, Hittite nom.-acc. sg. *tēkan* < PIE **d^héǵ^hōm* shows that Anatolian inherited an ablauting paradigm in this word. Thus it could have analogically replaced the reflex of **ǵ(ʰ)d-* with **dg-* at any time, and all the attested Anatolian forms can be derived from either PA **deǵ-* or **dg-* (for the latter in Hittite see 5.3,6).

Likewise, if one accepts Schindler's restriction (1977a: 33) of **TK* > **Kp* to tautosyllabic position, then the paradigm of **h₂ed^hǵ^h-* > Hitt. *batk-* 'shut' (Puhvel, 1991: 268) would also have had both metathesized and non-metathesized allomorphs, again permitting leveling of the latter. It thus does not seem possible to decide whether PA inherited *[p] from PIE or not. I will take no further notice of PIE *[p] in what follows.

4.1.3 Laryngeals

There is a broad, though not universal, consensus on the general development of laryngeals in Anatolian (one may compare the treatment below with that of Eichner, 1980: 128⁴¹, & 1988b). The one important exception to this will be duly noted. Readers should remember, however, that evidence for

the laryngeals in certain positions is scarce, particularly outside Hittite. In this case, I have generally projected pre-Hittite developments back to PA unless there seems to be evidence to the contrary. The validity of the following statements should be judged accordingly.

4.1.3.1 */h₁/

I know of no compelling evidence for the preservation of PIE */h₁/ in PA in any position (thus already Kurylowicz, 1927: 104, and Eichner, 1973: 53ff & 1988b: 137, pace Pedersen, 1938: 183f; Puhvel, 1984 passim; Lindeman, 1987: 55f&110f; et al.). In most positions it is lost without a trace. For two important assimilations see 4.1.6.1.1 (2) and (3). Please note further the following points:

(1) If my proposal of a "limited Čop's Law" for PA is valid (4.1.1.3 & 4.1.2.1,3), then the loss of initial *h₁- before vowel must be PA: NB PIE *h₁édwo-* > **é.dwo-* > PA **ád.dwa-* 'evil' and PIE **h₁ésu-* > **é.su-* > PA **ás.su-* 'good'.

(2) The initial *t-* of Hitt. *tianzi* 'they put' < **d^hh₁yénti* and similar forms may easily be analogical to that of the strong stem **d^heh₁y-* seen in *tēbbi* 'I put', *dāi* 'he puts' etc.. There is no need at all to assume preservation of the *h₁ in **d^hh₁yénti* into pre-Hittite in order to explain the non-assimilation of the initial **d*(^h). Another clear example of loss between consonant and */y/ is Hitt. *wer(i)ye-* 'call' < **wérh₁ye-* (Oettinger, 1979a: 344). Deletion in a sequence **Ch₁CC* is shown by **d^hh₁ske/o-* > **tske/o-* > Hitt. *z(ik)ke/a-* / *z(aš)ke/a-* ([tske/a-]) 'put, place' (iter.), also perhaps in *zashāi-* 'dream' < **d^hh₁sh₂o+* (Starke, 1979: 248). In several instances of loss between consonants, it is impossible to distinguish between */h₁/ and *h₃/: e.g. Hitt. *aršan+* 'jealous' < **h₁(e)rh₁/s+* (Benveniste, 1932b: 139), Hitt. *wargant-* 'fat' < **worh₁/sgo+* (Szemerényi, 1942: 397; Čop, 1955b: 31). For loss between stop and vowel note **-d^hh₁-énti* > Hitt. *-danzi* in *pēbutanzi* (Oettinger, 1979a: 108).

Based on the Greek non-Attic-Ionic dialect form λῆνος with eta, the root of the word for 'wool' ended in */h₁/ in PIE, not */h₂/ (Peters, 1987). Hitt. *bulana-* therefore reflects **h₂/s^wh₁-neh₂-*, and no loss of */h₂/ between two sonorants is involved. With regular loss of */h₁/ we would expect /Hulna-/. Given its extreme rarity, we could read the Hittite word thus, but a pronunciation with an anaptyctic vowel is also possible, since the cluster /-ln-/ would have been virtually unique. Hittite (and probably Luvian) shows assimilation of

*-/ln-/ clusters (4.1.6.1.1,5), including from **wln* in **h₂/w₁-ne-h₁-* > *bulle-* 'fight'. The lack of assimilation in /Hul(a)na-/ thus requires that loss of **/h₁/* in this environment follow assimilation of **-/ln-/*, including specifically **-uln-* < **-wln-*. Rather than assume maintenance of **/h₁/* into pre-Hittite, I prefer to suppose **CwRC* > **CuRC* (3.1,6), then assimilation of **-ln-* to **-ll-*, and finally loss of **/h₁/* between consonants, all in PA. I know of no evidence against attribution of all this to PA.

(3) Sequences of **VwV* are regularly preserved in Hittite (see 5.1.4 and 6.1.4.2.1). If intervocalic **h₁* is lost in PA, then **au-ē-* 'come' (< virtual PIE **au-h₁ei-* with Hrozný, 1917: 91) should lead to Hitt. ***awē-* (cf. CLuv. *awī-*). I assume that attested Hitt. *uē-* (/we:-/) reflects a renewed **ū-ē-*, with **ū-* generalized from the PA weak stem **ū-y-(ēnti)*, regular from **au-h₁y-ēnti* (so also Eichner, 1973: 85⁶). Luvian generalizes the strong stem instead (otherwise Oettinger, 1979a: 133f). If Hitt. *uwate-* 'bring' contains the same preverb + **-oh₁-d^heh₁-* (Oettinger, 1979a: 126), then once again the sequence *uwa-* must reflect a renewed **ū-*, not directly **au-oh₁-*, which would yield ***awa-*. However, by the alternate analysis of Lehrman (1985: 258), *uwate/a-* would continue **au-* plus an iterative **wod^(h)éye/o-* 'lead', and the development of **au-* to *ū-* before non-syllabic would be regular. In either case, a recent pre-Hittite creation is suggested by the absence of the dissimilation to **uma-* (cf. 6.1.4.2.1,1). Given other Luvo-Hittite isoglosses, the existence of CLuv. *uwata-* does not require projection of this verb back into PA. It remains an open question whether one should derive Hitt. *wem(i)ye-* and HLuv. *wa/i-mi-(ya)-* 'find' from a preform **ū+em-ye/o-* with generalized **ū-* (following Hrozný, 1919: 306). One should note in any case that Hittite has generalized the preconsonantal form **ū-* as a preverb (so also now Kimball, 1993).

(4) Loss of intervocalic **h₁* in PA requires that the monophthongization of **ey* and **ew* also be PA (3.1 (8) & 4.1.5). As discussed in 3.1 (5) above, attribution of this loss to PA also presupposes that certain Hittite sequences of *uwV* are somehow secondary.

(5) I view the initial *a-* of PA weak stems in **aT-* such as **ad-* 'eat' and **as-* 'be' as analogical to the weak stem **sas-* of 'sleep' and other *TeT* roots (already PIE **T₂T*, as per Oettinger, 1979a: 98; cf. Schindler, 1967b: 197), not as a prothetic vowel directly reflecting **h₁-* (contra Gamkrelidze, 1968: 95; Eichner, 1973: 55, et al.). Kimball (1987b: 160ff) takes **as-* as analogical but **a+stop-* as vocalized **h₁*. I see

no reason to make such a distinction. Eichner (1988b: 137f) now concedes the possibility of the analogical account for all cases. The weak stems in **aC-* are in any case PA: Pal. and Luv. weak stem *ad-* beside Hitt. *ad-* 'eat'; Lycian *app-* 'take' (12.1.6.1,1) beside Hitt. *app-* 'take'; Lycian *ahñta-* 'property' < **ásont-* **'existing'* (12.1.6.3.1). Loss of initial **/h₁/* before non-syllabic sonorant is shown by **h₁lengh-* > Hitt. *li(n)k-* /CLuv. *likk-* 'swear' (Oettinger, 1979a: 181&13; Lühr, 1980: 69f) and **h₁néh,mñ* > Hitt. *lāman* 'name' (also in HLuv. /lamniya-/ 'call'). Whether or not one starts with an acrostatic paradigm to explain TochB *ñem* (cf. Zucha, 1988: 156 vs. Jasanoff, 1988b: 228), the starting point for Anatolian is effectively proterokinetic. The *a-* of HLuv. *á-ta₁-ma-za* /adamantsa/ etc. does not reflect initial **h₁* (see 4.1.6.1.2 for details). There are no compelling examples of "vocalization" of **/h₁/* in Anatolian (so also Lindeman, 1987: 80&106). I find quite unbelievable the account of *d(a)luki-* 'long' and *z(a)lug(a)nu-* 'postpone' by Eichner (1973: 85¹¹). We are dealing rather with different enlargements of the basic roots: **dl-(e)ugh-* and **sl-(e)ug-* (for the latter see Pokorny, 1959: 962). See below on the other laryngeals.

One well-known feature of the Anatolian languages is the lack of word-initial */r-/*, aside from a few transparently secondary examples (10.1.1.4,5; 11.4.1,1; 14.1.6.3.4). In Hittite, the consistent result of PIE **h₁rV-* is *ar-*. However, nearly all cases involve alternating paradigms with a zero-grade allomorph **h₁r-*. It is thus impossible to decide whether *ar-* represents generalization of the zero-grade reflex or the phonetic outcome of **h₁rV-*: see the detailed survey and discussion by Tischler (1986). However, the Hittite verb *arāi/ariyanzi* 'rise' probably reflects a paradigm **h₁réih₁/syei/h₁rih₁/syénti* (for the root shape and slightly different paradigm see Jasanoff, 1981: 17). Here there was no allomorph **h₁r-*, so *ar-* must be the regular Hittite result of **h₁rV-*. In the absence of counterevidence elsewhere, I thus assume regular loss in PA of initial **/h₁/* before non-syllabic **/r/* as before other sonorants. Hittite at least developed a prothetic *a-* before the resulting word-initial **r-*. It seems likely that this change is already PA, but this cannot be proven.

(6) As expected, when **h₁* is lost in a tautosyllabic **Vh₁* sequence there is compensatory lengthening of the vowel. The rule by which voiceless stops are voiced in PA after accented long vowel (4.1.1.1) includes in its environment the long vowel **æ* < PIE **eh₁*: e.g. Lyc. *tadi* 'puts' < PA **dæ̃di* < PIE **déh₁ti*. Since this loss of **h₁* with compensatory lengthening before consonant must be PA, I assume that all cases of

tautosyllabic $*Vh_1 > \bar{V}$ are PA: e.g. $*móh_1yo- > *móyo-$ 'grown man' $>$ Hitt. $māya(nt)-$ (Melchert, 1984b: 46f), $*múh_1to+ >$ Hitt. $mūdā(i)-$ '(re)move; postpone' (4.1.1.1.1), perh. $*moh_1-leh_2-ye/o- >$ Hitt. $mālā(i)-$ 'approve' (Eichner, 1984: 203). Contra Eichner (1973: 79; 1980: 129⁴¹ & 1988b: 139f) loss of a tautosyllabic laryngeal after a short diphthong does not cause compensatory lengthening. See 6.1.5.26 for relevant examples.

4.1.3.2 $*/h_2/$

PIE $*/h_2/$ is generally preserved in PA as a fortis, voiceless fricative which I symbolize as $/H/$. Exceptions are the following:

4.1.3.2.1 "Lenition"

PA $*/H/$ is "lenited" (i.e. voiced) to $*/h/$ under the same conditions as voiceless stops (4.1.1.1):

(1) after accented long vowel: Hitt. $mēhur$ 'time' $<$ PA $*mēh_1ur <$ (virtual) $*mēh_2ur$ (Eichner, 1973); CLuvian pret. 1st sg. $aḫa =$ Lyc. aga 'I made' $<$ PA $*(y)āha <$ $*yēh_1-h_2e$ (Melchert, 1992a: 191⁵).

Note: "Eichner's Law" (non-coloring of PIE $*/e:/$ by $*/h_2/$ and $*/h_3/$) is assured, pace Lindeman (1987: 56ff&110f). Besides Mayrhofer (1986a: 132f), see now Jasanoff (1988b) and McCone (1991: 50f). The analysis of Hitt. $wēḫ-$ 'turn' as $*wēh_2-$ is not ad hoc or circular, as misrepresented by Lindeman. Both acrostic presents (Narten, 1968) and "lenition" after accented long vowels in PA (Eichner, 1973) are independently established. It is thus quite reasonable to apply these concepts to explain first Hitt. $wēk-$ 'demand' $<$ $*wēk-$ and then in parallel fashion $wēḫ- <$ $*wēh_2-$ (so also Oettinger, 1979a: 99f & 1992: 215ff).

(2) between unaccented vowels: Hitt. pret. 1st sg. mid. $-ḫḫaḫa(t) =$ Lyc. $-xagā <$ PA $*-Haha+ <$ iterated $*-h_2eh_2e+$ (1.2.2.1.2).

4.1.3.2.2 Conditioned Loss

PIE $*h_2$ is lost in the attested languages in several positions. Attributing the loss to PA in the following cases is necessarily tentative:

(1) between stop and vowel. This loss must follow the assimilation of $*Dh_2$ to $*T$ described in 4.1.6.1.1 (1). An

example after voiceless stop is Hitt. *paltāna-* 'shoulder' < **p_lth₂-óno-* (cf. Oettinger, 1979a: 372²³⁵).

(2) between vowel and stop. This change must follow the "lenition" of stops after accented long vowel (4.1.1.1), because verbs in *-*ch₂-* never show lenited endings in Luvian or Lycian: CLuv. *tätta* 'has arrived' < *(*s*)*téh₂-to*, Lyc. *prñnawate/ē* 'built' < **prñnowéh₂-to*, etc.. Compare also prob. Hitt. *lāpp-* 'glow' < **ieh₂p-* (Mudge, 1931: 252; Benveniste, 1932b: 140; Kimball, 1983: 185) and *lāppa-* 'shovel' (or sim.) < **lōh₂po-* (Ivanov, 1983: 160f). This loss (with compensatory lengthening) is also seen in Hitt. *sākiya-* 'give a sign' < **séh₂g(i)ye-* (formally = Lat. *sāgīre* 'find the scent'). Note the Hittite long *ā*, which falsifies the derivation from **sh₂g-* by Eichner (1973: 71) and Oettinger (1979a: 345&413). I reject categorically the ad hoc assimilation *-*h₂g-* > -*gg-* (Eichner apud Oettinger, 1979a: 413), invented solely to save an etymology (*sākk-/sekk-* 'know') which must be rejected on semantic grounds (on correct derivation of the latter from **sek-* 'cut' see Justus, 1982, esp. 322ff, following Vaillant, 1942-45). If Hitt. *wāg-* 'bite' represents **wéh₂g-* instead of **wāg-* (Kimball, 1988: 245), then it is a direct counterexample to **h₂g* > *gg*.

(3) between obstruent and following consonant. This change must follow the affrication of */t/ before */y/ (4.1.1.2), because of the preserved stop in Hitt. *buett(i)ya-* 'pull, draw' < **h₂wedh₂-ye/o-* via **Hwētye/o-* (4.1.6.1.1) or Hitt *t(i)ye-* 'step' < *(*s*)*th₂-ye/o-* (so also Oettinger, 1979a: 350, after Watkins). I find this account in terms of ordering preferable to the assumption that the */h₂/ aspirates the preceding stop (Eichner, 1980: 158ff⁷⁹), since there is no other basis for aspirated stops in Anatolian. For a Luvian example note HLuvian *ha-ni-ya-* 'malicious' and CLuv. *banhaniya-* 'be malicious' < **h₂enñ₂-ye/o-* (after Van Brock, 1964: 141; cf. Bernabé, 1973: 440, and Puhvel, 1991: 89). Evidence from Palaic (8.1.3.4) now suggests that */H/ is not lost in PA between a vowel and */y/.

There is no proof that the medial /a/ of Lyc. *kbatra-* and HLuv. *tu-wa/i-tara/i-* /t(u)watra/i-/ 'daughter' continues directly the */h₂/ of the preform **d^hugh₂tr-*. I assume rather loss in a sequence **Ch₂CC* (cf. loss of */h₁/ in the same environment, 4.1.3.1.2), then anaptyxis in the resulting triple cluster: **d^hugh₂tr-* > **dugtr-* > **dug₂tr-* > **dugatr-* and hence the attested forms (cf. 10.1.1.4 and 12.1.1.4). Loss of */h₂/ in the same environment is found in *palz(a)hha-* 'pediment' < **p_lth₂sh₂o-* and *dammishha-* 'harm' < **dñh₂sh₂o-*

(cf. Starke, 1979: 249). There is no solid evidence for "vocalization" of $*/h_2/$ anywhere in Anatolian (so also Lindeman, 1987: 106), pace Zucha (1988: *14) et al..

(4) $*/h_2/$ is clearly preserved in some cases between sonorant and following consonant: Hitt. sg. *walḫ-Ci* 'strike' < $*wēlh_2-Ci$. Given this incontrovertible example, I also take the singular stems of Hitt. *tarḫ-* 'overcome' and *ṣanḫ-* 'search; sweep' from full-grade $*terh_2-$ and $*senh_2-$: see 6.1.5.6&7 for discussion and opposing views. Loss has been alleged in the specific environment of $*m\_s$, but none of the examples is probative. Hitt. *daṣ(u)want-* 'blind' need not reflect $*d(e)mh_2s-went-$ 'dark', but is better derived from $*das-went-$ 'lacking', to the root of Skt. *dāsyati* 'lacks' (for the meaning cf. Ital. *orbo*): cf. already Čop (1964: 58).

Deletion of $*/h_2/$ in Hitt. *damaṣṣ-/dameṣṣ-* '(op)press' and *dammīṣḫā-* 'violence, harm' is unavoidable, but the conditioning is very unclear. The attested shape of this verb and its derivatives remains problematic, despite repeated attempts at a solution: Oettinger (1979a: 123f), Starke (1979: 249⁸), Zucha (1988: 62), van den Hout (1988), Bader (1990: 19f). The most promising analysis is that of van den Hout, who follows Pedersen and Kuiper in assuming an ablauting "s-present", but even his derivation faces serious phonological difficulties. He starts with a paradigm of sg. $*dṛḫ_2-es-$, pl. $*dṛḫ_2-s-$, supposing a regular development to $*damḫas-$ for the former, and to $*dams-$ whence *dameṣ-* for the latter (the singular is then unsurprisingly remodeled to attested *damas-*). However, the assumed anaptyxis in $*dams-$ is anything but "regular". Before consonant we would expect rather deletion of the $*m$: cf. $*woms-t-$ > Hitt. *wašt-* 'sin' (see 6.1.6.1.5,7 and Catsanicos, 1991: 73, for the root etymology, pace Puhvel, 1992). Before vowel $*-ms-$ should assimilate to $-ns-$: cf. Hitt. *ān(aṣ)ṣ-* 'wipe' < $*ōms-$ (6.1.6.1.3.2).

In his analysis van den Hout has extrapolated the ablaut pattern from roots in *CEC* to a root in *CERH/CREH*, but Kuiper (1934: 198ff) argues on the basis of Skt. *śās-* 'command, instruct' that for *CEH* roots the ablaut was rather fixed $*CēH-s-$. Hittite *paḫṣ-* 'protect' < $*peh_2-s-$ supports this. Narten (1968: 14f) argues that *śās-* actually reflects an acrostatic present with $*ē/é$ ablaut, but the crucial fact remains that the *s-* present to a *CEH* root does not have fixed zero grade of the root $*CH-es-/CH-s-$ (see also Jasanoff, 1988b, on acrostatic $*gneh_2-s-$ > Hitt. *g(a)neṣṣ-*). An acrostatic paradigm cannot directly explain *damaṣṣ-/dameṣṣ-*. A plural $*dmeh_2s-nti$ would lead to Hitt. $*d(a)maṣṣanzi$ (4.1.6.1.1,2). The fate of the singular $*dmēh_2s-ti$ is less clear, but $*d(a)maḫṣzi$ seems likely (cf. 6.1.5.11&16). From this one would expect a leveling to invariant $*d(a)maṣṣ-$, which would surely have survived (cf. *āṣṣ-* 'remain').

There is a clear tendency for $*\tilde{e}/\tilde{e}$ ablaut to be altered to $*\tilde{e}/\beta$ after the dominant $*\tilde{e}/\beta$ type: see Narten (1968: 16ff) and compare Hitt. $\tilde{e}d-/ad-$ 'eat' after $\tilde{e}s-/as-$ 'be' and others. In the latter case the alteration may have been quite late in pre-Hittite, but it need not have been. If we are permitted to assume an early secondary $*dm\tilde{e}h_2sti/d\eta h_2s-\tilde{e}nti$, I believe this paradigm will lead to the attested Hittite. The singular would yield regularly $*d(a)mahs-$ (i.e. $/dmaHs-/$), as per above. By strict phonological rules we would expect syllabification of the $*m$ in the plural, but Hittite and Luvian elsewhere show an analogical maintenance of non-syllabic sonorant after the strong stem (cf. Oluv. $\tilde{l}üwa-$, as per Melchert, 1988b: 218). An initial sequence of $*dmHs-$ with maintained non-syllabic $[dm-]$ would explain both the loss of the laryngeal and the anaptyxis in the resulting initial $*dms-$, which becomes $*dm\tilde{e}s-$, with accent on the anaptyctic vowel, as usual in such initial clusters (cf. 3.3.6). $*/dmaHs-/$, $*/dmes-/$ is then leveled to attested $d(a)māss-/d(a)mēss-$ (for the geminate $/-ss-/$ see 6.1.6.1.1.2).

The shape of the derivative $dammišbā-$ is also difficult. As per van den Hout (1988: 310), a zero-grade root is most likely: $*d\eta h_2s-sh_2\tilde{o}-$ (NB the plene spelling of the last syllable). We may assume $*damsHsH\tilde{o}-$ and then $*damsH\tilde{o}-$ with regular loss of $*/h_2/$ in a cluster with three consonants (see (3) above). We would expect loss of $*/m/$ before $/sC/$ (6.1.6.1.5.7). I can only invoke influence of the base verb for maintenance of the $*/m/$. If maintained, the $*/m/$ would be geminated before a consonant (6.1.6.1.1.3 & 10.1.6.1.1.4), whence $*dammsH\tilde{o}-$. Anaptyxis would finally lead to $*dammišbā-$ (6.1.6.2.3). Obviously, the long string of hypotheses makes this entire derivation no more than a possibility.

(5) The loss of $*/h_2/$ in Hitt. $\tilde{e}šnaš$ 'blood' (gen sg.) is probably old (cf. Skt. $asnās$ and see Mayrhofer, 1986a: 132¹⁴¹&150 w/refs.), not independent in Hittite (contra Zucha, 1988: 175). The rare nom.-acc. sg. $\tilde{e}ššar$ is in any case analogical to $\tilde{e}šnaš$. The alternate account of $\tilde{e}ššar/\tilde{e}šnaš$ by Laroche apud Catsanicos (1982: 94) is not credible.

(6) I do not accept the loss of $*/h_2/$ directly adjacent to $*/o/$ in Hittite (see 2.3.7 end).

For the fate of $*/h_2/$ in word-final position see 4.1.6.3.1
(2). Note also the important assimilations in 4.1.6.1.1 (1)-(3).

4.1.3.3 $*/h_3/$

The only major controversy regarding laryngeals in Anatolian concerns the fate of initial $*/h_3/$. For a summary of the issues see Melchert (1987b). The views expressed below are my own, and one should take careful note of the dissenting opinions cited.

4.1.3.3.1 Preservation

I share the view of Normier (1980a: 58), Watkins (1982c: 457), Bernabé (1983: 39ff), Kimball (1983 & 1987a) and others that */h₃/ is preserved initially as *b-* in Hittite, Palaic and Cuneiform Luvian. I assume that initial */h₃/ was a lenis voiced fricative */h/ in PA, distinct from the fortis voiceless */H/ which was the regular reflex of */h₂/: for the phonemic identification of this initial /h-/ with the "lenited" reflex of */h₂/ in PA see 3.1 (5) above, but I stress again that this step is an independent issue.

The evidence for the preservation of initial */h₃/ is twofold. First, I accept the derivation by Weitenberg (1984: 223) of Hitt. *ḫarganāu* 'palm, sole' < virtual */h₃reǵnōw 'extension' (cf. Grk. ὀρέγω 'stretch out (hand or foot)'). In this TRET root, the *o-* of the Greek word cannot be explained as an *o*-grade, and hence Hitt. *ḫarg-* cannot reflect */h₂orǵ- (see further Melchert, 1987b: 21f, and now Lamberterie, 1991-93). Second, as pointed out by Kimball (1987a), initial */h₃- disappears in Lycian, but initial */h₂- is preserved as *x-*: contrast Lyc. *epiriḫe-* and Hitt. *ḫappariye-* 'sell' < */h₃ep- with Lyc. *ḫātawa-* 'rule' and Hitt. *ḫant-* 'front' < */h₂ent-. For another reflex of */h₃ep- in Lycian see Melchert (1989a: 43f). For the opposing view that initial */h₃- disappears in Anatolian see Eichner (1978: 162⁷⁷) and Oettinger (1979a: 546¹) among others. Compare also Rasmussen (1992) for another viewpoint.

4.1.3.3.2 Loss

I now share the widespread but by no means universal view that */h₃/ is regularly lost in all other positions (but note two important assimilations in 4.1.6.1.1,2&3):

(1) intervocalically: a sure example is */séuh₃u- 'full' > Hitt. *šū-* (Watkins, 1975a: 378; see Melchert, 1987b: 24f, for details). Contrary to a number of claims, Hitt. *lab(b)u-* 'pour' cannot reflect */leh₃u-. For correct derivation from */leh₂(u)- see Schmitt-Brandt (1967: 64f), Eichner (1979: 55⁴²), Oettinger (1979a: 424) and Jasanoff (1979: 88). I derive *labḫu-* with Jasanoff from a "u-present" */léh₂w-/lh₂w-. For the history of this stem in Luvian and Hittite see Melchert (1988b: 217f). There is also evidence for a stem *lab(b)-*, which I take as */lóh₂-/léh₂- (for the type see Jasanoff, 1979 passim). Like other athematic *ḫi*-verbs which have lost qualitative ablaut by regular phonological changes, this stem (*/lāḫḫi-/*/labḫanzi) is analogically remodeled after the *išpāri/išparranzi* type, whence a

third singular **lāḫi*, which also leads to *lāḫu-* beside *labḫu-*. For the extensive literature on *lab(bu)-* see Tischler (1990: 5ff).

(2) between vowel and consonant: Pal. *sūnat* 'filled' < PA **sunō-t* (Melchert, 1987b: 25); Hitt. sg. *dā-(bḫi/tti)* 'take' < PA **dō-*; Hitt. *lāman* 'name' < PA **lōmṇ-* < **h₁neh₃mṇ-*. The last two cases show expected compensatory lengthening of the preceding vowel. In the first, retraction of the accent has shortened the original long **ō* < **ch₃*. Somewhat different is the preform of 'name' with double zero-grade: **h₁ṇh₃mṇ-*, which leads to HLuv. *á-ta_{1/5}-ma-za* etc. (see 4.1.6.1.2). Since I assume syllabic sonorants in PA, I would assume loss here between syllabic **ṇ* and consonant. We have no means to determine whether there was compensatory lengthening or not, but it seems to me an unnecessary assumption in any case. One could alternatively posit a change **h₁ṇh₃mṇ-* > **anh₃man-* and then loss between consonants.

Note: there is in principle no way to distinguish **/h₁/* and **/h₃/* after **i/u* or **y/w*. I therefore arbitrarily list all cases of **i/uh_{1/5}c* > **i/üC* under **/h₁/* (4.1.3.1,6).

(3) between consonant and vowel: **dh₃-énti* > Hitt. *danzi* 'they take' (Oettinger, 1979a: 501); also in the compounds *pēd(a)-* and *ud(a)-* 'carry' < **pē/áw-dh₃-* (with secondary "thematization" from the third plural).

(4) between consonants: (virtual) **súnh₃-ye-* > Hitt. *sūn(i)ye-* 'immerse' (contra Oettinger, 1979a, 159). The retracted accent must be analogical to the *wem(i)ye-* type < **wémye-*. Another example is (virtual) **h₂erh₃s-* > Hitt. *ḫarš-* 'break (the soil)' to the root which means 'plow' elsewhere in IE (cf. Oettinger, 1979a: 193&506²⁸). The fixed Hittite sequence *ḫarš-teripp-* 'break (the soil)' then 'turn (the soil)' (with Hoffner, 1974: 42f, and Kimball, 1983: 102f²¹) argues for this inherited derivation, contra Puhvel, 1991: 185 (borrowing from Akk. *ḫarāṣu* 'plant' or *ḫarāṣu* 'dig a furrow', which does not fit the semantics of the Hittite verb).

Note: once again, there is often no way to distinguish **/h₁/* and **/h₃/* in this environment. I again arbitrarily list such cases under **/h₁/* (4.1.3.1,2).

The word for 'ear' requires special discussion. A derivation from a PIE **stómṇ* (> Grk. *στόμα* 'mouth') is not possible because of CLuv. *tūm(m)an(t)-* 'ear' (likewise impossible Puhvel, 1984: 460). PIE **/o/* does not become *u* in Luvian before **m*: cf. ptc. **-ómno/i-* > PA **-ómmo/i-* >

CLuv. *-āmma/i-*. One must therefore start with **sth₁m₁n-* (Oettinger, 1982a: 235) with generalized zero-grade root: cf. 'name' < **h₁n₁h₁m₁n-* (4.1.6.1.2). Hitt. *ištaman-* may represent a generalized full-grade **stēh₁m₁n-* (cf. again Hitt. *lāman/lāmn-* 'name' < **h₁nēh₁m₁n-*). Oettinger, following Eichner's proposal of **h_x* > u before labial (see 3.3.3), assumes directly **(s)th₁m₁n₁t-* > *(s)tūm(m)an(t)-* (in terms of anaptyxis **(s)th₁m₁n₁t-* > *(s)tūm(m)an(t)-*): likewise Zucha (1988: 44). That anaptyxis and rounding have taken place is clear. That the anaptyctic vowel takes the accent and lengthens is also unsurprising (cf. 3.3.6). However, the sequence of events is quite indeterminate. A preform **(s)th₁m₁n₁t-* would have begun with three (or four) consonants. Deletion of the laryngeal in such a cluster and then anaptyxis in the remaining cluster cannot be excluded. I repeat that compelling evidence for "vocalization" of laryngeals in Anatolian is lacking. Note also that the rounding of the anaptyctic vowel before labial in this word may be peculiarly Luvian or part of a wider PA process (cf. 3.3.3).

4.1.4 Sonorants

These sounds are relatively stable in PA, as indeed are their non-syllabic forms into the attested languages, as may be seen in the chapters below. Note the following points regarding possible conditioned changes in PA:

- (1) Certain geminates in Hittite (and indirectly in Lydian) demand in my view a limited form of "Çop's Law" for PA. For a detailed justification see Melchert (1994d). I give only the essentials here.

Following Çop (1970), I assume that a sequence **/é.C₁/* regularly becomes */aC₁C₁/* in CLuvian, (where *C₁* is a PA voiced stop, **/s/* or sonorant, and the period indicates the syllable boundary): e.g. **pérem* 'in front' > CLuv. *parran* vs. Hitt. *pēran*. The rule is well-established for Luvian (see 10.1.1.3 below for details). It is crucial to observe that the rule applies only with a preceding short **ē*: contrast **dōrus-* > CLuv. *tārus-* 'statue'. While the single consonant is in most examples intervocalic, the key conditioning factor is that it follow an open syllable (cf. 4.1.1.3). As Hitt. *pēran* and other examples show, this rule does not apply to Hittite in its generalized form.

Hittite does, however, have examples for this change in absolute initial position: PA **ēmu* 'me' > Hitt. *ammug*, PA **ēno-* 'that' > Hitt. *anna-* (in *annaz* 'formerly' etc.). Neither the *a*-vocalism nor the geminate consonant of these words can be otherwise explained. An *o*-grade stem **ōno-* would lead to Hitt. *ana-* with single *-n-* and is probably attested in

the univerbation *anīīwat* 'today', i.e. 'on this day' (further exx. in Neu, 1991: 22³¹). The PA status of this special gemination rule is confirmed at least for the first example by Lydian. By the well-founded accent rules of Eichner (1986a), Lyd. *amu* 'I, me' must be accented on the second syllable and reflect a PA **emū*. However, the possessive adjective *žm(i)*— must be accented on the first syllable. I have also shown (1992b: 36f) that the Lydian nasalized vowel *ž* consistently continues an accented short vowel in a closed syllable, confirming in this case the PA geminate. Hitt. *ammug* 'me' cannot continue **emū* with accent on the second syllable, because we would then expect only single *-m-* pretonically, contra Eichner (1986a: 12 etc.): cf. OHitt. *šumanza* 'cord, band' < **su(h₁)mēn+sa*. The *a*-vocalism of the first syllable would also be unexplained. Hitt. *ammug* and Lyd. *žm(i)*— together demand a PA **ammV-*. I have also argued (Melchert, 1991a: 139¹⁷) that Lyd. *žna-* means 'that' and matches Hitt. *anna-* < PA **anno-* (< **eno-*) vs. Lyd. *ān(a)-* 'this' < **ono-* (= Hitt. *ana-* 'this' above).

Čop's Law in Luvian also includes /s/ and voiced (i.e. single) stops, and there are examples for both with word-initial **ē.C₁-* in PA (cf. 4.1.1.3 & 4.1.2.1,3). I thus attribute to PA a "Čop's Law" in absolute initial position and view the Luvian version of this rule as a generalization of the Anatolian process.

(2) Hittite, Luvian, and Lycian give evidence for loss of initial **y/* before **e/*. There are no certain examples for **ye-* in Palaic and Lydian, so attribution of this change to PA must remain tentative. Examples: **yéh₁-* 'do, make' > **æ-* > Hitt. *ē-* (beside usual restored *iē-*), CLuvian *ā-*/HLuvian *a-*, Lyc. *a-*) (Melchert, 1984b: 14ff & 159ff w/refs., 1989a: 40f, contra Puhvel, 1984: 346, et al.; cf. already Pedersen, 1928: 158!); **yéh₁ro-* 'period of time' > CLuv. *āra/i-* 'time' (Melchert, 1989a: 41²⁸, after Morpurgo Davies, 1987: 218–219³¹); **yégo-* 'ice' > Hitt. *ega-*; **yéwo-* 'barley' > Hitt. *ewa-*; **yékt-* 'hunting net' > Hitt. *ēkt-*, CLuv. *akkati-* (see further 10.1.6.2.3,2). Note that this change must follow the limited version of "Čop's Law" proposed immediately above.

(3) There is no evidence for gemination of pretonic sonorants, in PA or Hittite, pace Eichner (1980: 163, et aliter). For Hittite counterexamples for **m/* see Oettinger (1982b: 166f). Eichner offers no positive examples for the other sonorants. For Hittite counterexamples for **r/* and **n/* see 6.1.4.1.1.

(4) As discussed in 3.1 (6) and 3.3 (2), syllabic sonorants generally remain in PA, but **wR* must have already become **uR* between consonants.

4.1.5 Vowels

PA appears to have preserved the PIE vowel system nearly intact. For a few special developments see 4.1.6.2. I do assume that the short diphthong */ey/ had monophthongized to */e:/ in PA: see 3.1 (8) for details. As emphasized there, this dating of the change rests in turn on the loss of intervocalic */h₁/ and */h₃/, whose attribution to PA is itself not assured. Likewise, PIE */ew/ must have already become */u:/ (or some transition sound such as a close [o:]). I also assume that tautosyllabic sequences of */Vh₁/, have already contracted to long vowel in PA (cf. 4.1.3.1,6 and 4.1.3.3,2,2).

As per Eichner (1986a: 13¹²), original unaccented long vowels are shortened in PA: **dʰéǵʰōm* 'earth' > PA **dēǵom* > Hitt. *tēkan*, **h₂ēstoyó-* 'of bone(s)' > PA **Hestoyó-* > Hitt. (E) *bištā-* 'mausoleum', **h₂ēporó-* 'bought' (or sim.) > **Heporó-* > Hitt. (LÜ) *bippara-* 'serf', gen. pl. **-ōm* > PA **-om* > OHitt. *-an*, thematic allative **-ō* > PA **-o* > Hitt. *-a/Lyc. -e*. However, this does not apply across the board to secondary long vowels from loss of tautosyllabic laryngeal or contraction of diphthongs: cf. Hitt. *mūdā(i)-* '(re)move; postpone' < PA **mūdāHye/o-* or CLuv. *tūpī-/tūpai-* 'strike' < PA **(s)towbéye/o-*: see 6.1.6.2.6 and 10.1.6.2.4 on this problem in Hittite and Luvian. On Hitt. *bišša-* 'thill' see 4.1.6.1.1 (2).

For a reason that lengthening of accented short vowels in open syllables cannot be PA see 6.1.5.3. Lengthening in accented closed syllables also cannot be PA: note Lycian *esi/esu* 'is/let be' < **ēsti/u* (long **ē* could lead only to Lycian *i*; 12.1.5.2).

4.1.6 Special Developments

4.1.6.1 Consonants

4.1.6.1.1 Assimilation

(1) An inherited sequence of voiced stop plus **h₂* appears in the cuneiform languages as a geminate in intervocalic position (Pedersen, 1938: 36). Since we do yet have any examples in the alphabetic languages, this result is open to two interpretations. Given the evidence that **h₂* is voiceless, I prefer to assume that the stop becomes voiceless by regressive assimilation and **h₂* is then lost as usual between stop and vowel (so Winter apud Kurylowicz, 1958: 251, and Watkins, 1975a: 376). The alternative assumption of progressive assimilation to a geminate voiced stop (e.g. Jasanoff, 1979: 87)

cannot be entirely ruled out. Examples: Hitt. *mēkk(i)-* 'much' < PA **mēk-* < PIE **megh₂-*; Hitt. 2nd pl. mid. *-ttuma(ri)* = CLuv. *-ttuwar(i)* = Pal. *-ttuwar* < PA **-t(u)wVr* < PIE **-dh₂(u)wV*; Hitt. *padda-* 'dig' < PA **bót-* < PIE **bʰódʰh₂-*.

Note that this change does not take place in word-final position, where the laryngeal is lost: Hitt. *ūg=us* 'I them' < **ūgh₂+.* See 4.1.6.3.1 (3). After a voiceless stop **/h₂/* is lost with a trace. The contrary claim of Kimball (1983: 820) is based on false premises (cf. 6.1.5.5).

(2) A sequence **/Vh₂sV/* assimilates to */VssV/*. The one sure example for **/h₂/* is **peh₂s-* > Hitt./Luv. *pašs-* 'swallow' (Bernabé, 1973: 428; Melchert, 1987b: 26). The same change is likely in **ḡnēh₂s-* 'recognize' > Hitt. *ḡ(a)nēss-* (acrostatic present w/Jasanoff, 1988b: 232ff, contra Oettinger, 1979a: 199). However, in a non-ablauting athematic *mi-*verb the gemination of the */s/* could also be attributed to its position as first member of a cluster (6.1.6.1.1.2).

It is generally held that **/h₂/* is preserved before **/s/* in Hittite (e.g. Melchert, 1987b: 26). However, this general claim is not valid, since all attested examples of the cluster can be explained as being pre-consonantal, at least prehistorically. The verb **peh₂s-* 'protect' is athematic, and thus */paHs-/* generalized from preconsonantal position is quite in order. The family of *naḥṣaratt-* 'fear' etc. may be based on a **neh₂s-ró-* which equals OIr. *nár* (Eichner, 1979: 53²⁶; Oettinger, 1979a: 352). The assumption of a base noun **neh₂sr/-n-* is entirely gratuitous. Nothing therefore stands in the way of a PA assimilation of **-h₂s-* to **-ss-* intervocalically. There is only one good positive example for the change, but it seems unavoidable. The geminate */-ss-/* of the Hittite and CLuvian "relational" suffix *-ašša/i-* demands an assimilated cluster, while the *a-*vocalism of the matching Lycian *-ahe/i-* requires PA */a/* (12.1.5 and Melchert, 1992c). These two facts falsify the derivation from a "thematization" of the genitive singular ending **-os* (Georgiev, 1967: 160 et alit.). Since the */-i-/* of the Luvian and Lycian suffix is the "motion-*i*" (Starke, 1990: 62 et alit.), the suffix is underlyingly thematic, and the oft-repeated direct equation with Lat. *-ārius* is impossible (see Bader, 1988a: 176²¹, for the extensive literature). Nevertheless, a closely related **-ch₂so-* (> PA **-asso-*) seems the only means of accounting for the shape and function of the Anatolian suffix (see Bader, 1991a passim, for various forms of the suffix and a possible further analysis). A "substrate" source for the suffix (Kronasser, 1966: 233f; Kammenhuber, 1969: 274; Stefanini, 1969: 296ff) is not credible.

I also still believe that a sequence $*/Vh_1sV/$ likewise assimilates to $*/VssV/$, but I now concede that the evidence is circumstantial. None of the examples I have presented previously are probative (Melchert, 1984b: 92&100). In some cases the laryngeal may be $*/h_3/$ (or even $*/h_2/$): in Hitt. *hissā-* 'hill' the first laryngeal may be $*/h_2/$ or $*/h_3/$, and the second any laryngeal, since there would be no coloring effects given its position: $*h_2/gih_xsch_2-$ (cf. Bernabé, 1973: 427f; Peters, 1980: 94f; Katz, 1983; Lindeman, 1987: 43). Likewise *hāssā-* 'hearth' must contain at least one instance of $*/h_2/$ in order to explain the vocalism of Lat. *āra*. If the ultimate root here is that of Pal. *hā-* 'be warm' (Melchert, 1984a: 41f), then the second laryngeal cannot be $*h_2$ (which is not lost intervocalically, pace Bernabé, 1973: 427). This leads to $*h_2ch_1/gsch_2-$. The same enlarged root is found in the root-noun *hāss-* 'ash(es); soap' (Puhvel, 1991: 210ff), which shows that *hāssā-* 'hearth' cannot itself be a root noun (contra Kimball, 1983: 158). However, we are not well-informed on what governs coloring effects when an $*/e/$ is surrounded by two different laryngeals. Is the result determined by order, and if so, is it the preceding or following laryngeal which wins out? Or is there a hierarchy among the laryngeals? With our present knowledge either $*h_1$ or $*h_2$ is possible for the second laryngeal. I continue to insist that the Hittite geminate *-ss-* is due to assimilation of the preceding laryngeal, whose existence is independently motivated (Sturtevant-Hahn, 1951: 49, contra Eichner, 1980: 160, & Puhvel, 1991: 224), but which laryngeal is impossible to determine. Likewise Hitt. *kūssan* 'wage' reflects $*kuh_xs-$ with indeterminate laryngeal (Čop, 1956c: 139ff).

Hittite "inchoatives" in *-ss-* certainly continue $*-ch_1s-$ (Watkins, 1973, supported by Melchert, 1984b: 32ff). However, these verbs are in Hittite non-ablating athematic *mi*-verbs. The stem-final $*/-s-/$ may thus be subject to regular gemination in a cluster (again 6.1.6.1.1.2). The same argument applies to Hitt. *iss(a)-*, iterative of 'do, make', which represents $*(y)i-(y)ih_1s-$ (Jasanoff, 1988b: 235), but is athematic in OH: *istēni*, etc.

However, it is highly suggestive that all examples of iter. *-iss(a)-* in Hittite are formed to *hi*-verbs in *-i-* (*halzišsa-*, *šissā-*), all clear cases of which are enlargements of roots in final $*-h_1$: $*d^hch_1i-$, $*h_2weh_1i-$, $*speh_1i-$, etc. Likewise the Hittite iterative *warrišsa-* 'help, aid' is based on a CLuvian stem **warri(ya)-* (Starke, 1990: 155f). This stem is also a *hi*-verb in *-i-*, as proven by the HLuv. pres. 3rd sg. *wa+ra/i-ya-ya* (/warriyay/), which is perfectly well-formed, contra Starke (1990: 155⁴⁹⁴). The original paradigm was $*wérh_1i-/wérh_1i-$. The former leads to Luvian *warri(ya)-*, the latter to OH *ūrryer* (*u-ur-ri-er*). In all cases of final $*-h_1i-$ ($*sch_1(i)-$, $*werh_1i-$), laryngeal-sonorant metathesis (2.3.5) would lead to $*-ih_1s-$, whence *-iss-*.

That the geminate *-ss-* in Hittite *-iss(a)-* is due to the laryngeal and not athematic inflection is shown by CLuvian, where the iterative suffix is regularly merely *-sa-*: *arpaša-* 'fail', *ḥapanuša-* '?!', *mazzallaša-* '?!', *tarpaša-* 'substitute, exchange'. The geminate *-ss-* from **-ih₁s(V)-* has indeed been spread analogically beyond its original locus: *pipiša-* 'give' to a root **pay-* without final laryngeal, but also a *hi-*verb in final *-i-*, denominatives in *-i(ya)-* (*ippatarrišša-* 'distrain', *ṣabḥanišša-* 'impose s. upon', *tarmišša-* 'nail down', *tiyanišša-* 'stuff, fill'), one verb in *-nu-* (*ḥalalannušša-*) and two denominatives in *-a-* (*karmalašša-* 'become crippled', *tarpanallašša-* 'become a rival'). However, the irregular distribution of the geminate *-šša-* (consistent after *-i-*, but sporadic elsewhere) betrays its analogical origin. If the geminate were due to the original athematic inflection, then it should have affected all stems equally: **arpašša-*, etc. Note also Pal. *pīša-* 'give' with expected single *-s-* to a non-laryngeal root vs. *marišši* 'crushes' or the like, where an enlarged **merh₁i-* is again likely. In CLuv. *šašša-* 'let go' the geminate may again be regular from **sch₁-s-* (Melchert, 1989: 33ff). In sum, I stand by the claim that **/Vh₁sV/* assimilates to **/VssV/* like the other two laryngeals and tentatively attribute the change to PA.

(3) A sequence **/VRh_xV/* assimilates to **/VRRV/*. For this rule see Oettinger (1979a: 549) and Melchert (1984b: 44⁹¹, after Schindler). Compare already Bernabé (1973: 432f&435f); Watkins (1975a: 376); and Kimball (1983: 783&787). Either Oettinger's formulation in terms of accent or mine of **VRH_xV* vs. **RH_xV* (cf. 3.1.6) will account for most examples, since full grade will normally be accented, and zero-grade unaccented. However, only my version explains the example of Hitt. *anniške/a-* < **enh₁iskē/ó-* (4.1.6.2.3). Note that my previous example *ḥullanzi* is not valid (4.1.6.1.1.5 & 6.1.6.1.6.1). Hittite evidence is plentiful for **h₂*: **mélh₂-* 'grind' > *malla-* (see Melchert, 1988b: 215f, for **h₂* in this root), **térh₂o-* 'be able/strong' > *tarra-*, etc. Hittite and CLuvian both exhibit the rule in the "durative" suffix *-anna/i-* < **-enh₂i-* (*uppanna-* 'bring'): see Jasanoff (1983: 74f) for the preform. The replacement of the *i-*stem by an *a-*stem is secondary in both languages. This suffix shows up in Lydian as *-ēn(i)-*, where the vowel *ē* requires a closed syllable (Melchert, 1992b: 36f), likewise pointing to **-nn-*. I cannot follow Oettinger (1994c), whose explanation of the geminate is based on false premises (see 4.1.4.3 and 6.1.4.1.1).

Hitt. *ḥarra-* 'crush' < **h₂érh₂o-* provides an example with **/h₃/* (etymology with Sturtevant, 1942: 41, pace Puhvel, 1991: 136). Pal. *ṣunnuttīl-* 'outpourings' or sim. < **su-n-h₃-u-* shows that the rule applies there too (see Melchert, 1987b: 24f, for arguments for **h₃*, here).

I follow Oettinger in assuming that */h₁/ participates in this assimilation as well. The best example is Hitt. *isparr-* 'kick flat' (weak stem) < **spérh₁-*. For the root etymology see Oettinger (1979a: 268), but for the *bi*-verb paradigm see below and for *isparrizzi* as possibly from **sporh₁éye-* see Lehrman (1991-93: 132). This verb is separate from *isparnu-* 'spread' < **sper-*, pace Puhvel, 1984: 446f (see already Benveniste, 1933b: 139). On structural grounds, Hitt. *zinni-* 'finish' must also represent **si-n-h₁-*, with generalized weak grade of a nasal-infix verb, as per Oettinger (1979a: 152): for the initial *z-* see 4.1.6.1.3 and 6.1.6.1.10. The very different morphological analysis of Barton (1993) assumes the same phonology. The account of Bader (1981a: 64ff) is phonologically impossible (cf. 6.1.6.1.2.2, end). Oettinger's derivation of Hitt. *kallešš-* 'call' from **kalh₁-es-* (1979a: 197) is also possible, but cf. van den Hout (1988: 316³⁹): one may suppose **k₁h₁-es-* with regular loss of intervocalic **h₁* and then development of an *-l-* in the hiatus form **k₁l-es-*; sim. Bader (1990: 20). If one accepts the arguments in (2) immediately above concerning *warri(šša)-* 'to help', then Hitt. *warra-* = CLuv. **warrah-* in *warrahit-* 'help' must likewise reflect **wé/ór_h₁eh₂-*. The geminate *-rr-* demands some laryngeal at least. The preform **woréh₂-* of Starke (1990: 156) cannot account for the geminate, since there is no PA gemination of pretonic sonorants (cf. 4.1.4.3). If one interprets *bu(wa)lliš-* as 'that which is plucked' (Melchert, 1984b: 105), we must now reconstruct with Zucha (1988: 139) **h₂/g₃wélh₂es-*: for */h₁/ here see the discussion on 'wool' at 4.1.3.1 (2). Unfortunately, the assumed meaning 'pine-cone' for *bu(wa)lliš-* is quite dubious: see Kühne (1993: 229f).

The preserved *-b-* in Hitt. *tarbu-* < **térh₂u-* is due to analogy with the prevocalic allomorph *tarbw-* < **térh₂w-*. Likewise CLuv. (*mam*)-*malbu-*. The preservation of intervocalic *-b-* in CLuv. *ilbā(i)-* 'wash' < **ēlHāye-* (virtual **ēlh₂ah₂ye/o-*) I can attribute only to association with the "state II" form **laH(w)-* attested in CLuv. *la(b)unā(i)-* 'wash'.

For a specific argument for attributing the above assimilation to PA, see 4.1.6.2.1 (1).

Note: the combined effects of deletion of **h₁/g₃* between consonants (4.1.3.1,2 & 4.1.3.3.2,4); backing of **ē* before **Rh_x* (4.1.6.2.1,1); the assimilation of **VRh_xV* to **VRRV*; and pre-Hittite **ō* > **ō̄* (6.1.5.22) produced some complicated allomorphy in the paradigms of *bi*-verbs to roots in *-*eRh_x*. E.g., **spórh₁-h₂et*, **spórh₁-ci*, **spérh₁teni*, **spérh₁nti* > **spōr-Hei*, **spōrr-ci*, **spér-teni*, **spārr-nti*. With leveling of the singular after the first and second persons this produces attested Hitt. *ispārbi*, *ispāri*, *isperten*, *isparranzi*. I take this to be one important source of the much discussed pattern in

Hittite *bi*-verbs of third singular $-āC_1i$ vs. third plural $-aC_1C_1anzi$ (for a possible additional minor source see 4.1.1.3). This pattern was extended analogically, whence *wāki/wakkanzi* 'bite', *ištāpi/ištappanzi* 'shut up', *ḫāsi/ḫašsanzi* 'give birth', *zāhi/zahḫanzi* 'strike', and so forth. In the first case it is the geminate $/-gg-/$ which is secondary, as shown by the fact that the derivatives have consistently $/-g-/$: *wagešsar*, *wagata-* etc. (contra Oettinger, 1979a: 445f). Kimball (1988: 245¹⁷) dismisses the hapax *wakkanzi* as an error, but in view of the other alternating examples I see no reason to doubt its reality. In the other examples cited the geminate is the regular reflex, and the simple consonant is analogical to *išpāri/išparranzi*. Confirmation of the above account comes from the restrictions on the extent of this pattern, which have to my knowledge never been noticed or explained. The alternation is extended only to verbs with fixed root accent ($< *ō/ē$), where by regular phonological developments the qualitative ablaut has been eliminated. The alternation never appears in verbs which preserve $ā/e < *ō/ē$: *šakki/šekkanzi*, *k(a)rāpi/g(i)ripanzi*. Nor in verbs which reflect $*ō/β$ with mobile accent: *āri/arānt-*, *lāgi/lagānt-*. Neither the account by Oettinger (1979a: 444ff) nor derivation from a lengthened-grade perfect can explain this distributional fact of the $-āC_1i/-aC_1C_1anzi$ type.

(4) Original $*/-mn-/$ in a non-ablauting paradigm is assimilated to $*/-mm-/$ in PA. PA geminate $*/-mm-/$ is preserved in the cuneiform languages, simplified to $/m/$ in Lycian and Lydian. Examples: ptc. $*-omno/i-$ $>$ PA $*-ommo/i-$ $>$ $-amma/i-$ in Pal. *paḏamman*, CLuvian $-a(i)mma/i-$, Lyc. $-Vme/i-$ (Pedersen, 1938: 40, & Melchert, 1983b: 23ff, contra Benveniste, 1959); $*mīm-$ $>$ PA $*mimm-$ $>$ Hitt. *mimma-* 'refuse' (Sturtevant, 1933: 133); PA $*āmmi-$ 'my' $>$ Lyd. *ēmi-* (Melchert, 1994d; 4.1.4.1). For the treatment of $*/-mn-/$ in alternating paradigms in Hittite and Luvian see 6.1.6.1.1.3 and 10.1.6.1.1.4.

CLuvian *kumma-* 'sacred' and cognates in Palaic and Lycian suggest that $*-nm-$ also assimilated to $*-mm-$ in PA: $*kuṇmo-$ $>$ $*kunmo-$ $>$ $*kummo-$. I know of no evidence from Hittite to contradict this assumption: the sequence $*g^wēnmi$ of pre-Hittite *kuemi* 'I slay' (6.1.6.1.5,8) could easily have been maintained/restored by paradigmatic analogy.

(5) There is mounting evidence for assimilation of $*/-ln-/$ to $/-ll-/$ in Hittite and probably Luvian. One likely example is *wēllu-* 'meadow' $< *wēl-nu-$ (but $*wels-u-$ is conceivable; for both see Puhvel, 1969: 66). Another is *allaniye-* 'to sweat' with $*alla-$ $< *aln-$ (Puhvel, 1984: 28f, w/refs.). Even more attractive is Hitt. *walla-/wallu-* 'praise; boast' $< *wal-neh_2-/n(e)u-$. For the *bi*-verb *walla-* compare the development of $*t_1(K)neh_2-$ $>$ *tarna-* 'let go'. Competing forms with different nasal suffixes is not unusual. As elsewhere, the nasal suffix

could have a transitivity effect, hence 'make strong' > 'magnify' > 'praise'. The *ye/o*-stem in Hittite *walliya*- and the CLuvian cognate *walliya*- 'lift, raise' would be secondary, as often. The CLuvian form with *-ll-* supports making the assimilation PA--only the concrete sense of the Luvian is mildly disturbing. There is also some merit in Puhvel's assumption (1991: 14&51) of the same assimilation in Hitt. *ḫallanniye*- 'ravage' and *ḫalluwā(i)*- 'brawl, quarrel, from the same root as Grk. ὀλλυμι. However, in this case there is not a shred of evidence for prehistoric nasal-infix/suffix verbs in Hittite. The stem *ḫallanniye*- may easily be denominative to a noun **ḫallātar* 'destruction', and *ḫalluwā(i)*- is clearly denominative, as conceded by Puhvel. We may therefore posit nominal forms **h₃e/ol-no-* and **h₃el-nu-* (cf. **wel-nu-*) as the ultimate source of the respective Hittite words.

On the other hand, the very best example for the **-ln-* to *-ll-* assimilation is *bulle/a*- 'fight', convincingly derived by Lehrman (1985: 176f&235ff, after Cowgill) and by Puhvel (1991: 367f) from a nasal-infix present. They properly reject the analysis by Bernabé (1973: 434), Oettinger (1979a: 264), Melchert (1984b: 99f) et al., who tried to explain *walḫ-* and *bulḫa-* as forms of the same prehistoric paradigm (cf. 6.1.6.1.6). Revising Puhvel's idiosyncratic laryngeal system, we may posit **h₂/w₂l-nē-h₁-/h₂/w₂l-n-h₁- > **bulnē-/buln- > bulle-/bulḫ(a)-* (for the paradigm compare *zinni/a*- 'finish', as per Oettinger, 1979a: 150f). The first plural *bullumen* < **h₂/w₂l^hnh₁(u)wen* is derived as per 3.3 (3) (either analysis). A root-final **/h₃/* as per Puhvel is excluded by the strong stem *bulle-*.*

For my reasons for attributing the assimilation **/-ln-/ > /-ll-/* to PA, see 4.1.3.1 (2) on Hitt. **bulana*- 'wool'.

4.1.6.1.2 Dissimilation

HLuv. *la-m(a)-ni* 'time' (dat.-loc. sg.) (Nowicki, 1981: 253f) beside Hitt. *lammar/lamn-* 'time; hour' < **nōmṛ/ nēmn-* (Duchesne-Guillemin, 1947: 85; Neumann, 1955: 171) suggests that the dissimilation of initial **/n-/* to */l-/* in the presence of two following nasals is PA. Given the above example, I see no reason to take HLuv. *la-m(a)-ni-ya*- 'call upon' as a borrowing from Hittite *lam(ma)niye*- 'name, call'. Thus **h₃nēh₃mṛ* 'name' > **nōmṛ* > **lōmṛ* may also be attributed to PA. The dissimilation is real, pace Kronasser (1966: 103).

As indicated above, 3.1 (6), syllabic sonorants are probably preserved in PA. This makes it likely that the special

development in the oblique stem of 'name' seen in HLuv. *á-ta_{4/5}-ma(n)-za*, Lyc. *adāma-* and Lyd. *ētamv* 'designation' is a post-PA change of the Western group, although I emphasize that I cannot prove that the change never occurred in Hittite and Palaic. The PIE paradigm of 'name' is the object of much controversy, but I follow Schindler (1975b: 263), Peters (1980: 244¹⁹⁸), and others in deriving the Anatolian forms from a 'proterokinetic' **h₁néh₂m̥n/h₁n̥h₂mén-* (cf. 4.1.3.1,5 with further references). An initial **h₃-* (Beekes, 1987: 1ff) is excluded by the lack of initial *h-* in Hittite (4.1.3.3.1). As per above, the strong stem develops to **lōm̥n* with loss of initial laryngeal and dissimilation.

In the Western languages the paradigm of 'name' itself generalized the weak grade of the root, hence a virtual **h₁n̥h₂m̥n-* > **ñm̥n*. With the development of the syllabic nasals to vowel plus nasal this gave **ánman*, whence with dissimilation **ádmán* and with anaptyxis **ádamán*, directly seen in HLuvian nom.-acc. sg. *á-ta_{4/5}-ma(n)-za* and Lycian nom.-acc. pl. *adāma* (< **adāmma*). The reality of the anaptyctic vowel is shown by the Lycian as well as by Lydian *ētamv*, which shows a nasalized first vowel apparently in anticipation of the following nasals.

4.1.6.1.3 Other Consonantal Changes

If one accepts Oettinger's analysis of nasal anticipation for certain cases of Hittite */ts-/* < **s-/* (6.1.6.1.10), the equation of Hitt. *zēna-* and Lyc. *-sñn(i)-* 'autumn' by Neumann cited there suggests that at least in part this phenomenon is already PA.

4.1.6.2 Vowels

4.1.6.2.1 Changes in Quality

(1) As per 4.1.6.1.1 (3), I attribute the assimilation of **VRh_xV* > **VRRV* to PA. This includes **ēRh_xV*, the result of which in Hittite and Luvian is always *aRRV*. The *a* vowel here does not lengthen in Hittite, arguing that it is pre-Hittite **a/* (6.1.5.24). We also find Hittite *a* for **ē* in sequences of *aRbC*: PA **wélH-Ci* 'strike' > Hitt. *walḫ-Ci*, etc. I assume that the change of **ē* to *a* in both cases represents a backing due to the following laryngeal (whatever their precise value, all three laryngeals are surely dorsal). Since the backing requires that the laryngeal still be present, the change **ēRh_xV* > *aRh_xV* must be pre-PA and precede the assimilation of the sonorant-laryngeal cluster: contrast **mélh₂-* > Hitt. *malla-* 'grind' with

**wel-nu-/wels-u-* > Hitt. *wēllu-* 'meadow'. Note, however, that the loss of **h₁* between consonants must precede the backing of **ē*: Hitt. *išper₁ten* 'kick flat!' < PA **spér₁ten* < pre-PA **spér₁h₁ten*.

Hittite *arabza* 'outside' is the old ablative of a root noun: **érh₂ti* > **arHts* > /*araHts*/ (6.1.6.2.3). The allative **érh₂-h₂ē* appears as Hitt. *arba* 'away'. OH dat.-loc. *ārbi* probably reflects a thematized *ārba-* from the old strong stem **ór₁h₂-*, while NH *irba-* takes its vocalism from the derived verb *irbā(i)-* < **érh₂āHye/o-*. I concede that this last account would require that pretonic **ē* > *i* be PA (cf. 6.1.5.10, 8.1.5.2, 10.1.5.2).

(2) As discussed in Melchert (1983a) I maintain that there is a special development of */u:/ (perhaps ultimately */uh₂/) to */i:/ in the nominative form of 'you' singular. This may be viewed as either "breaking" of the long */u:/ after a dental (**tū* > **tyū* > **tyī* > **tī*) or as palatalization of a dental before a close long */u:/ (**tū* > **tū* > **tū* > **tī*): cf. Hrozný (1917: 107). The lack of any other comparable isolated sequences admittedly makes the rule unverifiable (that the rule would be blocked in the collective plural of *u*-stems is to be expected), but I continue to find this analysis superior to all alternatives advanced thus far. Derivation of *zīg* from **tē* (Kronasser, 1956: 141, Villar, 1988, et al.) is phonologically impossible (accented **ē* ≠ Hitt. *i*) and functionally improbable. A nominative preform **ti(H)* (Cowgill, 1965: 169⁵⁶) is totally ad hoc, as is **twi* (Barton, 1993). For an alternate preform **tei* see Shields (1987: 166), but note crucially that the preform **tū* is independently required in PA as the source of the long *ū* of the first singular nominative **ūg* seen in Hitt. *ūg*. The alternate account of Hitt. *ūg* by Shields (1993) is based on several dubious premises and fails to explain the long *ū* of *ūg*.

4.1.6.2.2 Anaptyxis

(1) For the anaptyctic *e* of **téri-* 'three' as PA, see 3.3 (6). I see no reason not to assume that other examples of initial */tr-/ > */tér-/ (such as Hitt. *teripp-* = HLuv. /*tarrapp-*/ 'plow') are also PA (otherwise Kimball, 1983: 49ff). For HLuvian /*tarrappunas*/ 'of plowing' see Morpurgo Davies (1986: 140), but I cannot accept her adduction of the other words cited there, on both phonological and semantic grounds.

(2) One must give strong consideration to the suggestion of Eichner (1988b: 136ff) that anaptyctic vowels are rounded to */u/ in PA before a labial (though one need not accept his claim that the anaptyctic vowel directly reflects a laryngeal). See 3.3 (3) and 4.1.3.3.2 (4).

4.1.6.2.3 Syncope

Hittite "iteratives" in *-ske/a-* to *ye/o-* stems show syncope of **-ye/o-ské/ó-* to *-iske/a-* (Melchert, 1984b: 102). The example of Hitt. *anniske/a-* to *an(i)ya-* 'carry out; treat; worship' suggests that this syncope is already PA. The most natural way to explain the contrast of single *-n-* in the base verb vs. *-nn-* in the "iterative" form is to assume a root **enh_x-* (cf. Mayrhofer, 1986b: 71, but also Scheller, 1975: 192f), with a present **énh_xye/o-* > Hitt. *an(i)ya-* (with regular loss of laryngeal between consonant and **y*; 4.1.3.1.2 etc.). In the "iterative" **enh_xye/o-ské/ó-* pretonic syncope would have led to **enh_xiské/ó-* whence *anniske-* with regular assimilation of **VRh_xV* to *VRRV* (4.1.6.1.1,3).

4.1.6.3 "Laws of Finals"

4.1.6.3.1 Final Consonants

(1) Voiced stops had been generalized in word-final position, for which compare Old Latin (Meillet-Vendryes, 1968: 146f). Examples: Hitt. pret. 3rd sg. *pa-i-ta-aš* /*páyð-as*/ 'went he' < PIE **-t*; Hitt. *-at(+V)* = Pal. *-at(+V)* = Luv. *-ata* = Lyc. *-ede* = Lyd. *-ad* 'it' < PIE **-od*.

Final **/-nt/* almost certainly became **/-n/* already in PA: Hittite-Palaic-CLuvian nt. nom.-acc. sg. **-ont#* > *-an*. See the remarks of Neumann (1965b: 273). On Palaic preterite third plural *-ant(a)* see 8.1.6.4.1 (1). For Luvian and Lycian see 10.1.6.3.2 and 12.1.6.4.2.1.

(2) Voiceless **/H/* is likewise "lenited" (I would say voiced) in word-final position: Hitt. *miyah(u)want-* 'mature' = **miyah₁+want-* 'having growth' with **miyah* < (virtual) **m(h₁)y-eh₂* (after Eichner, 1973: 59f). Cf. also Luvian abstracts in *-ah-it-*, where the abstract suffix **-eh₂* has been extended by *-id-* after undergoing voicing: for the morphological analysis see also Watkins (1975a: 364ff) and compare already Forrer (1922: 222). Contra Starke (1990: 156⁵⁰⁰) the single *-b-* here is due to this regular change, and the suffix *-ah-* is the same as that of the collective plural and denominative verbs in *-abh-*.

The new word-final voiced **/-h/* after vowel is in turn lost with compensatory lengthening (pace Catsanicos, 1984: 145ff, and Lindeman, 1983 & 1987: 53). As per Watkins

(1982a), the resulting long vowel is directly attested in Hitt. coll. pl. *āssū* 'goods' and Pal. *ānnī* 'those' (perh. also in Hitt. *mekki* 'a lot'; cf. already Sturtevant-Hahn, 1951: 81). As Watkins points out, it is striking that the Hittite collective plural ending *-a* < **-eh₂* never shows plene spelling. Since there certainly is no orthographic constraint on final *-Ca-a*, it is unlikely that the vowel here is really synchronic [-a:].

One possible explanation is to suppose that for some reason the loss of final **-/h/* is much earlier after **/a/* than after **/i/* and **/u/*. The resulting long **[-a:]* is thus shortened in pre-Hittite, while [-i:] and [-u:], produced only later (even in pre-Hittite), remain. An accent shift to **-ī/ūh*, as per Zucha (1988: *26&74) is entirely ad hoc and unnecessary, and the analysis of Lindeman (1983: 42) is phonologically impossible. Assuming a very early PA change of **-ah* > *-ā* permits explanation of the Hittite suffixes *-āwar* and *-ātar*. The former surely represents an extension of the suffix **-eh₂* by **-w₁/-wn-* (cf. Melchert, 1984b: 63, w/refs., & Nussbaum, 1986: 109). However, *miyaḥwant-* 'mature' shows that even the voiced **-h-* is not regularly deleted before **/w/*. We thus need to assume that *-āwar* is formed after final **-ah* > **-ā*, but before the latter is shortened. In this case the development could still be specifically pre-Hittite, but this will not do for *-ātar*.

We are again dealing with a bipartite suffix: **-eh₂-* + **-t₁/-tn-*. The voiceless stop in the latter is assured by the CLuvian form *-ttar/-tt(a)n-*, where it remains because the suffix is added directly to the root (cf. Starke, 1990: 437ff). The voiced stop in Hitt. *-ātar* cannot be attributed to the direct loss with compensatory lengthening of **/h₂/* before stop, because the latter follows the PA voicing rule after accented long vowels (4.1.3.2.2.2). Hitt. *ṣak(ku)nuwant-* 'impure' and the oblique stem *-tt(a)n-* to CLuv. *-ttar* suggest that voiceless stops are not voiced before a following nasal. It is true that in these cases the voiceless stop could be restored from the strong stem (*ṣakkar*, *-ttar*), but if we assume **-éh₂t₁* > **-āttar*, then why does the same generalization to the weak stem not occur in *-ātar/-ānn-*? I therefore find problematic the derivation of [-a:ḏ₁] from assimilated [-a:dn-] in the weak stem (Sturtevant-Hahn, 1951: 62; Cop, 1963: 38f). Given the other suggestive evidence for early final **-ah* > **-ā*, I assume rather with Eichner (1973: 80) that this change precedes the voicing of voiceless stops after accented long vowel in PA: **-ā+ -t₁* > **-āḏ₁*. Likewise in the weak stem **-ātn-* > **-ādn-* > **-ānn-*. For the last change see 6.1.6.1.3.1 (4).

(3) */H/ is lost word-finally after consonant (contra Zucha, 1988: *14, et al.): Hitt. *ūg* 'I' < *ēgh₂ (cf. Skt. *ahām* < *ēgh₂-óm); Hitt. nom.-acc. sg. *mēk* 'much' < *mēgh₂; prob. OH coll. pl. *aniat* 'regalia' < (virtual) *en_h₂yót-h₂ (but scribal error remains possible). The regular ending -a in Hittite athematic stems and elsewhere in Anatolian is the generalized o-stem ending *-eh₂, as in so many other IE languages (thus with Lindeman, 1983: 43 & 1987: 53). Note that the final vowel of Hitt. 1st plural middle -*wašta* does not continue directly *-h₂ of *-we/ozd^h₂, but is rather a prop vowel to maintain the final cluster, just as in the preterite third singulars in /-Cta/: cf. 6.1.6.2.4. Note also Hitt. (*kit*)*kar* 'at the head' prob. < *kerh₂ (cf. Nussbaum, 1986: 96ff) and N-ASg *mēmal* 'groats' < *mēmolph₂ (but here leveling after oblique *memall*- is possible).

(4) Final *-r is lost after an unaccented vowel in PA (cf. Eichner, 1973: 98⁷⁸ & 1975a: 76). Evidence comes from two sources. First, medial endings: cf. Pal. *hānta* 'are warm' < PA *Hónto < pre-PA *Hōntor vs. Pal. *hāri* 'is warm' < PA *Hóri < pre-PA *Hór. Likewise OH *kitta* 'lies' < (virtual) PA *kēto < pre-PA *kēytor vs. OH *tuggāri* 'is prescribed' < PA *tukōri < pre-PA *tukōr (see for all of this Yoshida, 1990: 112ff, including the reasons why the change must be PA). Second, collective plurals of r/n-stems with fixed accent: OH -*ešša* (with analogical geminate after -*eššn*-) < PA *-ēso < pre-PA *-ēsōr (e.g. *wagešša*) and OH -*āta* < PA *-ādo < pre-PA *-ādōr (e.g. *hattada* 'wisdom') vs. Hitt. *widār* 'waters' < PA *wedōr (Melchert, 1988a, esp. 227¹).

(5) For the reason I do not assume final *-m > -n in PA, see 6.1.6.3.1 (7).

(6) In Melchert (1993c) I have presented evidence for a special law of finals for at least Hittite, Luvian and Palaic. There I left open the question of whether the change was already PA, given no evidence for or against in Lycian and Lydian. I now see, however, that the relative chronology of one example requires that the development be PA.

I assume that a final sequence of *-Cros/m# becomes *-Corm/s# and likewise *-Clos/m# > *-Cols/m#. Since we know only that the new vowel appears as /a/ in the three cuneiform languages, one could alternatively view the change as a special syncope in this final sequence and then anaptyxis: *-Cros/m# > *-Crs/m > *-Cars/m. In either case, the new final clusters *-Vrs/m and *-Vls/m are then regularly simplified to *-Vr and *-Vl.

I will not repeat the details here, but this change accounts for the following facts. (1) the varied shapes of the word for 'horn', which continues and old "instrumental" noun **sów_het/d^hro-*, as per Oettinger (1979b): by the above rule PA nom.-acc. sg. **sówedrom* becomes regularly **sówedo/ar*, whence Hitt. and CLuv. *šāwāt_{ar}*, which becomes an *r*-stem and also open to analogical influence of *wātar*, whence Pal. coll. pl. *šāwidār*. On the other hand, the oblique case stem remains **sówedr-*, whence a regular neuter *a*-stem *šāwitra-* with restored nom.-acc. sg. *šāwitrān*. Note the difference in treatment of the second vowel due to the contrast of open and closed syllable (cf. 6.1.5.8 vs. 6.1.5.10). (2) the class of neuter nouns in *-ttar/-tar* established by Starke (1990: 399ff) is now also explained naturally as old "instrumental" nouns in **-tro-*. (3) Hitt. *šiyattal-* 'spear' (sic!) represents the regular reflex of a virtual **syo-tlom* 'the thing hurled' (with Forrer, 1926: 1.197; the attempt of Starke, 1990: 200ff, to emend this word into a non-existent CLuv. **šiyatrit-* must be rejected!). (4) Hittite adjectives in *-ar* such as *šakuwaššar-* 'whole, integral', and the adverbially used *pangar-* 'en masse' and *naššar-* 'carefully' reflect adjectives in **-ro-* (cf. already Eichner, 1979: 53^{26/30}). Likewise *tabar-na-* 'ruler' is based on a **tapar-* 'strong' < **d^habro-* (see Eichner, 1975a: 81⁵, for the etymology). (5) Hittite animate nouns in *-aššar* (such as *španduzziaššar-* 'libation vessel') which match Luvian animate nouns in */-asra/i-/* and */-astra/i-/* (such as CLuv. *kuttaššra/i-* = HLuv. *ku-ta-sa+ra/i-* 'orthostat' and (with epenthesis) abstracts like *mašašš(ar)ra/i-* 'deceit'). In Luvian the suffix **-asro-* is extended by the "motion-*i*", but in Hittite the rule above leads to animate *r*-stems based on nom. and acc. singular *-(a)ššar* (both regular from **-sros* and **-srom!*). Hittite animate *hūppar-* 'bowl' likewise may continue **Hēupros/m* (with the usual Hittite removal of "lenition" of the stop).

An additional *ro*-adjective is found in Luvo-Hittite *kallar-* 'nefarious' < PIE **ǵ^halh_x-ro-* (> substantivized OIr. *galar* 'sickness', as per Pedersen, 1938: 46). The Hittite geminate *-ll-* (supported by the second OIrish *-a-*, per L. Joseph, pers. comm.) points to a laryngeal following the *-l-*, which has undergone assimilation by the rule in 4.1.6.1.1 (3). Note that this implies that the cluster was already in intervocalic position, suggesting in turn that the special final change proposed here had already taken place: pre-PA **ǵalh_xros/m* > **ǵalh_xors/m* > **ǵallors/m* > *kallar-*. In the absence of any counterevidence in Lycian and Lydian, I tentatively posit the special law of finals for PA.

4.1.6.3.2 Final Vowels

As per 4.1.5 above, following Eichner, original unaccented long vowels are shortened in PA, including in absolute final position. However, there is slim but suggestive evidence that original unaccented short $*-\bar{e}$ yields $-i$ in Hittite, while original unaccented long $*-\bar{e}$ leads to $-a$ (see 6.1.6.3.2.1,2). I must therefore conclude that the shortened version of the latter did not fall together with $*-\bar{e}$ in PA: enclitic $*-\bar{t}\bar{e}$ 'thee' > $*-\bar{t}\bar{a}$ (or sim.) > Hitt. $-tta$.

4.2 Accent

We cannot now and may never be able to assign a chronology to the various levelings and secondary adjustments in accent which appear to be required in the attested languages. I know of only one case where comparative evidence seems to require a change in PA: both Palaic (8.1.3.4) and Lydian (14.1.6.3.3) suggest that denominative verbs in $*-eh_2y\acute{e}/\acute{o}-$ had already retracted their accent to $*-\acute{a}Hye/o-$ in PA (after the associated unextended stems in $*-\acute{a}H-$), since they show "lenition" of the dental stop in the third singular ending, reflecting $*-\acute{a}Hyedi$ (by 4.1.1.1,2). It also seems likely that the similar retraction in denominatives in $*-e-y\acute{e}/\acute{o}-$ (after iterative-transitives in $*-\acute{e}ye/o-$) reflected in "lenited" endings in Luvian, Lycian and Lydian is likewise PA (cf. 10.1.6.2.4, 12.1.6.3.4, and 14.1.6.3.3). However, I noted in 3.3 (8) the possibility that the second "lenition" rule was still operative into the prehistory of the individual languages. It therefore cannot be excluded that the retractions just cited are parallel but independent in the different languages.

The latter explanation seems likelier for other isolated retractions, such as in nasal-infix/suffix verbs: Pal. $\acute{s}\acute{u}nat$ 'filled' < $*\acute{s}\acute{u}n\acute{o}t$ for $*\acute{s}\acute{u}n\acute{o}t$ < $*su-n\acute{e}-h_2-t$; Hitt. $\acute{b}\acute{u}nik-$ 'wound' < $*\acute{H}\acute{u}-ne-g-$ for $*Hu-n\acute{e}-g-$ (Kimball, 1983: 484); Hitt. $\acute{k}\acute{i}nu-$ 'break open' < $*\acute{g}\acute{i}-nu-$ for $*\acute{g}^{(h)}i-n\acute{e}u-$. Likewise the retraction in generalized weak stems such as $*p\acute{i}yV-$ 'give' (CLuv. $p\acute{i}ya-$, Lyd. $bid-$) or $*\acute{d}\acute{u}wV-$ 'put' (CLuv. $\acute{t}\acute{u}wa-$).

I need not repeat here the evidence from Hittite for preserved mobile accent in verb paradigms. Note that the contrast of Hitt. $\acute{s}alli-$ 'great' with CLuv. $\acute{s}al\acute{h}i(tti)-$ 'growth' and with Hitt. $\acute{p}al\acute{h}i-$ 'broad' (3.1.,6) or that between Hitt. $\acute{t}\acute{e}pu-$ 'few' with generalized $*\acute{d}\acute{e}bu-$ and $\acute{p}\acute{a}nku-$ 'all' with $*\acute{b}\acute{n}\acute{g}\acute{u}-$ suggests that quantitative ablaut was also still alive in noun paradigms in PA. It is thus possible that the associated mobile accent was also still present.

4.3 Synchronic Rules

4.3.1 Rules Inherited from PIE

The basic rule of sonorant syllabification and that of *s*-epenthesis persist: see 3.3 (2) & (4). It is unlikely that regressive voicing assimilation and laryngeal metathesis remained living rules to the end of the PA period: cf. 3.3 (1) and (5). The PA status of "Sievers-Lindeman" is unclear: 3.3 (3).

4.3.2 New PA Synchronic Rules

The assibilation of */t/ to *[ts] before */y/ and "lenition" of stops and */H/ were surely synchronic rules of PA, but "lenition" after accented long vowel was probably lost before the end of the PA period (3.3, 7&8).

4.4 Relative Chronologies

The analyses presented above presume the following relative chronologies:

Set 1:

- (1) $*h_1 > \emptyset$ /#_ V (4.1.3.1,1) must precede
- (2) $*\tilde{e}.C_1 > *\acute{a}C_1.C_1$ (4.1.1.3; 4.1.2.1,3) must precede
- (3) $*y > \emptyset$ /#_ e (4.1.4.2)

Set 2:

- (1) $*eh_1 > \text{æ}$ (4.1.3.1,6) & $*-ah\# > *-\bar{a}\#$ (4.1.6.3.1,2) must precede
- (2) $*T > *D / \bar{V}$ (4.1.1.1,1) must precede
- (3) $*Vh_2 > \bar{V} / \_ C[-\text{cont}]$ (4.1.3.2.2,2)

Set 3:

- (1) $*h_1 > \emptyset / C\_ C$ (4.1.3.1,2) must precede
- (2) $*\tilde{e}Rh_x > *aRh_x$ (4.1.6.2.1,1) must precede
- (3) $*VRh_x V > *VRRV$ (4.1.6.1.1,3) must precede
- (4) $*R > *eR$ (3.1,6)

NB: pretonic syncope in $*-skē/ō-$ stems (4.1.6.2.3) must also precede (3).

Set 4:

- (1) $*t > *[ts] / \_y$ (4.1.1.2) must precede
- (2) $*h_2 > \emptyset / C\_y$ (4.1.3.2.2,3)

Set 5:

- (1) $*ey > *ē; *ew > *ū$ (3.1,5; 4.1.5) must precede
- (2) $*h_1/h_2 > \emptyset / V\_V$ (4.1.3.1,4; 4.1.3.3.2,1)

Set 6:

- (1) $*Dh_2 > *T$ (or $*DD$) (4.1.6.1.1,1) must precede
- (2) $*h_2 > \emptyset / C\_V$ (4.1.3.2.2,1)

Set 7:

- (1) $*\bar{V} > V$ when unaccented (4.1.5) must precede
- (2) $*Vh_1/s > \bar{V} / \_C$ (4.1.3.1,6) and $*ew > *ū$ (3.1,5; 4.1.5)

Set 8:

- (1) $*CwRC > *CuRC$ (3.1,6) must precede
- (2) $*-VlnV- > *-VllV$ (4.1.6.1.1,5) must precede
- (3) $*h_1 > \emptyset / l\_n$ (4.1.3.1,2)

Set 9:

- (1) $*-Cr/los/m\# > *-Cor/l/s/m\#$ (4.1.6.3.1,6) must precede
- (2) $*VRH_xV > *VRRV$ (4.1.6.1.1,3)

CHAPTER FIVE: HITTITE PHONOLOGY

5.1 Segmental Phonemes

5.1.1 Stops	/p/	/t/	/k/	/k ^w /
	/b/	/d/	/g/	/g ^w /

(1) As discussed above in 1.2.6.1, I assume that stops are distinctive synchronically in Hittite only in medial position, where the contrast is one of fortis (long) vs. lenis (short). Only fortis (voiceless) stops occur word-initially, and only lenis (voiced) stops word-finally. I retain the standard symbols for voiceless and voiced stops merely for convenience.

(2) Lindeman (1965) presents three types of evidence for synchronic labiovelars in OH. First, we find first plural *akuēni* /agwēni/ with delabialization from **ag^wwēni*, not ***akumēni* with dissimilation from **aguwēni* (so also Oettinger, 1979a: 87¹⁰). Since the dissimilation of /w/ to /m/ next to /u/ remains a synchronic rule in this environment (5.3.8), I wish to stress that *akuēni* cannot be viewed as a historical relic: the stem must still be underlying /ag^w-/, not /agu-/ in attested Hittite. Second, pret. 3rd sg. *e-ku-ut-ta* shows the final prop vowel characteristic of stems in final consonant (/eg^wta/) vs. *arnut* (/arnud/). Third, alternate spellings such as *e-uk-zi* beside *e-ku-zi* suggest /ég^wtsi/ 'drinks'. The regressive voicing assimilation in iterative *akkuške-* is not probative, because the word is probably underlying /akuske-/ in Hittite (cf. 1.2.6.1.2 and 6.1.6.2.3). For an argument that /k^w/ and /g^w/ have become /ku/ and /gu/ before consonant in NH, see Oettinger (1979a: 237) and cf. Eichner (1992: 80f).

Examples:

/p/ < **p*/: (1) *pēdan* 'place' < PA **pēdom*; (2) *pa-pparš-* 'sprinkle' < PA **pers-*; (3) *tēripp-* 'plow' < PA **tērep-* < **trēp-*; (4) *appizziya-* 'rear-' < PA **opitsyo-*; (5) *šip(p)ānd-išpand-* 'libate; worship' < PA **spō/ēnd-*; (6) *kar(ap)p-* 'lift' < PA **kērp-*; etc.

(1) Sommer, 1922: 36ff & 1932: 164; (2) Friedrich, 1924/25: 122²; Sturtevant, 1933: 130; (3) Sturtevant, 1933: 76; (4) Kretschmer apud Hrozný, 1917: 21¹; Lohmann, 1933: 324f; Dunkel, 1982/3: 87; Zucha, 1988: 6ff; contra Bader, 1982: 144 et al.; (5) Hrozný, 1915: 29 & 1917: 4¹; (6) Forrer apud Feist, 1924: 130¹.

/p/ < */b/ /#_: (1) *parku-* 'high' < PA **bérġu-*; (2) *pānku-* 'total; community' < PA **bŋġu-*.

(1) Hrozný, 1917: 189¹; (2) Sturtevant, 1930b: 216 (contra Polomé, 1968).

Both examples are from PIE **b^h*; absence of PIE **b* is accidental.

/b/ < */b/: (1) *bapa-*/**bapn-* 'river' < PA **Hábō-*/*Hábn-*; (2) *lilip-* 'lick' < (virtual) PA **lileb-*; (3) *nēpiš-* 'sky, heaven' < PA **nēbes-*; (4) *tēpu-* 'few' < PA **débu-*; (5) *alpā-* 'cloud' < PA **albó-*; etc.

(1) Čop, 1963: 24; Laroche, 1973b: 183f; Hamp, 1972; Zucha, 1988: 43f; (2) Watkins, 1975b: 182; Oettinger, 1976a: 32 (contra Oettinger, 1979a: 208, and Kimball, 1983: 474f); (3) Hrozný, 1919: 72⁵; (4) Marstrander, 1919: 150 (cf. Hrozný, 1919: 146⁴); (5) Mudge, 1931: 252.

First two examples from PIE **b*; others from PIE **b^h*.

/t/ < */t/: (1) *tēri-* 'three' < PA **tēri-* < **tri-*; (2) *tarra-* 'be able' < PA **tárro-* < **térh₂o-*; (3) *wēt-* 'year' < PA **wēt-*; (4) *ma/ilittu-* 'sweet' < PA **mlitu-*; (5) *šaktā(i)-* 'sick-maintain' < PA **sókto-* 'sickness'; (6) *paršdu-* 'bud' < PA **porstu-*; (7) *bant-* 'front' < PA **Hánt-*; etc.

(1) Ehelolf, 1929: 322ff; (2) Mittelberger apud Schindler, 1970: 149 (ident.); Oettinger, 1979a: 549 (preform); (3) Hrozný, 1929: 287f; (4) Kurylowicz, 1958: 231; (5) Watkins, 1974b: 67ff & 1976; (6) Weitenberg, 1976: 70ff; (7) Hrozný, 1917: 21.

/t/ < */d/ /#_: (1) *tāru-* 'wood' < PA **dóru-*; (2) *daššu-* 'mighty' < PA **dēnsu-*; (3) *takš-* 'wield' < PA **deks-*; (4) *tēkan* 'earth' < PA **dēgom*; (5) *tēpu-* 'few' < PA **débu-*; (6) *tit(ta)nu-* 'install' (pre-Hitt. redup. to PA **dā-* < PIE **d^heh₁-*).

(1) Ehelolf, 1933: 7; (2) Kellogg, 1925: 28; (3) Hrozný, 1917: 56²; Laroche, 1963: 69&71 (contra Pedersen, 1938: 139ff, et al.); (4) Friedrich, 1924/25: 122²; Pedersen, 1925: 41f; (5) Marstrander, 1919: 150 (cf. Hrozný, 1919: 146⁴); (6) Hrozný, 1917: 76³ (root etym.); Eichner, 1980: 160 (phonol.).

First three examples < PIE **d*; last three < PIE **d^h*.

/d/ < */d/: (1) *pēdan* 'place' < PA **pēdom*; (2) *wātar* 'water' < PA **wōd̥r*; (3) *šip(p)ānd-/išpand-* 'libate; worship' < PA **spó/ēnd-*; (4) *kard-* 'heart' < PA **k̥rd-*; (5) *-te-* (in *pehute-*, *wete-*) < PA **d̥e-* 'place'; (6) *māld-* 'speak solemnly' < PA **mōld-*; etc.

(1) Sommer, 1922: 36ff & 1932: 164; (2) Hrozný, 1915: 39, & 1917: 62; (3) Hrozný, 1915: 29, & 1917: 4¹; (4) Forrer apud Feist, 1924: 130¹; (5) Sturtevant, 1933: 80; (6) Mudge, 1931: 252; Benveniste, 1932a: 133ff.

Last two examples < PIE **d^h*, rest < PIE **d*.

/k/ < */k/: (1) *kard-* 'heart' < PA **k̥rd-*; (2) *kā-/ki-* 'this' < PA **kó-/k̥i-*; (3) *LŪkuwan-/kun-* 'dog-man' < PA **kwon-/kun-*; (4) *-kki-/kka* (indef. marker) < PA **-ke-/k̥o*; (5) *wewakk-* 'demand' < PA **wēwok-*; (6) *hart(ag)ga-* 'bear' < PA **H̥rtk̥o-*; (7) *š/zamankur-* 'beard' < PA **šmonk̥w̥r*; (8) *kunk-* 'erect, raise' < **kunk-*; etc.

(1) Forrer apud Feist, 1924: 130¹; (2) Hrozný, 1917: 140; (3) Melchert, 1989b; (4) Melchert (cf. Hamp, 1956, and see 13.1.1 on *Lyd. ak-*); (5) Hrozný, 1919: 180⁶; (6) Friedrich, 1952: 61; (7) Laroche, 1950: 40f; (8) Eichner apud Oettinger, 1979a: 180.

/k/ < */k/: (1) *kišš-/kišā(i)-* 'comb' < PA **kes-*; (2) *kar(aš)š-* 'cut' < PA **kers-*; (3) *lukke-* 'kindle' < PA **lowkéye-*; (4) *tu(e)kka-* 'body; limb' < PA **twék-/tuk-*; (5) *kānk-* 'hang' < PA **kōnk-*; (6) *bark-* 'hold' < **Hark-*; etc.

(1) Goetze-Sturtevant, 1938: 88f; (2) Hrozný, 1919: 205³; (3) Sommer, 1922: 32 (root etym.); Kellogg, 1925: 36, & Watkins, 1973: 69 (preform); (4) Kurylowicz, 1958: 223; Schindler, 1972: 36f; (5) Sturtevant, 1931b: 172; (6) Sturtevant, 1930b: 215 (already Bugge apud Knudtzon, 1902: 94!).

/k/ < */g̊/ /#_: (1) *gēnu-* 'knee' < PA **gēnu-*; (2) *ganešš-* 'recognize' < PA **gnēss-* (i.e. **gnēh_s-*); (3) *g(a)ritt-* 'flood' < PA **grit-*; (4) *kiš(sa)r-* 'hand' < PA **gesr-*; (5) *ge/imra-* 'open country' < PA **gēmro-*; (6) *kallar-* 'nefarious' < PA **gallVr-* (i.e. **g^halh_x-ro-*).

(1) Hrozný, 1919: 184²; (2) Laroche, 1961: 27ff (root etym.); Jasanoff, 1988b, et al. (preform); (3) Čop, 1954: 155f; Schindler, 1972: 35; (4) Sturtevant, 1927: 121; (5) Sturtevant, 1930b: 216; (6) Pedersen, 1938: 46; Melchert, 1993c: 107.

First three examples < PIE **g̊*; last three < PIE **g^h*.

- /k/ < */g/ /#_: (1) *k/g(a)rāp-* 'devour' < PA **grób-*;
 (2) prob. *gala(n)k-* 'soothe' < PA **gleng-*.

(1) Sturtevant, 1932b: 130; (2) Tischler, 1980: 463.

First example < PIE **g^h*, second < PIE **g* (development not in doubt even if example is false).

/g/ < */ĝ/: (1) *ūg* 'I' < PA **ūĝ* (for **eĝh₂*); (2) *harki-* 'white' < PA **Hargi-*; (3) *harg(a)nāu-* 'sole, palm' < (virtual) PA **hregñōw* 'extension'; (4) *tēkan* 'earth' < PA **dēĝom*; (5) *parku-* 'high' < PA **b(e)rĝu-*; (6) *pānku-* 'total; community' < PA **bñĝu-*; etc.

(1) Hrozný, 1915: 25, & 1917: 97ff; (2) Kurylowicz, 1927: 101; (3) Weitenberg, 1984: 223f; (4) Friedrich, 1924/25: 122²; Pedersen, 1925: 41f; (5) Hrozný, 1917: 189¹; (6) Sturtevant, 1930b: 218 (contra Polomé, 1968).

First three examples < PIE **ĝ*, last three < PIE **ĝ^h*.

/g/ < */g/: (1) *iukan* 'yoke' < PA **yugóm*; (2) *ega-* 'ice' < PA **ego-* < **yégo-*; (3) *ūrki-* 'trail' < PA **wrgi-*; (4) *hark-* 'perish' < PA **horg-*; (5) *lāg-* 'bend' < PA **lóg-*; (6) *daluki-* 'long' < PA **dlug-*; (7) *li(n)k-* 'swear' < PA **leng-*; etc.

(1) Sturtevant, 1930b: 218 (as inherited!); (2) Hoffner, 1971: 35³⁴; (3) Duchesne-Guillemin, 1947: 80; (4) Cuny, 1934: 205 (pace Puhvel, 1991: 187; see Pedersen, 1938: 146, for intrans. sense); (5) Sturtevant, 1930b: 218; (6) Hrozný, 1915: 28, & 1917: 23 (root etym.); (7) Sturtevant, 1930b: 218.

Last three examples < PIE **g^h*, rest < PIE **g*.

/k^w/ < */k^w/: (1) *kui-* 'who' < PA **k^wi-*; (2) *kuer-* 'cut' < PA **k^wer-*; (3) *-kku* 'and; or' < PA **-k^we*; (4) *tekkušša-* 'give a sign' < PA **dek^wšo-*; (5) *man(n)inkuwa-* 'near' < PA **-enk^wo-*; (6) *watku-* 'jump' < PA **wé/ótk^w-*.

(1) Hrozný, 1915: 26, & 1917: 144; (2) Pedersen, 1938: 128; (3) Carruba, 1969b: 71&73; Eichner, 1971 (contra Kronasser, 1966: 349); (4) Goetze, 1951: 471¹² (= Av. *dazša-*); (5) Duchesne-Guillemin, 1947: 82f; (6) Sturtevant, 1933: 235; Čop, 1955a: 69; Oettinger, 1979a: 237.

/k^w/ < */g^w/ /#_ : (1) *kuinna*- 'woman, wife' < PA **g^wén+*; (2) prob. *kuēlwan*- (a vessel) < PA **g^wélwon-*; (3) *kuēn*- 'kill' < PA **g^wén-*.

(1) Neu, 1990: 208ff (pace Güterbock: 1992); (2) Neumann apud Tischler, 1983: 604; (3) Hrozný, 1919: 73⁸.

First two examples < PIE **g^w*, last < PIE **g^{wh}*.

/g^w/ < */g^w/: (1) *nekumant*- 'naked' < PA **neg^wmo-* (for **neg^wno-*); (2) *tarkuwa(nt)*- 'fierce, grim' (of eyes) < PA **tōrg^wo-*; (3) *eku-euk*- 'drink' < PA **eg^w-*; (4) *balkuešsar* 'ritual offering' < PA **Helg^w+ *'what is worthy'*; (5) *šāk(u)wa*- 'eye' < PA **sōg^wo-*; (6) *tarku*- 'dance' < PA **terg^w-*; (7) **nekutt*- 'evening' (in *nekuz*) < PA **nég^wt-*; (8) perh. *šakutt(a)*- 'upper thigh' < PA **sag^wt-*.

(1) Götze, 1928: 120 (root etym.); Lindeman, 1965: 32 (phonol.); (2) Szemerényi, 1942: 395f; Neumann, 1971: 262; (3) Juret, 1934: 251f; Puhvel, 1984: 267f; (4) Carruba, 1976: 130; Badali-Zeilfelder, 1991: 82f (w/ slightly diff. meaning); (5) Hrozný, 1917: 146; (6) Benveniste, 1962: 125; Puhvel, 1974: 292; (7) Hrozný, 1917: 69¹; Schindler, 1967a: 290ff, contra Lindeman, 1986: 147ff; (8) after Normier apud Kühne, 1986: 103 (cf. Skt. *sákthi*).

First two examples < PIE **g^w*, third and fourth < PIE **g^{wh}*, and last four < PIE **k^w* (for the special medial treatment see 4.1.1.1,3).

5.1.2 Affricate

Hittite /ts/ reflects in part inherited PA *[ts], in part Hittite innovations. The source of Hittite initial /ts/ before the back vowels /a/ and /u/ is an unsolved mystery. Schindler apud Oettinger (1979a: 447) ingeniously analyzes *zab(b)*- 'strike, fight' as **ds-eh₂*- to **das-* in Grk. *δαί* 'in battle', but this type of solution is not likely to apply to all cases. The proposal by Benveniste (1954: 29ff) of a PIE phoneme */ts/ has rightly met with universal rejection.

Examples:

/ts/ < PA *[ts]: (1) locative suffix *-zzi(ya)*- < PA **-tsy_o-*; (2) *bazziya*- 'strike' < PA **Hatsye/o-* (i.e. **h₂etye/o-*).

(1) Lohmann, 1933; (2) Čop, 1958: 52ff; Oettinger, 1976b: 125f.

/ts/ < PA */t/ /__i: (1) pres. 3rd sg. -zzi < PA *-ti;
 (2) pres. 3rd pl. -nzi < PA *-nti; (3) suff. -uzzi- < PA
 *-uti-.

(1)-(2) Hrozný, 1917: 154; (3) Sturtevant, 1933: 155.

/ts/ < PA */t+s/: (1) anim. nom. sg. -(n)z(a) < PA
 *-(n)t+s; (2) az(zas)teni 'you (pl.) eat' etc. < PA *ats-téni.

(1) Hrozný, 1917: 89; (2) Hrozný, 1917: 61; Sturtevant, 1933: 129.

/ts/ < 2ary pre-Hittite */n+s/: (1) anzās 'us' < PA
 *nšós (via *ansós); (2) šumanz(a) 'sinew, cord' < PA
 *šümēn+s; (3) apēnzan 'of them' < (virtual) PA *obōy-n-som.

(1) Hrozný, 1917: 90&112; (2) Carruthers, 1930: 161f; (3) Petersen,
 1937a: 318f, & Melchert, 1984b: 113 (cf. Pedersen, 1938: 56f; Kronasser,
 1956: 150).

For the synchronic alternation of /ts/ and /s/ in clusters
 see 6.1.3.1. For irregular /ts/ < */s/ in the presence of a
 nasal see 6.1.6.1.10.

5.1.3 Fricatives

/s/

/H/

/h/

(1) Hittite /s/ contrasts with geminate /ss/, like all other
 continuants except /H/ and /h/. For the various sources of
 /ss/ see 6.1.6.1.1.2 and 6.1.6.1.3.1 (9), (13) & (14). For initial
 /s-/ < */dy-/ or */di-/ see 6.1.1.2.

(2) The distribution of /H/ and /h/ appears to be governed
 by the same factors as inherited voiceless and voiced stops. I
 therefore likewise assume a synchronic medial contrast of fortis
 (long) vs. lenis (short), with generalization of the fortis variant
 in word-initial position: see 1.2.6.2. On word-final position
 see 6.1.6.3.1 (4).

Examples:

/s/ < */s/: (1) *seš*- 'sleep' < PA **ses*-; (2) *šip(p)ānt-išpant*- 'libate; worship' < PA **spó/énd*-; (3) *esā* 'sits (down)' < PA **ēso*; (4) *nēpiš*- 'heaven, sky' < PA **nēbes*-; (5) *paršdu*- 'bud' < PA **pórstu*-; etc.

(1) Mudge apud Sturtevant, 1933: 89; (2) Hrozný, 1915: 29, & 1917: 41; (3) Kurylowicz, 1927: 104; Sturtevant, 1933: 91; Puhvel, 1984: 300 et al. (pace Eichner, 1973: 54; Oettinger, 1979a: 431⁷⁶, Normier, 1980: 57⁵⁸, et al.); (4) Hrozný, 1919: 72⁵; (5) Weitenberg, 1976: 70ff.

Note: none of the examples alleged by Puhvel (1984: 212, 222, 412) for internal [-z-] < */-d(h)y-/ or */-g(h)y-/ is remotely persuasive.

/H/ < */H/: (1) *harki*- 'white' < PA **Hárġi*-; (2) **hap(n)*- 'river' < PA **Háb(n)*-; (3) *hastēr*- 'star' < PA **Hstēr*-; (4) *pabbur* 'fire' < PA **páHw*; (5) *palhi*- 'broad' < PA **płHi*-; (6) *šubmili*- 'firmly planted' < (virtual) PA **suH-mili*-; etc.

(1) Kurylowicz, 1927: 101; (2) Čop, 1963: 24; Laroche, 1973b: 183f; Hamp, 1972; (3) Otten-von Soden, 1968: 40f; Schindler, 1969: 144, et al. (contra Puhvel, 1991: 239); (4) Hrozný, 1917: 69 (root etym.); Kurylowicz, 1927: 102 (preform); (5) Sturtevant, 1933: 106f; (6) Catsanicos, 1986: 122f.

/H/ < */h/ /#___: (1) *barg(a)nāu* 'palm, sole' < (virtual) PA **hṛġnōw* 'extension'; (2) *bāppar* 'transaction' < PA **hōpr*; (3) *bāran*- 'eagle' < PA **hōron*- (i.e. **h,éron*-); (4) *bar(ap)p*- 'change sides' < PA **hōrb*- (i.e. **h,érb*-).

(1) Weitenberg, 1984: 223f (see also Melchert, 1987b: 21f); (2) Sapir, 1936: 179 (cf. Laroche, 1950: 42); (3) Mudge, 1931: 252f; (4) Polomé, 1954: 159f, & Benveniste, 1962: 11 (contra Puhvel, 1991: 176ff, with mass confusion of separate verbs).

The devoicing here is not assured, and one could assume preserved /h-/.
/h-/.
/h/ < */h/: (1) pret. 1st sg. middle -*bbaha(t)* < PA **-Haha+*; (2) *mēbur* 'time' < PA **mēhw*; (3) *web*- 'turn' < PA **wēh*-; (4) *ēhu* 'come!' < PA **ēhu* (**ēy-h₂u*).

(1) Eichner, 1975a: 77; Melchert, 1992a; (2) Eichner, 1973; (3) Kurylowicz, 1927: 102; Oettinger, 1979a: 99f; (4) Eichner, 1973: 55&86, and Oettinger, 1979a: 125 (contra Carruba, 1976: 129; Cowgill, 1979: 27⁸; Puhvel, 1984: 252; and Dunkel, 1988a: 120).

5.1.4 Sonorants /m/ /n/ /r/, /l/

/w/ /y/

The simple sonorants /m/, /n/, /r/ and /l/ contrast with the corresponding geminates. For the sources of the latter see 6.1.6.1.1.1, 6.1.6.1.1.3, 6.1.6.1.1.5, and 6.1.6.1.3.1 *passim*.

Examples:

/m/ < */m/: (1) *māld*- 'speak solemnly, pray' < PA **mōld*-; (2) *mēk(ki)*- 'much' < PA **mēk(i)*- (i.e. **mēgh_h(i)*-); (3) *istāman*- 'ear' < PA **stōmṇ* < **stēh_hmṇ*; (4) *ge/imra*- 'open country' < PA **gēmro*-; (5) *tarma*- 'nail' < PA **tōrmo*-; etc.

- (1) Mudge, 1931: 252; Benveniste, 1932a: 133ff; (2) Hrozný, 1917: 22;
(3) Sturtevant, 1928: 123; Oettinger, 1982a: 235; (4) Sturtevant, 1930b: 216;
(5) Laroche, 1951: 68 (cf. Sturtevant, 1929b: 11).

/n/ < */n/: (1) *nāda*– 'reed' < PA **nódo*–; (2) *nēwa*– 'new' < PA **néwo*–; (3) *gēnu*– 'knee' < PA **gēnu*–; (4) *kānk*– 'hang' < PA **kónk*–; etc.

- (1) Otten, 1955: 392; (2) Forrer apud Feist, 1924: 130¹; (3) Hrozný, 1919: 184²; (4) Sturtevant, 1931b: 172.

/r/ < */r/: (1) *tāru* - 'wood' < PA **dōru*-; (2) *bāran* - 'eagle' < PA **hōron*-; (3) *g(a)ritt* - 'flood' < PA **grit*-; (4) *p(a)rā* 'forth' < PA **prō*; (5) *tarma* - 'nail' < PA **tōrmo*-; (6) *qe/imra* - 'open country' < PA **qēmro*-; etc.

- (1) Ehelolf, 1933: 7; (2) Mudge, 1931: 252f; (3) Čop, 1954: 155f; Schindler, 1972: 35; (4) Sturtevant, 1933: 62; (5) Laroche, 1951: 68 (cf. Sturtevant, 1929b: 11); (6) Sturtevant, 1930b: 216.

/l/ < */l/: (1) *lukke* - 'set fire to' < PA **lowkéye* -; (2) *lāg* - 'tip over, incline' < PA **lóg* -; (3) *militt* - 'honey' < PA **mélid* -; (4) *māld* - 'speak solemnly, pray' < PA **móld* -; (5) *saklāi* - 'rite, custom' < (virtual) PA **saklōy* -; etc.

- (1) Sommer, 1922: 32 (root etym.); Kellogg, 1925: 36, & Watkins, 1973: 69 (preform); (2) Sturtevant, 1930b: 218; (3) Ehelolf, 1933: 1ff; (4) Mudge, 1931: 252; Benveniste, 1932: 133ff; (5) Sturtevant, 1933: 87.

/w/ < */w/: (1) *wāš-* 'buy' < PA **wós-*; (2) *wewakk-* 'request, demand' < PA **wéwok-*; (3) *nēwa-* 'new' < PA **néwo-*; (4) *tuekka-* 'body; limb' < PA **twék(o)-*; (5) *buett-* 'pull, draw' < PA **Hwet-* (i.e. **h₂wedh₂-*); etc.

(1) Götze, 1928: 99²; (2) Hrozný, 1919: 180⁶; (3) Forrer apud Feist, 1924: 130¹; (4) Kurylowicz, 1958: 223; Schindler, 1972: 36f; (5) Melchert, 1984b: 88¹⁶ (w/ refs.).

/y/ < */y/: (1) *iukan* 'yoke' < PA **yugóm*; (2) *(i)yanta* 'they go' < PA **y-ónto*; (3) *šiu(n)-* 'god' < PA **dyēu(m)*; (4) *tiye-* 'step' < PA **tyé-* (i.e. **(s)th₂yé-*); (5) *tāye-* 'steal' < PA **taHyé-* (**(s)th₂yé-*).

(1) Sturtevant, 1930b: 216 (as inherited!); (2) Melchert, 1984b: 19, after Watkins, 1969a: 199 (contra Oettinger, 1979a: 348f, et al.); (3) Pedersen, 1938: 57; Watkins, 1974a; (4) Götze-Pedersen, 1934: 69f; (5) Sturtevant, 1933: 62.

5.1.5 Vowels

/i/, /i:/

/u/, /u:/

/e/

/e/, /e:/

/a/, /a:/

(1) For reasons given below in 5.2 and 5.3, I assume that most phonetic long vowels are merely variants of the corresponding short vowels conditioned by the accent. The phonemically distinct long vowels listed above are thus all quite rare.

(2) There is no longer any reason to doubt that /e/ and /i/ are distinct phonemes at all stages of Hittite: see Eichner (1980: 141ff) and in detail Melchert (1984b: 78ff), pace Kimball (1993).

(3) For close /e/ (continuing */Vy/ diphthongs) as distinct from ordinary /e/ see Melchert (1984b: 141ff). Evidence for this vowel remains slim, and its existence is not entirely assured. Historically, this vowel was almost certainly inherently long, and then secondarily shortened when unaccented. Synchronically, however, it is more efficient to assume an underlying short vowel and lengthening under the accent just as with ordinary /e/.

(4) There is no vowel /æ/, pace Held-Schmalstieg (1969: 96ff), who totally misinterprets attested alternations of orthographic *e* and *a*.

(5) Claims for a synchronically distinct /o/ vowel are false: see 1.2.6.5.1.2.

Examples:

/i/ < */i/: (1) *kui*- 'who, which' < PA **kw_i-*; (2) *imma* 'indeed' < PA **immo*; (3) *militt*- 'honey' < PA **mēlid*- (2nd vowel); (4) *mimma*- 'refuse' < PA **mímm*- < **mímn*-; (5) *karitt*- 'flood' < PA **grit*-; etc.

(1) Hrozný, 1915: 26, & 1917: 144; (2) Eichner, 1981: 64, contra Melchert, 1985: 202f; (3) Ehelolf, 1933: 1ff; (4) Sturtevant, 1933: 133; (5) Čop, 1954: 155f; Schindler, 1972: 35.

/i/ < */e/ / NC[-coronal]: (1) *link*- 'swear' < PA **leng*- (PIE **h₁leng^h-*); (2) *-inkuwa*- (in *manninkuwa*- 'near; short' < PA **-enk^wo-*; (3) *immiye/a*- 'mix' < PA **énmye/o-*; (4) causatives in *-ni(n)k-* < PA **-nenK-*.

(1) Sturtevant, 1930b: 218; (2) Duchesne-Guillemain, 1947: 82f; (3) Sturtevant, 1933: 133; (4) Sturtevant, 1933: 233f.

/i/ < unaccented */e/: (1) *idālu*- 'evil' < (virtual) PA **edwōlu-*; (2) *nepiš*- 'heaven, sky' < PA **nēbes-*; (3) *kiššr*- 'hand' < PA **gesr-*; (4) *kišduwant*- 'hungry' < PA **Kestwént-*; (5) prob. *widār/witen*- 'water' < PA **wedōr/wedén-*; etc.

(1) Melchert, 1984b: 51, after Watkins, 1982a: 261; (2) Hrozný, 1919: 72⁵; (3) Sturtevant, 1927: 121; (4) Friedrich, 1924/25: 122; Kurylowicz, 1958: 230; Schindler, 1967a: 297f; (5) Hrozný, 1917: 65; Schindler, 1975a: 4 (cf. 6.1.5.23).

/i/ < /e/ / w [+coronal]: (1) *witt*- 'year' < PA **wēt*- (via *wēt-*); (2) *wita*- 'build' < PA **wédæ-* (or sim.); (3) prob. *huišu*- 'raw' beside *huesu*- < PA **Hwésu-*.

(1) Hrozný, 1929: 287f; Melchert, 1984b: 112f; (2) Sturtevant, 1933: 92; (3) Milewski, 1936: 13&46¹ (cf. Melchert, 1984b: 107).

Note: Hitt. *huišwant*- 'alive' may reflect this change or the preceding one (cf. Melchert, 1984b: 106f; Watkins, 1985b: 245; Zucha, 1988: 120ff). There is no justification for abandoning the derivation from **h₂wes-*, contra Kimball (1983: 68ff).

/i/ ([i:]) < */i/ in accented open syllable: (1) *kīnu-* 'break open' < (virtual) PA **gīn(e)u-* (accent 2ary); (2) prob. dat.-loc. *-ī* (e.g. *iššī*) < PA **-ī*; (3) *šiwatt-* 'day' < PA **dīwot-*; (4) *kī* 'this' (nt. nom.-acc. sg.) < PA **kī*.

(1) Szemerényi, 1942: 391; (2) Sturtevant, 1933: 95; Melchert, 1984b: 98; (3) Zinko, 1981: 38&107; Melchert, 1984b: 95 (cf. Kronasser, 1956: 130), contra Kimball, 1983: 522f; (4) Hrozný, 1917: 140³; Pedersen, 1938: 50.

Note: on *it* 'go!' < PA **īdi* (Hrozný, 1917: 173) see 6.1.5.2.

/i/ < */e:/ /K___: (1) *kī-* 'lie' < PA **kē-*; (2) *gimmant-* 'winter' < PA **gēmm-* < **g^hheimn-*; (3) *kīš-* 'become' < PA **g/keis-*;

(1) Hrozný, 1917: 35; Eichner, 1973: 78; (2) Sommer, 1920: 23 (root etym.); Melchert, 1984b: 70 (preform); (3) Eichner, 1973: 78/Szemerényi, 1942: 391; Melchert, 1984b: 69.

/i:/ < */i:/: (1) *zīg* 'you' < PA **tī+*; (2) perh. coll. pl. *mekkī* 'a lot' < PA **-ī*; (3) *-ī-* < PA **-ī-* < **-ih₂* in *parkū-* 'pure', etc.

(1) Melchert, 1983a: 156ff; (2) Melchert apud Watkins, 1982a: 259²⁴, (3) Pedersen, 1938: 35f; Kimball, 1983: 495ff.

/e/ ([e:]) < accented */e:/ & */Vy/: (1) *nē(y)a-* 'turn' (intr.) < PA **nēo-*; (2) *uē-* (/wē:-/) 'come' < PA **au-ē-*; (3) perh. *hēu-* 'rain' < PA **Hēu-* (< **h₂éih₁/,u-*); (4) pron. nom. pl. anim. *-e* < PA **-oy*; (5) *nē-* 'turn' (tr.) < PA **nóy-*.

(1) Hrozný, 1917: 29³; Eichner, 1973: 77; (2) Hrozný, 1917: 911; (3) Melchert after Čop, 1971a: 141f (cf. Grk. ἀλιονάω); quite impossible Puhvel, 1991: 303f, et al. (4) Sturtevant-Hahn, 1951: 36; (5) Hrozný, 1917: 29³; Oettinger, 1979a: 405.

/e/ < unaccented */e:/ & */Vy/: (1) OH pres. 1st sg. *-hhe* < PA **-Hay*; (2) OH pres. 3rd sg. *-e* < PA **-ē*; (3) OH *-šše* 'to him' < PA **-soy*.

(1) Sturtevant, 1933: 257; Eichner, 1973: 79; (2) Melchert, 1984b: 94³⁷; (3) Hrozný, 1917: 132.

/e/ ([e:]) < accented */e/: (1) *pēdan* 'place' < PA **pēdom*; (2) *gēnu-* 'knee' < PA **gēnu-*; (3) *nēwa-* 'new' < PA **nēwo-*; (4) *wēss-* 'wear' < PA **wēs-*; (5) *mēk(ki)-* 'much, many' < PA **mēk(i)-* (i.e. **mēgh₂(i)-*); etc.

(1) Sommer, 1922: 36ff & 1932: 164; (2) Hrozný, 1919: 184²; (3) Forrer apud Feist, 1924: 130¹; Sturtevant, 1931: 121; (4) Kurylowicz, 1927: 104; (5) Hrozný, 1917: 22.

/e/ ([e:]) < accented */e/: (1) *ēs-* 'sit down' (sic!) < PA **ēs-*; (2) *wek-* 'demand' < PA **wēg-*; (3) *mēhur* 'time' < PA **mēhwr*; (4) *bastēr-* 'star' < PA **Hstēr-*; (5) *ker* 'heart' < PA **kēr*; etc.

(1) Kurylowicz, 1927: 104; Sturtevant, 1933: 91; Puhvel, 1984: 300, et al. (pace Eichner, 1973: 54; Oettinger, 1979a: 431⁷⁶; Normier, 1980: 57⁵⁸; et al.); (2) Hrozný, 1919: 180⁶ (root etym.), Eichner, 1973: 78 (preform); (3) Eichner, 1973; (4) Otten-von Soden, 1968: 40f (ident.); Schindler, 1969: 144 (preform) (contra Puhvel, 1991: 239); (5) Forrer apud Feist, 1924: 130¹.

/e/ ([e:]) < accented */æ:/ (PIE */eh₁/): (1) *tē-* 'say' < PA **dæ-* 'put'; (2) stative/inchoative suff. *-e-*/*-ēs-* < PA **-æ-*/*-æs-*; (3) *(i)ē-* 'do, make' < PA **(y)æ-*;

(1) Hrozný, 1915: 29 & 1917: 2³; (2) Watkins, 1973: 71ff; (3) Holma, 1916: 23; Pedersen, 1925: 41; Sturtevant, 1933: 219; Melchert, 1984b: 14ff (contra Oettinger, 1979a: 348f; Puhvel, 1984: 345f, et al.).

/e/ < unaccented */e/: pret. 3rd pl. *-er* < PA **-ēr*.

Sturtevant, 1933: 260 (preform); Oettinger, 1979a: 114 (phonol.), contra Melchert, 1984b: 118⁸².

/e/ < unaccented */æ/: *-te-* in *pebute-* 'carry off' and prob. *wete-* 'build' < PA **-dæ-* (i.e. **d^heh₁-*).

Sturtevant, 1933: 80 (etym.); Oettinger, 1979a: 36 (phonol.).

/e/ < 2ary /e/: (1) anim. nom. pl. *-ēs* < PA **-eyes*; (2) perh. *wēs* 'we' < PA **wēyes*.

(1) Hrozný, 1917: 11,26&47, et al. (contra Kammenhuber, 1969: 303; Neu, 1979: 191; and Kimball, 1983: 418ff); (2) Kronasser, 1956: 141; Eichner, 1969: 32 (but **wēys* also possible, as per Eichner and Sturtevant, 1933: 193).

/u/ < */u/: (1) *iukan* 'yoke' < PA **yugóm*; (2) *suppi-* 'sacralized, taboo' < PA **súp-*; (3) *šuhmili-* 'firmly planted' < PA **su-Hmí-*; (4) *tāru-* 'wood' < PA **dóru-*; (5) *šupp-* 'fall asleep' < PA **sup-*; (6) *nu* (sent. conj.) < PA **nu*; (7) *kinun* 'now' < (virtual) PA **ke/inún*; etc.; (8) *šuppala-* 'animal' < PA **súp(o)lo-*.

(1) Sturtevant, 1930b: 216 (as inherited!); (2) Melchert after Watkins, 1975c: 211ff; (3) Catsanicos, 1986: 122f; (4) Ehelolf, 1933: 7; (5) Sturtevant, 1936: 283; (6) Hrozný, 1917: 122 (on absence of lengthening see 6.1.5.2); (7) Hrozný, 1917: 141; (8) Watkins, 1973b: 397f.

/u/ ([u:]) < */u/ in accented open syllable: (1) *kūša-* 'bride' < PA **kúso-*; (2) *nūwa* 'still, yet' < PA **nú-ho*; (3) prob. gen. sg. *kūnaš* 'dog' < PA **kúnos*.

(1) Weitenberg, 1975 (also in *kūšata-* 'bride-prce', contra Kimball, 1983: 461); (2) Melchert, 1984b: 30; (3) Melchert, 1989b: 99.

/u/ < */Vw/ (unaccented): (1) *lukke/a-* 'kindle' < PA **lowkéye/o-*; (2) *uppi/a-* 'send' < **aw-páy-*.

(1) Sommer, 1922: 32 (root etym.); Kellogg, 1925: 36, & Watkins, 1973a: 69 (preform), contra Oettinger, 1979a: 273ff; (2) Hrozný, 1917: 122² (preform); Melchert (phonol.). See 6.1.5.26 for discussion of both cases.

/u:/ < */Vw/: (1) *ū-* 'see' < PA **āw-*; (2) *ūp-* 'rise' (of sun) < PA **ūp-* < **ēup-*; (3) *hūb(h)a-* 'grandfather' < PA **Hāw(h)o/a-*; (4) *šū-* 'god' < PA **dyēw-*; (5) *u-* 'her-' (in *ūnni/a-*, *ūššiye-*, etc.) < PA **āw-*.

(1) Hrozný, 1919: 73; (2) Sturtevant, 1933: 102; (3) Sturtevant, 1928b: 163; (4) Pedersen, 1938: 57; Watkins, 1974a; (5) Hrozný, 1917: 70¹.

/u:/ < */u/: (1) PA **ūg* 'I' > *ūg*; (2) *āššū* 'goods' < PA coll. pl. **-ū*.

(1) Melchert, 1983a: 156 (cf. Sturtevant, 1933: 192); (2) Watkins, 1982a: 255ff.

/a/ < */a/: (1) *alpā-* 'cloud' < PA **albō-*; (2) *alpant-* 'dull; weak' < PA **ālpō+*; (3) *kuwašš-* 'kiss' < PA **kwás-*; (4) *buwappa-* 'evil' < PA **Hwápo-*; (5) *atta-* 'father' < PA **atta-*; (6) *awan* 'past, by' < PA **āw+*; etc.

(1) Mudge, 1931: 252; (2) Puhvel, 1975: 61; (3) Benveniste, 1932b: 139; (4) Juret, 1942: 58; (5) Hrozný, 1917: 31; (6) Hrozný, 1915: 28, & 1917: 35.

/a/ < unaccented */o/: (1) *wašše/a-* 'clothe' < PA **woséye/o-*; (2) *memall-* 'groats, grits' < PA **mémolH-*; (3) *wargant-* 'fat' < PA **worǵ+*; (4) dat.-loc. pl. *-aš* < PA **-os*; (5) *pēdan* 'place' < PA **pēdom*; etc.

(1) Hrozný, 1917: 79⁴; Holt, 1957: 149f; Eichner, 1969: 37f; Melchert, 1984b: 31f; (2) Hrozný, 1920: 47¹; (3) Szemerényi, 1942: 397; Čop, 1955b: 31; (4) Melchert (= **-b^h/mos* w/o labial formant; so also Neu, 1991: 14, contra Neu, 1979: 193, et al.); (5) Sommer, 1922: 36ff & 1932: 164.

/a/ ([a:]) < */a/ in accented open syllable: (1) *āra* '(what is) fitting, fas' < PA **āra*; (2) *bāta-* 'become dry' (medial) < PA **Hādo-*; (3) *māniyabb-* 'hand over; manage' < PA **māniyo+*; (4) prob. *wāgi* 'bites' < PA **wāgē*.

(1) Hrozný, 1915: 28, & 1917: 41³; (2) Benveniste, 1954: 39; Watkins, 1973c: 188; (3) Mudge, 1931: 252; (4) Petersen, 1937b: 212; Čop, 1953: 174ff, contra Oettinger, 1979a: 445¹¹³, but cf. Kimball, 1988: 245.

/a/ ([a:]) < */o/ in accented open syllable: (1) *wātar* 'water' < PA **wōd̥r*; (2) *tāru-* 'wood' < PA **dōru-*; (3) *sāru-* 'booty' < PA **sōru-*; (4) *wāš-* 'buy' < **wōs-*; (5) *lāg-* 'bend' < **lōg-*; etc.

(1) Hrozný, 1917: 65; (2) Ehelolf: 1933: 7; (3) Čop, 1955c: 398; (4) Götze, 1928: 99²; (5) Sturtevant, 1930b: 216.

/a/ < */e/ before coronal nasal: (1) *anda* 'into' < PA **ēndo*; (2) athem. pres. 3rd pl. *-anzi* < PA **-ēnti*; (3) supine *-wan* < PA **-wen*; (4) *pēran* 'in front' < PA **pérem*.

(1) Hrozný, 1915: 28; 1917: 17⁴; (2) Melchert, contra Sturtevant, 1933: 253; Kimball, 1983: 749ff; et al. (see 6.1.5.6); (3) Benveniste, 1935: 114f; (4) Melchert, revising Dunkel, 1990: 168³¹ (etym.) (contra Neu, 1974: 66f, Ivanov, 1979: 73, et al.).

/a:/ < */o/ in accented closed syllable: (1) sg. *māld-* 'speak solemnly' < PA **mōld-*; (2) sg. *šipānd-* 'libate, consecrate' < PA **spōnd-*; (3) *kāšt-* 'hunger' < PA **Kōst-*; (4) sg. *kānk-* 'hang' < PA **kōnk-*; (5) *āppa* 'back' < PA **ōpV* (cf. 6.1.5.24 for closed syllable); etc.

(1) Mudge, 1931: 252; Benveniste, 1932a: 133ff; (2) Hrozný, 1915: 29, & 1917: 4¹; (3) Friedrich, 1924/25: 122 (ident.); Kimball, 1983: 141 (phonol.); (4) Sturtevant, 1931b: 172; (5) Lohmann, 1933: 324f; Zucha, 1988: 6ff (contra Dunkel, 1982/83: 71&84; Bader, 1982: 144, et al.).

/a:/ < accented */a:/: (1) abst. suff. $-\bar{a}tar$ < PA $*-\bar{a}-$
 dr ; (2) suff. $-\bar{a}war$ < PA $*-\bar{a}-w\bar{r}$.

(1) Eichner, 1973: 80; (2) Melchert, 1984b: 63f.

/a:/ < accented */o:/: (1) nom.-acc. pl. $wid\bar{a}r$ 'waters'
 < PA $*wed\bar{o}r$; (2) $ba\bar{s}t\bar{a}i$ 'bone(s)' < PA $*Hast\bar{o}y$; (3)
 $ba\bar{r}g(a)n\bar{a}u$ 'palm; sole' < PA $*hr(e)\bar{g}n\bar{o}w$.

(1) Hrozný, 1917: 65; Schindler, 1975a: 4; (2) Benveniste, 1932b: 139
 (root etym.); Weitenberg, 1979: 295, et al. (preform); (3) Weitenberg, 1984:
 223f (for phonol. see Melchert, 1987b: 22). For accent of all three examples
 see 6.1.5.23.

5.2 Accent

The distribution of the Hittite accent may be inferred from its various secondary effects, most notably vowel lengthening and shortening (cf. Zucha, 1988: 370f et passim). Since some of these processes remain as synchronic rules (see 5.3 below), we may assume that the accent pattern which governs them is also by and large valid for attested Hittite. As emphasized by Eichner (1980: 164), the distribution of enclitics also provides valuable information concerning synchronic accent patterns.

5.3 Synchronic Rules

(1) As in Palaic and Luvian, there is limited evidence in Hittite for a rightward shift of the accent with the addition of clitics. Once again there are also many apparent counterexamples, and I can do no more here than point to the existence of the phenomenon. The conjunction $kuitman$ 'while, until' is spelled more than 200 times uniformly with a short vowel in the second syllable, and we may safely assume that the word is normally pronounced with accent on the first syllable. However, in §10 of the Laws we find $ku-it-ma-a-na-a\bar{s}$ 'until he'. The unique long [a:] of the second syllable is surely due to lengthening in an accented open syllable, the shift in accent being due to the added enclitic $-a\bar{s}$. Note also $ba\bar{s}\bar{s}an=kan$ in KBo XXV 31 ii 17 vs. usual $ba\bar{s}\bar{s}an$, despite the fact that one also finds $ba\bar{s}\bar{s}an=kan$ (cf. Zucha, 1988: 26). Otten (1974: 67⁹⁹) cites $pl-ra-a-am-mi-it$ in ms. C of the Anitta text vs. $p\bar{e}-e-ra-am-mi-it$ in the OH ms. A as a possible example of accent shift, but as always one must be cautious about features of a late copy. We find a similar contrast in a series of divine names with and without enclitic: cf. $DE-el-ta-ra-an...[D]Na-a-ra-an$ $^DNa-m-\bar{s}a-a-ra-an$ in

KBo XVII 96 i 9f vs. ^D*Il-ta-ra-a-ta...* ^D*Na-ra-a-ta* ^D*Nam-ša-ra-a-ta* in XVII 95 iii 15f. Although the immediate context is Hurrian, the previous example suggests that both the accent shift and resulting changes in vowel length are Hittite.

(2) The OH ms. *KBo* XXII 1 shows the unique spellings *har-te-ni-i* and *me-ma-aḫ-bi-i* with unexpected plene spelling of the final vowel. As indicated by Watkins (1982b), the context independently suggests that these verbs occur in questions, and he plausibly interprets the plene spelling as showing a secondarily lengthened (and accented) final vowel marking the yes-no question (probably also with extra high pitch). He properly compares Sanskrit "pluti" (thus also Ivanov, 1989). See also Strunk (1983).

(3) The examples cited in (1) and (2) above show that the rule by which any short vowel is lengthened in an accented open syllable remains a living synchronic rule of Hittite. Note that as expected not only are ordinarily short vowels lengthened when the accent shifts to them, but also ordinarily long vowels revert to short when the accent is removed.

(4) In the case of lengthening of vowels in closed syllables, the relationship between the synchronic and diachronic processes is complex. Historically, original long vowels were shortened in unaccented syllables already in PA (4.1.5). A handful of new long vowels were subsequently produced in unaccented position. Short */e/ and */o/ were lengthened in accented closed syllables in pre-Hittite, but short */a/ was not (6.1.5.24 w/ refs.). One should also bear in mind that most cases of unaccented short */e/ became either [i] or [a] in Hittite (6.1.5.8&10).

There are a few cases of synchronic alternation between accented long [e:] and unaccented short [e]: pret. 3rd pl. [-é:r] vs. [-er]; orthotonic *šēt* 'his things' vs. enclitic *-šet* 'his'. Historically, the former shows shortening of an unaccented long vowel, the latter lengthening of an accented short vowel. Synchronically, however, there can be no general phonological rule shortening unaccented long /e:/: note anim. nom. pl. *-ēš* even when unaccented. The long vowel here due to loss of intervocalic *y is pre-Hittite and may thus be later than the shortening of PA unaccented long vowels. An accented **-ēš* (Zucha, 1988: *26) is implausible and unnecessary. On the other hand, accented short [e] does not occur. We may therefore posit both morphemes above with underlying short /e/ and a rule lengthening short /e/ in accented closed syllable.

For the large number of cases of accented long [e:] which do not alternate, one may assume either underlying /e/ and application of the above rule, or simply underlying long /e:/. Whichever choice one makes, one must certainly treat all such cases alike synchronically, whether they represent preserved long vowels or lengthened short vowels historically.

The synchronic situation is different for /a/. There are enough cases of alternation between accented long [a:] and unaccented short [a] to justify a synchronic rule: sg. *a-ar-(bi)/a-ar-(ti)* vs. ptc. *a-ra-(a)-an-za* 'arrive', *a-ap-pa/a-ap-pa-an* 'back/behind' vs. *ap-pi-iz-zi-(ya)* 'rear-'; accented irreal particle *ma-a-an* vs. enclitic *-ma-an*, etc. However, we cannot have a synchronic rule lengthening underlying short /a/ in an accented closed syllable, because there are many cases of short [a] in this environment: e.g. *ar-ba* 'away' vs. *a-ar-bi* 'I arrive'. On the other hand, I know of no assured cases of unaccented long [a:]. We may therefore assume underlying long /a:/ in such cases and a synchronic rule shortening the vowel when it is unaccented. Note that for most examples this represents an inversion of the original rule (cf. again 6.1.5.24).

(6) Anaptyxis. Alternate spellings such as *ga-ra-a-pi* and *gi-ri-pa-an-zi* 'devour' suggest that the first vowel is "empty" and that the word begins /kr-/. However, we also find occasionally *ga-a-ra-pi*. While an error is possible, such unexpected plene spellings only seem to occur with velars, not labials (never e.g. **pa-a-ra* for *pa-ra-a*). I therefore tentatively assume a real synchronic alternation between /kr-/ and a sporadic anaptyctic form /ka:r-/ (cf. 1.2.6.6): that the anaptyctic vowel takes the accent is not surprising (cf. 3.3.6). Despite the lack of alternate *a/i* spellings, I find a similar alternation likely between initial /sl-/ and /sr-/ and forms with anaptyxis: cf. *sa-li-(i)-ga* but 2x *sa-a-li-* and usual *sa-ra/i-pV-* but 2x *sa-a-ra-*. The spelling *tāgan* beside *tagān* 'on/to the ground' suggests an alternate spoken [tá:gan] beside [tgá:n], pace Neu (1980b: 87). One can also interpret *tagān* as /tagá:n/ with "morphological" zero grade (Schindler, 1967b: 203): cf. 4.1.2.3.

It is possible that the alternation of initial *baCV-/buCV-* observed by Puhvel (1991: 373) is at least in part due to synchronic anaptyxis in initial /HCV-/ clusters, with varying realizations (or spellings) of the inserted vowel: e.g. *b(u/a)luganna/i-* 'coach' (< *b(a)luga-* 'message' with Laroche and Puhvel). However, the material is disparate and mostly of obscure origin. It is also conceivable that *ta/uḫuṣṣ(iye)-* 'keep quiet, acquiesce', whether Hittite or Luvian, reflects /tHus-/ with anaptyxis, beside

metathesized **tuh₂s-* in Skt. *tūṣṇīm* (cf. Oettinger, 1979a: 326). The status of the alternation *mīlulī-/mālulī-* 'viscera' (?) remains obscure (cf. 6.1.6.1.2.1).

(7) Consonant Gemination. The gemination of certain consonants in clusters probably remains as a synchronic rule: cf. *šašanzi* vs. *šaš(ša)nu-*.

(8) The rule by which /w/ dissimilates to [m] next to /u/ (6.1.4.2.1) is maintained in Hittite at morpheme boundary. Examples: 1st pl. and inf. of /-nu-/ verbs [-nu-men(i)] and [-nu-mantsi] < /-nu-wen(i)/ and /-nu-wantsi/; anim. acc. pl. of /-u-/ stems [-am-us] < /-aw-us/. Note, however, that the [-um-] forms in the type of *pēda-* 'carry' (*pētumen(i)*, *pētumanzi*) are synchronically irregular. Attested sequences of [-uwV-] and [-Vwu-] result from another synchronic rule which inserts a [w] into hiatus sequences with /u/ and vowel following the dissimilation rule (see 5.4.2.3,3).

(9) The inherited rule of s-epenthesis between dental stops remains a synchronic rule at least in OH: *ēdmi* but *ēzz(aš)teni* (/éd.teni/ > [é:d-s-teni] > [é:ts.steni]; cf. 6.1.6.1.1.2). There is clear evidence for spread of the [-ts-] allomorph in such paradigms (Oettinger, 1979a: 531). Only a careful review of NH compositions can confirm whether the alternation and the rule were completely eliminated in NH.

(10) Sandhi Rules. In OH one finds assimilation of a word-final /-n/ to the initial /s-/ or /m-/ of a following enclitic: *na-aš-ša-an* for /n=an=san/, *ma-a-am-ma-an* for /ma:n=man/ (Bernabé, 1973: 422&438). For the latter sequence one also finds the alternate treatment with loss of the /-n/: *ša-ab-ba-me-et* for /saHan=met/ (cf. 6.1.6.1.5,8). Although a careful survey with datable manuscripts is yet to be made, these spellings seem to be replaced in NH by *na-an-ša-an*, *ma-a-an-ma-an* etc. Whether this reflects a loss of the rule or merely "morphophonemic" spellings is not yet determinable. See Justeson and Stephens (1981: 368f) for further examples of /-n=s-/ > [-ss-] and more dubious cases of /-t=s-/ > [-ss-].

5.4 Phonotactics

5.4.1 Consonants

5.4.1.1 Initial Consonants

5.4.1.1.1 All voiceless obstruents and all sonorants except /r/ occur freely in word-initial position. On the absence of voiced obstruents see 1.2.6.1.3. The lack of initial /r/ is systematic, as elsewhere in Anatolian (see 4.1.3.1,5).

5.4.1.1.2 Initial Consonant Clusters

I remind the reader that the syllabic nature of the cuneiform orthography makes the status of initial clusters difficult to determine. The following summary should be taken as provisional.

Stop + stop/stop + fricative: none (but cf. 5.3,6, note).

Stop + liquid: /pr-/ is probable in *p(a)rā* 'forth' and *p(a)rāi-* 'blow'; likewise /kr-/ in *ka-ra-a-wa-ar* 'horn', *ga/i-ra-pV-* 'devour' and *ga/i-ri-it-* 'flood' (but cf. 5.3 (6) above); /kl-/ is likely in *g(a)la(n)k-*. The absence of /tr-/ is undoubtedly systematic (cf. 4.1.6.2.2,1), that of /pl-/ may or may not be.

Stop + nasal: /tm-/ is likely in words like *damāi-* 'other' and *dama/ešš-* 'oppress'; /kn-/ is highly probable in *ganešš-* 'recognize' and *ganut* 'by the knee'.

Stop + glide: /tw-/ in *tuekka-* 'body', *t/duwān* 'far' and *t/duwarni/a-* 'break'; /kw-/ in *kuwašš-* 'kiss' and *kuwa(n)-* 'dog-(man)'; probably /py-/ in *pianzi* 'they give', /ty-/ in *tianzi* 'they put', etc., /ky-/ in *gyemi* (*gi-e-mi*) 'in winter'.

Affricate + stop: /tsk-/ in *zikke-/zaške-* 'put' (iter.) and *zašgaraiš-* 'anus'.

Affricate + fricative: /tsH-/ in *zašhai-* 'dream'.

Affricate + liquid: probably /tsl-/ in *z(a)lug(a)nu-* 'postpone, delay'.

Affricate + nasal: /tsm-/ in *z(a)mankur-* 'beard' (beside /sm-;/; see 6.1.6.1.10).

Affricate + glide: possibly /tsw-/ in *zuwa-* 'food', *zuwalwal-* '?' (both words are probably Luvian in origin).

Fricative + stop: /sp-/ at least in *ša/epikkusta-* 'pin'. I also assume /sp-/ in *(i)špant-/š(p)pand-*, /st-/ in *ištamašš-* 'hear', /sk-/ in *iškalla-* 'tear', etc. (see 1.2.6.6). I also follow Benveniste (1937: 497) and Watkins (1982c) in viewing *ba-tu-ki-ga-* 'frightful' as having /Ht-/ , but /Hp-/ in *ba-(a)-pu-uš-* 'shaft, penis' as per Watkins is problematic (cf. 1.2.6.6, end). See also 5.3 (6).

Fricative + fricative: I continue to view Hitt. *išhi-* 'bind' and derivatives as /isHi-/ (Melchert, 1984b: 99, contra Oettinger, 1986b: 48, et al.), but other reflexes of the root such as *išhanittara-* '(marriage) bond, alliance' surely do have /sH-/ (see Puhvel, 1984: 396, and in detail Bader, 1990: 6 et passim). A synchronic triple cluster /Hst-/ in *bastēr-* 'star' < **h₂stēr-* is possible, but unlikely.

Fricative + liquid: probably /sl-/ in *salig-* 'accost' and /sr-/ in *šarā* 'up', *šaraku-* 'give water to' and *šara/ip-* 'sip'; initial /Hl-/ is possible in *haluga-* 'message' and *halina-* 'clay' (but cf. 5.3.6 on the phonetic realization). The absence of /Hr-/ is surely systematic.

Fricative + nasal: /sm-/ in *š(a)mankurwant-* 'bearded', *ša/emeḥuna-* (a food), *ša/emen-* 'withdraw from'. The apparently systematic lack of /sn-/ as well as /Hm-/ and /Hn-/ is noteworthy.

Fricative + glide: /sw-/ in *šuwāru-* 'heavy'; /sy-/ in *šiu(na/i)-* 'god' (further exx. of both are likely); /Hw-/ is frequent, while /Hy-/ is systematically absent.

Nasal + liquid: /ml-/ in *ma/ilišku-* 'weak', *ma/ilittu-* 'sweet' (+ several others). Note the systematic absence of /mr-/ , /wr-/ and /wl-/.

5.4.1.2 Final Consonants

5.4.1.2.1 Only voiced stops occur word-finally (4.1.6.3.1.1). Final /-d/ is common. Final /-g/ is found in the personal pronouns *ūg* 'I' and *zig* 'you' and the adverb *būdak*. Final /-b/ is extremely rare: OH part. *-ap* (variant to *-apa*) and the strange *arlip* 'erect' (?). Final /-s/ is of course very frequent, while final /-H/ is found in the imv. 2nd sg. of verbs in *-aḥḥ-* (*maniyah*, etc.), where it is restored/maintained by analogy with the rest of the paradigm. We find final /-r/ ,

/-l/ and /-n/, but no /-m/. If one interprets diphthongs as vowel plus glide, then final /-w/ and /-y/ occur with some frequency in /-ay/, /-a:y/, /-aw/ and /-a:w/. There is also a good chance that borrowed words such as *ar-ki-ú* (an architectural feature) have a final sequence /-iw/ (Weitenberg, 1978: 305f).

5.4.1.2.2 Final Consonant Clusters

Final clusters are highly restricted. Since it is unlikely that pret. 3rd singulars such as *ēpta* 'took' are to be read as /e:pt/ (cf. 6.1.6.2.4), there are no final clusters of stop plus stop, and indeed none with a stop as first member except /-t+s/ (e.g. nom. sg. /si:wat-s/ 'day'), which is of course phonetically identical with the unitary affricate /-ts/.

Fricative + affricate: /-sts/ in *kāšz(a)* 'hunger' (nom. sg.), OH abl. *nepišz(a)* etc. and enclitic sequences *-a/uš-z(a)* (pronoun + reflexive); /-Hts/ in *araḥz(a)* 'outside'.

Liquid + stop: /-rd/ in OH inst. *kiššart(a)/kiššar(a)t* 'by the hand' < *-rd.

Liquid + affricate: /-rts/ in **pērz(a)* 'from the house' and *baštērz(a)* 'star'.

Liquid + fricative: /-rs/ in *kar(a)š* 'cut!', /-ls/ in **gul(a)š* 'write!', /-rH/ in **tar(a)b* 'overcome!', /-lH/ in *wal(a)b* 'strike!' (and similar inv. 2nd singulars).

Nasal + stop: /-nd/ in OH inst. *-and(a)* < *-nd (*wēdand(a)*, etc.), also voc. *^DTarḥunt(a)*, *^DWešuriyant(a)* (contra Eichner, 1974: 23f; cf. Neu, 1979: 179).

Nasal + affricate: /-nts/ (frequent).

Nasal + fricative: /-ns/ in inv. 2nd sg. *an(a)š* 'wipe!'; /-nH/ in inv. 2nd sg. *šan(a)b* 'seek!'.

5.4.1.3 Medial Consonants

5.4.1.3.1 Medial Consonant Clusters

I list specific examples only for very rare cases. The voicing quality of stops is often indeterminate. I give only voiceless values unless voicing is assured by etymology. Note that a number of consonants are realized as geminates in clusters (6.1.6.1.1,2-4). I assume that there are /-Cw-/ and

/-Cy-/ clusters at least at the phonological level--a phonetic realization [Cuw] and [Ciy] in many cases is impossible to disprove (cf. Pedersen, 1938: 8).

Stop + stop: /-pt-/; /-tk-/; /-tk^w-/ (*watku-*); /-kt-/; /-gd-/ (*ēgdu-*).

Stop + affricate: /-pts-/; /-kts-/ (*makziya-*).

Stop + fricative: /-ps-/; /-ts-/ (*ētši*), /-ks-/; /-k^ws-/ (*tekkušša-*); /-tH-/ (*titha-*).

Stop + liquid: /-pl-/ (*adupli-*), /-pr-/; /-tr-/; /-dr-/; /-kl-/ (*tag(ga)liye-*), /-kr-/; Note absence of /-t/dl-/!

Stop + nasal: /-pn-/ (*lap(pa)nu-*), /-bn-/ (*tepnu-*); /-tm-/ (only in Luv. borrowing *itmarī-*; cf. *kammars-*!), /-dn-/ (see 6.1.6.1.3.1.4!); /-gm-/ (*ḥukmāi-*), /-kn-/; /-gn-/; /-g^wm-/ (*nekumant-*).

Stop + glide: /-pw-/; /-bw-/; /-tw-/; /-dw-/; /-kw-/; /-gw-/; /-py-/; /-by-/; /-ty-/; /-dy-/; /-ky-/; /-gy-/.

Affricate + stop: /-tsp-/ (*wiz(za)pant-*), /-tst-/; /-tsk-/ (*šazke-*, *az(zik)ke-*).

Affricate + glide: /-tsy-/.

Fricative + stop: /-sp-/ (*waš(ša)pa-*, *hašp-* < Luv.); /-st-/; /-zd-/ (*hašdwēr*); /-sk-/; /-Hp-/ (*laḥpa-*); /-Ht-/.

Fricative + fricative: /-sH-/; /-Hs-/.

Fricative + liquid: /-sl-/ (*ešli/ut*; *SALiḡli-*), /-sr-/; /-Hl-/; /-Hr-/.

Fricative + nasal: /-sm-/ (*āšma*, *našma*); /-sn-/; /-Hm-/ (*šuhmili-*, *laḥma-*); /-Hn-/ (*laḥni-*, *waḥnu-*).

Fricative + glide: /-sw-/; /-sy-/; /-Hw-/; /-hw-/; /-Hy-/.

Liquid + stop: /-lp-/; /-lb-/; /-lt-/; /-ld-/;
 /-lk-/; /-lkw-/ (*welkuwa(n)-*), /-lg-/; /-lg^w-/
 (*halkuesšar*); /-rp-/; /-rb-/; /-rt-/; /-rd-/; /-rk-/;
 /-rg-/; /-rg^w-/.

Liquid + affricate: /-lts-/; /-rts-/.

Liquid + fricative: /-ls-/; /-rs-/; /-lH-/; /-rH-/.

Liquid + liquid: /-rl-/ (*arlip(a)*, *karla-*, *marlant-*
 etc.).

Liquid + nasal: /-lm-/; /-ln-/ (*wilna-*); /-rm-/;
 /-rn-/.

Liquid + glide: /-lw-/; /-ly-/; /-rw-/; /-ry-/.

Nasal + stop: /-mp-/; /-mb-/; /-nt-/; /-nd-/;
 /-nk-/; /-ng-/; /-ng^w-/.

Nasal + affricate: /-nts-/.

Nasal + fricative: /-ns-/ (*an(aš)ša-*, *an(aš)š-*);
 /-nH-/.

Nasal + liquid: /-mr-/.

Nasal + nasal: /-mn-/.

Nasal + glide: /-mw-/; /-my-/; /-nw-/ (but cf.
 6.1.6.1.5,8), /-ny-/.

5.4.2 Vowels

5.4.2.1 Initial Vowels

Most Hittite vowels occur freely in word-initial position. Examples seem unnecessary. For reasons given in 6.1.5.5ff, there is no phonetic short [e] in initial position, nor can I find an example of phonetic short [e] there.

5.4.2.2 Final Vowels

Final unaccented short /-i/, /-u/ and /-a/ are routine. Final /-ē/ appears in OH (*-šše* 'to him/her', etc.), but has probably been eliminated by NH. There is no final unaccented short /-e/. All final accented vowels are phonetically long,

being in an open syllable (5.3,3). There are examples for vowels of all types.

5.4.2.3 Vowel Sequences (Hiatus)

Hittite cuneiform orthography makes it very hard to make definitive decisions about vowel hiatus. In sum, there seem to be few really compelling examples for hiatus, but much is debatable.

(1) In Melchert (1984b: 39), following others, I assumed that OH spellings such as *tar-ma-e-mi* show a hiatus [a:_e] produced by loss of intervocalic */y/ in **-āye-* < **-āHye-*. However, as I already pointed out (1984b: 75), we also find *Ca-(a)-e* for inherited */a:y/ (nt. nom.-acc. sg. *ta-ma-a-e*). I therefore now seriously doubt that there is any hiatus [a:_e] in *tarmaemi* etc. (much less in the corresponding plurals like *tarmānzi*). For reasons cited in 1.2.6.5.2, I now also reject any synchronic hiatus in *a-a-* 'be warm' (contra Melchert, 1984b: 38). I now read *Ca-(a)-e* as /a:y/ and all sequences *Ca-a-* (*aC*) and *a-a+* as simply /a:/.

(2) As discussed in 6.1.5.3, I also understand *pa-a-u-un* as [pa:wun] with an inserted glide [w]. Likewise *šu-u-uš* etc. = /suwus/, not /su_us/. Note that since underlying /wu/ and /uw/ still undergo dissimilation to [mu] and [um] in Hittite (5.3,8), one must suppose that [pa:wun] and [suwus] are underlying /pa_un/ and /su_un/ and that the insertion of the [w] is a synchronic rule.

(3) The most likely candidate I know for real hiatus in Hittite is the sequence *-aēš* in the anim. nom. plural of ablauting *i*-stem adjectives: *šallaēš*, *hargaēš*, etc.. The preserved length in the second vowel marked frequently by scriptio plena makes disyllabic [a:_e] more plausible than [ay]. The fact that /-e:s/ is the universal productive anim. nom. plural ending presumably plays a key role in maintaining the unusual sequence [a:_e]. Whether we should also assume [a_u] in the corresponding anim. acc. plural is less certain, but the lack of any spellings such as ***šal-la-u-uš* with the *-u-* to mark the inserted glide does argue for [a_u].

(4) The Hittite word for 'mouth' (nom.-acc. *aiš*, gen. sg. *iššāš*, etc.) presents a crux. No historical account satisfying to everyone yet seems possible. However, established Hittite sound laws do allow us to restrict the number of possibilities.

Absence of initial *b*- precludes an initial **/h₃-/* (4.1.3.3.1). On the other hand, the geminate *-ss-* of the weak cases demands a medial laryngeal before the **/s/* (4.1.6.1.1,2 & 6.1.6.1.1.2). Finally, the long vowels of the endings of the weak cases (*iššāš*, *išš*, *iššāz*) point to pre-Hittite accent on the endings (6.1.5).

Beyond this point we must proceed on structural grounds. Unless one assumes an unparalleled type of paradigm (not impossible in an archaic noun for a body part), PIE *o*-grade in the root is hard to motivate. Given the considerations in the preceding paragraph and Lat. *ōs* etc., it seems reasonable to posit a basic root ending in **-h₃*: **h₁eh₃-*. If this assumption is granted, then there is no way to derive the *i-* of Hitt. *išš-* from an **ē*, since **eh₃s-* would have been **[ohs-]* already in PIE.

Per Schindler (1975b: 264ff), the most archaic type of neuter *s*-stem has proterokinetic inflection: **mén-s*, **mn-és-*. In the productive type this is altered to **mén-e/os*, **mén-es-*. There are also examples of the acrostatic class: **séde/os*, **sédes-* (> Oir. *síd* 'peace; mound', Welsh *hed* respectively; prob. **nébes-* > HLuv. *tī-pa-s()*, CLuv. *tappaš-*). If we assume an original proterokinetic paradigm for 'mouth', **h₁eh₃-s*, **h₁h₃-és-* will produce directly Lat. *ōs*, CLuv. *āšš-* and Palaic **āš-* (in *aššummauwa-*; 8.1.6.3.3) with unsurprising generalization of the strong stem. Contra Zucha (1988: 136) hyperplane in the CLuvian word does not prove hiatus (1.2.6.5.2).

The Hittite *-i-* can only be accounted for by assuming that the *s*-suffix was replaced by **-is-* (cf. Eichner, 1973: 84⁵). The existence of **-is* beside **-e/os* is undeniable: cf. Av. *hadīš-* 'seat' and crucially CLuv. *happiš-* 'limb, member' vs. Hitt. *happeššar*. The Hittite paradigm thus reflects **h₁éh₃is*, **h₁h₃-ís-*. The strong stem leads regularly to **o-is*, whence Hitt. /ays/ or perhaps rather /ayis/ (if one chooses to so interpret the spelling *a-i-iš*). Laryngeal-sonorant metathesis (2.3.5) in the weak stem gives **h₁iš₃s-*, whence *išš-*. The accent on the endings in the oblique cases of an original proterokinetic paradigm may be secondary: cf. dat.-loc. sg. *lamni* 'hour' from an original acrostatic **lóm₁/lémn-*. That only Hittite shows **-is* is admittedly surprising, but no more so than CLuv. *happiš-* beside Hitt. *happeššar*. See Tischler (1977: 6ff) and Puhvel (1984: 17) for the many other competing analyses of 'mouth' (plus Zucha, 1988: 135ff).

CHAPTER SIX: CHANGES FROM PA TO HITTITE

6.1 Segmental Phonemes

6.1.1 Stops

As discussed in detail in 1.2.6.1, I assume that the PA contrast of voiceless/voiced stops has been reanalyzed in Hittite as one of fortis/lenis, with the realization in medial position being that of long/short. I retain the standard symbols for voiceless and voiced stops for convenience. One important contributing factor in this reanalysis was the devoicing of voiced stops in word-initial position. For the specially conditioned creation of a few geminate voiced stops see 6.1.6.1.1.4 and 6.1.6.1.3.1 (8).

I reject categorically the phonetically quite unmotivated devoicing of stops before */i/ and/or */e/ proposed by Eichner (1974: 21 and 1980: 149ff). Cf. the discussion in 1.2.6.1.3.

6.1.1.1 The labials show no other changes. Examples:

* /p/ > /p/: PA **pédom* 'place' > *pēdan*; PA **tērep*- 'plow' > *tēripp*-; PA **kérp*- 'lift' > *kar(ap)p*- (+ further exx.).

* /b/ > /p/ /#___: PA **bérġu*- 'high' > *parku*-; PA **bŕġu*- *'thick' > *pānku*- 'total; community'.

* /b/ > /b/: PA **Hābn*- 'river' > **hapn*-; PA **nēbes*- 'sky, heaven' > *nēpiš*-; PA **dēbu*- 'few' > *tēpu*- (+ further exx.).

6.1.1.2 The dental stops are regularly maintained, but PA */t/ is assibilated to [ts] before /i/ in Hittite, including in the adverb *hanz(a)* 'in front' regularly < **Hānti* < **h₂énti* (Jasanoff, 1976: 126, contra Bader, 1982: 143 et aliter; Starke, 1990: 125ff; Puhvel, 1991: 91ff). The alternate *hanzan* shows merely adverbial -an as in *pariyan*, *apaddan*, and so on. The dat.-loc. *hantī* 'apart' < 'in front, opposing' is analogical (with Kronasser, 1956: 62, contra Kimball, 1983: 765). The meaning 'apart' is due to polarization from *āppan* 'behind', but also 'with, on the side of'. The alternate derivation of *hantī* from **handhai* and **hanati* by Szemerényi (1982: 215ff) is implausible and unnecessary. The assibilation is probably blocked after /s/, hence suffix -*asti*- < *-*osti*- in *dalugasti*- 'length' etc. (Sturtevant, 1933: 126; Kronasser, 1956: 62 & 1966: 53; Joseph,

1984). The verbal ending *-zi* in forms like *ēšzi* 'is' is analogical. This generalization and secondary sources of the affricate elsewhere make /ts/ phonemic in Hittite. There is no evidence for */t/ > /ts/ before */e:/. Derivation of *-zzi* < */tēl/ or *zīg* 'you' < */tē+ (Sturtevant-Hahn, 1951: 61; Kronasser, 1956: 141, et al.) is falsified by the Hittite vocalism (see Melchert, 1983a: 153 & 1984b: 119f). The comparison of Hitt. *zē(y)a-* 'be cooked/roasted' with Lat. *tizio* 'fire-brand' etc. by Čop (1956a: 41ff) is attractive. One may suppose */tēh₁/s- > PA */tēo- > Hitt. *zēa-* (cf. 3.1.8 on *nēa-*). The high close */ē < */ey would thus also cause assibilation in Hittite, vs. regular */ē.

There is no development */t/dw > z, contra Carney (1954: 234f); Pisani (1969: 266ff); Georgiev (1978: 94ff); and Barton (1993). The evidence of *tuekka-* 'body', *tuēl* 'your' and *duwarni/a-* 'break' is incontrovertible. There is also no change of */t to s in Hittite in the vicinity of r, pace Carruba (1969b: 36f). See rather 10.1.6.1.5 (2).

PA */d/ appears as Hitt. /s/ in *šiu(na/i)-* 'god' and *šiwatt-* 'day' (Pedersen, 1938: 175). OH pret. medial ending *-ati* reflects PA */-odi, with a voiced form of the reflexive particle (Neu, 1968b: 143ff; Melchert, 1992a: 192, contra Carruba, 1992a). Given this example, one may also take *it* 'go!' < PA */idi < */id^hi as regular. The assibilation thus clearly does not take place in internal */-di- sequences (making impossible the derivation of ablative ending *-zzi* < */-d^hi, contra Kronasser, 1956: 103). Internal cases of */-dy- are thus far lacking (pace Puhvel, 1984: 212&412). I tentatively assume regular assibilation before both */y and */i word-initially (so also Kronasser, 1956: 62, and Starke, 1990: 150). One could alternatively restrict the rule to */dy and take *šiwatt-* as analogical to *šiu-*, but the semantic connection seems to me rather tenuous. Note that even if the first result of the change were [z] (Benveniste, 1962: 8), it would surely be devoiced word-initially. The */y/ of */dy-/ is preserved in Hittite, falsifying Puhvel's derivation (1974: 294f) of *šakuwa-* 'eye' and *šēhur* 'urine' < */d^hy- (same objection by Zucha, 1988: 56). Examples for dental stops:

*/t/ > /t/: PA */tēri- 'three' > *tēri-*; PA */wēt- 'year' > *wēt-*; PA */porstu- 'bud' > *paršdu-* (+ further exx.).

*/t/ > /ts/: PA */-ti/*-nti (pres. 3rd sg./pl.) > *-zzi/-nzi*; PA */-uti- suffix > *-uzzi-*.

*/d/ > /t/ / #__ : PA **dóru*- 'wood' > *tāru*-; PA **dēgom* 'earth' > *tēkan*; PA **dēbu*- 'few' > *tēpu*- (+ further exx.).

*/d/ > /d/ : PA **pēdom* 'place' > *pēdan*; PA **wódy* 'water' > *wātar*; PA **móld*- 'speak solemnly' > *māld*- (+ further exx.).

*/d/ > /s/ / #__i/y : PA **dyčw*- 'god' > *šiu*-; PA **dīwot*- 'day' > *šiwatt*-.

I find sporadic "Verschärfung" of */d/ to /t/ before */r/ (Oettinger, 1986a: 30) totally unbelievable.

6.1.1.3 PA palatal and velar stops merge in Hittite. Examples:

*/k/ > /k/ : PA **kēr*/*krd*- 'heart' > *ker*/*kard*-; PA **kwon*-/*kun*- 'dog' > *LÜkuwan*-/*kun*- 'dog-man'; PA **wēwok*- 'demand' > *wewakk*- (+ further exx.).

A special conditioned change of */k/ to /s/ before */w/ or */u/ (Goetze, 1954: 403ff; Gütterbock & Hamp, 1956: 22ff; Josephson, 1979: 96ff) is now definitely excluded by the example of 'dog'. Cf. also prob. *wēlkuwa(n)*- 'blade (of grass)' < **welkw*+ (Eichner, 1975b: 158⁴), and see Oettinger (1979a: 180&205) for additional likely counterexamples. The other alleged examples of */k/ > Hitt. /s/ presented by Josephson (1979: 92ff) are worthless.

*/k/ > /k/ : PA **kes*- 'comb' > *kišš*-/*kišā(i)*-; PA **lowkéye*- 'kindle' > *lukke*-; PA **kónk*- 'hang' > *kānk*- (+ further exx.).

*/g/ > /k/ / #__ : PA **gēnu*- 'knee' > *gēnu*-; PA **gesr*- 'hand' > *kiš(ša)r*-; PA **gēmro*- 'open country' > *ge/imra*- (+ further exx.).

*/g/ > /k/ / #__ : PA **grób*- 'devour' > *k(a/i)rap*-; prob. PA **gleng*- 'soothe' > *g(a)la(n)k*-.

*/g/ > /g/ : PA **dēgom* 'earth' > *tēkan*; PA **Harḡi*- 'white' > *ḡark*-; PA **berḡu*- 'high' > *parku*- (+ further exx.).

*/g/ > /g/ : PA **yugóm* 'yoke' > *iukan*; PA **lóg*- 'bend' > *lāg*-; PA **horg*- 'perish' > *ḡark*- (+ further exx.).

The claim of Pedersen (1938: 176ff) for a change $*k > *kja > *j > b$ is totally implausible, and the alleged examples all false. For a refutation of all previous attempts to derive Hittite $b(b)$ from PIE dorsal stops see Polomé (1952). I also cannot accept the desperate attempt by Puhvel (1991: 90) to derive $b < *k$ by a wholly ad hoc laryngeal assimilation/dissimilation rule: cf. 6.1.6.1.3.1 (15). Puhvel's example for $*gy > [z]$ (1984: 222) is also unconvincing.

6.1.1.4 PA labiovelars are preserved in Hittite. The newly discovered word for 'woman' confirms that initial $*/g^w/ < \text{PIE } */g^w/$ behaves just like that from PIE $*/g^wh/$. I remain unpersuaded by any of the alleged examples of $*/g^w/ > /w/$ or conditioned unrounding of $*/g^w/$ or $*/k^w/$ to $/g/$ and $/k/$ proposed by Kronasser (1956: 66f); Čop (1955a: 63f, 1955c: 393ff et aliter); Puhvel (1974: 292); or Seebold (1982/3): note the change of opinion by Sturtevant-Hahn (1951: 57)! The problem of $*/g/$ vs $*/g^w/$ in the PIE root 'be extinguished' is quite real, but is not confined to Hittite (see Bomhard, 1972: 112, & Tischler, 1980: 593f). Tocharian $käs-$ also requires a plain velar $*/g/$ like Anatolian $kist-$ (Ringe, 1990: 404). It is possible, but far from assured, that hapax $watq(a)bbut$ 'jump!' for expected $*watkubbut$ reflects delabialization of $*k^w$ in the proximity of u . Examples for labiovelars:

$*/k^w/ > /k^w/$: PA $*k^wi-$ 'who' $> kui-$; PA $*-k^we$ 'and' $> -kku$; PA $*dek^wo-$ 'give a sign' $> tekkušša-$ (+ further exx.).

$*/g^w/ > /k^w/$ /#___: PA $*g^wén+$ 'woman' $> kuinna-$; PA $*g^wén-$ 'kill' $> kuēn-$; prob. PA $*g^wélwon-$ (container) $> kuēlwan-$.

$*/g^w/ > /g^w/$: PA $*neg^wmo+$ 'naked' $> nekumant-$; PA $*egw-$ 'drink' $> eku-/euk-$; PA $*sóg^wo-$ 'eye' $> šakuwa-$; PA $*terg^w-$ 'dance' $> tarku-$ (for the last two examples see 4.1.1.1,3).

6.1.2 Affricate

The PA affricate $*[ts]$ is maintained in Hittite. Examples are the locative suffix $*[-tsyo-]$ $> -zzi(ya)-$ and PA $*Hatsye/o-$ 'strike' $> hazziya-$. Note the additional sources of $[ts]$ cited in 6.1.1.2 and 6.1.3.1, some of which make $/ts/$ phonemic in Hittite.

6.1.3 Fricatives

6.1.3.1 The PA sibilant */s/ for the most part remains unchanged in Hittite. Examples are plentiful: PA **ses*- 'sleep' > *šeš*-, PA **spó/énd*- 'libate' > *išpand*- /*šip(p)ānd*-, PA **nēbes*- 'sky, heaven' > *nēpiš*-, etc.

On the sources of geminate /ss/ in Hittite see 6.1.6.1.1.2 and 6.1.6.1.3.1 (5) and (9), where opposing views are also discussed.

PA */s/ regularly appears as /ts/ in secondary sequences of */Vns/ (Melchert, 1983b: 7ff, after Schindler). The process is presumably epenthesis of a [t] in the sequence [ns]. This treatment contrasts with assimilation of original */VnsV/ to /VssV/ (cf. 6.1.6.1.3.1.9). I continue to find this formulation superior to that of Oettinger (1980a: 45ff), which is based on the accent. For the difference between PIE anim. nom. sg. *-*én* (> Hitt. -*anz(a)* /-*ántš*/) and *-*ō* (> Hitt. -*aš*) see also now Jasanoff (1989: 138). Examples: PA **nsós* 'us' > *anzāš* (via **ansós*); PA **Hms(o)no*- 'black' > *hanz(a)na*- (Oettinger, 1987b: 191, pace Puhvel, 1991: 112); PA **sumēn* 'sinew, cord' + 2ary nom. sg. -*s* > *šumanz(a)*; pre-Hittite **obóy-n-som* 'of them' > *apēnzan* etc. (with Petersen, 1937a: 318f; cf. 6.1.6.1.10). For similar accounts of the last example implying the same sound change see Milewski (1932/33: 109); Sturtevant (1933: 205); Kronasser (1966: 194); and Carruba (1976: 134f). On Hitt. *genzu*- 'groin, lap' (or sim.) see Zucha (1988: 256).

We find the same epenthesis in the case of secondary */Vrs/ in PA **H(a)stēr* 'star' + 2ary nom. sg. -*s* > *hastērš(a)*. In other cases /-*lts*-/ and /-*rts*-/ appear irregularly beside /-*ls(s)*-/ and /-*rs(s)*-/: *gulzi*- 'drawing' beside *gul(aš)š*- 'incise'; *pirzahhanna*- '?' beside *piršahhanna*-, *Parzana*- beside *Earšana*- (Neu, 1977: 273), and perhaps A.SA *arziya*- 'cultivated land' < *arši*+ (Puhvel, 1984: 187): for more dubious examples see Puhvel (1991: 208f). There is a similar but independent development in Luvian (10.1.6.1.5.1).

Note also *nabzi*-/*nabši*- (Güterbock & Hoffner, 1980ff: 3.341f), in what is surely a loanword from Hurrian.

One also finds sporadic /ts/ for /s/ before /k/: *zašgaraiš*- 'anus' and *zakkar* 'feces'. The spelling of the former can only indicate /tsk-/, suggesting that this is also the source of /ts-/ in the latter, even if it is /tsakar/ analogical to normal *šakkar* /sakar/. The original source of the zero-grade

form **sk-* is the weak stem of the collective plural (see Zucha, 1988: 185f, w/refs.; for a different view, Eichner, 1981: 60). Compare 7.1.2 (2) for the same unusual change in Palaic.

For irregular /ts/ for /s/ when followed by a nasal see 6.1.6.1.10.

6.1.3.2 PA **/H/* and **/h/* are generally preserved in Hittite. I do assume devoicing of **/h-/* to **/H-/* in initial position, but this is not assured. PA **/H/* before **/y/*, whose presence seems demanded by Palaic (see 8.1.3.4), is lost in Hittite with compensatory lengthening (Watkins, 1975a: 371f; Eichner, 1978: 160⁶⁹, pace Lindeman, 1987: 53³⁶). I am not persuaded by the evidence presented by Rikov (1980: 77ff) for loss of **/H/* before the vowel **/i/*: cf. 6.1.6.1.6 (1). I remind readers that the assignment of various cases of laryngeal loss to pre-Anatolian or to pre-Hittite remains extremely tentative due to the lack of evidence in the other languages. Some of those listed above in 4.1.3.2.2 could turn out to be pre-Hittite instead. Examples:

**/H/* > */H/*: PA **Hárgi-* 'white' > *harki-*; PA **páHwṛ* 'fire' > *pahḫur*; PA **płHi-* 'broad' > *palḫi-* etc.

**/H/* > *∅* / *_y*: PA factitive suff. **-áHye/o-* > *-āi-/* *-ā-*; PA **(s)taHyé/ó-* 'steal' > *tāye/a-*; PA **dúHyo-* 'far' > *tūwa-*.

**/h/* > */H/* / *#_*: PA **hópr* 'transaction' > *bāppar*; PA **hóron-* 'eagle' > *bāran-*; PA **hórb-* 'change sides' > *bar(ap)p-*; etc.

**/h/* > */h/*: PA **-Haha+* (pret. 1st sg. mid.) > *-bba-ba(t)*; PA **mēḫwṛ* 'time' > *mēḫur*; PA **wēh-* 'turn' > *weḫ-*.

Beside regular weak *wahḫ-* 'turn' < **wēh-* we also find *wah-*, with lenited *-h-* from strong *wēh-*.

6.1.4 Sonorants

6.1.4.1 Nasals and liquids

6.1.4.1.1 The non-syllabic nasals and liquids are stable in most environments in Hittite. Contra Eichner (1973: 100⁸⁸, 1979: 59⁵⁸, & 1980: 147⁷¹), there is no gemination of sonorants after accented short **ē*, as shown by the following counterexamples: **gyēmi* 'in winter' > *gyemi* (*gi-e-mi*); **gēnu-* > *gēnu-* 'knee'; **pérem* > *pēran* 'in front' **mēlit-* > *militt-* 'honey' (see already Kimball, 1983: 430³²). There is

also no gemination of sonorants pretonically (contra Eichner, 1973: 100⁸⁸ & 1980: 163), as shown by: **sumén+s* > *sumanza(n)-* (OH spelling!); **i-néw-* > *inu-* 'make warm' (contra Eichner, 1974: 61); **aró-* > *arā-* 'companion' (see already Cop, 1964: 63ff, but w/several false exx.). Contra Cop (1964: 51ff) and Zucha (1988: *19&48), there is also no gemination after accented short vowels other than **ē*: **dóru-* > *tāru-* 'wood', adj. suff. **-ó-lo-* > *-āla-* (e.g. *ašūšāla-* vs. *ašūša-*; Zucha, 1988: 16). Additional examples for the sonorants:

**/m/* > */m/*: PA **móld-* 'speak solemnly' > *māld-*; PA **stōrmŋ* *'orifice' > *istāman-* 'ear'; PA **tórmō-* 'nail' > *tarma-*; etc.

**/n/* > */n/*: PA **néwo-* 'new' > *nēwa-*; PA **gēnu-* 'knee' > *gēnu-*; PA **kónk-* 'hang' > *kānk-*; etc.

**/r/* > */r/*: PA **dóru-* 'wood' > *tāru-*; PA **prō* *'in front; forth' > *p(a)rā* 'forth'; PA **tórmō-* 'nail' > *tarma-*; etc.

**/l/* > */l/*: PA **lowkéye/o-* 'kindle' > *lukke-*; PA **mélid-* 'honey' > *milit-*; PA **móld-* 'speak solemnly' > *māld-*; etc.

For the development of new geminates see 6.1.6.1.1.3, 6.1.6.1.1.5, and 6.1.6.1.3.1.

6.1.4.1.2 The example *lumpasti-/luppašti-* 'chagrin, regret' (to Grk. λύπη, as per Pisani, 1966: 51, & Oettinger, 1986a: 10) shows that syllable-final */m/* is relatively weak like */n/* (see below). Note here also the evidence of the alternate form that the stop remains voiceless.

Rather different are the cases where *-mm-* appears to alternate with *-mp-* and *-p-* (NB: not *-pp-*!): *kurimma-/kurimpa-* 'left behind' > 'widow/orphan; dregs' (cf. also *kuripabh-* 'leave behind'); *buimma-/buimpa-* '?' (and *buinpa-*!); ^{NINDA}*lammuri(ya)-/lala(m)puri(ya)-*; probably *arimma-/GISarimpa-/aripa-* (pace Puhvel, 1984: 139). This alternation may thus reflect not a sound change, but varying attempts to render a difficult foreign phoneme.

One should probably compare the alternation of *m* and *p* in clusters. Examples in appellatives are ^{GIS}*halmuti-/halputi-* (Puhvel, 1991: 44, w/refs.) and ^{LU}*damšatalla-/tap(a)šatalla-* (Neu, 1980c: 83f), both certainly borrowings (cf. on the last Eichner, 1982b: 55). Examples in names are not hard to find:

*D*Nam/pšara, URUKalašm/pa. Given the adjacent *š*, one might be tempted to view these as cases of assimilation, but one also finds once URUŠapuša beside usual Šamuša, which suggests a wider phenomenon. Compare finally the divine name *Kumarbi* which appears in HLUvian as *Ku-ma_x+ra/i-ma-* (Melchert, 1988c: 37). However, *lahma-* is probably not a variant of *lahpa-* 'ivory' (see Tischler, 1980: 14).

6.1.4.1.3 As is well-known, /n/ is relatively unstable in Hittite before a following stop, /ts/, or /H/: see Sturtevant (1933: 69) and Kronasser (1956: 71 & 1966: 89ff) among others. Justeson and Stephens (1981) present new arguments for the linguistic reality of the deletion (contra Carter, 1977/78), but as the above references show, this was already the consensus. While one cannot in principle prove that a given individual case is not an error, I find misguided the occasional attempts to explain away examples in this manner (e.g. McMahon, 1991: 70⁶²), and we should abandon the practice of emending them (Starke, 1985 passim; Melchert, 1989a: 34f; correctly Eichner, 1970: 14¹¹). Whether the /n/ was deleted entirely or reflected in nasalization of the preceding vowel (or alternatively both) is beyond our means to determine. Stops in the forms without /n/ are often spelled simply, which might seem to be evidence that the stops had become voiced after the nasal (as in Lycian and Lydian: see 11.1.1.1 and 13.1.1). However, consistent *nuttariya-* beside *nuntariya-* 'hasty' contradicts this, and I take the other examples as cases of "simplified spellings" (cf. 1.2.6.1). It can hardly be accidental that most cases involve /a(n)t/ or /a(n)k/, where spelling the geminate stop would require the relatively complex signs *AT* or *AK*, while *nuttariya-* has the very easy *UT*. Cf. also the case with /-(m)p-/ in the preceding section. Contra Pedersen (1938: 184) the spelling of */-nt-/ as -*Vn-da/u-* is certainly no evidence for voicing of the stop.

In the above environment we find alternating forms with and without /n/. It is thus unlikely that the loss is regular before velar, pace Oettinger, 1979a: 137. I assume underlying /linktsi/ 'swears', /ninktsi/ 'gets drunk', etc. at all periods. Compare especially *ninzi* in 6.1.6.1.5 (3) for evidence that the nasal remains (so also Justeson and Stephens, 1981: 370²⁶).

The consistent loss (or assimilation) of the first *n* in *mānbanda* > *mābhan* 'as' is specially conditioned in a univerbation (cf. CLuv. *ābba* 'when, as' < **ēnh₂o*; 10.1.6.1.4,5).

For regular loss of */n/ before nasals and glides see 6.1.6.1.5 (8).

6.1.4.1.4 Alleged sporadic loss of word-final /r/ in Hittite is false: see 4.1.6.3.1 (4) with references. However, there remains evidence that the articulation of /r/ is fairly weak. We find with some frequency *pé-an* (read /pe_an/) for *peran* 'in front'. This suggests that *pu-u-ut* for *pūrut* 'mud' also shows a real deletion of intervocalic /r/: see Čop (1966-68: 56) for further putative examples. More frequent are examples for sporadic loss of /r/ between vowel and consonant: *še(r)tappila-*, *šeḫu(r)gani-yawant-*, *waggant-* lx for *wargant-*, *pappaššanta* lx for *papparš-*, *aršaššura-/aršaršura-*, *pašša-/parša-*, *e/išḫanu-/e/išḫarnu-*, *laḫḫuwannuzzi-* lx for *laḫḫ(wa)urnuzzi-*, *te(r)wartanna-*, plus further more questionable cases. Evidence for hypercorrective *r*-insertion remains weak, but is hard to completely ignore: lx *arimpa-* for *aimpa-* (Puhvel, 1984: 15); lx *ḫazkarari* for *ḫazkarai* (Puhvel, 1991: 281); lx *šarāwar* allegedly for *šāwar* 'resentment' (Kronasser, 1966: 68).

6.1.4.1.5 Syllabic Nasals and Liquids

(1) The regular result of PA **R* in Hittite is *aR*: see Sturtevant (1931a: 83ff); Sturtevant-Hahn (1951: 42); Kronasser (1956: 52f); Benveniste (1962: 70f); Eichner (1973: 76); Carruba (1976: 128); and Lehrman (1987: 13f), contra Szemerényi (1956). Examples: PA **sṛn-* 'disappear, withdraw' > *šamn-* (Oettinger, 1976d: 97f), **ṛdro-* 'blue' > **āmdara-* > *ānt(a)ra-* (Machek, 1949: 131f); PA **ṛsós* 'us' > *anzās*, PA **krd-* 'heart' > *kard-*, PA **pṛḫi-* 'broad' > *palḫi-*, **pṛṫhono-* 'shoulder' > *paltana-* (Hrozný, 1917: 35), etc. All the evidence cited by Sturtevant (1933: 70) for preserved [r] may be interpreted otherwise.

(2) Note the unexpected long vowel in *ānt(a)ra-*. This raises the possibility that **R* becomes pre-Hittite **oR*, which when accented regularly becomes **ōR*, whence *āR* (6.1.5.22). This would also account for *ār(a)šzi* 'flows', which is unlikely to continue **ērsti* (pace Kimball, 1983: 181; see 6.1.5.7): generalized zero-grade **ṛsti* > **ōrsti* > *ār(a)šzi*. Similarly, since short **ē* is raised to *i* before nasal plus non-coronal (6.1.5.9), *pānku-* 'all' cannot represent generalized **b(ḫ)ēng(ḫ)u-* (like *tēpu-* < **d(ḫ)ēb(ḫ)u-*). In a proterokinetic *u*-stem adjective the only other likely possibility is a generalized zero-grade from the weak stem but with fixed root accent: **bṛḡu-* > **bōngu-* > *pānku-* (cf. Sturtevant, 1931a: 85). Since accented syllabic sonorants are rare, it is difficult to test this rule further. Unfortunately, the only example of negative **ṛ-* is too poorly attested to confirm or deny the above proposal: **ṛ-my-ont-* 'immature' > *āmmiyant-* (but also *am-mi-* and *a-mi-!*). The two putative counterexamples known to me are

not probative: *kard-* 'heart' and *parn-* 'house'. Since the case endings of these nouns never show plene spellings, the zero-grade stem is probably secondarily accented: **křd-*, **přn-* (a preform **pěrn-*, as per Zucha, 1988: 184, is excluded by Luvian *parn-*; see 10.1.6.1.3.1,3). There are no attested plene spellings, but this may be due merely to the practice of writing these almost exclusively with *CVC* signs: *kar-*, *pār-*. As shown by hapax OH *ma-a-ar-ka-ab-bi* 'I cut up' beside normal *mar-kV-*, the consistent use of *CVC* signs does not preclude a long vowel.

The account by Kimball (1983: 770ff) of *paddān-* 'basket' and *uddān-* 'word' as resulting from "Sievers Law" is problematic. Hitt. *uttar/uddan-* 'word' cannot result from **-kt-* (see 6.1.6.1.2.2), so there is no evidence for a "Sievers Law" environment in this word. I suggest rather that the weak stem of these two words is derived from the endingless locative: **utēn* > **utan* (6.1.5.6). With addition of endings with initial vowel, the *-a-* was regularly lengthened in accented open syllable: **utāni* > *uddāni*. The more common *uddant* and *paddant* are analogical to *lamant* etc. (cf. Kimball's own alternative solution, 1986: 98f).

(3) The absence of any nasal in Hitt. *katta/kattan* 'down/below' (< **kmta* per Hrozný, 1915: 27 & 1917: 32⁶) and *katti-/kattan* 'with' (Bugge apud Knudtzon, 1902: 59!) has been the subject of much discussion. It seems impossible to separate the latter from PIE **kom*, and Greek *κατ-* requires a zero-grade **kmti-*. The idea that syllabic **m* regularly loses its nasalization before another consonant is contradicted by *āntara-* above (the other examples cited by Kronasser, 1956: 53 are false). That the scribes use *KAT* as shorthand for [kpt] or the like (Pedersen, 1933: 181) seems unlikely, given that **kán-ta* would have been scarcely more difficult.

If one accepts the derivation of *kappuwe/a-* 'count' < **km+puh₂ye/o-* (after Machek, 1957: 92, & Čop, 1966–68: 61), one could suppose a regular loss of nasalization in unaccented (non-final) **NC*. The preserved *-n-* in third plurals in *-anzi* < **-nti* could easily be analogical. Compare the situation in Lydian (14.1.4.2). That *katta* as a preverb was often unaccented does not seem overly ad hoc.

(4) As per 3.1 (6), **wR* between consonants had already become **uR* in PA: Hittite examples include PA **Hurgil-* 'twisting' > *hurkil-* 'sin, perversion' and PA **h₂ulne-* > **Hulle-* > *hulle-*. As per Eichner (1973: 73), **K^wRC* also results in Luvo-Hittite *KuRC*: e.g. PA **k^wš-* 'scratch, incise' > *gul(aš)š-*, with Eichner (1974: 67f); less likely **g^wš-* (Carruba, 1966a: 36). The situation at word-boundary is more

complicated. Schindler (1975a: 8, revising Eichner, 1973: 73ff) claimed that word-boundary acts just like consonant (accepted by Melchert, 1984b: 12, contra Oettinger, 1979a: 97²⁵ & passim; Zucha, 1988: 133). All clear Hittite examples support this: PA **en-dur* 'inside' > *andurz(a)* (w/ 2ary "ablative" ending), **urhi-* > PA **urri-* 'help' > *urr-*, PA **urgi-* > *urki-* 'track, trail'.

However, by the attractive derivation of Luvian *walwa/i-* and Lydian *walwe-* 'lion' from PIE **wl̥kʷo-* 'wolf' by Lehrman (1978&1987), Luvian shows *wal-* for initial PA **wl̥-*. We could assume simply different treatments in the two languages. However, recall that syllabification of sonorants is probably still a living rule of PA (3.3.2). It is thus possible that at word-boundary there were sandhi-variants *-V##wRC-* and *-C##uRC-*, which are reflected in the differing Hittite and Luvian outcomes above. Hittite would also show an example of *wal-* < PA **wl̥-* if one accepts Lehrman's further adduction of Hitt. *walkuwa-* 'monstrosity' < **wl̥kʷó-* 'dangerous, nefarious', but the derivation is questionable semantically and morphologically. One should perhaps compare rather the equally obscure TochB *walkwe-*, which cannot reflect **wl̥kʷo-* (Ringe, 1990: 404).

For developments of syllabic sonorants in final syllables see 6.1.6.3.1 (7).

6.1.4.2 Glides

6.1.4.2.1 The regular result of PA **/w/* is */w/*. Examples: PA **wéwoḱ-* 'demand' > *wewakk-*; PA **néwo-* 'new' > *nēwa-*; PA **twék(o)-* 'body; limb' > *tuekka-*; etc. There are a few conditioned changes affecting **/w/*:

(1) **/w/* is dissimilated to **/m/* next **/u/*. This change is well-established for Hittite (Kammenhuber, 1969: 137, & Melchert, 1984b: 22ff). That the substitution is merely graphic (Kronasser, 1966: 81ff) is not remotely credible. See already Sturtevant (1929a et aliter), but the projection of this change back to "Indo-Hittite" is unjustified. Examples: pre-Hitt. *u-* stem anim. acc. pl. **-awuš* > *-amuš*; 1st pl. **-nu-wen(i)* > *-numen(i)*, **duwēni* 'we take' > *dumēni*. Evidence for this rule outside Hittite is weak to non-existent. The Luvian examples cited in Melchert (1984b: 27⁵⁸) are worthless. Meriggi (1980: 336) has pointed out apparent 1st pl. *nudummeni* beside 2nd sg. *nuduši* in CLuvian context (see Starke, 1985: 411), but the 1st plural ending has a Hittite form, not that expected for CLuvian (***numni* or ***numanni* < **numēni*, like *-unni/-wanni* <

*-wēnā). Thus, even if the verbal stem is Luvian, it is unlikely that the ending shows a genuine Luvian form.

While there is no absolutely compelling evidence against the dissimilation being PA, there are several highly suggestive examples. If Hitt. 2nd pl. med. -*dduma* reflects a PA *-*tuwV* < *-*dh₂uwVr* with a "Sievers-Lindeman" development (Melchert, 1984b: 26), then it is most economical to take CLuv. *aztūwari* /atstūwari/ as indirectly showing the same preform. It seems ad hoc to dismiss the scriptio plena as aberrant (Melchert, 1984b: 26⁵⁴), or to assume that Luvian independently turned a PA variant *-*twVr* into disyllabic *-*tuwVr*. Note further that the change *-*awus* > -*amūš* in the animate plural of *u*-stem adjectives must be pre-Hittite, because the change of *-*ewrās* > *-*awus* is specific to Hittite (3.1.6). Finally, even if Luvian *tūwa*- = Lyc. *tuwe*- 'place, put' is not directly built on first plural **duwēni* (> Hitt. *dumēni* 'take'), as per Oettinger (1979a: 483), it seems unlikely that the processes which create the sequences **duw*- are totally unrelated. I now therefore attribute the dissimilation rule to pre-Hittite. As per 10.1.4.1, there is no general loss of intervocalic */y/ in Luvian. We may thus assume that such a loss of */y/ in pre-Hittite is after the */w/ > /m/ dissimilation rule, accounting for most attested sequences of /uwV/ in Hittite, as per Melchert (1984b: 28ff). With Eichner (1978: 160⁶⁹ & 1984: 205) we may add to this group Hitt. *tūwa* 'far' and *tūwaz* 'from afar' < PA **dúHyo*- < **dúh₂yo*-. The tortured account of these words in Melchert (1984b: 30) may be abandoned. As discussed in 3.1 (5), the absence of dissimilation in the few remaining instances of Hittite /uwV/ do not justify assuming the retention of intervocalic */h₁/ and */h₃/ into pre-Hittite.

The rule by which a /w/ dissimilates to /m/ adjacent to /u/ is maintained as a synchronic rule at morpheme boundary: see 5.3 (8) with examples.

Hiatuses of [-V_u-] and [-u_V-] created by loss of intervocalic */y/ (see below) are filled by a new /w/: pre-Hitt. **kapu-yé/ó*- 'count' > *kappuwe/a*-; pre-Hitt. **pāy-un* 'I went' > *pāwun* (*pa-a-ú/u-un*).

(2) PA */w/ is regularly lost in pre-Hittite between a dental stop and following */o(:)/: PA **edwól*+ 'evil' > *idālu*- (Watkins, 1982a: 261); PA **dwóyom* 'twice; second' > *dān* (Cowgill apud Eichner, 1992: 56; Puhvel, 1978: 99). For this very restricted formulation see Melchert (1984b: 51f) vs. the wider claim of Čop (1956d: 32ff) and Carruba (1976: 141).

(3) There are also at least two examples of a sporadic loss of /w/ between /n/ and vowel: *unašba-* lx for usual *un(u)wašba-* 'ornament' and *burna(i)-* beside *burn(u)wa(i)-* 'sprinkle'. The status of this change remains unclear.

(4) I take the hapax *idālaz* for *idālawaz* 'evil' as an error, not as evidence for the regular loss of */w/ between */o/ vowels (thus Cop, 1969: 192ff) nor of sporadic loss in *-awa-* (Kronasser, 1966: 341). The other alleged examples of the loss are improbable, and the second *a* of *idālawaz* probably does not reflect */o/: see 6.1.5.8.

6.1.4.2.2 PA */y/ is preserved in Hittite postconsonantly, including cases of assibilation of */t/ and */d/ (contra Puhvel, 1974: 294f). Examples: PA loc. suff. *[-tsyo-] > OH *-zziya-* (the NH form *-zzi-* is probably due to syncope; Melchert, 1984b: 58f); PA **dyēu-* 'god' > *šiu-*; PA **tyé-* 'step' > *t(i)ye-* (cf. 4.1.3.2.2,3); etc.

As per 4.1.4 (2) above, I provisionally attribute the loss of initial */y/ before */e(:)/ to PA. PA initial */y/ before other vowels remains in Hittite: e.g. PA **yugóm* 'yoke' > *iukan*; PA **yónto* 'they go' > *(i)yanta*. The expected singular form **ētta* < PA **ēto* is indirectly attested in the analogical pres. 3rd pl. *entari*. More frequently, however, the *ya-* form is spread to the singular (OH *yatta* spelled *ya-at-ta!*), or the initial *y-* is restored after the plural, whence OH *iētta* (and in turn 3rd plural *iēnta*): see Melchert (1984b: 14ff) contra Puhvel (1984: 335, et al.).

If we attribute the loss of initial */y/ before */e/ to PA, the development of Hitt. *iēzzi/(i)yanzi* 'make, do' and OH *yanzi* 'they go' is rather different from that sketched in Melchert (1984b: 19f), where I assumed that the change is pre-Hittite, after the development of */ent/ to */ant/. A PA **y-ēnti* 'they go' should have undergone the change and become **ēnti*. We may suppose, however, that the initial **y-* was maintained/restored by analogy with the **i-* of the 1st plural (cf. Pal. *iwini*), whence OH *yanzi*. As for 'make', the regular reflex of the PA strong stem **æ-* (< **yéh₁-*) is directly attested in Hitt. *ēt* 'made' and indirectly in *ēnzi* 'they make'. The unattested **ēzzi* 'makes' is assured. The inherited plural **ih₁-ēnti* would have lost the **h₁* at some point in PA, leading to **i₁ēnti* and then **yénti*. We have no independent means of dating the loss of intervocalic **h₁* and initial */y/ before */e/. At present we may assume that the latter occurs first and that by the time **ih₁ēnti* becomes **yénti* the new **y-* remains. From this is derived regularly OH *yanzi* (spelled *ya-an-zi*) and analogically singular *(i)yazzi* and *iēzzi* as for 'go' above. This entire scenario would be much simpler, of course, if one could assume third plurals in **-onti*, where the **y/* would never have been lost. However, I believe the weight of

evidence suggests that Hittite third plurals to inherited athematic verbs are from **-énti* see 6.1.5.6 below. All the examples for an alleged change **y* > **dy* > *z*, as per Josephson (1979: 99ff), are false.

Intervocalic **y/* is regularly lost in Hittite: see Melchert (1984b: 31ff), with reference to Oettinger (1979a: 338). See also Eichner (1979: 54³⁵), but his contraction rules (ibid. notes 33-37) are false, being based on a non-existent umlaut of **ē* to *i*: cf. 6.1.5.12. Examples: PA **wosēye/o-* 'clothe' > *wašše/a-* (Melchert, 1984b: 31f, after Eichner, 1969: 31ff); pre-Hitt. **kapuyē/ō-* 'count' > *kappuwe/a-* (Oettinger, 1979a: 33); PA **dwoyom* 'twice' > *dān* (Cowgill apud Eichner, 1992: 56, & Puhvel, 1978: 99), etc.

PA factitive verbs in **-āHyē/o-* appear in Hittite as stems in *-āi-/ā-*, while PA **(s)taH-yē/ō-* 'steal' gives *tāye/a-*. The account of this difference given in Melchert (1984b: 40), following Watkins (1976: 371f), cannot be correct, because Palaic evidence requires that the factitives also have **/-Hy-/* in PA (8.1.3.4). Since not only Palaic but also Lydian requires that the denominatives have a retracted accent **/-āHyē/o-/* (Melchert, 1992b: 50f), I now attribute the irregular preservation of the **y/* in *tāye/a-* 'steal' to its unique shape: a disyllabic stem with accent on the vowel following the **y/*: **(s)taHyē/ō-*. I do not find credible the account of Kimball (1983: 531) via a preform **teh₂i-ye/o-*. The alternate preform **(s)toh₂yēye/o-* of Jasanoff (1978: 92) would have led to ***tāizzi/tānzi* (cf. 6.1.6.2.5,3).

Contra Melchert (1984b: 45& 164) I no longer believe that Luvian shares the loss of intervocalic **y/* with Hittite (cf. 10.1.4.1).

Secondary sequences of */e(:)/* plus vowel develop a hiatus-filling */y/*: OH *nēa-* 'turn' > *nēya-*, secondary weak stem *udnē-* > *udnēy-*, etc. (Kronasser, 1956: 51; Melchert, 1984b: 46f).

6.1.5 Vowels

The development of PA vowels in Hittite is relatively complex. In terms of quality, Hittite shares with Luvian and Palaic the merger of **/o(:)/* with */a(:)/*, but differences in detail suggest that this is a parallel rather than shared change. Hittite like Palaic merges PA **/æ:/* with */e:/*, against the western languages. Hittite appears to preserve PA close long **/e:/* distinct from **/e:/* until late Neo-Hittite, where the former is raised to */i:/*. The vowels **/e/*, **/e:/* and **/e:/* are

all raised to /i(:)/ in pre-Hittite under a variety of special conditions. The contrary change of /i/ to /e/ is attested only as a limited and problematic phenomenon in Neo-Hittite. PA short */e/ is also conditionally lowered to /a/.

Hittite shares with Palaic and Luvian the lengthening of all accented short vowels in open syllables (Eichner, 1980: 144⁶⁵). I will argue below that unlike them it lengthens only accented short */e/ and */o/ in closed syllables (cf. already Eichner, 1986a: 13, & 1986b: 206¹⁰).

6.1.5.1 The PA high vowels are essentially maintained in Hittite. Examples:

*/i/ > /i:/ PA **k^wi*- 'who, which' > *kui*-; **mímn*- > PA **mímm*- 'refuse' > *mimm(a)*-; PA **mélid*- 'honey' > *militt*-; etc.

*/i:/ > /i:/ PA **tī+* 'you' > *zīg*; perh. PA coll. pl. **-ī* > *-ī* in *mekkī* 'a lot'; **-ih₂* > PA **-ī* > *-ī* in *parkūi*- 'pure' etc.

*/u/ > /u:/ PA **yugóm* 'yoke' > *iukan*; PA **súp*- 'sacralized' > *suppi*-; PA **tú+* 'you' (acc.) > *tug*; etc.

*/u:/ > /u:/ PA **ūg* 'I' > *ūg*; PA coll. pl. **-ū* > *-ū* in *āššū* 'goods'.

6.1.5.2 The inherited short vowels are phonetically lengthened in accented open syllables, but since this synchronic rule remains (5.3.1-3), I view these as still underlyingly short. Examples: PA **dīwot*- 'day' > *šīwatt*-; (virtual) PA **gīn(e)u*- 'break open' > *kīnu*-; prob. PA loc. sg. **-ī* > dat.-loc. *-ī* (e.g. *iššī*); *PA **kúso*- 'bride' > *kūša*-; PA **nú-ho* 'yet' > *nūwa*; prob. PA gen. sg. **kúnos* 'dog' > *kūnaš* 'dog-man'. In the case of PA **īdi* 'go!' > *īt*, apocope has secondarily made the long vowel underlyingly long (whence also analogical inv. 2nd pl. *itten*, contra Hrozný, 1917: 42).

The lack of lengthening in *nu* (likewise *ta* < **to*) is noteworthy. The Hittite treatment, which suggests something less than full stress, contrasts with that in CLuvian: clause-initial *pā* < **pó* vs. enclitic *-pa* < **-pe*.

6.1.5.3 Contra Kimball (1983: 481ff), there is solid, if necessarily limited, evidence that PA short */i/ and */u/ do not lengthen in accented closed syllables. For */i/ note that verbs with *i*-reduplication such as *mimma*- 'refuse' never show

plene spellings. Accent on the *i*-prefix is assured by the typical zero-grade of the root (see Melchert, 1984b: 98ff). The relative-interrogative stem *kui-* is also never spelled plene, including numerous sentence-initial cases.

The best and most important example for **/u/* is *tug* 'you' (dat.-acc.). The consistent lack of plene (200+ exx.) vs. *ūg* 'I' shows that the former continues an inherited acc. singular **tū* with short **/u/* (already Bugge apud Knudtzon, 1902: 61, & Schmidt, 1978: 120ff, contra Melchert, 1983a: 161), while the latter indirectly reflects a nom. sg. **tū* with long vowel, as generally assumed. Since Palaic preserves word-final stops (8.1.6.4.1.1), the secondary *-g* of Hitt. *tug* vs. Palaic *tū* must be a pre-Hittite addition. In turn, since it is the *-g* which makes the syllable closed, Hittite must have inherited **tū* with short vowel (*ūg* shows that a long vowel would not have been shortened in an accented closed syllable). This chronology means that at least for **/u/* the rule lengthening a short vowel in an accented open syllable must be post-PA.

Apparent counterexamples such as *mi-(i)-ú-uš/un* 'soft, gentle' < **mih₁u-* can and should be read as [mi:wu-] with a hiatus-filling /w/ (cf. 6.1.4.2.1.1 end). Likewise probably *hēu-* 'rain' < **h₂éyh₁su-* (= [He:wu-] with hiatus-filling [w] instead of [y]) and also *pa-a-ú/u-un* /pa:wun/ 'I went', despite the fact that the spelling is NH, and NH *pár-ga-u-uš* [pargawus] with analogical [pargaw-] from the rest of the paradigm, replacing OH [pargamus] with dissimilation. The aberrant NH spelling *e-ep-pu-u-un* 'I took' remains unexplained.

The only genuine counterexamples involve /-Cu:RC-/. This includes inherited sequences, such as *šurka/i-* 'root' (= Lat. *surcus*) and *kūrka-* 'foal' (cf. Grk. κύρπος with Forssman, 1980: 72), which seem to show "wrong" syllabification in PIE (**ur* instead of **w₁r*): cf. Zucha (1988: 49) w/refs. to Mayrhofer (1986a: 160ff). However, PA **w₁R(C)* also appears as Hitt. *ūrC*: PA **w₁gi-* 'track, trail' > *ūrki-*; **w₁h₁i-* > **w₁ri-* 'help' > *ūrri-* (cf. Eichner, 1973: 74, on **d₁w₁rh₁ye-* > Hitt. *tūriye-* 'harness'); and *išbiul-* 'treaty' < pre-Hittite **isHyul* with generalized **-ul* for **-w₁l* (Zucha, 1988: 88). To further confuse the issue, in CLuvian even unaccented **-Cw₁r* seems to yield a long vowel: **péh₁w₁r* 'fire' > *pāhūr*! This suggests that at some point in the prehistory of these languages all **uR* became **ūR*. Hittite then shortened the unaccented cases, as it does other cases of PA unaccented long **ū* (cf. 6.1.5.26). Why **/u/* should lengthen before **/r/* and **/l/* in the first place is quite unclear.

On the long /u:/ of *kūn/apūn* and *kūs/apūs* see 6.1.6.3.1 (7).

6.1.5.4 As discussed in Melchert (1984b: 153ff), there are several indisputable examples of the lowering of /i/ to /e/ in NH. Examples: MH *išša-* 'do' (iter.) > *ēšša-*, MH *mimma-* 'refuse' > NH *memma-* (post-Mursili), *tiṭṭa-* 'thunder' > *tetṭa-*, etc. All examples known to me show a sequence /-iCCa-/, which makes the change appear to be a kind of "a-umlaut" in closed syllables. However, counterexamples like *kiššan* 'thus' make the status of this development unclear.

6.1.5.5 The development of PA short */e/ in Hittite is very complicated and in certain respects controversial. Due to a series of conditioned changes, inherited short */e/ is virtually eliminated at the phonetic level.

One fact which is clear is that accented short */e/, when preserved as [e], is lengthened in both open and closed syllables (respectively Eichner, 1980: 144⁶⁵, and Kimball, 1983: 301ff). The point was essentially demonstrated by Hart (1980 & 1983b: 104), who was non-committal about the phonetic realization. As per 5.3 (3) & (4) above, I posit both these lengthenings as synchronic rules of Hittite and thus assume that the */e/ remains underlyingly short. Examples: (open syll.) PA **pēdom* 'place' > *pēdan*; PA **gēnu-* 'knee' > *gēnu-*; etc.; (closed syll.) PA **wēs-* 'wear' > *wēss-*; PA **mēk(i)-* 'much' > *mēk(ki)-*; etc.

The supposed exceptions claimed by Kimball (1983: 683ff&811ff) are implausible and unnecessary, since the lack of plene spellings in closed syllables may easily be graphically motivated (1.2.6.5.2). Shortening before /ts/ is contradicted by the exceptions to the exceptions which she is forced to assume (1983: 659). A further counterexample is *mēk(ki)-* 'much', pace Kimball (1983: 815).

The sequence *-ēb-* of *pēbute-* 'carry off' is problematic. Contra Eichner (1973: 78) and Oettinger (1979a: 391 etc.), HLuv. *pa-si-ya-* = Hitt. *peššiyē-* 'throw away' shows that the preverb *pē* reflects **pē*, not **pōy* or **pē*. However, we also know that the lengthening of **ē* in open syllable is post-PA (CLuv. *parran* = Hitt. *pēran* < **pērem*). Thus the **ē* of *pēbute-* would not have been long early enough to condition "lenition" of the following **/h₂/*, a PA change (4.1.3.2.1,1). For the preverb **bu-* as continuing **h₂(e)u-* see Eichner (1973: 55&86, but with wrong meaning) contra Dunkel (1988a: 117). I see no alternative but to suppose that *pēbute-* is a pre-Hittite creation adding already lengthened orthotonic *pē* to a stem **bute-* /Hude-/. The *ē* of *pēbute-* is retained, because this is the shape of the preverb everywhere else in Hittite. Since **-ēbb-* /-e:H-/ does

not exist in pre-Hittite (*-ēH- > *-zh- in PA, 4.1.3.2.1,1), the sequence *pēbhute- is also reshaped to pēbute- (cf. *iebut* beside *(i)yabbut*).

The preverb *h₂(e)u- is a variant of *h₂o- 'to, zu-' (see Dunkel, 1982/83: 199 & 1988a: 107, for this pattern). For *h₂o- 'to, zu-' see Hitt. *baiduēr* 'branches' < *h₂o-zd-wēr, Grk. ὀκέλλω 'drive to land', and so on (for the shape *h₂o see Dunkel, 1982/83: 198 & 1988b: 62, and Melchert, 1988b: 224¹⁷ & 1992c: 46). This is also the source of *-h₂o/u 'also, and' (Dunkel, 1988a: 107f & 1988b: 62): cf. English 'to' and 'too', German *da-zu* 'in addition'. For the sense of Hitt. *chu* 'come!' < *eī-h₂(e)u 'go to' cf. Skt. *ā+gam-* 'come'.

I now believe that the oppositional pair *uwate-/pebute-* 'bring/carry off' (persons!) is a pre-Hittite creation from two historically unrelated verbs. For *uwate/a-* the best analysis is that of Pedersen (1938: 131) and Lehrman (1985: 258): *au+wade/a- < *wod^héye/o- 'lead'. This explains the restriction to use with persons as object and eliminates the need to appeal to a quite unattested preverb *ō in Anatolian. However, Lehrman's derivation of *pēbute/a-* from the same source (1985: 170) is not convincing: *pe+wod^héye/o- > *pe_ude/o- with syncope and hiatus(!) and then *pēbute/a-* with hiatus-filling -b-. The last two steps run entirely counter to normal Hittite treatment of secondary vowel sequences (either contraction or insertion of glides). As per Catsanicos (1983: 88), *tameumma-* 'of another' provides a direct counterexample for the sequence e_u. We must assume rather *pe+Hude/a- 'hin-schaffen', with *Hu-de/a- 'zu-stellen, deliver, produce' < *h₂(e)u-d^heh₁-. The semantics of *u-wode/a- 'lead here' (people) were carried over to *pe-hude/a- 'remove', whose inflection had accidentally come to match the former.

6.1.5.6. The fate of accented short */e/ in closed syllable before sonorant is perhaps the most vexing problem in Hittite vocalism, and opinions vary widely. Oettinger (1979a: 184 & passim) assumes a general rule *ēRC > āRC, as have many others. Kimball (1983: 342ff) assumes preservation and lengthening of *ē in this environment. I believe that the developments are considerably more complex (cf. Kronasser, 1966: 25).

As per 4.1.6.2.1 (1) above, I believe the sequence */ēRH/ becomes */aRH/. Since this rule must precede the assimilation of */VRh_xV/ to */VRRV/, I tentatively attribute both to PA.

I am convinced that PA short */eN/ becomes /aN/ before a dental and in final position, i.e. when the nasal is coronal (thus already Pedersen, 1938: 166). The equation Hitt. *anda* = OLat. *endo* 'in(to)' < *ēndo is in my view indisputable (already Hrozný, 1915: 28 & 1917: 174). Accent on the first syllable is assured by CLuv. *ānta* and the lack of a lengthened

vowel in the second syllable of the Hittite. Contra Kimball (1983: 767f & 1986: 94) Lyc. *n̄te* is perfectly regular from the same source, with *n̄t-* < **nd* (12.1.1.2) and syncope due to frequent proclisis (see 12.1.6.3.1,2). PA pres. 3rd pl. **-énti* in root presents also becomes regularly *-anzi* (*akuwanzi*, *appanzi*, *ašanzi*, *adanzi*, etc.). The massive analogy required by Kimball (1983: 749ff) to explain these from **-n̄ti* is neither credible nor necessary. The very few apparent counterexamples to the above change may easily be due to paradigmatic analogy: 3rd sg. *kuēnzi/kuēnta* after 1st sg. *kuemi/kuenun*, and so forth (likewise *ša/emenzi/ta*, *uenzi/ta*). Third plurals in *-enzi* (only < **-yēnti*!) are analogical to third singulars in *-(y)ezzi*: see Oettinger (1979a: 133) and Melchert (1984b: 42).

This change includes PA **/ens/* > */ass/*. Examples: PA **dēnsu-* 'massive, mighty' > Hitt. *daššu-* (NB: **d̄nsu-* would lead to ***danzu-*; 6.1.3.1). As per Kronasser (1956: 167), *kuēši* 'you kill' for **kuašši* is analogical to *kuemi*.

Note that the */a/* < **eN/* is not lengthened in Hittite, contrary to Palaic (8.1.5.4). In addition to *anda* (100+ exx. without plene), the pres. 3rd plurals cited either never show plene (*akuwanzi*, *ašanzi*) or extremely rarely (*appānzi* 2x, *atānzi* 1x) and then never in OH manuscripts. The three exceptions are real or false analogies to the participle in *-ant-*, where **-ōnt-* seems to have been generalized for all verb classes (6.1.5.22). Likewise in possessive adjectives in *-want-* < **-wēnt-* my collection shows 340+ examples without scriptio plene vs. the hapax *kišduwānduš* in KUB XIV 1 Ro 9, a ms. which also contains the quite aberrant *ākkānza* 'dead', where both plene vowels are unparalleled! Real lengthening is thus highly unlikely, while the absence of length here is expected, contra Zucha (1988: 133).

Examples in final position: PA loc. sg. **-wén* > Hitt. "supine" *-wan* (accented at least originally!); prob. PA **pér-em* > **pér-en* > *pēran* 'in front' and likewise **ópem* > *āppan* (Melchert, revising Dunkel, 1990a: 168³¹); also **-kem* > **-ken* > *-kan* (in the collocation *nu=kan*; Dunkel, 1990b: 115); prob. particle *-an* (which typically reinforces the idea of 'in(to)') < **-en*, contra Dunkel (1990b: 126ff). Hitt. *dagān* 'on/to the ground' need not reflect regular PIE endingless locative **d̄ḡhém* (Schindler, 1967b: 201), but may be rather **d̄ḡhóm* (Neu, 1980b: 87). Such an analogical allomorph is also required by Tocharian (Schindler, 1967b: 197).

Contra Melchert (1984b: 103) I now attribute the */i/* of Hitt. *innarā-* 'strong, violent' to lack of accent (6.1.5.10 below).

This permits the conditioning for */eNC/ to /aNC/ to be generalized to any dental (coronal) vs. */eN/ to /iN/ before non-coronal (6.1.5.9).

6.1.5.7 A paucity of examples whose morphological history we control makes the regular outcome of */é/ before liquid plus consonant very hard to determine. The following version of events should be taken as very provisional! One should compare the very different views of Kimball (1983: 708ff&778ff), following Kurylowicz (1958: 228).

If we attribute the change of */é/ to /a/ in *wélH- 'strike' > walb- to influence of the following */H/ already in PA (4.1.6.2.1.1), then there is no positive evidence for a change of */é/ to /a/ before */lC/. Note crucially contra Kimball (1983: 793) that walb- cannot continue a zero-grade *wH-, which would give **ulb- (6.1.4.1.5). Furthermore, while a lengthened grade cannot be absolutely excluded in the following examples, I believe it is fair to say that we would a priori expect ordinary e-grade: PA *g^wél-won- 'holding liquid' > kuélwan- 'basin'; PA *wél-s-u- or *wél-nu- 'meadow' > wéllu- (Puhvel, 1969: 66); PA *Hwélpi- 'young, fresh' > Hitt. *huélpi-*; PA *él-tī (i.e. *el-tih₁) 'scales' (dual) > Hitt. *elzi-* (Puhvel, 1984: 270); PA *wélkw+ > welkuwa(n)- 'blade (of grass)' (Eichner, 1975b: 158⁴). In the absence of any contrary evidence, I thus assume PA */élC/ > Hitt. /élC/ (by regular rule [é:lC]). Note, however, that the athematic verbs *salk-* 'knead' and *walk-* '?' and *istalg(i)ye-* 'flatten, smoothe' could(!) continue PIE e-grade. In that case one would need to assume that */élC.C/ does become Hittite /alCC/. For this special condition compare the next paragraph.

Despite its late attestation, the otherwise inexplicable vocalism of *melteštar* at Meskene (Laroche apud Güterbock & Hoffner, 1980ff: 253) may also reflect original weak stem *mēld(h)-, whereas usual *mālt-* is analogical to other *hi-*verbs in sonorant-stop (*šipānd-/šipand-*, etc.).

As for */érC/, there is a considerable body of evidence to suggest a regular change to /arC/ (thus Sturtevant-Hahn, 1951: 30, et aliter; Čop, 1966-68: 44ff). The examples are of two types. First, there are athematic verbs ending in -arC: PA *kērs- > karš-; PA *pērs- 'flee' and *bērs- 'break' > parš-; PA *tērgw- (PIE *térkw-) > tarku-/taruk-; surely also PA *wērP- 'rub, wash' > warp-. Note that as athematic *mi-*verbs, all of these strong stems would have been followed by another consonant in most forms. As per Oettinger (1979a: 345), *karp(i)ye-* 'lift' is older than athematic *karp-*. The Lydian cognate (*fa-*)*korfid* argues for accent on the root and

thus *e*-grade: **kérye-* (Melchert, 1992b: 47f). If **y* is counted as a consonant, note again the sequence **érC.C.* I continue to find Kimball's assumption (1983: 708ff) of morphological replacement of **éRC* by **RC* in these cases unlikely (for a possible real case of such replacement see 6.1.4.1.5). Second, we have a group of cases with only one consonant following the /r/ but with Hittite *a*-vocalism in the next syllable: PA **ér-* 'stand' > *ar-*; PA **érg-* 'mount' > *arg-*. Lack of scriptio plena in the next syllable and loss of final **-r* argue that both of these middles are barytone: **értor* > *arta* (contra implausible **h₁rto* by Kimball, 1983: 679), **érgor* > *arga* (cf. 4.1.6.3.1,4). I would add **ensternē* > *istarna* (6.1.6.3.2.1,2). Finally, there is *arkanzi* 'they cut' < **érknti* (NB no lengthening!) vs. *ārki* 'cuts' < **órkei* (root etym. per Eichner, 1982a: 23).

Against the above evidence for **/érC/* > */arC/* stand *ērman* 'sickness', athematic *kuēr-* 'cut' and *mēr-* 'vanish, perish', and *išperten* 'kick flat!'. As for *ērman*, I must explicitly withdraw the gen. sg. **ērmaš* cited in Melchert (1984b: 87), a ghost-word apparently of my invention which is to be stricken! Without this evidence for a "proterokinetic" inflection, an "acrostatic" **érmn/*érmn-* with trivial generalization of the strong stem is quite possible for Hitt. *ērman* (thus Oettinger, 1979a: 354; cf. Zucha, 1988: 149). The original weak stem **érmn-* would be preserved in the denominative *armaniye-* 'be sick'. While *Irman-* could be merely a spelling for */er:man/* (Zucha), it could also reflect a renewed *e*-grade which becomes *i* pretonically (6.1.5.10). Lengthened grade for *kuēr-* seems impossible to justify, given the comparative evidence: Skt. root aor. *ákar* and OLuv. *k(u)war-/kur-* (Meriggi, 1957b: 207⁴⁰; Starke, 1990: 458). A root aorist with ordinary *e*-grade also seems most likely for **mer-* (Oettinger, 1979a: 104ff). The weak stem *išper-* also reflects *e*-grade: for the type see Jasanoff (1979). However, the last example has a front vowel in the following syllable. The present active singular of *kuēr-* and *mer-* is likewise *Cer-Ōi*, and the preterite third plurals are *kuerer* and *merer*. The preterite singular *kuerun*, **kuers*, *kuert(a)* could be analogical. I therefore tentatively conclude that **/érC/* becomes */arC/* only before a back vowel in the following syllable (a kind of umlaut) or when another consonant follows (**/érC.C/* > */arC.C/*). In the remaining case (**/érC_ie/i*), the **/é/* remains and undergoes the regular synchronic lengthening under the accent.

6.1.5.8 Following a suggestion of W. Cowgill (pers. comm.), I now propose that PA **/e/* also becomes */a/* in posttonic open syllables (revising Melchert, 1984b: 104ff). This accounts for

the pres. 1st and 2nd plural endings *-wani* and *-tani*. It cannot be accidental that we never find these endings with an unambiguous weak form of the stem where accent on the ending would be expected (**ašwani*, **aptani*): see already Rosenkranz (1978: 80). In many cases we have independent reasons to assume accent on the stem: *aumani* (MH) with 2ary strong stem vs. *umeni* (OH)/*umēni* (OH/NH ms.) (NH *aumēni* is not probative); *pāiwani* (OH) and *paittani* (OH/NH ms.) (accent on preverb); *dašuwah(u)wani* (MH), *ištamašuwani* (MH) & *ištamaštani* (OH/NH ms.) (denom.); *walḥ(u)wani* (MH) & *walḥtani* (MH), *ḥuek(u)wani* (Oettinger, 1979a: 92), *uwatewani* (Oettinger, 1979a: 107; MH), *pēḥutettani* (OH/MH ms.) and *naiwani/naištani* (MH) (generalized strong stem). Based on these clear examples we may likewise assume accent on the stem in cases where strong and weak stem have merged due to phonological changes: *ḥarwani* (OH), *parš(u)wani* (OH), *šipanduwani* (MH), *tekkušnumani* (MH), *mališkunuttani* (MH). In view of the above evidence I take *e-du-wa-a-ni* (OH/NH ms.) to be an imperfect spelling of the regular reflex /*édwani*/ of the expected original acrostatic weak stem **éd-weni* (vs. already OH *adweni* analogical after ordinary root presents). For the false long vowel of the ending in a NH copy cf. *pāiwāni* and *paittāni* vs. correct OH *paiwani* above. Correct *eduwani* is attested at KBo XV 26,7 (MH/NH ms) with *ekuwani* 'we drink', which could be analogical to *eduwani*, but could also be a genuine reflex of an acrostatic plural **(h₁)ék^wweni* (cf. TochA *yok* and Oettinger, 1979a: 107). We would expect to find these endings in iteratives in **-ské/ó-*, and *akkuškēwani* (OH) with its lengthened [e:] shows unambiguous accent on the stem. Cf. also *akkuškettani* (*-ke-et-*) and *az(zi)ka/ittani* (OH/NH ms.), *linkiške(u)wani* (MH/NH ms.), and *z(ik)kewani* (MH). The derivation of *-tani* from **-th₂enei* (cf. Skt. *-thana*) per Eichner (1973: 78 & 1975a: 79) explains neither *-wani* nor more importantly the distributional restriction just presented. The same applies to a borrowing from Luvian (Carruba, 1966b), which is also falsified by the single *-n-*: cf. real CLuv. 1st pers. pl. *-unni* < **-wānni* < **-wēni* (10.1.4).

This rule also permits us to explain the oblique stem of *u*-stem adjectives as regular from pre-Hittite **-ew-* (so already Hrozný, 1917: 9), with retracted accent due to generalization of full-grade of the root: **dēbu-/dbēw- --> *dēbu-/dēbew- > tēpu-/tēpaw-* (cf. my ill-advised attempt to motivate *o*-grade of the suffix in Melchert, 1984b: 45, followed by Zucha, 1988: 273). For *i*-stem adjectives see 6.1.6.2.5 (2). Note also nt. nom.-acc. sg. **sówedrom* > PA **sówedVr* (4.1.6.3.1,6) > *sāwatar* vs. nom.-acc. pl. **sówedrā* > *sāwitra* (6.1.5.10).

Contra Kimball (1983: 445ff) **ēw* is not reflected in ***ū* in dat.-loc. sg. *ta-a-ru-u-i* etc.. The spelling *-Cu-u-i* (which is only NH!) merely reflects (secondary) */-ruw/* for */-rwi/*.

All of the good examples for posttonic **/e/* to */i/* are in closed syllables (6.1.5.10), and for neuter *s*-stems one may assume generalization of the closed-syllable result: consistent *nēpiš-* 'heaven' from the nom.-accusative and ablative.

On the fate of absolute final unaccented **/e/* see 6.1.6.3.2.1 (1).

6.1.5.9 Before a cluster of nasal plus non-coronal consonant (labial or velar), short **/e/* is raised to */i/* (Melchert, 1984b: 103f). Examples: PA **ēnmye/o-* 'mix (in)' > *īm(m)iye/a-* (Oettinger, 1976a: 56); PA **lēng-* 'swear' > *link-*; PA **-enk^wo-* > *-ink(u)wa-* (*man(n)inkuwa-* 'short; near'); etc.

The fact that this change occurs in *li(n)k-*, *ni(n)k-* etc., which must be accented, argues against the account of Kimball (1983: 408) whereby the change in *-ni(n)k-* verbs is due to lack of accent. Jasanoff (1979: 85) includes *kānk-* 'hang' in his class of **ó/é* presents, but a weak **kēnk-* would have led to ***kink-*, whose replacement seems surprising. Since he cannot cite any *e*-grade forms elsewhere for this verb, *kānk-/kank-* may continue rather an unreduplicated perfect **kónk-/kṇk-*.

6.1.5.10 Pre-tonic **/e/* and posttonic **/e/* in closed syllables (other than final **/-eN/*) also changes to */i/* (Oettinger, 1976a: 24; Normier, 1980a: 78; Hart, 1983b: 104; Kimball, 1983: 386ff; and Melchert, 1984b: 104ff, revised). Pretonic examples: PA **edwól+* 'evil' > *idālu-*; PA **gesr-* 'hand' > *kiš(sa)r-*; PA **en-(h₂)nor-ó-* 'strong, violent' > *innarā-* (cf. 6.1.5.6, end), etc. This fact falsifies Pedersen's account (1938: 169) of the *na-* of *natta* 'not' as proclitic **nē*. This change may be PA (4.1.6.2.1.1). Posttonic examples: PA encl. poss. nom. sg. **-mes* > *-miš*; PA **nébes* 'sky, heaven' > *nēpiš*; PA **sóm-wetes-t-* 'of the same year' > *sāudist-* 'new-born'; PA **sówedro-* > *sāwitra-* (cf. Oettinger, 1978b: 201). Cf. also the city name *Kāniš* vs. *Nēsa-*. This rule accounts for all examples known to me of **-ēsC-* > *-isC-*, making unnecessary a special conditioned change in this sequence (Eichner, 1982a: 26⁵³).

I restrict the posttonic change to closed syllables (cf. 6.1.5.8). In *s*-stems like **nébes-* the treatment of the nom.-accusative and old ablative (**nébesti* > *nēpišz(a)*) is generalized. The raising is apparently inhibited before dental stop: encl.

poss. nt. nom.-acc. sg. **-med* > *-met* (for details see Melchert, 1984b: 122ff). This is the only case known to me where PA short **/e/* is preserved at the phonetic level. On the problem of **/e/* in absolute final position see 6.1.6.3.2.1 (1).

6.1.5.11 There are a couple of examples suggesting **/é/* > */a/* before two obstruents plus consonant (or two obstruents plus word-boundary): PA **déks-Ci* 'wield' > *takkış-Ci* (cf. Oettinger, 1979a: 219) (for subsequent anaptyxis see 6.1.6.2.3), PA **-wezd#* (i.e. **-wezd^hh₂*) > *-wašta*. However, the *e*-grade is not assured in either of these: on the latter cf. Eichner (1975a: 79).

6.1.5.12

(1) Eichner (1973: 76 & 1980: 144⁶⁵) proposes an "i-umlaut" rule by which various "e's" in Hittite are raised by an */i/* in the next syllable. Most of his examples are refuted by contemporaneous spellings which show we should read an ambiguous sign with *e*-vocalism (cf. 1.2.6.5.1 and Melchert, 1984b: 83ff): read *pé-di* beside *pé-e-di*, *ú-ez-zi* beside *ú-e-ez-zi*, etc. Furthermore, since both */i/* and */e/* are lengthened in an accented open syllable (6.1.5.2 and 6.1.5.5), Eichner's claim that the */i/* resulting from umlaut is not lengthened is quite implausible, and the lack of any plene spellings like ***pí-i-di* argues against his umlaut rule, not for it. See the telling criticism of Kimball (1983: 11ff).

However, the examples just cited do not preclude a genuine i-umlaut, because they involve alternating paradigms where the *e*-vocalism in the cases with following */i/* could be restored/maintained by analogy. It is indeed noteworthy that Hittite *militt-* (for the geminate *-tt-* see Starke, 1990: 192!) < PA **mélid-* 'honey' is spelled *mi-li-* in all eight of its phonetic spellings. Here the */i/* of the next syllable is constant, precluding analogical restoration of the */e/*. However, the spellings are few, and none is in an OH manuscript. Moreover, the similarly shaped *šepitt-* (kind of grain) shows no such change, which would require the umlaut rule to be further restricted. Note that the first syllable of *militt-* is never written plene, which is quite unexpected from either accented **/i/* or **/e/* in open syllable, as per above. Given the restored */-tt-/* as well, one may wonder whether the noun 'honey' in Hittite has been influenced by the adjective 'sweet', thus **melit-* after **mlitu-*. A preform **melit-* would of course give regularly attested *militt-* (6.1.5.10). In any case, unlike Eichner (1980: 147), I am at present unwilling to posit a

regular umlaut rule based on a single uncertain example: cf. Zucha (1988: *18f).

(2) Oettinger (1984 & 1985) has proposed a more restricted pre-Hittite umlaut of **ya* > **yē* > *yī* before a sequence **Ci*. This phonological change is then analogically extended, both before and after the loss of intervocalic **y*. Finally, in the historical period, *ya* analogically spreads at the expense of *ye*. There is no question about the last step, nor can there be any doubt that it is morphological, not phonological: see Melchert (1977: 32ff) with references to Carruba (1962: 157ff & 1966b: 79ff) and Carruba et al. (1965: 13f).

Pace Zucha (1988: 225f) *uppiyašsar* for *uppešsar* is merely analogical to the verb stem *uppiya-*, just like *hannašsar* for *hannešsar* after *hanna-*.

There are also unquestionable instances of unexpected *ye* for *ya*, but none of the evidence for Oettinger's umlaut rule is compelling. First of all, the linguistic reality of many of the attested examples of *ye* for *ya* is very doubtful. Since the only stem for 'send a message' is *batrā(i)-/batre-*, the spelling *ba-at-ri-i-e-eš-sa* for */Hatrēssar/* in a NH copy can hardly be genuine. Thus *pitta-* 'land-grant, estate' probably is syncopated from **piyatta-* 'gift' (= Lyc. *pijata-*), as per Puhvel (1979: 213). But there is no assurance that the spelling *pī-i-e-et-ta* (lx in a NH copy) represents a real unsyncopated umlauted */piyetta/*. Some examples of *ye* for *ya* may well be real: *i-e-bu-ut* 'walk' for *i-ya-ab-bu-ut* (NB replacement of *-bb-* by *-b-* next to *e*). However, given the clear replacement of *ye* by *ya*, such cases may easily be hypercorrections.

Oettinger himself concedes this point (1984: 44f) and therefore places most emphasis on instances of prehistoric *ye* for *ya*, where the subsequent loss of intervocalic **y* leads to alleged *e* for **ya*. However, given the indisputable use of *E* for *YA* (1.2.6.7,3), these cases are better taken as merely further examples of this orthography: $GIS_{e-i-e} = e-i-ya_x$, *bu-u-ma-an-te-i-e* = *bu-u-ma-an-ti₉-i-ya_x* (Kronasser, 1966: 380n), *pār-ku-wa-e* = *pār-ku-wa-ya_x*; OH *pal-ba-e-a* = *pal-ba-ya_x-a*

Contra Oettinger (1985: 48) OH *ta-ma-a-e* may spell simply */t(a)ma:y/*, a perfectly well-formed nt. nom.-acc. plural to a stem in long diphthong (cf. OH *li-in-ga-en* for */linga:yn/* and see Melchert, 1984b: 75). Note that most of Oettinger's alleged cases of *e* for *ya* must be analogical, since they do not

occur in the umlauting environment (indeed, most are word-final!).

The suggestion of Zinko (1981: 28) that *-Ca-en* reflects **-ayan* < **-oym* with umlaut is also very unlikely.

Finally, Oettinger can present no compelling evidence for the original phonological rule itself. Examples of *ye* for *ya* in the first singular and third plural of **ye/o* verbs (*a-ni-e-eb-bu-un*, *i-e-en-zi*) are better explained as analogical. First of all, if the change is phonological, there is no explanation for why there are no examples in the first and second plural, which meet the conditions for the change (MH *bal-zi-e-u-en* is of course, secondary for *bal-zi-u-en* and not probative). Second, note that the *e*-vocalism also spreads in **-ske/o-* verbs, where the conditions for Oettinger's rule are not met: *ak-ku-uš-ke-e-wa-ni* etc.. As for *memia(n)-* 'word, matter', the mixed animate *n*-stem inflection to which it belongs is a recessive type in Hittite and cannot be an innovation, pace Oettinger and Zucha (1988: 159). The word is certainly a stem in **-h₁/son-*, as per Eichner (apud Oettinger, 1985: 300¹¹): cf. already Götze-Pedersen (1934: 59f, esp. on *meminl*); Kronasser (1956: 122 & 1966: 197); Carruba (1966a: 38). In sum, while Oettinger's rule cannot in principle be excluded, I find the positive evidence for the change quite insufficient.

6.1.5.13 Until the prehistory of Anatolian reduplicated stems is clarified, I am unwilling to assume a sporadic assimilation of **e* to *a* before following *a* in *papar(aš)š-* (Oettinger, 1979a: 213). The reduplication here may be an Anatolian creation in which the reduplicating vowel merely copies that of the base. Umlaut is likewise dubious in *waritanzi* 'they fear' (Oettinger, 1979a: 128). The cases of **ē* to *a* umlaut proposed by Kronasser (1966: 22ff) are all false: most reflect PIE ablaut, directly or indirectly, despite his denial.

6.1.5.14 PA long **/e:/* is regularly preserved under the accent. On the possible synchronic interpretation see 5.3 (3) & (4). Examples: PA **ēš-* 'sit' > *ēš-*; PA **wēg-* 'demand' > *wek-*; PA **kēr* 'heart' > *ker*; etc.

The alleged examples of **/e:/* to */i/* cited by Normier (1980: 57f) are false, being based on random, uncontrolled spellings. Likewise, there is no change of **ē* to *i* in NH (pace Zinko, 1981: 53). Anim. nom. pl. *kuišš* for *kušš* (regular < **k^wéyes* w/loss of intervocalic **y*) is merely analogical to the *i*-stem nouns. The spelling *ú-i-e-eš* for 'we' (2x in NH copies of OH texts) is totally worthless.

PA long */e:/ is shortened when unaccented (Oettinger, 1979a: 535, and Melchert, 1992d: 184, contra Melchert, 1984b: 118⁸²). The best example is the pret. 3rd plural ending *-ēr, which appears as unaccented -er in Hittite (having been generalized in unaccented position at the expense of -ar < inherited *-r).

Secondary long /e:/ by contraction after deletion of */y/ remains, even unaccented: anim. nom. pl. *-eyes (i-stems) > -ēs (Melchert, 1984b: 121f, after Hrozný, 1917: 11, 28 & 47, Pedersen, 1938: 28, et al.).

6.1.5.15 In Melchert (1984b: 111f&135f), I proposed that inherited long */e:/ is raised to /i/ after */H/. I cited as examples the "vrddhi" derivatives *Hēstoy-ó- 'of bones' > (Ē)hīstā- 'mausoleum' and *Hēpor-ó- 'bought/traded' (or sim.) > hīppara- 'serf' (etymologies after Eichner and Hoffmann apud Eichner, 1973: 72). However, the phonology of the attested words (no plene in first syllable, preserved -ā- from contraction, unlenited -pp-) suggest that they were accented on the final syllable, as per Eichner's preforms. Since unaccented original long vowels are shortened in PA (4.1.5), these words would have entered Hittite already in the form *Hestoyó- and *Heporó-. The attested vocalism is not problematic from these preforms: pretonic short *ē is raised to i in Hittite (6.1.5.10). My derivation of hīla- 'courtyard' from a "vrddhi" form *Hēlo- is no more than a possibility. This leaves the preterite third plural ending -hbir vs. regular unaccented -er as evidence for the putative rule. However, my orthographic arguments for a reading /-Hir/ are less than compelling. While the absence of any spellings -hē-er for the ending remains noteworthy, there are no examples in OH manuscripts. Furthermore, while the sign HĒ is used principally for /He/, the sign HI may at any time be read /He/ or /Hi/. Nothing precludes reading -hē-er /-Her/ like regular /-er/. The available evidence thus seems inadequate to support the rule, and I explicitly withdraw it.

An immediate benefit is that one may now interpret some sequences of attested hē- as /He:-/ < *h₂ē-, as others had previously proposed. In particular, the verb hē(n)k- /hī(n)k- 'offer, grant' may continue an acrostatic present *h₂ēnk/k- with generalized strong stem (Peters, 1975: 41; Oettinger, 1979a: 171ff; and McCone, 1991: 50f, who argues for a word equation with Olr. (ro)-ic- 'attains'). The forms with i-vocalism are most easily taken as simple analogy to the dominant type of li(n)k- 'swear', but in the absence of plene spellings a shortening of the *ē before a cluster *-nk(Ci) and

regular raising to *i* cannot be excluded (6.1.5.9). The examples with *e*-vocalism would then be maintained from those variants where the nasal is deleted (6.1.4.1.3). It is also conceivable that *hink*- continues in part the regular reflex of the original weak stem **h₂ēnk-*.

Economy and the semantics would favor deriving the medium tantum *he(n)k-/hi(n)k-* 'bow' from the same source as 'offer oneself' (Oettinger, loc. cit., Puhvel, 1991: 292, et al.). However, the OH spellings *ha-ik-/ha-in-kV-* with a diphthong cannot be dismissed as hypercorrections as easily as Puhvel implies, because the supposed parallels are not probative. Hapax *a-ip-* for *e-ep-* may easily be a scribal error of sign *A* for *E* (minus two strokes): Kammenhuber (1969: 227). Hapax *appaizzi-* for *appizzi(ya)-* 'rear-' may be a morphologically renewed form based on the adverb *appa + -izzi-*. Neither of these possibilities exists for *ha-ik-*. However, *maiqaus* (KUB XXVI 1 iii 58 for *meqqaus* 'many'), cited by Kronasser (1966: 35) does provide a convincing parallel. I conclude that *henk-* 'bow' is also /He:nk/ and hereby retract my account in Melchert (1984b: 23-24⁴⁶).

The various attempts to derive Hitt. *hekur-* 'crag' either from **h₂ēk-* (Eichner, 1973: 71) or **h₂ēyk-* (Melchert, 1984b: 142¹¹³) founder on the morphology of the word (animate stem in *-ur!*). A loanword as per Puhvel (1991: 289) is far more likely.

6.1.5.16 The secondary pre-Hittite sequence **-ēn+s* appears as *-anz(a)* [-ántš], with regular epenthesis in a secondary **n+s* cluster (6.1.3.1), shortening of the long **ē*, and then regular development of **ē* to *a* before coronal nasal (6.1.5.6): pre-Hittite **sū-mēn-s* 'cord' > *šumanz(a)*. It cannot be determined whether the shortening of **ēns* here is regular or tied to the epenthesis and/or word-final position. In any case, Oettinger's example for **ēns* > /e:s/ (1976d: 99) is quite dubious: *s* aorist **smēns-* --> *s(a)mes(i)ye-* 'make disappear'. For another account of *s(a)mes(i)ye-* see 6.1.6.1.5 (8). Contrast **h₂stér+s* 'star' > *h(a)stérz(a)* with preserved *ē*.

6.1.5.17 There are several examples of a sporadic raising of **e/* and **e:/* to */i/* and */i:/* between a */w/* and following dental consonant (Melchert, 1984b: 112ff, pace Zucha, 1988: 122ff). There is some evidence for a similar tendency in Palaic (8.1.5.2), Luvian (10.1.5.2), and Lydian (14.1.5.4). Contra Oettinger (1979b: 201), I see no reason to doubt that this alternation is linguistically real. Use of graphic *I* for *E* just in the environment after */w/* makes no sense, given the consistent contrastive use of these signs everywhere else.

Determining the extent of this change is complicated by the fact that in some cases the raising could also be attributed to other changes cited above. Examples: PA **wét-* 'year' > OH *wēt+/witt+* (*wēt[tandanni]/witti*); PA **wédæ-* 'build' > *wete-/wita-* (*wetezzi/witantuš*).

6.1.5.18 PA **/e:/* (< PIE **/ey/*) usually appears as */e(:)/* in Hittite and is indistinguishable orthographically from the reflexes of PA **/e:/* (Oettinger, 1979a: 535). One conditioned change (next section) and an apparent incipient raising to */i:/* in late Neo-Hittite suggest, however, that the higher */e:/* remains distinct from */e:/*. Note also the likelihood that this vowel assibilates **/t/*, while regular **/e(:)/* does not (6.1.1.2). As already emphasized in Melchert (1984b: 141ff), the evidence for the late raising remains slim, and the assumption of a distinct */e:/* should still be regarded as tentative. Examples: PA **nēyo-* 'turn' (intr.) > *nē(y)a-* > late NH *nīya-*. Cf. 6.1.5.26 for another example involving Hitt. */e:/* < PA **/oy/*. For a shortened variant of **/e:/* when unaccented note PA present third singular **-e* > OH *-e* (*war(aš)še, mazze*).

Kimball (1983: 371&466ff) assumes regular **ey* > *i* in Hittite, except next to laryngeal and before */ts/*! This conditioning for the exceptions seems very ad hoc, and I prefer rather to explain the cases of **ē* > *i* as the exceptions: see the next section. Her account of inst. *haštit* 'bone' (1983: 472ff) is morphologically improbable. As she concedes, the gen. sg./pl. *ha-aš-ti-i-aš* may reflect a trisyllabic [*Hastiyas*] for **h₂(e)st(h₂)y-Vs* (whether this is due to "Sievers-Lindeman" or not). If it is real, the twice attested *haštit* may be the contraction product of synchronic weak stem */Hasti-/* + productive ending */-it/*.

6.1.5.19 PA **/e:/* is raised to */i/* after a velar (Eichner, 1973: 78, and Melchert, 1984b: 102f). Examples: PA **kē-* 'lie' > *ki-*; PA **gēm-* 'winter' > *gimant-*; PA **g/keis-* 'become' > *kis-*. We may assume with Eichner that the relatively high long **/e:/* palatalizes the velar, which in turn raises the vowel. We would expect the resulting vowel to be long at least when accented, but the total lack of plene spellings in the extremely common verb *kitta(ri)* 'lies' is hard to understand if this were true. Since the restored voiceless stop is geminate (*-tt-*), one must assume ad hoc that the expected */i:/* is shortened in a closed syllable (cf. Eichner, 1973: 78). Likewise then *gimant-*. The long vowel in *kis(a)-* is of course regular in an accented open syllable. Given this distribution, the new vowel is synchronically underlyingly short */i/*. The specially conditioned shortening remains problematic. It is true that most cases of */i/* in closed syllables are short (cf. 6.1.5.3), but note that the

secondary /i/ from */e/ between */w/ and dental consonant is long in accented closed syllables like /e/ (cf. 'year' in 6.1.5.17).

It is important to note the contrast between the raising of PA */e:/ after velar and the absence of same with Hitt. /e:/ < PA */oy/ (PA anim. nom. pl. **kóy* 'these' > *kē*) and ordinary Hitt. [e:] (PA **gēnu* - 'knee' > *gēnu*-).

6.1.5.20 PA */æ:/ merges with /e:/ in Hittite, as in Palaic. Examples: PA **daē*- 'put' > *tē*-; PA stative/inchoative suff. **-aē*- / *-aēs*- > *-e*- / *-ešš*-; PA **aē*- 'do' > OH *e*- (usually restored *iē*-).

It is likely that in unaccented position */æ:/ is shortened to [e] (Oettinger, 1979a: 35). The only examples known to me are in univerbations of **daē*- 'put': *pehute*- 'carry off' and prob. *wete*- 'build' (but not *uwate*- 'bring': see 6.1.5.5, note, for details).

6.1.5.21 PA */o(:)/ regularly merges with /a(:)/ in Hittite (for possible different outcomes in final syllables see 6.1.6.3.2.2,2). However, contra Kimball (1983: 136ff) I believe only accented short */o/, not short */a/, is lengthened in closed syllables (see in brief Melchert, 1992d: 186, and cf. already Hart, 1980, and for absolute initial syllables Eichner, 1980: 154⁷⁷). Thus the ordering of the lengthening rule and the merger of */o/ and */a/ differs in Hittite from Palaic and Luvian (8.1.5.9 & 10.1.5.3). Both changes therefore seem to be a common dialectal feature but not a shared prehistoric development.

6.1.5.22 PA short */o/ appears as /a/ when unaccented. Examples: **woséye/o*- 'clothe' > *wasše/a*-, **mémolH*- 'groats, grits' > *memall*-, **pédom* 'place' > *pedan*, etc.

Accented short */o/ is lengthened to [a:] in both open and closed syllables (for the former see Normier, 1980: 56⁵², besides the authors cited above). For reasons given in 5.3 (3) & (4) I assume the former is synchronically short, but the latter long. Examples: (open syllable) **wódr* 'water' > *wātar*, **dóru*- 'wood' > *tāru*-, **sóru*- 'booty' > *sāru*-, etc.; (closed syllable) **möld*- 'speak solemnly' > *māld*-, **spōnd*- 'libate, consecrate' > *šipānd*-, **opV* 'back' > *āppa* (for the last as a closed syllable see 6.1.5.24). The participle in *-ant*- is spelled often enough with plene to suggest that it is long when accented: *ašānt*- 'being', *appānt*- 'taken', *adānt*- 'eaten', *arānt*- 'arrived', *lagānt*- 'inclined', etc. Recall that scriptio plena is in general less common in closed syllables (1.2.6.5.2), so we would not expect plene here to be the norm. In ablauting

athematic verbs we would expect the participle to be in **-ént-* (**h₁s-ént-* 'being'). However, as per 6.1.5.6, I believe the weight of evidence argues that **ē* (> **ā*) is not lengthened in this environment. I therefore assume that Hittite has generalized **-ont-*, originally proper to thematic verbs (so also Kimball, 1983: 752). Such a generalization is hardly surprising: cf. Grk. -ων/-οντ-.

6.1.5.23 PA long **/o:/* is retained as */a:/* under the accent. Examples: coll. pl. **wedōr* 'waters' > *widār*, coll. **Hastōy* 'bone(s)' > *hastāi*, **hr(e)gnōw* 'surface' > *harg(a)nāu* 'palm, sole', etc. For the accent in these forms see Eichner (1985a: 165¹⁶⁹); Melchert (1988a: 227¹); Zucha (1988: 195); and Yoshida (1990: 113).

6.1.5.24 PA short **/a/* remains [a] when unaccented and in accented closed syllables. Examples: (unaccented) PA **atta-/anna-* 'father/mother' > *atta-/anna-* (2nd vowel), etc.; (accented closed syllable) same exx. (1st vowel), **ālpō+* 'weak' > *alpant-*, **kwās-* 'kiss' > *kuwašš-*, **Hwāpo-* 'evil' > *huwappa-*, etc.. Hittite initial *a-* (not **ba-*) demands PIE **/a-/*, not **/h₂e-/*. For PIE 'kiss' and 'evil' as also having PIE **/a/* see Eichner (1988b: 132f); impossible Bader (1990: 30). Note that in **Hwāpo-* > *h(u)wappa-* the stop acts to close the syllable, demonstrating that at least by pre-Hittite the intervocalic voiceless stop was geminate: [Hwāp.po-]. Likewise **h₂ēto-* > **Hāto-* > *hatta-* 'cut', although a PIE etymon remains elusive (cf. Čop, 1958: 57ff).

In **alb(h)ō-* > *alpā-* 'cloud' the **a* is unaccented as in Grk. ἄλφός, as per Zucha (1988: 3) contra Melchert (1992d: 186). Hitt. *alpu-* means 'sharp' (Güterbock, 1988: 168ff, pace Puhvel, 1975: 61, et aliter) and probably reflects PIE **pū-* (Hamp, 1989).

The forms *nāb-* 'fear' and *lāb(w)-* 'pour' with long *ā* and single *-b-* are analogical (4.1.6.1.1 (3), end). The hapax spelling *pāḥsanta* in a MH copy (*KBo* XXI 22 Vo 38) is hardly probative vs. 180+ examples without plene; likewise hapax *pāḥhur* 'fire' (*KUB* XVII 10 iii 22; MH copy). The regular outcome of **-eh₂-* in factitive verbs is also *-abb-* without lengthening: see Kimball (1983: 254ff). The only exception is *šu-up-pí-a-ab-ba-ti* in the OH ms. *KBo* XXV 112 ii 14.21 (sic contra Kimball). The absence of *-ya-* in this spelling is also unusual, and one may wonder if *-pí-a-ab-* is not a peculiar alternate way of indicating the glide in [-p(i)yaH-].

In accented open syllables **/a/* is phonetically lengthened, but remains underlying short (5.3.3). Examples: **māniyo+* >

māniyabḥ– 'hand over' manage'; **ārā* '(what is) fitting' > *āra*; **Hād*– 'dry' > *bād*– (in medial *bādantari*, but active *bādu* and *bāza* may reflect **Hód*–; cf. Kimball, 1983: 189); prob. **wāgē* 'bites' > *wāgi* (but **wōh₂gei* is possible, as per Kimball, 1988: 245). For the prehistory of Hitt. *āššu*– 'good' see 4.1.2.1 (3) with the reference there.

6.1.5.25 PA long */a:/ is maintained under the accent. Examples: abstr. suff. **-ād_r* > *-ātar*, suff. **-āw_r* > *-āwar*.

6.1.5.26 Contrary to the received opinion (e.g. Kronasser, 1956: 44; Held–Schmalstieg, 1969: 105f; Zinko, 1981: 120), Kimball (1993) has shown that not all PIE short diphthongs are monophthongized in PA or even in Hittite (see already the suggestion of Oettinger, 1980a: 51²⁴, contra Eichner, *ibid*). I accept Kimball's examples, but the following formulation is my own. One should compare the overall treatment of diphthongs here with that of Zinko (1981).

For PIE */ey/ and */ew/ as already monophthongized to PA */e:/ and */u:/ see 3.1 (8) and 4.1.5.

PA */oy/ and */ay/ are maintained as /ay/, and PA */ow/ and */aw/ as /aw/, before coronal (dental) continuants. Examples: **kóyno*– 'in-law' > *gaina*– (NB: never spelled with plene *-a-*!) (cf. already Hrozný, 1919: 100⁶, and Bader, 1988b: 27), pret. 3rd sg. **nóys*–(t) 'turned' > OH *naiš* (preform after Jasanoff, forthcoming; NB never plene in OH!); pret. 3rd sg. **pays*–(t) 'gave' > *paiš* (NB: never plene!); **mōws*– 'fall' > *mauš*– (for preform see Melchert, 1984b: 64, but revise phonology; for root etymology Čop, 1956b: 230); **āwlo*– 'windpipe, throat' > *auli*– (Kühne, 1986: 114, contra Puhvel, 1984: 231f & 1991: 450), **āw*–s– 'see' > *auš*– (already Hrozný, 1919: 72⁶), prob. **āwri*– 'watchtower' > *auri*–. The diphthongs may also be preserved before dental stop: note prob. *karaitt*– 'flood' < **g_roi*– (Schindler, 1972: 35), but a secondary lengthened grade cannot be entirely excluded. Contra Eichner (1973: 79, 1980: 129⁴¹ & 1988b: 139f), **Vyh_x* does not appear as Hitt. *āy*!

The stems **nóy*– and **páy*– are also indirectly reflected in the imperative second singulars *nai* and *pai*, which are originally distinct from pres. 3rd sg. *nāi* and *pāi* (thus already W. Cowgill, *pers. comm.*). As elsewhere the inv. 2nd sg. represents the bare stem. The diphthongs resisted the regular monophthongization in final position (6.1.6.3.2.1,4) by analogy to other parts of the paradigm. In NH the long diphthong *āy* is spread from the pres. 3rd sing. *nāi* and *pāi* to *nāiš* and to the imperatives *nāi* and *pāi*.

Elsewhere */oy/ and */ay/ monophthongize to /e:/ and */ow/ and */aw/ to /u:/. Both vowels are shortened when unaccented. Examples (accented): sg. **nóy*- 'turn' (tr.) > *nē*- (*nēbbi*, *nēbbun*); **páy*- 'give' > *pē*- (*pebbi*, *pebbun*); anim. nom. pl. **kóy* > *kē* (but late NH *kī*; cf. 6.1.5.18); **mów*- 'fall' > *mū*-; **áw*- 'see' > *ū*-; **áw-nih_x*- > *ūnni*- 'drive hither' (cf. 6.1.6.1.1.5). Examples (unaccented): pron. anim. nom. pl. *-oy > -e, 3rd sg. pron. 'to him' *-soy > OH -šše; pres. 1st sg. *-Hay > OH -bhe; **lowkéye/o*- 'kindle' > *lukke/a*-; **aw-páy*- --> *uppi*- 'send' with secondary zero-grade of the root (with Hrozný, 1917: 122², contra Pedersen, 1938: 116f): cf. CLuv. *ūpa*-, 10.1.5.5.

I uphold derivation of transitive *lukke/a*- 'kindle' < **lowkéye/o*-, as per Kellogg (1925: 36) and Watkins (1973: 69) contra Oettinger (1979a: 273ff): see Melchert (1984b: 31ff) for the phonology. However, *lukkatta* 'grows bright, dawns' cannot represent **léwketō* (Skt. *rócate* 'shines') as per Watkins. Note besides the unexplained short /u/ the wrong meaning, as emphasized by Oettinger. Thus with Oettinger, loc. cit., *lukkatta* replaces *lukta* (lx) < pre-Hittite **lúktō* < **luktō* (reanalyzed aorist injunctive). NH *lukat* for older *lukkatta* 'dawns' is a late secondary creation and certainly does not reflect an old **leúkot* (see Tischler, 1990: 65&69, and cf. Neu, 1980b: 17).

6.1.5.27 Kimball's demonstration that Hittite has at least some phonemic short diphthongs /ay/ and /aw/ complicates the status of long diphthongs /a:y/ and /a:w/, since the plene writing of the latter is quite inconsistent (but there is no reason to doubt their existence, pace Held-Schmalstieg, 1969: 102). We have solid evidence for preservation of at least accented */o:y/ and */o:w/ in the strong stems of "amphikinetic" nouns: e.g. **Hastōy* 'bone(s)' > *ḥastāi*, **hr(e)gnōw* 'surface' > *ḥarg(a)nāu* 'palm; sole'. These two examples are collectives, but the corresponding animate types in -āiš and -āuš reflect the same type of PIE paradigm: see Kronasser (1956: 110ff & 1966: 204ff); Melchert (1984b: 62&71f); and in detail Weitenberg (1979 and 1984: 264ff), with references to competing analyses. For the accent see Eichner (1985a: 165⁶⁹) and Zucha (1988: 330ff). That the type of Hittite -āi- and -āu- also continues *-ēi- and *-ēu- (Eichner, 1991: 157) is dubious (see next paragraph), but cannot be entirely excluded. Given the merger of */a:/ and */o:/ in Hittite, we may assume that */a:y/ and */a:w/ would be preserved. For one example of secondary /a:w/ see weak -āun- in *karāun*- 'horn', etc.

A long diphthong */e:y/ is probably continued in Hitt. *utnē* 'land' < **udnēy*: see Melchert (1984b: 72f, w/refs.) and 6.1.6.1.3.1 (4). The account of Neu (1974: 112) and Zinko

(1981: 40f) is phonologically impossible. The fate of */e:w/ is uncertain. Hitt. *šiu-* 'god' may represent PA **dyū-* < **dyēw-* or **dyēw-* (and in the latter the monophthongization could be PA or pre-Hittite): so also Zinko (1981: 38). The interpretation of *k(a)rū* 'formerly' as an endingless locative (with various etymologies) is possible, but hardly assured: see Kimball (1983: 454ff) for discussion and references (to which add Eichner, 1978: 160⁷⁰). Contra Kimball (1983: 456ff) *tarrū* 'solidly' (or sim.) is more likely **terh₂uh₂* (nt. pl. adv.) with Neu (1980b: 48¹¹³) and Watkins (1982a: 258¹⁷) than an endingless locative **torsēu*, as per Čop (1971b: 30f).

6.1.6 Special Developments

6.1.6.1 Consonants

6.1.6.1.1 Gemination

6.1.6.1.1.1 Hittite preserves PA geminates. Examples: **átta-* 'father' > *atta-*, **ánna-* 'mother' > *anna-*, **ánno-* 'that' > *anna-* (in *annaz* 'formerly' etc.), **immō* 'indeed' > *imma*. As per 4.1.1.1 (4), I also tentatively assume that the general gemination of intervocalic voiceless stops is PA. In any case, these are clearly true geminates in Hittite, since they serve to form a closed syllable for purposes of vowel lengthening under the accent. Note **Hwápo-* 'evil' > *hwappa-* and **Háto-* 'cut' > *hatta-*, both consistently without *plene* vs. **ópV* 'back' > *appa* and cf. 6.1.5.24.

6.1.6.1.1.2 PA */s/ is geminated as both the first and second member of clusters. This is best attested with sonorants, where it is noted by Čop (1964: 57) and Bernabé (1973: 446f). The latter plausibly interprets the phenomenon as the spreading of the /s/ across a syllable boundary. Examples: **gesr-* 'hand' > *kis(sa/e)rV-*, **sasn(e)u-* 'cause to sleep' > *šas(sa)nu-* (compare *šes-/šas-* 'sleep' with consistent single *-š-*!); **k_wš-* 'incise' > *gul(aš)š-*, **wers-* 'pluck' > *war(aš)š-*, **óms-* 'wipe' > *ān(aš)š-* etc. I also take this to be the source of the *-šš-* in *-eššar/-ešš(a)n-* (NB spellings *battareššani*, *tethieššanaš*, etc.) with generalization of the geminate from [-es.snV-] to the nom.-accusative (Melchert, 1984b: 92&105, pace Oettinger, 1986a: 12 w/note 51). Oettinger's claim that *-eššar* is related to the "inchoative" suffix *-ēšš-* does not account for collective *-eššar/-eššn-* nor for cases where **-e/is-* was never extended by **-r:* *ateš-* (weak *ateš(sa)n-*) 'axe' < **adēs-*, UZU *habriš(n)-* 'lung' (contra Puhvel, 1991: 7); *battariš(n)-* 'cross-roads' (contra Puhvel, 1991: 264); *buwalliš-* (weak *buwalliš(sa)n-*) 'pine-cone' (or sim.) < **h₂/wēlh₁-e/is-*;

kuppiš(n)- 'camp-chair, stool' borrowed from Luvian *kuppiš*- (*s*-stem!); **dandukiš*- (weak *dandukiš(sa)n*-) 'mortality' to *danduki*- 'mortal'; and probably *batalkiš*- 'hawthorn' (NB nom.-acc. *batalkiš* at KUB XII 44 iii 5) with weak stem **batalkišan*-, whence secondary animate *batalkiš(sa)na*- (see Watkins, 1993b: 244f, and cf. Oettinger, 1976b: 126, contra Čop, 1958: 54f). I repeat that the continued practice of emending nom.-acc. forms of these words without *-ar* is totally illicit (pace Beckman, 1983: 285; Starke, 1990: 111, et al.): note the change of opinion in Neu (1982: 210²³) vs. Neu (1980b: 43). For the secondary status of the nom.-acc. in *-r see already Kammenhuber (1969: 187) and Álvarez-Pedrosa (1990: 196&204). In none of these examples is there a shred of evidence for any connection with a verb stem in *-ēšš*-. The geminate *-šš*- must be due to the following *-n*-. Instead of assuming hysterokinetic *s*-stem adjectives as the base of *-ēššar*/*-ēššn*- (Melchert, loc. cit.), one could choose derivation from neuter *s*-stem nouns (Zucha, 1988: 228ff), but the Hittite vocalism would require that this be at a very early stage when the weak stem was in *-ēš- (cf. Schindler, 1975b: 216).

Likewise the feminizing suffix *-š(sa)ra*- reflects *-*sr-o*- (contra Oettinger, 1986c: 124, and Szemerényi, 1966b: 216). For reasons given in 1.2.6.6, I view spellings such as *ki-iš-ra*-, *ki-iš-sa/še-ra*- as alternates for [kis.sra-], not as evidence for real anaptyxis.

I believe there is also sufficient evidence to show that the same gemination of */s/ takes place in all heterosyllabic clusters. Examples with obstruents: **wóspo*- 'garment' > *waš(sa)pa*-, iter. **ti-ske/o*- 'step' > *tiš(sa)ke*-; **dek^wso*- 'give a sign' > *tekkušša*-, **ég^w-si* 'you drink' > *ekušši*, **paHs*- 'protect' > *pah(haš)s*- (see already Čop, 1964: 57). Particularly noteworthy is the geminate of Hitt. *haššikk*- 'be satiated' vs. Pal. *baš*- 'idem': pre-Hittite **Hásk-V*- > [Hás.skV-], **Hásk-C*- > [Hásik-C] (6.1.6.2.3), leveled to *baššikk*- (not credible Puhvel, 1991: 232). Note that in cases of epenthetic [s] in dental clusters, the sibilant also appears to be geminated across the syllable boundary: *ba-az-za-aš-ta* beside *ba-a-az-ta* [Há:ts.sta], *az(zaš)teni* etc. (cf. 1.2.6.3, end). No iteratives in *-šša*- are involved, contra Puhvel (1984: 320). In this case, it is unclear whether the original syllabification was [ts.t] or [t.st]. In *palzabha*-/*palzasba*- [palts.sHa-] 'pediment', original [t.sH] has become [ts.sH] (cf. Starke, 1979: 249).

The above generalization admittedly makes the rule very powerful. It implies that all athematic verb stems ending in /-s-/ would develop a geminate before endings with initial

consonant. We do in fact find geminate [-ss-] in **non-alternating** verbal stems in final /-s/: *kes- 'comb' > *kiss-* (read [kess-]), *les- 'gather' > *liss-* ([less-]) vs. *kēsáHye/o- and *lēsáHye/o- > *kisā(i)-* and *lisā(i)-* with single -s-; *wēs- 'wear' > *wēss-* (whence analogically also transitive *wašše/a-* 'clothe'). In these non-alternating stems the geminate [-ss-] is generalized to the forms with vowel-initial endings. In ablauting stems such as *ēs-/aš-* 'be' we find phonologically regular single [-s-] before vocalic endings: *ešun*, *ešer*, *ašanzi*, etc. Whether the /s/ is geminated before consonantal endings is uncertain, but note the rare geminate spellings before vocalic ending cited by Oettinger (1979a: 90-91¹⁶), which may be stray analogies to spoken [é:s.smi] for *ēšmi*. In *ēs- 'sit down', where the crucial founding form the third singular is prevocalic (*ēso-), we find only -š-, so that first singular *ēšha(bhari)* may also have [-s-], not phonologically regular [-ss-].

I emphasize that there is no other plausible source for the gemination of the /s/ in cases like *kiss-*, *liss-* and *wēss-*. Eichner (1979: 58, 1980: 161ff et aliter) has proposed that PA */s/ is geminated in Hittite in pretonic position (followed by Kimball, 1983: 168, et aliter). Čop (1964: 46) and Eichner, loc. cit., also allege gemination after a prehistoric accented short vowel (for both also Zucha, 1988: *20). The latter is easily refuted by examples such as *Hwēsu- 'raw' > *bue/išu-* and *Hwēso- 'spindle' > *GIS₃bue/iša-*, *ōsi > *aši* 'the aforementioned'. Eichner's first rule is based on *woséye/o- 'clothe' > *wašše/a-* and *Hih/Hsā- 'thill' > *hišša-*. But the geminate /-ss-/ of the latter is due to assimilation of the laryngeal plus */s/ cluster, for which there is other evidence (see below), while the geminate of *wašše/a-* may be analogical after the base verb *wēss-*. Likely counterexamples include *kēsáHye/o- and *lēsáHye/o- > *kisā(i)-* and *lisā(i)-*, *as-ēnti 'they are' > *ašanzi* and the large number of derivatives of *aš-*. For some of these, of course, one may appeal to analogy with prevocalic *ēs-*, but for some words like *ašāwar* 'sheepfold', the necessary semantic association seems very weak. Unfortunately, a truly isolated case of pretonic prevocalic */s/ is lacking. Note that Eichner's pretonic gemination rule is clearly false for Palaic (8.1.6.1.1), so there is no question of the rule being PA. There is also no gemination of continuants in reduplicated stems (see 1.2.6.1.3).

6.1.6.1.1.3 PA */m/ is also geminated before a consonant (Bernabé, 1973: 438&447). Examples: *gēmro- 'open country' > *ge/im(ma)ra-* (also in names ^D*Kam(ma)rušepa-*, URU *Mam(ma)rant/da*, etc.); pre-Hitt. *lamnyé/ó- 'call by

name' > *lam(ma)niye/a-*, suff. **-mn/-mnV-* > *-man/-m(ma)n-* (in *šaraman-/šarām(ma)n-*, etc.). In ablauting paradigms the geminate [-mm-] of the weak stem [-mmn-] is spread to the strong stem (*lamman* 'name' < *lammn-* beside regular *lāman*, *lammar* 'hour' < *lammn-*, etc.), while for the weak stem we find [-mmn-] and [-mm-]: *šaramm-/šarām(ma)n-* etc. Original **/-mn-/* in non-ablauting paradigms is assimilated to [-mm-], probably already in PA: see 4.1.6.1.1 (4) (contra Oettinger, 1983b: 440), whence **mí-mnV-* 'refuse' > *mimma-*, **ḡ^heimn-ont-* 'winter' > *gimmant-*, etc. (contra Eichner, 1980: 161; Oettinger, 1982a: 238; Zúcha, 1988: 127). See for details Melchert (1983b: 3) and cf. Götze (1937: 491) and Kronasser (1966: 102). For evidence against the gemination of pretonic **/m/* (Eichner, 1980: 163 et aliter) see 4.1.4 (3) and 6.1.4.1.1.

Gemination of **/-ms-/* to [-mms-] is also possible in *dammīšhā-* 'harm' < **dammīšhā-* < **dem(h₂)/s-sh₂o-* (4.1.3.2.2,4 end).

6.1.6.1.1.4 There seems unavoidable evidence for gemination of voiced stops after **/r/*: cf. Oettinger (1979a: 197). Examples: **horb-* 'change sides' > *bar(ap)p-*, **berḡ-* 'high' > *par(ak)kiye-* 'rise/raise', **sterḡ-* > *ištar(ak)k-* 'become sick' (with Eichner, 1982a: 16ff; totally implausible Puhvel, 1984: 477). The etymologies for the first two are sure, and the last very attractive. One may perhaps add *war(ap)p-* 'rub; wash' < **(s)werb^h-* (Sturtevant, 1933: 113&131; for the meaning 'rub' see Oettinger, 1979a: 234), but the etymology here is far from assured. Since I know of no alternate geminate spellings in the case of **/r/* plus dental or for **/l/* plus stop, I tentatively restrict the rule to **/r/* plus non-coronal stops. It is unclear whether we should interpret the orthographic gemination as phonetic gemination of the voiced stop or devoicing. In the first instance one may compare typologically in a very general way the gemination of consonants after */r/* in Sanskrit (Whitney 1889: 78f). For the second possibility compare the devoicing of Classical Armenian *b^(h)* to Modern *p^h* after *r*: see Vogt (1958: 146).

6.1.6.1.1.5 I follow Bernabé (1973: 448f) in assuming gemination of **/n/* and **/s/* posttonically in secondary sequences involving enclitics (cf. already Götze, 1928: 40³; Kronasser, 1956: 35; Kurylowicz, 1958: 220). For the phonetic process Bernabé plausibly compares Ital. /dá+mi/ 'give me!' > *dammi*. Examples: **nú/tó+ -soy* > *nu=šše/ta=šše* (later *nu=šši/ta=šši*), **nú+ -nos* > *nu=nnas*, **nó+ sew* > *naššu* 'either' (Pedersen, 1938: 200), **ḡ^hesrī-si* 'in his hand' > *kīšrī-šši*. For the most part this posttonic treatment was generalized

in Hittite to all occurrences of the enclitics thus affected (i.e., also to cases where the consonant stood between unaccented vowels): *nu=mu=ssan*, *X=ya=ssi*, *pēdi=ssi*, etc.. However, there is probably one relic form with single *-s-*: *annišan* 'formerly' /*ānni-san*/, which with Eichner (1980: 162) I take as also containing the "local" particle *-san*. In *ku=ssan* 'when' and *ki=ssan* 'thus', the geminate is regular as per above, and from *kissan* the geminate is generalized to *apēnišsan* and *enišsan*. The derivation of these adverbs by Kronasser (1966: 357) cannot account for the geminate *-ss-*. Palaic seems to preserve the original distribution more faithfully (7.3.3).

I extend this rule to univerbations of accented preverb plus verb. This accounts for the geminates of *ūnni/a-* and *penni/a-* 'drive' and *ūss(i)ye-/pešš(i)ye-* 'throw': **ú/pé+nih_x-* and **syē-* (i.e. **sh_hye-*). The assumption of root accent in **pe-syē-* by Oettinger (1979a: 347f) in order to explain HLuv. *pa-si-ya-* is not credible. Kimball (1987b: 178ff) derives the geminate in *ū/pešš_hye-* by assuming an initial laryngeal in the root, but evidence for the laryngeal is weak, and there is certainly no initial laryngeal in 'turn, drive'.

OH mss. have consistently *nu-mu* for /*nu=mu*/, showing that the above change does not apply to /*m*/. The geminate spelling *nu-um-mu* in NH copies is non-probative (see 1.2.6.4).

6.1.6.1.2 Preserved Consonant Clusters

The history of consonant clusters in Hittite has yet to be written. This and the following section should be viewed as preliminary attempts at a systematic treatment. In citing evidence for regularly preserved clusters I have as far as possible avoided synchronically transparent morpheme boundaries such as verb stem plus ending, since analogical restoration/preservation would be trivial in such cases.

6.1.6.1.2.1 Initial Clusters

Initial stops have all been devoiced by attested Hittite (1.2.6.1.3).

Stop + stop and stop + fricative: none.

Stop + liquid: **/dl-/* (prob. in *d(a)luki-* 'long', etc.), **/gl-/* (prob. in *g(a)la(n)k-* 'soothe'); **/pr-/* (*p(a)rā*, *p(a)rā(i)-*), **/kr-/* (*k(a)rāwar*); **/gr-/* (*ga/iritt-*), **/gr-/* (*ga/irap-*) (but cf. 1.2.6.6 and 5.3, note 6!).

The lack of */tr-/ is systematic (see 4.1.6.2.2,1), that of other combinations probably accidental.

Stop + nasal: */dm-/ (*d(a)mā(i)-*, *d(a)ma/ešš-*; probable!); */ġn-/ (*g(a)nut*, *g(a)nēšš-*).

*/pn-/ is apparently broken up by anaptyxis (*punušš-* 6.1.6.2.3, but a synchronic cluster remains possible).

Stop + glide: */tw-/ (*tuekka-*), */dw-/ (*t/duwarni-*, *t/duwān*), */kw-/ (*LÜkuwa(n)-*), */kw-/ (*kuwašš-*); */py-/ (*pianzi*), */ty-/ (*tiya-*); */dy-/ (*tianzi*, *tiyamar*), */ġy-/ (*giemi* 'in winter').

Fricative + stop: */sp-/ (*išpant-/šipant-*, *ša/epikkušta-* etc.), */st-/ (*ištarakk-* etc.), */sk-/ (*iškalla-* etc.); */Ht-/ (*batuki-*) (*/Hp-/ in *hāpuš-* is doubtful).

For detailed discussion of the orthography see 1.2.6.6. There is no alternation of Hittite initial /st-/ with /s-/ elsewhere (pace Puhvel, 1984: 471&477)! Cf. also 5.3 (6).

Fricative + fricative: */sh₂-/ in *išhanna* 'to bind', *išhanittar+* 'marriage bond, alliance' (Puhvel, 1984: 396; Bader, 1990: 4); perh. also in *išhaḫru-* 'tear' (Tischler, 1978: 381f; Oettinger, 1979a: 367²²⁴; cf. Puhvel, 1984: 393).

Fricative + liquid: */sr-/ (*šara/ip-*, *š(a)rā(i)-*; latter with Hrozný, 1917: 91); */sl-/ (*šalig-*); perh. */Hl-/ in *ḫaluga-* 'message' < **h₂leugh-* (Sturtevant, 1933: 82; Oettinger, 1980b: 592, et al.) and *ḫalina-* 'clay' (Neumann, 1971: 265). Cf. 5.3 (6) on the synchronic realization.

The absence of /Hr-/ is systematic (note **hregnōw* > *ḫarg(a)nāu*). Whether the loss is phonological (metathesis) or morphological (generalization of zero-grade in ablauting paradigms) is unclear.

Fricative + nasal: */sm-/ (*š(a)mankurwant-*, *ša/emen-*, etc.). The absence of */sn-/ is noteworthy!

It is conceivable that Hitt. *išmeriya-* equals Pal. *šameri-* and thus represents /sm-/ spelled *iš-me-* (see Čop, 1956a: 37ff). That *šummittant-* 'axe' has a real anaptyctic vowel is doubtful, pace Oettinger (1976d: 95) and Neumann (1959: 349). A cluster */Hm-/ is possible in *ḫ(a)mēša-* 'spring', but far from certain (cf. Puhvel, 1991: 74, w/refs.). I know of no examples for */Hn-/. Recall that "Saussure's Law" (2.3.7) would have eliminated all cases of */HRO-/.

Fricative + glide: */sw-/ (*śuwāru-*), */sy-/ (*śiye-*); */Hw-/ (*bueš-*, etc.).

The absence of */Hy-/ is undoubtedly systematic (cf. 6.1.3.2), but I know of no examples to show this.

Nasal + liquid: */ml-/ (*ma/ilišku-*, *ma/ilittu-*) (with Kurylowicz, 1958: 231).

There are no examples for */mr-/ or for */wr-/ and */wl-/.

Nasal + nasal: none for Hittite! Cf. CLuv. *m(a)nā-* 'look at, favor' < **mneh₁-*.

6.1.6.1.2.2 Medial Clusters

Stop + stop: */-pt-/ (*šiptamiya-*; Hrozný, 1917: 96), */-kt-/ (*šaktā(i)-*; Watkins, 1974b: 70 & 1976; prob. *uktūri-*; Puhvel, 1972: 115; *ēkt-* 'hunting net' < **yekt-*; Hamp, 1978: 119f, pace Puhvel, 1984: 260); */-gd-/ (*ēgdu-*, Puhvel, 1972: 113); */-k^wt-/ (*nekut-*, perh. *šakutt(a)-*); */-tk/ (*bart(ag)ga-*); */-d(h)gh-/ (*batk-*; Puhvel, 1991: 268); */-tk^w-/ (*watku-*).

In view of *šaktā(i)-* 'sick-maintain' < **sokto-* 'sickness', I must reject the derivation **uktr* > *uttar* 'word, matter' (Sturtevant, 1933: 126; Kronasser, 1956: 134²²; Puhvel, 1972: 112) and **lukt+* 'light' > *luttāi-* 'window' (Kronasser, 1956: 73; Puhvel, loc. cit.), and the alleged assimilation of */k/ before /t/. For the source of *luttāi-* 'window' see Eichner (1973: 80) & Melchert (1984b: 71), but for TochB *lyauto* cf. the alternative of Hilmarsson (1988).

Stop + fricative: */-ps-/ (*teṣṣu-*; not assuredly old!), */-ks-/ (*takš-*), */-k^ws-/ (*tekkušša-*).

/-ts-/ is normally indistinguishable from the unitary affricate /ts/ (but expectedly *tiṣi* 'you eat'). Stop + /H/ occurs only in secondary sequences (reduplicated *tiṭṭa-* 'thunder' and athematic first singulars like *šag(ga)bbi* /*sakhi*/, as per Sturtevant, 1933: 257, contra Pedersen, 1938: 111) and in loanwords. */H/ is regularly lost after stop (I assume already in PA: 4.1.3.2.2.1). Note the occasional simplification of even these secondary sequences: *warput* for *warphut* and *šippandun* for *šippant(ab)ḥun* (Neu, 1968a: 191).

Stop + liquid: */-kl-/ (*maklant-*, *šaklāi-*); */-pr-/ (*paprant-* etc.), */-dr-/ (*ēdri-* etc.).

The "instrumental" suffix reflected in *ḥapputri-*, *wāṣṣutri-*, *šāwitra-* could be PIE */-tr-/ or */-dhr-/. The absence of dental plus */l/ is

systematic: cf. 6.1.6.1.3.1 (2) and 4.1.6.3.1 (6). The absence of assured inherited examples of */-Pl-/ and */-Kr-/ is noteworthy.

Stop + nasal: */-dn-/ (*udnē*, occasional *-ātn-*); */-kn-/ (*šak(ku)nuwant-*, etc.), */-gn-/ (*ikniyant-*); */-gm-/ (*bukmā(i)-*, but relation to *bueg-* transparent), */-g^wm-/ (*nekumant-*).

On the problem of */-tn-/ and */-dn-/ see 4.1.6.3.1 (2) and 6.1.6.1.3.1 (4). *šaknu-* 'robe' may reflect */-kn-/ (Melchert, 1983c: 145³⁴) or */-gn-/ (Hrozný, 1919: 76⁸). *ikniyant-* 'lame' reflects **ig^hniyo-* '(lame)-legged/footed' = Grk. ἰχνίον. For semantics see exx. in Buck (1949: 318ff) and Mayrhofer (1978: 395), pace Puhvel (1984: 354). Cf. Oettinger (1976a: 22¹).

Stop + glide: */-(z)dw-/ (*bašduēr*). All other exx. of stop + /w/ involve transparent sequences with *-wen(i)*, *-wanzi* etc. Likewise internal stop + /y/ is found only with the very productive deverbal and denominal **-ye/o-* suffix. These examples are hardly probative for original stop + */y/ sequences, but none of the alleged cases of stop plus */y/ to /s/ is convincing (Puhvel, 1984: 21&412).

Fricative + stop: */-sp-/ (*wašpa-*; Watkins, 1969b: 239ff), */-st-/ (*šašt-* etc.), */-zd(w)/- (*bašduēr*), */-sk-/ (*-ške/a-*).

*/H/ is regularly lost before stop, probably in PA (4.1.3.2.2,2). All attested sequences of /H/ plus stop are in loanwords.

Fricative + fricative: */-sH-/ (*ēšhar* etc.); */-Hs-/ (*paḥš-* etc.).

As per 4.1.6.1.1 (2), I now assume that */-Hs-/ is regularly preserved only before a consonant. Examples before a vowel are analogical. The cases of */-sh₂-/ > Hitt. /-ss-/ alleged by Bernabé (1973: 429ff) are all patently false. Also impossible is **h₂āsh₂m₂* > **bāsm₂* 'hearth' (Zucha, 1988: 28).

Fricative + liquid: */-sr-/ (*kišr-*, *ēšri-*), */-sl-/ (*ešli/ut*, but is this old?).

The fate of */-Hr/1-/ is uncertain. Some attested examples are loanwords, others clearly secondary (*baḥliya-*, *baḥlabḥ-*, etc.), but others could(!) be inherited (*maḥla-*, *išbaḥru-*). Puhvel's comparison (1991: 6) of *baḥbara-* 'rake' with Lat. *area* 'threshing floor' is attractive, but the shape suggests a reduplicated form **h₂e-h₂r-o-*. Compelling examples for loss or assimilation of */H/ before liquid are also thus far lacking. Cf. 6.1.6.1.3.1 (7).

Fricative + nasal: */-sn-/ (*pišna-*, etc.); */-Hm-/ (*šuhmili-*; Catsanicos, 1986: 122f; no assimilation, contra Bader, 1990: 25); */-Hn-/ (*waḥnu-*, but cf. 6.1.6.1.3.1.6!).

All cases of internal /-sm-/ are secondary (*āšma*, *kāšma* with -ma, per Puhvel, 1978: 104ff; *našma* < **našsu-ma* with Pedersen, 1938: 200; *nu/ta=šmaš* prob. also syncopated from **nu/ta-šumaš*). The absence of inherited examples is suspect.

Fricative + glide: */-sw-/ (*(ḥu(i)šwant-* etc.), */-sy-/ (only compounds *peššiye-/ūššiye-*); */-hw-/ (**miyaḥuwant-*), */-Hw-/ (*šarḥuwant-*).

*/H/ is normally lost before */y/ (6.1.3.2). Attested /-Hy-/ is secondary (*šarhiye-* with productive **-ye/o-*).

Liquid + stop: */-lb-/ (*alpa-*, *šalpi-*), */-lp-/ (*alpant-*), */-ld-/ (*mald-*), */-lg-/ (*ḥalki-*), */-lg-/ (*ištalk-*), */-lk-/ (?), */-lkw-/ (*welkuwa(n)-*), */-lg^w-/ (*ḥalkueššar*); */-rb-/ (*ḥar(ap)p-*), */-rp-/ (*kar(ap)p-*), */-rd-/ (?), */-rt-/ (*tarta-*), */-rg-/ (*ištar(ak)k-*, *par(ak)kiye-* etc.), */-rg-/ (*ḥark-* 'perish'), */-rk-/ (*ḥar(k)-* 'hold'), */-rg^w-/ (*tarku-*; PIE **-rk^w-*).

For the gemination of voiced non-coronal stops after */r/ see 6.1.6.1.1.4.

Liquid + fricative: */-rs-/ (*war(aš)š-*, etc.); */-lH-/ (*walḥ-*), */-rH-/ (*tarḥ-*, etc.).

All these clusters are regularly preserved only before another consonant. Examples between vowels are analogical: see 4.1.6.1.1 (3) and 6.1.6.1.3.1 (10). There is no reduction of **-rsn-* to *-rn-* (contra Neumann, 1985: 25): *tarna-* 'cranium' and *taršan-* (sic!) 'throat' are separate words! The absence of assured examples for **-ls-/* is surely accidental.

Liquid + liquid: no assured examples. Hitt. *marla(nt)-* 'foolish' could continue directly **mōrlo-*, but cf. Eichner (1975a: 81⁵).

Liquid + nasal: */-lm-/ (*kalmara-*, *kalmi(šana)-*, *kalmuš-*); */-rm-/ (*tarma-*, *ērman*, etc.), */-rn-/ (*duwarni-*).

An old sequence **-Vrn-/* is assured for the last example (see Melchert, 1984b: 114⁷¹, and 10.1.6.1.3.1.3). The absence of **-ln-/* is systematic: 4.1.6.1.1 (5). In any case attested **-ln-/* in *wilna-* 'clay' is due to an originally ablauting paradigm (Zucha, 1988: 165f). Cf. 4.1.3.1 (2) on **ḥulana-* 'wool'.

Liquid + glide: */-lw-/ (*palwā(i)-* etc.), */-ly-/ (?);
 */-rw-/ (*ar(u)wā(i)-* etc.), */-ry-/ (besides */-ye/o- ?).

The examples for */-ly-/ > /-ll-/ and */-ry-/ > /-rr-/ given by Georgiev (1978: 45f) are all false, but such an assimilation remains possible.

Nasal + stop: */-mp-/ (*dampu-*, *lumpašti-*), */-nd-/ (*anda*, *šipand-*), */-nt-/ (*hant-*, etc.), */-nk-/ (*šamankurwant-*), */-ng^w-/ (*šankuwai-* ?).

The absence of */-mb-/ may be systematic (6.1.6.1.3.1,8).

Nasal + fricative: */-nH-/ (*šanḥ-*).

*/-ns-/ > /-ss-/ (6.1.6.1.3.1,9), and */-ms-/ > /-ns-/ (6.1.6.1.3.2).

Nasal + liquid: */-mr-/ (*ge/imra-*). The lack of any other combinations is striking.

Nasal + nasal: */-mn-/ (*šaramn-* etc.), but compare 6.1.6.1.1.3! The lack of */-nm-/ is systematic (6.1.6.1.5,8).

Nasal + glide: */-nw-/ (*un(u)wašḥa-*), but cf. 6.1.4.2.1 (3);
 */-ny-/ (*giman(i)ye-*).

There is no assimilation */-ny-/ > /-nn-/, pace Georgiev (1978: 45f) and Bader (1981: 62).

6.1.6.1.2.3 Final Clusters

For the treatment of consonant clusters in final position see 6.1.6.3.1. Note that a variety of clusters are irregularly preserved in second singular imperatives (*wal(a)ḥ*, *kar(a)š*, etc.) by analogy to the rest of the paradigm.

6.1.6.1.3 Assimilation

It is difficult in some cases to decide whether an assimilation is PA or specifically pre-Hittite. I try to cite whatever evidence there is on this question.

6.1.6.1.3.1 New Geminates by Assimilation

(1) PA */-DH-/ becomes Hitt. /-T-/ (or /-DD-/?) when the *//H/ is in clisis: PA **k^wid-Ho* 'each' (nt. nom.-acc. sg.) > *kuitta* (= formally CLuv. *kuiḫa* 'something/anything'). This

change at morpheme boundary is the same as the PA result of *-DH- internally (4.1.6.1.1,1), but for obvious reasons must be taken as a specifically pre-Hittite change. Cf. the special weak treatment of */-sH-/ in the same environment in section (14) below.

(2) PA */-dl-/ becomes Hitt. /-ll-/. As per Čop (1966-68: 54f), PIE "instrumental" suffix *-d^(h)lo- appears in Hitt. -ulli- (with typical Hitt. union-vowel -u- and substantivizing -i-). The alternate derivation from *-uh₂li- and equation with Latin -ūlis (Bader, 1988a: 183) is unlikely, given that stems in -ulli- are deverbative nouns. Since it appears to be deverbative, Hitt. *ḫattalla-* 'club' < *ḫatta-* 'strike' may also reflect directly *-o-d^hlo- (after Čop, loc. cit., contra Starke, 1990: 309f, and Melchert, 1993b: 64). But the denominative suffix -alla/i- is Luvian and continues *-ē-lo- (10.1.4.1). If (!) Milyan *kille-* 'payment' does represent a noun in *-t/d^(h)lo- (Melchert, 1989c: 77), the preserved geminate would argue that the assimilation is new. That would in turn imply an inherited cluster from PA and likewise an independent assimilation in Hittite. Contra Čop, *-tlo- is not a possibility for Hitt. -ulli- or *ḫattalla-*. Likewise, if the attractive but uncertain interpretation of Hitt. *pulla-* as 'son' by Hoffmann (1992) is correct, it also cannot reflect *put-lo- as Hoffmann suggests. For *-tlo- in Hittite see 4.1.6.3.1 (6). A preform *pu(t)slo- (cf. Latin *pullus*) remains quite possible (cf. Starke, 1987: 243f³).

(3) PA */-dm-/ > Hitt. /-mm-/. Contrast *ḡódmr̥s- 'defecate' > Hitt. *kammarš-* vs. CLuv. *katmarši(ya)-*. Another example may be *ud-miyant- 'grown up' > *ummiyant-* 'young adult' (implicitly Puhvel, 1984: 48). But Hitt. *imma* 'indeed' reflects *im-mo (Eichner, 1981: 64, contra Melchert, 1985: 202f), because of CLuv. *imma*/HLuv. *i-ma* (my alleged evidence for particle -id alone is also to be rejected: see Starke, 1990: 97239).

(4) Hittite apparently shares with Palaic an assimilation of */-dn-/ to /-nn-/ in the abstract suffix *-ādn- > -ānn- (for the PA preform with voiced stop see 4.1.6.3.1,2). The evidence I cited in Melchert (1992c: 47¹⁵) for this assimilation in Lycian is false: no Lycian infinitive ***siyani* exists (Melchert, 1992a: 194), and the non-appearance of the infinitive as -*ñne/a* is irrelevant, since the preform is *-uno/-una, not *-weno/a. Therefore, despite the lack of any trace of the *-u- in Lycian, the previous view that Lycian -*Vne/a* equals Luvian -*una* (Laroche, 1960a: 172f) is likely to be correct. My claim that all cases of unassimilated /-tn-/ and /-dn-/ in

Luvian may be restored after forms without the nasal remains valid. There is thus no way to be certain whether the assimilation of */-dn-/ to /-nn-/ is PA or not: cf. Rosenkranz (1978: 64). Obviously, however, without any positive cases for the change outside Palaic and Hittite, we can posit the rule only there. Note that Luvian does not assimilate */-dm-/, while Hittite does.

Since the abstract suffix surely continues PA */-dn-/ (4.1.6.3.1,2), one cannot explain the lack of assimilation in *utnē* 'land' as per Puhvel (1972: 112): */-tn-/ assimilates, while */-dn-/ does not. The OH forms of 'land' demand the immediate preforms nom.-acc. **udnēy*, obl. **udny-*, a likely "hysterokinetic" collective plural, as per Schindler (1975a: 9). A suffix **-ni-* seems unlikely and is contradicted by the Armenian cognate *getin* 'ground, land' < **wedēno-* (Götze-Pedersen, 1934: 79f). Zucha (1988: 300f) suggests a secondary derivative from **wed(e)n-*, the weak stem of 'water': **wed(e)n-o-* 'of water' > 'watered land' (with substantivization in Arm. *getin* and substantivizing *-i-* in Hitt. **wedn-i-*, as elsewhere). Compare for the semantics CLuv. *hapat(i)-* '(river) valley'. Hitt. *udnē/udny-* would be a collective to **wedn-i-*. Whether one accepts this precise derivation or not, the Armenian word does suggest that the *-dn-* in the Hittite reflects an ablauting base where the **-dn-* cluster was not uniform, hence its preservation. It still seems possible (though hardly necessary) to relate Grk. ἔδαφος 'ground, bottom'. Adding οὐδός 'ground' seems difficult, but compare Hamp (1969: 10). On alleged CLuvian **wadna-* and Lyc. *wedre/i-* cf. 12.1.6.2 (2). For a very different analysis of 'earth' see Hamp (1969) and Rasmussen (1992: 54f), neither of whom I can follow.

The unassimilated /-dn-/ clusters in *taksatniya-* 'make level' or *iyatniyant-* 'flourishing' are not Luvianisms, pace Starke (1990: 493) et al., but merely trivial analogies to the nom.-acc. forms of the respective base words *taksātar* and *(i)yāta(r)* (with Kronasser, 1966: 101). Neither example can be Luvian, since **do/ekš-* would not yield *takš-* in Luvian (10.1.1.1), while the Luvian word for 'mobile wealth' is *iunabit-* (Morpurgo Davies and Hawkins, 1987: 273).

(5) For assimilation of */VH_sV/ to /VssV/ as already PA, see 4.1.6.1.1 (2). None of the examples cited by Bernabé (1973: 422ff) for a synchronic alternation of /-ss-/ and /-Hs-/ is persuasive. The hapax *naššariya-* for *naḫšariya-* 'be afraid' (KUB XLIV 4 Vo 7) is probably real, but isolated.

(6) It is uncertain whether */-Hn-/ assimilates to /-nn-/. The /-Hn-/ of *waḥnu-* 'turn' and derivatives may be maintained/restored after the transparent base *wēḥ-/waḥ(h)-*. The examples for assimilation to /-nn-/ cited by Bernabé (1973: 439ff) are all false. **Tarḥunna-* < **t(e)rh₂u-h₂no-* (Bader, 1988a: 186 & 1990: 12; cf. *Portūnus*) is attractive, but the quality of the laryngeal is uncertain (cf. Eichner, 1983: 64). The same applies to *kunna-* 'right-(hand)' < **kuh₂no-* *'the strong one' (cf. for the semantics OE *swipra* < *'the stronger', in Buck, 1949: 865). The equation of *kunna-* with Skt. *śunā-* 'luck' (Zucha, 1988: 47, after Eichner) is phonologically impossible: expect **kunā-* (cf. also Neumann, 1975: 232f). Puhvel (1989: 360f) and Dunkel (1988-90: 23ff) have independently compared the suffix of *tawananna-* (title of the Hittite queen) with that of Lat. *matrōna* etc., but it is by no means clear that *-ōna* reflects **-oh₂nā* (indeed Dunkel argues explicitly against it). The diminutive suffix *-anna/i-* is Luvian and therefore ambiguous: I find **-ē-no-* with "Čop's Law" more likely (10.1.4.1), but **-eh₂-no-* cannot be excluded (Bader, 1988a: 186).

(7) Eichner (1975a: 80f) proposes that the Hitt. 1st person sg. voluntative form *-allu* continues a first person subjunctive ending plus *-lu*. His own account fails to explain the geminate *-ll-*, but one could suppose **-oh₂lu* > *-allu*, implying an assimilation **-h₂l-* > *-ll-* (Oettinger, 1979a: 259 & passim). This seems attractive in the absence of any compelling evidence for **-h₂l-* preserved as *-hl-* or for loss with compensatory lengthening, the other two most likely outcomes. However, one feature of the forms in *-allu* is that in all cases where there is a distinction, they are formed from the weak(!) stem of the verb: *ašallu*, *sekkallu*, etc. This is quite unexpected if the preform is a PIE subjunctive. I must therefore doubt the derivation. Bader (1988a: 180ff; 1991: 92) derives the denominative suffix *-alla-* from **-eh₂-lo-*, but since all examples of *-alla/i-* may be Luvian, a preform **-ē-lo-* with "Čop's Law" is more likely (10.1.4.1).

(8) The thoroughly convincing comparison of Hitt. *kappi-* 'small' with Av. *kamb-* by Szemerény (1966a: 207) is confirmed by the Lydian gloss *καμβειν* (13.1.1). Whether one starts with **kmb(h)i-* or **komb(h)i-* for the Anatolian form, I see no reasonable way to account for the absence of */m/ and geminate stop except to assume an assimilation of */-mb-/ to Hitt. /-bb-/. Given this very solid example, I also prefer to derive Hitt. *istapp-* 'stop up, shut' from **stēmbh-*, thus /stabb-/ (cf. Benveniste, 1933b: 139). The single /-b-/ in *istāpi* is analogical to the type of *aki/akkanzi* and

išpāri/išparranzi (otherwise Oettinger, 1979a: 419f). HLuv. (*261) *ta-p(a)-* 'close up, block off' can be read as /*tab-*/ or /*tamb-*/. If(!) Lycian *teb-* means 'besiege' and is cognate (Melchert, 1993a: 68), it would suggest that */-mb-/ > /-bb-/ is PA, but the interpretation is anything but assured (and compare the contradictory implications of 12.1.6.1,7).

(9) PA */-VnsV-/ becomes Hitt. /-VssV-/: cf. Bernabé (1973: 422). For probable evidence that this rule, shared with Palaic and Luvian, is not PA, see 12.1.3.1 on Lycian and Milyan. Examples: **dēnsu-* 'massive, mighty' > *daššu-*, **h₂ónso-* 'offspring' > *hāšša-*, **h₂ā/ónsu-* > *haššu-* 'king' (by whatever root etymology; see Tischler, 1978: 193&207f w/refs.). For a detailed discussion and the contrast with secondary pre-Hittite */-VnsV-/ > /-VntsV-/ see Melchert (1983b: 7ff) and cf. 6.1.3.1. A sequence */VmsV/ does not assimilate to Hittite /-VssV-/, pace Puhvel (1991: 217f). See 6.1.6.1.3.2.

(10) PA */-VrsV-/ becomes Hitt. /-VrrV-/: cf. Čop (1966-68: 51f). The only sure example thus far is **órso-* 'arse' > *ārra-*, but it is undeniable (Friedrich, 1923: 376, pace Neumann, 1961b: 80). The derivation of *parranda* 'beyond, across' < **porso+* (Čop, 1966-68: 52) is merely possible, and that of *tarru-* 'sprawling' < **torsu-* is very dubious (Čop, 1971b: 30ff): **-rh_x-* is possible in the first instance and much more likely in the second (see 6.1.5.26, end). All putative counterexamples known to me may be explained either from a zero-grade **-rs-* or as analogical to related forms where */-rs-/ is in pre-consonantal position, where it is regularly retained. Most such cases are inner-paradigmatic. In the case of *warša-* 'rain-shower' (or similar) < **wórso-* (Eichner, 1973: 89²⁶, et aliter), one may assume prehistoric association with the athematic verb *warš-* 'soothe' in its more original meaning 'trickle, drip'. It is possible that this assimilation rule is PA. The derivation of *ārr(a)-* 'wash' < **ōrs-* (Kimball, 1983: 182ff; cf. already Götze-Pedersen, 1934: 48) is excluded by the Tocharian cognate *yār-* 'bathe', whose forms point to **e/orh_x-* (Ringe, pers. comm.).

(11) Recall that I attribute the assimilation */-VRh_xV-/ > /-VRRV-/ to PA. For examples see 4.1.6.1.1 (3).

(12) For assimilation of */-ln-/ to /-ll-/ as already PA, see 4.1.6.1.1 (5).

(13) One finds sporadic assimilation of /-ps-/ to /-ss-/ in GIL *hapsalli-/hassalli-* 'camp-stool'. The word may or may not be a borrowing. The account of Puhvel (1991: 129) is quite impossible (cf. 6.1.6.1.3.2).

(14) While /-sH-/ is normally preserved in Hittite (*išbi-* 'bind' < **Hí-sHí-*, etc.), the sequence is assimilated to /-ss-/ in the case of the enclitic conjunction *-*Ho*: Hitt. *kuišša* 'each, every' = formally CLuv. *kuiš-ša* 'some/anyone': see Houwink ten Cate (1973: 120⁵) and already Pedersen (1933: 184); false Puhvel (1984: 8f). Likewise acc. sg. *kuinna* vs. CLuv. *kuinša*. Cf. the specially conditioned loss of */H/ intervocalically in the same enclitic (6.1.6.1.5,6).

(15) I reject categorically a distant assimilation **k...*H* > **H...*H* (followed by a convenient dissimilatory loss of the second **H*!), first proposed by Peters (1980: 230^{176a}) to derive *haršar/haršan-* 'head' from **kerh_xs-* and extended by Puhvel (1991: 190) to *harwant-* 'keeper' from **kerh_x-* (the latter is rather simply *bar-want-* 'keeping' < *bar(k)-* 'keep, hold'). The desperate attempt to derive *harš+* 'head' from **kerh_xs-* and relate it to Skt. *śiṛṣan-* etc. at all costs must be abandoned! As shown by Puhvel's own attractive adduction of *harši-* 'thick loaf' and 'bowl' (1991: 197) and by *haršuman-* 'located at the head; headwaters' (Melchert, 1983b: 11), the *r/n* inflection of *haršar/haršan-* is unlikely to be old, and the putative morphological match with Sanskrit carries no weight (see already the refutation by Nussbaum, 1986: 21f⁴, citing the same examples). The likely comparanda for *harš+* 'head' remain Grk. *ὄρος* 'mountain' and Skt. *ṛṣvā-* 'high' (Götze, 1937: 492³). Despite the difficulty in sorting out reflexes of the root **h₁er-* 'move' > 'rise' from a putative **h₂er-* 'high, prominent', the existence of the latter remains possible (see Polomé, 1952: 449f). Whether Tocharian *arām/ere* 'form, appearance' (sic!) belongs here is another matter (cf. Polomé, loc. cit., and Schindler apud Zucha, 1988: 177).

6.1.6.1.3.2 PA */m/ assimilates to a following dental or velar in some cases. PA */-ms-/ > Hitt. /-ns-/ (Melchert, 1988b: 211ff): **ómso-* 'upper back' > *an(aš)ša-* (etym. Puhvel, 1984: 63); **óms-* 'wipe' > *ān(aš)š-* (Melchert, loc. cit., but the tentative etymology must be rejected, since the long *ā-* requires **ō*). CLuv. *am(ma)šša/i-* 'idem' shows that the assimilation is specifically pre-Hittite. Note further that this change must follow assimilation of original */-VnsV-/ to /-VssV-/ (preceding section, 9). Contra Oettinger (1979a: 439) and Puhvel (1991: 217f), one must distinguish **h₂o/ens-* 'beget, give birth' > Hitt. *hāšš-* and HLuv. *has-* (/hass-/) from

**h₂ó/émso-* > Luv. *hamša-/ha-ma-sa-* 'grandchild': for the **h₂em-* of the latter cf. Grk. ἄμναμμος, as per Bader (1988b: 33).

PA */-mK-/ > */-nK-/ (prob. [-ŋK-]). For this change note **nem-K-* 'take one's share of drink' > *nink-* 'drink one's fill'. Cf. for the semantics Span. *tomar* 'take' > 'drink' and for the formation **Has-K-* 'be satiated' > *haššikk-* (vs. unextended Pal. *haš-* 'idem', HLuv. (LINGERE)*ha-sa-* 'satiety'). For the analysis of *haššikk-* see already Oettinger (1979a: 194).

Puhvel (1984: 463) derives *istanḥ-* 'taste' < **stem-h₂-*, assuming the same root as in *istaman-* 'ear' with a general meaning of sensory perception and an assimilation of PA */-mH-/ > */-nH-/ (prob. actually [-ŋH-]). This otherwise very plausible account is contradicted by the evidence that *istaman-* cannot reflect a root **stem-* (see 4.1.3.2,4).

6.1.6.1.4 Secondary Gemination

There are a number of cases, especially in NH, of geminate spellings of intervocalic sonorants in words regularly (or previously) spelled with single consonant. The total absence of this phenomenon in other examples such as *gēnu-* 'knee' or *pēran* 'before' excludes a strictly phonological change, as implied by Oettinger (1979a: 118). On the other hand, the absolute consistency of the geminate in the NH stem *kuenna-* 'kill' argues against a mere spelling habit. I cite here all examples known to me, with no pretense that the list is exhaustive: *kuenna-* 'slay' (regular), *merrant-* 'vanished' (regular); *arkuwarri* 'pleas' (N-API, 1x), *kuerri* 'cuts' (Pres3Sg, 1x), *kuinna-* 'woman' (1x), *minumarri* 'soothings' (2x), *sallanumarraza* 'raising up' (1x), *sāuwarri* 'resentment' (D-LSg, 1x), *zankilatari* 'expiations' (1x); *buḫupal(l)i* 'clapper(s)' (geminate OH!), *išḫiul(l)aš* 'treaty', *katter(r)a-* 'lower', *kazzarnul(l)i* '?!', *kurtal(l)i* '?!', *pašsul(l)i* 'crumbs', *waštul(l)i* 'in sin'.

The contrast of NH (ASA) *kuera-* 'field' and *kuerri* 'cuts' is instructive. The former is a pre-Hittite deverbative animate noun < *kuer-* 'cut' (cf. *šarra-* 'share' < *šarra-* 'divide' etc.). The latter is a nonce-creation beside regular *mi-*verb *kuerzi* 'cuts'. A close examination shows that the great majority of other examples cited above are likewise secondary creations. In all these cases, a morpheme-final sonorant which was pre-consonantal (hence syllable-final!) secondarily appears before a following vowel: /k^wer.i/, /sa.war.i/, /sallanumar.ats/, etc..

There are two likely phonetic responses to such a new underlying sequence. The first is to resyllabify, and this is attested, e.g., in the likewise secondary nt. nom.-acc. plural *kururi* 'hostile': /kurur.i/ > [ku.ru.ri]. However, it seems equally likely that the sonorant will be spread across the syllable boundary, and this is what I suggest has happened in the cases above: /kwer.i/ > [kwer.ri] and so forth.

This account explains directly examples like *kuenna-*, *kuinna-*, *merrant-*, *šāuwarri*, and the nom.-acc. plurals in *-arri* (on the surely secondary status of the *-i* here see Gertz, 1982: 313ff). In neuter *l-*stems such as *buḫupal-*, *išḫiul-*, and *waštul-*, a reanalysis of the oblique stem as based on the founding nom.-acc. singular is also plausible: nom.-acc. sg. /isHyul/, hence gen. sg. /isHyul.as/ > [isHyul.las] (beside regular [isHyu.las]). The only example known to me where the gemination is unexpected by this hypothesis is *katterra-*. Here I can only appeal to analogy with the other cases cited. I cannot accept the analysis of *buḫupal(l)i-* by Oettinger (1994b), which depends on the pretonic gemination of sonorants in Hittite (cf. 6.1.4.1.1).

6.1.6.1.5 Deletion

(1) There is some evidence for loss of /s/ before /ts/ (Eichner, 1973:88²³; Oettinger, 1979a: 213): *ārzi* lx for *ār(a)šzi* 'flows', *papparzi* lx for *pappar(a)šzi* 'sprinkles', *takkizzi* 2x for *takkīšzi* 'wields', *tapuzza* 2x for *tapušz(a)* 'beside' (Neu apud Tischler, 1991: 139), (*āppa*) *parz(a)* 'backwards' beside *par(a)šz(a)* 2x. The ratio in favor of the form with deletion in the isolated adverb suggests that the loss of /s/ here may be regular. In verb paradigms it is normally restored by analogy (/arstsi/ after /arismi/ etc.). I have proposed the same loss in Luvian (Melchert, 1987a: 200f).

(2) A dental stop is lost between */s/ and either */t/ or */ts/: (virtual) **šīzd-ti/tu* 'prosper' > *šēšzi/šīšdu* (Oettinger, 1979a: 216, after Carruba apud Friedrich, 1966: 28f, contra Eichner, 1982a: 26⁵²), **taist-ti-* 'burden' > **taist-tsi-* > *taišzi-* (cf. *taišṭā(i)-* 'load').

(3) Stops are sometimes lost in the middle of clusters involving sonorants: *kišnu-* 2x for *kištnu-* 'extinguish', *ḫinnuzi* lx for *ḫing(a)nuzi* 'makes bow', *ḫamanzi* lx for *ḫama(n)kzi* 'intertwines', *ninzi* lx for *ni(n)kzi* 'drinks one's fill' (in the last three cases it is probable that the nasal first assimilates to the velar, thus leaving [ḫignutsi] etc.). The form *tamezzi* 'presses' probably also reflects an underlying /tamenktsi/ with loss of the velar

and then the nasal (for which see 6.1.4.1.3). I would also assign here the *tamenta* (for /tamenkta/) cited by Oettinger (1979a: 94). Given the number and similarity of these examples, I see no reason not to take them as linguistically real. However, contra Čop (1958: 54f) *batalkis(na)*- 'hawthorn' does not reflect a second member **alkistna*- (thematized from *alkiŝtan*- 'branch'). We have rather a compound **had(a)-alkiŝ*- 'thorn-branch' (see 6.1.6.1.1.2 and for the first member now Watkins, 1993b: 244f, with comparison to OIr. *ad** 'hawthorn'). The preconsonantal form *har-* of *hark-* 'hold, have' may originate in the same way, with generalization due to the frequent use as an auxiliary, as often suggested (e.g. Eichner, 1975c: 89f; false Puhvel, 1991: 156; cf. 6.1.6.1.2.2). The loss of a velar stop in **trKnáH-* 'release' > **tarKnā-* > *tarna-* probably also belongs here (cf. TochA present stem *tárnāš* to *türk-*). The alternation in *happu(t)riya-* is obscure (cf. Puhvel, 1991: 135).

(4) In cases where a *-ške/a-* form coexists with a base ending in a velar stop, the latter is maintained by anaptyxis: *akk-*, *akkisške-* 'die', etc. (see Melchert, 1984b: 134, expanding Oettinger, 1979a: 41). Since this formation is fully productive in Hittite, and the *-ške-* form renewable from the base at any time, I find it likely that *paške-* 'plant, fasten' represents **pag/k-ske-* (root ultimately **peh₂g/k-*) with regular simplification of the cluster **-ksk-* in this case where the base verb has disappeared (so also Rikov, 1982: 24; cf. Oettinger, 1979a: 327).

(5) Puhvel (1978: 103) derives *damāi-* 'other' from **dwoyosmōi*. The use of a dative singular ending as the stem form seems to me problematic, but the pronominal formant **-smo-* may indeed be at work here. If so, the OH spellings with single *-m-* point to loss of **/s/* in an internal **/-sm-/* cluster, not assimilation.

(6) PA **/H/* is lost in Hittite in enclisis, based on the treatment of the conjunction **-Ho* (for **h₂o* in this morpheme see Dunkel, 1982/83: 198f & 1988b: 62, and Melchert, 1992c: 46, contra Bader, 1982: 131 et aliter). Hitt. *nūwa* 'still, yet' may be analyzed as **nú-Ho*, structurally equivalent to Goth. *nauh* = OHG *noch* < **nu-k^we* (Melchert, 1984b: 30). For the development of **-Ho* to Hitt. *-ya* 'also, and' see Melchert (1984b: 165) and cf. Pedersen (1933: 184) & Eichner (1980: 129⁴¹). Hitt. postvocalic *-ya* cannot reflect PIE **-yo*, contra Dunkel (1982/83: 180f) et al..

(7) A nasal is lost in Hittite before a cluster of */s/ + stop (see Eichner, 1970: 172³): (secondary) **g^wenske-* > *kuwaske-* 'slay', (syncopated) **Hanske-* > *baš(sik)ke-* 'litigate; judge'; **wómst-* > *wašt-* 'sin' (with Catsanicos, 1991, pace Puhvel, 1992), prob. **ensternē* > *ištarna* 'between, among' (Melchert, after Puhvel, 1984: 482).

(8) Before nasals and glides there is evidence for a regular loss of /n/, not assimilation, contra Kronasser (1956: 73) & Oettinger (1979a: 118): cf. Sturtevant (1933: 133f); Pedersen (1938: 126); and Kronasser (1966: 102). We find *kuemi* 'I slay' < **g^wépmi*; *šamenu-* 'cause to disappear' < **smépn-(e)u-*; *kucwen* 'we slew' < **g^wépn-wen*; *šaudišt-* 'new-born' < **sópn-wetes-t-* 'of the same year' (cf. 4.1.1.1, 6.1.5.10, & 6.1.6.2.2); *dāiuga-* 'two years old' prob. < **dāpn-yuga-*; and perhaps *awiti-* 'sphinx' < **n-wid-* via **aḫ-wid-* (Puhvel, 1984: 247). Additional examples occur in productive sequences with enclitics, as expected alongside forms with the /n/ maintained, which may then undergo sandhi assimilation (5.3.9): *mā=wa* for *mān=wa* 'if' + quotative part. (Kronasser, 1956: 74), *tā=ma* lx for *dān=ma* 'but the 2nd time', *šabḫa=met* for *šabḫan=met* 'my corvée', *tarša=ma* for *taršan=ma* 'but the throat' (acc. sg.), perhaps also *kišša mema-* (2x), cited by Kümmel (1967: 17). With no examples from OH manuscripts, we cannot determine whether *im(m)iye-* 'mix' < **enmye/o-* has the same loss or assimilation to *-mm-*.

The regular treatment of /(V)ns/ morpheme-internally is certainly assimilation to /(V)ss/: see 6.1.6.1.3.1 (9). We do find *kueši* 'you slay' to *kuen-* and *šamešiya-* 'disperse' (incense) which contains *šamen-*. The former may be analogical to *kuemi* and *kucwen*, while the latter, whose formation is obscure, could be based on a **same-* backformed from *šame-nu-* cited above. In the absence of any other examples for deletion of */n/ before /s/, I tentatively view these two examples as secondary.

6.1.6.1.6 Dissimilation

(1) Given the undeniable existence of CLuv. *hišbi-*, the semantics of Hitt. *išbu(wa)-* 'sprinkle' vs. *šubḫ(a)-* 'pour', and the other evidence for the type in Luvo-Hittite, I still prefer to derive Hitt. *išbi-* 'bind' and *išbu(wa)-* from reduplicated *i-* presents with dissimilatory loss of the initial **H-* (Meriggi, 1953: 37, and Melchert, 1984b: 99f, contra Oettinger, 1986b: 48; cf. on *išbi-* Sturtevant-Hahn, 1951: 51). Other possibilities cannot be entirely excluded. One could explain *išbi-* (**/sHi-/*) as backformed from the weak stem of an ablauting paradigm

which had become highly irregular in pre-Hittite: **séh₂i-h₂ei/séh₂yei/sh₂yēnti* > **sabbibbi/*sāi/sbyanzi* (for the type compare *tebbi/dāi/t(i)yanzi*). Similarly, one could start with an ablauting root present **séh₂u-mi/sh₂u-wēni/sh₂w-ēnti* > **sabbumi/*subweni* (metathesis as per 3.3.5)/s**h**(u)wanzi. This very irregular paradigm would have split into *subb(a)-* and *(i)sbu(wa)-* with secondary differentiation of the meaning. Regular loss of initial **/H-/* before **/i/* in reduplicated forms (Rikov, 1980: 77ff) is very unlikely.

I now reject a dissimilatory explanation of *walb-* 'strike' (contra Melchert, 1984b: 11572, following Oettinger, 1979a: 264, Bernabé, 1973: 434, et al.). We should rather assume a root **welh₂-* 'strike' (seen elsewhere at least in Lat. *uolnus* 'wound') and keep separate *bulle/a-* 'fight' etc., following Lehrman (1985: 235ff) and Puhvel (1991: 367f). See 4.1.6.1.1 (5) for further discussion.

Hitt. *hamesha-* 'spring' may or may not reflect dissimilated **h₂meh₂sh₂o-* (Starke, 1979: 249).

(2) Dissimilatory loss of **/r/* is seen in **srakur-ye-* 'water' > **srakru-ye-* (next section) > **sakruye-* > *sakruwe-*. The base noun **srakur* (i.e. **/srag^w-wr/*) belongs to the poorly attested *s(a)raku-* (*/sragw-/*) 'to water' (contra Čop, 1963: 34). Final **-r* is also lost by dissimilation in *pēru* 'rock' < **pēru* < **pērw* (Eichner, 1973: 75).

(3) Elsewhere */r/* is dissimilated to */n/* following another proximate */r/*: **urōri* 'burns' > *urāni*; likewise **urirant-* 'burning' > *urinant-*: see Sommer (1930: 120ff) and Kronasser (1956: 74) contra Kronasser (1966: 103).

(4) A preform **neg^wno-* 'naked' is dissimilated to **neg^wmo-* seen in *nekumant-* (Lindeman, 1965: 32). This change could be PA instead of pre-Hittite.

(5) See 6.1.4.2.1 on **/w/* > */m/* next to **/u/*.

(6) I assume that dissimilation of **/n/* to */l/* before proximate nasal is PA (4.1.6.1.2). Hamp's alternate suggestion (1988b) of a special development of initial **h₂n-* is not credible. I do not believe the dissimilation of **emen(e)* to *ammel* 'mine' suggested by Georgiev (1970) and Carruba (1976: 134). Watkins (1985c: 6172) plausibly suggests that Hitt. *māl-* is 'inner strength' < **'mental force'* from a root noun to **men-* (cf. also CLuv. *mali(ya)-* 'think').

6.1.6.1.7 Metathesis

(1) Pre-Hittite **srag(w)wrye-* 'water' > *šakruwe-* with metathesis of **wř* to *-ru-* (see also (2) of the preceding section). Similar is *-g^wm-* > *-gmu-* in *nekmuntatar* 'nakedness' beside *nekumant-* 'naked'.

(2) Metathesis of **/h₂u/* to **/uh₂/* is a PIE process (2.3 (5) w/ refs.), but *erubi-* for *erhui-* 'basket' in a loanword from Luvian suggests that other Hittite examples of **/Hw/* > */uH/* need not be old: *tarhu-/taruḥ-* 'be able', *išhu(wa)-* 'sprinkle' but *šubḥ(a)-* 'pour'.

(3) An interesting distant metathesis appears in *ḥaššarnila-* 'head' (of grain) and *ḥaššarnant-* 'having heads' (of grain), both derivatives of *ḥaššan-* 'head' (Melchert) and in *araša/i-* 'door' (beside 1x *ašari-*) < Hurr. *asar-* (Puhvel, 1984: 128f). Note also hapax *arašan* to *ašara-* 'white' (Puhvel, 1984: 206).

(4) Hitt. *apiši-* 'exorcist' is metathesized from Akk. *ašipu-*, as per Puhvel (1984: 102), who compares also Hitt. *kurpiši-* 'hauberk' but *gurzipant-* 'wearing a h.' to Akk. *gursipu/gursipu*. Note also hapax *maršiḥ* [] for *marīḥši-* (impurity in wool).

(5) Metathesis of **-lsn-* to **-lns-* is possible in *alanza(n)-* 'alder' (?), as per Puhvel (1984: 30).

(6) We find once *mazki(ya)-* beside *mak(ki)zi(ya)-* (Güterbock and Hoffner, 1980ff: 3.123).

6.1.6.1.8 Alternations

(1) There is evidence for interchange of */k/* and */H/* after */s/*. At least in *ḥameškant-* for *ḥamešhant-* 'spring' and *GISŠU.A-ki* for *kišḫi-* 'chair' (Hurrian loanword) the substitution is */k/* for */H/*, but Oettinger (1980b: 593) also cites *taḫš-* for *takš-* and *išharuḥ-* for *iškaruḥ-*, while Puhvel (1984: 427) adds *išḫiš-* for *iškis-* and *ḥaḫara(i)-* for *ḥazkara(i)-* (1991: 280f). The case of *išḫunabḫ-/iškunabḫ-* and *išḫunā(i)-/iškunā(i)-* 'disfigure' (?) is much less clear (see Puhvel, s.v.). Here there may be more than one verb involved.

Note also in other contexts perhaps *panduga* coll. pl. for *panduḫa-* 'stomach' (or sim.) and *kuwankunura-* beside *ḫu(wa)nḫuwan-* 'wave' etc. Finally, one should recall the famous problem of *išḫaḫru-* 'tear', if indeed this stands for **iḫakru-* (Oettinger, 1979a: 367²²⁴; Puhvel, 1984: 393).

(2) We find sporadic interchange of /r/ and /l/ and assuredly in both directions: *kalipten* lx for *karipten* 'devour', *taluppan* lx for *taruppan* 'joined', but also *aṣḥayūr* lx for *aṣḥayūl* '?', *ḥapalzār* lx for *ḥapalzil* '?', and *ḥastariyatar* lx for *ḥastaliyatar* 'heroism' (but the last example may be Luvian).

(3) I attribute the initial /l-/ of *lāman* 'name' and *lammar* 'hour' to a PA dissimilation (4.1.6.1.2), but we also find other apparent substitutions of /l/ for /n/ in Hittite: *armala-irmala-* 'sick' and *irmaliya-* 'be sick' beside *irmaniya-* 'idem' (base noun *ērman-*) (so also Oettinger, 1981a: 147); *ṣargaliya-* for *ṣarganiya-* 'ascend' (?) (vice-versa Oettinger, 1979a: 354); *ḥalmaṣṣwitt-* 'throne' < Hatt. *ḥanwaṣṣuitt-*.

One also finds alternation of l/n before a dental stop: *bultala-/ḥuwantala-*, also *bultalā(i)-/ḥuwantalā(i)-* (denom. from preceding, pace Puhvel, 1991: 429); *maltalla/i-/mantalla/i-* 'slanderous' (or sim.); *makalti-/makanti-* (Hurrian loanword). Cf. also CLuvian *ṣakaldamman-* 'destruction' vs. HLuv. *sā-ka-ta-li-sa-/sakantalissa-/* 'destroy' (or sim.): Starke (1990: 276f&515ff) & Melchert (1993b: 184ff).

6.1.6.1.9 Haploglogy

Reduction of /-wawa-/ to /-wa-/ is regular in *arkuwar* 'prayer' for **arkuwawar*. That in the borrowing *nawartanna* 'nine circuits' for **nawawartanna* may thus also be real, as well as that in hapax *uwanzi* for *uwawanzi* 'to come'. Mere haplography in the last two cases cannot of course be excluded. The collective *lalakueṣṣar* 'ant swarm' reflects **lalakwesessar*. The other examples cited by Kronasser (1966: 103f) are dubious or false.

We find repeated *pabili* for expected **pabilili* 'in Babylonian'. The reality of the following hapax examples cannot be determined: *tawalaṣ* for *tawalalaṣ* 'server of t.', *mernun* for *mernunun* 'I caused to disappear'.

The alternation *parā ḥandandātar/ḥandātar* 'providence' is not due to haploglogy, but to derivational renewal: see the compelling analysis of Puhvel (1991: 106f).

6.1.6.1.10 Nasal Perseveration/Anticipation

Probable perseveration appears in *man(za)zzi* 'endures' beside *mazz-* (cf. Oettinger, 1979a: 208⁸¹). Likely examples for anticipation are *ḥandanda* for *ḥattanta* (Oettinger, 1976b: 125).

and *šuwandumat* for *šuwattumat*. See further Kronasser (1966: 93).

Oettinger (1994a) has explored this phenomenon in a larger context, to whom I refer the reader for further examples of varying degrees of probability. Of particular interest is his application of this idea to the problem of unexpected /ts/ for /s/ in Hittite in the presence of a following nasal:

One finds sporadic initial /ts/ for /s/ directly before sonorants: *z(a)mankur-* 'beard' beside *š(a)mankurwant-* 'bearded'. The word *z(a)lug(a)nu-* 'postpone, delay' probably represents **sl(e)ug-* with the same development generalized (cf. Laroche, 1950: 41, for the etymology). This change before another consonant can hardly be viewed as epenthesis (cf. 6.1.3.1), and voicing in initial position as per Laroche is not credible in view of general developments there (1.2.6.1.3).

As per Oettinger (1979a: 152⁴⁰), there are also apparent examples when the nasal does not immediately follow the */s/: **šēno-* 'year' > *zēna-* 'autumn', **si-nh-* 'finish' > *zinni-* (Eichner apud Oettinger), *zankil-* 'penalty' < **sank-* (but for *zē(ya)-* 'be cooked' see 6.1.1.2). The alternate etymologies of *zinni-* and *zankil-* by Barton (1993) are not credible either phonologically or semantically. Oettinger (1994a) now suggests that here too we have nasal anticipation, only in word-initial position: **#s(...)N* > **#ns-(...)N* > *ts(...)N* (with regular epenthesis in secondary nasal plus */s/ as per 6.1.3.1). Since nasal anticipation is not a regular process, the existence of counterexamples with normal /s-/ does not necessarily falsify the analysis: *šanḫ-*, *šarnink-*, *šunna-* etc.. I find Oettinger's explanation attractive, since it does account for the restricted environment of irregular initial */ts-/. By the persuasive interpretation of Neumann (pers. comm.) of Lyc. (*tri*)-*sāni* as 'three-year old' (i.e. 'three autumns old'), the change in **seno-* 'autumn' must be already PA, since ordinary **s* yields only Lycian *h*, while secondary **ns* could easily lead to *s* (cf. 12.1.3.1 & 12.1.6.4.1). One should also consider the possibility raised by Puhvel (1984: 321) that Hitt. *ēzzan* 'chaff' represents secondary **ēns-ṇ* for **ēšṇ*.

Not all cases of inorganic /n/ may be attributed to anticipation/perseveration. As per Justeson and Stephens (1981: 367f), some examples such as *ḫantessar* for *ḫattesšar* 'pit' are surely hypercorrections based on the loss of nasals before homorganic stop (6.1.4.1.3). They also compare hypercorrect *n=an=šan* 'and he(!)' for *n=aš=šan* (nominative), based on the sandhi treatment [n=as=san] for the accusative (5.3.9).

Claims of spontaneous 'irrational' nasalization in Hittite and elsewhere by Carruba (1970c: 72ff & 1984) are not convincing.

6.1.6.2 Vowels

6.1.6.2.1 A number of words appear with and without initial *a*:- (*aš*)*šuraššura*- (bird name), ^D(*Am*)*mamma*-, *NINDA(a)**lattari*-, and (*aš*)*huwa(n)tra*- '?', (*a*)*impa*- 'burden'. In the absence of secure etymologies, we cannot determine whether we are dealing with prothesis or aphaerisis (cf. Kronasser, 1966: 33ff). Oettinger (1979a: 456) claims definite "emphatic" prothesis in *allappabḫ*- 'spit', but this is very dubious.

6.1.6.2.2 Syncope

Syncope of sequences /-C(u)wVC-/ and /-C(i)yVC-/ to /-Cu(:)C-/ and /-Ci(:)C-/ respectively is well established (for the former see already Pedersen, 1938: 172). Examples: *šanḫunzi/šanḫ(u)wanzi* 'they roast', *tinzi/t(i)yanzi* 'they step'. I have nothing significant to add to my discussion in Melchert (1984b: 52f & 58f). The conditioning factors and the length of the resulting vowel await further study. It remains difficult to distinguish between syncope and inherited ablaut alternations in some individual cases. A use of the vowel signs *U/Ū* and *I* for /-(u)wa/ and /ya/ (Kronasser, 1966: 77ff) is not credible.

As per Eichner (1970: 12), iteratives such as *ḫaš(šik)ke*- 'litigate; judge' < **ḫannaske*- (via *ḫanske*-) probably show pretonic syncope. Cf. the irregular reduction of -*āy*- to -*ē*- in the same environment (6.1.6.2.5.5). His further account of *istamaske*- and *iḫasḫant*- (1975a: 83, followed by Zucha, 1988: 45) as syncopated **istamaniske*- and **iḫaniskant*- is also possible. In -*iye/a*- stems the -*iske*- form is itself already the result of the pretonic syncope (Melchert, 1984b: 102 etc.), but the latter is arguably already PA (cf. 4.1.6.2.3). The question remains as to why only certain stems in -*nVske/a*- would undergo syncope. See also the next section.

Occasional syncope of other unaccented vowels is also likely: PA **sóm-wetes-t*- 'of the same year' > **sōwadist*- > *sāudist*- 'of this year, new-born'; enclitic *-*sumos* > -*šmas* 'to/for you' (Hrozný, 1917: 32), *naššu=ma* (lx) > *našma* 'or' (Pedersen, 1938: 200). Cf. also Eichner (1975a: 81⁵, 1979b: 76, 1981: 60) and Puhvel (1984: 246). Cf. further *ḫalibli(ya)*- 'genuflect' < reduplicated **ḫalibḫli(ya)*-. Syncope is also

possible in NINDA *har(a)špawant-* beside NINDA *haršupanna/i-* (Puhvel, 1991: 200). Much more study is needed even to approximate the conditioning factors.

6.1.6.2.3 Anaptyxis

As per 1.2.6.6, I distinguish between those cases where a prehistoric anaptyctic vowel has become underlying synchronically and those where forms with and without the anaptyctic vowel alternate synchronically. For the latter synchronic cases, where the vowel is [a], see 5.3 (6).

Oettinger (1979a: 41), assumes that the unmarked reflex of the prehistoric anaptyctic vowel in Hittite is [e], which then regularly develops to [i] in unaccented position. However, the only solid evidence for [e] is initial */tr-/ to *[té:r-], which is a separate PA change (4.1.6.2.2,1). The conditioned development of the anaptyctic vowel to /a/ and /u/ cited below suggests rather that the anaptyctic vowel was a schwa [ə], which in the absence of special conditioning becomes Hittite /i/.

There is regular anaptyxis in a cluster of obstruent [-coronal] + obstruent + consonant or word boundary (cf. Oettinger, 1979a: 41, and Melchert, 1984b: 108f & 134f). I see no reason not to regard this process as phonological (pace Oettinger, 1993b: 155). Examples: **áks* 'died' > *akkiš*, **taksta* 'wielded' > *takkišta*, iter. **sanHške-* > *šanhiške-*, **apske-* > *appiške-*, **Hask-Ci* 'be satiated' > *haššik-Ci*, etc.. In **akʷške-* 'drink' > *akkuške-* the vowel appears as /u/ after the labiovelar. See also Oettinger (1979a: 319f), but I reject his claim of anaptyxis in cases where spelling variants argue for an empty vowel (see 1.2.6.6): *taršikke-/taraške-/tarske-/*, *az(zik)ke-/atske-/*, *zikke-/zaške-/tske-/*. It cannot be accidental that all cases involving spelling variation involve a dental as the first consonant, hence my restriction on the anaptyxis given above. On possible anaptyxis in *dammīšbā* 'harm' see 4.1.3.2.2 (4). Watkins' derivation (1985b: 252) of *lalukkiš-* 'become bright' and *lalukkišnu-* 'illuminate' < **lo-louks-* with anaptyxis is possible, but uncertain.

The stems *pišēna-* 'man, male' and *paršēna-* 'hip, thigh' beside *pišnatar* 'manhood' and *par(a)šnā(i)-* 'squat' are problematic. Oettinger (1982b: 172) suggests anaptyxis in the base nouns, with the anaptyctic vowel drawing the accent: **péano-* > **pešéno-* > *pišēna-*. The accent shift would explain both the change of the first **ē* to *i* (6.1.5.10) and the lengthening of the second (6.1.5.5). He accounts for the derivatives by a syncope of the anaptyctic vowel due to accent further to the right, a plausible if unprovable assumption. If this analysis is correct, the anaptyxis

would have to precede the gemination of */s/ before /n/ (6.1.6.1.1.2): NB *pišēna-*, not **pišēna-*. Since the latter rule is shared with Luvian (10.1.6.1.1.3), the anaptyxis here would have to be quite early indeed. A more serious problem is the absence of such anaptyxis in very similar looking words: *parš(a)na-* 'panther' < **prš-no-* (Oettinger, 1986a: 22) and nouns in *-ešsar/-eš(ša)n-*. The last example certainly reflects **-ēsn-* (Melchert, 1984b: 90). Finally, if we read [p]iṣnāš 'of a man' in *KBo XVII 1+ iv 6* (Neu, 1980a: 10), the anaptyxis is even lacking in the base word! Zucha (1988: 53f) offers an attractive alternative: 'man' is an *n*-stem **pes-ēn-*, **pes-n* 'characterized by a penis' ('individualizing' **-en-*) formed from an underlying root noun. The forms *pišēneš*, *pišenuš*, and *pišnāš* continue the *n*-stem. The stem of *LU-aš* (nom. sg.) is either a secondary thematized *n*-stem or an old adjective **pes-n-ō-* (sim. Carruba, 1993). As for 'hip', one may assume **prš-ēno-* > *paršena-* and syncope in *paršnā(i)-*. The noun *wiṭn-/wiṭān-* 'clay' reflects an ablauting animate *n*-stem, not anaptyxis (Zucha, 1988: 165f).

Unsurprisingly, the anaptyctic vowel is colored to [a] next to /H/. One sure example is **ērHti* 'outside' > **ārHts* > *arabz(a)* (/āraHts/) (see 1.2.6.6 for the orthography). The analysis of Zucha (1988: 14ff) is impossible (for **erh₂-* > *irh-* see 6.1.5.10). A synchronic /Haste:r-/ 'star' < **h₂stēr-* with anaptyxis and coloring also seems likely.

Oettinger (1976d: 95 & 1979a: 104³⁵) has suggested that the anaptyctic vowel appears as [u] in the proximity of another /u/. This seems undeniable in some cases, very likely in others. Examples: **dūHsto* 'be finished' > *tubḫūšta* (lx *tubḫūšta!*) (etym. Watkins, 1990: 452f); *iṣḫunawar* 'sinew' < **sh₂nōh₁wr* (or sim.); prob. **pn(e)u-s-* 'interrogate' > *punušš-* (Oettinger, 1979a: 215), *kunkuške-* 'raise, erect' (ibid. 179). However, Oettinger's derivation of *tubušš(i)ye-* (sic!) 'be silent' < **tuh₂s-ye-* is problematic, due to the consistently single *-h-* and the apparent alternate *dabušš(i)ye-* (cf. 5.3.6). Weitenberg (1979: 303) plausibly suggests coloring of an anaptyctic vowel to [u] after /m/ in *muhrai-* 'fibula' (?) < **m₂Hr-* beside *māhrai-* < full-grade **meHr-*. The non-syllabification of **m-* in **mHr-* is easily analogical to full-grade **meHr-*, and the complex scenario of Zucha (1988: 283f) is unnecessary. The alternate analysis of Bernabé (1984) is impossible, since medial **/h₃/* is not preserved as *-h-* in Hittite. I cannot believe an anaptyctic *u* in Hitt. *suli(ya)-* 'lead' < **slī-* (Neumann, 1959: 349). Contrast *š(a)lig-* (5.3.6) and *z(a)lug(a)nu-* (6.1.6.1.10).

6.1.6.2.4 Prop Vowel

I follow Eichner (1975a: 80) & Oettinger (1979a: 96) in assuming a secondary "prop vowel" in pret. 3rd singulars like

ēpta 'took' < **ēpt*, contra Pedersen (1938: 98) and Kronasser (1956: 31). The reality of the vowel is supported by the spelling *e-ku-ut-ta* for /ég^wta/ 'drank', where ***e-ku-ut* would have been sufficient to spell a real **/eg^wt/ (W. Cowgill, pers. comm.), and by *bi-in-kat-ta* 'presented' and *li-in-kat-ta* 'swore' beside *bi-in-ik-ta* and *li-in-ik-ta* (Oettinger, 1976a: 40). For a different viewpoint see Yoshida (1991: 368 & 1993: 28f) and cf. Pedersen (1938: 201).

6.1.6.2.5 Contraction

(1) Sequences of like vowels resulting from loss of intervocalic **y*/ lead to the corresponding long vowel: */e_e/ > /e:/ (anim. pl. **-eyes* > *-ēš*); */o_o/ > */o:/ > /a:/ (**dwoyom* 'twice' > *dān*, **Hestoyo-* 'of bone' > (E)*bištā-* 'mausoleum'); */i_i/ > /i:/ (**yi-yi(h₁)s-* iter. 'do' > *iš(sa)-*; Jasanoff, 1988b: 235). I am unpersuaded by the "statistical" evidence of Eichner (1974: 14) that length by contraction is longer than inherited length or lengthening by the accent (cf. 1.2.6.5.2, end, on initial hyperplene). Also false is his claim that all long vowels by contraction are regularly shortened in unaccented position (note *-ēš* < **-eyes* above). The complicated rearrangements assumed by Zucha (1988: 335) are also quite unnecessary (remember that plene spelling is not consistent).

As per Melchert (1984b: 34), the lack of plene spellings in verbs in **-eye-* > *-e-* (**woséye-* 'clothe' > *wašše-*) may be due to chance or reflect analogical replacement of [e:] by [e]. I know of no examples with original */a_a/, but */a_o/ appears expectedly as /a:/ (**ayo-* 'be warm' > *ā-*; see 1.2.6.5.2 on the spelling). Recall that */u_u/ resulting from laryngeal loss (probably in PA) leads to /uwu/, not contraction: 6.1.4.2.1 (1).

(2) As argued in detail in Melchert (1984b: 33ff), sequences of */e_o/ and */e_a/ appear to show deletion of the */e/, not contraction to a long vowel. Examples: **pe+ay-* 'give' > **pay-* > *pe-* (not ***pāi-*!), **woséyo-* 'clothe' > *wašša-*, etc. Note, however, that the first example here is certainly PA. Likewise, anim. nom. plural *-ēš* < **-eyes* cited above shows that posttonic **ē* > *a* in open syllables (6.1.5.8) does not apply in the weak stem of *i*-stem adjectives. I therefore assume loss of intervocalic **y* and deletion of **ē* before **o* in the weak cases, which explains directly the lack of length resulting from contraction: gen. sg./dat.-loc. pl. **-eyos* > **-e_os* > **-os* > *-aš* (contra Melchert, 1984b: 44f, and Zucha, 1988: 334ff).

(3) The stems *bā(i)-* 'trust, believe', *lā(i)-* 'let go' and *sā(i)-* 'be angry' probably reflect complex contractions resulting from

loss of two **y*'s: **h₂/oyéye-* > **h_a_e_e-* > **h_a_ē* > *hāi-*; **h₂/oyéyo-* > **h_a_e_a-* > **h_a_a-* > *hā-* (cf. Puhvel, 1991: 9f, for correct root etymology but different preform). Likewise **loh₁éye/o-* and **sayéye/o-*. The seemingly more obvious preform **saHyé/ó-* for the last example (e.g. Oettinger, 1979a: 363) is contradicted by the different outcome of **taHyé/ó-* 'steal' as *tāye/a-* (cf. Oettinger, 1979a: 357, and 6.1.4.2.2).

(4) The new evidence for short diphthongs in PA and pre-Hittite (6.1.5.26) allows us to replace several of the rather improbable contractions assumed in Melchert, 1984b: 73f. Examples: **nóyh₁/ei* 'turns' > PA **nóye* > **nōye* (open syll.) > **nō_e* > *nāi*; **dóh₂ey* 'takes' > PA **dó_e* > **dō_e* > *dāi*; **pe-ay-ey* 'gives' > PA **páye* > **pāye* > **pā_e* > *pāi*; **/a:_e/* > */a:y/* (denom. **-áHyē-* > **-āye-* > **-ā_e-* > *-āy-*); also **/a:_o/* > */a:/* (denom. **-áHyō-* > **-āyo-* > **-ā_o-* > *-ā-*); **/æ:_e/* > */a:y/* (**d^héh₁yey* 'puts' > PA **dæye* > **dæ_e* > *dāi*, etc..

For the univerted verb 'go' we may assume **pé-h₁eyti/pé-h₁yenti* > PA **pé_eti/pæyenti*. That the singular resulted in a long diphthong leading to Hittite *āy* seems unlikely. I would suppose rather generalization of the stem **pæy-*, which before consonant leads to Hitt. *pai-* /*pay-*/ (NB OH *pa-i-mi* and *pa-iz-zi* without *plene*). Before vowel **pæy-* becomes regularly Hitt. *pāy-* (lengthening in accented open syllable), whence *pāwun* and *pānzi* with loss of intervocalic **y*. The long diphthong is eventually generalized, whence NH *pāimi* and *pāizzi*.

(5) In iteratives of stems in *-āy-*, the long diphthong is irregularly reduced to *-ē-*, due to its unaccented position in a polysyllabic stem: *batrā(i)-*, iter. *batreske-* 'send a message', etc. (Oettinger, 1979a: 360 & Melchert, 1984b: 93³⁶).

6.1.6.2.6 Shortening

While inherited unaccented long vowels are already shortened in PA (4.1.5 after Eichner), the fate of newly created unaccented PA long vowels in Hittite is less clear. The vowels resulting from contraction of diphthongs appear to be shortened when unaccented, but there are not many examples: **nó-sew* > PA **nósū* > Hitt. *našsu* 'either', PA **lowkéye/o-* 'kindle' > Hitt. *lukke/a-*, PA **aw-pí-* (for **aw-páy-*) > Hitt. *uppi-* 'bring', PA pret. 1st sg. **-Hay* > OHitt. *-bbe* (cf. 6.1.5.26). Likewise the surprising long vowel resulting from **uR* and **wR* is shortened in Hittite when unaccented: e.g. PA **páHw₁r* > *pabbur* (cf. 6.1.4.1.5,4). The preterite third plural ending **-ēr*

when generalized to unaccented position appears as Hitt. *-er* (/ *-er*/): see 6.1.5.14. On the other hand, PA **mūdāHye/o-* '(re)move' is attested as Hitt. *mūdā(i)-*. The long *ū* resulting from **uh₁/*, in this word is at least as old as the long vowels from **Vw* and **uR/wR* (and arguably older, probably already PA). One can thus hardly explain the preserved long vowel phonologically. I tentatively assume that the verb *mūdā(i)-* either takes its long vowel from the presumed base **mūh₁/sto-* or keeps the accent of the latter (cf. Kimball, 1983: 146f, on *sāktā(i)-* 'sick-maintain'). Only a clear example of short vowel from an unaccented sequence of vowel plus tautosyllabic laryngeal can confirm this. A likely candidate is Hitt. *šumanza(n)-* 'cord', which probably reflects PA **šūmēn+s < *suh₁-mēn-*, but the order **-uh₁-* is not entirely assured: cf. Grk. ὑμήν/ὑμήν and see Bader (1990: 35). Contrast the apparent regular conservation of unaccented PA long vowels in Luvian (10.1.6.2.4). Notice that the long vowels resulting from contraction after loss of intervocalic **/y/* remain, even when unaccented (6.1.6.2.5.1). This fact supports the idea that the loss of **/y/* here is specifically pre-Hittite.

I totally reject the attempt of Catsanicos (1984: 145ff) to deny unaccented long vowels in Hittite.

6.1.6.2.7 Alternations

There are several cases of apparent alternation of *i* and *u*. The status of these (graphic, phonological, morphological) is quite unclear: MUS *illuyanka-/illiyanku-* 'serpent', *buhupal-/buhupal-* (1x) 'clapper, cymbal', *kunni/uštalla(nt)-* '?', *karimmi-/karūmmi-* (1x) 'sacred building', *kariwariwar/karuwariwar* 'early in the morning', *išqari/uh-* (a vessel). Cf. Kronasser (1966: 39ff).

6.1.6.2.8 "Ecthlipsis"

Eichner (1969: 41⁴⁸) explains the unexpected iterative stems *arš(i)kke-* (/arske-/) to *aršāi-/aršiya-* 'plant, cultivate' and hapax *waššikittari* (/waske-/) to *wašše/a-* 'put on, clothe' as due to what he terms "ecthlipsis": loss of the vowel between like consonants in **aršiske-* and *waššeške-* (contra Eichner, there is no need to assume a new anaptyctic vowel in the attested forms; cf. 1.2.6.6). While the second example could easily be an error, this is not likely for the first written *ar-ši-ik-ke-*.

6.1.6.3 "Laws of Finals"

6.1.6.3.1 Final Consonants

(1) Final stops are regularly preserved in Hittite after a syllabic. Examples: pron. nt. nom.-acc. sg. $*-d > -d$ (*-at*, *kuit*, etc.), instr. $*-n/rd > -an/rd(a)$ (OH *wedanda*, *kiššarta/kiššarat*); $*\bar{u}g 'I' > \bar{u}g$ (analogically *zīg*). The only possible labial example is OH part. *-ap*, if the more frequent *-apa* is secondary (rather than apocope of *-apa* to *-ap?*).

Final clusters of stop or $*/H/$ plus $*/-t/$ in preterite third singulars are preserved by addition of a prop vowel: see 6.1.6.2.4. Sturtevant (1933: 125) and Oettinger (1979a: 405&460) assume that preterite third singulars like *naiš* reflect $*n\acute{o}y(h_x)s-t$ with loss of $*-t$ in a final $*/-st/$ cluster, but this cannot be proven (cf. next section). Note that this requires that the preterite third singulars of *mi*-verbs in $/-s-/$ be analogical: *ēšta*, *punušta*, etc..

The final stop in the cluster $*/-nt/$ is deleted already in PA (4.1.6.3.1,1): nt. nom.-acc. sg. of $*-ont > -an$. The cluster $/-nt/$ of the vocatives $*Tarhunt(a)$ (^{DU}*-ta*) and $*Wišuriyant(a)$ is analogical to the rest of the paradigm (contra Eichner, 1974: 23f, the final *-a* is not linguistically real!). If one accepts the derivation of the quotative particle *-war* from $*-wér(h_x)-t$ (Oettinger, 1979a: 344, et al.), the loss of the final stop here may be regular or due to enclisis.

(2) Final $*/-s/$ is maintained after vowel and in the clusters $*/-ts/$ (*šīwaz* 'day', etc.) and $*/-nts/$ (*e/ont*-stem anim. nom. sg. *-anz(a)*). Oettinger (1979a: 85) proposes that final $*/-s/$ after obstruents other than dental stops is lost, based on the behavior of preterite second singulars of *mi*-verbs. There we do not find $*\bar{e}pša$ 'you took' parallel to third singular *ēpta* 'he took', but complete replacement by the *hi*-verb 2nd sg. ending *-ta*: *ēpta* 'you took'. If one accepts the idea that *hi*-verb preterite third singulars in *-š* reflect $*-s-t$ with final $*/-t/$ (section (1) above), then one may suppose that when original final $*/-s/$ is lost after stop, an example like *akkiš* 'died' is still **akst* (or **akkist*).

However, the loss of final $*/-t/$ after $*/s/$ versus prop vowel after all other obstruents seems odd, and the motivation for the replacement of ending $*-s$ by *-ta* in the second singular of *mi*-verbs need not be total loss of the $*/-s/$. For the numerous *mi*-verbs in stem-final $/-s-/$, the ending $*-s$ would have been unsuitable even with prop vowel and ready for

renewal by *-ta*. Therefore one could alternatively assume that final **/-st/* becomes */-sta/* with prop vowel, whence regularly *ēsta*, etc.. Preterite third singulars of *bi*-verbs may represent original final **/-s/* with anaptyxis after non-coronal obstruents (6.1.6.2.3): cf. Pedersen (1938: 97) and Yoshida (1993: 331⁹). The new ending *-iš* of *akkīš* is maintained because of existing *naiš*, *daiš* etc.. The same anaptyxis in the second singular of *mi*-verbs (**ēppiš* 'you took') produces an odd allomorph which is renewed by *-ta*. I see at present no basis for choosing between this and the alternative given above.

Final **-Vrs* becomes *-Vr* (see next section). The maintenance of final **/-rs/* in *ār(a)š* 'arrived' < **ōrs(t)* may be analogical (cf. Oettinger, 1979a: 40). Original final **/-Vm/ns/* appears as */-Vs/* (Pedersen, 1938: 29): gen. sg. **-wens* > *-waš*, anim. acc. pl. **-ms/-oms* > **-ums* > *-uš* (see (7) below and 6.1.6.3.2.2,1). For secondary */-nts/* and */-rts/* see 6.1.3.1.

(3) Final sequences of stop plus liquid plus **-/os/* or **-/oN/* undergo a special development in PA: see 4.1.6.3.1 (6) for discussion and the reason for making the change PA.

(4) Any final **/-h/* not already lost in PA is lost in Hittite (cf. 4.1.6.3.1,2). The maintenance of final */-H/* in imv. 2nd singulars of stems in */-aH/* is analogical (Pedersen, 1938: 186, et al., pace Lindeman, 1987: 53): *šuppiyah*, etc.. The peculiar *išgaru/iḫ-* (a vessel) is surely a foreign word and has nothing to do with *išgar-* (Puhvel, 1984: 420).

(5) Final **/-r/* and **/-l/* are retained. Inherited examples of the former are necessarily limited to after an accented vowel (cf. 4.1.6.3.1,4). Examples: **wedōr* 'waters' > *widār*, **Hozdwēr* 'brushwood' > *ḫašduēr*; suff. *-īl* < PA **-īl*.

(6) Syllabic liquids appear as */ar/* and */al/*, just as in internal position: **wōdr* 'water' > *wātar*, pret. 3rd pl. **-r* > *-ar* (contra Neu, 1989: 19f); **-l* > *-al* in *ardal-* 'saw' (the arguments of Starke, 1990: 305ff, for a borrowing from Luvian are unconvincing). Final postconsonantal **wṛ* and **wḷ* become *-ur* and *-ul*: **mēḫwṛ* 'time' > *mēḫur*, **-wḷ* > *-ul* (*aššul*, *waštul*, etc., contra Pedersen, 1938: 165). Postvocally, however, one finds *-war* (Schindler, 1975a: 8): verbal noun *-war* < **-wṛ* regular in *-yawar* < **-yowṛ* and other vocalic stems and generalized as the productive form also after consonant.

(7) Final */-m/ merges with /-n/ (the farfetched speculations of Przyluski (1938), following Cuny, are now totally ruled out by CLuvian forms in *-am=šan*; cf. 10.1.6.1.3.1,4).

There is no evidence for a weak pronunciation of word-final *-n*. The oft-repeated alleged examples of neuter nom.-acc. singulars in *-a* for *-an* (Pedersen, 1938: 21f; Kronasser, 1966: 92&345, et al.) can all be taken as regular neuter (collective) plurals, which in predicative use can alternate with neuter singular in the same function (simil. Neu, 1991: 13f).

There is no question that final syllabic *[-ṃ] appears as /-an/, as internally: suff. **-ṃn > -man* (*lāman*, *ērman* etc.).

The outcome of final *[-ṃ] is much debated. The evidence is conflicting, and any solution requires the assumption of analogical replacement somewhere. I find compelling the derivation of thematic 1st sg. *-anun* (*īyanun* 'I did' etc.) as regular **-an < thematic *-om*, plus the regular athematic *-un < *-ṃ* (*ešun* etc.). The counterarguments of Benveniste (1962: 70f) are based on a strict parallelism with the other sonorants which cannot be taken for granted. For *-un < *-ṃ* see Sturtevant-Hahn (1951: 24&40); Kronasser (1956: 41&169); Oettinger (1976b: 118 & 1979a: 259); and Zucha (1988: *23), contra Pedersen (1938: 90); Dressler (1964: 101); Kammenhuber (1969: 301); Neu (1979: 192) and Carruba (1981b: 126f). While I have argued above that PA inherits a 1st sg. ending **-Hu* beside **-Ha* (2.3.8), I find it farfetched to attribute the *-u-* of Hitt. *-un* to this source (contra Benveniste, 1962: 17f, and Dressler, 1964: 100). Indeed, I believe it is the presence of *-un < *-ṃ* in the *mī*-conjugation which motivates the renewal of **-Ha/Hu* as *-ḫḫun* in Hittite. I must of course explain the anim. acc. sg. *-an* of consonant stems as analogical to *-an < *-om* in *o*-stems (so also Hrozný, 1917: 90, and Eichner, 1992: 49). Pedersen (1938: 21) naturally assumes the opposite, but note his remark on the *o*-stem neuter *-an*.

If the change of final **-ṃ > -un* is accepted for Hittite, note that this must be a specifically pre-Hittite rule, because **-ṃ > Lyc. -ā* just like **-ṇ* (12.1.4.2). Note further, however, that **-ṃ* does eventually result in a final *-n*, just like original **-Vm*. Therefore, if we attribute **-Vm > -Vn* to PA, then we must assume the same change again in pre-Hittite for the **-um < *-ṃ*. While this is not impossible, for simplicity's sake I take the merger of **-m* with **-n* to be parallel but independent in Luvian, Palaic and Hittite. The persistence of final **-ṃ* in PA means that Hitt. *šiptamiya-* may easily be a derivative in **-iyo-* from the cardinal **septm* (contra Eichner, 1992: 84).

I also find attractive the suggestion that anim. acc. pl. **-ms* > Hitt. *-uš* (Sturtevant-Hahn, 1951: 40; Oettinger, 1976a: 26, & 1976/77: 131²; Zucha, 1988: *23, contra Dressler, 1964: 121). We know that even original **/-Vms/* is preserved into PA (6.1.6.1.3.2), so I see no obstacle to assuming unassimilated syllabic **-ms* as well. Cf. 6.1.6.3.2.2.

6.1.6.3.2 Vowels in Final Syllables

6.1.6.3.2.1 Absolute Final Vowels

(1) Final unaccented short vowels are generally retained (cf. Sturtevant, 1933: 138). The non-front vowels are non-controversial. Examples: **/-a/* in **kṛta* 'down' > *katta*, perh. also **-sā^he* > *-šta* (cf. Grk. *προ-σθα* with Hrozný, 1917: 185?); **/-o/* > */-a/* in **ēndo* 'into' > *anda* etc., **/-u/* in imv. 3rd sg./pl. **-tu/-ntu* > *-tu/-ntu*.

The loss of the final syllable in *māṇḥanda* > *māḥhan* 'as; like; when' is surely specially conditioned in a weakly accented conjunction (thus with Carruba, 1966a: 33f, first option).

Final **/-i/* also clearly seems preserved after most consonants. Examples after stops: **k^wóbi* 'where/when' > *kuwapi* (Hrozný, 1915: 26 & 1917: 146), pret. med. **-odi* > OH *-ati* (etym. Neu, 1968b: 143ff, phonol. Melchert, 1992a: 192, after Eichner, 1986a: 12f). The deletion of the final *-i* in the preterite middle ending takes place only within the historical period and is surely morphological, not phonological (the *-i* which is elsewhere a marker of the present tense is suppressed here). I therefore take the apocope in **ídi* 'go!' > *it* to be specially conditioned (cf. with Sommer, 1947: 61, Lat. *die, fac*), contra Oettinger (1983b: 439) and Carruba (1992a: 26⁴²): see refs. to other accounts in Tischler (1978: 441). Contra Melchert (1984b: 101f) the particle *-i* of *ēni*, *aši*, and *uni* must be unaccented (it would otherwise show up as long). I also see no reason not to assume that the retention is regular in the verbal endings *-mi*, *-ši*, *-weni* and *-teni* after **/s/*, **/m/* and **/n/*. Since *-tani* does not reflect **-th₂ene* (6.1.5.8), there is no merit in taking *-teni* as **-tenei* with Eichner (1973: 78) and Oettinger (1979a: 141). The extension in *-n-* is rather after first plural *-wen(i)*, as per Kronasser (1956: 170). Dat.-loc. pl. *-aš* reflects **-os* (seen elsewhere in **-b^h-os/-m-os*), as confirmed by Lyc. *-e*, not apocopated **-o/āsu/i*, contra Kammenhuber (1969: 305): so also now Neu (1991: 14) contra Neu (1979: 193).

On the other hand, final */-ti/ shows up regularly as /-ts/ (perh. [tsʲ]), with assibilation and loss of the */-i/. This is proven by reflexive part. *-ti > -z(a) (NB OH spellings *nu-uz* and *ta-az*), abl. *-ti > -z(a). The expected -zzi is preserved only before the enclitic -ya 'also, and' (*kēzzi=ya* 'and on this side' etc.): Oettinger (1976a: 236) and Melchert (1977: 439ff). A few examples show that this loss is also regular in the present third person verbal endings: *ḫarz(a)* 'holds', *kappuwanz(a)* 'count'. Normally, of course, the /-i/ is restored here by analogy to the rest of the present paradigm. Compare also the adverb *ḫanz(a)* /Hants/ 'in front' < old loc. sg. **h₂énti* (see 6.1.1.2 for details).

Final */-i/ is retained after /r/ in the present medial endings in -ri (Sturtevant, 1933: 262, contra Eichner, 1973: 77). However, it seems most economical to derive Hitt. *sēr* 'above' from the same **séri* which leads to CLuv. *šarri* and Lyc. *hri* (Čop, 1970: 86). An endingless locative **sēr* as the source of the Hittite (Neu, 1980b: 35f) cannot, of course, be excluded, but I marginally prefer to take the loss after /r/ in *sēr* as regular and attribute the retention in -ri to analogy with other present endings.

The fate of final unaccented short */-e/ is a crux. The alternatives are /-i/, /-a/ or zero (apocope). There is no evidence to suggest that it is retained as /-e/. I find the alternation of the indefinite marker -kki with -kka a strong argument that the former represents *-*kē* beside *-*kō* in the latter (rather than a conceivable *-*kī*). The derivation from *-*kē/o* is confirmed by Lycian *tise* (12.1.1.3, 12.1.5.1). The derivation of *kuiški* < **k^wisk^we* with an ad hoc dissimilation of the second labiovelar is not remotely credible, pace Oettinger (1983: 185¹⁸) et al.. The hapax *kuinku* in broken context is worthless. Contra Kronasser (1956: 148 & 1966: 348f) et al., the variants -ki and -ka are in essentially complementary distribution and cannot be taken as alternate spellings for /-k/ (so also Tischler, 1980: 565). The sign *KI* is ambiguous, and one could in principle read *kuiške*. The same goes for inv. 2nd sg. *mēmiški* (plausibly taken as *-*e* > -i by Hrozný, 1917: 177), but note also inv. 2nd sg. *kappuwi*, cited by Oettinger (1979a: 541). The vocative singular ending previously read as -e is clearly -i in OH: see Eichner (1982/3: 234f). However, contra Eichner, loc. cit., this is no reason for abandoning the well-motivated derivation from PIE *-*ē* (Sturtevant-Hahn, 1951: 84⁸⁸; Laroche, 1969: 178; Eichner himself, 1974: 17f; Oettinger, 1979a: 541). This etymology seems to me far superior to Eichner's new proposal (1982/3: 236ff) or that of Neumann (1982/3: 241ff).

The very consistent spelling *uwate*— elsewhere in the paradigm also makes *lmv2ndSg uwati* 'bring' (beside analogical *uwate*) a very likely example (Oettinger, 1979a: 38). This **-ē* is secondary from unaccented **æ* (**eh₁*).

The alleged examples for apocope cited by Eichner (1974: 17) and repeated by Oettinger (1976b: 144³² & 1983b: 439) are all false. Nor do I find compelling the derivation of *ammēl* 'mine' etc. from an apocopated and dissimilated **emene* by Carruba (1976: 134). The case of *-kku* 'and; if; or' < **-kwe* need not be apocope. As suggested to me by A. Garrett (pers. comm.), if one assumes that final unaccented short **/-e/* first becomes **[ə]*, then the subsequent development to */u/* after labiovelar but */i/* elsewhere would be directly comparable to that of the anaptyctic vowel (6.1.6.2.3).

(2) Puhvel (1984: 478ff) makes a strong case for comparing Hitt. *ištarna* 'among, through' with Lat. *inter*, deriving the former from **enstér+*. He does not account for the final *-na* of the Hittite, but one may compare the *-nē* of Lat. *supernē* 'from above' etc. Loss of ablative function in Hittite is not a serious counterargument (cf. *arabz(a)* 'outside', etc.). Hitt. *-na* < **-nē* suggests that original unaccented absolute final long **ē*, though shortened in PA (4.1.6.3.2), does not fall together with original unaccented final short **ē*. One may thus also derive Hittite enclitic *-tta* 'thee' < **-tē* (cf. Lat. *tē*), contra Pedersen (1938: 74); Kronasser (1956: 142); Carruba (1969b: 46); and Schmidt (1978: 120). The alternate form *-ttu=(za)* may continue the old accusative **tū* (Schmidt, 1978: 120ff, pace Melchert, 1983a: 161) in secondary enclitic use.

(3) Final unaccented long **/u:/* is retained into OH in the collective ending *-ū* (*āššū* 'goods') and *-ī* (perh. in *mekki* 'a lot'), contra Lindeman (1983 and 1987: 53). There were probably no other unaccented long vowels inherited in final position. It remains possible that the loss of final **-h* which produces these long vowels is itself pre-Hittite. An accent shift to **-ū/īh*, as per Zucha (1988: 274) is totally ad hoc. I am also unpersuaded by the arguments of Catsanicos (1984: 145ff).

(4) Final **/-e/* < PA **/-e(:)/* and **/ay/* and **/oy/* is preserved in OH as */-e/*. Examples: pres. 3rd sg. **-e* > *-e* (*warāšše* 'plucks', contra Eichner, 1973: 77; Zucha, 1988: *17), pres. 1st sg. **-Hay* > *-bhe* (*dabbe* etc.), **-soy* > *-šše*. The replacement of */-e/* by */-i/* in these morphemes occurs in the historical period and is analogical to the */-i/* of other present verb endings and dative (< locative) singulars respectively: Eichner (1973: 78f & 1974: 7f) and Melchert (1984b: 68¹²⁷).

(5) Since short vowels are lengthened in accented open syllables (6.1.5), all accented final vowels are long phonetically. Final */-ī/ appears as [i:] loc. sg. *-ī > -ī (*išši, taknī*, etc.): thus also Innocente (1981: 383ff); cf. Eichner (1986a: 13). The alternate derivation of the dative-locative from PIE *-ey (e.g. Kronasser, 1956: 101; Kammenhuber, 1969: 301; Eichner, 1973: 77; Oettinger, 1976a: 31; Zinko, 1981: 11ff) is contradicted by the total absence of -e in OH (cf. (4) immediately above). Final */-ē/ shows up as [i:] in the imv. 2nd sg. *-skē > *-skē > -skī (*akkušī, azzikī* vs. *akkušēši, akkušēwari*). This contrasts with [e:] in *lē* (proh. negative) < *lǝē (*lēh₁) or *lē (for *nē). Since all extant examples of */-ē/ > [i:] are confined to *-skē, one could attribute the raising to the influence of the preceding palatal (but recall that this does not happen in internal position: *gēnu- 'knee' > gēnu-). Given the likelihood cited above that unaccented final */-e/ becomes /i/, I prefer to assume rather a change of all absolute final short */e/'s to /i/, and then regular lengthening under the accent in *-skē > *-skī > -skī. The adverb *innarā* 'violently' shows the coll. pl. ending *-eh₂, but the long vowel is probably a relengthened */-a/ in accented open syllable, not a direct reflex of a long */-a:/ (cf. 4.1.6.3.1,2)

(6) A PIE long diphthong */e:y/ is preserved in *utnē* 'land', surely a "hysterokinetic" collective in *-ēy, whatever the root etymology: Melchert (1984b: 72f). Given the behavior of the vowel in Hittite (Melchert, 1984b: 46f), I assume that */e:y/ led to PA and Hittite */e:/ Either *lē or *lǝē also appears as *lē* in the Hittite prohibitive negative.

(7) The PA long diphthongs */o:y/ and */o:w/ are maintained as /a:y/ and /a:w/ in accented final position: *Hastōy 'bone(s)' > *hastāi*, *hr(e)gnōw 'surface' > *harg(a)nāu* 'palm; sole'. The occasional dative singulars in -ai (*haššannai, labarnai*, etc.) are almost certainly new creations of stem-final -a- plus productive ending -i, not old *-ōy or *-āy (thus with Pedersen, 1938: 28; Neu, 1979: 188; and Zinko, 1981: 20f, contra Kronasser, 1956: 101; Kammenhuber, 1969: 301; Eichner, 1975a: 81⁵). The allative in -a reflects PIE *-ō (Neu, 1979: 187, and Zinko, 1981: 121, after Laroche, 1970: 46f), ultimately < *-oh₂, as per 2.3 (8), not *-ōy/-āy (contra Sturtevant, 1933: 170, followed by Pedersen, 1938: 28, and Kronasser).

6.1.6.3.2.2 Other Vowels in Final Syllables

(1) I believe we should seriously consider a special development of final *-ons to -uš in the anim. acc. plural of o-stems, vs. regular *ons > *ass internally: thus already Kretschmer apud

Hrozný (1917: 27), Pedersen (1938: 28) and Kronasser (1956: 41&105) contra Dressler (1964: 121) and Oettinger (1976/77: 131³). Given the other evidence for the survival of unassimilated */-ms-/ into PA (6.1.6.1.3.2), the change should probably be given as *-oms > -uš, which would make it even more plausible phonetically (for the PIE anim. acc. plural as ultimately sg. *-om plus plural marker *-s see among others Hirt, 1927: 59). The change would still contrast with regular internal *-oms- > -anšš- (*ómso- 'shoulder' > an(aš)ša-).

The above assumption would not only make more understandable the generalization of -uš as the anim. acc. plural ending in Hittite. It would also in my view help motivate the replacement of consonant-stem anim. acc. singular *-un < *-m̃ (see 6.1.6.3.1,7). The regular results in pre-Hittite would be anim. acc. sg./pl. -an/-uš for o-stems and *-un/-uš for consonant stems, rather than -an/*-aš for the o-stems, with no points of contact between the two types. I know of no counterevidence for final *-oms > -uš. While there may arguably be evidence for OH anim. nom. pl. in -(y)aš < *-(y)ōs (Eichner, 1974: 184; Neu, 1979: 192 & 1991: 15), I know of none for an OH anim. acc. pl. **-aš: cf. Kammenhuber (1969: 304, w/ref.). Nor is there any good reason to suppose that OH t=uš and š=uš are secondary, contra Oettinger (1976a: 25).

(2) Very problematic is the anim. acc. singular ending -ūn in the demonstrative pronouns k̄a- 'this' and ap̄a- 'that'. One solution is that the accusative singular ending reflects a remnant of u-stem inflection in pronouns, comparable to Skt. amú- 'this, that' (thus Benveniste, 1962: 71f, followed by Puhvel, 1984: 6; similarly Rosenkranz, 1978: 126). The irregular lengthening of */u/ in a closed syllable could easily be analogical to the rest of the paradigm, which always has a long stem vowel (ap̄āš, ap̄ēl, ap̄ēz etc.). However, this proposal strikes me as quite unlikely. The history of Skt. amú- is in general clear: an inflected stem *e-/o- plus an originally uninflected deictic particle *-(a)u which secondarily takes on end-inflection (cf. typologically Hitt. anim. acc. pl. uniuš). With a few predictable exceptions, the u-vocalism runs throughout the Skt. paradigm. In Hittite there is no trace of internal inflection, and the u-vocalism is restricted to the anim. acc. singular (the anim. acc. plural -ūš tells us nothing, since this is the generalized ending in Hittite). On the prehistory of Skt. ašū/amú- see Klein (1977), especially page 172 rejecting Benveniste.

I find it particularly suspicious that we find *u*-vocalism only in the case ending with final **-m*. With all due hesitation I therefore raise the possibility of a special treatment of accented final **-óm* (regularly lengthened to **-ōm*) as **-ūm* hence *-ūn* (thus Pedersen, 1938: 49&165, but without stipulation of the accent; cf. also Schmalstieg, 1979: 787ff). Note in particular the contrast between orthotonic *un(i)* 'that one' < **óm* vs. enclitic *-an* < **-om* (see for *uni* Pedersen, 1938: 60, and Laroche, 1979: 151, contra Bader, 1981b: 36ff). I realize that this complicates the history of *o*-stem finals, since any oxytone *o*-stem would have regularly anim. acc. sg. (and gen. pl.) **-ūn*. However, the total number of oxytone *o*-stems in Hittite is exceedingly small (*arā*- 'companion', *išbā*- 'lord', *iuga*- 'yoke' among nouns). I thus do not find their analogical replacement of acc. sg./gen. pl. **-ūn* by *-ān* especially problematic (recall that the rest of the paradigm would match other *o*-stems). That the synchronically irregular *-ūn* would remain only in the frequently used demonstratives is also unsurprising (cf. Hrozný, 1917: 46f, with unlikely further examples for final *-un*). A general change of final **-om* > *-un* (Kronasser, 1956: 41) is not credible.

6.2 Accent

As already pointed out in 5.3, several of the effects of the accent remain as synchronic rules of Hittite. We may therefore assume that the accent itself remains stable as well. Hittite retains mobile accent in a few noun paradigms: *wātar* 'water' /wá:dar/ vs. *widār* 'waters' /widá:r/, *tēkan* 'earth' /tégan/ vs. dat.-loc. *taknī* /tagní/, etc.. Likewise in some verbs: *dābhe* 'I take' /tá:He/ vs. *tumēni* 'we take' /tuméni/, *dattēni* 'you (pl.) take' /ta:tēni/. Although it is not directly reflected in the weak finite forms, mobile accent is also likely in the type of *ēši/ašanzi* and *ari/aranzi*, based on the participles *ašānt-* and *arānt-*: /étsi/ vs. /asántsi/ and /asá:nt-/ and /á:ri/ vs. /a:rántsi/ and /a:rá:nt-/. For the distribution of long and short vowels in the underlying forms see 5.3 (4). The suggestion by Zucha (1988: 27&79) of accent retraction in *o*-stem nouns is not supported by the evidence.

6.3 Changes in Synchronic Rules

6.3.1 PA Synchronic Rules in Hittite

Of the synchronic rules of Proto-Anatolian (3.3), only *s*-epenthesis remains in Old Hittite, where /é:d-/ and /é:ts-/ 'eat' remain allomorphs in a single paradigm: 1st sg. *ēdmi*, 3rd

sg. *ēzzazzi*, etc. It is likely that paradigm leveling eliminates this rule by Neo-Hittite (cf. Oettinger, 1979a: 531).

6.3.2 New Synchronic Rules

All other synchronic rules of Hittite are apparently innovations since PA. Evidence that the lengthening of vowels under the accent (5.3.3-4) is not PA consists of the following. Palaic preserves final stops (note *kuit* 'what' etc.). Palaic *tū* 'thee' (dat.-acc.) thus shows that the addition of the final stop in Hitt. *tug* 'thee' must be specifically pre-Hittite. Contra Melchert (1983b: 161) the consistently short vowel of the Hittite word means that it must be derived from **tū̄*. If the lengthening of short vowels in accented open syllables were PA, **tū̄* would also have to have become already **tū̄*, which with the addition of the velar would give Hitt. ***tūg*. Attested Hitt. *tūg* requires that lengthening in accented open syllables follows addition of the final velar only in pre-Hittite. Lengthening of accented short vowels in closed syllables in PA is falsified by Lycian *es-* 'be', which must continue **ē̄s-*, not **ē̄s-* (long **ē̄* leads to Lycian *ī*; 12.1.5.2). On dissimilation of **w* to *m* next to *u* as pre-Hittite see 3.1 (5) and 6.1.6.4.2.1 (1).

6.1.4 Relative Chronologies

Set 1:

- (1) **/d/ > /s/ > /#__y* (6.1.1.2) must precede
- (2) **D > T /#__* (1.2.6.1.2)

Set 2:

- (1) **VnsV > VssV* (6.1.6.1.3.1,9) and
- (2) **VrsV > VrrV* (6.1.6.1.3.1,10) must precede
- (3) **R > aR* (6.1.4.1.5) which must precede
- (4) **Vns > Vnz* (6.1.3.1) which must precede
- (5) **ms > ns* (6.1.6.1.3.2)

Set 3:

- (1) **ē̄ > ī /K__* (6.1.5.19) must precede
- (2) **a/oy > ē̄* (6.1.5.26)

Set 4:

- (1) $*w > \emptyset$ / t/d_o (6.1.4.2.1,2) and
- (2) $*\acute{o}CC > *\acute{o}CC$ (6.1.5.22) and perhaps(!)
- (3) $*R > *oR$ (6.1.4.1.5,2) must precede
- (4) $*\acute{o} > \check{a}$ (6.1.5.21ff)

Set 5:

- (1) $*VH > \bar{V} / \_\_y$ (6.1.3.2) and
- (2) $*w > m$ next to u (6.1.4.2.1,1) must precede
- (3) $*y > \emptyset$ / V_V (6.1.4.2.2) which must precede
- (4) $*e\_e > \bar{e}$ (6.1.6.2.5,1) and
- (5) $*e\_a > a$ (6.1.6.2.5,2) which must precede
- (6) $*\check{e} > a$ in posttonic open syllable (6.1.5.8)

Loss of intervocalic $*/y/$ obviously must also precede insertion of $[w]$ into the hiatus it creates (6.1.4.2.1,1 end).

Set 6:

- (1) $*ent/d \ \& \ en\# > an$ (6.1.5.6) and
- (2) $*enC[-coronal] > inC$ (6.1.5.9) and
- (3) $*erCC/erCa > ar$ (6.1.5.7) must precede
- (4) $\check{e}CC > \bar{e}CC$ (6.1.5.5)

Final $*en\# > an$ must also precede $*\check{e} > i$ in posttonic closed syllables (6.1.5.10). The change of $*\check{e}$ to a before three consonants, if real (6.1.5.11), must also precede the general lengthening of accented $*\check{e}$ in closed syllables.

CHAPTER SEVEN: PALAIC PHONOLOGY

I again remind the reader that the miniscule Palaic corpus means that the following description is necessarily sketchy and tentative.

7.1 Segmental Phonemes

7.1.1 Stops	/p/	/t/	/k/
	/b/	/d/	/g/

(1) The above system is the simplest consistent with the data available. Positive evidence for unitary labiovelars is lacking, but this could easily be due to chance. Given the persistence of labiovelars elsewhere in Anatolian, it is quite possible that Palaic has a voiceless labiovelar stop /k^w/. There would be no voiced labiovelar stop in any case: see further below.

(2) In Palaic as in Hittite, voiceless stops are realized as geminates, and voiced stops as single stops, in intervocalic position. As indicated in 1.2.6.1.3, I assume that voiceless stops have been generalized in word-initial position. Voiced stops are generalized in word-final position.

Examples:

/p/ < */p/: (1) iter. *pīša-* 'give' < (virtual) PA **pīs(o)-*; (2) part. *-ppa* < PA **-pe*; (3) *b(a)pari(ya)-* 'hand over' < (virtual) PA **hpryé/o-*; (4) prob. *b(a)pittala-* 'member' < PA **Hp-e-tlō-*; (5) prob. *bānnu-* 'liver' < (virtual) PA **pén-nu-* 'fattened'.

(1) Bossert, 1954: 99, Kammenhuber, 1959a: 34f; (2) basic ident. by Kammenhuber, 1955: 387&377f, etym. by Melchert (cf. Lat. *nem-pe*), after Carruba, 1970a: 66, contra Kammenhuber; (3) Laroche apud Kammenhuber, 1959a: 74 (morphol.), Carruba, 1970a: 54 (sense), Melchert (etym.); (4) Melchert (contra Oettinger, 1986b: 48); (5) Melchert, 1984a: 42f.

For spelling of (3) & (4) see 1.2.6.6 (end).

The suggested derivation of *padāmma-* from either **peda-* 'carry away' (Carruba, 1972: 45) or **ped-* 'fall' (Watkins, 1978: 378) is mere guesswork semantically and implausible phonologically (expect **pe/itamma-*).

/p/ < */b/ /#_: (1) *pāpa-* 'father' < PA **bāba-*; (2) *parkui(ye)-* 'purify' < PA **berḡwī+*.

(1) Kammenhuber, 1959a: 22; (2) Carruba, 1970a: 67, 1972: 53.

/b/ < */b/: (1) *apa-* 'that' < PA **obó-*; (2) *bāpna-* 'river' < PA **Hā/óbñ-*; (3) *pāpa-* 'father' < PA **bāba-* (1st ex. < PIE **bh*, others < **b*).

(1) Kammenhuber, 1955: 367 & 1959a: 72; (2) Carruba, 1970a: 54, 1972: 43; (3) Kammenhuber, 1959a: 22.

Contra Kammenhuber (1959a: 27f et aliter) the title *tabarna-* is not a borrowing from Hattic, but from Luvian. See Eichner (1975a: 81⁵) and 9.1.1 under /b/.

/t/ < */t/: (1) *tī/tū* 'you' < PA **tī/tú*; (2) part. *-tta* < PA **-te*; (3) *bantanā-* 'meet' < PA **Hant+*; (4) imv. 2nd pl. mid. *-tt(u)war* < (virtual) PA **-twe/or* (PIE **-dh₂-*); (5) prob. *tarta-* 'curse' < PA **tórto-*; (6) prob. *ḡapittala-* 'member' < PA **Hp-e-tló-*; (7) abst. suff. *-ttil* < PA **-til* (in *šunnuttil-*).

(1) Bossert, 1944: 90, and Otten, 1953a: 328 (root etym.); (2) Watkins, 1978: 308f (cf. Grk. ὄτε), after Meriggi, 1963: 3ff, contra Kammenhuber, 1959a: 39f (et aliter) and Carruba, 1969b: 24ff; (3) Carruba, 1972: 47; (4) Melchert, 1984a: 27; (5) Melchert, 1984a: 35; (6) Melchert (contra Oettinger, 1986b: 48); (7) Kammenhuber, 1959a: 14f.

/t/ < */d/ /#_: (1) *Tiyaz* 'Sun-god' < PA **díwots*; (2) prob. *tiuna-* 'divine' (or sim.) < (virtual) PA **dyúno-*; (3) prob. *tašūra-* 'sacrificial table/stand' < PA **das+* (i.e. **dh₂es-*); (4) perh. *takkuwa(ga)-* 'offer' < (virtual) PA **dokwáHye/o-*; (5) perh. *tāzzu-* 'place, put' < (virtual) PA **dó-du-*.

(1) Laroche, 1949: 10f, Otten, 1953a: 329, contra Otten, 1953b: 51f; (2) Melchert (cf. Carruba, 1972: 50); (3) Melchert after Eichner (< PA **dasó-* 'votive offering' in Lyc. ὁῖῆ and Lyd. *tašēv*; cf. for formation Hitt. *išnūra-* 'kneading pan' < *išna-* 'dough'); (4) Melchert (meaning), Insler (root etym., pers. comm.; ult. to root **dek-* in Skt. *dāivás-*); (5) Melchert after Carruba, 1970a: 74 (cf. Lyd. *dacu(we)-* and see 7.1.2 (4) below).

/d/ < */d/: (1) *at* 'eat' < PA **ad*-; (2) *kārt* 'heart' < (virtual) PA **k̑d*-; (3) *ānta* 'in(to)' < PA **ēndo*; (4) *wite/i* 'build' < PA **wēdēz*-; (5) *sāwit(i)ra* 'horn' < PA **sōwedro*- (exx. (1)-(3) < PIE **d̑*; (4)-(5) < PIE **d̑h*).

(1) Bossert, 1944: 88, & Otten, 1951: 81; (2) Laroche, 1955: 74f; (3) Kammenhuber, 1955: 359, contra Meriggi, 1963: 6f, & Carruba, 1969b: 24ff; (4) Kammenhuber, 1955: 366, contra Carruba, 1970a: 76; (5) Oettinger, 1979b: 200f, after Kammenhuber, 1955: 373.

The PA **d*/ in **sōwedro*- may reflect either PIE **d̑h* as per above or PIE **t* lenited between unaccented vowels in PA (thus Oettinger).

/k/ < */k/: (1) *kā* 'this' < PA **k̑o*-; (2) *kī* 'lie' < PA **k̑ē*-; (3) *kārt* 'heart' < (virtual) PA **k̑d*-; (4) *iška* 'be!' < PA **sk̑o*; (5) *azz(i)kī* 'eat!' < PA **adsk̑ē*; (6) perh. *takkuwa(ga)* 'offer' < (virtual) PA **dokwāHye/o-*.

(1) Kammenhuber, 1955: 366&376; (2) Sommer apud Otten, 1944: 132²², & Bossert, 1954: 96; (3) Laroche, 1955: 74f; (4) Watkins, 1993a: 477f, revising Melchert, 1984a: 30f; (5) Otten, 1951: 82, & Bossert, 1954: 96 (no positive evidence that word is Hittite); (6) Melchert (meaning), Insler (root etym.) (see above under /t/ for details).

/k/ < */g̑/ /#__: prob. *genu* 'knee'

Kammenhuber, 1959a: 28f (tentative).

/g/ < */g̑/: *parkui(ye)* 'purify' < PA **berg̑wī+*.

Melchert, after Carruba, 1970a: 67, 1972: 53 (a preform **berkwī-* with **/k/*, as per Pokorny, 1959: 142, following Couvreur, is excluded by the CLuvian cognate; see 10.1.1.4.4).

Contra Kammenhuber (1955: 364) et al., Pal. *wa-aq-qa-kán-ta* (i.e. /wagganta/) means 'fat' and matches Hitt. *warkant*-/wakkant- < **worg̑+* with the same phonology as in the latter (H. Eichner, pers. comm., who compares KUB IX 32 Ro 20f cited by Kümmel, 1967: 120). Cf. 6.1.4.1.4 & 6.1.6.1.1.4.

The "endings" *-kat* and *-ga* are enclitic forms of *ka* 'this' (Melchert, 1984a: 28ff, contra Kammenhuber, 1959a: 29ff, Carruba, 1972: 25ff, and Watkins, 1975a: 360). While "simplified spellings" of a geminate are possible, it is quite likely that the enclitic forms show /g/ < secondary PA **/g̑/* by "lenition" of **/k̑/* between unaccented vowels (4.1.1.1,2).

/k/ < */k/: prob. **kummāwa* 'sacralized' < PA **kummó* (i.e. **kum̑mó*-) in *aškummāwa* 'sacralized meats'.

Watkins, 1987: 399f, after Szemerényi, 1979: 314⁶ (meaning); Melchert, modifying Schindler apud Watkins, 1987: 401 (etym.). Cf. 10.1.1.1 and 12.1.1.3 below on Luvian and Lycian, which require a velar */k/ vs. the */k̥/ of Avestan *spon̥ta-* etc.

karšandu in *KUB XXXV* 159 ii 2 is probably Hittite, not Palaic.

The analysis of *tēkant-* (sic!) as 'flowed' < **tek-* (Watkins, 1978: 310f) is mere speculation semantically and improbable phonologically (expect **tekkant-*). Assuming an analogically spread lengthened grade **tēk-* from a hypothetical "acrostatic" present (Eichner apud Wallace, 1983b: 52) is entirely ad hoc.

*/k/ < */g/ /#___: *kist-* 'extinguish' < PA **gezd-* (i.e. **ges-dh-*).

Wallace, 1983a: 163, after Kammenhuber, 1959a: 29.

*/g/ < */g/: (1) adj. suff. *-ik-* < PA **-ig-* (i.e. lenited **-/ik-/*); (2) prob. *luki-* 'portion' < (virtual) PA **lug̃-*, whence *luki(ye)-* 'divide, apportion'.

(1) Melchert, 1984a: 37, revising Kammenhuber, 1955: 370 (see 4.1.1.1 (2) for phonol.); (2) Carruba, 1972: 16f (sense & etym.), Wallace, 1983a: 165 (etym.), Melchert, 1984a: 32f (morphol.).

There is evidence elsewhere for both **leug-* and **leug-*: Pokorny (1959: 686). The connection of *luki(ye)-* with Hitt. *lukke-* 'kindle' (Laroche, 1955: 74, Kammenhuber, 1955: 358) is semantically improbable.

*/k(w)/ < */k^w/: (1) *kui-* 'who' < PA **k^wi-*; (2) conj. *-kku* 'also, and' < PA **-k^we*.

(1) Bossert, 1944: 88, Otten, 1944: 133; (2) Kammenhuber, 1959a: 12.

*/k(w)/ < */g^w/ /#___: perh. *kuwani-* 'woman' (or 'womanly') < PA **g^wón+*.

Watkins apud Melchert, 1990: 207.

It is at present impossible to determine whether the lack of examples for PIE **/ĝh/*, **/gh/* and initial **/g^wh/* is systematic or accidental. The treatment of medial **/g^wh/* as *-bw-* (7.1.3 below) is not by itself sufficient to justify positing voiced aspirates distinct from voiced stops in pre-Palaic (and PA). See the discussion in 8.1.1.4 below.

7.1.2 Affricate

(1) Palaic has a voiceless dental affricate /ts/, which reflects sequences of */t+s/ and undoubtedly also PA *[ts], although there are not yet any attested examples of the latter. Certain examples for */t+s/ are *Tiyaz* 'sun-god' < PA nom. sg. **dīwots* and LÜ *mayanz(a)* 'grown man' < PA **móyonts* (i.e. **móh,yont-*): for the latter see already Bossert (1944: 91) and Kammenhuber (1955: 361). If we assume in the absence of contrary evidence that *azz(i)kī* is Palaic, it shows secondary /ts/ < **adské*.

(2) We also find secondary /ts/ < /s/ before consonant in *pāpaz=kuwar* and *ānnaz=kuwar* (vs. regular *pāpaš* and *ānnaš*): cf. for the affrication Hitt. *z(a)kkar* 'excrement' and see 6.1.3.1. Note also the place name *Lihzina-* beside *Lihšina-* in Hittite contexts.

(3) As in Luvian (10.1.6.1.5,1) and Hittite (6.1.3.1), we also find sporadic *z* for /s/ after sonorant: =*kuwar=zi* for /=*kwar=si*/, *kitar=zi* for /=*kitar=si*/, perh. *mārz(a)* for /=*ma:r=s*/, D *Gulzannikeš* 'fate goddesses' < **guls-* 'write' (cf. Hitt. *gulšš-*). Given these examples, D *Hilanzipa-* < -*n+sepa-* may also be Palaic, though a borrowing from Hittite is quite possible. Contra Carruba (1970a: 40) I take *z* for /s/ here as another case of affrication to /ts/, not voicing to [z]. Since Palaic preserves final stops, even in enclitics (nt. nom.-acc. sg./pl. -*at* and -*kat*), it is very unlikely that any of the nouns ending in -*anza* are nt. nom.-acc. sg. with the particle -*sa/-za* as in Luvian (Meriggi, 1963: 6), because the latter surely represents an enclitic neuter *-*sod*: cf. Arbeitman (1992: 34). Contra Meriggi (loc. cit.) and Carruba (1970a: 42), it is also quite uncertain that any nouns in -*anza* reflect anim. acc. plurals in *-*Vns* with affrication, because none of the examples is syntactically clear. I assume on the basis of present evidence that all nouns in -*anz(a)* are anim. nom. singular. While the form *apanša* with -*nš-* is certainly suggestive, its context does not compel interpretation as a neuter or an anim. acc. plural, or even assignment to *apa-* 'that': cf. Kammenhuber (1959a: 25). There are no clear examples for the anim. acc. plural.

(4) The verb stem *tāzzu-* presents a conundrum. It does seem to mean 'put, place' (thus tentatively already Carruba, 1970a: 74). The resemblance to Lyd. *da-cu(we)-* 'establish' is striking, but a direct historical connection is difficult: (1) affrication of **d(h)* before */i/ and */u/ in Lydian includes word-initial position (see 14.1.1.3), but PA **duw(V)-* 'put, place' otherwise appears as *tuwV-* (Luv. *tuwa-*, Lyc. *tuwe-*),

(1) Bossert, 1954: 96ff; (2) Watkins, 1993a: 477f, revising Melchert 1984a: 30f; (3) Kammenhuber, 1955: 355f (meaning), Eichner, 1975a: 86⁶ (etym.); (4) Otten, 1944: 132; (5) Oettinger, 1979b: 200f, after Kammenhuber, 1955: 373; (6) Melchert (see above under /t/ for details); (7) Otten, 1951: 81 (basic ident.), Kammenhuber, 1955: 358f (morphol.); (8) Kammenhuber, 1959a: 34f.

/H/ < */H/: (1) *hantanā*– 'meet' < PA **Hant+*; (2) *hāpna*– 'river' < PA **Hā/ōbn*–; (3) pret. 1st sg. –*hba* < **-Hā*; (4) *hušši(ya)*– 'pour out' < PA **Hussyé*– (i.e. **h₂uh₂syé*–); (5) *hā*– 'be warm' < PA **Hā*– (i.e. **h₂ēh₁/s₂o*–); (6) *haš*– 'be satiated' < PA **Has*–; (7) prob. *hapittala*– 'member' < PA **Hp-e-tlō*–; (8) prob. *ēšbur/ēsba* 'blood' < PA **ēsH₁/ēsHor*; perh. (9) *hašira*– 'dagger' < (virtual) PA **H₂siro*–.

(1) Carruba, 1970a: 54; (2) Carruba, 1970a: 54; (3) Carruba, 1970a: 45, etc.; (4) Melchert after Eichner, 1982a: 18¹³, contra Carruba, 1970a: 56; (5) Melchert, 1984a: 41f; (6) Otten, 1951: 81f (sense); Palmer, 1959: 134ff (root etym.), also Puhvel, 1991: 231f (but w/impossible preform); (7) Melchert (contra Oettinger, 1986b: 48); (8) Carruba, 1970a: 53 (see below for vocalism); (9) Eichner, 1980: 127³⁰.

/H/ < */h/ /#___: (1) *hapani(ya)*– 'hand over' < (virtual) PA **h₂pyé/ō*–; (2) *hāran*– 'eagle' < PA **hóron*– (i.e. **h₂éron*–).

(1) Laroche apud Kammenhuber, 1959a: 74 (morphol.), Carruba, 1970a: 54 (sense), Melchert (etym.); (2) Kammenhuber, 1959a: 50.

/3/ < */Hy/: denom. suff. –*āga*– < PA **-āHye/o*–.

Melchert after Watkins, 1975a: 373. See 8.1.3.4.

/h/ < */h/: (1) –*ha* 'also' < PA **-ho* (lenited in *wašū=ha* 'also (these) good things'); (2) prob. pret. 1st sg. –*ha* (in *hultaba*) < PA **-ha* (lenited **-Ha*).

(1) Melchert, 1984a: 31f, revising Watkins, 1982a: 256, contra Carruba, 1970a: 78; (2) Melchert, after Carruba, 1970a: 56.

/h(w)/ < */g^w/ /X___Y: *aḥw*– 'drink' < PA **ag^w*–.

Bossert, 1944: 88 (basic ident.), Otten, 1951: 81 (root etym.).

It is possible that *hw* here indicates a unitary phoneme /h^w/ (cf. Goth. *hw*). see 7.1.1 above, note (1). While the only example thus far reflects PIE **/g^wh/*, this is not sufficient evidence for positing distinct voiced aspirates in pre-Palaic (and hence PA). See 8.1.1.4 for discussion.

Examples:

/m/ < */m/: (1) *muš-* 'be satiated' < PA **mus-*; (2) *malitannaš* 'honied, sweet' < (virtual) PA **mlitānnos* (lenited -t- 2ary after **mēlid-* 'honey' < PIE **mēlit-*); (3) *mān* 'when(ever)' < PA **mām*; (4) *LU mayant-* 'grown man' < PA **mōyont-* (i.e. **mōh₁yont-*); (5) *-mu* 'me' < PA **-mu* (+ further exx.).

(1) Kammenhuber, 1955: 355f (meaning), Eichner, 1975a: 86⁶ (etym.); (2) Laroche, 1955: 75 (basic ident.), Melchert, 1984a: 39 (morphol.; the account of Eichner, 1980: 147⁶⁹, cannot explain the geminate -nn-); (3) Kammenhuber, 1955: 359ff (basic ident.); Melchert (etym.); (4) Kammenhuber, 1955: 359ff (see already Bossert, 1944: 91); (5) Kammenhuber, 1959a: 17.

/n/ < */n/: (1) *nī(t)* 'not' < PA **nē(+)*; (2) *bantanā-* < PA **Hant+*; (3) vbl. suff. *-nā(ga)-* < PA **-nāHye/o-*; (4) *nū* 'now' < PA **nū/nū* (+ further exx.).

(1) Kammenhuber, 1955: 366; (2) Carruba, 1970a: 54; (3) Watkins, 1975a: 360f&373; (4) Bossert, 1944: 91, Otten, 1944: 129.

/r/ < */r/: (1) *wēr-* 'call, cry out' < PA **wēr-*; (2) *bāran-* 'eagle' < PA **hōron-*; (3) pres. med. ending *-r(i)* < PA **-rī*; (4) *šāwit(i)rā-* 'horn' < PA **sōwedro-*; (+ further exx.).

(1) Kammenhuber, 1956: 8; (2) Kammenhuber, 1959a: 50; (3) Carruba, 1970a: 46 (see already Sommer apud Otten, 1944: 132²²); (4) Oettinger, 1979b: 220f, after Kammenhuber, 1955: 373.

/l/ < */l/: (1) *malitannaš* 'honied, sweet' < (virtual) PA **mlitānnos*; (2) noun suff. *-ttil* (= Hitt. *-zziil*) < PA **-til*; (3) prob. **ulātar* 'hiding place, thicket' < (virtual) PA **ulātr*; (4) prob. *lāla-* 'tongue' < PA **lālo/ā-*; (5) prob. *b(a)pittala-* 'member' < **Hp-e-tlō-*; (6) prob. *luki-* 'portion' < (virtual) PA **lugī-*, whence *luki(ye)-* 'divide, apportion'.

(1) Kammenhuber, 1959a: 19 (basic ident.), Melchert, 1984a: 39 (morphol.); (2) Kammenhuber, 1959a: 17f; (3) Melchert, 1984a: 38f; (4) Carruba, 1970a: 62 (tentative); (5) Melchert; (6) Carruba, 1972: 16f (sense & etym.), Wallace, 1983a: 165 (etym.), Melchert, 1984a: 32f (morphol.).

/w/ < */w/: (1) *wēr-* 'call, cry out' < PA **wér-*; (2) *wāšu-* 'good' < PA **wōsu-*; (3) inv. 2nd pl. mid. *-tt(u)war* < (virtual) PA **-twe/or*; (4) pres. 1st pl. *-wini/-wani* < PA **-wēni/-weni*; (5) *sāwit(i)ra-* 'horn' < PA **sōwedro-* (+ further exx.).

(1) Kammenhuber, 1956: 8; (2) Bossert, 1954: 96ff; (3) Melchert, 1984a: 25ff; (4) Melchert & Cowgill (for 1st), Kammenhuber, 1959b: 38 (for 2nd); (5) Oettinger, 1979b: 200f, after Kammenhuber, 1955: 373.

As indicated above, I also tentatively assume synchronic sequences /kw/ and /hw/ for inherited labiovelars.

/y/ < */y/: (1) vbl. suffix *-ie-* < PA **-ye-* (in *anie-/aniya-* 'execute, accomplish', *luki(ye)-* 'divide, apportion'); (2) LÜ *mayant-* 'grown man' < PA **mōyont-* (i.e. **mōh,yont-*); (3) perh. *ie-* 'walk' < PA **ye-* (in *ānt=iēnta* 'they enter').

(1) Carruba, 1972: 39, & Kammenhuber, 1959a: 27 (for 1st), Melchert, 1984a: 25ff, revising Wallace, 1983a: 165 (for 2nd); (2) Kammenhuber, 1955: 359ff (see already Bossert, 1944: 91); (3) Melchert (contra Carruba, 1969b: 24ff).

/y/ < Ø (hiatus filler): *Tiyaz* 'sun-god' < PA **dīwots* via **dī-ots* (with conditioned loss of */w/). Less likely is direct palatalization of */w/ after */i/. Given the Hittite and Luvian cognates, it is quite improbable that the Palaic word reflects directly PIE **dei-* without **w*!

Laroche, 1949: 10f, and Otten, 1953a: 329 (basic identification), Melchert (phonol.). Cf. 8.1.4 below.

7.1.5 Vowels	/i/, /i:/	/u/, /u:/
	/e/, /e:/	/a/, /a:/

(1) Given the limited evidence and the problems of *e* and *i* spellings in cuneiform (see 1.2.6.5.1.1), the phonemic status of /e/ in Palaic is controversial. See among others Wallace (1983a & 1983b). I uphold /e/ (and /e:/) distinct from /i/ for reasons which will become clear below, but the issue cannot be considered settled by any means. I do reject the previous claim

of a general change of PA short /e/ to Palaic /a/ (Kammenhuber, 1959b: 30, Carruba, 1970a: 39, et al.), even with the restrictions proposed by Oettinger (1979a: 535); Wallace (1983a: 169); or Starke (1990: 72). I must state expressly that I cannot easily account for the *e*-spellings in *ašendu* (vs. attested and expected *ašandu*) and *šebhannaš* (*e* before geminate *-bb-*!). For the former I can suggest only a false extension of the type of *lukiyeṇta* and *(ānt)ienta*. While the latter show that the allomorph *-ye-* is extended to the plural in Palaic as in Hittite (cf. 6.1.5.6), the motivation for *e* in the plural of a non-*ye/o*-verb obviously is lacking. Pal. *šebhannaš* would have to be a compromise form like Hitt. *waḥ-* 'turn'. The latter combines the vocalism of a full grade with the lenited *-b-* of a lengthened grade (6.1.3.2). The Palaic word would show rather lengthened-grade vocalism with unlenited *-bb-* from a full grade. The ad hoc nature of this account is manifest.

(2) The vowels /a/ and /a:/ apparently combine with a following /y/ to form falling diphthongs /ay/ and /a:y/. The absence of any diphthongs with /w/ could easily be due to chance (*taudan* in text 8 ii 5 is quite uncertain!).

(3) For reasons given in 7.2 and 7.3.1 below, I take the secondary lengthening of short vowels under the accent to be a living synchronic process of Palaic. This means that in such cases the vowels are underlyingly still short.

Examples:

/i/ < */i/: (1) *kui-* 'who' < PA **k^wi-*; (2) adj. suff. *-ik-* < PA **-ig-* (i.e. lenited **-ik-*); (3) prob. *i-* 'go' (in *iwini*) < PA **i-*.

(1) Bossert, 1944: 88, Otten, 1944: 133; (2) Melchert, 1984a: 37, revising Kammenhuber, 1955: 370; (3) Melchert (already Cowgill, pers. comm.).

/i/ < */e/ /w__dental: (1) *wite/i-* 'build' < PA **wédæ-*; (2) prob. pres. 1st pl. *-wini* in *iwini* 'we go' < PA **-wēni*; (3) *šāwit(i)ra-* 'horn' < PA **šōwedro-*.

(1) Wallace, 1983b: 54; (2) Melchert (also already Cowgill, pers. comm.); (3) Oettinger, 1979b: 200f, after Kammenhuber, 1955: 373.

/i/ < */e/ pretonically: (1) **kistān* 'extinguished' (participle) < PA **gezdōn* (nt. nom.-acc. sg. to an **nt*-stem!); (2) prob. *h(a)pittala* - 'member' < PA **Hp-e-tlō* -.

(1) Melchert, after Wallace, 1983a: 163, and Kammenhuber, 1959a: 29; (2) Melchert.

Since the spelling *GI-nu-* for 'knee' is quite ambiguous (/genu-/ or /ginu-/), I prefer this formulation to that of Oettinger (1979a: 535) and Wallace (1983a: 169) whereby short */e/ becomes /i/ after a dorsal.

/i/ ([i:]) < */i/ / .C,V (open syllable): (1) iter. *pīša* - 'give' < (virtual) PA **pīs(o)* -; (2) *Tiyaz* 'sun-god' < PA **dīwots* (lack of scriptio plena accidental!); (3) perh. *bašīra* - 'dagger' < **Hṣīro* -

(1) Melchert, after Kammenhuber, 1959a: 34f; (2) Laroche, 1949: 10f, and Otten, 1953a: 329 (basic ident.), Melchert (phonol.); (3) Eichner, 1980: 127³⁰ (cf. Skt. *asī* - 'sword, dagger?').

/i/ < */i:/: (1) *tī* 'you' (subj.) < PA **tī*; (2) coll. pl. *-ī* < PA **-ī* (**-ih₂*).

(1) Melchert, 1983a: 151ff(see 4.1.6.2.1,2); (2) Watkins, 1982a: 258, Melchert, 1984a: 32.

/i/ < */e:/: (1) *kī* - 'lie' < PA **kē* -; (2) *iu* 'come!' (exhortative) < PA **ēhu*; (3) prob. *kī* 'here, voici' < PA **kē*.

(1) Kammenhuber, 1955: 367 (see already Sommer apud Otten, 1944: 132²²); (2) Melchert (cf. Carruba, 1970a: 58, 1972: 8, and Wallace, 1983b: 50³); (3) Melchert, 1984a: 34, contra Carruba, 1970a: 59.

On examples of final /-i/ < PA */e:/ see 8.1.5 below.

/i/ < */e:/ / #: (1) *nī(t)* 'not' < PA **nē*; (2) *az(zi)kī* 'eat!' < PA **adskē* (w/2ary **ē* < **ē* as per below).

(1) Kammenhuber, 1955: 366; (2) Melchert, after Otten, 1951: 82, and Bossert, 1954: 96 (there is no good reason to suppose that the word is Hittite).

Derivation of *nī* from a preform **nēi* (Eichner, 1971: 40³³, followed by Wallace, 1983b: 53) is precluded by the Lydian cognate *nī*: see 14.1.5.7/8.

/e/ < */e/: anim. nom. pl. -eš < PA *-es.

Otten, 1944: 128&132 (basic ident.), Wallace, 1983b: 51⁴, and Melchert, 1984a: 169 (preform).

/e/ < */æ/: wite- 'build' < PA *wédæ-.

Kammenhuber, 1956: 8 (sense). For preform see Oettinger, 1979a: 130 w/note 84, and Wallace, 1983a: 160f & passim.

The immediate result of PA */æ:/ would be a long /e:/, but the word is spelled *ú-i-te-/ti-ši*. The lack of plene and the alternation *e/i* may indicate that the accent was on the first syllable. The unaccented */e:/ is then shortened and sporadically raised to /i/.

/e/ ([e:]) < */e/ /___: (1) *wēr-* 'call, cry out' < PA *wér-; (2) *aniēhba* 'I carried out' < PA *enyéHa; (3) perh. -iēnta 'they walk' (2ary after 3rd sg. *iētta < PA *yéto: cf. Hitt. *iēnta*); (4) prob. *ēšba* 'blood' (coll. pl.) < PA *ēsHo (i.e. *ēsh₂ōr) (sg. *ēšbur* could continue < PA *ēsHr w/ original *ē or full-grade *ē from the plural).

(1) Kammenhuber, 1956: 8; (2) Carruba, 1970a: 50, 1972: 39; (3) Melchert (contra Carruba, 1969b: 24ff); likewise pret. 3rd pl. *lukienta* 2ary after 3rd sg. *lukīēt; (4) Melchert, after Carruba, 1970a: 53.

Given the ambiguity of example (4), we have no good evidence for the result of non-final */e:/. Wallace (1983a: 171, following Eichner) also derives *wēr-* from *wēr-, which is phonologically quite possible. Thus some of the above examples could show phonological long /e:/ < PA */e:/.

/e:/ < */oy/: nt. nom.-acc. pl. -e (in *n=e*) < PA *-oi.

Kammenhuber, 1959a: 34 (basic ident.), Oettinger, 1979a: (etym.).

/u/ < */u/: (1) *wāšu-* 'good' < PA *wōsu-; (2) weak stem *muš-* 'be satiated' < PA *mus-; (3) *iu* 'come!' (exhortative) < PA *ēhu; (4) *šunnuttil-* 'pourings, servings' < PA *sunn+.

(1) Bossert, 1954: 96ff; (2) Kammenhuber, 1955: 355f (sense), Eichner, 1975a: 86⁶ (etym.); (3) Melchert (cf. Carruba, 1970a: 58, 1972: 8, and Wallace, 1983b: 50); (4) Kammenhuber, 1959a: 14f.

/u/ ({u:}) < */u/ / CV (open syllable): (1) *tū* 'you' (obj.) < PA **tū*; (2) *šūnat* 'filled' < (virtual) PA **šunōt*. Pal. *nū* 'now' could reflect the same lengthening (cf. Hitt. *nu*) or a PA **nū* with long vowel.

(1) Bossert, 1944: 90 (root etym.), Melchert (phonol.; cf. Hitt. *tug w/short u*!); (2) Melchert (for secondary retraction of accent cf. Hitt. *būni(n)k-* and 4.2).

/u:/ < */u:/: coll. pl. *-ū* < PA **-ū* (**-uh₂*).

Melchert, 1984a: 32, revising Watkins, 1982a: 258 (cf. Hitt. *-ū*, as per Watkins).

/u:/ < */Vw/ (?): perh. strong stem *mūš-* 'be satiated' < PA **mōws-* (for root etym. see Eichner, 1975a: 86⁶).

Since this word is probably sound-symbolic, it is at least as likely that the root simply had a basic */u/, secondarily lengthened in the strong stem under the accent, as per above. The assumed development of the u-diphthong remains probable.

/a/ < */a/: (1) final vowel of *pāpa-* 'father' and *āna-* 'mother' < PA Lallwörter in **/-a-/*; (2) weak stems *aḫu-* 'drink', *aš-* 'be' and *at-* 'eat' < PA **ag^w-*, **as-*, and **ad-*.

(1) Kammenhuber, 1959a: 21f; (2) Otten, 1951: 81f.

/a/ < */o/: (1) loc. sg. *-a* < PA **-o* (PIE **-ō*); (2) anim. nom. pl. *-aš* < PA **-os* (PIE **-ōs*); (3) *bāran-* 'eagle' < PA **hōron-* (2nd vowel); (4) *kitar* 'lies' < (virtual) PA **kēdori*.

(1) Kammenhuber, 1959b: 32 (basic ident.), Laroche, 1970: 46f (etym.); (2) Otten, 1944: 128 (basic ident.), Watkins, 1975a: 360, Melchert, 1984a: 37 (preform), contra Kammenhuber, 1969: 275; (3) Kammenhuber, 1959a: 50; (4) Sommer apud Otten, 1944, 132²² (basic ident.), Eichner, 1973: (phonol.).

/a/ < posttonic /e/ in open syllable: (1) part. *-tta* < PA **-te*; (2) part. *-ppa* < PA **-pe*; (3) prob. 1st pl. pres. *-wani* < PA **-weni*.

(1) Watkins, 1978: 308f, after Meriggi, 1963: 3ff; (2) Melchert, after Carruba, 1969b: 33f; (3) Melchert, after Cowgill for Hitt. cognate (6.1.5.8).

This change is common to Palaic and Hittite (see 6.1.5.8), but it does not seem to happen after **y*, in view of Hittite *-āi-* < **-āHye-*. Therefore the second *a* of Pal. denominative suffix *-āga-* < **-āHye/o-* must represent a generalization of the *o*-grade, as independently in Hittite *-ya-* for *-ye-* (cf. 8.1.3.4).

/a/ < **e/* (unaccented) / *N.* (closed syllable): 2PIImv *-ttan* < PA **-ten*.

Carruba, 1970a: 45, and 1972: 7 (tentative), Melchert, 1984a: 26f.

/a/ < **a/* (unaccented): nt. nom.-acc. pl. *-a* < PA **-ā*.

Bossert, 1944: 91 (tentative).

The only form of this ending in Palaic is *-a*: see Melchert (1984a: 32) contra Watkins (1975a: 380).

/a/ ([a:]) < **a/* and **o/* / *N.*: (1) *pāpa-* 'father' < PA **bāba-*; (2) *ānna-* 'mother' < PA **ānna-*; (3) *wāšu-* 'good' < PA **wōsu-*; (4) *bāpna-* 'river' < PA **Hā/ōbn+*; (5) *kā-* 'this' < PA **kō-*; (6) *kārt-* 'heart' < **kārt-* < (virtual) PA **křd-* (root accent 2ary); (7) *ās-* 'be' < **ās-* (w/2ary general. of PA weak stem **as-*) (+ further exx., not all attested w/scriptio plena!).

(1)-(2) Kammenhuber, 1959a: 21f; (3) Bossert, 1954: 96ff; (4) Carruba, 1970a: 54, 1972: 43; (5) Kammenhuber, 1955: 366&376; (6) Laroche, 1955: 74ff (basic ident.), Melchert (preform); (7) Melchert, contra Wallace, 1983a: 169, et al. (but cf. Wallace, 1983b: 51⁴!).

/a/ ([a:]) < **e/* / *N.* (closed syllable): (1) 3rd pl. *-ānti* < PA **-énti*; (2) prob. *ānta* 'in(to)' < PA **éndo*; (3) prob. *bānnu-* 'liver' < **pén-nu-* **fat*'.

(1) Otten, 1944: 131f (basic ident.), Melchert (preform; cf. 6.1.5.6); (2) Kammenhuber, 1955: 359, contra Carruba, 1969b: 24ff; (3) Melchert, 1984a: 42f.

/a:/ < **a:/*: (1) abstract suff. *-ā-* in *ulānna* 'hiding place' < (virtual) PA **ulānno* and *malitannas* 'of sweetness' (lack of plene accidental!); (2) *bā-* 'be warm' < PA **Hā-* (PIE **h₂eh₁/sq₁-).*

(1) Melchert, 1984a: 38f; (2) Melchert, 1984a: 41f.

/a:/ < */o:/: coll. pl. -ār < PA *-ōr in *šāwidār* 'horns (of plenty)' (analogical after type of **widār* 'water' < PA **wedōr*).

Oettinger, 1979b: 203.

7.2 Accent

Our knowledge of the Palaic accent is indirect, being based on the secondary effects of lenition and vowel lengthening and shortening. All of the lenition is PA in date. Some of the vowel changes are PA, some specifically pre-Palaic. In the absence of contrary evidence I assume that the accent as reflected by these changes remains in attested Palaic.

There is limited evidence in Palaic, as in Hittite (cf. 5.3.1) for a rightward shift of accent with the addition of enclitics. Once again there are also apparent counterexamples. Given the inconsistency of the use of scriptio plena, determining the status of this change seems hopeless. I merely wish to point out its existence. One example is *ḥarās=k(u)war=zi*, with secondarily lengthened *ḥarās* requiring *ḥarās* vs. regular /b/āranas inherited from PA **hóronos* (cf. Hitt. *ḥarās*, *ḥāranas*). The other likely example is *ānnī wasū=ḥa* 'also those good things'. As *ānnī* shows, the final long /u:/ of *wasū* could be regular even if unaccented, but the lack of scriptio plena in the first syllable of *wasū* (which is otherwise extremely consistent in this word) suggests [wasú:=ḥa] vs. usual [wá:su]. We cannot determine whether *arūn=am=pi* is another instance, since we do not know whether the regular accent is /áru-/ or /arú-/. NB also *qaššūt=at* and *aršū=kat*, where once again the long vowel is likely due to lengthening under the accent, which may or may not be due to the added enclitic.

Cf. also the apparent productive cliticization described in 7.3 below.

7.3 Synchronic Rules

7.3.1 Vowel Lengthening. Since they are conditioned by the rightward shift of accent with enclitics described in 7.2 above, both Palaic vowel lengthening rules must still be synchronic rules of the language. The first rule lengthens all accented vowels in open syllables: for examples see 8.1.5 below. Note the long vowel of *arūn=am=pi* (in an open syllable because of the added enclitics) vs. short /u/ in *arūs*. Therefore this lengthening rule must be a synchronic rule of the language, whether accent shift has taken place or not (see 7.2 above).

The synchronic status of the rule is also shown by the fact that when the accent shifts away from some long vowels in an open syllable, the underlying short vowel reappears: NB the first syllables of *wasū=ba* and *barās=k(u)war=zi*. The second rule lengthens /e/ and /a/ in accented closed syllables. Note in support of its status as a relatively late and still living rule that it applies to all cases of pre-Palaic accented */ā/: (1) */a/ < */e/ before tautosyllabic nasal (pres. 3rd pl. -*ānti* < *-*ēnti*, prob. *ānta* 'in(to)' < *-*ēndo*); (2) */ar/ < */r/ (dat. *kārti* 'heart' < virtual *-*kārdi*); (3) analogical */a/ (2ary strong stem *ās* = 'be'); (4) both old */ā/ and */ō/ (see exx. in 7.1.5 above).

7.3.2 Palaic shows a handful of examples of apparent cliticization of words which are regularly accented. The cliticization is shown not only by the lack of word spacing but also by secondary shortening of vowels which are regularly long under the accent. Examples: *nū=wasu* (vs. regular *wāsu-*), *a=ti=apan* (vs. regular *apā-*): for both exx. see Kammenhuber (1955: 360&367). I would tentatively add *ittin=anta* and *kartin=anta* (vs. regular *ānta* 'in(to)')—otherwise Carruba (1970a: 58).

7.3.3 Sandhi Phenomena. Palaic shows assimilation of /n/ to /m/ in the combinations *arūn=am=pi* and *kistām=mu* (Carruba, 1970a: 41). Not surprisingly, one also finds unassimilated *=an=pa=ti*. As in Hittite, we find gemination of /s/ following the accent in univerbations: *nu=ssī*. Note that the contrast of [nū=ssi] and [nī=ppa=si] tends to support the claim that accent is the conditioning factor (6.1.6.1.1.5), despite the leveling of -*ssī* in Hittite.

The suggestion of Meriggi (1963: 8) and Carruba (1970a: 65) that *nī=ppa=ssī* may be from underlying *nīt=ppa=* has merit. It would account for the lack of s.p. in *nī=* and is consistent with the very good possibility that *nīt* is the ordinary negation while *nī* is prohibitive. Note, however, that the loss of -*d* here before *p-* would contrast with its preservation in *nīt=kuwat* and *kuit=kuwar*!

7.4 Phonotactics

7.4.1 Consonants

7.4.1.1 Final Consonants: in word-final position Palaic has generalized voiced stops: only the dental /-d/ is attested (the labial and velar would have been rare already in PA). We also find final /-h/ (perh. only in borrowed words), /-s/, /-n/, /-l/ and /-r/. The only final clusters attested are /-ts/ and

/-nts/, but it seems likely that 2nd sg. imperatives like Hitt. /kars/ 'cut!' also exist in Palaic.

7.4.1.2 Initial Consonants:

7.4.1.2.1 As indicated above in 1.2.6.1.3 and 7.1.1 (2), I assume that Palaic allows only voiceless obstruents in word-initial position. The sonorants /m/, /n/, /l/ and /w/ are all attested word-initially. The absence of initial /y-/ is probably accidental (NB prob. */ye:nta/ 'they walk' in the univerted *āntienta*), while that of /r-/ is undoubtedly systematic, as in Hittite.

7.4.1.2.2 Initial Consonant Clusters:

Stop + Sonorant: /ty-/ (*tiuna-* 'divine' or sim.), perh. /pr-/ (in *p(a)rāit*), /kw-/ (*kui-* etc., if these are not unitary labiovelars!).

Fricative + Stop: /sk-/ (*iška*|| 'be!' (unless we have a real prothetic i-!); /Hp-/ (*b(a)pari-* and *b(a)pittala-*, because -p- here represents /-p-/, which would be spelled -pp- if the preceding vowel were real).

As per Carruba (1970a: 39), the consistent -a- in Pal. *Zaparwa-* beside consistent Hitt. *Ziparwa-* suggests a real anaptyctic vowel in each tradition for original Hattic */tsp-/.

Fricative + Sonorant: /sw-/ (*š(u)wāru-*); /Hw-/ (*b(u)warninaš*).

Sonorant + Sonorant: /ml-/ (*m(a)litannaš*), perh. /my-/ (*miyalikšeš*).

7.4.1.3 Medial Consonants:

7.4.1.3.1 Gemimates. I assume that intervocalic voiceless stops are true gemimates in Palaic as in Hittite, since they are spelled in the same fashion. The differing conditions for vowel lengthening in Palaic (see 8.1.5) make it difficult to find direct evidence as in Hittite.

Geminate continuants are clearly contrastive with the corresponding single consonants. For cases of PA gemimates preserved in Palaic see below 8.1.6.1.1. The source of some additional examples is unknown: *balluiš*, *innašša-*, *buwaššanni-* & *wužžanni-*, *qaššūt-*.

7.4.1.3.2 Medial Clusters:

Stop + Stop (thus far only in enclitic combinations):
 /-tk(w)-/ (lukit=ku, nit=k(u)wat, kuit=k(u)war).

Stop + Fricative: /-ps-/ (bapšasša-), /-ks-/ (miyalikšes);
 /-tH-/ (paṭṭina- & waṭṭala-).

Stop + Sonorant: /-bn-/ (bāpna-), /-tn-/ or /-dn-/
 (itna-); /-dr-/ (sāwit(i)ran); /-p/bl-/ (āpla- and adupla-),
 /-tl-/ (b(a)pitt(a)la-).

Affricate + Stop: /-tsk-/ (azz(i)kkī). Also perh. /-ntsk-/ in
 manz(a)kilbaš.

Fricative + Stop: /-sp-/ (only in combination maš=pa),
 /-st-/ (āšdu, wišta-, etc.), /-sk-/ (mišgašaš, aškummauwa-;
 cf. also (i)ška[] above); /-zd-/ (?) (kištām=mu).

Fricative + Affricate: /-Hts-/ (only in place-name Liḥzīna-).

Fricative + Fricative: /-sH-/ (ēšbur etc., iṣḥaranti,
 pašḥullašaš; ^DŠaušhalla-).

Fricative + Sonorant: /-sm-/ (kuwawāllašmaš); /-Hl-/
 (maḥlant-), /-hw-/ (aḥwānti, if not a unitary labiovelar!).

Sonorant + Stop: /-nt-/ (verb endings -nti/-nta/-ntu,
 ḥantana-), /-nd-/ (ānta); thus far /-mp-/ and /-nk(w)-/
 only in enclitic combinations (=am=pi and =an=k(u)war);
 /-rt-/ (wērti, tarta-, purtaḥḥiṣ), /-rd-/ (kārti); /-rK-/
 (šarku-, ḥarkī+), also /-rgw-/ (parkuiti); /-lp-/ (baḥpūta,
 baḥpiyala, manzakilbaš); /-lt-/ (ḥultaḥa); /-lk-/ (ānnittalkiyan).

Sonorant + Affricate: /-nts-/ (^DḤilanzipa-, manzakilbaš,
 tenzi); /-rts-/ (only in combination =kuwar=zi); /-lts-/
 (^DGulzannikeš).

Sonorant + Fricative: /-ms-/ (āmšai & ḥamšu[]); /-nH(w)-/
 (ḥ(u)wanḥ(u)wani-); /-rf-/ (Zaparwa-); /-rs-/ (aršū=kāt);
 /-rH-/ (marḥa- etc.).

Sonorant + Sonorant: /-ml-/ (šamluwa-); /-nm-/
 (ḥin=mu), prob. /-ny-/ (anie/aniya-); /-rm-/ (takarmu-);
 /-rn-/ (ḥ(u)warninai, karnan[]); /-rl-/ (warlaḥi-).

7.4.2 Vowels

7.4.2.1 Initial Vowels

All four Palaic vowels, both long and short, are attested in word-initial position.

7.4.2.2 Final Vowels

Palaic /i/, /u/ and /a/ occur freely in word-final position, as do their long counterparts. Final long /e:/ is attested in *n=e* 'and them' (nt. nom.-acc. pl.) under the accent. Short /e/ probably does not occur in final position.

7.4.2.3 Vowel Sequences

I assume a sequence /i:_u/ with hiatus in *i-ú* 'come!' < PA **ēhu* with loss of the **h*. Likewise *kī=at* 'here'+ 'them' (nt. nom.-acc. pl.) shows /ki:_ad/ in a sequence of adverb plus enclitic pronoun (Melchert, 1984a: 34).

CHAPTER EIGHT: CHANGES FROM PA TO PALAIC

8.1 Segmental Phonemes

8.1.1 Stops

PA voiceless and voiced stops are generally preserved in Palaic, but I assume that voiced stops are devoiced word-initially (cf. 1.2.6.1.3 and 7.1.1.2).

8.1.1.1 The labials require no further comment. Examples:

PA */p/ > /p/: PA **pi-* 'give' > iter. *pīša-*; PA part. **-pe* > *-ppa*; (virtual) PA **hpryé/ó-* 'hand over' > *b(a)pari(ya)-* (+ further exx.).

PA */b/ > /b/: PA **obó-* 'that' > *apa-*; PA **Há/óbn+* 'river' > *bāpna-*; PA **bāba-* 'father' > *pāpa-* (1st ex. < PIE **b*^h; others < **b*).

PA */b/ > /p/ /#__: PA **bāba-* 'father' > *pāpa-*; PA **berḡwī+* 'pure' > *parkui(ye)-* 'purify'.

8.1.1.2 As is well-known, PA */t/ does not assibilate in Palaic before */i/. If *tiuna-* means 'divine' or the like and reflects PA **dyu+*, then PA */d/ does not assibilate before */y/. On the other hand, PA */d/ may appear as Pal. *z(z)* (prob. [dz]) before */u/: see the detailed discussion of *tāzzu-* 'put, place' (?) in 7.1.2 (4). Otherwise, the development of dentals is regular. Examples:

PA */t/ > /t/: PA **tī/tú* 'you' > *tī/tū*; PA part. **-te* > *-tta*; PA **Hant-* 'face' > *hantanā-* 'meet' (+ further exx.).

PA */d/ > /d/: PA weak stem **ad-* 'eat' > *at-*; PA **wedæ-* 'build' > *wite/i-*; (virtual) PA **kīd-* 'heart' > *kārt-*; PA **ēndo* 'in(to)' > *ānta* (+ further exx.).

PA */d/ > /t/ /#__: PA **dīwots* 'Sun-god' > *Tiyaz*; prob. (virtual) PA **dyūno-* 'divine' > *tiuna-*; prob. PA **das+* 'put' > *tašūra-* 'sacrificial table' (+ further exx.).

Pal. *wite/i-* 'build' and *genu-* 'knee' (or *ginu-*) argue that the generalized form of "Čop's Law" does not operate in Palaic (cf. 10.1.1.3). Thus Pal. *wattana* is unlikely to be a locative of 'water' reflecting **wédeno* (Carruba, 1970a: 79, with doubts).

8.1.1.3 So far as our very limited evidence tells us, Palaic merges PA palatal and velar stops like Hittite. Examples:

PA */ġ/ > /k/: PA *kó- 'this' > kã-; PA *kē- 'lie' > kē-; (virtual) PA *kīd- 'heart' > kār-; PA *skó 'be!' > iška (+ further exx.).

PA */ġ/ > /g/: PA *berġwī- 'pure' > parkui(ye)- 'purify'.

For Pal. *waqqanta* as 'fat' matching Hitt. *wargant-/waggant-* following Eichner see 7.1.1 under /ġ/.

Cf. also prob. secondary */ġ/ > /g/ in enclitic forms of -ka- 'this' (see 7.1.1 for details).

PA */ġ/ > /k/ /#___: prob. PA *ġēnu- 'knee' > genu-.

PA */k/ > /k/: PA *kummó- 'sacralized, pure' > (aš)-kummāwa- 'sacralized meats'.

PA */g/ > /g/: PA adj. suff. *-ig- (< lenited *-ik-) > -ik-; prob. (virtual) PA *lugī- 'portion' > luki-, whence luki(ye)- 'divide, apportion'.

PA */g/ > /k/ /#___: PA *gezd- 'extinguish' > kišt-.

Since the stem *marh(ina)-* refers to an action performed on a god, it certainly does not mean 'break, divide' or the like, pace Carruba (1970a: 63) et al. There is thus no evidence for a weakening of */k/ to Pal. /h/, as suggested by Oettinger (1979a: 281⁴⁴). The comparison of Pal. *waḡariya-* with Hitt. *waqqariya-* (Carruba, 1970a: 77) is likewise based on nothing more than phonetic resemblance.

8.1.1.4 The voiceless labiovelar stop is preserved (including devoiced PA */g^w/ in word-initial position). As indicated above in 7.1.1 (1), I assume for the sake of simplicity that the reflexes of the PA labiovelars are synchronically sequences of obstruent plus /w/, but I emphasize that this assumption is by no means necessary.

We have no good examples for the PIE voiced aspirates */ġh/ and */gh/. The only example for */g^wh/ is in medial (intervocalic) position: *eg^wh- 'drink' > aḡw- (weak stem). I consider the latter single example insufficient evidence for assuming that pre-Palaic (and thus PA) kept the entire series of PIE voiced aspirates distinct from the voiced stops (on other

alleged evidence for the distinction see 3.1.1). The present evidence permits the simpler assumption that PA $*/g^w/$ (< PIE $*/g^w/$ or $*/g^wh/$) undergoes weakening to Pal. $/hw/$ (or $/h^w/$) in medial position. Cf. the likely change of PA medial $*/g^w/$ to $/w/$ in Lydian (14.1.1.7). Note that we have no examples of PIE $*/g^w/$ in medial position in Palaic. Only a solid case of the latter or of PIE $*/ġh/$ or $*/gh/$ can settle the issue. Examples:

PA $*/k^w/ > /k(w)/$: PA $*k^wi-$ 'who' > *kui-*; PA $*-k^we$ 'and' > *-kku*.

PA $*/g^w/ > /k(w)/ / \# \_$: perh. PA $*g^wón+$ 'woman' > *kuwani-* 'womanly' (or sim.).

PA $*/g^w/ > /h(w)/ / X \_ Y$: PA weak stem $*ag^w-$ 'drink' > *aḡw-*.

8.1.2 Affricate

There are not yet any examples of the PA affricate $*[ts]$ in Palaic, but the treatment of $*/t+s/$ as $/ts/$ assures us that the affricate would remain, as elsewhere (see 7.1.2). It is conceivable, but very unlikely, that all morphemes containing $*[ts]$ have been lost in Palaic.

8.1.3 Fricatives

8.1.3.1 PA $*/s/$ is preserved in Palaic. The voiced allophone $*[z]$ may appear in PA $*gezd-$ 'extinguish' > Pal. *kist-*, as per Oettinger (1976b: 129) and Wallace (1983a: 163). Examples:

$*/s/ > /s/$: PA $*wósu-$ 'good' (noun) > *wāšu-*; PA $*škó$ 'be!' > *iška*; PA $*mus-$ 'be satiated' > *muš-*; PA weak stem $*as-$ 'be' > *aš-* (+ further exx.).

On the conditioned affrication of $/s/$ to $/ts/$ see above 7.1.2 (2) and (3).

8.1.3.2 In medial position $*/H/$ and $*/h/$ remain distinct. As indicated in 1.2.6.2, I tentatively assume that the voiceless $*/H/$ has been generalized in word-initial position, but this is by no means assured, and one could also suppose that initial $*/h-$ remains unchanged. Examples:

 */H/ > /H/: PA *Hant- 'face' > *hantanā-* 'meet';
 PA *Há/óbn+ 'river' > *hāpna-*; PA pret. 1st sg. *-Ha >
 -*hba*; prob. PA *ēsH₁/ēsHo 'blood' > *ēsbur/ēsba* (+ further
 exx.).

*/h/ > /H/ /#___: (virtual) PA *hpryé/ó- 'hand over'
 > *hapari(ya)-*; PA *hōron- 'eagle' > *hāran-*.

*/h/ > /h/: PA lenited pret. 1st sg. *-ha > -*ba*; PA
 conj. *-ho (lenited *-Ho) > -*ba* (in *wasū=ba* 'also (those)
 good things').

8.1.3.3 I assume a conditioned loss of */h/ between accented
 long vowel and a following */u/: PA *ēhu 'come!' > *iu* (see
 already Wallace, 1983b: 50³). I find a specially conditioned loss
 of the weak /h/ in Palaic much more plausible than a hiatus-
 filling secondary -*b-* in Hittite. For the latter opposing view
 see Lehrman (1985: 170) following Cowgill (among others). The
 suggestion of Oettinger (1979a: 536) that *iu* continues *ē+*au*
 (i.e. the Hitt. preverb *u-*), would force us to give up the
 obvious parallelism with Hitt. *ehu*. I base the existence of and
 the conditioning for my rule on a parallel change in Luvian:
 see 10.1.3.2 (5).

8.1.3.4 Watkins (1975a: 373) first proposed that Palaic verbs in
 -*Ca-(a)-ti/-Ca-(a)-ga-ti* continue PA *-*eh₂yeti*, with the
 Palaic -*g-/ø* alternation spelling a weakened direct reflex of
 the laryngeal, perhaps [x]. Oettinger (1979a: 158 & 559) and
 Melchert (1984a: 38) accepted the phonetic interpretation, but
 suggested rather a preform *-*ēh₂ti*, since there seems to be no
 trace of the **y* in Palaic. This analysis is problematic both
 orthographically and phonologically.

Given the development of *-*g^w-* to -*hw-*, it is
 surprising that a voiced velar fricative from **h₂* is not likewise
 spelled with single -*b-*. More seriously, the ending of the
 Palaic verbs is always spelled with single -*t-*. As shown by
 Luvian and Lycian (4.1.3.2.2), the loss of **h₂* in *-*eh₂ti* with
 compensatory lengthening is later than the PA lenition after
 accented long vowel. Therefore Palaic /-*axti*/ or the like from
 *-*ēh₂ti* could not show a lenited ending.

The only plausible source of stems in -*Ca-(a)-ga-* with
 scriptio plena before the -*g-* and a lenited ending -*ti* is PA
 *-*ēh₂yedi*. We must assume that the accent of the type in
 *-*eh₂yé-* is retracted to *-*ēh₂ye-* in PA before lenition
 between unaccented vowels (see Melchert, 1992b: 50f, and
 14.1.6.3.3 for supporting evidence from Lydian). The PA

preform is thus **-áHyedi*. Palaic *-Ca-(a)-ga-ti* shows generalization of *o-* or perhaps already *a-vocalism* (cf. Hitt. *-ya-* for *-ye-*). The *-g-* must be a special reflex of the combination **-Hy-*. The likeliest result is a weak voiced palatal fricative /ʒ/ combining the features of the **H* and **y*. This rather unstable phoneme is then subject to loss, whence *-Ca-(a)-ti*. For the spelling of a voiced palatal fricative with *-g-* compare Hitt. *ši-ga-at-tal-li-<iš>-ki-* once for *ši-ya-at-tal-li-iš-ki-*, as already cited by Carruba (1970a: 39). Note that the long vowel preceding the /ʒ/ need not be due to compensatory lengthening (strictly speaking, the laryngeal is not lost), but may be due to the regular lengthening of accented vowel in open syllable in Palaic (see 8.1.5 below).

8.1.4 Sonorants

8.1.4.1 The non-syllabic sonorants are generally stable in Palaic. On final **-m* > *-n* see below 8.1.6.4.1. The precise conditioning on the loss of intervocalic **/w/* is unrecoverable. Examples:

**/m/* > */m/*: PA **mlit-* 'sweet' > *m(a)lit-* in *malitannaš* (lenited *-t-* after PA **mēlid-* 'honey'); PA **mus-* 'be satiated' > *muš-*; PA **mām* 'how, as' > *mān* 'when'; PA **-mu* 'me' > *-mu* (+ further exx.).

**/n/* > */n/*: PA **nē* 'not' > *nī*; PA **Hant-* 'face' > *ḡant-* in *ḡantanā-* 'meet'; PA vbl. suff. **-naHyē/o-* > *-nāga-/nā-* (/na:ʒa-/); PA **nú* or **nū* 'now' > *nū*.

**/r/* > */r/*: PA **wér-* 'cry out, call' > *wēr-*; PA **hóron-* 'eagle' > *ḡāran-*; PA medial **-ri* > *-r(i)*; PA **sówedro-* 'horn' > *šāwit(i)ra-* (+ further exx.).

**/l/* > */l/*: PA **mlit-* 'sweet' > *m(a)lit-* in *malitannaš*; PA nom. suff. **-til* > *-ttil*; prob. (virtual) PA **ulātṛ* 'hiding place' > *ulānna*; (virtual) PA **lālo/ā-* 'tongue' > *lāla-* (+ further exx.).

**/w/* > */w/*: PA **wósu-* 'good' (noun) > *wāsu-*; PA **wér-* 'cry out, call' > *wēr-*; (virtual) PA inv. 2nd pl. mid. **-twe/or* > *-tt(u)war*; PA pres. 1st pl. **-wēni/*-weni* > *-wini/-wani*.

**/w/* > *ø* */i_*?: PA **díwots* 'sun; day' > *Tiyaz* 'Sun-god' (with *y* as hiatus-filler). The preserved *-w-* in the first plurals *ḥapariwani* and *iwini* would naturally be due to analogy with other stems not ending in *-i-*, but the exact parameters of the loss cannot be determined.

**/y/* > */y/*: PA vbl. suff. **-yé/ó-* > *-ye/a-* (in *aniēḥḥa*, *aniyaši*, *lukiyēnta*); PA **mōyont-* 'grown (man)' > *Lūmayant-*; perh. PA **yōnto* 'they walk' > *-ienta* (in *ānt=ienta* 'they enter') *w/e*-vocalism 2ary from singular.

For **/Hy/* > */3/* see 8.1.3.4.

8.1.4.2 What little evidence we have for the development of syllabic sonorants in Palaic is conflicting. We must first remove from consideration *parkui(ye)-* 'purify', which may continue **berḡwī-*. We also have no way to determine if the nouns *agaman* and *ṣapāman* represent neuters in **-mṇ* (as assumed by Carruba, 1970a: 49&69) or animate stems in **-mo-*.

In *kārti* 'heart' (dat. sg.) we surely have **kīdi* (with **r* > *ar* and then regular lengthening under the accent, which would be secondarily on the root). Likewise, if Pal. *ḥašira-* 'dagger' reflects **Hṇsi-ro-* (Eichner, 1980: 127³⁰), it implies **n* > **an*. The loss of the nasal before **/s/* in this example would contradict the Hittite development (cf. 6.1.3.1), but there is no counterevidence in Palaic. On the other hand, *ēšbur* and *ēšba* probably mean 'blood', as per Carruba (1970a: 53). Since *ēšba* shows loss of final *-r*, it is surely the collective plural, contra Wallace (1983a: 165f): see Melchert (1988a) and 4.1.6.3.1.4. This would imply *ēšbur* < **ēsHr* (or **ēsHr* with secondary full-grade from the oblique) and *-ur* < **-r*. Charles Reiss (pers. comm.) also suggests that Pal. *ūmmaya-* means 'immature' (cf. Hitt. *am(m)iyant-* with *ūm-* < **mṇ*- (assimilated **n*-). NB the following *maiu* and *Lūmayant-* (Carruba, 1970a: 10, text 1.A. IV 9ff). The contrast with *kārti* seems puzzling, but note also the word *purtaḥḥiṣ*. While we have no assurance that this word is inherited, it could well be. If it is, *pur-* is unlikely to continue PIE **p(V)ur-* on phonotactic grounds. This suggests **Pṛ-* > *pur-*, with **r* > *ur* in the vicinity of a labial, as in Sanskrit. Likewise, of course, *ūm-* < **mṇ-* next to */m/*. Also as in Sanskrit, the original distribution of *aR* and *uR* could have undergone realignment, whence *ēšbur*. Obviously, all of this is speculative without further examples (or a convincing etymology of *purtaḥḥi-*).

8.1.5 Vowels

Palaic shares the same basic developments of PA vowels as Hittite and Luvian: merger of */o/ with */a/ (Kammenhuber, 1959b: 30), secondary lengthening of accented short vowels in open syllables, raising of pretonic */e/ to /i/, and the change of */e/ to /a/ in posttonic open syllables. It may share with Luvian the lengthening of any accented vowel in absolute word-initial position. Unlike Hittite or Luvian, Palaic apparently preserves */e/ in posttonic closed syllables. It steers a middle course in treating accented short vowels in closed syllables: it lengthens */a/ from any source like Luvian, but also lengthens any remaining cases of */e/ like Hittite. Accented */i/ and */u/ in closed syllables remain short, as expected. PA */æ:/ appears in the one solid example we have as *e/i*, probably reflecting secondarily shortened long */e:/ (cf. Hittite). It certainly does not lower to /a:/ as in Luvian, Lycian and Lydian.

As already indicated above (7.1.5,3), I take the secondarily lengthened vowels of Palaic to be underlyingly short (see 7.3.1).

8.1.5.1 The high vowels are stable. They do of course undergo the general lengthening in accented open syllables. Examples:

*/i/ > /i:/ PA **k^wi-* > *kui-* (*kuiš*, *kuin*); PA adj. suff. **-ig-* (lenited **-ik-*) > *-ik-*; prob. PA **i-* 'go' > *i-* (in *iwin*).

Examples of relative *kui-* include clause-initial position, where it is without doubt fully accented.

*/i/ > /i:/ ([i:]) in accented open syllable: (virtual) PA iter. **piš(o)-* > *piša-*; PA **dīwots* 'sun; day' > *Tiyaz* 'Sun-god' (absence of scriptio plena accidental).

*/i:/ > /i:/ PA **tī* 'you' (nom.) > *tī*; PA coll. pl. **-ī* > *-ī* (in *ānnī* 'those').

*/u/ > /u:/ PA **wōsu-* 'good' (noun) > *wāšu-*; PA weak stem **mus-* 'be satiated' > *muš-*; PA **ēhu* 'come!' > *iū*; PA **sunn-* 'fill; pour' > *sunn-* in *sunnutti-*.

*/u/ > /u/ ([u:]) in accented open syllable: PA acc. **tū* 'you' > *tū*; (virtual) PA **sūnōt* (**su-ne-h₃-t*) 'filled' > *sūnat* (w/secondary retraction of accent).

Strong stem *mūš-* 'be satiated' could represent generalized and secondarily accented weak stem **mūs-* (cf. *āš-* 'be') or a diphthong **mōws-*.

**/u:/ > /u:/*: PA coll. pl. **-ū > -ū* (in *wašū=ba*); perh. PA **nū* 'now' > *nū* (but this could be PA **nú* with 2ary lengthening in accented open syllable).

Examples for the lengthening of accented **/i/* and **/u/* even in closed syllables when word-initial are suggestive, but not assured. For **/i-/* note possibly *itna-* and *innašša-*. Whether or not it ultimately represents **ñi-* as suggested above in 8.1.4.2, the long *ū* of *ūmmaya-* (and *ūmmayalla-*) may furnish an example for **/ū-/*.

8.1.5.2 Short **/e/* is raised to */i/*, as in Hittite, pretonically and between **/w/* and a following dental. Examples:

**/e/ > /i/ /w_dental*: PA **wedæ-* 'build' > *wite/i-*; prob. PA pres. 1st pl. **-wēni > -wini* (in *iwini*); PA **sōwedro-* 'horn' > *šāwit(i)ra-*.

As in Hittite (6.1.5.17), this change is not consistent, whence *wērti* above. The */i/* in the first two examples is presumably long, being in an accented open syllable. It could not be indicated in the spelling.

**/e/ > /i/* pretonically: PA **gezd-* 'extinguish' > *kīšt-* (in nt. nom.-acc. sg. ptc. *kīštām=mu*); prob. PA **Hp-e-tlō-* 'member' > *ḫ(a)pittala-*.

8.1.5.3 Short **/e/* becomes */a/* in posttonic open syllables, again as in Hittite. Examples:

PA pres. 1st pl. **-wēni > -wani*; PA part. **-te* and **-pe > -tta* and *-ppa*.

On PA denom. suff. **-āHyē- > -aga-* see above 8.1.3.4.

8.1.5.4 Short **/e/* also becomes */a/* in a closed syllable before a coronal nasal (cf. again Hittite). It then undergoes the regular lengthening of */a/* in a closed syllable when accented. Examples:

PA pres. 3rd pl. **-ēnti > -ānti*; prob. PA **ēndo* 'in(to)' > *ānta*; prob. PA **pēn-nu-* 'fattened' > *bānnu-* 'liver'; PA inv. 2nd pl. **-ten > -ttan* (in *sittan*).

8.1.5.5 Remaining cases of short */e/ are preserved as /e/, being phonetically lengthened under the accent, in both open and closed syllables. Examples:

*/e/ > /e/ in posttonic closed syllable: PA anim. nom. pl. **-ēs* > *-ēs*.

*/e/ > /e/ ([e:]) under accent: PA **wérti* 'calls, cries out' > *wérti*; PA vbl. suff. **-yé-* > *-yē-* (in *aniēbhā*, *lukiyēnta*); perh. secondary in *-ienta* 'they walk' after 3rd sg. **iētta* < **yéto*; prob. PA coll. pl. **ēsHo* (**ēsh₂ōr*) 'blood' > *ēsba* (likewise perh. sg. *ēsbur* < virtual **ēsH₁r*, with full-grade from oblique, but cf. below); PA **gēnu-* 'knee' > *genu-* (lack of s.p. accidental).

See also PA **adské* 'eat!' > *azz(i)kī* below.

8.1.5.6 Long */e:/ in word-final position is raised to /i:/, including secondary long [e:] by 8.1.5.5. Examples:

*/e:/ > /i:/ /_#: PA **nē* 'not' > *nī*; PA **adské* 'eat!' > **adskē* (see above) > *az(zi)kī*.

The fate of non-final */e:/ is unclear. It may well be preserved as /e:/ in PA sg. **ēsH₁r* 'blood' > *ēsbur* (Wallace, 1983a: 171). A PA **wēr-* 'call' > *wēr-* is also possible, as per Eichner apud Wallace, *ibid*.

8.1.5.7 PA long */e:/ < PIE */ey/ is raised to long /i:/. Examples:

*/e:/ > /i:/: PA **kē-* 'lie' > *kī-*; PA **ēhu* 'come!' > *iu*; prob. PA **kē* 'here' > *kī*.

In unaccented word-final position, the resulting vowel is probably shortened: note PA pres. 3rd sg. and dat. sg. **-ē* (i.e. **-ey*) > Pal. *-i* (see Kammenhuber, 1959a: 23&35). It is of course conceivable that the shortening is already PA.

8.1.5.8 PA long */æ:/ < PIE */eh₁/ apparently becomes long /e:/, indirectly attested in PA **wēdāē-* 'build' > *wite/i-*, where the alternation *e/i* probably points to secondary shortening in unaccented position.

8.1.5.9 PA */o/ merges with /a/, and */o:/ with */a:/.
Examples:

*/o/ > /a/ ([a:] when accented): PA dir. sg. *-o > loc. -a; PA anim. nom. pl. *-os > -as; PA *wósu- 'good' (noun) > wāšu-; PA *kó- 'this' > kā- (+ many more exx.).

*/o:/ > /a:/: PA coll. pl. *-ōr > Pal. -ār in šāwidār 'horns (of plenty)' (analogical after type of *wedōr 'water' > *widār: see Oettinger, 1979b: 202).

*/a/ > /a/: PA *bāba- 'father' and *ānna- 'mother' > pāpa- and ānna- (2nd vowel); PA weak stems *agw-, *as-, and *ad- > aḫw-, aš- and at-.

*/a/ > /a/ ([a:]) when accented: PA *bāba- 'father' and *ānna- 'mother' > pāpa- and ānna-; (virtual) PA *ās- 'be' > āš- (weak stem 2arily generalized). NB other exx. above of 2ary */a/ > [a:] under the accent.

*/a:/ > /a:/: PA abstr. suff. *-ādṛ/n- > -ānn- (in ulānna); PA *Hā- 'be warm' > ḫā-.

*/a:/ > /a/ when unaccented: PA coll. pl. *-ā > -a.

8.1.5.10 Evidence for PA diphthongs in Palaic is extremely sparse. We have one good example for */oy/ > /e:/. The one possible example of */ow/ is quite uncertain, but the general absence of a diphthong /aw/ suggests that the assumed development to /u:/ is likely. I take all examples of spellings in -Ca-iC-, -Ca-a-iC- and -Ca-i-iC- as secondary diphthongs /ay/ and /a:y/ (see 8.1.6.3.2 below), but a partial conditioned preservation of PA */oy/ and */ay/ as /ay/ as in Hittite (6.1.5.26) cannot be excluded.

*/oy/ > /e:/: PA nom.-acc. pl. nt. *-oy > -e.

Contra Meriggi (1963: 3ff) and Carruba (1970a: 74), I take -ti as dative and reflexive of the 2nd sg. pronoun 'you', with Kammenhuber (1955: 360ff, etc.). Her own derivation of enclitic -ti from the orthotonic nominative ti (1959a: 16&19) does not explain its use as a dative (as in text 2.A Ro 7.11). I therefore derive -ti from a PA *-toy, parallel to 3rd person reflexive (!) -s(s)i from PA *-soy (= OHitt. -še 'to/for him'): for the latter see Kammenhuber (1956: 15²⁹). As in the case of NHitt. -ši for -še, the i-vocalism of Pal. -ti and -s(s)i is probably analogical after the nominal dat. sg. ending -i.

**/ow/ > /u:/* (?): the strong stem *mūs-* could reflect PA strong stem **mōws-* 'be satiated' (I now take *mūši* as pres. 3rd sg., contra Carruba, 1972: 22, and Melchert, 1984a: 34ff). However, in a root of this type secondarily lengthened **/u/* under the accent in the strong stem is also possible, as per above.

8.1.6 Special Developments

8.1.6.1 Consonant Clusters

A systematic account of consonant clusters is impossible given the restricted corpus. The following remarks are in the usual order.

8.1.6.1.1 Geminates. Palaic generally preserves PA geminates. Voiceless stops are realized as geminates in intervocalic position: for the spelling see 1.2.6.1. Among the continuants, examples for */-nn-/* are relatively plentiful: PA **/-nn-/* < **/-nh₃-/* in *šunnuttī-* (contrast *šūnat* < **šūnōt*, i.e. **suneh₃t*), and from **/-nn-/* in *bānnu-* 'liver' < **pēn-nu-* 'fattened' (Melchert, 1984a: 42f), *ānna-* 'mother' < **ānna-*, and *ānni-* 'that' < **ānno/i-* (see 4.1.4.1).

We find PA geminate **/-mm-/* preserved in *padāmma-*, nt. nom.-acc. sg. with the suffix *-āmma-* < **-ōmmo-* (i.e. **-ōmno-*), in either participial or adjectival function: see Carruba (1972: 45) and Watkins (1978: 311). See also Pal. *aš-kummāwa-* 'sacralized meats' reflecting PA **kummō-* 'pure, sacralized' (**kwṛmō-*).

We may assume similar preservation of geminate liquids, but none of the Palaic examples has a clear history. The *-rr-* in *ārra-* and *wārra-* is likely to be expressive beside the *-ḫr-* in the isofunctional Luvian pair *āḫra-* *wāḫra-*.

Palaic, like Hittite, also shows geminate */-nn-/* from **/-dn-/* in derivatives of abstracts in */-a:dar, -a:dn-/*: *D Gulzannikeš, ulānna, malitannaš*, prob. *šeḫḫannaš* (so also Bernabé, 1973: 439). The evidence I cited in Melchert (1992c: 47¹⁵) for the PA date of this assimilation is false. Hence the assimilation may or may not be restricted to Palaic and Hittite, as traditionally assumed (cf. 4.1.6.3.1 (2) & 6.1.6.1.3.1,4).

The status of geminate */-ss-/* in Palaic is obscured by the dearth of examples with secure etymologies. The morpheme most likely to continue PA **/-ss-/* unexpectedly shows a single *-s-*. As per Carruba (1970a: 42f), Pal. *-aša-* appears

to be a relational suffix corresponding to Hitt. *-assa-*, CLuv. *-āssa/i-*, etc. < **-asso/i-* (on the preform see 4.1.6.1.1,2). While the example *mišgaš* could be a predicative genitive singular, this interpretation does not seem possible for ^D*Zaparwa,taš*, nor for the accusatives ^D*Zaparwā,šan* (stet!) and [^D*Zap*]arwa,šin. Since the spelling is consistent and the sign AS is a simple one, these can hardly be explained as errors or "simplified" spellings. In the absence of any non-ad hoc explanation for the Palaic single */-s-/*, I tentatively prefer the account of Bader (1991: 99), by which Palaic */-asa/i-/* is a secondarily inflected form of an old genitive singular in **-oso/i* seen also in HLuvian (10.1.6.3.2) and Lycian (12.1.6.4.2.1). The words *ḥapšaššaš*, *innaššaš*, and *kuinnaššaš* are in an obscure context, and we cannot affirm that they show the missing expected form of the relational suffix.

Pace Melchert (1984a: 35), *marišši* is iterative third singular (Kammenhuber, 1955: 367f, et al.), not second singular. The contrast with iter. 2nd sg. *piša* from a root without laryngeal suggests that the geminate */-ss-/* in *marišši* reflects directly or analogically **/-h₁s-/*, as in the corresponding Hittite type (see 4.1.6.1.1,2), but we cannot assert this with any confidence given only one example of each spelling.

The rule of Eichner (1980: 161ff) by which **s/* becomes */-ss-/* pretonically is dubious for Hittite (6.1.6.1.1,2). It is certainly false for Palaic: *mušānti*, *ḥašira-*, *tašūra-* all show pretonic */-s-/*. This leaves unexplained the */-ss-/* of *ḥušši(ye)-* 'pour' < **h₂usyē/ó-* (= Lat. *hauriō*, as per Eichner, 1982a: 181³). One can assume a root-final laryngeal and assimilation (**h₂uh₁s-yē/ó-* > PA **Hussyē/ó-*), but there is no independent evidence for the second laryngeal. In sum, further evidence for geminate */-ss-/* is badly needed to clarify the situation.

For geminates as a result of sandhi phenomena see 7.3.3 above.

8.1.6.1.2 Other inherited clusters

Stop + sonorant: prob. **pr-/* in *p(a)rāit* 'appeared' (cf. 8.1.6.3.2); **-bn-/* in *ḥāpna-* 'river'; **-tl-/* in *b(a)pittala-* 'member'; PA **-dr-/* < PIE **-dhr-/* or lenited **-tr-/* in *šāwit(i)ra-* 'horn' (Oettinger, 1979b: 200f); */ty-/* < PA **dy-/* in *tiuna-* 'divine'; the */-Tn-/* of *itna-* could also be old (voiced or voiceless).

The clusters /-tl-/ and /-dr-/ are derived from the oblique stems of the PA preforms, generalized in Palaic: cf. 4.1.6.3.1,6).

Fricative + stop: */-st-/ in *āšdu* 'shall be' and perh. */-zd-/ in *kīšt-* 'extinguish'; /-sk-/ in *(i)ška* 'be!' and /-tsk-/ in *azz(i)ki* 'eat!' < PA */-sk-/ (the /-sK-/ of *mišgašaš* is likely to be old as well); /Hp-/ in *h(a)pittala-* 'member' < PA */Hp-/ & in *h(a)pari(ye)-* 'hand over' < PA */hp-/ (see 1.2.6.6, end).

Fricative + fricative: */-sH-/ in *ēšbur/ēšba* 'blood'.

Fricative + sonorant: */sw-/ in *š(u)wāru-* 'heavy'; the /-Hl-/ of *maḥlant-* is also surely PA, whatever its ultimate origin.

Sonorant + stop: */-nt-/ in *ḥantana-* 'meet' and third plural *-nti/ -ntu/-nta* (also /-nts/ in nom. sg. *mayanz(a)* etc.), */-nd-/ in *ānta* 'into'; */-rt-/ in *tarta-* 'curse' and *wērti* 'cries out', */-rgw-/ in *parkui(ye)-* 'purifies'. In *šarku-* and *ḥarki+* we may have either inherited /-VrK-/ or a reflex of *[rK] (cf. 8.1.4.2 above).

Sonorant + fricative: prob. */-ms/ in *āmšai* 'wipes' (= Hitt. *ānši*, contra Carruba, 1970a: 50) and in *ḥamšu* [] (= CLuv. *ḥamšuk(k)alla-*; 'great-grandson', if the incomplete word is Palaic!); prob. */-rH-/ in *marḥa-* 'god' etc. (despite the lack of an etymon).

Sonorant + sonorant: */ml-/ in *m(a)litannaš* 'of sweetness' and */-ml-/ in *šamluwa-* 'apple' (see Soysal, 1989); */-ny-/ in *anie-/aniya-* 'do, carry out'.

8.1.6.2 Other Special Consonant Changes

(1) On the affrication of /s/ to /ts/ see above 7.1.2 (2) and (3). The very limited evidence makes it impossible to sort out specific Palaic changes from those shared with Hittite and Luvian.

(2) The combinatory change of */Hy/ to Palaic /3/ has been described in 8.1.3.4.

(3) On changes due to synchronic sandhi rules see 7.3.3 above.

(4) I now follow Eichner (pers. comm.) in interpreting *wagganta* as 'fat' with the same phonology as Hitt. *waggant-*

beside *wargant*—: either direct assimilation or gemination after /r/ and then loss of /r/ (cf. 6.1.6.1.1.4 and 6.1.4.1.4).

8.1.6.3 Vowel Changes

8.1.6.3.1 Syncope. Palaic shows an irregular syncope of /ye/ and /ya/ to /i:/ . Note *šit*, *sittan*, & *sittuwar* to **š(i)ye/a-* 'sting' < 'shoot' < PA **syé/ó-* (i.e. **sh₁yé/ó-*): thus Melchert (1984a: 25ff) et al.. We also find *lukit*, *lukinta*, *anitti*, *b(a)pariši*, and *ḥuššinta* beside uncontracted *aniēbba*, *aniya*, *aniyaši*, and *lukiyēnta*, and perhaps the anim. nom. pl. *kuwanis* < **-iyos* (if this reflects an **iyo*-adjective, as per Melchert, 1990: 206f, but see also below on the possibility of "i-motion").

8.1.6.3.2 Contractions

(1) The verb *parāit/paraīt* does not mean 'blew' or 'chased' (Carruba, 1970a: 67), but is rather an intransitive motion verb (Melchert, 1984a: 267). Oettinger (1986b: 47f) plausibly interprets 'appeared' and makes an equation with Hitt. *parāi* 'appears'. This stem is denominative from *p(a)rā* 'forth' (prob. < **prō*), as per Oettinger (1979a: 472). Contra Oettinger the pres. 3rd sg. may reflect regularly **prō-y-ei* with contraction to /a:y/, which spreads secondarily to other parts of the paradigm (see Melchert, 1984b: 73f). Palaic /a:y/ in *parāit* would indirectly continue a similar contraction.

(2) It remains uncertain whether or not a pres. 3rd sg. ending *-ai* is directly attested in Palaic beside *-i*. With Kammenhuber (1959a: 21), I interpret *b(u)warninai* and *šapawinai* as dative singulars of nouns (see (3) below). Carruba (1970a: 56&69) and Oettinger (1979a: 559f) take them as pres. 3rd singulars of the *ḥi*-conjugation. The context is syntactically ambiguous. However, Palaic verbs in *-na-* are denominative in origin (Melchert, 1984a: 37f) and inflect as *mi*-verbs in Palaic: cf. *ḥantanāti* 'meets' and see 8.1.3.4 above. There is thus no likely source for *ḥi*-verbs in *-(i)nai*. On the other hand, there is some chance that *āmsai* means 'wipes' and matches Hitt. *ānsi* (pace Carruba, 1970a: 50). If this is so, the *-ai* ending, originally the result of contractions, has spread analogically in Palaic to an athematic verb, just as in Hittite: see again Melchert (1984b: 73f w/ note 139).

(3) As in Hittite (6.1.6.3.2.1.7), the dat. sg. ending *-ai* (*tabarnai*, *tawanannai*, *ḥuwarninai*, *šapawinai*) could reflect an inherited long diphthong **/-o:y/* (secondarily shortened or not), but more likely is a new short diphthong /ay/ created by

adding the productive dat. sg. ending *-i* to stem-final *-a-* (instead of the usual deletion seen in *tabarni*, etc.).

(4) The status of the sequence *a-i* in other examples is problematic. The word *ḫalais/ḫalāis* is to be taken with Watkins (1978: 308f) as an anim. nom. sg. noun, contra Carruba (1970a: 53 & 1972: 42). We could have a reflex /a:y/ of an inherited long diphthong */o:y/, as in Hittite nouns in *-ais* (6.1.5.27), but the second spelling with plene of both the *a* and *i* raises some doubt. The anim. nom. plural(!) *kuwāis* is surely secondary, but from what source? One could suppose a stem in **-oyo-* with a nom. pl. in **-oyos* and syncope of expected **/-ayas/* to */-ays/*. However, the lack of syncope in the similar *šawayaya* (nt. nom.-acc. pl.) makes this unlikely. I therefore tentatively assume that the anim. nom. pl. *kuwāis* reflects a stem *k(u)wāy(a)-* with "*i*-motion" (with Starke 1990: 75). The underlying form would thus be /k(u)wāy-is/ with an *i*-stem ending. The attested spelling could represent [k(u)wa:yiš] or a contracted [k(u)wa:ys] (see the similar indeterminacy in Luvian, 9.1.6). It is possible then that *ḫalāis* likewise represents an *i*-stem nom. sg. to a stem *ḫalāy(a)-*: [Hala:yiš] or contracted [Hala:ys]. Similarly, anim. nom. pl. *kuwaniš* 'womanly' (?) may reflect a contracted **/kwaniy-is/* rather than a syncopated **/kwaniy-os/* (cf. 8.1.6.3.1). Obviously, this entire analysis is provisional.

aš- (i.e. **āš-*) 'mouth' in *aškummāwa-* 'sacralized meats' may or may not reflect a contraction, depending on the ultimate preform of this difficult word (cf. 5.4.2.3,4).

8.1.6.3.3 Anaptyxis and Prothesis

(1) I assume with Carruba (1970a: 39) a genuine anaptyctic /a/ in Pal. *Zaparwa_s-* vs. Hitt. *Ziparwa_s-*, although a different spelling convention for /TsP-/ cannot be entirely excluded.

(2) I reject an anaptyctic /i/ in *azz(i)kī* 'eat!' < PA **adsḫē* for the same reasons as for Hittite: see 1.2.6.6 for a discussion and opposing views.

(3) Pal. *aškummāwa-* 'sacralized meats' contains *aš-* 'mouth' (Watkins, 1987: 399f, after Szemerényi, 1979: 314⁶) and does not show a prothetic /a-/ (contra Carruba, 1970a: 39). Pal. *iška*] 'be!' < PA **šḫó* (Watkins, 1993: 477f, revising Melchert, 1984a: 30f) shows a graphic prothetic *i-*, just as one finds in Hittite. On the linguistic status of this *i-* see 1.2.6.6.

8.1.6.3.4 Lengthening

Both rules lengthening accented vowels remain as synchronic rules of Palaic (see 7.3.1 above).

8.1.6.4 "Laws of Finals"

8.1.6.4.1 Final Consonants

(1) Palaic generally preserves PA final consonants. For stops note nom.-acc. sg. nt. *kuit* 'what', encl. *-kat* 'this', and pret. 3rd sg. act. *-t*. Palaic shows evidence for the PA generalization of voiced stops in word-final position (4.1.6.3.1,1): pret. 3rd sg. *šarkut=at* 'ed them' with single *-t-*, nt. nom.-acc. sg. *qaššūt=at* likewise. Since the Pal. pret. 3rd sg. ending is consistently *-t* (never *-tta*), the pret. 3rd pl. act. *-Vnta* is unlikely to continue a medial ending **-onto*. It rather reflects inherited 3rd pl. act. **-Vnt*: thus Otten (1951: 328) and Kammenhuber (1956: 20f): see already Otten (1944: 132). There are two possible ways it can do so. The less likely is that a prop vowel was added to this ending in PA before regular final **-nt* > **-n* (cf. 4.1.6.3.1,1). I find it more likely that the final stop has been restored by analogy to the present ending: pres. 3rd sg. *-t/di*: pres. 3rd pl. *-nti*: pret. 3rd sg. *-d*: x (*--> -nd*). The final *-a* would thus be merely graphic (cf. Hitt. *ēšband(a)*, instr. of 'blood'). Compare the discussion by Gusmani (1965b: 78f) and Yoshida (1991: 370f & 1993: 3421).

(2) Final **/-s/* is maintained after both vowel and consonant: anim. nom. sg. and pl. */-Vs/* and also *Tiyaz* 'Sun-god' < **/-t+s/* and *LÜ mayanz(a)* < **/-nt+s/*.

(3) Final */-n/* representing both PA **/-m/* and **/-n/* is preserved. See 6.1.6.3.1 (7) for why I do not attribute the change of final **/-m/* to PA.

(4) Final **/-l/* is maintained in the abstract suffix *-til* < PA **-til*.

(5) Final **/-r/* after unaccented vowels was already lost in PA (see Yoshida, 1990: 112ff, and cf. Melchert, 1988a: 223f). The final */-r/* of *kitar* 'lies' is secondary, due to apocope of */-i/* from a renewed ending */-ri/* (thus with Yoshida, 1990: 115). Similarly, the final */-r/* of the inv. 2nd pl. middle ending *-tt(u)war* (Melchert, 1984a: 27) must be secondary after an unattested pres. middle **-tt(u)war* apocopated from **-tt(u)wari*. That of the enclitic *-k(u)war* may be generalized from the

frequent examples where $-k(u)war$ is non-final before vowel. We have no direct examples of final $*/-r/$ after accented vowels, but *ṣawidār* 'horns' after $*widār$ 'water(s)' implies preservation. Cf. also the obscure *nabḥir*.

8.1.6.4.2 Final Vowels

(1) Palaic generally preserves PA final vowels. Unaccented $*/-i/$ is found in the pres. verb endings $-ti$, $-nti$, $-ṣi$, $-wani/$ $-wini$. Final $*/-ri/$ is also preserved in *ḥāri* 'is hot', but apocopated in *kītar* 'lies' (& indirectly in *ṣittuwar* 'sting!'). We do not have enough examples to determine the conditioning, but note that in the latter the $*/-i/$ is two syllables from the accent, while it is only once removed in *ḥāri*. Final unaccented $*/-u/$ appears in *iū* 'come!' < PA $*ēhu$, in third person imperatives such as *āṣdu* and *aṣandu*, and in the enclitics $-mu$ 'me' and $-tu$ 'to him'. Final unaccented $*/-e/$ is usually preserved as $/-a/$ (cf. 8.1.5): part. $-tta$ and $-ppa$ < PA $*-te$ and $*-pe$. However, enclitic $*-kwe$ is reduced to $-kku$ (cf. likewise Hitt. $-kku$). Final unaccented $*/-o/$ is found in the loc. sg. $-a$ (PA dir. $*-o$), including infinitives in $-una$ < $*-uno$, in the pres. 3rd middle $-nta$ < PA $*-nto$, in the conjunction $-ḥa$ 'also' < PA $*-ho$, and probably *ānta* 'into' < PA $*ēndo$. I assume that unaccented $*/-o/$ has been apocopated (or should one say syncopated?) in the univerbation *āntienta* 'they enter' (i.e. /andyenda/). Cf. Hitt. $LU_{ant(i)yant}$ - beside $LU_{antayant}$ - 'son-in-law, *errebu*'. Final unaccented $*/-a/$ is preserved in the pret. 1st sg. ending $-ḥḥa/$ $-ḥa$ < PA $*-Ha/$ $-ha$.

(2) Accented final short vowels are lengthened in Palaic like all such vowels in open syllables. I know of no exx. of $*/-i/$, but final accented $*/é/$ appears as [i:] in *azzikī* 'eat!' (iter.), and Pal. acc. *tū* 'you' must be a lengthened PA $*tū$ (cf. Hitt. *tug* with short vowel and see 6.1.5.3). The final vowel of *iṣka* 'be!' (subst. verb) is long from $*ṣkō$. We cannot tell from the broken context whether it is spelled with s. p. or not.

(3) Final unaccented long $*/i:/$ is apparently preserved in the nt. nom.-acc. pl. *ānnī* 'those'. The consistent spelling of the nt. pl. ending $-a$ without s. p. suggests that final unaccented $*/-a:/$ has been shortened: cf. the same contrast in OH (4.1.6.3.1,2). The long $/u:/$ of *waṣū=ḥa* is secondarily accented (see 7.2), but would surely be long even when unaccented. Since it has exclusively dative function, Pal. dat. sg. $-i$ probably continues PA $*-ē$ (i.e. $*-ey$), with shortening to $/i/$ in all attested examples, where the ending is unaccented. Likewise the pres. 3rd sg. ending $-i$ of the *ḥi*-conjugation.

(4) PA final accented long */i:/ is preserved in nom. *tī* 'you' (see 4.1.6.2.1 (2) for the PA). As already noted, Pal. *nū* 'now' may reflect either original **nū* with long /u:/ or **nū* with secondary lengthening under the accent. Pal. *n=e* 'and them' (nt. nom.-acc. pl.) has a long /e:/ from PA */oy/. On the /-i/ of *-tī* and *-š(š)i* see 8.1.5.10.

8.2 Accent

As indicated above in 7.2, our knowledge of the Palaic accent is entirely indirect, being based on the vowel lengthening and shortening described in 7.3.1.

The vowel pattern of *mūsi/mušanti* and *ās/āšdu* beside *atānti* etc. indicates that Palaic has maintained mobile accent in athematic verb paradigms of both the *hi-* and *mi-* conjugations. Pal. *kītar* 'lies' faithfully reflects PA **kēdo* with root accent and "lenited" ending (Eichner, 1973: 78)--on the *-r* see 8.1.6.4.1 (5). Pal. *azz(i)kī* 'eat!' continues the accent of PA **adskē*. We know from CLuvian (cf. 10.1.4.1) that *anie-* 'carry out, treat' reflects an original root-accented **ēn-ye/o-*. The long /e:/ in Pal. *aniēḫḫa* may show either a shift of the accent after the type in **-yē/ó-* (cf. Pal. *ḫ(a)pari(ye)-*) or merely a generalization of the vocalism of the latter type.

As nominal forms which appear to preserve PA accent we may cite *ānna-* 'mother', *ānni=* 'that', *ēšḫur/ēšḫa* 'blood', **kīštān* 'extinguished' (nt. nom.-acc. sg. of an *nt-*stem), probably *lāla-* 'tongue', and *wāšu-* 'good'. For a formally isolated example note also probably Pal. *ānta* 'into' < PA **ēndo*.

The apparent oblique stem *ēšḫana*] 'blood', gen. sg. [ḫ] *āraṇaš* 'eagle', dat. sg. *kārti* 'heart', and nom. sg. *ḫāpnaš* 'river' (with secondary *a-*stem) all suggest that Palaic has given up mobile accent in noun paradigms, generalizing root accent in all attested cases.

The only other obvious innovations known to me are of a type we see elsewhere: *šūna-* 'fill' with retracted accent from **su-nēh₃-* (so also Hart, 1983a: 131; cf. Kimball, 1983: 484, on Hitt. *ḫūni(n)k-*) and iterative *pīša-* 'give' reflecting **pī-* from generalized weak stem **pī-* (cf. CLuv. *pīya-* and Lyd. *bi(d)-*). Cf. 4.2.

8.3 Changes in Synchronic Phonological Rules

8.3.1 Losses/Modifications of PA Phonological Rules

(1) Palaic retains the distinction of fortis vs. lenis stops and /H/ vs. /h/ at least in medial position. There is also clear evidence that some of the morphophonemic alternations produced by the PA "lenition" rules survive in Palaic: pres. 3rd sg. /-ti/ in *anitti* vs. /-di/ in *hantanāti* etc.. However, various changes have altered the distribution of these variants, and it is doubtful that their synchronic distribution is determined by phonological rules. For example, syncope leads to *šittan* 'sting' (imv. 2nd pl.), with /-tan/ after accented long vowel. Similarly, if *da-bba* and *hulta-ba* are indeed preterite first singulars, it is not obvious that the choice of ending is phonologically conditioned.

Although the total number of examples is limited, it is noteworthy that the particles *-ppa* and *-tta* show consistently geminate spellings after vowel (10x and 3x respectively), while *-tu* (3rd sg. dat.) and *-ti* (2nd sg. dat. & refl.) always show single stop (5x and 4x). All four morphemes contain etymological voiceless stops, and the distribution of the "lenited" and "unlenited" variants in PA was undoubtedly determined by accent. Palaic has apparently generalized one of the two variants in each case, regardless of the synchronic accentual position. One wonders if the choice of the voiceless variant in the case of *-ppa* and *-tta* was influenced by the prehistoric presence of sentence-initial **po* and **to*.

(2) The limited PA version of "Čop's Law" by which initial **[əC₁V-]* becomes **[əC₁C₁V-]* is certainly lost as a synchronic rule in Palaic. The derived form is now underlying.

(3) We simply have no evidence bearing on s-epenthesis in Palaic.

8.3.2 New Synchronic Phonological Rules

As already described above in 7.2 and 7.3.1, the rules which lengthen short vowels under the accent are still synchronic rules of Palaic. For synchronic sandhi rules see 7.3.3.

8.4 Relative Chronologies

There are few crucially ordered sound changes in Palaic. The above analyses do presuppose the following:

Set 1:

(1) Short */e/ > /a/ before /N/ in closed syllable
(**-énti* > *-ānti*, prob. **éndo* > *ānta*, etc.)

must precede

(2) Accented short */é/ and */á/ > [e:] and [a:] in closed syllable (**wérti* > *wērti*).

Set 2:

(1) Short */e/ > /i/ between */w/ and dental (**wédæ-*
> *wite/i-*, **-wéni* > *-wini*)

must precede

(2) Accented short */é/ > [e:] in open syllable, which in turn

must precede

(3) Accented long *[é:] > [í:] in word-final position
(**adské* > *azz(i)kī*).

Set 3:

(1) */d/ > [dz] (or sim.) before */u/ (**dó-du-* > *tāzzu-*)

must precede

(2) */d/ > /t/ word-initially.

Note, however, that this particular analysis is far from assured: see 7.1.2 (4).

CHAPTER NINE: LUVIAN PHONOLOGY

9.0 The revised readings of Hieroglyphic Luvian syllabic signs (see 1.2.7.1) have eliminated all but a handful of the differences between Hieroglyphic and Cuneiform Luvian. I am aware of none in the segmental phonemic inventory. I will discuss minor variations in the distribution of the sounds and the historical changes which produced these as appropriate.

Given the severe limitations of the Hieroglyphic writing system (see 1.2.7.2), we must for the most part interpret Hieroglyphic spellings in the light of Cuneiform Luvian. For obvious reasons, I have tried whenever possible to cite as examples forms which occur in both dialects. If only one form is given without specification, it is CLuvian.

9.1 Segmental Phonemes

9.1.1 Stops	/p/	/t/	/k/
	/b/	/d/	/g/

(1) As for Palaic (cf. 7.1.1.1), I have assumed the simplest system consistent with the facts. Once again, the lack of positive evidence for a unitary labiovelar /k^w/ may easily be due to chance. There certainly is no voiced labiovelar /g^w/: see 9.1.4 (end) and 10.1.1.4 (1).

(2) I assume that in CLuvian, as in Palaic and Hittite, the synchronic contrast is between fortis and lenis stops, with the former realized as geminates in intervocalic position (1.2.6.1). We cannot determine the synchronic situation in HLuvian. Voiceless stops have been generalized in word-initial position (1.2.6.1.3). Luvian has no word-final stops (see 10.1.6.3.1).

(3) For the change of */ĕC₁V/ to /áC₁C₁V/ ('Čop's Law') see 4.1.4 (1) and 10.1.1.3.

(4) For the 'lenition' of posttonic voiceless stops in reduplicated verbs see 10.1.1.1 (end) and 12.1.1.1 (end).

(5) CLuv. *ta-ap-pa-aš-* and HLuv. *ti-pa-s(V)-* 'heaven' show a special development of initial */n-/ to a dental stop. We cannot determine the voicing quality of the new stop, which could have developed before or after devoicing of original initial stops.

Examples:

/p/ < */p/: (1) *parran*=*pa+ra/i-na* 'before, in front' < PA **pérem*; (2) *pāta*=*pa-ta-* (& *pa+ra/i-*) 'foot' < PA **pód(o)-*; (3) *āpan*=*ā-pa-na* 'behind' < PA **ōpem*; (4) *-ppa*=*-pa* (conj.) < PA **-pe*; etc..

(1) Meriggi, 1957b: 222/Bossert, 1950a: 33 (ident.); Melchert revising Dunkel, 1990: 168³¹ (etym.); (2) Otten, 1953b: 79/Hrozný, 1933: 62⁴; (3) Rosenkranz, 1952a: 78/Hrozný, 1937: 336, & Bossert, 1951: 287 (ident.); Melchert after Lohmann, 1933: 324f, & Dunkel, 1990: 168³¹ (etym.); (4) Otten, 1953b: 41/Hrozný, 1933: 94 (ident.); Bossert, 1953a: 188; Bader, 1982: 108ff (etym.).

/p/ < */b/ /#___: (1) **piha*=**pi-ha-* (in names) 'splendor; might' < PA **bēho-*; (2) *parray(a)-* 'high' < PA **bérgey+*.

(1) Melchert, modifying Starke, 1990: 106&314f, contra Lehrman, 1978: 224ff; (2) Laroche, 1963: 77f (ident.); Melchert (preform, contra Starke, 1990: 58 & passim).

/bb/ < */b/ / * /é/___: (1) *tappaš-* 'heaven' < PA **nēbes-*; (2) perh. *papparkuwa-* 'purify' < (virtual) PA **bē-b(V)rġwaH-* (but more likely inner-Luvian innovation /pa-pparkuwa-/ after initial */b/ > /p/).

(1) Rosenkranz, 1952a: 49 (after Bossert, 1949: 110); Čop, 1970: 90 (cf. HLuvian *ti-pa-sV-* < **nēbes-*, 10.1.5.2); (2) Laroche, 1959a: 79 (ident.); Melchert contra Starke, 1990: 78 (preform): cf. 10.1.1.4 (4).

/b/ < */b/: (1) *apā*=*(ā-)pa-* 'that (one)' < PA **obó-*; (2) *tapar-* 'rule' ult. < PA **dabró-* *'strong'; (3) *kup(iya)-* 'plot' prob. < PA **kub-*; (4) *bāp(i)-* 'river' < PA **Háb-*.

(1) Otten, 1953b: 56&58/Hrozný, 1933: 35; (2) Götze, 1925: 62ff; Friedrich, 1947: 8 (ident.); Eichner, 1975a: 81⁵, & Starke, 1983: 406 (etym.); (3) Friedrich, 1930a: 288 (ident.); Čop, 1956: 146f (etym.) (less likely 'lenited' */p/ < **keup-*, as per Oettinger, 1979a: 204, et al.); (4) Laroche, 1973b: 180ff.

/b/ < */p/: *pipišsa*=*pi-pi-sa-* iter. of 'give' < (virtual) PA **pípi+*.

Meriggi, 1934b: 143 (ident.); Laroche, 1958a: 194f (morphol.): for phonol. see refs. in (4) above.

/t/ < */t/: (1) *t/dā*—=*ta*— 'step; stand' < PA *(s)*taH*—; (2) *tuw*— 'your' = *tu* 'you' (obl.) < PA **tu*; (3) *tātariyam*(*ma*)*n*—=*ta*—*ta*+*ra*/*i*—*ya*— 'curse' < (virtual) PA **tōtorye*—; (4) *-tta*—=*ta* (particle) < PA *—*te*; (5) *-tt(u)war(i)* < (virtual) PA *—*twe/ori* (*—*dh₂we/ori*).

(1) Meriggi, 1957b: 220/Morpurgo Davies, 1987: 211ff; (2) Meriggi, 1957b: 220/1934b: 162; (3) Laroche, 1954a: 124/Meriggi, 1934b: 152, after Forrer; (4) Laroche, 1959a: 88/Hrozny, 1933: 94 (ident.); Watkins, 1978: 308f (etym.); (5) Sommer, 1938: 85 (ident.); Melchert, 1984b: 26 (phonol.).

/t/ < */d/ / #__ : (1) *tāruš*—(*ša*)=*ta*—*ru*—(*sa*) 'image, statue' < (virtual) PA **dōrus*— (& prob. hapax GIS*tāru*— 'wood'); (2) *tūwa*—=*tu*—*wa*/*i*— 'put, place' < (virtual) PA **duwV*—; (3) *tāta*/*i*—=*tā*—*ti*— 'father' < PA **dāda*—; (4) *tapar*— 'rule' ult. < PA **dabrō*— 'strong'; (5) *tiyamm(i)*—/*ta*—*ka*—*mi* 'earth/country' < PA **dǵēm/dēgom*—; (6) *Tiwa*t—=*Ti*—*wa*/*i*—*t(V)*— 'Sun-god' < PA **dīwod*— (i.e. **dīwot*—).

(1) Otten, 1953b: 65&103/Bossert, 1959; (2) Meriggi, 1957b: 199/1934b: 162; (3) Friedrich, 1930b: 372²/Hrozny, 1933: 23; (4) Götze, 1925: 62ff; Friedrich, 1947: 8 (ident.); Eichner, 1975a: 81⁵, & Starke, 1983: 406 (etym.) (cf. Hrozny, 1917: 18³); (5) Laroche, 1954a: 124/Bossert, 1950b: 224 (ident.); Kimball, 1983: 427²⁰ (etym. of 1st); Čop, 1970: 91 (etym. of 2nd: see 10.1.1.3); (6) Rosenkranz, 1948: 249ff.

/dd/ < */d/ / */é/ __ : (1) *maddu*—=*ma*—*tu*—(*sa*) 'wine' < PA **mēdu*—; (2) **padd(a)*— 'carry' in *pēran paddunaš* 'tray' < **pēdV*—.

(1) Meriggi, 1957b: 198f/Morpurgo Davies & Hawkins, 1987: 280ff (nt. u-stem certain, pace Starke, 1990: 191⁶²⁴!); (2) Melchert (see 1.2.6.7,1).

/d/ < */d/: (1) *pāta*—=*pa*—*ta*— (& *pa*+*ra*/*i*—!) 'foot' < PA **pōd(o)*—; (2) *tāta*/*i*—=*tā*—*ti*— 'father' < PA **dāda*—; (3) *ad*—=*ā*—*t(V)*— 'eat' < PA **ad*— (weak stem); (4) *nātatt(a)*— 'reed' < PA **nōdo*+; (5) *Tiwa*t—=*Ti*—*wa*/*i*—*t(V)*— (& *-ti*—*wa*/*i*+*ra*/*i*—!) 'Sun(-god)' < PA **dīwod*—; (6) *mallit*—=*ma*—*li*—*t(V)*— 'honey' < PA **mēlid*—; (7) prob. *widā(i)*— 'smash, strike' < (virtual) PA **wēdaHye/o*—.

(1) Otten, 1953b: 79/Hrozny, 1933: 62⁴; (2) Friedrich, 1930b: 372²/Hrozny, 1933: 23; (3) Laroche, 1959a: 34/Hrozny, 1934: 292; (4) Laroche, 1958a: 180⁵; (5) Rosenkranz, 1948: 249ff, contra Oettinger, 1986a: 27; (6) Meriggi, 1957a: 58/Laroche, 1960b: 95 (5&6 with PA lenition per Eichner, contra Starke, 1990: 150f; see 4.1.1.1,2); (7) Watkins, 1986: 326 (PIE **wed^h*—).

/d/ < */t/: *tātariyam(ma)n*—=*ta-ta+ra/i-ya*— 'curse' < (virtual) PA **tótorye*—.

Laroche, 1954a: 124/Meriggi, 1934b: 152 after Forrer: see refs. in (4) above for phonology.

/k/ < */k/: (1) *karš*— 'cut' < PA **k(e)rs*—; (2) *kattawatnalla/i*— 'plaintiff' < (virtual) PA **katawādn+*; (3) *kīša(i)*— 'comb' < PA **kēsaHye/o*—; (4) prob. *kummai(a)*— /*kumaza*— 'sacralized/priest' < PA **kummō+*.

(1) Meriggi, 1962a: 260; (2) Rosenkranz, 1952a: 22 (ident.); Melchert, 1979: 268ff (etym.); (3) Laroche, 1954a: 124 (ident.); Čop, 1970: 93 (preform); (4) Güterbock apud Laroche, 1958: 154 (ident.); Melchert modifying Schindler apud Watkins, 1987: 401 (preform). Cf. 10.1.1.1.

The lack of examples in medial position is surely due to chance.

/k/ < */ġ/ /#___: (1) *kuttaš(ša)ra/i*—=*ku-ta-sa+ra/i*— 'orthostat' < (virtual) PA **ġutosr(i)*—; (2) *katmarši*— 'defecate' < PA **ġodmršye*—; (3) *gurta*— 'citadel' < PA *ġrdo*—.

(1) Laroche, 1954b: 103ff/Mittelberger, 1978: 5; (2) Güterbock, 1957: 353 (ident.); Eichner, 1975a: 83 (etym.) (cf. Puhvel, 1979b: 304); (3) Heubeck, 1961: 58ff.

/gg/ < */ġ/ / */é/___: HLuv. *ta-ka-mi* 'in the country' < PA **dēgom* (w/ general. strong stem): Čop, 1970: 91 (sim. Starke, 1987: 263).

See 10.1.1.3 for discussion and possible further example.

/g/ < */ġ/: *papparkuwa*— 'purify' < PA **b(e)rġw+*.

Laroche, 1959a: 79 (ident.); Melchert contra Starke, 1990: 78 (preform): see 10.1.1.4 (4).

/g/ < */g/: perh. *dakkuwa/i*— 'dark' (?) < PA **dṇgwo/i*— (**d^hṇgwo/i₂*—).

Starke, 1987: 263⁷⁴.

See 10.1.1.4 for discussion of the very complex development of voiced dorsals in Luvian.

/k(w)/ < */k^w/: (1) *kui*-=REL-*i*- 'who, which' < PA **k^wi*-; (2) *kūr*-=REL+*r(a/i)*- 'cut' < PA **k^w(e)r*-; (3) prob. -*ku* (sic!) '?' < PA **-k^we* 'also, and'.

(1) Hrozný, 1920: 38/Hawkins & Morpurgo Davies, 1993: 51&59 (w/refs.); (2) Laroche, 1959a: 59/Hawkins, 1975: 143; (3) Melchert, 1993b: 105 (cf. Laroche, 1959a: 58, & Carruba, 1969b: 72).

On the lack of word-medial examples see 10.1.1.4.

9.1.2 Affricate

Luvian has a voiceless affricate spelled with *z*. In the absence of any contrary evidence, I assume a single phoneme which I characterize as a dental /ts/. There is no assurance, however, that all forms of this Luvian phoneme are phonetically identical. A palatal allophone (or allophones) in some environments is quite possible (cf. 10.1.1.1 and 10.1.2).

Examples:

/ts/ < PA *[ts] (*t/___y): HLuvian *ha-zi-(ya)*- 'inscribe' < PA **Hatye/o*- 'strike; scratch' (cf. Hitt. *hazziya*- 'strike; play (an instrument)').

Čop, 1958: 52ff, and Oettinger, 1976b: 125f & 1979a: 346¹⁷⁶.

/ts/ < PA */-t+s/: (1) *Tiwaz*=*Ti-wa-za* 'Sun-god' (nom. sg.) < PA **dīwot-s*; (2) anim. nom. sg. -*nz(a)*=-(*n*)*za* (& 2ary stem -*nza*-) < PA **-nt-s*; (3) *āz(zaš)*-=*ā-z(a)*- 'eat' < PA **ēts*- (before *t); (4) NB also 2ary nom.-acc. sg. *zār-za=za+ra/i-za* 'heart' < obl. **zārd*- < **kīd*- + part. -*sā*.

(1) Rosenkranz, 1948: 249ff; (2) Meriggi, 1957b: 220/Stefanini, 1979: 609²⁷; Carruba, 1983: 82; Melchert, 1987a: 193 (contra Hawkins et al., 1974: 181ff); (3) Hrozný, 1920: 39; Oettinger, 1979a: 91; Starke, 1990: 44⁶⁸, contra Hawkins et al., 1974: 185; (4) Morpurgo Davies & Hawkins, 1988: 176, contra Melchert, 1987a: 197 (contrast lack of assimilation in *āšhar-ša*, *wār-ša*, *utar-ša*).

/ts/ < PA */-ns/#: anim. acc. pl. -*nz(a)* (& 2ary anim. nom. pl. -*nzi* = anim. nom.-acc. pl. -(*n*)*zi*) < PA *-(*V*)*ns*.

Forrer, 1938: 191; Gusmani, 1960b: 502ff (after Pisani); Starke, 1990: 44, contra Kammenhuber, 1969: 276.

/ts/ < PA */s/ in 2ary sequence sonorant+/s/: (1) nt. nom.-acc. sg. 'particle' -za=-za < PA *-so/ed after -n and -k *parnan-za=DOMUS-na-(n)za* 'house', *āduwal-za* 'evil'; (2) *ānza(š)=ā-(n)zu(?)*-za 'we, us' < PA **ns+*.

(1) Laroche, 1959a: 133; Neu, 1983a: 215 (phonol.); Arbeitman, 1992: 34, after Melchert (preform); (2) Meriggi, 1957a: 60.

/ts/ < PA */k/: (1) *za-/zi=-za-/zi-* 'this' < PA **kō-/k(o)i-*; (2) *zī-* 'lie' < PA **kē-*; (3) *zārt=-za+ra/i-t(V)-* 'heart' < PA **krd-*; (4) iter. -zza=-za- < PA *-*skē/o-*; (5) 'ethnic' suffix -izza=-i-za- < PA *-i(s)*kō-*; (6) HLuv. *zū-wa/i-n(i)-* 'dog' < PA **kwon-*; (7) HLuv. (EQUUS) *ā-zū-(wa/i)-* 'horse' < PA **ēkwo-*; (8) prob. HLuv. *zū+ra/i-ni-* 'horn' < pre-Luvian **kṛn-id-*.

(1)-(8) Melchert, 1987a: passim; (1) also Gusmani, 1969b: 305; (1)-(3) also Morpurgo Davies & Hawkins, 1988; (6) cf. already Hrozný, 1934: 129; (6)-(8) cf. already Gelb, 1942: 21; (8) Melchert, 1987a: 202 (phonol.); Starke, 1990: 406ff (stem). See 10.1.4.2 on the problematic vocalism.

For (7) cf. possibly CLuv. *az-zu-wa-an-za* (dat.-loc. pl.) at KBo XIII 260 ii 24. CLuv. **āštu-* 'horse' does not exist, pace Starke (1990: 502) with no textual evidence! LU *āštušanni-* remains an Indic loanword.

9.1.3 Fricatives

/s/

/H/

/h/

For the possibility that the voiceless labiovelar /k^w/ is weakened to /Hw/ in HLuvian and my reasons for rejecting this analysis see 1.2.7.2.1.

Examples:

/s/ < */s/: (1) *šā-=(69)sa-* 'let go, release' < PA **sā-*; (2) *šarri=*SUPER+RA/I 'above; upon' < PA **séri*; (3) *šūwa=*su-wa/i- 'fill' < PA **suwV-*; (4) *wāšū=*wa/i-su 'good' (nt. nom.-acc. sg.) < PA **wósu*; (5) *kīša(i)-* 'comb' < PA **kēšaHye/o-*; (6) *tappaš=*ti-pa-s(V)- 'heaven' < PA **nēbes-*; (7) *āš-/aš=-as-* 'be' < PA **ēs-/as-*.

(1) Melchert, 1989a: 32ff; (2) Rosenkranz, 1952a: 44f/Bossert, 1953b: 334 (ident.); Čop, 1970: 86 (phonol.); (3) Kammenhuber, 1956: 3/Gelb, 1950: 19; (4) Bossert, 1954: 85ff; (5) Laroche, 1954a: 124 (ident.); Čop, 1970: 93 (preform); (6) Rosenkranz, 1952a: 49/Bossert, 1949: 110; (7) Forrer, 1922: 222/Meriggi, 1934b: 110.

/ss/ < */s/ / */é/___: *wašsar* - 'favorable' (& prob. verb stem *wašša* - 'be pleasing') < **wés*+.

Laroche, 1954a: 123 (ident.), Melchert (preform; "Čop's Law"). The geminate /-ss-/ of *waššantari* < **wésonto* (Hrozný, 1920: 38) could be attributed to this change, but cf. also 10.1.6.1.1.3.

/H/ < */H/: (1) **bāwa/i* = *ha-wa/i-(i)* - 'sheep' < PA **Hé/ówV*-; (2) **bišbi(ya)* = *hi-sa-hi* - 'bind' < PA **Hi-sHi*-; (3) **bantil(i)* - 'first' / *ha-(n)t(V)* - 'face' < PA **Hant*-; (4) pret. 1st sg. -*bba* = *-ha* < PA **-Ha* (-**h₂e*); (5) conj. -(C)*ba* = *-ha* 'also; and' < PA *-(C)*Ho* (**-h₂o*); (6) **āšbar-(ša)/āšban* = *á-sa-ha+ra/i+/á-sa-ha-na* - 'blood' < PA **ēsHr/ēsHn*- (generalized full-grade).

(1) Bossert, 1953b: 316 (ident.); Kimball, 1987a: 185&189 (preform); (2) Schwarz, 1938a: 350/Barnett, 1948: 134 (ident.); Meriggi, 1953: 37, and Melchert, 1984b: 99 (preform), contra Oettinger, 1986b: 48; (3) Meriggi, 1957b: 222/Steinherr, 1951: 113; (4) Goetze, 1925: 62; Sommer, 1932: 62/Forrer, 1932: 50; (5) Schwarz, 1938a: 352/Forrer, 1932: 28f, (ident.); Melchert, 1992c: 42¹³ (preform); (6) Otten, 1953b: 36/Meriggi, 1934b: 110 (ident.); Starke, 1990: 558ff(etym.).

Contra Starke, 1990: 559f, CLuv. *ašhan*+ without scriptio plena is merely secondarily unaccented **ēsHn*-, not a reflex of **h₁sh₂n*-.

/H/ < */h/ /#___: (1) *banḥaniya* - 'be malicious' / (MALUS₂)*ha-ha-ni-wa/i* - 'malicious' < **hanya*+ < **h₃enh₂ye/o*-; (2) prob. *ḥappinatta* - 'wealth' < **hopen*+.

(1) Van Brock, 1964: 141; Bernabé, 1973: 440 (to root of Hitt. *banna* - 'litigate' < **h₃enh₂o*-, for which see Puhvel, 1991: 83f); (2) Laroche, 1963: 71 (no proof of borrowing from Hittite, pace Oettinger, 1981a: 152¹⁸).

For *baniya*- vs. *ḥanna*- cf. Hitt. *ṣūniya*- beside *ṣunna*- (4.1.3.3.2.4). Pace Starke (1990: 76) et al., CLuv. *ḥarran(i)*- cannot be 'eagle' < **hóron*- < **h₃éron*-. Geminate -rr- after accented short **ó* is impossible: cf. 10.1.4.1. The word clearly does not mean 'eagle': see *KBo* II 6 iv 18. On Lycian *Xerēi* see 12.1.3.2.

/h/ < */h/: (1) pret. 1st sg. -*ba* = *-ha*; (2) conj. -(V)-*ba* = *-ha* < PA **-ho*; (3) **piḥa* = **pi-ha* - 'splendor; might' < PA **bēho*-; (4) abstr. suff. -*aḥ-it* = *-a-hi-t(V)*- < PA **-ah+id*-.

(1) Götze, 1925: 62; Sommer, 1932: 62/Forrer, 1932: 50 (ident.); Morpurgo Davies, 1983/83: 270 (preform); cf. Eichner, 1973: 80; (2) Forrer, 1932: 28f (ident.); Melchert, after Eichner and Morpurgo Davies (preform); (3) Melchert, modifying Starke, 1990: 106&314f, contra Lehrman, 1978: 224ff; (4) Melchert, revising Watkins, 1975a: 364f (see already Forrer, 1922: 222, and Eichner, 1973: 59f).

The difference between /H/ and /h/ cannot, of course, be shown in HLuvian orthography.

9.1.4 Sonorants

/m/

/n/

/r/, /l/

/w/

/y/

On the irregular change of initial */n-/ to dental stop see above 9.1.1 (5).

Examples:

/m/ < */m/: (1) *mān*=*ma-na* 'if' < PA **mām*; (2) *maddu*=*ma-tu-(sa)* 'wine' < PA **médu*-; (3) CLuv. -*mu* 'me'/HLuv. (*á*-)*mu* 'I, me' < PA *-*mu*/**emú* 'me'; (4) *ḥamša/i*=*ha-ma-sa/si*- 'grandchild' < PA **h₂omso*-.

(1) Rosenkranz, 1952a: 43/Forrer, 1932: 36f (ident.); Kronasser, 1956: 85; Melchert, 1984a: 36²⁰ (etym.); (2) Meriggi, 1957b: 198f/Morpurgo Davies & Hawkins, 1987: 280ff; (3) Meriggi, 1957b: 221/Forrer, 1932: 46; (4) Laroche, 1958a: 189/Gelb, 1942: 25⁴ (ident.); Bader, 1988b: 33 (etym.).

/mm/ < */m/ / */é/___: (1) *mammalw*-/*mammalḥu*- 'crush' < (virtual) PA **mēm(V)*lHw-; (2) *t(i)yamm(i)*- 'earth' < PA loc. **dǵēm(i)*.

(1) Melchert, 1988b: 215f; (2) Kimball, 1983: 427²⁰.

CLuv. *māmma(nna)*- 'look at; favor' is a "durative" in -*anna*- and reflects PA **mēm(V)*- < **mēm(V)*-, not **mēm(V)*-, contra Oettinger (1979a: 486⁷²) and Starke (1980b: 147). The preform **mēm(V)*- cannot explain the CLuvian geminate -*nn*-. See Melchert (1988b: 219f).

/n/ < */n/: (1) proh. neg. *nī/nīš*=*nī-(sa)* < PA **nē*; (2) *nātatt(a)*- 'reed' < PA **nódo*+; (3) inf. -*una*=*-u-na* < PA *-*uno*; (4) *manā*=*LITUUS-na*- 'see' < PA **mnāē*- (i.e. **mneh₁*-).

(1) Sommer, 1938: 85/Hawkins, 1975: 120ff (ident.); Morpurgo Davies, 1975: 158 (etym.); (2) Laroche, 1958a: 180⁵; (3) Friedrich, 1947: 11/Bossert, 1951: 276 & 1953b: 338f; Laroche, 1960a: 173; (4) Melchert, revising Starke, 1980b: 147 (NB lenited endings!).

/nn/ < */n/ / */é/___: (1) pres. 1st pl. *-unni* < PA **-wēni* (via **-wannī* w/syncope); (2) "gentilic" suffix *-wann(i)-* < (virtual) PA **-wén(i)-*; (3) prob. **mānnaḥ-* 'face' (in *mānnaḥ(wa)nn(i)-*, a facial feature) < PA **ménah-*; (4) *ānni-* 'carry out' < pre-Luvian **ēni-* < **ēnyi-* < PA **ēnye-*; (5) perh. NINDA *tannaḥ-* 'pretzel' (or sim.) < PA **ténos* **'loop'*.

(1) Melchert, after Carruba, 1968a: 18 (*-wannī* perh. lx in *likuwanni*, Oettinger, 1979a: 13); (2) Laroche, 1954a: 123 (ident.); Melchert (preform); for the 'i-motion' see Starke, 1990: 62, and Oettinger, 1987a; (3) Melchert, after Poetto, 1986b (cf. Hitt. **mēna-* in *mēna-bḥanda* 'facing'); (4) Sommer, 1932: 108 (ident.); Melchert, after Oettinger (preform); (5) Starke, 1990: 107.

/r/ < */r/ / */é/___: (1) *tāruḥ-(ša)=ta-ru-(ša)* 'statue, image' < (virtual) PA **dōrus-* (& prob. hapax GLS *tāru-* 'wood'); (2) *šarla(i)-=sa-sa+ra/i-la-* 'worship, exalt' < PA **serlāye/o-*; (3) *adari(ya)-* 'feed' < PA **edriye/o-*.

(1) Otten, 1953b: 65&103/Bossert, 1959; (2) Laroche, 1958a: 179 & 1959b; (3) Otten, 1953b: 58.

/rr/ < */r/ / */é/___: (1) *parran=pa+ra/i-na* 'before, in front' < PA **pérem*; (2) *šarri=*SUPER+RA/I 'above; upon' < PA **séri*; (3) **nanuntarra/i-* 'present' < **-téro/i-*.

(1) Meriggi, 1957b: 222/Bossert, 1950a: 33; (2) Rosenkranz, 1952a: 44f/Bossert, 1953b: 334 (ident.); Čop, 1970: 86 (phonol.); (3) Čop, 1970: 87, contra Starke, 1990: 369f.

/r/ < */d/ (HLuvian only!): (1) *pa+ra/i-* 'foot' (beside *pa-ta-*) < PA **pōd(o)-*; (2) *tā+ra/i-* 'father' (beside *tā-ti-*) < PA **dāda-*; (3) *-ti-wa/i+ra/i-* 'Sun-god' (beside *Ti-wa/i-tV-*) < PA **dīwod-* (i.e. **dīwot-*).

See Morpurgo Davies, 1982/83: 246ff.

There is a single example of rhotacism in CLuvian: *tiwari(ya)-* 'of the Sun-(god)', as per Popko (1984) and Starke (1990: 147).

/r/ < */l/ (HLuvian only!): (1) *wa/i+ra/i-* 'die' (beside *wa/i-la-* < PA **wel-* (or **g^wel-*); (2) prob. (VINUM) *ha+ra/i-* 'harvest' < PA **h₂olgi-*; (3) *pa+ra/i-sa-* 'time' < pre-Luvian **palsa-* (= Hitt. *palša/i-* 'idem'); (4) *ha+ra/i-ti-* 'proclaim' (or sim.) < PA **H₁ti-*.

(1) Hawkins, 1980c: 109ff (cf. CLuv. *u(wa)lant(i)-* 'dead'); (2) Melchert, 1988b: 220ff; (3) Neumann, 1976: 140 (PIE etymon unknown); (4) Neumann, 1976: 140 (ident.); see Puhvel, 1991: 63f, for etymology.

The alleged example of HLuv. *á-tu-wa/i+ra/i-* beside *á-tu-wa/i-la/i-* is probably false (see Starke, 1990: 188ff).

/r/ < */n/ (HLuvian only!): *ma-ru-ha* 'at all' (or sim.) beside *ma-nu-ha* < PA **mām+?*.

/l/ < */l/: (1) *lāla/i-* = *la-la/i-* 'tongue, speech' < PA **lālo-*; (2) *lūwa-* 'pour' < PA **lh₂wV-* (pl. stem); (3) HLuv. *la-m(a)-ni* 'time' (dat.-loc. sg.) < PA **lo/emni* (i.e. **no/emni*); (4) *u(wa)lant(i)-* 'dead' / *wa/i-la-* (& *wa/i+ra/i-*!) 'die' < PA **wel-* or **g^wel-*; (5) *ādduwal(i)-* = *á-tu-wa/i-la/i-* 'evil' < PA **āddwol+.*

(1) Rosenkranz, 1952a: 22/Meriggi, 1962a: 78; (2) Melchert, 1988b: 217f; (3) Nowicki, 1981: 253f (ident.) (see 4.1.6.1.2 for PA form & etym.); (4) Laroche, 1954a: 124/Hawkins, 1980c: 109ff (ident.); Carruba, 1968a: 14 & 1969b: 84⁸³ (1st etym.); Morpurgo Davies apud Hawkins, 1980c: 114 (2nd etym.); (5) Sommer, 1932: 50f (ident.); Watkins, 1982a: 261 (preform).

/ll/ < */l/ / */é/___: (1) *mallit-* 'honey' < PA **mélid-* (i.e. **mélit-*); (2) prob. adj. suffix *-alla/i-* < PA **-é-lo-*.

(1) Meriggi, 1957a: 58; (2) Melchert.

/l/ < */d/: (1) *l(a)warri-* 'break' < PA **dwerneye-*; (2) prob. *lā-* = *la-* 'take' < PA **dō-* (i.e. **deh₃-*), but NB also HLuv. *ta-* 'take' with preserved dental stop!

(1) Carruba, 1966a: 17f; (2) Laroche, 1958b: 104 (contra Kammenuber, 1959c: 221, & Meriggi, 1962b: 258 & 1980a: 261).

/w/ < */w/: (1) *wāšu* = *wa/i-su* 'good' (nt. nom.-acc. sg.) < PA **wōsu*; (2) *warpa/i-* = *wa/i+ra/i-pa/pi-* 'enclosure; sphere' < PA **worPo-*; (3) *Tiwa-* = *Ti-wa/i-t(V)-* 'Sun-god' < PA **dīwod-*; (4) *ādduwa-* = *MALUS₁-tu-wa/i-* 'evil' < PA **āddwo-* (i.e. **ēdwo-*).

(1) Bossert, 1954: 85ff; (2) Weitenberg, 1977: 49 (ident.); Melchert, 1984b: 157 (etym.), contra Hawkins & Morpurgo Davies, 1986: 76f; (3) Rosenkranz, 1948: 249ff; (4) Starke, 1990: 189 (but stem is **-wo-*, not ***_-u-!*).

/w/ < **/g^w/*: (1) *wāna-* 'woman' < PA **g^wón+*; (2) HLuv. *wa/i-wa/i-(i)-* 'cow' < PA **g^wów+*; (3) *ū=-u-* 'drink' < PA **e/ag^w-*; (4) *taru-* 'dance' < PA **terg^w-* 'twist; dance'; (5) *tāwa/i=ta-wa/i-* 'eye; face' < PA **sóg^wo-*; (6) *marway(a)-* 'dark' < PA **morg^woyo-*.

(1) Melchert, revising Starke, 1980a: 85 (neither **g^wénch₂-* nor **g^wénch₂-* can explain *wāna-*); (2) Bossert, 1953b: 315; (3) Morpurgo Davies apud Hawkins, 1980b: 221; (4) Benveniste, 1962: 125; (5) Laroche, 1954a: 124 (see 4.1.1.1 (3) for the PA preforms of the last two); (6) Neumann, 1973: 298; Starke, 1986: 163; Melchert/Starke apud Oettinger, 1989/90: 98.

/y/ < **/y/*: (1) *pīya=-pi-ya-* 'give' < PA **piyV-* (pl. stem); (2) adj. suff. *-iya=-i-ya-* < PA **-iyo-*; (3) *tātariyam(ma)n=-ta-ta-ra/i-ya-* 'curse' < (virtual) PA **tótorye/o-*; (4) *kuwaya=-REL-ya-* 'fear' < PA **dwóy(e)-*; (5) NB also *iunabi(-ša)* 'abundance' /*i-u-na* 'to go' (/yuna/) < (virtual) PA **y-uno*.

(1) Forrer, 1926: 1.207/Gelb, 1942: 12&25 (cf. Meriggi, 1934b: 142); (2) Carruba, 1982: 43 & passim; Melchert, 1990: 199ff; (3) Laroche, 1954a: 124/Meriggi, 1934b: 152, after Forrer; (4) Laroche, 1967: 52 (contra Melchert, 1984b: 164); (5) Morpurgo Davies & Hawkins, 1987: 273/Hawkins-Morpurgo Davies-Neumann, 1974: 47¹⁶³.

9.1.5 Vowels

/i/, /i:/

/u/, /u:/

/a/, /a:/

Examples:

/i/ < **/i/*: (1) *imma=i-ma* 'indeed' < PA **immo*; (2) reflexive particle *-ti=-ti* < PA **-ti*; (3) vbl. ending *-ti=-ti* < PA **-ti* (etc.); (4) *hišhi(ya)=-hi-s(a)-hi-* 'bind' < PA **Hí-sHí-*; (5) *mimma-* 'look at; favor' < (virtual) PA **mí-mmV-* (i.e. **mí-mnV-*); (6) *kui=-REL-i-* 'who, which' < PA **k^wi-*.

(1) Eichner, 1981: 64, contra Melchert, 1985: 202f; (2) Laroche, 1958a: 169; (3) Sommer, 1932: 108/Meriggi, 1937: 105; (4) Schwarz, 1938a: 350/Barnett, 1948: 134 (ident.); Meriggi, 1953: 37, & Melchert, 1984b: 99 (preform), contra Oettinger, 1986b: 48; (5) Melchert, 1988b: 218ff; (6) Hrozný, 1920: 38/Hawkins & Morpurgo Davies, 1993: 51&59 (w/refs.).

/i/ < */e/ / *y___: verbal suffix *-ye- > *-yi- > -i-.

Oettinger, 1976/77: 135 et aliter.

/i/ < */e/ / *ŕ/___ (via *y___): (1) iŕ(ŕa)r(i)-=i-s(á)-t(a)ra/i- 'hand' < PA *ŕesr+; (2) *im(ma)ra- 'field, open country' (in adj. im(ma)raŕŕa/i-) < PA *ŕēmro-.

(1) Laroche, 1954a: 124/Meriggi, 1934b: 97 (vocalism Hawkins et al. 1974: 188); (2) Laroche, 1954a: 124.

For the need to keep this development separate from the preceding, see 10.1.4.1 under /-n-/ > /-nn-/.

/i/ < */e/ / *w___ dental stop: ħuitar=(BESTIA) CURRERE-sà+ra/i- 'wild animals', ħuitwal(i)- 'alive' etc. < PA *Hwed/s-.

See 10.1.6.1.5 (2) for detailed discussion.

/i/ < */e/ pretonically(?): (1) neg. prefix ni- < PA *né- (as in ni-waralla/i- 'not one's own=another's'); (2) irĥātt(a)- 'circle, round' < PA *erHót-; (3) HLuv. *pita- 'ground' (in pitahaliya- 'throw to the ground, demolish') < PA *pedó- (cf. Lyc. pddē for accent).

(1) Hawkins, 1980d: 143 & 1981: 174f; (2) Melchert (cf. Laroche, 1949: 22); (3) Melchert, after Poetto, 1981: 51¹⁰⁰.

This proposed change, which is shared with Hittite (see 6.1.5.10), must be viewed as provisional.

/i:/ < */i:/ /___C,V: (1) prob. pīya-=pi-ya- 'give' < PA *pīyV- (pl. stem w/retracted accent); (2) Tiwat-/ti-wa/i-t(V)- 'Sun-god'.

(1) Forrer, 1926: 1.207/Gelb, 1942: 12&25; (2) Rosenkranz, 1948: 249ff (lack of plene accidental).

/i:/ < */i:/: 'motion'-suffix -i-=-i- < PA *-i- (i.e. *-ih₂).

Starke, 1990: 59ff; Oettinger, 1987a.

/i:/ < */e:/: (1) proh. neg. *nī/nīś=ni-(sa)* < PA **nē*;
 (2) *hīrut=hi-ru-t(V)* - 'curse' < PA **h₂ērud-* (i.e. **h₂ērut-*);
 (3) *kīśā(i)* - 'comb' < PA **kēsaHye/o-*; (4) *ēlhā(i)* - 'wash' <
 (virtual) PA **ēlHaHye/o-*; (5) **piḥa=pi-ha-* 'splendor;
 might' (in deriv.) < PA **bēho-*; (6) *ippatarri(ya)* - 'distrain' <
 PA **ēptro+*.

(1) Sommer, 1938: 85/Hawkins, 1975: 120ff (ident.); Morpurgo
 Davies, 1975: 158 (etym.); (2) Watkins, 1993: 469f; (3) Laroche, 1954a: 124
 (ident.), Čop, 1970: 93 (preform); (4) Melchert, after Meriggi, 1957a: 61f &
 1957b: 223; (5) Melchert, modifying Starke, 1990: 106&314f, contra Lehrman,
 1978: 224ff; (6) Melchert, following Rosenkranz, 1952a: 71.

/i:/ < */e:/: (1) *ī=i-* 'go' < PA **ē-*; (2) *zī-* 'lie' <
 PA **kē-*; (3) prob. *zīti-* 'man' < **kēdi-* (i.e. **kēyti-*); (4)
 prob. dat.-loc. sg. ending *-ī* (in *tappašī, apatī*) < PA **-ē*.

(1) Meriggi, 1957b: 202ff/Hawkins et al., 1974: 189; (2) Melchert,
 1987a: 195f; cf. Morpurgo Davies & Hawkins, 1988: 180; (3) Gusmani,
 1987/88: 109 (**kōyti-* also poss.); (4) Melchert.

/i:/ < */oy/: *wiši-/wišai-* 'press' < **woisēye/o-*.

Starke, 1990: 549f (root etym.); Melchert (preform).

/u/ < */u/: (1) *wāšu=wa/i-su* 'good' (nt. nom.-acc.
 sg.) < PA **wōsu*; (2) inv. 3rd sg. ending *-tu=-tu* < PA
**-tu*.

(1) Bossert, 1954: 85ff; (2) Forrer, 1922: 221/Meriggi, 1932: 53ff;
 Forrer, 1932: 37 (ident.).

/u:/ < */ú/ /___C₁V: (1) *kūr=REL+r(a/i)* - 'cut' <
 PA **k^wr-* via **kúr-* (w/retracted accent); (2) prob. *lūwa-*
 'pour' < PA **h₂wV-* via **lúwV-* (pl. stem w/retracted
 accent.); (3) prob. *tūwa=-tu-wa/i-* 'put, place' < PA **dh₂wV-*
 via **dúwV-* (likewise).

(1) Laroche, 1959a: 59/Hawkins, 1975: 143; (2) Melchert, 1988b: 217f;
 (3) Meriggi, 1957b: 199/1934b: 162 (ident.); Melchert (preform).

/u/ < */ú/ /#___: *ū(n)za=u-zu(?)* -za 'you (pl.)' < PA
**ús-* via **úns-* w/2ary nasal after 1st pl. *ānza*).

Melchert (cf. Meriggi, 1957b: 221).

/u:/ < */Vu:/: (1) *ū* = *u* - 'drink' < 2ary */*au*- < PA */*ag*-; (2) *būba* | = *hu* - *ha* - 'grandfather' < PA */*Háuh*o/a-; (3) *GISūdanza* 'windows' < PA */*leu(H)*to-; (4) *utar* (pl. *ūtra*, adj. *ūtnašša/i*-) 'word, spell' < PA */*o*/eutr/n-; (5) *dūpī* - /*dūpai*- 'strike' < (virtual) PA */(s)*toubéye*/o-.

(1) Morpurgo Davies apud Hawkins, 1980b: 221; (2) Melchert, after Eichner, 1978: 145¹¹ (for the poss. 2ary *a*-stem see below 11.1.1, end); (3) Eichner, 1973: 80; (4) Melchert (cf. Carruba, 1962: 65); (5) Melchert (for root */(s)*teub*^k- cf. Grk. ΣΤΥΦΕΛΙΣ(ω)).

/a/ < */a(:)/ (unaccented): (1) nt. nom.-acc. pl. -*a* = -*a* < PA */-*ā*; (2) *hant*- (in *hantil(i)*- 'first' & *hantawat(i)*- 'ruler') = *ha*-*t(V)*- 'face' < PA */*Hant*-.

(1) Forrer, 1922: 218; (2) Meriggi, 1957b: 222, & Laroche, 1959: 40/Steinherr, 1951: 113.

/a/ < */o/ (unaccented): (1) enclitic -*aš*/-*an* = -*aš*/-*an* 'he, him' < PA */-*os*/-*om*; (2) *ānta* = *ā*-*ta* 'into' < PA */*ēndo*; (3) 3rd pl. mid. -*antari* < PA */-*onto*.

(1) Hrozný, 1933: 87; (2) Hrozný, 1920: 38; (3) Forrer, 1922: 218.

/a/ ([a:]) < */é/ /__CC (incl. by 'Čop's Law'): (1) 3rd pl. -*anti*/-*andu* < */-*ēnti*/u; (2) *māmma(nna)*- 'look at; care for' < (virtual) PA */*mēmm*- (i.e. */*mēmn*-); (3) *tappaš*- 'heaven' < PA */*nēbes*-; (4) *maddu* = *ma*-*tu(-sa)* 'wine' < PA */*mēdu*-; (5) *wašša*- 'be pleasing' and *waššar*- 'favor' < PA */*wēs*+; (6) *parran* = *pa*+*ra/i*-*na* 'before, in front' < PA */*pérem*; (7) *malli(t)*- 'honey' < PA */*mēlid*- (i.e. */*mēlit*-); (8) *tiyamm(i)*- 'earth' < PA loc. sg. */*dqēm*; (9) suff. -*wann(i)*- < (virtual) PA */-*wén(i)*-; (10) */*mānnah*- 'face' < PA */*mēnah*- in *mānna(bu)wann(i)*- (facial feature).

(1) Hrozný, 1920: 38; (2) Melchert, 1988b: 220, after Starke, 1980b: 142ff; (3) Rosenkranz, 1952a: 49; Čop, 1970: 90; (4) Meriggi, 1957b: 198f/Morpurgo Davies & Hawkins, 1987: 280ff; (5) Laroche, 1954a: 123 (ident.); Melchert (preform); (6) Meriggi, 1957b: 222/Bossert, 1950a: 33 (ident.); Čop, 1970: 86 (phonol.); Melchert revising Dunkel, 1990: 168³¹ (preform); (7) Meriggi, 1957a: 58/Laroche, 1960b: 95 (ident.); Čop, 1970: 85 (phonol.); (8) Laroche, 1954a: 124 (ident.); Kimball, 1983: 427²⁰ (preform); (9) Melchert; (10) Melchert, after Poetto, 1986b.

I assume regular lengthening here, despite the extreme rarity of scriptio plena. See 10.1.5.2.

/a/ < */e/ (posttonic): (1) part. -ppa=-pa < PA *-pe;
(2) part. -tta=-ta < PA *-te; (3) tappaš- 'heaven' < PA
*nébes- (2nd vowel); (4) inv. 2 pl. -tan < PA *-ten.

(1) Otten, 1953b: 41/Hrozný, 1933: 94 (ident.); Bossert, 1953a: 188; Bader, 1982: 108ff (etym.); (2) Laroche, 1959a: 88/Hrozný, 1933: 94 (ident.); Watkins, 1978: 308f (etym.); (3) Rosenkranz, 1952a: 49 (after Bossert, 1949: 110); (4) Hrozný, 1920: 39.

Cf. above on pretonic */e/ > /i/ (?). The treatment of unaccented short */e/ in all positions is not yet determined beyond doubt.

/a/ ([a:]) < */á/ /__CC(?): (1) relat. suffix -āsša/i-=-
-a-sa/si- < PA *-ássa/i-; (2) zār-za 'heart' < *zárd- <
*kīd- (root accent secondary).

(1) Werner, 1954: 303, & Bader, 1988a: 176²¹, with refs. (see 4.1.8.1.1 (2) for prehistory of suffix); (2) Morpurgo Davies & Hawkins, 1988: 175ff.

Development not assured without further examples!

/a/ ([a:]) < */ó/ /__CC: (1) apāš/n=(á-)pa-sa/-na &
zās/n=za-sa/na 'that; this' < PA *obós/m & *kós/m; (2)
irhātt(a)- 'circle' < PA *erHót-; (3) hās-(ša) 'bone' < PA
*Hós (i.e. *h₂óst w/simplification of final cluster); (4) ptc.
-āmma/i- < PA *-ómmo/i-.

(1) Otten, 1953b: 58 & Meriggi, 1957b: 221/Hrozný: 1933: 86&23;
(2) Melchert (cf. Laroche, 1949: 22); (3) Otten, 1953b: 64 (basic ident.);
Oettinger, 1981b: 387; Hamp, 1984: 199⁹; & Starke, 1990: 122 (etym.); (4)
Forrer, 1922: 222 (basic ident.); Melchert, 1983b: 23f (preform), contra
Benveniste, 1959, et al.

/a/ ([a:]) < */é,á,ó/ /#_: (1) ābba 'when, as' < PA
*én-Ho; (2) ānta=a-ta 'into' < PA *éndo; (3) ānnara/i-
'vigorous' (etc.) < PA *én-(H)noro-; (4) āš=-á-s(a)- 'be' <
PA *és-; (5) āz(zaš)-=á-za- 'eat' < PA *éts-; (6) āšhar-
(ša) 'blood' < PA *ésHr (w/2ary full grade); (7) ānna/i-
'mother' < PA *ánna- (cf. ānna-wann(i)- 'mother-in-law');
(8) ānnan 'under' < PA *ānnem; (9) ādduwa=-MALUS₁-tu-
wa/i- 'evil' < PA *āddwo-; (10) ānz(aš)=á-zu(?) -za 'us' <
PA *ñs- (via *āns-); (11) āppan=a-pa-na 'behind, after' <
PA *ōpem; (12) conj. a=-á- < PA *ó- (NB spelling a-at-ta
for a=ta, i.e. *ó-te).

(1) Melchert, 1992c: 46, after Laroche; (2) Hrozný, 1920: 38; (3) Melchert, 1984b: 103f, after Schindler; (4) Forrer, 1922: 221; (5) Hrozný, 1920: 39; Oettinger, 1979a: 91 (by epenthesis before */t/, not iterative!); (6) Otten, 1953b: 36/Meriggi, 1934b: 110 (ident.); Starke, 1990: 558ff (etym.); (7) Otten, 1953b: 53; (8) Laroche, 1958a: 180ff (ident.); Melchert revising Čop, 1970: 87f (preform); (9) Melchert, after Watkins and Starke (for PA *a in exx. 8&9 see 4.1.1.3 & 4.1.4.1); (10) Meriggi, 1957a: 60; (11) Hrozný, 1937: 336 (ident.); Melchert, after Lohmann, 1933: 324f, and Dunkel, 1990: 168³¹ (preform); (12) Meriggi, 1957b: 196f (ident.); Melchert (preform; assumed o-grade after *to > Hitt. ta and *pó > CLuv. pā); so also with doubts Carruba, 1981b: 115.

/a:/ < */é/ /___C₁V or ___#: (1) nāwa/i- 'new'=na-wa/i- 'great-grandson' < PA *nēwo-; (2) nāwa/*nawa 'not' < (virtual) PA *nēwe; (3) nā(?)=*na 'not' < PA *né.

(1) Laroche, 1959a: 74/Bader, 1988b: 32 (see also Neumann, 1991a: 298); (2) Friedrich, 1955: 43f/Hawkins, 1975: 120ff (ident.); Holt, 1958: 156 (etym.); (3) Meriggi, 1957b: 203²⁸ (hapax, meaning not assured)/Hawkins, 1975: 120ff (ident.); Morpurgo Davies, 1975: 158 (etym.).

More examples are needed to be sure of this development.

/a:/ < */ó/ /___C₁V or ___#: (1) conj. pā < PA *pó; (2) t/dārus-(ša)=ta-ru-(sa) 'statue, image' < (virtual) PA *dorus-; (3) pāta=pa-ta- 'foot' < PA *pód(o)-; (4) wāšu=wa/i-su- 'good' < PA *wósu-; (5) nātatt(a)- 'reed' < PA *nódo-; (6) wāna- 'woman' < PA *g^wónā-.

(1) Otten, 1953b: 49 (ident.); Melchert (preform); see Dunkel, 1990b: 100, for ablaut; (2) Otten, 1953b: 65&103/Bossert, 1959; (3) Otten, 1953b: 79/Hrozný, 1933: 62⁴; (4) Bossert, 1954: 85ff; (5) Laroche, 1958a: 180⁵; (6) Melchert, revising Starke, 1980a: 85 (*g^wénā- > Luv. **wanna- per Čop's Law; preform *g^wónā- also demanded by Lydian kāna- with delabialization; 14.1.1.1).

/a:/ < */á/ /___C₁V: (1) bāp(i)- 'river' < (virtual) PA *Háb-; (2) lāla/i-/la-la/i- 'tongue' < PA *lālo/ā-; (3) tāta/i-=tā-ti- 'father' < PA *dāda-; (4) pābūr 'fire' < PA *páHw_r; (5) suff. -(C)āhūt=-(C)a-hi-t(V)- < PA *-āhid-.

(1) Laroche, 1973b: 180; (2) Rosenkranz, 1952a: 22/Meriggi, 1962: 78; (3) Friedrich, 1930b: 372²/Hrozný, 1933: 23; (4) Rosenkranz, 1952a: 27; (5) Melchert, revising Watkins, 1975a: 364f (see already Forrer, 1922: 222, and Eichner, 1973: 59f).

/a:/ < */o:/: (1) *lā* = *la* - 'take' < PA **dō*- (i.e. **de/oh₂*-); (2) *māya* - 'mature, adult' < PA **mōyo*- (i.e. **moh₁yo*-).

(1) Laroche, 1958b: 104, contra Kammenhuber, 1961: 47⁴, and Meriggi, 1962b: 256ff & 1980a: 261; (2) Melchert, 1984b: 46.

/a:/ < */a:/: (1) *t/dā* = *ta* - 'step; stand' < */(s)*tā*- < PA */(s)*tāH*-; (2) *mān* = *ma-na* 'if' < PA **mām*.

(1) Morpurgo Davies, 1987: 211ff; (2) Rosenkranz, 1952a: 43/Forrer, 1932: 36f (ident.); Kronasser, 1956: 85; Melchert, 1984a: 36²⁰ (etym.).

/a:/ < */æ:/ (**eh₁*): (1) *ā* = *á* - 'do, make' < PA **æ*-; (2) *manā* = LITUUS-*na* - 'look at; favor' < PA **mnæ*-; (3) *šā* = (*69)*sa* - 'release, let go' < PA **sæ*-; (4) *wār* - (*ša*) 'water' < PA **wæ*r; (5) *āra/i* = *á+ra/i* - 'time' < PA **æro*-.

(1) Laroche, 1954a: 124 (ident.), Melchert, 1984b: 159f & 1989: 40f (preform); (2) Melchert, revising Starke, 1980b: 147 (NB lenited endings!); (3) Melchert, 1989a: 32ff; (4) Watkins, 1987: 402; (5) Morpurgo Davies apud Hawkins, 1989: 195¹⁶ (etym.); Melchert, 1989a: 41²⁸ (phonol.).

The consistent long /a:/ in two categories yet awaits explanation. (1) inv. 2nd sg. in -*ā* such as *hannā*, *lilūwā*, *tūwā*, prob. *nannā* and *iyā*; (2) abl.-inst. in -*āti* (over 15 examples).

9.1.6 Diphthongs

(1) As in Hittite, the inconsistency of scriptio plena makes it difficult to distinguish between short and long diphthongs (and between diphthongs and disyllabic sequences). We have direct evidence for long /a:y/ and short and long /aw/ and /a:w/. That a short diphthong /ay/ exists in Luvian is likely.

(2): Adjectives in -*ai(ya)*- reflect *-*iyō*- stems built to stems in *-*o*- (Luv. -*a*-) without deletion of the final vowel of the base (Melchert, 1990: 201f). The addition of 'i-motion' in the strong animate cases produces *-*aiy-i*- (anachronistically *-*o-iy-ih₂*-). The outcome of such a sequence is hard to predict. The frequent spelling -*Ca-i-iC* may(!) indicate a disyllabic /-ayi-/: anim. nom. pl. *a-ar-ra-i-in-zi*, *wa-ar-pa-i-in-zi*, *ku-um-ma-i-in-zi* (beside *aš-har-nu-um-ma-in-zi*), anim. acc. sg. *pār-la-i-in* (beside anim. nom. sg. *wa-aš-ha-iš*). Alternatively, these examples could represent a short diphthong /ay/.

(3): The pres. 1st plural *hi-iz-za-ú-un-[ni]* clearly results from syncope, but it is unclear whether we should read /-awnni/, /-a:wnni/, or /-awunni/. Cf. *lu-ú-un-ni*: /lu:nni/ or /luwunni/? Note also the spelling of the unexplained pret. 3rd pl. in *-aunta*: *i-ik-ku-na-ú-un-ta* and *tar-ra-wa-u-un-ta*.

/a:y/ < */a:yo/ in iter. *widā(i)-* 'strike' < PA **wēdaHyo-*.

See Watkins (1986: 326) for the preform and 10.1.6.2.1 for the syncope.

/a:y/ < */V:ye/ in pres. 3rd sg. *-āi* (also spelled without scriptio plena).

See Morpurgo Davies (1979: 581-587). Compare the same generalization in Hittite (6.1.6.2.5,4).

/a:y/ < */éyo/ (via */á:ya/) in weak stem of denom. & iter. (spelled *-Ca-(a)-i(C)*, *-Ca-a-eC-* and *-Ca-i-iC-*)

Exx.: *sannaindu/sannāenta*, *zarpāinta*, *hapāindu*, *tarmaindu*, *kūšāinta*, etc.. See 10.1.6.2.1 for the syncope.

/a:y/ < */V:y/: (u)wāi- 'woe'.

Cf. Hitt. *wāi-* 'idem' (the word is, of course, imitative).

The nt. noun *tāin/tāin* 'oil' surely reflects some sort of contraction, but the source and structure of the word are unclear. See Starke (1990: 239ff).

/aw/ < */aw/: *aula/i-* 'windpipe, throat' < PA **aulo-*.

I assume with Laroche (1959a: 35) identity with Hitt. *aula/i-*, for whose source see Kühne (1986: 114) contra Puhvel (1984: 229ff & 1991: 450). For the phonology see Kimball (1993).

/a:w/ < */a:wV/ (by syncope): (1) obl. stem *-āun-* (also spelled *-aun-*) < PA **-āwen-*; (2) nom.-acc. *-aur* < PA **-āwṛ* via **-āwar*; (3) *lāun(a)i-* 'wash' < **lāHw-* (with secondary spread of prevocalic treatment).

(1) (includes infinitives) Starke, 1990: 529; (2) e.g. *daur* (lack of scriptio plena accidental); cf. Hittite type in *-āwar*; (3) Melchert, 1988b: 218¹⁴, after Meriggi, 1957b: 204.

9.2 Accent

As elsewhere, we can infer the place of the Luvian accent only indirectly from its secondary effects. While the lengthening of accented vowels in open syllables is likely a synchronic rule in Luvian as it is Hittite and Palaic (cf. 5.2 and 7.2), I can offer no comparable direct evidence.

Note the spelling *an-na-a-an* (*patanza*) 'under the feet' in *KUB XXXV* 39 iii 29. The geminate *-nn-* reflects original **ēnem* by Čop's Law (cf. expected *ānnan* at *KUB XXXV* 107 iii 4.23). I attribute the form *annān* to procliticisation in use as a preposition, causing a rightward shift of the accent (cf. a similar phenomenon in Hittite, Palaic and Lycian). This shift lengthens the accented vowel in closed syllable, while the initial vowel crucially loses its length. This example thus suggests that the lengthenings of accented /a/ both in closed syllables and in absolute initial position are synchronic rules.

Once again we have no independent reason to suppose any large-scale shifts in the Luvian accent. Note that the aphaereis in HLUvian *(ā-)pa-* 'that' argues for continued accent on the final syllable: /*(a)ba:-*/ like CLuvian *apā-* with lengthening of **/o/* under the accent.

9.3 Synchronic Rules

(1) By nearly any type of current phonological analysis, the loss of final stops in the nom.-acc. sg. of paradigms such as *malli(t)-* 'honey' and stems in *-i(t)-=-i-tV-* would be due to a synchronic phonological rule.

(2) As per 9.2, I take the lengthening of accented /a/ in closed syllables and in absolute initial position as synchronic rules. It is very likely that this is also true for other vowels in absolute initial position and for the lengthening of vowels in accented open syllables, but direct evidence is lacking.

(3) CLuvian *aztūwari* beside *adandu* and *aduna* and HLUvian *ā-za-tu* beside *ā-tu-na/ā-ru-na* argue that *s*-epenthesis in dental stop clusters survives into Luvian (cf. refs. in 9.1.2).

9.4 Phonotactics

9.4.1 Consonants

9.4.1.1 All consonants appear regularly in word-initial position except /r/. HLuvin has one example of initial /r-/: *ru-wa-na* = /ruwan/ 'formerly', which is secondary due to loss of an initial stop (10.1.1.4,5).

9.4.1.2 Luvian has no final stops nor /-H/ nor /-h/. Final */-m/ has become /-n/. One thus finds final /-s/, /-r/, /-l/ and /-n/. The glide /y/ appears in the diphthong /-ay/. The absence of final /-a:w/ is probably accidental.

9.4.1.3 Consonant clusters

Given our limited knowledge of the Luvian lexicon and the ambiguities of both cuneiform and hieroglyphic orthography, the following summary is necessarily sketchy.

9.4.1.3.1 Geminates

I assume that Luvian voiceless (fortis) stops and /H/ are true geminates in intervocalic position (see 1.2.6.1). Other continuants occur as geminates, which are phonologically contrastive with the corresponding simple consonants: /-ss-/, /-rr-/, /-ll-/, /-mm-/ and /-nn-/. This distinction can, of course, be shown directly only in CLuvian orthography (cf. 1.2.7.2). The geminates can in many cases be inferred for HLuvin by the effects of Čop's Law (see 10.1.1.3).

9.4.1.3.2 Initial Clusters

Stop + sonorant: /pr-/ (*pari*); /ty-/ (*t(i)yamm(i)-*); /kw-/ (*(k(u))waya-* & *kui-* etc. if latter does not have a labiovelar).

Fricative + stop: /Hp-/ (*(b(a))p(a)i-*, *b(a)panzu-*).

The absence of /sT-/ is systematic (10.1.6.1.4,4).

Fricative + sonorant: /Hw-/ (*(huitwāl(i)-*, *b(u)walmi-* etc.).

Absence of /sR-/ is striking and perhaps systematic.

Sonorant + sonorant: /mn-/ (*(m(a))nā-*).

9.4.1.3.3 Medial Clusters

Where the voicing quality of a stop is uncertain I give it as voiceless.

Stop + stop: /-pt-/ (*paptittar*); /-tp-/ (*witpani-*), /-tk-/ (*mitgaimi-*).

Expected /-pt-/ and /-kt-/ may occur in *ippatarri(ya)-*, *šappatammimma-* and *aggat(i)-*, but cf. 10.1.6.2.3 (2).

Stop + fricative: /-ps-/ (*šinapši-*, *dupša-*) (both apparently borrowings).

Stop + sonorant: /-pl-/ (*aplūšan*, *atup(a)lašša/i-*), /-pr-/ (*papra-*), /-pn-/ (*ulipna-*, *ūpnalla-*), /-pw-/ (*āpuwani-*); /-tr-/ (*āyatra*), /-dr-/ (*ad(a)riya-*, *ūtra*), /-dm-/ (*īmari-*, *katmaršī-*), /-tn-/ (*āyatni(ya)-*), /-dn-/ (*ūtnašša/i-*), /-ddw-/ (*ādd(u)wal-* etc.), /-dw-/ (*huitwal(i)-*); /-kl-/ (*kiklimai-*), /-kr-/ (*nikrani-*), /-kn(w)-/ (*šaknuwant(i)-*), /-ggw-/ (*dakkui-*).

The absence of /-t/dl-/ may be systematic.

Affricate + stop: /-tst-/ (*āz(zaš)tan* etc.).

Affricate + sonorant: /-tsw-/ (*azzuwa-*).

Fricative + stop: /-sp-/ (*bašpa-*, *wašpantašša/i-*), /-st-/ (*maluštiya-*, *paštari-* etc.), /-str-/ (*hattašt(ar)ra/i-*, etc.), /-sk-/ (*miluška-*, *duški-*).

Absence of /-HT-/ is likely to be systematic, although a word like *lahpa-* 'ivory' is probably Luvian as well as Hittite.

Fricative + fricative: /-Hs-/ (*āḫša-*, *mara/iḫši-*, *palahša-*); /-sH-/ (*ašḫa(r)nu-* etc., *hišḫi-*, etc.).

Fricative + sonorant: /-Hr-/ (*āḫra-*, *wahra-*), /-Hw-/ (*āḫḫuwahḫuwa-*); /-sl-/ (*šašla-*); /-sr-/ (*ašrahit-* etc.), /-sm-/ (*ušmant(i)-*), /-sn-/ (*targaš(ša)nalla/i-* etc.). Cf. 10.1.6.1.5 (2), end.

Sonorant + stop: /-lb-/ (*ḫuwalpani-* & *ḫulpanzena-*), /-lp-/ (*alpašša/i-* etc.), /-lt-/ (*halta/i-*, *kaldunni-*,

etc.), /-lk-/ (*alkumā*); /-rb-/ (*arpaša-* etc.), /-rbw-/ (*arpuwann(i)-*), /-rp-/ (*barpanalla/i-*, *tarpanalla/i-*, etc.), /-rt-/ (*ammart(a)-*, *warduli-*, etc.), /-rtw-/ (*bartuwa-*, etc.), /-rg-/ (*burkil-*), /-rk-/ (*arkammanalla-*); /-mt-/ (*bum(ma)ti-*); /-nd-/ (*ānta*), /-nt-/ (*bantawat(i)-* etc.), /-nk-/ (*gangati-*).

Absence of /-mp/b-/ may or may not be accidental.

Sonorant + affricate: /-lts-/ (*halhalzani-*, *gulzāuna*, etc.); /-rts-/ (*akirzā*, *arziya-*, *tarza-*); /-nts-/ (*anzanu-*, *inzagan-*, *kinzalpa-*, etc.).

Sonorant + fricative: /-lH-/ (*ilhai-*, *lalḫiya-*, *malḫašša-*, etc.); /-rH-/ (*irḫātt(a)-*, *šarḫ(a)-*), /-rhw-/ (*irḫ(u)wa-*, etc.--cf. 10.1.3.2,3); /-nH-/ (*banḫama-*, *banḫaniya-*); /-rs-/ (*āršiya-*, *baršani-*, etc.); /-ms-/ (*am(ma)šša/i-*, *ḫamša-* etc.).

Sonorant + sonorant: /-lm-/ (*balmašuitti*), *ḫuwalmi-*, *kalmiyani-*), /-lw-/ (*balwatnalli-*, *malwara-*, etc.); /-rl-/ (*arlanuwa-*, *ḫutarliya-*, *parli-*, *šarlai-*), /-rm-/ (*arma-*, *ḫarmaḫi-*, *tarma-*, etc.), /-rn-/ (*arnami-*, *ḫarnantašši-*, *ḫatarniya-*, *immarni-*, *parna-*, *tabarna-*); /-rw-/ (*ḫarwa-* etc., *iparwašḫa-*, etc.); /-ml-/ (*šamlaya-*, *šam(a)luwan-*), /-mr-/ (*im(ma)rašši-*), /-mn-/ (*ḫuitum(ma)nāḫit-*, *tātariyam(ma)n-*).

9.4.2.3.4 Final Clusters

The only attested final clusters are /-ts/ and /-nts/. The former is found in the nom. sg. of animate *t*-stems (e.g. *Tiwaz* 'Sun-god'). The latter appears in the nom. sg. of animate *nt*-stems (e.g. *Tarḫunz(a)* = (DEUS)TONITRUS-*hu-za* 'Storm-god') and in the dative plural and animate accusative plural (the latter CLuvian only!). See for these last two examples 10.1.6.3.1 with references.

It seems likely that imperative second singulars like */kars/ 'cut!' with final /-rs/ exist in Luvian.

9.4.2 Vowels

All Luvian vowels, long and short, occur in initial, medial and final position, under the proper accentual conditions. I know of no cases where one would be motivated to assume vowel sequences with hiatus. Obviously, not all examples interpreted as diphthongs above in 9.1.6 are absolutely assured.

CHAPTER TEN: CHANGES FROM PA TO LUVIAN

10.1 Segmental Phonemes

10.1.1 Stops

10.1.1.1 PA voiceless stops are generally preserved in Luvian.

Examples:

*/p/ > /p/: (1) PA **pérem* 'in front, before' > *parran=pa+ra/i-na*; (2) PA **pód(o)-* 'foot' > *pāta=-pa-ta-*; (3) PA **ópem* 'behind, after' > *āppan=á-pa-na*; (4) PA conj. **-pe* > *-ppa=-pa*.

*/t/ > /t/: (1) PA **(s)taH-* 'step; stand' > *t/dā=-ta-*; (2) PA **tú* 'you' > *tuwi-* 'your' = /tu:/ 'you'; (3) PA particle **-te* > *-tta=-ta*; (4) PA 2nd pl. middle **-twVri* (i.e. **-dh₂wVri*) > *-ttuwar(i)*.

I reject the conditioned change of */t/ to /s/ after */u/: cf. 10.1.6.1.3.1 (1).

*/k/ > /k/: (1) PA **k(e)rs-* 'cut' > *karš-*; (2) (virtual) PA **katawādn+* 'quarrel' > *kattawatnalla/i-* 'plaintiff'; (3) PA **kēsaHyē/o-* 'comb' > *kīša(i)-*.

The lack of examples in medial position and in HLuvian is surely due to chance.

/k^w/ > /kw/: (1) PA **k^wi-* 'who, which' > *kui=-REL-i-*; (2) PA **k^w(e)r-* 'cut' > *kūr=-REL+r(a/i)-*; (3) prob. PA **-k^we* 'also, and' > *-ku* (synch. meaning unclear).

On the lack of word-medial examples see 4.1.1.1 (4). For my rejection of the alleged change of /kw/ to /hw/ in HLuvian see 1.2.7.2.1.

PA voiceless palatal **/k̥/* unconditionally develops to an affricate in Luvian which is orthographically indistinguishable from the result of **/t+s/*: see Melchert (1987a) and (1989a: 23–32 w/refs.) and Tischler (1990: 83ff). I assume a single phoneme /ts/, but the phonetic realities are unknown and probably unknowable.

* /k/ > /ts/: (1) PA **kō*/*k(o)*i- 'this' > *za*-/*zi*-=*za*-/*zi*-; (2) PA **kē*- 'lie' > *zī*-; (3) PA **krd*- 'heart' > *zārt*-=*za*+*ra*/*i*-*t(V)*-; (4) PA iter. **-skē/o*- > *-zza*-=*za*-; (5) PA suffix **-i(s)kō*- > *-izza*-=*i*-*za*-; (6) PA **kwon*- 'dog' > HLuv. *zū*-*wa*/*i*-*n(i)*-; (7) PA **ekwo*- 'horse' > HLuv. (EQUUS) *á*-*zú*-(*wa*/*i*)-.

The word 'dog' shows that * /k/ develops regularly to /ts/ before * /w/. The attractive comparison of the Anatolian family of CLuv. *kummay(a)*- 'sacralized, pure' with Av. *spanta*- 'holy', etc. by Schindler apud Watkins (1987: 401) via **kunmo*- < **kw̥mo*- is thus possible only with assumption of "Gutturalwechsel": **kwen*- beside **k̥wen*-. The same problem arises if one accepts Neumann's analysis (1975: 233) of the name *Kukkunni* as a reduplicated Luvian counterpart of Hitt. *kunna*- 'right' and his derivation from **ku(h₂)no* -.

Luvian, like Lycian, appears to show 'lenition' (voicing) of original voiceless stops posttonically in certain reduplicated stems: *ta*-(*a*)-*ta*-*ri*-*ya*-(*am*)-*ma*-*an* 'curse' (noun) (cf. verb stem in HLuvian *ta*-*ta*+*ra*/*i*-*ya*-) < **tó*-*t(V)rye*-, *pi*-*pi*-*iš*-*ša*- 'give' (iter.) < **pí*-*pi(yV)*-. Since no such change occurs in disyllabic words, this development may well be analogical, not phonological: for details see my discussion of the Lycian facts in 12.1.1.1.

10.1.1.2 As indicated in 1.2.6.1.3, I assume that PA voiced stops were devoiced in word-initial position in Luvian. Examples:

* /b/ > /p/: (1) PA **bēho*- 'splendor; might' > **piḫa*- = **pi*-*ha*- (in names); (2) PA **bérgey*- 'high' > *parray(a)*-.

* /d/ > /t/: (1) (virtual) PA **dorus*- 'thing of wood' > *tārus*-(*ša*)=*ta*-*ru*-(*sa*) 'image, statue' (also in prob. hapax Gls *tāru*- 'wood'); (2) (virtual) PA **duwV*- 'put' > *tūwa*-=*tu*-*wa*/*i*-; (3) PA **dāda*- 'father' > *tāta*/*i*-=*tá*-*tī*-; (4) PA **dobro*- 'strong' > *tapar*-; (5) PA **dǵém* (loc.) 'earth' > CLuv. *tiyamm(i)*-; PA **déǵom*+ > HLuv. *ta*-*ka*-*mī* 'country'.

* /ǵ/ > /k/: (1) PA **ǵut*+ 'wall' > *kuttaš(ša)*/*ra*/*i*-=*ku*-*ta* *sa*+*ra*/*i*- 'orthostat'; (2) PA **ǵodm(V)rsye*- 'defecate' > *katmarsī*-.

The lack of examples of velar * /g/ is surely due to chance.

10.1.1.3 PA voiced stops become geminates in Luvian after a short accented * /é/ ('Cöp's Law'): see Cöp (1970). See 1.2.6.7 (1) and 4.1.1.3 for my formulation of the rule as

applying to all voiced stops, not just original voiced aspirates. Examples:

**/b/ > /bb/:* (1) PA **nébes-* 'heaven' > *tappaš-*; (2) perh. (virtual) PA **bē-b(V)rgwaH-* 'purify' > *papparkuwa-* (but this more likely reflects Luvian reduplication after devoicing of initial stops as per above).

HLuv. *ti-pa-s(V)-* 'heaven' must continue a lengthened-grade **nēb^hes-* (for the type see Schindler, 1975b: 264ff). Contra Starke (1990: 97ff) there is no PA rule $\sim > \sim \sim$, as shown by Luvian *parran=pa+ra/i-n(a) < PA *pērem*.

**/d/ > /dd/:* PA **médu-* 'wine' > *maddu-=ma-tu-* (*sa*); PA **péd(V)-* 'carry' > *padd-* (in *paddunaš* 'of carrying').

**/ġ/ > /gg/:* perh. HLuv. *ta-ka-mi* 'in the country' (i.e. */taggami/*) < PA **dēgom+* (w/generalized strong stem), as per Cop (1970: 91) and Starke (1987: 263). For an opposing view see Oettinger (1976c: 101) and compare the discussion in 10.1.1.4. The unexplained geminate of Hitt. *šakkuriye-* 'overcome' may also be due to an early borrowing from Luvian: **séġ^(h)wr* > **saggur*, whence a denominative verb. The assumption of a loanword is admittedly ad hoc, but other explanations seem quite implausible (cf. Oettinger, 1979a: 351¹⁹³ & 1987b: 190).

Voiced labial and dental stops are preserved elsewhere in Luvian (except word-final position). For special developments affecting PA **/d/* see 10.1.6.1.6. On rhotacism of */d/* to */r/* in HLuvian only see Morpurgo Davies (1982/83: 246ff).

Examples:

**/b/ > /b/:* (1) PA **obó-* 'that' > *apā-= (á-)pa-*; (2) PA **dobro-* 'strong' > *tapar-*; (3) prob. PA **kub-* 'plot' > *kup(iya)-*.

**/d/ > /d/:* (1) PA **pód(o)-* 'foot' > *pāta-=pa-ta-* (also *pa+ra/i-*); (2) PA **dāda-* 'father' > *tāta/i-=tā-ti-* (also dat.-loc. pl. *ta+ra/i-za*); (3) PA **ad-* 'eat' (weak stem) > *ad-=ā-t(V)-* (also *ā+ra/i-*); (4) PA **nódo-* 'reed' > *nāta(tta)-*; (5) PA **diwod-* 'Sun-god' > *Tiwa-ti-wa/i-t(V)-* (also *Ti-wa/i+ra/i-*); (6) PA **mēlid-* 'honey' > *mallit-=ma-li-t(V)-* (for the PA **/d/* in (5)&(6) see 4.1.1.1,2).

10.1.1.4 The development of the voiced dorsals in Luvian is complex and not yet entirely certain. A general loss as per

Oettinger (1976c: 101) or Melchert (1987a: 184ff) now seems unlikely. The following analysis owes much to unpublished work of S. Kimball, but responsibility for the particular formulation is mine. The evidence remains limited and contradictory, and readers should view the presentation below as provisional.

(1) The PA voiced labiovelar $*/g^w/$ does appear to be weakened to $/w/$ in all positions. Examples: (1) PA $*g^won+$ 'woman' > $wāna-$; (2) PA $*g^wow+$ 'cow' > HLuv. $wa/i-wa/i-(i)-$; (3) PA $*e/ag^w-$ 'drink' > $u-=u-$; (4) PA $*terg^w-$ 'twist; dance' > $taru-$; (5) PA $*sôg^wo-$ 'eye; face' > $tāwa/i-=ta-wa/i-$ (for the PA preforms of the last two see 4.1.1.1,3). HLuv. $wa/i-la-$ 'die' and CLuv. $(u)walant(i)-$ 'dead' could reflect $*g^wel-$ (Morpurgo Davies apud Hawkins, 1980c: 114; cf. OE *cwelan* etc.) or simply $*wel-$ (cf. TochA *wäl-*).

(2) Both $*/ġ/$ and $*/g/$ become $/y/$ before front vowel, disappearing before $/i/$. Examples: (1) PA $*g(e)ib-$ 'left' > $ip-$ in CLuv. $ipala/i-$ 'left-(hand)' and HLuv. $i-pa-ma/i-$ 'west' (Oettinger, 1986b: 49, w/hesitation); also in CLuv. $iparwassa/i-$ 'western' and $ipattarma-$ 'west' etc. (see Puhlev, 1984: 374ff, for sense but false etymology; false Starke, 1990: 504ff); (2) PA $*ġesr-$ 'hand' > $iš(sa)r(i)-=i-sá-tara/i- (/istr(i)-/)$; (3) PA $*ġemro-$ 'open country' > $*im(ma)ra/i-$ in $im(ma)rašša/i-$; (4) PA loc. sg. $*dgēm+$ > CLuv. $tiyamm(i)-$; (5) (virtual) PA $*bérġi-/bérġey-$ 'high' > $parray(a)-$.

Starke (1990: 424) also proposes a CLuvian adjective $*harraya-$ (sic!) 'silver', which would reflect a PA $*Hárgi-/Hárgey-$ 'white, bright', but this word does not exist! We find only a hapax *haranza* of uncertain meaning in KUB XII 1 iii 20. Since there is no loss of intervocalic $*y$ in Luvian (10.1.4.1, end), the attested form cannot possibly belong to an alleged stem $*harraya-$, whose nt. nom.-acc. sg. would be $*harrayan=za$.

In (2) and (3) the new $/y/$ raises the following $/e/$ to $/i/$ (just like original $*/ye/ > /yi/$; see 10.1.5.2), and the $/y/$ is then probably deleted ($i-iš-$ more likely = $/i:s-/$ under the accent than $/yis-/$). In CLuv. 'earth' the raising is blocked by the prior effect of "Čop's Law": $*dyēm(V)- > t(i)yamm-$. Only this derivation (Kimball, 1983: 427²⁰) accounts for the geminate $/-mm-/$, contra Szemerényi (1968: 130); Oettinger (1976c: 101); Starke (1987: 248f) et al. ($tiyamm(i)- < *d(^h)ēg(^h)om$). In the ablauting adjective 'high' the strong stem becomes regularly $*béri-$ with $*/ġ/ > /y/$ and loss of the latter before $/i/$. By "Čop's Law" $*béri-$ would lead to $*parri-$. The weak stem would change to $*bérġey-$ (again $*/ġ/ > /y/$ before front vowel, whence $*paryay-$ (short $*/e/ > /a/$, as per

10.1.5.4): note that at least posttonic $*\bar{e} > a$ must precede $*\bar{e} > i$ after the new $y < *\bar{g}$. I assume that the consonantism of the strong stem has been generalized in attested *parray(a)-*. The alternative assumption of an assimilation $*-Ry- > -RR-$ (Kimball, pers. comm.) is contradicted by preserved $/-ny-/$ in *an(i)ya-* 'carry out'. It is, of course, not impossible that specifically $*-ry-$ assimilates to $-rr-$ while $*-ny-$ remains.

The well-motivated conditioned change $*/g/ > /y/$ before front vowel does require that we take CLuv. *burkilašsa/i-* 'of perversion' as a loanword from Hittite (thus already Starke, 1990: 343ff). Despite the Glossenkeil, $\leftarrow \text{liki}$ 'salt-lick' (Otten, 1988:47; Neumann, 1991a: 298) must also be taken as Hittite (vs. the Luvian word *lapana-* '(salt-)lick', as per Watkins apud Melchert, 1993b: 125).

I stand by the derivation of CLuv. *mayassa/i-* 'of the community' from $*m\acute{o}(h_1)yo-$ (cf. Hitt. *māya-* 'adult male'), as per Melchert (1984b: 46 & 1987a: 184⁵), after Laroche (1959a: 55). The alternate derivation from $*m\acute{e}gi-/m\acute{e}gey-$ 'great, large' (sic!), by Laroche (1963: 77ff) and Starke (1990: 506) is phonologically possible ($*m\acute{a}yi-/m\acute{a}yay-$ leveled as *may(a)-* instead of $**mayay(a)-$ like *parray(a)-*), but the other evidence for a $*may(a)-$ 'great, large' is unconvincing, and preservation of the meaning 'great, large' (not 'much' like Hittite!) into pre-Luvian is suspect.

(3) Word-initially before back vowel $*/\acute{g}/$ is preserved, presumably devoiced to $/k/$ (1.2.6.1.3). Examples: (1) PA $*godm\bar{r}+$ 'feces' $> katmar\bar{s}i-$ 'defecate'; (2) PA $*\acute{g}(o)ut-$ 'wall' $> kuttas(\acute{s})a/ra/i- = ku-ta-sa+ra/i-$ 'orthostat'; (3) PA $*\acute{g}rdo-$ 'citadel' $> gurta-$ (contra Starke apud Oettinger, 1982b: 17447). Any attempt to explain away these cases as exceptions to a general loss are hopelessly ad hoc (e.g. Melchert, 1987a: 186). Note in particular the preserved $/-dm-/$ in the first word, which cannot be a borrowing from Hitt. *kammarš-*. On the treatment of $*\bar{r}$ as $-ur-$ in the last example see 10.1.4.2. The lack of any examples for initial $*/g/$ is surely accidental.

Another possible example of initial $*/\acute{g}/ > /k/$ before non-front vowel is $\approx kargaranti$ 'gladly, willingly'(?). If the meaning is correct (Sommer, 1932: 153), it probably reflects reduplicated $*\acute{g}h\bar{o}r-$ (Pisani, 1953: 308).

(4) Evidence for medial $*/\acute{g}/$ and $*/g/$ other than before front vowel is sparse. HLuv. *tu-wa/i-tara/i-* 'daughter' $< *dugatr-$ (see 4.1.3.2.2,3 for the preform) suggests loss intervocally (ordered after the conditioned change in (2) above). CLuv.

papparkuwa- < **b(e)rġw-* points to preservation between non-syllabics (contra Starke, 1990: 78, a preform with **/k̥/* is impossible, since this would lead to **papparzuwa-*, as per 10.1.1.1). It is likely that **/g/* is lost before a nasal in *nāna/i-* 'brother' < **nēġno-* (= Hitt. *nēgna-*, as per Watkins, pers. comm.), but this cannot be confirmed. As per 10.1.1.3, I follow Čop (1970: 91) in interpreting HLuvian *ta-ka-mi* as /taggami/ with generalized strong stem containing geminate /-gg-/ which is thus not subject to loss. For a different view of *ta-ka-mi* see Oettinger (1976c: 101).

(5) It seems clear that the unique initial /r-/ of HLuvian /ruwan/ 'formerly' is due to the loss of an initial dorsal stop seen in the Hittite cognate *k(a)rū* 'formerly, previously'. It also seems hard to deny a similar loss in the name of the stag-god /Runtiya-/ , which surely contains some form of 'horn' (see Bossert, 1944: 93f & 1951: 270&275; Houwink ten Cate, 1961: 128f; Neumann, 1992b: 35&38). I do not find credible the alternate solutions of Laroche (1954b: 115ff) or Carruba (1968b: 35ff). Whether the lost stop is voiceless **/k̥/* or voiced **/ġ/* is difficult to decide, since neither the morphology nor etymon of either word is certain.

Neu (1980b: 46f) interprets Hitt. *k(a)rū* as an old endingless locative **grēu* 'upon awakening' > 'early' (similarly Čop, 1961/62: 187ff). However, Eichner (1979: 58⁵⁷) starts from **krēw* (for the root see Benveniste, 1954: 41). For /runtiya-/ the most likely source would seem to be **ker(H)-* 'horn', which is definitely seen in HLuvian /tsurnid-/ 'horn' < **krnid-* and CLuv. *zarwani(ya)-* 'of horn' < **k(e)rwonīyo-* (Carruba apud Tischler, 1990: 88; Melchert, 1993b: 281). However, just what preform would lead to /runt-/ is not clear. Morphologically, a possessive **krwnt-* 'having horns' seems most plausible, but a motivation for a resyllabification to **krunt-* is lacking. There is an alternate source for 'horn': **g(h)rēu-* seen in Arm. *eļiwr* 'horn' and Toch. A *kror*, Toch. B *krorīyai* 'crescent, horn of the moon' (Hilmarsson, 1986: 41f; cf. also Normier, 1980b: 19f), but the derivation of the Armenian word, which is the basis for **g^h*, is far from assured (cf. Adams, 1991: 5f). Given the other evidence for conditioned loss of **/g/*, a voiced stop might seem more likely, but I know of no evidence for maintenance of **/kr-/*. A reasoned choice seems difficult.

10.1.2 Affricate

The PA affricate **[ts]*, the allophone of **/t/* before **/y/*, is probably preserved in HLuvian *ha-zi-(ya)-* 'inscribe' < PA **Hatye/o-* 'strike; scratch': cf. Hitt. *hazziya-* 'strike; play (a musical instrument)'. It is conceivable that the **-ye/o-* stem (from the base **Hat-* seen in Hitt. *hatta-* 'strike; slaughter') is

an independent parallel creation in Hittite and Luvian, but the Luvian result of *[ts] is hardly in doubt.

10.1.3 Fricatives

10.1.3.1 PA */s/ is generally preserved in Luvian. Examples:

*/s/ > /s/: (1) PA *sā- 'let go' > sā-=(69)sa-; (2) PA *sVrīáHye/o- 'exalt' > šarla(i)-=sa-sa+ra/i-la-; (3) PA *suwV- 'fill' > šuwa-=su-wa/i-; (4) PA *wósu- 'good' > wāšu-=wa/i-su-; (5) PA *kēsaHye/o- 'comb' > kīša(i)-; (6) PA *nébes- 'heaven' > tappaš- (and from a related preform also HLuv. ti-pa-s(V)-).

PA */s/ is geminated after */é/ by 'Čop's Law'. Example:

*/s/ > /ss/: PA *wés(V)- 'good' > waššar- 'favor', wašša- 'be pleasing'.

The real stem of 'heaven, sky' is tappaš- with expected single -š-. Nom.-acc. sg. tappaš=ša contains the particle -ša. Čop's one alleged example of gemination after **unaccented** vowel (1970: 90ff) is thus false.

For special developments of PA */s/ see 10.1.6.1.5 and 10.1.6.1.6 (3). See also 10.1.6.3.1 on the change of final */-ns/ to /-nts/.

10.1.3.2

(1) PA */H/ is generally preserved in Luvian. Examples:

*/H/ > /H/: (1) PA *Hé/ówV- 'sheep' > *hāwa/i-=ha-wa/i-(i)-; (2) PA *Hi-sHi- 'bind' > hišhiya-=hi-sa-hi-; (3) PA *Hant- 'front; first' > bantil(i)- 'first' and HLuv. ha-t(a)- 'face'; (4) PA pret. 1st sg. *-Ha > -bha=-ha; (5) PA conj. *-Ho 'also' > (-C)-ba=-ha.

(2) */H/ > /h/ / *V̄__u(?): PA *pāHwṛ 'fire' > *pāHūr > *pāhūr > pāhūr.

I tentatively attribute the 'lenition' of */H/ to /h/ here to the same process which deletes */h/ in a similar environment (see below). Note that here the length of the preceding vowel is secondary (under accent in an open syllable).

(3) PA */H/ is sporadically lost in medial clusters of /RHw/ (Oettinger, 1976c: 103 & 1986a: 14). Compare the similar loss of */h/ in all medial clusters with /w/ described below. All examples thus far are in CLuvian, but this may be due to chance. Examples:

pre-Luvian *ērHwV- > ēr(hu)wa-/ir(hu)wa- '?' (for the /H/ cf. ēḥḥuiddu w/loss of /r/ between vowel and consonant); pre-Luvian *mé-m(V)lH-wV- 'crush' > mammalwa- (also simplex malwa-) beside *mé-m(V)lH-u- > mammalḥu-.

(4) PA */h/ is also generally preserved in Luvian. Examples:

*/h/ > /h/: (1) PA pret. 1st. sg. *-ha > -ḥa=-ha; (2) PA conj. *(V)-ho > -(V)-ḥa=-ha; (3) PA *bého- 'splendor; might' > *piḥa-=-*pi-ha- (in names); (4) (virtual) PA abstr. suff. *-ah-id- > -aḥit-=-a hi t(V)-.

*/h/ > */H/ /#___: (1) *hanye/o+ 'be malicious' > ḥanḥaniya-/ (MALUS₂) ḥa-ha-ni-wa/i-; (2) prob. *höpen+ 'rich' > ḥappinatta-.

(5) */h/ > Ø / *V̄___u: PA *sēhur/sēhun- 'urine' > dūr/dūn- (via *sēu-), contra Čop (1965: 101). The conditioning appears similar to that in Palaic (see 8.1.3.3).

(6) PA */h/ is sporadically lost medially before /w/. Examples:

(1) (virtual) PA *ménah-wenī- (part of the face) > mānna(h)-wanni-; (2) pre-Luvian *sēḥwa- 'sharp, bitter' > sē(h)wa- (likewise sēḥwāl beside siwal); (3) pre-Luvian *pahwVrye- 'light a fire' > pawari-; (4) PA *laHu- 'wash' > pre-Luvian *lāHu- > *lāḥu- > laḥun(a)i-/laun(a)i-; also pre-Luvian *lī-lhw- 'pour' > liluwa- ((for 2ary pre-Luvian */h/ in (3) & (4) see section (2) immediately above).

10.1.4 Sonorants

10.1.4.1 The non-syllabic PA sonorants are for the most part stable in Luvian. Examples:

*/m/ > /m/: (1) PA *mām 'when; how' > mān=ma-na 'if'; (2) PA *mēdu- 'wine' > maddu-=ma-tu-(sa); (3) PA *emū 'me' > HLuv. (á-)-mu 'I, me'; (4) PA *Hómso- 'grandchild' > ḥamša/i-=ha-ma-sa/si-.

* /n/ > /n/: (1) PA proh. neg. **nē* > *nī/nīš=ni*; (2) PA **nódo-* 'reed' > *nātatt-*; (3) PA **-uno* > *-una=-u-na*; (4) PA **mnaē-* 'see' > *manā=-LITUUS-na-*.

NB: PA initial * /n/ develops irregularly to a dental stop in the word for 'heaven' (**nēbes-* > CLuv. *tappaš-* and **nēbes-* > HLuv. *tī-pa-s(V)-*).

* /r/ > /r/: (1) PA **dóru-* 'wood' > *taruš-(ša)=ta-ru-sa* 'image, statue'; (2) PA **sVrláHye/o-* 'exalt' > *šarla(i)-=sa-sa+ra/i-la-*.

* /l/ > /l/: (1) PA **lalo/ā-* 'tongue' > *lāla/i=-la-la/i-*; (2) PA **lHwV-* 'pour' > *lūwa-* (and **lī-lHw-* > *līlūwa-*); (3) PA **gwel-* or **wel-* 'die' > *u(wa)lant(i)-* 'dead' = *wa/i-la-* 'die'; (4) PA **áddwol+* 'evil' > *ādduwal(i)-=á-tu-wa/i-la/i-*.

In HLuvian only(!) /l/ is often rhotacized to /r/. There is also apparently one example of /n/ > /r/. Examples:

(1) PA **gwel-* or **wel-* 'die' > *wa/i+ra/i-* (beside *wa/i-la-*); (2) prob. PA **Holgi-* 'harvest' > (VINUM) *ha+ra/i-*; (3) pre-Luvian **palsa-* > *pa+ra/i-sa-* 'time'; (4) PA **Hlti-* 'call' > *ha+ra/i-ti-* 'proclaim' (or sim.); (5) (virtual) PA **mānu-ho* 'at all' (or sim.) > *ma-ru-ha* (beside *ma-nu-ha*).

Liquids and nasals also undergo "Čop's Law" in Luvian, becoming geminate after accented short */*ě*/:

* /m/ > /mm/: (1) PA **dǵém(i)* 'earth' (loc.) > CLuv. *t(i)yamm(i)-*; (2) (virtual) PA **mē-m(V)lHw/u-* 'crush' > *mammalw-/mammalhu-*.

* /n/ > /nn/: (1) PA pres. 1st pl. **-wēni* > **-wanni* (> *-unni* via syncope); (2) (virtual) PA suffix **-wén(i)-* > *-wann(i)-* ("gentilic" suffix); (3) PA **ēnye-* 'carry out' > pre-Luvian **ēnyi-* (10.1.5.2) > **ēni-* > *ānnī-*; (4) prob. **-ēno/i-* > *-anna/i-*.

I see no other means of explaining the contrast of CLuv. *ānnī-* and weak *an(i)ya-*. Notice that this derivation requires that "Čop's Law" follow the raising of **ě* to *i* after original **y* (vs. **d(h)ǵ(h)ém+* > **dyém+* > *t(i)yamm(i)-* 'earth', where "Čop's Law" must precede the similar raising of **ě* to *i* after *y* < **ǵ*). Cf. 10.1.1.4.

Pace Starke (1990: 502 & 1993: 22f) there is no CLuvian "possessive" suffix *-anna/i-*, only *-wann(i)-*. CLuvian *-anna/i-* is attested only as a

diminutive (*armanna/i-* 'lunula'). In any case PIE **-h₂on-* cannot lead to CLuvian *-anna/i-*, since gemination by "Čop's Law" occurs only after **r*!

**r/* > */rr/*: (1) PA **séri* 'above' > *šarri* 'upon'; (2) PA **pérem* 'in front' > *parran=pa+ra/i-na*.

**l/* > */ll/*: (1) PA **mélid-* 'honey' > *mállit=-ma-li-t(V)-*; prob. (2) PA **-é-lo-* (adj. suff.) > *-alla-*.

PA **/w/* is preserved in Luvian. Examples:

(1) PA **wósu-* 'good' > *wāšu=-wa/i-su*; (2) PA **worPo-* 'enclosure' > *warpa/i=-wa/i+ra/i-pa/pi-*; (3) PA **dīwod-* 'Sun-god' > *Tiwat=Ti-wa/i-t(V)-*; (4) PA **āddwo-* 'evil' > *ādduwa=-MALUS₁-tu-wa/i-*.

PA **/y/* is preserved (contra Melchert, 1984b: 164!). Examples:

(1) PA **piyV-* 'give' (pl. stem) > *pīya=-pi-ya-*; (2) PA adj. suff. **-iyo-* > *-iya=-i-ya-*; (3) (virtual) PA **tō-torye/o-* 'curse' > *tātariyaman=-ta-ta+ra/i=ya-*; (4) (virtual) PA **bérġey-* 'high' > *parray(a)-*; (5) 3rd pl. **-éyonti/-āHyonti* > *-āinti* (with syncope; see 10.1.6.2.1).

10.1.4.2. The regular treatment of syllabic **R* is surely *aR*:

(1) PA **prn-* 'house' > *parn=-DOMUS-n(V)-* (**pērn-*, per Zucha, 1988: 184, is impossible; cf. 10.1.6.1.3.1,3); (2) perh. (virtual) PA **krwoniyo-* 'of horn' > *zarwani(ya)-* (but **kerwon-* seems possible); (3) prob. particle **-tr* > *-tar* (CLuv. *kuiš=tar* = Homeric τῖς ταρ; C. Watkins, 1994; cf. Carruba, 1969b: 36); (4) PA **s₃H-* 'great' > *šalḫitti-/šalḫianti-* 'growth' (or sim.); (4) PA **r_s-* 'us' > *ānz-* 'we, us' (Meriggi, 1957a: 60); (5) oblique **ésH₂-* > *ašhan-* (cf. Starke, 1990: 555ff).

There is some evidence, however, for **R* > *uR*: HLuv. *zú+ra/i-n(a/i)-* 'horn' < **k₂rnid-* (thus, pace Starke, 1990: 408), CLuv. *gurta-* 'citadel' < **g^(h)rd^(h)o-* (Heubeck, 1961: 59ff, esp. 62). Luvian status is assured by the derivative *gurtawann(i)-*. The derivation of *gurta-* < **g^wr-* by Bader (1991: 127) is falsified by the preserved *g-* (cf. 10.1.1.4.1). The status of this variation is not yet clear, but a dialect feature is possible. Note also the rendering of Lydian syllabic [r] as *ur* in Συργαστης = *Srkaštus* (cf. 13.1.1) and compare the variation in Palaic (8.1.4.2). One may also wonder whether the unexpected

pret. 3rd pl. ending *-unta* = *-u-ta* reflects a similar treatment of **-nto*.

PA **-CwR#* becomes *-ūR*, and the long vowel stays even when unaccented: PA **páHwṛ* 'fire' > *pābūr*. Compare 3.1 (6), 6.1.4.1.5 (4) and 6.1.5.3 (end). However, word-initial **wR-* becomes *waR-*, unlike Hittite: PA **wḷkw-o-* > *walwa/i-* 'lion' (Lehrman, 1978&1987).

10.1.5 Vowels

Luvian shares with Hittite and Palaic the rule lengthening accented short vowels in open syllables and the eventual merger of **o(:)/* and **a(:)/*. It may also share the change of pretonic short **e/* to *i/*. Luvian certainly differs from Hittite (and probably from Palaic) in lengthening all accented vowels in word-initial position. "Čop's Law", by which a sequence of accented short **é/* plus single consonant yields */aCC/*, is also unique to Luvian in its general form (cf. 4.1.4.1 above for a limited form in PA). The result of accented short **á/* and the entire development of short **e/* are far from certain. I tentatively assume that, as in Palaic, accented short **a/* from all sources is lengthened in closed syllables, but the evidence is much less clear. Long **e:/* as well as PA **e:/* are raised to *i:/*, but PA **æ:/* appears in Luvian as */a:/*.

10.1.5.1 Aside from the lengthening under accent cited above, the high vowels are stable:

**i/* > */i:/*: (1) PA refl. **-ti* > *-ti=-ti*; (2) PA **Hí-sHi-* 'bind' > *bí-šbi(ya)-=hi-s(a)-hi-*; (3) PA **kwi-* 'who, which' > *kui=-REL-i-*; (4) (virtual) **mi-mnV-* 'look at; favor' > PA **mí-mmV-* > *mimma-*; (5) PA **immo* 'indeed' > *imma=i-ma*.

**i/* > */i:/* in accented open syllable: prob. pre-Luvian **piyV-* 'give' > *pīya-=pi-ya-* (PA weak stem w/retracted accent).

**í/* > */i:/* /*#*__: prob. PA **gésr-* 'hand' > pre-Luvian **yésr-* > **yísr-* > **ísr-* > *iš(ša)r(i)-*.

Cf. the same development for initial **u-* below. It is less likely but possible that the spelling *i-iš-* represents */yis-/*.

**i:/* > */i:/*: PA 'motion'-suffix **-ī* (i.e. **-ih₂-*) > *-(C)ī=-i-*.

**/u/ > /u:/* (1) PA **wósu* 'good' > *wāšu=wa/i-su*; (2) imv. 3rd sg. **-tu > -tu=-tu*.

**/u/ > /u:/* in accented open syllable: (1) PA **k^wr-* 'cut' > **kur-* > **kūr-* > *kūr*-=REL+*r(a/i)-*; (2) prob. PA **l(H)wV-* 'pour' > **luwV-* > **lúwV-* > *lūwa-*; (3) (virtual) PA **duwV-* 'put' > **dúwV-* > *tūwa*-=*tu-wa/i-* (all exx. w/2arily retracted accent); (4) PA **tú* 'you' (obl.) > HLuv. /*tu:/* (but not directly provable from spelling!).

**/ú/ > /u:/ /#_*: PA **ús-* 'you' (pl. obl.) > **úns-* (w/ 2ary nasal after 1st pl. **āns*) > *ūnz(a)=u-zu(?)*-za.

PA long **/u:/* presumably remains as Luv. **/u:/*, but I know of no examples.

10.1.5.2 Except for conditioned raising to /i/, PA short **/e/* becomes Luvian /a/. Orthographic evidence for subsequent lengthening of the /a/ under the accent is not as plentiful as one would expect, and the general rule given below is not assured. All current evidence points to an unconditioned raising of PA long **/e:/* to /i:/.

**/e/ > /i/ /y_*: (1) PA **gesr+* 'hand' > **yesr+* > *īš(ša)r(i)-=i-s(ā)-tara/i-*; (2) PA **gemro-* 'open country' > **yemro-* > **im(ma)ra-* (in *im(ma)rašša/i-*); (3) PA verb suffix **-ye-* (after *C*) > *-(y)i=-i-*.

As per 10.1.4.1, the change after original **/y/* in the third example must be earlier and separate from that in the first two examples.

**/e/ > /i/* pretonically(?): (1) PA neg. prefix **né-* > *nī-* (as in *nī-waralla/i-* 'not one's own=another's'); (2) PA **erHót-* 'boundary; circuit' > *irhātt(a)-*; (3) PA **pedó-* 'place, ground' > **pida-* (in HLuv. *pita-haliya-*) (cf. Lyc. *pddē* for accent).

As is clear from the above examples, this entire rule is not assured!

**/e/ > /i/ /w_dental*: PA **Hwes/d-* > *buitwal(i)-* and *buitar/(BESTIA)CURRERE-šā+ra/i*.

As in Hittite (6.1.5.17), Palaic (8.1.5.2) and Lydian (14.1.5.4), this rule is sporadic, not regular, but it is quite real, pace Zucha (1988: 122ff, et al.).

**/é/ > /a/ ([a:]) /__CC* (incl. geminates by "Čop's Law"): (1) PA 3rd pl. **-énti/u > -anti/u*; (2) (virtual) **mé-mmV- 'look at; care for' > PA *mé-mmV- > māmma(nna)-*; (3) PA **nébes- 'heaven' > tappaš-*; (4) PA **médu- 'wine' > maddu=-ma-tu-(sa)*; (5) PA **wésV- 'good' > wašša- 'be pleasing' & waššar- 'favor'*; (6) PA **pérem 'in front' > parran=pa+ra/i-na*; (7) PA **mélid- 'honey' > mallit=-ma-li-t(V)-*; (8) PA loc. **dġēm+ > tiyamm(i)- 'earth'*; (9) (virtual) PA suff. **-wén(i)- > -wann(i)-*; (10) PA **ménah- 'face' > *mānnaḥ- (in mānna(bu)wann(i)-)*.

**/e/ > /a/* posttonically: (1) PA part. **-pe > -ppa=-pa*; (2) PA part. **-te > -tta=-ta*; (3) PA **nébes- 'heaven' > tappaš- (2nd vowel)*.

**/é/ > /a/ ([a:]) /#__*: (1) PA **én-Ho 'when, as' > ābba*; (2) PA **éndo 'into' > ānta=ā-ta*; (3) PA **én-(H)noro- 'vigorous' > ānnara/i-*; (4) PA **és- 'be' > āš=-ā-s(a)-*; (5) PA **éts- 'eat' > āz(zaš)-=ā-za-*; (6) PA **ésHr 'blood' (secondary full grade) > āšhar*.

**/é/ > /a:/* in open syllable(?): (1) PA **né 'not' > nā*; (2) (virtual) PA **néwe 'not' > nāwa*; (3) PA **néwo- 'new' > nāwa/i- (also in HLuv. na-wa/i- 'great-grandson')*.

More examples are needed to confirm this development.

**/e:/ > /i:/*: (1) PA proh. neg. **nē > nī/ni*; (2) PA **Hērud- 'curse' (i.e. *h₂ērut-) > ĥirut=-hi-ru-t(V)-*; (3) PA **kēsaHye/o- 'comb' > kiša(i)-*; (4) (virtual) PA **ēlHaHye/o- 'wash' > ēlḥā(i)-*; (5) PA *nēbes- > HLuv. ti-pa-s(V)*; (6) PA **ēptro+ *'means of seizure' > ippatarri(ya)- 'distrain'*.

The example of HLuvian */asta/ 'sat'* (thus already Hrozný, 1933: 69⁶) is not evidence for **ē* or **e_h* > Luv. *a*. The preform is pret. 3rd sg. active **éstat* (= OHitt. *ēsta* 'sat') (C. Watkins, pers. comm.), with thus regular development of accented short **/e/* in a closed syllable. For an "acrostatic" paradigm for 'heaven' see also Zucha (1988: 142) and cf. 5.4.2.3 (4).

10.1.5.3. PA **/o(:)/* and **/a(:)/* merge to */a(:)/*. As in the case of */a/* from PA short **/e/*, evidence for lengthening of original **/a/* in an accented closed syllable is scarce. However, since original short **/o/* definitely is lengthened in this environment, I presently prefer to avoid the complicated hypothesis by which only **/o/* is lengthened in accented closed syllables, before the merger with **/a/* and before "Čop's Law".

**/a/ > /a/ (only unaccented?):* PA **Hant-* 'front' > *ḡantil(i)-* 'first' and *ḡantawat(i)-* 'ruler'.

**/ā/ > /a:/* in open syllable: (1) (virtual) PA **Hāb-* 'river' > *ḡāp(i)-*; (2) PA **lālo/ā-* 'tongue' > *lāla/i-/la-la/i-*; (3) PA **dāda-* 'father' > *tāta/i-=tā-ti-*; (4) PA **pāHwṛ* 'fire' > **pāHūr* (10.1.4.2) > **pāHūr* > *pāḡūr* (10.1.3.2,2); (5) (virtual) PA abstr. suff. **-āh-id-* > *-āḡit=-a-hi-t(V)-*.

**/ā/ > /a/ ([a:])* in closed syllable (?): PA adj. suff. **-āsso/i-* > *-āḡṣa/i-*. (quite uncertain w/o further exx.)

**/ā/ > /a:/ ([a:]) /#_*: (1) PA **ānna-* 'mother' > *ānna/i-*; (2) PA **ānnem* 'under' > *ānna*; (3) PA **āddwo-* 'evil' > *ādduwa-*; (4) PA **ḡs-* 'us' > **āns-* > *ānz(aḡ)=ā-zu(?)*-za.

**/a:/ > /a:/*: (1) PA **(s)tāH-* > **(s)tā-* 'stand' > *t/dā=-ta-*; (2) PA **mām* 'how, as' > *mān=ma-na* 'if'.

**/o/ > /a/ (unaccented)*: (1) PA **obó-* 'that' > *apā=*(*á-*)*pa-* (1st vowel); (2) PA **éndo* 'into' > *ānta/ā-ta*; (3) PA **én-(H)no-ro-* 'forceful; virile' > *ānnara/i-* etc.; (4) PA ptc. N-ASgNt **-ómom* > *-āmman=(za)*.

**/ó/ > /a/ ([a:])* (in all positions!): (1) PA **obós/n* & **kós/n* 'that; this' > *apāḡ/n* and *zāḡ/n*; (2) PA **erHót-* 'boundary; circuit' > *irḡātt(a)-*; (3) PA **Hóst(H)-* 'bone' > *ḡāḡ(-ṣa)*; (4) PA **ópem* 'behind' > *āppan*; (5) PA conj. **ó-* > *a-* (NB *a-at-ta* for */a=ta/* < **ó-te*) (6) PA **wósu-* 'good' > *wāḡu-*; (7) PA **pód(o)-* 'foot' > *pāta-*; (8) PA **nódo+* 'reed' > *nātatt(a)-*; (9) PA **ḡónā-* 'woman' > *wāna-*.

Contra Starke (1980a: 85), neither **ḡéneh₂-* nor **ḡenéh₂-* can lead to attested *wānā*. The former would produce ***wānā* by "Čop's Law"; the latter cannot explain the long first vowel of dat.-loc. *wāni*, which should not be emended. The preform **ḡónā* is also demanded by Lydian *kāna-* (see 13.1.1 after Gusmani). Those who do not entertain any *o*-grade forms in the PIE word for 'woman' (e.g. Jasanoff, 1989) will have to reckon with a "Lindeman" variant with secondary accent on the syllabic nasal: **ḡṇéh₂-* > **ḡṇā-* > **wṇā-* > **wānā-* (10.1.4.2) > *wānā-*. The developments for Lydian *kāna-* would be similar, including the not implausible assumption that the vowel resulting from **ṇ* was rounded after the labiovelar and delabialized the latter.

**/o:/ > /a:/*: (1) PA **dō-* 'take' > *lā-*; (2) PA **mōyo-* 'adult' (i.e. **mōh₂yo-*) > *māya-*; (3) PA coll. pl. in **-ōR* > *-āR* (*ādduwāl*, *ḡalāl*, *ṣi(ḡ)wāl*, *inzagān*).

10.1.5.4 PA */e:/ is raised to /i:/, but PA */æ:/ becomes /a:/:

*/e:/ > /i:/: (1) PA *ē- 'go' > ī- = i-; (2) PA *kē- 'lie' > zī-; (3) prob. PA dat. sg. *-ē > -ī (*tappaṣī*, *apatī*, etc.).

*/æ:/ > /a:/: (1) PA *ǣ- 'do, make' > ā- = á-; (2) PA *sǣ- 'let go' > sā- = (*69)sa-; (3) PA *wǣr- 'water' > wār(-sa); (4) PA *ǣro- 'time' > āra/i- = á-ra/i-; (5) PA *mnǣ- 'look at; favor' > manā- = LITUUS-na-.

10.1.5.5 Evidence for PA diphthongs in Luvian is predictably scarce. The available examples point to widespread monophthongization of the short i-diphthongs to /i:/ and the short u-diphthongs to /u:/: I know of no good examples for original PA long diphthongs.

*/oy/ > /i:/: PA *woyséye/o-* '(op)press' > *wiši-/wišai-*.

*/Vw/ > /u:/: (1) PA *lew(H)-to- 'window' > GISlūdanza (acc. pl.); (2) PA *Hawho/a- 'grandfather' > hūba[(?)]=hu-ha-; (3) PA *e/agw- 'drink' > *e/aw- (10.1.1.4,1) > ū- = u-; (4) PA *(s)towbhéye/o- 'strike' > dūpi-/dūpai-/tu-pi-; (5) PA *o/ewtṛ 'word' > utar.

PA *aw is also reflected in CLuv. ūppa-/ūppi- 'bring' < (virtual) PA *aw-pí- (as in Hittite, the stem in -a- is secondary, based on an unattested pres. 3rd sg. *ūppai). Note that the lack of "lenition" in CLuvian supports the assumption that the accent here is on the root, not on the preverb (cf. 6.1.5.26 and 6.1.6.2.6). The CLuv. verb upa- 'furnish, grant, dedicate' (= Lyc. ube-) must be kept separate (with Meriggi, 1957b: 221). Its source remains unknown.

CLuv. aul/i- (*aulati*) presumably equals Hitt. *aula/i-* 'windpipe; throat', suggesting that the conditioning for the monophthongization of diphthongs is similar to that for Hittite.

10.1.6 Special Developments

10.1.6.1 Consonants

10.1.6.1.1 Gemination

10.1.6.1.1.1 Luvian preserves PA geminates, but there not many examples: ptc. suffix **-ómmo/i-* > *-amma/i-*, **mímmV-* and **mémV-* 'look at; have regard for' > *mimma-* and *māmma(nna)-* (Melchert, 1988b: 218ff), perh. **kummo-* > *kumma-* 'sacred'; **ánna-* 'mother' > *ānna/i-*, "durative" suffix **-ānni-* > *-anna-* (*uppanna-*); **āddwol-* 'evil' > *ādduwal(i)-*; PA relat. suff. **-āsso/i-* > *-āssa/i-*. As per 4.1.1.1 (4), I also assume that intervocalic voiceless stops are geminated in PA, and these remain in Luvian: **ópom* > *āppan* 'behind', pret. 3rd sg. mid. **-to* > *-tta*, etc..

10.1.6.1.1.2 "Čop's Law"

As per 10.1.1.3 above, Luvian generalizes the PA rule of absolute initial $\#*ē.C_1$ > $áC_1.C_1$ to all such sequences: **pérem* > *parran*, **mēlid-* > *mallit-*, **wēso-* 'be pleasing' > *wašša-*, **mēdu-* 'sweet drink' > *maddu-* 'wine', etc..

10.1.6.1.1.3 As in Hittite, **/s/* is geminated as both the first and second member of clusters. As in Hittite, most of the evidence is limited to clusters with sonorants: **gesr-* 'hand' > *iš(ša)r(i)-*, suffix **-sro-* > *-š(ša)r(i)-* (in *kuttaššara/i-* 'orthostat'), also *targaš(ša)nalla/i-* 'muleteer', *takkis(ša)ra* '?', **óms-* 'wipe' > *am(maš)ša/i-*. Note, however, **wospo-* 'garment' > *waš(ša)pa(nt)-* (see Kümmel, 1967: 133f, for a geminate example; Watkins, 1969b: 239ff for the etymology). On the further development of **/-sr-/* see 10.1.6.1.5 (2).

10.1.6.1.1.4 Again as in Hittite, **/m/* is also geminated before a consonant: **ó/éms-* > *am(maš)ša-* 'wipe'; **gēmro-* 'open country' > **immar(i)-* (in *im(ma)rašš(i)-*), suffix **-(u)mn-* > *-um(ma)n-* (*huitum(ma)nahit-*, *tatariyam(ma)n-*).

10.1.6.1.2 Preserved Consonant Clusters

The following is perforce extremely sketchy.

10.1.6.1.2.1 Initial Clusters

Stop + sonorant: */pr-/ (*pari*).

Whether the lack of other stop + liquid clusters is systematic or not cannot be determined.

Fricative + stop: */Hp-/ (*b(a)p(a)i-*, *b(a)panzu-*).

The absence of */sT-/ is systematic (10.1.6.1.4). On *b(a)p(a)i-* / *b(a)panzu-* see Melchert (1988b: 236ff). The derivation of Puhvel (1991: 119) is phonologically impossible.

Fricative + sonorant: */Hw-/ (*buidwali-*, prob. others).

Lack of /sR-/ is probably significant.

Sonorant + sonorant: */mn-/ (*m(a)nā-*).

10.1.6.1.2.2 Medial Clusters

Stop + stop: perh. */-pt-/ (*īppatarri(ya)*, *šappatammimma-*) and */-kt-/ (*aggat(i)-*)

For probable anaptyxis in this environment see 10.1.6.2.3 (2). The only orthographically attested stop clusters have little chance of being inherited: *mitgaima/i-* 'sweet', *witpani-* 'testicles' (?) (tentative sense with Garrett and Kurke, 1993, but their derivation is doubtful). The /-pt-/ of *paptitar* probably reflects recent reduplication.

Stop + fricative: none (both exx. of /-ps-/ are likely loanwords).

Stop + liquid: */-pr-/ (*papra-*); */-dr-/ (*ūtra*, *ad(a)riya-*), */-tr-/ (*āyatra*).

Absence of inherited /-Pl-/ and any /-Tl-/ is probably not accidental.

Stop + nasal: */-pn-/ (prob. in *ulipna-*); */-dm-/ (*ītmari-*, *katmarši-*); */-tn-/ (*ayatniya-*, etc.), */-dn-/ (*utnašša/i-*, etc.); */-kn-/ (*šaknuwant(i)-*).

Preserved /-dm-/ vs. Hittite (6.1.6.1.3.1,3) is noteworthy. It is a matter of debate whether /-gN-/ is lacking or not (cf. 10.1.6.1.4,1).

Stop + glide: */-dw-/ (perh. *buitwali-*, but cf. 10.1.6.1.5,2!), */-ddw-/ (*adduwal(i)-* etc.); */-gw-/ (perh. in *dakkuwa/i-*).

Affricate + stop: */-tst-/ (*az(zas)tan*, etc.).

It is uncertain whether the *s*-epenthesis rule is alive in Luvian, but it certainly inherits reflexes of it.

Fricative + stop: */-sp-/ (*waspantassa/i-*, perh. *haspa-*);
*/-st-/ (*asta-*; see Starke, 1990: 186⁶¹³, and Neumann
apud Tischler, 1977: 86).

Old */sġ/ gives */sts/ and then /ts/ (10.1.6.1.4,3), but I know of no reason not to expect /-sk-/ < */-sk-/. Lack of */-HT-/ is, of course, expected: cf. (virtual) */(s)tāH-to 'stood' > *tātta*.

Fricative + fricative: */-sH-/ (*āsġar*, etc. + others).

Fricative + liquid: */-sr-/ (*asrahit-* etc.), */-sl-/ (*asla-*).

As per 10.1.6.1.1.3, /-sr-/ is phonetically [-s.sr-]. Note that the example of /-sl-/ is surely reduplicated. Lack of old /-Hr/l-/ is almost surely systematic.

Fricative + nasal: no sure examples, which can hardly be accidental (cf. 10.1.6.1.3.1,2 and 10.1.6.1.5,2).

Fricative + glide: none.

We would expect no */-Hy-/ (10.1.6.1.4,2), but the lack of */-Hw-/ is probably accidental. The absence of /-sy-/ and /-sw-/ is noteworthy. Compare 10.1.6.1.5 (2).

Liquid + stop: */-lb-/ (*bulpanzena-* etc.), */-lt-/ (*balta/i-*); */-rb-/ (prob. *arpaša-* etc.), */-rp-/ (prob. *tarpanalli-*), */-rg-/ (*burkil-*), */-rk-/ (*arkammanalla-*).

Absence of /-rt/d-/ and other /-IT-/ combinations is likely to be accidental.

Liquid + fricative: no sure examples. -

Intervocalic examples with */H/ reflect either syllabic liquids (e.g. */sHV- 'growth' > *salġianti-*), secondary formations (redup. *lalġiya-*), or are analogical to pre-consonantal forms (*ilġa(i)-*). Some examples are pre-consonantal (*irġ(u)wa-*) or are secondarily "thematized" from them (*sarġ(a)-*). Cf. 3.1 (6). Likewise, attested /-rs-/ and /-ls-/ may in all cases continue syllabic */-r/ls- (*karš-*, *marša-*, etc.). A reduction of */-ren- to -rn- (Neumann, 1985: 25) can neither be confirmed nor denied.

Liquid + liquid: */-rl-/ (*šarla(i)-* etc.).

I assume an old base **šérlo-* (> HLuv. **šarla/i-* in SUPER-*la/i-*) on the basis of Lyd. *serli-* (cf. 14.1.5.6).

Liquid + nasal: */-rm-/ (*tarma-*, prob. others).

The lack of */-lm-/ is probably accidental, but that of */-ln-/ systematic (4.1.6.1.1,5). There are no exx. of inherited */-rn-/ (cf. 10.1.6.1.3.1,3).

Liquid + glide: none, probably an accidental gap.

Nasal + stop: */-nd-/ (*ānta*), */-nt-/ (*bantawati-* etc.).

The absence of */-mb-/ and */-ng-/ may be systematic (10.1.6.1.3.1,4). The fate of */-mp-/ and */-nk-/ is unknown.

Nasal + fricative: */-ms-/ (*am(maš)ša/i-*, *bamša-*).

Absence of */-ns-/ is systematic (cf. 10.1.6.1.3.1,4), and that of */-NH-/ probably is as well (10.1.6.1.4,5). Both examples of */-nH-/ cited in 9.1.4 are probably reduplicated.

Nasal + liquid: */-mr-/ (*im(ma)rašša/i-*).

Whether either example of */-ml-/ is inherited is unclear. Lack of */-nl/r-/ is noteworthy.

Nasal + nasal: */-mn-/ (*buitum(ma)naḥit-*, *tatariyam(ma)n-*).
Cf. 10.1.6.1.1.4.

The fate of */-nm-/ is unknown. There would not have been many inherited examples (see 4.1.6.1.1,4).

10.1.6.1.2.3 Final Clusters

On the fate of final clusters see 10.1.6.3.1 below.

10.1.6.1.3 Assimilation

10.1.6.1.3.1 New Geminates by Assimilation

(1) Intervocalic */-ts-/ becomes */-ss-/: **utsV-* 'year' > *ušša/i-* = *u-sa/si-* (contra Zucha, 1988: 110). There is no assibilation of */t/ or */d/ to /s/ after */u/, contra Kronasser (1966: 55f); van Brock (1968: 119ff) and Eichner (1983:59⁶⁰): HLuv. *u-sa-nu-* 'have built' does not exist! A clear counterexample is *kuttas(ša)ra/i-* = *ku-ta-sa+ra/i-* 'orthostat'

< **kutt-* 'wall' (assuming a Hittite loanword is wholly ad hoc). CLuvian **ušsarunta/i-* matching Hittite *wattaru-* 'spring', alleged by Weitenberg (1984: 194) and accepted by Eichner (1991: 156) does not exist! In *KUB XXIX 4 iii 46* read clearly *Pušsaruntaz* and thus also in *KUB XXXI 77 i 10* **šaruntin* with Glossenkeil.

(2) Since Luvian *-anna/i-* and *-alla/i-* may be explained by "Čop's Law" from **-éno-* and **-élo-*, Bader's derivation (1988a: 186 et aliter) from **-eh₂no-* and **-eh₂lo-* is quite uncertain. The assumed phonological development remains possible.

(3) Intervocalic */-rn-/ is assimilated to /-rr-/ in Luvian (in contrast to Hittite), contra Oettinger (1979a: 151). The crucial example is **dwerneye/o-* 'break' > *l(a)warr(i)-* vs. Hitt. *duwarni/a-*. This means that all attested sequences of /-VrnV-/ are secondary. Cases of /-arnV-/ may reflect syllabic *[r]: this is clear in **p₁rn-* > *parna-* 'house' and possible in all other examples. On HLuv. *zú+ra/i-na/i-* 'horn' see 10.1.4.2.

(4) Although HLuvian orthography cannot show it, *ha-sa-mi-* 'family, clan' and (NEPOS) *ha-su-* 'progeny' surely are to be read /hassV-/, like Hitt. *hašš-* 'beget; give birth' etc. < **Hó/éns-* (cf. 6.1.6.1.3.1,9). PA */-ms-/ is preserved: see 10.1.6.1.2.2 and Melchert (1988b: 211ff), pace Puhvel (1991: 217f). Note in particular the anim. acc. sg. ending **-om* preserved as *-am* before the enclitic possessive *-šan* 'his' in *KBo XIII 260 iii 1ff* (Starke, 1985: 260): see Carruba (1986: 51f); Melchert (1988b: 214); et al..

(5) The enclitic pronoun **-smos* 'to them' becomes CLuv. *-mmaš* with */-sm-/ > /-mm-/. The intermediate stage */-dm-/ proposed by Čop (1965: 116) is impossible, since /-dm-/ remains in Luvian (*katmarši-*, 10.1.6.1.2.2). HLuv. *-ma-za* prob. equals /-mmants/ with the same assimilation and renewal by the productive nominal dative plural ending. It is unclear whether this assimilation is due to enclisis or is regular. The only attested /-sm-/ cluster in *ušmant(i)-* has no clear prehistory (contra Meriggi, 1957b: 221, et al.).

(6) A sequence */-mb-/ may be assimilated to /-bb-/: cf. HLuvian *(261) *ta-pa-* = Hitt. *ištapp-* 'block up, obstruct' < **stVmb(ʰ)-* (see 6.1.6.1.3.1,8). Likewise, if CLuv. *dakkuwa/i-* means 'dark', the geminate *-kk-* must reflect /-gg-/ < */-ng-/ in **d(ʰ)ngwī-*.

10.1.6.1.3.2

Final /-n/ is sporadically assimilated to the initial /p-/ of the enclitic *-ppa*: *mām=pa* and *nānum=pa* beside *mān=pa* and *nānun=pa* (cf. the same phenomenon in Palaic: 7.3.3).

The hapax *NINDA.walpailanniš* beside usual *NINDA.walpaimanni-* may show distant assimilation to the preceding *-l-* (Hoffner, 1974: 189) or dissimilation to the following nasal.

10.1.6.1.4 Deletion

(1) I follow Watkins (pers. comm.) in assuming loss of */g/ before /n/ in **negno-* 'brother' > *nān(i)-*. Compare the opposite assumption of Oettinger (1976c: 101). Possible but unlikely is a simplification of */-ldw-/ to */-lw-/ in HLuv. *malwa-* 'votive (stela)' < **maldwa-* 'pledge, vow' (Neumann, 1992a: 158). Cf. rather Lyd. *mlwēnda-*.

(2) */H/ is lost before */y/ with compensatory lengthening: **-aHye/o-* > **-āye/o-* > *-ā/-āi-* (**kēsaHye/o-* 'comb' > *kīsa(i)-*, etc.). The claim of Greppin (1972: 86) for */HyV/ > Luvian /HV/ is thus false. Cf. 6.1.6.1.5 (6) for Hitt. *-ya* 'also, and'.

(3) */s/ is lost before /ts/ in the iterative suffix: **-ske/o-* > **-sze/o-* > *-za-* (CLuv. *kappilazza-* 'become angry', HLuv. *ta-za-* 'stand', etc.). See Melchert (1987a: 200f) and compare 6.1.6.1.5 for the same change in Hittite.

(4) Initial */s-/ of */sT-/ clusters is lost: **st₁mnt-* 'orifice' > *tūmmant-* 'ear' (Bossert, 1956: 208), prob. **stV(m)b-* 'stop up' > HLuv. (261)*ta-pa-* 'wall off'.

(5) */n/ is lost before /H/ in **énHo* 'when, as' > *ābba*. While a similar change in Hitt. *mābhan* < older *mānḥanda* seems specially conditioned in a univerbation, the loss may well be regular in Luvian. The only attested /-nH-/ sequences are in reduplicated forms and notably at morpheme boundary in *kuin=ba* 'someone' (vs. Hitt. assimilated *kuinna!*).

(6) As in Hittite (6.1.4.1.4), /r/ is frequently but sporadically lost between vowel and consonant: *ēbbuiddu* (i.e. /i:Hwitu/) denom. to *ērḥuwa-*, *ašḥa(r)nu-* 'make bloody', *pappaša-* 'sprinkle' for **papparša-* (cf. Hitt. *papparš-*).

10.1.6.1.5 Epenthesis

(1) There is regular epenthesis of /t/ in /-ls-/ sequences: **kʷls-* 'scratch, incise' > *gulz-*. Also at morpheme boundary: *ādduwal=za* (with particle *-ša*). While original */-ns-/ becomes /-ss-/ (10.1.6.1.4), one finds epenthesis in secondary combinations, including at morpheme boundary: HLuv. *á-ta/5-ma-za* 'name' (/adaman=za/) with particle *-ša* (+ further exx.), PA **ṇs-* 'us' > *ānza(š)=á-zu(?)*-za 'we; us'. Cf. the same development for final */-ns/ in 10.1.6.3.1 below. Contra Melchert (1987a: 197) there is no regular epenthesis in /-rs-/ at morpheme boundary, as per Morpurgo Davies & Hawkins (1988: 176): cf. *utar=ša* 'word'. In the case of *zār=za* 'heart' the base is *zārt-*. On the other hand, the word *akirzā* and especially the duplicate *arš[a-]* for *arzašidu* suggest that epenthesis in internal */-rs-/ clusters is not unheard of (cf. also in Hittite context Luvian *marzaštarriš* beside *maršaštarriš*, contra Starke, 1990: 394¹⁴¹⁹).

(2) Both CLuvian and HLuvian show evidence for sporadic epenthesis of /t/ in */-sr-/ clusters, although they do not agree in having the change in the same lexical items. Cf. CLuv. *iš(ša)r(i)-* 'hand' vs. HLuv. *i-s(á)-t(a)ra/i-* /istra/i-/ < **gesr-* (Meriggi, 1934b: 97). CLuvian has epenthesis regularly in abstracts in **-srV-*: *hattašt(ar)ra/i-* 'violence', *maršašt(ar)ra/i-* 'falsehood', etc., but not in the concrete noun *kuttaš(ša)ra/i-* 'orthostat'. HLuvian also shows (SCALPRUM) *ku-ta-sa+ra/i-* 'orthostat' without epenthesis and abstracts such as *ha-ta-sa-tara/i-* 'violence' and *sa-na-wa/i-sa-tara/i-* 'benevolence' with /-str-/, but note also *mi-ta-sa+ra/i-* 'dependency' without. See for all of this Neumann (1965a: 84ff) contra Starke (1990: 384ff), who entirely distorts the evidence for this class of nouns. But HLuv. *i-sa-tara/i-t(a)-* 'seat, throne' reflects a virtual **ēs-tro-* with "instrumental" suffix, as per Starke (1990: 418) contra Meriggi (1934b: 98).

It is doubtful that epenthesis is responsible for cases of alternation of *s/t*, although some examples seem amenable to such an analysis. One could interpret the functionary SAL *alhuišra-/alhuiṭra-* as showing regular /-sr-/ and /-tr-/ resulting from */-str-/ (with epenthesis and then simplification by deletion of the /s/). It is also tempting to compare HLuvian *a-tara/i-* (/atra/i-) 'image, self' with Hitt. *ēš(ša)ri-* 'image, statue' < **ēsri-* 'essence' and assume the same phonetic development. However, Lyc. *atra-/atla-* 'self' raises doubts about this example, as does the possibility suggested by Hawkins (1989: 190⁷) that the weak stem of *atra/i-* is **atn-*.

Even if one attributes the preceding two examples to epenthesis, such an explanation does not seem possible for another set of cases where there is no /-sr-/ cluster. We find both HLuv. (BESTIA)CURRERE-sâ+ra/i- and (BESTIA)CURRERE-tara/i- (/Hwisar/ and /Hwidar/), where /-ar/ results from syllabic *-r. The latter shape is seen also in CLuv. *huitar*. We should also put here CLuv. *huitwal(i)-* 'living' vs. Hitt. *hūiṣwant-* (cf. Otten, 1953b: 86). Contra Oettinger (1979a: 116f) the i-vocalism in Luvian does not preclude derivation from *Hwed- (see 10.1.5.2). The animal name *huitnaimi-* is surely a further derivative.

There are two alternative explanations for this set of examples. First, since they all belong to a single root, we must seriously consider the suggestion of Polomé (1965: 20) and in detail Puhvel (1986) that we have derivatives of two different root extensions: **h₂w-es-/h₂w-ed-*. For the latter Puhvel compares OIce. *vitnir* 'creatures'. It does seem unusual, however, that both forms would have survived alongside each other into HLuvian. Starke's attempt (1990: 564) to interpret (BESTIA)CURRERE-sâ+ra/i- as */Hwitnasar/ is ad hoc and now impossible in view of the correct interpretation of "REL₂" as CURRERE with a phonetic value /hwa/i/ (Hawkins and Morpurgo Davies, 1993: 57f).

We must therefore also consider the solution of Čop (1965: 117ff), by which */s/ became voiced to *[z] before sonorant in Luvian and then turned to /d/ before voiced consonant (for which he cites parallels in Indic and Celtic). Čop's supporting examples for this change are unfortunately false, but it is striking that we have no assured inherited examples of */s/ plus sonorant in Luvian except */-sr-/ (see 10.1.6.1.2.2). There is thus no good evidence against Čop's proposed rule. In all cases of */-sr-/ known to me, either paradigmatic ablaut or the law of finals described in 4.1.6.3.1 (6) would have produced allomorphs in */-sVr/. These could then be the source of maintained /-sr-/ cited above. Obviously, we need additional examples of inherited */-sR-/ either to confirm or falsify Čop's claim.

Since voicing assimilation of */s/ to *[z] is crucial to this account, I find it highly unlikely that there is any connection with the sporadic substitution of dental stop for */s/ in initial position, pace Čop (1965: 108ff): cf. 10.1.6.1.6 (3).

(3) There is one additional complication in the Luvian development of */-sr-/. Carruba (1990: 248f) has made a

strong case that the name *Mi-za+ra/i-mu-wa/i-* contains a first element **mizra-*, cognate with Hitt. *mišri-want-* 'pure, shining'. The Lycian name *Mizretije-* would contain the same element. Revising Carruba's reconstruction slightly, we may assume a *ro*-adjective **misro-* 'shining, pure' seen in Luv. **mizra-* and Lyc. **mizre-* (for the latter already Neumann, 1983b: 131), the base of the Hittite noun **misri-* 'brightness, purity' (cf. Hitt. *zš(ša)ri-* **'essence' > 'image'* and Grk. *ὄκρυς* 'peak' beside *ἄκρος* 'high'). The phonetic interpretation of *z* in this case is problematic. In Lycian a natural interpretation would be a voiced sibilant [z] (cf. 12.1.6.1.5). If one accepts Čop's account of **-sR- > *-zR- > -dR-* above, **[mizra-]* could be taken as the predicted intermediate stage. However, in both HLuvian and Lycian the value of *z* in all clear cases is that of a voiceless affricate [ts]. Whether we are justified in assuming two different uses of *z* ([z] and [ts]) is quite uncertain.

10.1.6.1.6 Substitution

(1) Luvian shows a sporadic change of initial **/d-/* to */l-/*. One finds both HLuv. (CAPERE)*la-* and (CAPERE)*ta-* 'take' < **deh₃-*. CLuv. has only *lā-*. Likewise CLuv. *l(a)warri-* 'break' < **dwerneye/o-*. Note that here this change must have taken place before the change **dw- > kw-* described below. I find extremely dubious the opposite change claimed by Oettinger, 1979a: 456 (CLuv. *tappa-* 'spit' < **lapaH-*, also in Hitt. *allappabḫ-* 'idem').

(2) It is likely that Luvian shares with Lycian the change of initial **/dw-/* to */kw-/*: **dwóyV-* 'fear' > *kuwaya-* (thus with Laroche, 1967: 46f, and Ivanov, 1983: 164f, instead of from **k^{weh}₁i-* with Melchert, 1984b: 164). Since initial voiced stops are devoiced in both languages, one could also view the change as **/tw-/ > /kw-/*. Unfortunately, examples of inherited **/tw-/* are apparently lacking (CLuv. *duyanalla/i-* is */tu-/*, and Lycian *tuk(edri-)* 'statue' may continue **tuk-* **'body'*, not **twek-*). This leaves open the possibility that CLuv. *waškuīt-* 'offense' (or sim.) continues a virtual **wastwV-* to *wašta-* 'sin' (Eichner, 1974: 71, but with false root etymology). At present I can neither prove nor disprove this idea.

(3) In two words PA initial **/s/* appears irregularly as a Luvian dental stop: **sóg^{wo}/ih-* 'eye, face' > *tāwa/i-* = *ta-wa/i-*, pl. *tāwa=ta-wa/i* (= Hitt. pl. *šakuwa*) (Čop, 1965: 102f, after Laroche, 1958b: 106); **šēhur/šēhun-* 'urine' > *dūr/dūn-* (= Hitt. *šēbur/šēhun-*) (Čop, 1965: 100ff). The semantic and morphological match between Hittite and Luvian in both words makes unlikely any attempt to derive the forms from different

PIE sources (as per Szemerényi, 1980: 26ff, and Melchert, 1987a: 188¹⁷, for 'eye'). I find unpersuasive the attempt of Puhvel (1974: 294f and 1979b: 301ff) to derive Hittite /s/ in these examples from */d(h)y-/ , since in all other cases of palatalization Hittite preserves the /y/. CLuvian *t(i)yamm(i)-* 'earth' < loc. **d(ʰ)g(ʰ)ém-* via **dyém-* suggests the same problem for Luvian (cf. the objection by Carruba, 1992a: 253⁸). The conditioning for the change in these two words versus the usual preservation in initial position is unclear. For a mere possibility see Oettinger (1987a: 14). The other examples alleged by Čop (1965: 103ff) are unconvincing. Despite his assertions, it is very unlikely that this sporadic change word-initially has anything to do with the word-internal alternation of /s/ and /t/: see 10.1.6.1.5 (2).

(4) It is likely that we have a change of */n/ to /l/ in *māli-* 'thought' etc. < **men-* (Watkins, 1985c: 617²) vs. preserved /n/ in the meaning 'sight': *m(a)na-* 'look at' < **mneh₁-*, **mānnab-* 'face' < **mēneh₂-* etc.

(5) See 9.1.4 for examples of rhotacism of /d/, /r/ and perhaps /n/ in HLuvian only (Morpurgo Davies, 1982/83).

10.1.6.1.7 Nasal Perseveration

Present third singular *arnaminti* probably reflects nasal perseveration (Oettinger, 1994a), contra Puhvel (1984: 162).

10.1.6.1.8 Metathesis

I interpret HLuvian INFANS.NEPOS-REL-la- as /hamskwalla-/, metathesized from *ha-ma-su-ka-la-* /hamsukalla-/. Compare Hawkins and Morpurgo Davies (1993: 572⁷), who suggest "infection".

10.1.6.2 Vowels

10.1.6.2.1 Syncope

Syncope in Luvian is quite restricted in comparison with Lycian and Lydian. I know of evidence for syncope only when the deleted vowel is preceded by a glide.

(1) Posttonic Syncope.

Luvian nouns such as *taraur* 'handful' and *lammaur* '?' are surely equivalent to Hittite nouns in *-āwar* and thus reflect **-āwár* < **-āw̥r*. The absence of the syncope in *kuršawar*

'island' could be due to its prehistoric status as the verbal noun of *kursā(i)*- 'cut' (see Starke, 1981: 142ff, for the derivation). The geminate /-nn-/ of the CLuv. 1st plural ending *-unni* must reflect in the first instance **-wānni* < **-wēni* by Čop's Law (10.1.1.3). The syncopated form *-unni* has apparently been generalized from cases where the accent was secondarily fixed on the verbal base. Given our very limited knowledge, Luvian may have abandoned mobile accent in verb paradigms. Finally, I believe the only way to account for the third plurals in *-āinti* to verbs with third singulars in *-īti* is to assume a sequence **-ēyonti* > **-ēyanti* > **-āyanti* > **-āyanti* > *-āinti*, with syncope as the last step. Similarly, in verbs reflecting **-aHye/o-*, it is the weak stem which typically shows the allomorph *-āi-* in Luvian (*widāindu*): **-aHyo-* > **-āyo-* > **-āya* > *-āy-* by syncope. See Melchert (1994c) for a detailed justification.

As per Mittelberger (1964: 74ff) there are also clear cases of syncope of *-uwa-* to *-u-* and *-iya-* to *-i-*. Here we find both syncopated and unsyncopated forms: CLuv. *dūwandu/dūndu*, HLuv. *tu-wa-ta/tu-ta*; CLuv. *ariyaddu/arindu*, HLuv. *pi-ya-ta/pi-ta*, *i-zi-ya-ta/i-zi-ta*. The conditioning for the syncope here is far from clear.

(2) Syncope in Unaccented Initial Syllables

Here the process also seems to be sporadic. The appearance of CLuv. *unattis* beside *wanattis* 'woman' does suggest that we should also attribute to syncope, not ablaut, the alternations *ulipna-/walipna-* 'fox', *ulant(i)-/(u)walant(i)-* 'mortal'.

10.1.6.2.2 Aphaeresis

HLuvian shows frequent aphaeresis of the unaccented /a-/ of /amú/ 'I, me' and /abá-/ 'that'. The spelling *sa-ta* for pret. 3rd sg. 'was' is problematic, given expected CLuv. *āsta*. We do know that the second vowel is real (cf. 10.1.6.3.1). I can only hazard the speculation that the aphaeresis here originates in enclitic use of the verb 'be', whence /sta/.

10.1.6.2.3 Anaptyxis

(1) As per 4.1.6.1.2, I provisionally assume that the anaptyxis in the word for 'name' in the western Anatolian languages is a shared innovation.

(2) Given the evidence of Lycian *appdi* 'takes' (see 12.1.6.1.1), I now assume real prehistoric anaptyxis in Luvian medial stop clusters, with subsequent "lenition" of the second stop when it falls between unaccented vowels: whence *aggat(i)* - 'hunting net' < **ēkad* - < **ēkat* - < **ēkt* - (cf. Hitt. *ēkt* -), *īppatarri(ya)* - 'distrain' < **ēptro* +, and prob. *šappatammimma* - (ptc. of 'make sevenfold' or sim.) < **šēpadV* - < **šēpatV* - < **šēptV* -.

(3) It seems likely that the new sequence /lw-/ in *l(a)warri* - from */dw-/ is broken up by an anaptyctic vowel, but this cannot be proven.

(4) On *tūmmant* - 'ear' < **st(h₃)m̥nt* - see 4.1.3.3.2 (4) after Oettinger (1976d: 101¹⁷; 1982a: 235; and 1982b: 173⁴⁵).

10.1.6.2.4 Contraction

Luvian shares with Lycian a type of verb in *-īti/-ainti* (e.g. *dūpiti/dupainti* 'strike' = Lyc. *tubidi/tubeiti*), with "lenited" ending in the third singular and alternating vocalism: see for the type Morpurgo Davies (1982/83). I now assume for the strong stem **-ēyedi* > **-ēyidi* (10.1.5.1 after Oettinger, 1976/77: 135) > **-ēydi* (contraction) > *-īdi* (with secondary **ey* > *i* just like original **ey*). The unsurprising contraction of **eyi* > **ey* precedes the syncope in the plural described in 10.1.6.2.1 (1). Verbs with weak stem in *-ai-* always show "lenition" in the third singular *-īdi*, while verbs < **-yé/ó-* never do. There is thus no "suppletion" of *-īi-* and *-aii-*, as claimed by Starke (1990: 156f and passim).

Likewise, Luvian has a class of verbs in *-ā-/-ai-* with "lenition" of the ending after *-ā-* (cf. Lycian *xttadi/xttaiti* 'harms'). The pattern in Luvian is obscured by our very limited evidence and some analogical disturbance of the distribution of the allomorphs *-ā-/-āi-* (cf. the similar situation in the corresponding Hittite type in *-āi-/-ā-!*). Nevertheless, the "lenited" ending in an example like *ēlḫādu* 'let him wash' clearly distinguishes this type from denominatives in **-eh₂-*, which never show "lenition": cf. pret. 3rd sg. *tūrātta*, denominative to ^{GIS}*tūra/i-* (a weapon or tool). I thus assume for the singular **-āHyedi* > **-āyedi* > **-āyidi* > **-āydi* > *-ādi*, with contraction and reduction of the secondary **āy* to *ā* before syncope in the plural (see again 10.1.6.2.1.1). I refer the reader to Melchert (1994c) for details of the argument.

10.1.6.2.5

It is significant that Luvian, unlike Hittite, does not seem to shorten unaccented */u:/ from CA */Vw/ or */-Cur/: *tūp(a)i-* 'strike' < */(s)to**w**béye-, *pāhūr* 'fire' < */pā**H**wr/, *ūppi/a-* 'bring' < */aw-pi-. Note also the "motion suffix" -i- < */-ih₂ with long vowel even in cases where it is surely unaccented: e.g. *hāwīš* 'sheep'. The long -i- of */i**h**ā(i)- 'wash' (attested *ēl**h**ā-*) and *kīšā(i)-* 'comb' suggests that these are post-PA creations, even if they belong to a lengthened-grade iterative type (cf. Lat. *cēlāre*): cf. 4.1.5).

10.1.6.3 "Laws of Finals"

10.1.6.3.1 Consonants

Final stops are lost in Luvian. All examples happen to be dentals: nt. nom.-acc. sg. */k^wid 'what' > *kui*=REL-i, */kód 'this' > *zā=za-ā*, */mēlid 'honey' > *malli*, abst. suff. */-āhid > -a-*hi*-(*ša*)=-a-*hi*-(*ša*). In the case of the neuter nouns in final dental, this loss in the nom.-acc. singular is a synchronic rule. Note also the loss of final */-t in the root noun */Hóst 'bone' (nt. nom.-acc. sg.) > *hās*-(*ša*) (Hamp, 1984: 199⁹, and Morpurgo Davies apud Zucha, 1988: 279, contra Van Brock, 1968: 119; Kammenhuber, 1969:321; Puhvel, 1991: 237; et al.). Preterite third singular -*tta* = Lyc. -*te* (which occurs also after a vowel!) reflects medial */-to, not active */-t: see the references in the next section.

Final */-s/ is universally preserved, including in the clusters */-ts/ (*/d^wot-s > *Tiwaz*) and */-nts/ (*/t^rHwnt-s > *Tarhunz(a)*). Final */-ns/ develops to */-nts/: anim. acc. pl. */-Vns > -Vnz(*a*) (the final graphic -a is not real, as per Starke, 1990: 44, contra Oettinger, 1976/77: 132). Any final */-h/ inherited from PA is lost. I can cite no sure examples.

Final */-m/ becomes */-n/ (cf. 10.1.6.1.3.1.4). Final */-l/ is well-attested (*ādduwāl* etc.). All examples of */-r/ known to me reflect syllabic */[r] or apocoped */-ri/, but I see no reason to doubt that any final */-Vr/ inherited by Luvian would have remained.

As in Hittite, the regular result of final */-m is uncertain. CLuvian 9-un-(*za*) 'nine' clearly reflects */nēwm, but the result with u-vocalism may be due to the preceding */w. Likewise CLuv. anim. acc. plural -anz(*a*) may or may not continue */-m as well as */-ons, but it does seem attractive to suppose that HLuv. á-zu(?) -za 'us' represents /antsunts/, with /ants-/

< **ns-* (as in Hittite *anzās*) plus the original athematic accusative plural ending /-unts/ < **-ns*.

10.1.6.3.2 Final Vowels

Final unaccented (short) vowels are all retained, with */e/ and */o/ becoming /a/. Examples for */-i/ hardly need to be cited. For */-u/ we have the third person imperative endings in -(n)tu; for */-e/ we may cite the enclitic particles *-pe > -ppa and *-te > -tta; */-o/ is represented by *endo > ānta 'into', pret. 3rd sg./pl. mid. *-to/*-onto > -tta/-anta (Sturtevant-Hahn, 1951: 5; Gusmani, 1965b: 78f; in detail Yoshida, 1991: 369f & 1993, after Watkins, 1969: 42&174, contra Eichner, 1975a: 80); also HLuv. gen. sg. /-isa/ (or /-issa/) < *-i-so/-is-so' (Bader, 1991: 139); for */-a/ we have at least *káta 'down' > HLuvian *katta (INFRA-ta).

Next to stable /-i/ in *jarri* 'above' < **séri* we find for the present middle both *ziyari* and *ziyar* 'lies'. For a detailed discussion of the problem see Yoshida (1990: 116f), to which I have nothing to add. An incipient apocope during the historical period seems likely, but the evidence is sparse.

Forrer (1932: 39) derives -tu 'to him' from *-tōi, comparing Grk. τῷ, which seems possible phonologically, but dubious morphologically. The alternate derivation by Carruba (1969b: 45) from *-toi seems unlikely, given the change of non-final *a/oj to ī.

10.2 Accent

Luvian appears to have generally maintained the accent in inherited non-alternating paradigms: e.g. *tāta/i-* 'father' < **dáda-*; GĪStāru- < **dóru-*; *nāta(tta)-* 'reed' < **nódo-*; *apā-* 'that' < **obó-* (NB also the aphaeresis in this word in HLuvian). Examples such as *zārt-* 'heart' < **kéd-*, *dūr/dūn-* 'urine' < **sēhwṛ/ṇ-* and *iš(sa)r(i)-* 'hand' < (virtual) **gēs-* suggest that alternating accent has been abandoned in nouns.

In contrast to Hittite and Palaic, there is also no firm evidence for alternating accent in verb paradigms, and several examples point to secondarily fixed accent. Note CLuvian first plural -unni (i.e. -unni < *-wanni by syncope < *-wānni < *-wēnni by "Cop's Law"). See further *k(u)war-/kūr-* 'cut' < **kṵṛ-* and *tūwa-* 'place, put', *lūwa-* 'pour' and *piya-* 'give', all generalized from weak stems but with accent secondarily fixed on the first syllable.

10.3 Changes in Synchronic Phonological Rules

Of the synchronic rules of PA, only *s*-epenthesis seems likely to have remained in Luvian. The "lenition" of stops between unaccented vowels must have persisted into pre-Luvian (10.1.6.2.3,2), but it is extremely unlikely that any synchronic alternations due to this rule persist in the attested languages.

The deletion of word-final stops and vowel lengthenings under the accent are innovations of Luvian (9.3).

10.4 Relative Chronologies

The analyses proposed above require the following relative chronologies:

Set 1:

- (1) $*g/g > y / \_ e/i$ (10.1.1.4) and
- (2) $*g^w > w$ (10.1.1.4) and
- (3) $*k > z$ (10.1.1.1) must precede
- (4) $*D > T / \# \_$ (10.1.1.2)

Set 2:

- (1) $*Cy\check{e} > *Cy\check{i} > Ci$ (10.1.5.2) must precede
- (2) $*g/g > y / \_ e/i$ (10.1.1.4) which must precede
- (3) "Čop's Law" (10.1.1.3; 10.1.4,1) which along with
- (4) posttonic $*\check{e} > a$ (10.1.5.2) must precede
- (5) $*y\check{e} > *y\check{i} > i$ (from 2 above) (10.1.1.4)

Note that (2) must also precede loss of intervocalic $*g/g$ (10.1.1.4).

Set 3:

- (1) $\check{V} > \check{V} / \_ C_r.V$ must precede
- (2) $*H > h / \check{V} \_ u$ (10.1.3.2,2)

Set 4:

- (1) $*VrnV > VrrV$ (10.1.6.1.3.1,3) must precede
- (2) $*r > ar$ (10.1.4.2)

Set 5:

- (1) $*g/g > y / \_ e/i$ (10.1.1.4) must precede
- (2) $*\tilde{e} > a$ (10.1.5.2) which must precede
- (3) $*\check{V} > \tilde{V}$ (open & closed syllables!) and
- (4) $*\check{V} > \tilde{V} / \# \_$ (10.1.5.2)

Set 6:

- (1) $*dw- > lw-$ in $l(a)warri-$ must precede
- (2) $*dw- > kw-$ (10.1.6.1.6,1-2)

Set 7:

- (1) $*-VnsV- > -VssV-$ (10.1.6.1.3.1,4) must precede
- (2) $-ns- > -nts-$ (10.1.6.1.5,1)

Set 8:

- (1) Anaptyxis in medial stop clusters must precede
- (2) "Lenition" between unaccented vowels (10.1.6.2.3,2)

Set 9:

- (1) $*Vyi > *Vy > \bar{i}$ (10.1.6.2.4) must precede
- (2) posttonic syncope $*\check{V}yV > Vy$ (10.1.6.2.1,1)

CHAPTER ELEVEN: LYCIAN PHONOLOGY

11.0 For reasons cited in 1.2.8.1 above, the description below is based on Lycian (A), with notes on Milyan where information is available.

11.1 Segmental Phonemes

11.1.1 Stops /p/ /t/ /tʷ/(?) /<k/ /k/ />k/

(1) The Lycian stops are underlyingly voiceless. They are regularly realized as voiced stops after nasals (both consonants and nasalized vowels). Cf. 1.2.8.2.1 above and note further examples like Grk. μινδῆς for Lyc. *mīnti-* and Τῖσευσεμβρον for *Tikeukēpre-*. Since there is no voicing contrast in the stops, there is undoubtedly some free variation in favorable voicing environments, notably next to /r/ (cf. the situation in Lydian, 13.1.1): note the likely equation *Kuprlli-* = *Κυβερνῶς* and *Natr-bbijēmi-* beside *pijēmi-* vs. *Trqqñt-* appearing as *Τερκανδᾶς* (but cf. Egypt. *g* rendering *b* in this environment: Edel, 1973: 64).

(2) None of the examples yet presented for Lyc. *τ* < PA **kʷ* before **e* is entirely persuasive. Nevertheless, circumstantial evidence argues for this derivation. First, all cases of *τ* alternate with *t*, which definitely does come from PA **kʷ* before **i* and **e*. Second, Milyan, which does not front **kʷ* to *t* before front vowels, also lacks *τ*. The latter thus probably represents a transition sound between **kʷ* and *t*. A labialized dental stop as given above is, of course, merely one possibility.

(3) For the values of Lyc. *k*, *q*, and *x* as respectively front velar/palatal /<k/, (mid-)velar /k/, and back velar or uvular />k/ see 1.2.8.2.1 above and the historical developments discussed below.

(4) Milyan has all the stops of Lycian (except *τ*) plus an additional dorsal stop which I transliterate provisionally with Laroche as *K*: see above 1.2.8.2.1. It is noteworthy that the few examples of the sound in appellatives are all before /a/ or consonant, precisely those environments where we do not know the outcome of labiovelar **kʷ*. If the comparison of Mil. *laKra-* with Lyd. *laqrisa-* should prove correct (Ševoroškin, 1977: 135), it would confirm that *K* is a labiovelar (for this value of Lyd. *q* see 1.2.9.2.1). Unfortunately, the equation is quite uncertain, and obviously the rendering of the name *A/ErKKazuma-* by 'Αρκεσιμα is not favorable to this analysis.

See also Neumann (1988a: 257f). Evidence for $*/g^w/ > /w/$ in Lycian (12.1.1.4) falsifies Meriggi's value of a voiced $/g^w/$ for $/w/$ (1980b: 221), which is based on his dubious assumption that q equals voiceless $/k^w/$ (see 12.1.3.2).

(5) In all conditioning statements below, "front" and "back" vowels refer to pre-Lycian, after the effects of the "umlaut" rule: see 11.3 (3) and 12.1.3.2.

Examples:

$/p/ < */p/$: (1) *pije* - 'give' < PA **piyV-*; (2) *ped(e)* - 'foot' < PA **pōd(o)-*; (3) *pddē(n)* - 'place' < PA **pedō-* (also in *pddāt* - 'idem'); (4) *epñ* 'afterwards' (or sim.) < PA **ōpem*; (5) *epirije* - 'buy' < (virtual) PA **h(V)pēriye-* (+ several more exx.).

(1) Laroche, 1959a: 82; 1973a: 94f; 1979: 66&106; (2) Bugge, 1898: 231; (3) Carruba, 1978a: 175 (n-stem 2ary); (4) Pedersen, 1945: 23 (ident.); Melchert after Dunkel, 1990: 168³¹ (preform); (5) Laroche, 1958a: 172; Kimball, 1983: 130 & 1987a: 187ff; Melchert, 1989a: 43f.

$/p/ < */b/$ /#___: no direct exx., but cf. **pige-* 'radiance' < PA **bēho-* (virtual **b^hēh₂o-*) in name *Pigesere-* etc.

Melchert, modifying Starke, 1990: 106&314f.

$/p/ = [b] /N\_ < */mp/$ or $*/mb/$: 2ary in **ipre-* (*ībre-*) = *Ιμβρας* 'open country' < **imre-* < **gēmro-* (Carruba, 1980: 280f). Cf. also names like *Arttumpara-* < Ir. **Rtambara-* (Schmitt, 1982: 378).

$/t/ < */t/$: (1) *tri-/teri-* 'three' < PA **tri-*; (2) *tukedr(i)* - 'statue' < PA **tw(e)k+* '(visible) body'; (3) *Trqqñt-* 'Storm-god' < PA **trHñt-*; (4) *kbatra-* 'daughter' < PA **dug(a)tr-*; (5) part. *-te* < PA **-te*; (6) reflexive *-ti* < PA **-ti* (+ further exx.).

(1) Bugge, 1897: 44ff, after Deecke (for 1st), Eichner, 1993: 239f (for 2nd); (2) Neumann, 1961a: 55f, and apud Borchhardt et al., 1989: 92; (3) Laroche, 1958b: 97ff (cf. already Imbert, 1891: 107!); (4) Imbert, 1893: 89 (ident.); Laroche, 1967: 48 (etym.); (5) Laroche, 1961: 36 (ident.); Watkins, 1978: 308f (etym.); (6) Laroche, 1958a: 171.

/t/ < */d/ /#_ : (1) *ta-* 'put, place' < PA **dæ-*; (2) *tuwe-* 'place' (upright) < (virtual) PA **duwV-*; (3) *tideime/i-* 'child, son' < (virtual) PA **dēdey-ommo/i-* *'suckling'; (4) prob. *tede/i-* 'father' < PA **dāda-* (first three exx. < PIE **d^h*; last < **d*). (5) NB also Mil. *tbi-* 'two' < PA **dwi-*.

(1) Pedersen, 1945: 31 (etym.); Eichner, 1973: 80 (phonol.); (2) Bugge, 1897: 41 (vs. Pedersen, 1945: 31); (3) Savelsberg: 1874: 1.26f (root etym.); Melchert after Laroche, 1979: 110, and Neumann: 1993: 37 (preform); (4) Laroche, 1958a: 191; (5) Bugge, 1899: 61.

/t/ = [d] /N_ < */nt/ or */nd/: (1) *xñtawa-* 'rule' etc. < (virtual) PA **HantowaH-*; (2) pres. 3rd pl. -*Ṽ(ñ)ti* < PA **-Vnti* (likewise pret. -*Ṽ(ñ)te* < PA **-onto*); (3) *ahñta-* 'property' < PA **asnt-* *'being, existing' (sim. *lāta-* 'dead'); (4) *ñte* 'into' < PA **endo*; (5) *ētre/i-* 'lower' < PA **ñdero/i-*.

(1) Pedersen, 1933: 100; Sturtevant-Hahn, 1951: 7; Laroche, 1979: 104ff; (2) Heubeck, 1981&1982: 116ff (1st) (cf. already Arkwright, 1923: 16&21⁴; Deeters, 1927: 2289; & Neumann, 1969: 388ff); Savelsberg, 1874: 1.31 (2nd); (3) Laroche, 1979: 68 (cf. Carruba, 1970b: 37 for *lāta-*); (4) Thomsen, 1899: 13; Hrozný, 1917: 17 (false Kimball, 1986: 94); (5) Thomsen, 1899: 24 (ident.); Pedersen, 1945: 50 (etym.).

/t/ < */k^w/ /_ *e/i: (1) *ti-* 'who, which' < PA **k^wi-* (also in *tike* 'some-/anyone'); (2) *te/i* 'where' < (virtual) PA **k^weli*; (3) prob. *t^hi-* 'pay' < (virtual) PA **k^wi-k^wi-* (cf. also *t^hl(e)i-* 'idem' and Mil. cognates under /<k/ below).

(1) Torp, 1898a: 19; (2) Carruba, 1978a: 177; (3) Heubeck, 1985: 40f, and Neumann apud Neu, 1992b: 171.

/t^w/ < */k^w/ /_ *e: for possible exx. see Pedersen (1945: 49f), Laroche (1967: 57f) and Carruba (1978a: 165ff).

/<k/ < */k/: (1) *tukedr(i)-* 'statue' < PA **tw(e)k+* '(visible) body'; (2) **kume-* 'sacred' (in *kumaza-* 'priest', etc.) < PA **kummo-* (i.e. **kwñmo-*); (3) perh. *kete* 'according to' (?) < PA **káto*.

(1) Neumann, 1961a: 55, and apud Borchhardt et al., 1989: 92; (2) Laroche, 1979: 108ff (ident.); Melchert modifying Schindler apud Watkins, 1987: 401 (etym.); (3) Carruba, 1980: 285.

/<k/ < */k^w/ /_ *o/u: (1) prob. *kñme/i-* 'how/as many' < (virtual) PA **k^wommó/i-* (also in *kñmēt(i)-* 'idem'); (2) *krzzānase-* 'peninsula' < **k^wursāun+* < **k^wrsāun-*.

(1) Laroche, 1979: 69f (root etym.), Melchert (morphol.); (2) Meriggi, 1936a: 280 (ident.); Melchert (etym.), comparing CLuv. *kursawar* 'island' (Starke, 1981: 142ff).

Note: *křmēt(i)-* is also Milyan, so rule is Common Lycian. Cf. perh. also Mil. *kudi* 'with which' (?) (Meriggi, 1978: 44).

/<k/ < */k^w/ /___*i (Milyan only!!): (1) Mil. *kibe* 'or' < PA **k^wi+* (= Lyc. *tibe* 'idem'); (2) prob. Mil. *ki-* 'who, which' < PA **k^wi-* (pre-tonic in *ki=wisiu* and *ki=kikiti*); (3) prob. Mil. *kiki-* 'pay, requite' < (virtual) PA **k^wi-k^wi-* (= Lyc. *t^wi-* above).

(1) Bugge, 1901: 62ff; Laroche, 1958a: 169; & Morpurgo Davies 1975: 161; (2) Melchert, 1989c: 110 (cf. already Bugge, 1901: 54f); (3) Melchert, 1989c: 110 (cf. also ibid. on Mil. *kille-* and *kileima*, the latter cognate w/Lyc. *tl(e)i-* 'pay'). For different account of *tl(e)i-* cf. Oettinger (1978c: 106¹¹) and Eichner (1983: 54⁴⁴).

/<k/ < */d/ /___*w: (1) *kbi-* 'other; two' < PA **dwi-*; (2) *kbatra-* 'daughter' < **dwatra-* < PA **dug(a)tr-*.

(1) Bugge, 1899: 61; (2) Imbert, 1893: 89 (ident.); Laroche, 1967: 48 (etym.).

On this change see Bugge (1897: 43f), Laroche (1967: 46ff) and Starke (1987: 24f). This change is Lycian only! Cf. Mil. *tbiu* = Lyc. *kbiu* 'twice'. NB also Mil. *qñnātba* = Lyc. *qñnākba* '?' and Mil. *Xāzbi* (!) = Lyc. *Xākbi* 'Kandyba' surely with Lycian [<gv] after nasal.

/<k/ < */H/ (*_{h2}) /V[+front]___V[+front]: (1) *ēke* ([ē < ge]) 'when' < PA **ēn-Ho*; (2) *tike* 'some-/anyone' < PA **k^wis/m-Ho*; (3) *-ke* 'also' < PA **-Ho* (w/fronted treatment generalized).

(1)-(3) Melchert, 1992c: 46 w/refs.

/k/ < */H/ /___V[+front]: (1) prob. *qla-* 'precinct' < PA **Hilā-*; (2) prob. **Qeli-* 'grain-god' < PA **Holgi-* 'grain; barley'; (3) *Trqqñt-* 'Storm-god' < PA **trHñt-*; (4) prob. Mil. *qñtili-* 'first' (or pers. name) < (virtual) PA **Hantili-*.

(1) Laroche, 1967: 54 (= Hitt. *hila-*); (2) Neumann, 1979a: 270 and Melchert, 1988b: 224; (3) Laroche, 1958b: 97ff (cf. already Imbert, 1891: 107!); (4) Ševoroškin, 1979: 178. See 1.2.8.2.1 above on the problem of *q* and below 12.1.3.2 for my derivation and counterproposals.

/>k/ < */H/ /—V[+back]: (1) *xñtawa-* 'rule' etc. < (virtual) PA **HantowaH-*; (2) *xawa-* 'sheep' < PA **Hów+*; (3) **xaha-* 'altar' < PA **Hó/ássā-*; (4) *xahba-* 'grandchild' < (virtual) PA **Hónsu+*; (5) pret. 1st sg. *-za* < PA **-Ha* (**-h₂e*); (6) *xuga-* 'grandfather' < PA **Háwha-*; (7) pret. 1st sg. mid. *-zagā* < PA **-Haha+*; (8) *xddaza-* 'slave' < **H(V)udo+*; (9) *-xñta* in *tlaxñta* 'payment' < **H(e)nta* (i.e. allative **h₂(e)nth₂e*).

(1) Pedersen, 1933: 100; Sturtevant-Hahn, 1951: 7; Laroche, 1979: 104ff; (2) Laroche, 1967: 60; Kimball, 1987a: 189; (3) Laroche, 1979: 64; (4) Pedersen, 1945: 53f (phonol.); Tritsch, 1950: 517 (sense); Melchert, 1992c: 51 (morphol.), contra Hamp, 1980: 215; (5) Torp, 1898b: 11 (ident.), Pedersen, 1933: 184 (etym.); (6) Pedersen, 1945: 25f, after Thomsen (ident.); Melchert, after Eichner, 1978: 145¹¹ (phonol.), contra Hamp, 1980: 215 (*a*-stem after other PA Lallwörter **átta-*, **dáda-*, **ánna-*, **Hánna-*; also *zuza-* w/restored *-z-* after initial *x-* like Hitt. *bubba-*); (7) Melchert, 1992a: 190f; (8) Eichner, 1983: 59; (9) Eichner, 1983: 54¹⁴ (ident. w/Hitt. *banda*); Melchert (preform, after Hajnal, pers. comm., and Puhvel, 1991: 94).

/>k/ < */g/ /#—V[+back] (??): perh. *xupa-* 'tomb' < PA **gúpa-*.

Cf. already Lassen (1856: 342). Example and thus entire development quite uncertain! Also merely possible is the comparison of the Lycian name *Xuzune-* with *Kukkunni-* and derivation from **k/keu-* (see discussion by Neumann, 1975: 231ff).

11.1.2 Affricate /ts/

Lycian *z* in several demonstrable cases reflects PA **[ts]* or a pre-Lycian sequence **t+s*. One may also extend this interpretation to the special development of final **-Vns* to Mil. *-V/Vz* and Lyc. *-Vs* with epenthesis (12.1.6.4.1): cf. the same conditioned change in Luvian (10.1.6.3.1). I also assume a similar epenthesis in original **/-rs-/*. On Lycian *izr-* 'hand' and related problems see 12.1.6.1 (5).

Examples:

/ts/ < PA **[tsy]* (/ty/): suffix *-ze/i-* < PA **-tsy-* (/—tyo—/) in *hrzze/i-* 'upper', *przze/i-* 'front' and "ethnic" adjectives like *Wehñteze/i-* 'of Phellos'.

Gusmani, 1961c: 43f (cf. already Pedersen, 1945: 44f).

/ts/ < **-t+s*: Mil. nom. sg. *Trqqiz* 'Storm-god' < PA **trHént-s* (via **trHéts*).

Laroche, 1958b: 97ff; Gusmani, 1964b: 43; Oettinger, 1979a: 222⁸⁸ (morphol. already Pedersen, 1945: 52!).

/ts/ < *-Rs: (1) Mil. anim. nom./acc. pl. -V/*V̄*z < PA *-Vns; (2) *krzzānase* - 'peninsula' < PA **k^wṛsāun+* *'cutting'.

(1) Pedersen, 1945: 52; also Gusmani, 1964b: 48 (w/different phonetic interpretation!); Meriggi, 1980b: 261; (2) Meriggi, 1936a: 280 (ident.); Melchert (etym.), after Starke, 1981: 142ff.

/ts/ from epenthesis is simplified to /s/ in Lycian in word-final position: 12.1.6.4.1.

/ts/ < */d/ /___*(w)i (Milyan only!): *Xāzbi* 'Kandyba' (vs. Lyc. *Xākbi*; see above).

See Pedersen (1945: 44). The phonetic realization after nasalized vowel in this case is probably [dz]. Pedersen restricts the assibilation to medial position. I attribute the assibilation to the following *i and assume the t- of Mil. *tbi* - 'two' is analogical to related forms with other vocalism (cf. prob. the -tba of *qānātba*).

11.1.3 Fricatives /θ/, /s/ /h/
 /β/ /ð/ /ɣ/

(1) Lycian *b*, *d*, and *g* represent voiced fricatives. Cf. 1.2.8.2.1 w/refs. Since *g* represents the "lenited" form of *x* and occurs only before back vowels, it is undoubtedly a back velar or even uvular fricative.

(2) Examples such as *laððe/i* - 'maternal' < **ladāhi* - suggest that *ð* is a voiceless (interdental) fricative.

(3) Milyan, which does not share in the change PA */s/ > h, has no /h/. Obviously, it also lacks /θθ/ < *d+h. Whether the lack of initial /θ-/ in Milyan is accidental or systematic is undetermined.

Examples:

/θ/ < *t/d+h: (1) *laððe/i* - '(husband's) in-law' < **ladāhe/i* - *'of the wife', *teððe/i* - 'paternal' < **tedāhe/i* -, and *Leððe/i* - 'of Leto' < **Letāhe/i* -; (2) *ððē* 'votive object' (or sim.) < (virtual) PA **dasóm* via **tāhē*.

- (1) Laroche, 1979: 114; (2) Eichner, 1983: 59ff.

We find geminate $\theta\theta$ in all cases of an assimilated cluster. Source of simple initial θ - in *θride*, *θrṛma-*, and *θurtta-* is unknown. Since all clear cases of initial *tr-* reflect PA **t(V)r-*, perhaps θ - is a special development of PA **d/-* before **r*: in this environment initial **d/-* would have first become a fricative and only then undergone devoicing of initial obstruents.

/s/ < */k/: (1) si- 'lie' < PA **k̑ē*-; (2) *esbe*- 'horse; cavalry' < PA **k̑wo*-; (3) prob. -*sñt*- in *kbi-sñt-āta* 'twelve' or 'twenty' < PA *(*d*)*k̑nt*-. Cf. also (2) and (3) under the next entry.

(1) Thomsen, 1899: 23 (ident.); Pedersen, 1945: 17 (etym.); (2) Bugge, 1897: 27; (3) Laroche, 1974: 146⁴¹; Shevoroshkin, 1979: 192; Neumann apud Melchert, 1989a: 25. For phonol. of all exx. see Melchert, 1989a: 23ff.

/s/ < */sT/: (1) *es-* 'be' in *esi* and *esu* < PA **esti* and **estu*; (2) iter. suff. *-s-* < PA **-ske/o-*; (3) "ethnic" suffix *-is(e)-* < PA **-i(s)ko-* (could belong under previous entry); (4) prob. *wasaza-* (a priest) < **wasHa+*.

(1) Torp 1898a: 14 (ident.); Pedersen, 1945: 18 (phonol.); (2) Pedersen, 1945: 27, & Melchert, 1989a: 28f; (3) Melchert, 1989a: 29ff; (4) Laroche, 1967: 62 (= CLuv. *waṣḥazza*-); for sense see Melchert, 1991: 202.

All examples are medial! For initial $*_sT-$ see 12.1.3.1.

/h/ < */s/ (Lycian only!): (1) *ha-* 'let go, release' < PA **sæ-*; (2) *hri* 'above' (+ *hrppi* and *hrzze/i-*) < PA **seri*; (3) *hrm̄mā* 'land-section, temenos' < (virtual) PA **s(e)rm̄;* (4) *ah-* 'be' in *ahñtāi* 'property' < PA **as-*; (5) **zaha-* 'altar' < PA **Hō/ássā-*; (6) *zahba-* 'grandchild' < (virtual) PA **Hónsu+*.

(1) Melchert, 1989a: 38ff; (2) Thomsen, 1899: 12 (ident.); Pedersen, 1933: 181f; Laroche, 1958a: 180; (3) Melchert, after Innocente, 1987/88 (cf. Hitt. *xarr(a)*- 'divide, apportion' and Lyd. *sirma*- 'temenos'); (4) Laroche, 1979: 68; (5) Laroche, 1979: 64; (6) Pedersen, 1945: 53f (phonol.); Tritsch, 1950: 517 (sense); Melchert, 1992c: 51 (morphol.), contra Hamp, 1980: 215.

/β/ < */b/: ebe- 'this' < PA *obó-

Hrozný, 1917: 137.

For $b = [v] < */w/ / C\_$ see below under 11.1.4.

/ð/ < */d/: (1) *ped(e)*- 'foot' < PA **pód(o)*-; (2) *pddē(n)*- 'place' < PA **pedóm*; (3) pres. 3rd sg. *-di* < PA **-di*; prob. (4) *tede/i*- 'father' < PA **dáda*-; (5) *zddaza*- 'slave' < PA **H(V)udo+* *'haste'.

(1) Bugge, 1898: 231; (2) Carruba, 1978a: 175; (3) Eichner, 1973: 80; (4) Laroche, 1958a: 191 ('i-motion' 2ary); (5) Eichner, 1983: 59.

/ɣ/ < */h/: (1) pret. 1st sg. *-ga* < PA *-ha*; (2) *xuga*- 'grandfather' < PA **Háwha*-; (3) pret. 1st sg. mid. *-xagā* < PA **-Haha+*.

(1) Eichner, 1973: 80, & Oettinger, 1979a: 522; (2) Pedersen, 1945: 25f, after Thomsen (ident.); Melchert, after Eichner, 1978: 145¹¹ (phonol.), contra Hamp, 1980: 215; (3) Melchert, 1992a: 190f.

The second *-x-* of *zuza-* in the name *Epñzuza-* is secondary, as in Hitt. *bubba-* (iteration after the productive pattern of Lallwörter): so also Kimball (1993) for the Hittite. This account seems to me simpler than assuming a separate preform with final accent (Eichner, 1978: 145¹¹, and Zucha, 1988: 37f).

All exx. of /ɣ/ < */h/ are before back vowel. We do not know the fate of PA */h/ before front vowel.

11.1.4 Sonorants /m/ /n/

/r/, /l/

/w/ /y/

(1) As indicated above (1.2.8.2.2), the sounds spelled *m̃* and *ñ* in Lycian represent unreleased nasal consonants which occur only in syllable-final position. Since they are in complete complementary distribution with *n* and *m*, they are patently allophones of the latter (NB: *ñtēmle-* is to be syllabified *ñtēmle-*; cf. *m̃la-* and Mil. cognates). Between non-syllabics *m̃* and *ñ* undoubtedly are realized as [əm] and [ən]. Lyc. *r* and *l* may also function as syllabics: e.g. *hrppi* = [hɾp.pi], *hrm̃mā* = [hɾm.mā]. Cf. Houwink ten Cate (1961: 198) and Bryce (1987: 94ff).

(2) The labial glide /w/ is realized as a voiced fricative [v] after consonants. For the reason for assigning [v] to /w/ rather than to /β/ see 11.3.1 below.

Examples:

/m/ < */m/: (1) conj. *me* < PA **mo*; (2) *ēmu/amu* 'I, me' < PA **emú* or **āmmu*; (3) *hrēmā* 'land-section, temenos' < (virtual) PA **s(e)rmā* (+ other exx.).

(1) Thomsen, 1899: 17ff; Hrozný, 1917: 102⁴ (ident.); Melchert, 1992c: 46 (preform); (2) Bngge, 1901: 79ff; Torp, 1901a (cf. already Savelsberg, 1874: 2.61); (3) Melchert after Innocente 1987/88 (see above under /h/ for details).

/n/ < */n/: (1) *ni* proh. negative < PA **nē*; (2) *ne* 'not' < PA **nē*; (3) *ēnē* 'under' < (virtual) PA **ānnem* (+ other exx.).

(1) Torp, 1898: 13 (ident.); Morpurgo Davies, 1975: 158 (preform) (NB: cannot be **nēy*, cf. *Lyd. ni* and 14.1.5.6/7); (2) Torp, 1898: 32 (ident.); Morpurgo Davies, 1975: 158 (preform); (3) Laroche, 1958a: 180 (ident.); Melchert after Dunkel, 1990: 168³¹ (preform).

/r/ < */r/: (1) *hri* 'above' < PA **seri*; (2) *kbatra* 'daughter' < PA **dug(a)tr*–; (3) *tri*–/teri– 'three' < PA **tri*–; (4) *arawa*– 'freedom' < (virtual) PA **arowā*– (+ other examples).

(1) Pedersen, 1933: 181f; Laroche, 1958a: 180; (2) Imbert, 1893: 89 (ident.); Laroche, 1967: 48 (etym.); (3) Bugge, 1897: 44ff, after Deecke (1st); Eichner, 1993: 239f (2nd); (4) Laroche, 1979: 63&66.

/l/ < */l/: (1) *la*– 'die' < (virtual) PA **wlaH*–; (2) prob. *qla*– 'precinct' < PA **Hilā*–; (3) prob. **Qeli*– 'grain-god' < PA **Hólgi*–; (4) *lada*– 'wife' < PA **lā/ōdā*–.

(1) Thomsen, 1899: 21 (ident.); Carruba, 1968a: 14; 1969b: 84⁸³; & 1970b: 37 (etym.); (2) Laroche, 1967: 54; (3) Neumann, 1979: 270, & Melchert, 1988b: 224; (4) Grotefend, 1835: 325 (ident.); Hrozný, 1917: 49, & Winter, 1965a: 191 (etym.).

/w/ < */w/: (1) *arawa*– 'freedom' < (virtual) PA **arowā*–; (2) *tuwe*– 'place' (upright) < (virtual) PA **duwV*– (+ other exx.).

(1) Laroche, 1979: 63&66; (2) Bugge, 1897: 41 (contra Pedersen, 1945: 31).

/w/ < */g^w/: *wawa*– 'cow' < PA **g^wów+*.

[v] < */w/ /C___: (1) *esbe-* 'horse; cavalry' < PA **ekwo-*; (2) *kbi-* 'other; two' < PA **dwi-*; (3) *kbatra-* 'daughter' < PA **dug(a)tr-* via **duwatr-* and **dawatr-*; (4) *xahba-* 'grandchild' < 2ary **Hónswa-*.

(1) Bugge, 1897: 27; (2) Bugge, 1899: 61; (3) Imbert, 1893: 89 (ident.); Laroche, 1967: 48 (etym.); (4) Pedersen, 1945: 54 (phonol.); Tritsch, 1950: 517 (sense); Melchert, 1992c: 51 (morphol.), contra Hamp, 1980: 215.

For a reflex of PA */w/ word-initially see Milyan *wis(e)i-*, which is surely cognate with CLuvian *wiš(a)i-* '(op)press' < **woséye/o-*.

/y/ < */y/: (1) *pije-* 'give' < PA **piyV-*; (2) nom. suff. *-ije-* < PA **-iyo-*.

(1) Laroche, 1959a: 82; 1973a: 94f; 1979: 106f; (2) Pedersen, 1945: 34; Carruba, 1982: 39; and Melchert, 1990: 205f.

The absence of initial /y/ in Lycian is systematic, and the fate of PA initial */y/ is unknown.

11.1.5 Vowels /i/ /u/
 /e/, /ē/ /a/, /ā/

(1) The rendering of Lyc. /e/ by Greek α as well as ε and the Lycian umlaut rule affecting low vowels (see 11.3,3) indicate that Lyc. /e/ is a low front unrounded vowel (probably [æ] or [a]) vs. /a/ which is low back [a]. Cf. the remarks of Arkwright (1899: 59) and Bryce (1987: 89f).

(2) Greek equivalents such as Κπαράμω for *Xpparama* and Κονδορασις for *Qñturahñ* may point to a rounded allomorph for Lyc. /a/ and /ā/, but this is far from certain.

(3) The nasal vowels /ē/ and /ā/ are contrastive with /e/ and /a/ (due to among other things the loss of final nasal consonants). There are a handful of exx. suggesting that nasalized variants of the high vowels /i/ and /u/ may also exist, despite the lack of separate symbols: NB **ipre-* 'open country', which must be [ibre-] (Ιμβρος etc.). Cf. also *Ikkuwemi-* beside *Ēkuwemi-* < Ἐνδομις, where the first *k* is surely indicating a velar nasal, mimicking such use of Greek γ.

Examples:

/i/ < */i/: (1) *ti-* 'who, which' < PA **kwi-*; (2) *kbi-* 'other; two' < PA **dwi-*; (3) *hri* 'above' < PA **seri* (+ many more exx.).

(1) Torp, 1898a: 19; (2) Bugge, 1899: 61; (3) Pedersen, 1933: 181f; Laroche, 1958a: 180.

/i/ < */e/: (1) proh. neg. *ni* < PA **nē*; (2) *epiriye-* 'sell' < (virtual) PA **h(V)pēriye/o-*; (3) Mil. nom. sg. *Trqqiz* 'Storm-god' < **trqqēts* < **trHēnts* (compensatory lengthening).

(1) Torp, 1898a: 13 (ident.); Morpurgo Davies, 1975: 158 (preform); (2) Laroche, 1958a: 172; Kimball: 1983: 130 & 1987a: 187f; Melchert, 1989a: 43f; (3) Gusmani, 1964b: 43 (see 12.1.6.3.5).

/i/ < */e/ / *y_ (including < */ġ/): (1) *izr-* 'hand' < PA **ġēsr-*; (2) **ipre-* 'field, open country' < PA **ġēmro-* (in name *Ipre-side/i-*); (3) vbl. suff. *-i-* < *-*yi-* < *-*ye-*.

(1) Laroche, 1960a: 169; (2) Carruba, 1980: 280f; (3) Oettinger, 1976/77: 135 et aliter.

/i/ < */e/: (1) *si-* 'lie' < PA **kē-*; (2) *-i* 'to him/her' < PA **-ē* (less likely PA **-soy*); (3) prob. *side/i-* 'man' < PA **kēdo/i-*.

(1) Pedersen, 1945: 17, after Thomsen: 1899: 23f; (2) Thomsen, 1899: 49 (1st); (3) Gusmani, 1987/88: 109 & 1992: 226.

/i/ < */oy/: Mil. *wis(e)i-* '(op)press' < **woyseye/o-*.

Melchert, after Starke, 1990: 549 (= CLuv. *wiſi-/wiſai-* 'idem').

/u/ < */u/: (1) *ēmu/amu* 'I, me' < PA **emú* or **ámmu*; (2) *uh(V)-* 'year' < (virtual) PA **utsV-*; (3) *qanuwe-* 'cause to be seized' (?) w/causative *-nu(we)-* < PA **-nu+*; (4) inv. 3rd sg. *-u* (in *esu* 'shall be') < PA **-tu*.

(1) Bugge, 1901: 79ff; Torp, 1901a (ident.); (2) Shevoroshkin apud Neumann, 1974: 113; Laroche, 1979: 103f; (3) Melchert (stem *-nuwe-* more likely extension of weak stem **-nu-* than **-néw-*); (4) Torp, 1898a: 14 (ident.); Pedersen, 1945: 18 (preform) (cf. Torp, 1901b: 11).

/u/ < */Vw/: *xuga-* 'grandfather' < PA **Háwha-*.

Pedersen, 1945: 25f, after Thomsen (ident.); Melchert, after Eichner, 1978: 145¹¹ (phonol.), contra Hamp, 1980: 215.

/e/ < */e/: (1) part. *-te* < PA **-te*; (2) *esu* 'shall be' < PA **ēstu*.

(1) Laroche, 1961: 36 (ident.); Watkins, 1978: 308f (etym.); (2) Torp, 1898a: 14.

The Lycian "umlaut" rule (11.3.3) makes exx. like *esbe-* 'horse' and *esi* 'is' non-probative. For phonol. of all exx. see Melchert (1992c: 49), w/ref. to Pedersen (1945: 33). Cf. also Mittelberger (1964: 59).

/e/ < */o/: (1) conj. *me* < PA **mo*; (2) pret. 3rd sg./pl. *-te/-V(ñ)te* < **-to/-onto*; (3) *-ke* 'also' (also in *ēke* 'when' and *tike* 'some/anyone') < PA **-Ho*; (4) *ñte* 'in(to)' < PA **endo*; (5) dat.-loc. pl. *-e* < PA **-os*.

(1) Thomsen, 1899: 17ff; Hrozný, 1917: 102⁴ (= Hitt. *-ma*); (2) Hrozný, 1917, 383; (1)-(4) Melchert, 1992c: 46; simil. Rasmussen, 1992 (cf. already Pedersen, 1945: 33, and Mittelberger, 1964: 59); (5) Melchert (cf. 6.1.6.3.2.1,1 on Hitt. *-ar*).

/ē/ < */eN/: (1) *ē* 'if' < PA **en* **in*'; (2) *ēnē* 'under' < PA **ānnem*.

(1) Melchert, 1992c: 49¹⁸ w/prior refs.; (2) Laroche, 1958a: 180 (ident.); Melchert after Dunkel, 1990: 168³¹ (preform).

/ē/ < */oN/: (1) anim. acc. sg., nt. nom.-acc. sg. *-ē* < PA **-om*; (2) gen. pl. *-ē* < PA **-om*.

(1) Thomsen, 1899: 46; Hrozný, 1917, 142¹; (2) Melchert, 1992c: 46 (cf. Pedersen, 1945: 37).

/a/ < */a/: (1) pret. 1st sg. *-za/-ga* < PA **-Ha/-ha*; (2) pres. 1st sg. mid. *-zani* < PA **-Ha+*; (3) pret. 1st sg. mid. *-zagā* < PA **-Haha+*; (4) *-xñta* in *tlazñta* 'payment' < PA **H(e)nta* (i.e. **h₂(e)nth₂e*).

(1) Eichner, 1973: 80; Oettinger, 1979a: 571; (2)-(3) Melchert, 1992a: 190ff; (4) Eichner, 1983: 54⁴⁴ (ident. w/Hitt. *hanta*); Melchert, after Hajnal (pers. comm.) & Puhvel, 1991: 94 (preform).

/a/ < */a:/ or */aH/: (1) nt. nom.-acc. pl. *-a* < PA *-ā*; (2) anim. stems in *-a-* < PA fem. stems in **-ā-* (e.g. **zaha-* 'altar'); (3) vbl. suffix *-a-* < PA **-aH-* (in *prñnawa-* 'build' etc.); (4) relat. suff. *-ahe/i-* < PA **-āsso-/ -assi-*.

(1) Meriggi, 1928: 422 & 1936b: 261; (2) Pedersen, 1945: 33; Melchert, 1992c: 48; (3) Melchert, 1993b: v, contra Oettinger, 1979a: 325; (4) Pedersen, 1945: 34; Laroche, 1960a: 160f; Bader, 1988b (contra Mittelberger, 1966: 104, *-e/ah* < **-oso*, but cf. 12.1.6.4.2.1!)).

/a/ < */æ:/ (**eh*₁): (1) *ta-* 'put, place' < PA **dæ-*; (2) *a-* 'do, make' < PA *(*y*)*æ-*; (3) *ha-* 'let go, release' < PA **sæ-*.

(1) Pedersen, 1945: 31; Eichner, 1973: 80 (preform); (2) Pedersen, 1928: 158 (ident.); Melchert, 1984b: 159f & 1989a: 40ff (preform); (3) Melchert, 1989a: 38ff.

/ã/ < */a:N/: anim. acc. sg. in *-a* < PA fem. acc. sg. in **-ām* (e.g. *prñnawa-* '(grave-)house').

Melchert, 1992c: 48.

/ã/ < */[N]: (1) anim. acc. sg. in *-ā* < PA cons. stem acc. sg. **-m* (e.g. *xñtawatā* 'rule'); (2) *pddāt-* 'place' < (virtual) PA **pednt-*; (3) nt. nom.-acc. sg. *-ā* < PA **-ñ* (e.g. in *hrñmā* 'land-section, temenos' < (virtual) PA **s(ε)r-mñ*).

(1)-(2) Melchert, 1992c: 50f (w/much 2ary evidence for cons. stem acc. sg. *-ā*); (3) Melchert after Innocente, 1987/88 (alternation *-ā/-ē* in nom.-acc. sg. of neuters from confusion of *n*-stems in **-ñ* and *o*-stems in **-om*).

11.2 Accent

We have essentially no direct evidence for the distribution of the Lycian accent. We can draw some inferences from secondary effects of the accent (most notably syncope), but the synchronic status of these phenomena is quite uncertain (cf. 12.3), and we cannot be assured that the place of the accent remains the same in attested Lycian. On the other hand, examples such as *Xbidēñhi* (rel. adj. of *Xbidēñn(i)-* 'of Kaunos') are more likely to be neologisms than historical relics. We may infer in this case that the accent of the base *Xbidēñne/i-* was carried over into the derived adjective, thus *Xbidēñnehi-*, producing syncope of the penultimate vowel and *Xbidēñhi*, vs. regular *Xbidēñnéhi* with the productive accent pattern. Thus in the absence of evidence to the contrary we can impute the tentative accent patterns described in 12.2 below to attested Lycian.

11.3 Synchronic Phonological Rules

(1) Consonant Gemination in Clusters

Scholars have long noticed that Lycian frequently shows gemination of the second consonant in a cluster, but no one to my knowledge has offered a coherent account of this phenomenon.

The first step in a possible solution lies in defining the exceptions to the rule. The voiced fricative which results from */w/ after a consonant never undergoes gemination: e.g., *esbe-* 'horse' < PA **ēkwo-*. This suggests that the fricative here remains underlying /w/, and it may be phonetically [v], distinct from /β/ < */b/. Assuming an underlying form /eswe-/ allows us to unite this systematic exception with the other great class of exceptions: the second consonant is never geminated in a cluster of obstruent plus liquid (*epre/i-*, *atla-*, *tukedr(i)-*, etc.). NB: the geminate -ll- in *tllazñta* 'payment, tribute' is underlying (cf. Mil. *kille-* 'idem' and see above under /<k/ in 11.1.1). Other exceptions to the rule are rare and sporadic. Some are undoubtedly careless spellings, while others may be due to other factors (cf. consistent -rt- in the borrowed divine name *Ertemi-/Ertēmi-* vs. the personal name *Erttimeli-*).

Bernabé (1973: 446f) has interpreted a similar phenomenon involving Hittite continuants as spreading across a syllable boundary (see 6.1.6.1.1.2). This explanation is also attractive for much of the Lycian phenomenon. First of all, it accounts for the exceptional status of obstruent + liquid. One may assume that in Lycian, as commonly in IE languages, obstruent+liquid clusters are tautosyllabic: *epre/i-* = [e.pre/i-] etc.. Likewise, the *m* in *ñtēmlē* must be syllable-initial (see 11.1.4.1), and predictably the *l* is simple: [əndē.mlē]. I would add /e.swe-/ > [e.sve-]. Second, Bernabé's account may be immediately extended to all clusters of continuant plus continuant: *Armma-* = [arm.ma-] < /arma-/, *erbbe-* = [erβ.βe-] < /erβe-/, etc.. Note that the rule also applies when the first consonant is functioning as a syllabic: *hrmā* = [h̥m.mā] < /h̥rmā/.

One could conceivably also extend this interpretation to clusters of liquid plus stop: thus *martti* = [mart.ti] < /marti/, although the spreading of the stop across the syllable boundary does not seem as natural as that of continuants. Bernabé's account appears at first glance to fail in the case of obstruent clusters. Reading *astti* as [ast.ti] or *appte* as [apt.te] would be quite forced. However, one should notice that the gemination

also occurs in initial(!) obstruent clusters: *pddē*, *zddaza-*, *httēme/i-*. While such clusters are not necessarily unpronounceable, one could reasonably suppose that they are pronounced with an anaptyctic vowel, hence: [pəð.ðē] < /pðē/, [kəð.ðātsa-], [hət.tē.mi-]. I propose to interpret sequences such as *kṛmi-* in a parallel fashion: [kəm.mi] < /<kmi-/. In a language where original medial */sT/ clusters are reduced (*esi* 'is' < **ésti*), I also find it plausible that *astti* might be realized as [ā.sət.ti] and *Spartaze/i-* as [səp.par.tā.tse/i-]. Obviously, neither the interpretation of *kṛmi-* as underlying /<kmi-/ nor the assumption of anaptyxis is assured, but I believe that they offer a reasonably unified account of Lycian gemination in clusters: all such cases reflect spreading across a syllable boundary. For other geminates see 12.1.6.1 (12).

(2) Anaptyxis. If one accepts the account of consonant gemination in clusters above in (1), then one must also assume a regular anaptyxis in syllable-initial obstruent clusters (see exx. above). Whether one assumes the same for syllable-initial obstruent plus nasal depends on one's interpretation of *CÑNV* as [CəNV] or [CŃNV].

(3) Regressive Vowel Assimilation ("Umlaut"). In early works this phenomenon is misnamed "vowel harmony", but Meriggi (1928: 414) correctly terms it "umlaut". The gist of the rule is given by Neumann (1969: 376) and Laroche (1979: 80f), but they do not in my view go far enough. We may state the rule at the phonological level in very strong terms:

V[-high] > [α back] / __CoV[α back]

The rule operates iteratively right to left within the phonological word (including proclitics). Examples: /nte ta-/ > *ñta ta-* 'put in', /emu/ > *amu* 'I', /ēnahe/i-/ > *ēnehe/i-* 'maternal', /mare/ > *mere* 'laws' (dat. pl.). Note the iterative application in /Armanēne/i-/ > *Erṛmenēne/i-* 'brother of the Moon' (personal name). All exceptions known to me can be ascribed to the effects of analogy within paradigms and among closely related forms. Thus *ladi* 'wife' (dat. sg.) after regular *lada*, *ladā*, *ladāi*, *ladas*, *lada*. Similarly *ēmu/emu* 'I, me' after regular *ēme/i-* 'my'. The pervasive effects of this rule complicate the history of both Lycian vocalism (see Melchert, 1992c: 44f) and consonantism. In general only the vocalism of final syllables reflects regular historical changes, while the distribution of the dorsal stops is conditioned by the umlauted vowels: note e.g. *zawa-* 'sheep' < **Hówa-*, where the secondary *a*-stem (apparently after *wawa-* 'cow') umlauts the expected **e* of the

first syllable to *a*, which in turn leads to *x* from **H* (the regular result before back vowels!).

(4) Sandhi. Since Lycian has only one final consonant (/s/), the following sandhi phenomena all involve vowel sequences at word boundary. The developments are anything but regular. In some cases of the front vowels /e/ and /i/ a hiatus-filling glide /y/ is inserted: *se=atli* > *se(j)=atli*, *qla=ebi* > *qla(j)=ebi*. In other apparently identical situations there is vowel deletion instead, and indeed of either the first or second vowel, without regard to vowel quality: cf. *qla=ebi* > *qlabi* and *qlebi*, *qlahi=ehbijehi* > *qlahibijehi* and *ti=eseri* > *tiseri*, but *qastti=ebi* > *qasttebi*, also *me=ije* > *m=ije* (spelled *mijei*!) beside frequent *me=ije*, *Tlāñni=atru* > *Tlāñn=atru* (spelled *Tlāñnaatru*). The only predictable result is in the case of like vowels: *kbiñni=iprehi* > *kbiñn=iprehi*, *se/me=ē(ne)* > *s/m=ē(ne)*.

11.4 Phonotactics

11.4.1 Consonants

(1) All Lycian consonants appear word-initially except the voiced fricatives /β/ and /ɣ/, /r/ and the glide /y/. The only examples of initial *r-* in Lycian are syllabic [ɾ] produced by aphaeresis: *rñmazata-* 'monthly offering' < *arñma-* 'moon; month', *RKKazumaha* to *A/ErKKazuma-*. This also applies to Milyan *rñpali* and *rbbinezis*. However, Milyan *rinase* and *ripsse-* (a noun) are genuine exceptions to the absence of of word-initial /r-/. The voiced fricative /ð/ unexpectedly does occur word-initially, in which case it is always written as a geminate *dd-* (cf. 12.1.4.1, end). All cases of initial /ð/ must be secondary (cf. 12.1.1.2), but with the possible exception of *ddedi-* neither their source nor the reason for the geminate spelling is yet known.

(2) Lycian in general permits no final consonants except /s/. The apocopated form *httēñ* occurs three times beside *httēmi/httemi* and must be regarded as a genuine variant. Cf. also the peculiar hapax *kduñ*. Whether isolated cases like *zāhb* for *zahba* or *ehb* for *ehbi* are real variants or merely misspellings is impossible to determine.

(3) Initial Consonant Clusters

Lycian apparently permits a wide variety of initial obstruent clusters, including stop plus stop. However, see above 11.3 (1) for the likelihood that these clusters are broken up by

an anaptyctic vowel at the phonetic level. Exx. marked (Mil.) are attested thus far only in Milyan.

Stop + stop: *ptt-*, *ztt-* (& *xttb-*).

Stop + affricate/fricative: *pzz-*, *zzz-*; *xss-* (in the borrowing *xssadrapa-*); *tb-* (Mil.), *kb-*, *xb-*, (& NB *xttb-*); *pdd-*, *tdd-* (and *td-*), *kd-* (lx), *xdd-*.

Affricate + stop: *zzz-*.

Fricative + stop: *spp-*, *stt-* (prob. all in borrowings from Greek!); *hpp-*, *htt-*, *hqq-*.

Fricative + fricative: *hb-*, *sb-*.

Stop + liquid: *pl-*, *pr-*; *tl-*, *tr-*; *ql-*, *qr-* (Mil.); *xl-*, *xr-*.

Affricate + liquid: *zr-* (Mil.: cf. 12.1.6.1,5 below).

Fricative + liquid: *ʃr-*; *hl-* (lx), *hr-* (all Lyc. only); *sl-* (Mil.).

Sonorant + sonorant: *ml-*.

In determining initial consonant clusters I have excluded cases where a sonorant is functioning as a syllabic, such as *pr̥nawa-* = [p̥r̥n.na.wa-], although I interpret this as underlyingly /pr̥nawa-/.

(4) Final Consonant Clusters: none.

(5) Internal Consonant Clusters. For the regular gemination and probable anaptyxis in certain types of clusters see 11.3 (1) above. In cases such as *pr̥nawa-* I assume that *r* = [r̥]; one could also suppose [ər] or the like.

Stop + stop: *-p(p)tt-*.

Stop + affricate: *-zzz-*.

Stop + fricative: *-ppd-*; *-tb-*, *-kb-*.

Stop + liquid: *-pr-*; *-tl-*, *-tr-*; *-xl-* (The lack of *-pl-* and *-xr-* is probably accidental.)

Affricate + liquid: *-zr-*.

Fricative + stop: *-stt-*.

Fricative + fricative: *-hb-*.

Fricative + liquid: *-bl-*, *-br-*; *-dr-*; *-hl-*.

Sonorant + sonorant: *-l̃mm-*; *-r̃mm-*, *-r̃nn-* (lx *-rn-*); *-rll-* (lx *-rl-*).

11.4.2 Vowels

All the Lycian vowels occur freely in both initial and final position. There are no certain cases of vowel-vowel sequences. The spellings *ai* and *ei* are almost certainly diphthongs. I also interpret *āi* and *ēi* as diphthongs with a nasalized first element, but a reading [ā.i] and [ē.i] is certainly possible. The sequence of diphthong plus homorganic glide in forms like *ebeĩja* 'these' (nt. nom.-acc. pl.) is noteworthy and may reflect secondary **-o-iyō-* (cf. Carruba, 1982: 39, & Melchert, 1990: 205).

CHAPTER TWELVE: CHANGES FROM PA TO LYCIAN

12.1 Segmental Phonemes

12.1.1 Stops

12.1.1.1 The voiceless labial and dental stops of PA are generally preserved in Lycian.

Examples:

*/p/ > /p/: (1) PA **piy(V)*- 'give' > *pije*-; (2) PA **pód(o)*- 'foot' > *ped(e)*-; (3) PA **pedóm* 'place' > *pddē* (also in *pddāt*-); (4) PA **ópem* 'behind; afterward' > *epñ*; (5) (virtual) PA **h(V)pēriyé/ó*- 'buy' > *epirije*- (etc.).

*/t/ > /t/: (1) PA **teri*- 'three' > *teri*-/*tri*-; (2) PA **tw(e)k(o)*- 'visible body' > *tuk*- in *tukedr(i)*- 'statue'; (3) PA **TṛHnt*- 'Storm-god' > *Trqqñt*-; (4) PA **dug(a)tr*- 'daughter' > *kbatra*-; (5) PA part. **-te* > *-te*; (6) PA reflexive **-ti* > *-ti* (etc.).

As noted above (1.2.8.2.1 and 11.1.1.1), the voiceless stops of Lycian are realized as voiced after nasals. There are as yet no inherited examples for */mp/ > [mb]. Examples for */nt/ > [nd] include: (1) PA **Hant*- 'front' > *xñt*- in *xñtawa*- 'rule' etc.; (2) PA pres. 3rd pl. **(V)nti* > *-V(ñ)ti* (and likewise PA pret. 3rd pl. **-onto* > *-V(ñ)te*); (3) PA **asnt*- 'being, existing' > *ahñta*- 'property' (simil. ptc. **-nt*- in *lāta*- 'dead').

The "lenition" of PA **p* to pre-Lycian **b* in *pibi(je)*- 'give' is problematic. CLuv. *pipišša*- 'give' (iter.) shows that the development is common to Luvian and Lycian. The problem is compounded by our lack of knowledge about the Lycian accent. However, we would expect the accent in this type to be on the reduplicated syllable (see Melchert, 1984b: 98ff). While the interpretation and derivation of Lyc. *pabra*-/*pabla*- remain uncertain (cf. Carruba, 1969b: 81⁷⁶, and Rosenkranz, 1984: 445), the structure suggests a reduplicated stem with accent on the first syllable and zero-grade of the root: *pá-br*-/*pá-bl*-. Obviously, if this root continues inherited */p/, we would have another example of secondary "lenition" or voicing. A phonological account is complicated by the fact that there is no "lenition" after initial accented syllable in disyllabic words: *epñ* < **ópem*. Rather than restrict the rule to trisyllabic words, I prefer to view this development as

analogical to reduplicated forms of roots with original voiced stop, although we thus far lack a good example of the latter: thus **pipi-* > *pibi-* after **DVDV-* > **TVDV-* (by regular initial devoicing).

Unfortunately for this hypothesis, Lyc. *tideime/i-* 'child, son' is not from a reduplicated present (pace Eichner, 1980: 160 etc.). As shown by the diphthong *-ei-*, it is denominative to a noun **tide-* 'teat' (= Hitt. *tēta-*), seen also in *tidere/i-* 'collocatus' (see Neumann, 1993: 37f). The claim of Rosenkranz (1984: 444) that the voicing is already PIE in such reduplication is quite farfetched.

12.1.1.2 The PA voiced labial and dental stops undergo a three-way conditioned split in Lycian (cf. the similar but necessarily independent development of **/d/* in Lydian, 14.1.1.3): word-initially they are devoiced, after nasals they are preserved as voiced stops, and elsewhere they are weakened to voiced fricatives: cf. Pedersen (1945: 41), Mittelberger (1964: 58), Laroche (1979: 106²¹). The paucity of examples for the labials is surely due to chance.

Examples:

**/b/* > */p/* /#___: PA **bēho-* 'splendor; might' > **pige-* in the name *Pigesere-* (cf. CLuv. *Piḫa-*).

**/b/* > *[b]* /N___: no inherited exx. yet, but cf. the borrowed name Iran. **Rtambara-* > *Arttuṃpara-*.

**/b/* > */β/*: PA **obó-* 'this/that one' > *ebe-*.

**/d/* > */t/* /#___: (1) PA **dāz-* 'put, place' > *ta-*; (2) PA **duw(V)-* 'put, place' > *tuwe-*; (3) (virtual) PA **dideyommo/i-* 'suckling' > *tideime/i-* 'child, son'; (4) prob. PA **dada-* 'father' > *tede/i-* (secondary "i-motion"); (5) PA **dwi-* 'two' > Mil. *tbi-* (first three < PIE **d*^h, last two < PIE **d*).

**/d/* > *[d]* /N___: (1) PA **éndo* 'in(to)' > *ñte*; (2) PA **ñdero/i-* 'lower' > *ētre/i-*.

**/d/* > */ð/*: (1) PA **pód(o)-* 'foot' > *ped(e)-*; (2) PA **pedóm* 'place' > *pddē* (also in *pddāt-*); (3) PA "lenited" pres. 3rd sg. **-di* > *-di* (likewise analogically pret. 3rd sg. **-te* > *-de*); (4) prob. PA **dada-* 'father' > *tede/i-* (secondary "i-motion").

In Lycian (A) only, the dental stop in */dw/ develops to the palatal or front velar spelled as *k*. The only inherited examples are in initial position, where the stop has presumably been devoiced (see Laroche, 1967: 46ff, w/refs.):

PA **dwi*- 'two' > *kbi*- (vs. Mil. *tbi*-); PA **dug(a)tr*- 'daughter' > **duwatr*- > **dwatr*- > *kbatra*-.

In the place name *Xākbi* (Kandyba) and personal name *Ēkuwemi* = *lkkuwemi*- (< Ἐνδομῆς), the stop is surely still voiced after the nasal vowel.

In the face of the clear example **dwi*- > *kbi*-, I cannot accept Carruba's derivation (1974: 585¹² & 594) of *tezi/tezi* 'sarcophagus' (or sim.) from **tweti*.

12.1.1.3 The PA voiceless dorsals remain distinct in Lycian before front vowels (another isogloss with Luvian: see Melchert, 1989a: 24ff). The palatal */k/ becomes /s/ unconditionally. The velar */k/ appears as /<k/ before front vowels, while */k^w/ is fronted to /t/ in Lycian (A). The sound spelled τ probably represents a transition stage in this fronting, perhaps /t^w/. Labiovelar */k^w/ appears as /<k/ in Milyan before front vowels. It is unrounded to /<k/ before rounded vowels in both dialects. The outcome of */k^w/ before */a/ and that of velar */k/ before back vowels in general is not yet clear. While the equation of Mil. *laKra*- and Lyd. *laqrisa*- is quite uncertain (Sevoroškin, 1977: 135), it is noteworthy that all exx. of /K/ are before /a/ or consonant: *alKānalar*, *laKra*-, *mrKKasuwēti* and *mrKKdi*. It is thus quite possible that /K/ represents the labiovelar */k^w/ preserved in this environment (the absence in Lycian A would be due to the rarity of **k^wa/k^wC* in PA). Based on the behavior of PA **H* (see below), the treatment of **k* probably depends on pre-Lycian, not inherited, front and back vowels (cf. 11.3.3).

Examples:

*/k/ > /s/: (1) PA **ēkwo*- 'horse' > *esbe*-; (2) PA **kē*- 'lie' > *si*-; (3) prob. PA *-(d)k(o)mt- 'decad' > -sñt- (in *kbiñtāta* 'twelve' or 'twenty'). Cf. also PA iter. **-ske/o*- > -s- and PA adj. suffix **-(s)ko*- > -is(e)-; (4) PA **k^wi(s)ke/o* > *tise* 'anyone' (= Hitt. *kuiški*).

I cannot accept the analysis by Neumann (1991b) of the place-name *Αρυκανδᾶ* as **Aru(w)-ak-anda*, with alleged **ak*- 'rock, crag' < **ak*-.

* /k/ > /<k/: (1) PA **tw(e)k(o)-* 'visible body' > **tuk-* in *tukedr(i)-* 'statue'; (2) perh. PA **kato* 'down' > *kete* 'according to'(?); (3) prob. PA **kummo-* 'sacred' > **kume-* (in *kumehe/i-* etc.).

* /k^w/ > /t/ /__ *e/i (Lycian only!): (1) PA **k^wi-* 'who, which' > *ti-* (also in *tike* and *tibe*); (2) (virtual) PA **k^weli* > *teli* 'where'; (3) prob. (virtual) PA **k^wi-k^wi-* 'pay, requite' > *t_{ti}i-* (also in *t_{tl}(e)i-* 'idem').

* /k^w/ > /<k/ /__ V[round]: (virtual) PA **k^wommó/i-* 'how/as many' > *k_{m̄}me/i-* (also in *k_{m̄}mēt(i)-* 'idem'). Cf. also perh. Mil. *kudi* 'with which'.

* /k^w/ > /<k/ /__ V[front] (Milyan only!): (1) PA **k^wi-* 'who, which' > *ki-* in *kibe* 'or' and prob. directly in pretonic *ki-* 'who, which'; (2) prob. PA **k^wi-* 'pay, requite' > *ki-* in *kiki-* 'pay, requite', *kille-* 'payment, tribute' and *k_{lle}ima* 'idem' (last = ptc. of **k_{ll}(e)i-* 'pay' = Lyc. *t_{tl}(e)i-*).

12.1.1.4 Lycian apparently shares the same development of voiced dorsals as Luvian. For reasons discussed above (10.1.1.4), I now doubt a general unconditioned loss. I must emphasize, however, that our only example thus far for preserved */ġ/ or */g/ in Lycian is quite dubious.

* /ġ/ > *[y] /__ V[front]: (1) PA **ġesr-* 'hand' > **yesr-* > **yisr-* > *izr-*; (2) PA **ġēmro-* 'field, open country' > **ipre-* in name **Ip_{re}-side/i-* (via **(y)imre-* and **impre-*); (3) prob. PA **Ha/olġi-* 'grain; barley' > **Qeli-* in *Qelehi-* 'of the grain-god' (see refs. under /<k/ in 11.1.1). First two exx. < PIE **ġ^h*, last prob. < **ġ*.

* /g/ > ∅ medially: PA **dug(a)tr-* 'daughter' > *kbatra-* (via **duwat_r-* and **dwat_r-*). Whether the anaptyctic *a* is PA or pre-Lycian is indeterminate.

* /g/ > />k/ /#__ V[+back] (??): perh. PA **gúpā-* 'cave, hole' > *xupa-* 'tomb'.

The resemblance to Grk. γυπή 'hole, lair' is very striking, and an early borrowing before initial devoicing in Lycian cannot be excluded.

* /g^w/ > /w/: PA **g^wow-* 'cow' > *wawa-* (on the *a-* stem see 12.1.5.3). Lack of an example for PIE **g^{wh}* is surely accidental.

12.1.2 Affricate

The PA affricate *[ts] (allophone of */t/ before */y/) is preserved in Lycian. The loss of the conditioning */y/ makes /ts/ contrastive with /t/. Example: PA adj. suffix *-t_{syo}- (/ -tyo-/) > Lyc. -z- in neuter and oblique case forms of "ethnic" suffix -ze/i-: hrzzē 'upper' and przzē 'front' (nt. nom.-acc. sg.), przze 'front' (dat. pl.), Pttarazē 'of the Patarans' (gen. pl.). The -i- of the animate nom. and acc. reflect "i-motion" < *-ī- (*-ih₂): see Starke (1990: 68); false Melchert (1987a: 192 & 1992c: 46).

12.1.3 Fricatives

12.1.3.1 PA */s/ is generally preserved in Milyan, but regularly becomes /h/ in Lycian. */s/ is preserved in Lycian in internal clusters with following obstruent. Compare the treatment of Carruba (1978a: 169ff), but I see no justification for his claim that *s- is preserved before *m̃* and *ñ* (*sñta* is not 'one', pace Carruba, 1974: 586ff).

Examples:

* /s/ > /h/: (1) PA *sæ- 'let go' > ha-; (2) PA *seri 'above' > hri (also in hrppi and hrzze/i-); (3) (virtual) PA *sermñ 'land-section' > hrñmā; (4) PA *as- 'be' (weak stem) > ah- in ahñta- 'property' < *'existing'; (5) PA *Ha/ossā- 'hearth, altar' > *zaha-; (6) (virtual) PA *Honsu+ 'descendant' > zahba- 'grandchild'.

For the preservation of */s/ in Milyan cf. Mil. *tbis*u = Lyc. *kbih*u 'twice' or rel. suffix -ase/i- = Lyc. -ahe/i-.

* /-sT-/ > /s/: (1) PA *ésti/estu 'is, shall be' > esi/esu; (2) PA *-ske/o- > -s-; (3) perh. PA *-isko- > -is(e)- (but simply *-iko- > -is(e)- also possible). See Pedersen (1945: 18&27) and Laroche (1967: 62).

The result of initial PA *sT- is quite uncertain. Some attested examples of sT- are patently borrowings from Greek, and all could be: *Spartaze/i*- 'Spartan', *sppñtaza*- *'libation priest' (or simil., attested as name), *stta*- 'stand, be placed standing', *sttala*- 'stele'. Neumann (1983a: 147) has proposed that *esi-tñmāta*- is a compound name 'he shall be renowned', in which -tñmāta- equals CLuv. *tūmmant*- 'ear; hearing' < *st,mñt- (cf. Oettinger, 1982a: 235 and 4.1.3.3.2,4). However, the interpretation of obstruent clusters suggested above (11.3.1) also raises the possibility that initial *h*pp-, *ht*t-, and *h*qq- (i.e.

[həT.T-] continue **sT-* (with anaptyctic vowel early enough to permit regular **/s/ > /h/*). E.g., *hpprīterus-* (a title) could contain the inherited form of **spond-* 'libate' (so Carruba, 1978a: 169). Loss of the */h/* in the compound *esi-tīmāta-* would be expected, since Lycian does not have internal */-hC-/* clusters. One would expect by this account to find inherited **sT-* in Milyan, and note the attested (though quite unclear) *sttrmī-*. Only a more secure etymology for cases of initial */hTT-/* can settle the issue.

Cf. 12.1.6.1 (5), (8) and (9) for special developments of **/s/* next to sonorants and also 12.1.6.4.1.

It is impossible to determine the fate of the rare PA allophone **[z]* in Lycian.

12.1.3.2 PA **/h/* resulting from the "lenition" of **h₂* (see 4.1.3.2.1) is regularly preserved medially in Lycian as */x/*, but one should note that all examples are before back vowel. PA initial **/h/ < *h₂* (3.1.5) is lost in Lycian (see Kimball, 1983: 130 & 1987a). Examples:

**/h/ > /x/ /X__Y:* (1) PA pret. 1st sg. **-ha > -ga*;
(2) PA **Hawha-* 'grandfather' *> xuga-*; (3) PA pret. 1st sg. mid. **-Haha+ > -xagā*.

**/h/ > ∅ /#__:* (1) (virtual) PA **h(V)pērye/o-* 'sell' *> epirije-*; (2) (virtual) PA **h(V)penentiyaH-* 'act as seller' *> epenētiya-*.

The personal name *Xerēi* cannot mean 'eagle' and reflect PA **hóron+*, pace Starke (1987: 265⁸⁰ and 1990: 76). There is no rule deleting **n* in a final syllable **Vn:*: cf. *ēne/i-* 'mother', *nēne/i-* 'brother', etc. (cf. Carruba, 1970b: 38²⁴). Likewise false Neumann (1983a: 146 & 1983b: 130): *-ēi < dimin. *-anni-*. Names in *-ēi* are extensions, probably with the "motion-*i*" (Starke, 1990: 65ff), of names in *-ē* (e.g. *Xudaliž < Xudali*). The latter in turn most plausibly contain the "individualizing" suffix **-e/on* of Grk. Στράβων or Lat. *Cato* (cf. Pedersen, 1945: 37). I cannot follow Carruba (1977: 291). Contra Heubeck (1988: 77), *tuhēi* 'nephew' is also nominative singular (with Eichner, 1993: 242), not nominative plural, and is to be derived like the personal names.

PA **/H/* appears as one of the three dorsal stops *k*, *q*, and *x* (for the last as a synchronic stop see 1.2.8.2.1). While there is general agreement that such a split takes place, there is no unanimity on the conditioning for it, nor on the synchronic value of the stops. I assume that *x* is the regular outcome, with fronting to *q* before front vowels and further to *k*

between(!) front vowels: cf. the similar analysis of Ševoroškin (1977: 132 & 1979: 179⁶), but see also the different formulation of Laroche (1979: 84) and the very divergent views of Rasmussen (1974: 53ff).

The most controversial matter is the phonetic value of *q*. None of the alleged evidence for a labiovelar articulation can withstand scrutiny. First, contra Meriggi (1926: 2) et al., the sequence *-mq-* in Milyan (*(t)mqri* etc. proves nothing, as pointed out by Pedersen (1945: 46). Since all examples belong to a single base morpheme, the attested sequence may easily be due to syncope of an earlier **(t)mVqr-*. Second, none of the examples adduced by Rasmussen for a PIE labialized laryngeal is compelling. This leaves only the name of the Storm-god, Lyc. *Trqqas* (oblique *Trqqñt-*) and Mil. *Trqqiz* as support for a labial element in *q*. The apparent equation with Luvian *Tarhunt-* and the renderings in Greek letters such as Τροκουνδος do seem to argue for *q* < **-h₂w-*. However, Starke (1990: 141) points out the personal name Τερκουνδος, with no trace of rounding, attested from the border territory of Lycia-Pisidia. This variant, then, may reflect Lycian **Trqqāt-*, not Τροκουνδας or Τερκουνδας (cf. Zgusta, 1964: 487ff). Therefore I follow Starke and already Gusmani (1964b: 43) and Oettinger (1979a: 222 with note 88) in deriving the Lycian and Milyan forms from an ablauting paradigm **trh₂ént-/trh₂ñt-*. That PA possessed both **terh₂-* and **terh₂w-* is made likely by Hitt. *tarḫ-* beside *tarḫu-/taruḫ-*. This derivation permits a unified treatment of *q* as a mid velar which results in all clear cases from the fronting of **h₂* before front vowels. As justly emphasized by Shevoroshkin (1977: 132), this pattern of distribution is much clearer in Milyan than in Lycian, where the prominence of the obscure *qa-* misleads.

/H/ > /<k/ / V[front]___V[front]:* PA conj. **-Ho* (-h₂o*) 'and' > *-ke* (also in *tike* 'some/anyone' < PA **k^wis/n-* *Ho* = Hitt. *kuišša/kuinna* and CLuv. *kuišḫa/kuinḫa* and in *ēke* 'when' < PA **én-Ho* = CLuv. *āḫḫa*). The generalization of the fronted treatment in *-ke* would be due to the overwhelming preponderance of front-vowel endings in Lycian. Contra Oettinger (1983: 185¹⁹), *-ke* cannot reflect **-k^we*, which could give only **-te* in Lycian.

**/H/ > /<k/ /___V[front]:* (1) prob. PA **Hilā-* 'courtyard' > *qla-* 'precinct' (= Hitt. *ḫila-* 'courtyard'); (2) prob. PA **Ha/olgi-* 'barley; grain' > **Qeli-* in *Qelehi-* 'of the grain-god' (= Hitt. *balki-*); (3) PA **trH-ént-s/*trH-ñt-* 'Storm-god' > Lyc. *Trqqas/Trqqñt-*, Mil. *Trqqiz/Trqqñt-*; (4) prob. Mil. *qñtili-* 'first' (or pers. name) < (virtual PA

**Hantili*-); (5) prob. PA **Honso*- > Mil. (*epe*)-*qzzV*- 'descendant' via **qēze*- (Shevoroshkin, 1977: 131); (6) prob. (virtual) PA **Habeliyā*- *'of the river' (fem.) > Lyc. *Qebeliya* (river goddess) (Neumann, 1974: 109², but cf. Lebrun, 1987: 157).

In the name of the 'Storm-god', Mil. *Trqqiz* is the perfectly regular result of **trH-ént-s*, with **-ents* > **-ēts* > *-iz* and fronting of **H* to *q* before front vowel. The regular result of the weak stem **trHnt*- would have been **trzzāt*-. The regular Lycian results would have been nom. sg. **trqqis*, obl. **trzzāt*-. The attested paradigm has generalized the consonantism of the nominative and the vocalism of the weak stem (loss of the nasalization in *Trqqas* is of course regular: cf. anim. acc. pl. **-Vns* > *-Va*). Thereafter the weak stem was syncope to attested *Trqqūt*-.

The meaning of Mil. *qñtili*- is unfortunately much less certain than claimed by Shevoroshkin (1979: 178), but the resemblance to CLuv. *hantili*- 'first' (also a personal name in Hittite texts) is striking. Note that if the equation of *qñtili*- and *hantili*- were to be confirmed, it would eliminate the possibility that *q* is labialized, since *qñtili*- would represent **Hantili*- just as *ñtawā*- etc. reflects **Hantowā*-, the different outcomes of **H* being due to the differing vocalism produced by the Lycian umlaut rule. While none of the etymologies listed above is absolutely compelling (other than that for the Storm-god, which is the point of controversy), I find them in aggregate strongly suggestive of the interpretation offered here. Compare the balanced and cautious discussion by Carruba (1978a: 168).

/H/* > */>k/* / *___V[back]*: (1) PA **Hant*- 'front' > *ñt*- in *ñtawā*- 'rule' etc.; (2) PA **HowV*- 'sheep' > *zawā*- (*a*-stem after *wawā*- 'cow?'); (3) PA **Ha/ossā*- 'hearth, altar' > **zaha*-; (4) (virtual) PA **Honsu*- 'descendant' > *zahba*- (*w/2ary* shift to *a*-stems); (5) PA pret. 1st sg. **-Ha* (-h₂e*) > *-za*; (6) PA **Hawha*- 'grandfather' > *zuga*- (NB also *zuzā*- in name *Epñzuzā*- with repeated identical consonant by productive pattern of Lallwörter!).

PA **/H/* is lost before **/y/* with compensatory lengthening: **-áHye/o-* > *-a-/-ai-* (cf. 12.1.5.3 and 12.1.6.3.4).

12.1.4 Sonorants

12.1.4.1

The non-syllabic sonorants are generally stable in Lycian. Final nasals are lost with nasalization of the preceding vowel (12.1.6.4.1), and **/Vn/* likewise becomes regularly **/Ṽ/*

before stop (cf. the same change in Lydian, 14.1.4.2, and already the tendency in Hittite and Luvian, 6.1.4.1.3 and 10.1.6.1.4.,5). The fate of labial nasal plus stop is uncertain (cf. 12.1.6.1 (7) bnt also 6.1.6.1.3.1,8). The nasalized vowel before stop occasionally loses its nasalization (imv. 3rd pl. *tātu* and *tatu*, etc.). Contra Carruba (1969b: 76f & 1977: 291), Laroche (1979: 82 et aliter), and Mazoyer (1992: 126), there is no change of **Vn* to **Ṽi*: see Melchert (1992c: 4918). Note the development of **w/* to a fricative [v] after consonant. There is also no loss of **/n/* in a sequence **/-Vni/*: see 12.1.3.2, note, for discussion and references.

Examples:

**/m/ > /m/*: (1) PA **emú* 'me' > *amu/ēmu/emu* 'I, me'; (2) PA conj. **mo* > *me*; (3) (virtual) PA **s(e)rm̃* 'land-section' > *hr̃m̃mā*.

**/n/ > /n/*: (1) PA proh. neg. **nē* > *nī*; (2) PA **ne* 'not' > *ne*; (3) PA **ānnem* 'under, below' > *ēnē*.

**/Vnt/ > /Ṽt/ ([Ṽd])*: (1) PA pres. 3rd pl. **-é/ónti* > *-Ṽti*; (2) PA pret. 3rd pl. **-onto* > *-Ṽte*.

**/r/ > /r/*: (1) PA **seri* 'above' > *hri*; (2) PA **dug(a)tr-* 'daughter' > *kbatra-*; (3) PA **teri-* 'three' > *teri-/tri-*; (4) (virtual) PA **arowā-* 'freedom' > *arawa-*.

**/l/ > /l/*: (1) (virtual) PA **wlāH-* 'die' > *la-*; (2) prob. PA **Hilā-* 'courtyard' > *qla-* 'precinct'; (3) prob. PA **Ha/olgi-* 'grain; barley' > **Qeli-* in *Qelehi-* 'of the grain-god'; (4) (virtual) PA **lā/ōdā-* 'wife' > *lada-*.

**/w/ > /w/*: (1) (virtual) PA **arowā-* 'freedom' > *arawa-*; (2) PA **gʷow+* 'cow' > *wawa-*; (3) (virtual) PA **duw(V)-* 'put, place' > *tuwe-*.

**/w/ > [v] /C_*: (1) PA **ekwo-* 'horse' > *esbe-*; (2) PA **dwi-* 'two' > *kbi-* 'two; other' (= Mil. *tbi-*); (3) PA **dug(a)tr-* 'daughter' > **duwatr-* > **dwatr-* > *kbatra-*; (4) (virtual) PA **Honsu-* 'descendant' > 2ary **Honswa-* > *zahba-*.

I am not persuaded by the claim by Carruba (1974: 589f) of a conditioned change **wm* > *pm*.

**/y/ > /y/*: (1) PA **piyV-* 'give' > *pije-*; (2) PA adj. suff. **-iyo-* > *-ije-*.

* /y/ > Ø / C__ V: PA *-tyo- > -ze- (Mittelberger, 1964: 61, et al., contra Melchert, 1992c: 46).

The lack of inherited examples of initial /w/ is surely accidental (note Mil. *wis(e)i-* = CLuv. *wiš(a)i-* '(op)press'). The absence of initial /y/ may well be systematic. Since PA */d/ is devoiced to /t/ in Lycian in word-initial position, the few examples of initial /ð/ (regularly spelled as geminate *dd-*) must have some other source. While I can offer no concrete examples, one should consider the possibility that initial */y/ becomes Lycian /ð/ (cf. the similar general development in Lydian, 14.1.4.8). That graphic initial *dd-* = *ñt-* ([d-]), as per Carruba (1969b: 30f) seems implausible.

12.1.4.2 There is direct evidence for syllabic **ŋ* to Lycian /ã/ in the neuter *n*-stem *hrm̃mā* 'land-section, temenos' < (virtual) PA **s(e)r-m̃* 'division'. Likewise surely *zum̃mā* '?, despite the lack of root etymology. The alternate form *zum̃mē* is due to confusion with the neuter *o*-stems like *pddē* 'place' < PA **pedóm*, as well as unattested oblique **zum̃mēn-* (cf. the attested 2ary dat. pl. *pddēne* 'places'). The *e*-vocalism of the oblique stem may reflect directly inherited **-mén-* in a proterokinetic paradigm, which also is the likely source of the oxytone accent (cf. 12.1.6.3.1,2). However, it may also be due to umlaut by endings like *-i* and *-e*.

The consonant-stem anim. acc. sg. ending **-m̃* is directly continued by *-ā* in *ñtawatā* 'rule, kingship' < (virtual) PA **Hantowotm̃* (cf. for the suffix Hitt. *-att-*). This ending is indirectly reflected in the fact that consonant stems in Lycian secondarily become *a*-stems, starting from anim. acc. sg. **-ā* < **-m̃*: verbal abstracts *pijata-* 'gift' and *zata-* 'tribute' also < **-ot-*; *ahñta-* 'property' < **'existing'* and *lāta-* 'dead' from participles in **-nt-*; *mahāna-* 'god' from an *n*-stem (see Eichner, 1974: 64); perh. also *kbatra-* 'daughter' (although the *a*-stem here could be due to other feminine nouns in *-a*). The original diphthongal stem **g^wow-* 'cow' and the *u*-stem **Honsu-* 'descendant' also secondarily become *a*-stems, presumably due to the pattern of oblique cases in **-wV* (such as dat. pl. *zahbe*): i.e., oblique *-CV*: acc. sg. *-Cā̃*: oblique *-wV*: x (---> *-wā̃*). Note that there are no attested *u*-stems in Lycian.

Since both **eN* and **oN* lead to Lycian /ē/ (see below 12.1.5.1), the /ã/ of *pddāt-* 'place' must also continue a zero-grade **-ñt-*: cf. HLuv. dat.-loc. sg. *pi-ta-ñti*. The *a*-vocalism of nom. sg. *Trqqas* 'Storm-god' must also indirectly

continue the zero-grade suffix of the oblique stem: **tṛH-nt-* > **trzzāt-* (in attested dat. sg. *Trqqūti* the *ā* has undergone syncope). Cf. above 12.1.3.2 for further details. Compare also probably *-tīmāt-* 'renown' < **(s)t.mnt-* (12.1.3.1). In *ēti* 'under; down', probably from PA **ṇdi* (i.e. **ṇd^{hi}*), pre-Lycian **āti* has become *ēti* by the umlaut rule (11.3.,3). Lyc. *ētre/i-* 'lower' and HLuv. **antara-* 'idem' continue **ṇd^(h)ero-* (= Skt. *ādharma-*), likewise with umlaut (with Meriggi, 1980a: 253).

It is impossible to determine whether the PA syllabic liquids likewise regularly developed to /aR/ and /al/, because the only sure examples are in syncope environments. The *r* of *Trqqūt-* etc. is not direct evidence for **ṛ*, contra Kimball (1986: 90f). Thus attested *prīnawa-* '(grave)-house' could reflect directly preserved PA **prn-* or syncopated **parn-* (for syncope here see 12.1.6.3.1,2). The names *Arssāma-* < Ir. **Ršāma* and *Arttūmpara* < **Rtambara* would seem to support the idea that inherited **ṛ* > /ar/, but cf. *Widrīna-* < *Vidṛna* and even *Z/Kisaprīna-* < **Çicafarnā*. In **k^wṛsāun-* > *krzzān(ase)-* 'peninsula', one may assume **ṛ* > **ur* after **k^w*, then delabialization of the latter to *k-*, and finally syncope.

12.1.5 Vowels

12.1.5.1 Lycian differs from Hittite, Palaic and Luvian in that it reduces the five short vowels of PA to four by merging **o/* with */e/* instead of with */a/*: see Melchert (1992c) with refs. (to which add Snoj, 1984: 467) and Rasmussen (1992). This development is largely obscured in non-final syllables by the Lycian umlaut rule: see above 11.3 (3). For this reason most examples given below for the non-high vowels are in final syllables, and many apparently obvious examples are omitted as non-probative (e.g. *ped(e)-* 'foot' < PA **pod(o)-*, because the only attested form is abl.-inst. *pededi*, where the *e*-vocalism could be due to umlaut by the final *-i*). Lycian shares with Luvian and Lydian the special raising of PA **e/* to */i/* after */y/* (including */y/* < **/ġ/* before front vowel): cf. above 12.1.1.3.

Examples:

PA **i/* > */i/*: (1) PA **k^wi-* 'who, which' > *ti-* (also in *tike* 'some/anyone' and *tibe* 'or'); (2) PA **dwi-* 'two' > *kbi-* 'two; other'; (3) PA **seri* 'above' > *hri* (+ many more exx.).

PA **u/* > */u/*: (1) PA **emú* 'me' > *amu/ēmu/emu* 'I, me'; (2) (virtual) PA **utsV-* 'year' > *uh(V)-*; (3) PA vbl. suff. **-nu-* > *-nu-* in *qanu(we)-*.

PA */e/ > /e/: (1) PA part. *-te > -te; (2) PA *né 'not' > ne; (3) PA *estu 'shall be' > esu (but could be analogical to esi!).

PA */e/ > /i/ / *y__ : (1) PA *gesr- 'hand' > *yesr- > izr-; (2) PA *gemro- 'field, open country' > *yemro- > *imre- > *impre- > *ipre- (in name *Ipre-side/i-*); (3) PA vbl. suff. *-ye- > -i- (*sernite, qehñnite*, etc.).

PA */o/ > /e/: (1) PA conj. *-mo > me; (2) PA conj. *-Ho 'also' > -ke (also in *tike* and *ēke*); (3) PA *endo 'in(to)' > ñte; (4) PA pret. 3rd sg./pl. *-to/-onto > -te/-Ŵte.

PA */eN/ > /ē/: (1) PA *en 'in' > ē 'if'; (2) PA *ánnem > ēñē.

PA */oN/ > /ē/: (1) PA nt. nom.-acc. sg., anim. acc. sg. *-om > -ē; (2) PA gen. pl. *-om > -ē.

PA */a/ > /a/: (1) PA pret. 1st sg. *-Ha > -za; (2) PA pres. 1st sg. mid. *-Ha+ > -xani; (3) PA pret. 1st sg. mid. *-Haha+ > -zagā.

All certain cases of PA */aN/ happen to undergo umlaut (*ámmo/i- 'my' > ēme/i-, *ámma- 'mother' > ēne/i- (w/2ary "i-motion"), *ánnem 'under, below' > ēñē) or syncope (PA *Hant- 'front' > zñt- in *zñtawa-* 'rule' etc.), but note pret. 1st sg. -zā/-gā < PA *-Ha/-ha w/2ary nasalization and also -zagā above. Notice that the above examples falsify the claim that short *ā appears in Lycian as e (Oettinger, 1986b: 53).

12.1.5.2 PA long */e:/, secondary long *[e:] by compensatory lengthening, and PA */e/ all apparently yield Lycian /i/. PA long */a:/ leads to Lycian /a/. The open long */æ:/ < *eh₁ is lowered to /a/, as in Lydian and Luvian. There are no examples for */i:/ and */u:/, but there is no reason to expect that they would appear as anything except respective /i/ and /u/. Good evidence for PA */o/ is lacking, but despite my objection (Melchert, 1989c: 6) stems in -us- like *arus-* could reflect *-ōs < *-ont-s w/generalization of the nom. sg. as the stem: thus implicitly Laroche (1979: 103). The raising of *[o:] to /u/ would of course be completely parallel to that of *[e:] to /i/.

Examples:

**/e:/* > */i:/*: (1) PA proh. neg. **nē* > *nī*; (2) (virtual) PA **h(V)pēriye/o-* 'sell' > *epiriye-*; (3) PA **bēho-* 'splendor' > **pige-* (in names); (4) PA nom. sg. **tṛHent-s* 'Storm-god' > **trqqēts* > Mil. *Trqqiz*.

**/e:/* > */i:/*: PA **kē-* 'lie' > *si-*.

See also below under **/oy/*.

**/a:/* > */a:/*: (1) PA nt. nom.-acc. pl. **-ā* > *-a*; (2) PA fem. stems in **-ā-* > *-a-* (in **xaha-* 'hearth', *prñnawa-* '(grave-)house', etc.); (3) PA vbl. suff. **-aH-* > **-ā-* > *-a-* (in *prñnawa-* 'build', etc.).

**/a:N/* > */ā:/*: PA fem. acc. sg. **-ām* > *-ā* (in *prñnawā* '(grave-)house', etc.).

**/æ:/* > */a:/*: (1) PA **dæ-* 'put, place' > *ta-*; (2) PA **sæ-* 'release' > *ha-*; (3) PA **æ-* (< PIE **yeh₁-*) 'do, make' > *a-*.

12.1.5.3 What examples we have show monophthongization of PA short diphthongs to */i/* and */u/*, but evidence is very limited. PA long **/a:w/* becomes */a/*. Secondary **/a:y/* likewise leads to */a/*, so we may probably assume the same for PA **/a:y/*. Given the merger of **/o/* with */e/*, not */a/*, we may not safely assume that **/o:w/* and **/o:y/* behaved like those with long *a*-vocalism, but their results are quite uncertain. Examples:

**/oy/* > */i:/*: PA **woyséye/o-* '(op)press' > Mil. *wis(e)i-* (= CLuv. *wiši-/wišai-*).

Lycian *-i* 'to him, her' could reflect either PA **-soy* (with loss of *h* in enclisis) or PA **-ē* (i.e. **-ey*) (for the 2nd see Thomsen, 1899: 49). *side/i-* 'man' (at least in *Ipreside/i-* = *Im(ma)razita/i-*, as per Carruba, 1980: 275ff) can represent PA **kēdo-* or **kōydo-* (i.e. **ké/ōyto-*): see Gusmani (1987/88: 109 & 1992: 26).

**/aw/* > */u/*: PA **Hawho-* 'grandfather' > *xuga-* (*a*-stem secondary).

**/a:w/* > */a/*: PA **kṛsāwn+* 'cutting' > *krzzānase-* 'peninsula'.

This example appears as nasalized /ã/ because of the following nasal. The stem *wawa-* 'cow' reflects **g^wow+V-*, but the *a*-stem is unexpected. Instead of the analogical explanation given in 12.1.4.2, one could consider the suggestion of Zinko (1988: 51⁸⁶) that the *a*-stem is taken from a lengthened-grade nom. sg. **g^wōw* which gave regularly **wa*. Contra Zinko, however, *uwa-* is syncopated from *wawa-*.

**/a:y/ > /a:/*: PA **-áHye-* > pre-Lycian **-āyi-* > **-āy-* > *-a-* (e.g. in *xttadi* 'harms'). Cf. 12.1.3 (end), 12.1.5.1 and 12.1.6.3.4.

**/o:y/ > */e:y/ > /e/(?)*: perh. conj. **so/mo+oy* (nt. nom.-acc. pl.) > *se/me* (see Garrett, 1992: 203). Cf. also pres. 3rd sg. *pije* (= HLuv. *pi-ya-i*) < virtual **piye/o-ei* ("thematization" < 3rd pl.). This development is far from assured!

12.1.6 Special Developments

12.1.6.1 Consonant Clusters

The very limited evidence leaves most questions about inherited clusters unanswered. We can note the following:

(1) The sense 'seize' for Lyc. *ap(p)-* and comparison with Hitt. *ēpp-/app-* are hard to resist (Starke, 1990: 320). The pres. 3rd sg. *ap[p]di* (or *ap[d]di*) with "lenited" ending suggests that Lycian shares the development of stop clusters shown by Luvian (10.1.6.2.3.2): anaptyctic vowel and voicing of the now intervocalic second stop when between unaccented vowels: PA **ēpti* > **ēpati* > **ēpadi*. The subsequent Lycian penultimate syncope rule then deletes the anaptyctic vowel: **ēppdi/epddi*. The lack of "lenition" in the pret. 3rd sg. *apptte* reflects the secondary nature of the ending, which reflects a medial ending **-to* (Yoshida, 1993: 33f). The *a*-vocalism of attested *app-* is not the regular outcome of **ēC-* in Lycian: cf. PA **ēsti/u* > *esi/esu* and **bēho-* > **pige-*. The *a*-vocalism must be generalized from the weak stem, where e.g. pres. 3rd pl. **ēpnti* > **ēpāti* > **āpāti* > **apnti* (umlaut and syncope). The geminate *-pp-* in *apptte* is unexpected. We would expect the second consonant in the pres. 3rd singular to be geminate, and *ap[d]di* is epigraphically as possible as the usually read *ap[p]di*. Thus the status of the geminate *-pp-* remains unclear.

If *ait-* 'eight' reflects **ōkt-*, as seems likely (Meriggi, 1936a: 268), then the specially conditioned change **kt > yt* obviously must precede both the general anaptyxis in medial stop clusters and the regular change of **k* to *s*.

(2) PA */-ts-/ is simplified to */s/ > Lyc. -h-: (virtual) PA *utsV- 'year' > Lyc. *uh(V)-* (= CLuv. *uṣṣa/i-*; NB the geminate): thus with Laroche (1979: 104). If my very tentative derivation (Melchert, 1989c: 88) of Lyc. *za-* 'allotment, portion' etc. < (virtual) **dhh₁skēh₂-* is correct (cf. Hitt. iter. *z(ik)ke-* 'put'), then here an initial */tsk-/ yields *z* (/ts/). Worthy of consideration is Bader's derivation (1982: 105&140) of *se* 'and' < **g^hse* (but with much dubious material). For an alternate explanation of *se* see Carruba (1969b: 65). Note also perhaps *tese/i-* 'oath, pledge' < **dōkso-* (cf. *τουξομινδους* = *tesī mindi*, as per Laroche, 1974: 129, after Imbert, 1898: 216; also independently Carruba, 1969b: 86⁸⁶).

(3) Lyc. *tri-* 'three' would appear to preserve old */tr-/, but the interpretation of *terihe* as a form of 'three' (Eichner, 1993) suggests that the anaptyxis here is PA (cf. Hitt. *tēri-* and CLuv. *tariyanalla/i-* and 4.1.6.2.2,1), while *tri-* would show a later syncope (cf. *hri* < **seri* as per Laroche, 1958a: 180). However, *pri* probably does show */pr-/ (cf. Hitt. *p(a)rā* 'in front; forth' < **prō*). The internal /-tr-/ of *atra-/atla-* 'self' is shared with Luvian (cf. HLuv. *a-tara/i-* 'image'), but the PA and PIE origins of this word are unclear (cf. 10.1.6.1.5,2).

(4) On clusters of */s/ plus obstruent see above 12.1.3.1.

(5) We find graphic -zr- for original *-sr- in *izr-* 'hand' and **mizre-* 'bright, shining' (in the name *Mizretiye-*, as per Neumann, 1983b: 131 and Carruba, 1990: 248f). Likewise, in Milyan secondary *-sn- yields -zn-: acc. sg. -*izñ* < *-*isñ* < *-*isom* < *-*i(s)kom* (Melchert, 1989a: 299ff). One may probably add Mil. *zri-* 'upper' < **sri-* < **seri-* (Bugge, 1901: 75, and Pedersen, 1933: 181).

Gusmani (1964b: 48 & 1992: 227) and Oettinger (1976/77: 132⁸) interpret this as voicing of /s/ to [z] before sonorant. This is phonetically plausible, but Greek evidence (*Σεσκως* for *Zisqqa-*, *Μεσος* for *Mizu-*, etc.) points without exception to a voiceless quality for Lycian *z*, which is consistent with the well established value of *z* as a voiceless affricate [ts] (cf. 12.1.2 and 12.1.6.4.1). Furthermore, Lyc. **mizre-* matches HLuv. **mi-za-ra/i-* < **misro-* 'bright' (Carruba, 1990: 248f; cf. 10.1.6.1.6,3). A voiced fricative [z] is even less likely for the HLuvian *zV* series. I am therefore reluctant to assume a double use of *z* as [z] and [ts]. Given other evidence for affrication of */s/ to [ts] before consonant (6.1.3.1, end and 7.1.2,2), I prefer to assume an affricate also in Lycian **sR* >

zR, but the phonetic motivation is quite unclear, and the correct interpretation remains uncertain.

We find initial */sl-/ in *hl̥mme/i-* (via **hlāme/i-*) beside Mil. *sla-* (see Shevoroshkin, 1977: 144⁹ et aliter).

(6) If the equation of Lyc. *erbbe-* and CLuv. *arpa-* is correct (Neumann, 1984: 89ff, after Laroche, 1958b: 89), *-rb-* would continue an inherited */-rb-/ cluster. Whether *mar-tti* and *xul-tti* reflect old athematic verbs with inherited */-rt-/ and */-lt-/ or are the result of syncope is indeterminate.

(7) We do find *qānti* beside *qāti*, but in general */-VnT-/ is reduced to /-V̥t-/ (or syncopated to *-nt-*): cf. 12.1.4.1 and for the latter development note *mi̯nte/i-* < **m(i)y̥nte/i-* 'adult (male)'. If(!) Starke's attractive interpretation (1990: 297f) of *āmmāman-* as 'penalty' < **'burden'* and connection with Hitt. *impa(i)-* are correct, then in this case PA */-mb-/ is assimilated to /-mm-/: **emb(h)V+* > *āmmāman-* (1st a by umlaut). But cf. Carruba (1974: 581) and 6.1.6.1.3.1 (8).

(8) I assume epenthesis in original */-rs-/ in *krzzānase-* 'peninsula' < **k^wrsāwn+* (cf. CLuv. *kuršawar* 'island', as per Starke, 1981: 142ff).

(9) If(!) Mil. *(epe)-qzzV-* is 'descendant' < PA **Honso-* with secondary *z* < **s/* after nasal (see 12.1.3.2 for details), then Lycian apparently inherited PA */-ns-/ between vowels and did not share in the change */-ns-/ > /-ss-/ of Hittite and Luvian (see 6.1.6.1.3.1 (9) and 10.1.6.1.3.1,4). Mil. *kize* may also be the cognate of Lyc. *tise* 'someone', reflecting pre-Lycian **k^win-se* < **k^win-ke/o*. Note further the striking hapax *zāhb* for *zahba-* 'descendant' in Lycian itself. Cf. also perh. Lyc. *ebēhē* 'their' = Hitt. *apenzan* with secondary */-ns-/. We would have to assume regular */-Vns-/ > Lyc. /-Vh-/ and then in most cases loss of nasalization in the vowel (regular *zahba-*, *ebēhē* beside *ebēhē*). I also find very attractive the interpretation of Lyc. *(kbi/tri)-s̥ñne/i-* as 'two-/three-year-old', with the final member **s̥ñne-* 'autumn' matching Hitt. *zēna-* (Neumann, pers. comm.). Lyc. *s-*, like Hitt. *z-*, would reflect nasal anticipation: **nsēno-* < **sēno-* (Oettinger, 1994a; cf. 6.1.6.1.10). For final */-ns/ see below 12.1.6.4.1.

(10) Inherited */-rm-/ is preserved in *Ar̥mma-* 'moon(-god)' < **arma-*. The sequence */-mr-/ becomes /-mbr-/ via epenthesis in **ipre-* 'field, open country' (at least in the name *Ip̥re-side/i-* = CLuv. *Im(ma)ra-zita/i-*; Carruba, 1980:

275ff). Initial */wl-/ is reduced to /l-/ in *la-* 'die' < (virtual) PA **wlaH-*.

(11) PA geminates are reduced to single consonants: PA **ámmo/i-* 'my', **ánna-* 'mother' and **ánnem* 'under, below' > *ēme/i-*, *ēne/i-*, and *ēnē*. The PA suffix **-ommo-* < **-omno-* appears as *-Vme/i-*: *tideime/i-* 'child, son' < (virtual) **didey-ommo/i-* 'suckling', also prob. *ahāma-* 'existing'. Note also *uh(V)-* 'year' above vs. CLuv. *ušša/i-*.

(12) Aside from those in clusters, on which see 11.3 (1) above, Lycian has relatively few geminate consonants. In all clear cases these result from assimilation of pre-Lycian consonant clusters: /-θθ-/ < */-t/dh-/ (in *laððe/i-* < **lādāhi-* etc.); /-nn-/ < */-wn-/ in the "ethnic" suffix *-ñne/i-* (e.g. *Pillēñn(i)-* 'of Pinara' < **Pināléwēñn(i)-*; cf. Mil. *-wñn(i)-* = [wpn(i)]); /-ll-/ in *Pillēñn(i)-* (see above); perh. also in Lyc. *tlazñta* 'payment, tribute' and Mil. *kille-* 'idem' < (virtual) **kwi-dlo-* (instr. noun to *titi-* 'pay'). Note also lx *ññēmlē* for *ñtēmlē* and perh. *epñne* for *epñte* 'afterwards'. The verb stem *zuñmēñne-* must be denominative to the *n-*stem *zuñmān-/zuñmēñ-*, but the exact formation and source of the geminate *-ñn-* are unclear. Cf. also perhaps *āñmāman-* in (7) above.

Heubeck (1985) makes a plausible case for some examples of initial geminate stops as reflecting old reduplication and then syncope: *ttaraha* and *tteri* beside *teteri* 'city'(?), *titi-* and *tti(e)i-* 'pay, requite' (cf. prob. Mil. *kiki-* 'idem'); *p(p)uwe-* 'write' (cf. prob. HLuv. *pu-pu-la-* 'idem'): . Note that in these examples the geminate spellings are frequent or even regular. On the other hand, his attempt to extend this explanation to sporadic examples like *hhati* (lx vs. 7x *h-*), *ttāne/a* (3x vs. 60+ *t-*) is less convincing.

It is noteworthy that all three examples with *ta-* occur in the infinitive, which is furthermore in each case preceded by a preverb *hrppi*. Cf. the striking spelling *aladehzzāne* beside usual *alaha-*. In the latter the /h/ seems not only to have been geminated but also strengthened into something resembling /x/. Note also the gemination in the nominal compound *esedē=ñnewe-* 'collateral descendant', which shows the same insertion of *-de-* as in the infinitive(!) *aladehzzāne*. Is it a coincidence that the instance *eseri=hhati* is also written as one word? The lack of gemination in the apparently parallel *alade=hali-* and *hrppi=ta-* is perplexing. Nevertheless, I believe the common denominator of univerbation/compound in all these cases of gemination is significant and assume some kind of sandhi phenomenon (cf. Torp, 1898b: 27).

The geminates in *ebette*, *epatte*, *epenētijatte*, *erizalle*, *hāzzati*, and *azzala*— are entirely obscure in origin.

12.1.6.2 Other Consonant Changes

(1) Metathesis has clearly occurred in *ehbi* 'his' < **ebhi* (syncopated from **ebphi* in weakly stressed position; see 12.1.6.3 below). If it is not an error, lx *hladi* for *alahadi* presupposes loss of the first two vowels and then */lh-/ > /hl-/. I also account for the two(!) nasalized vowels of nom. pl. *māhāi* 'gods' by metathesis: **mahanāinhi* > **mahnāinhi* by syncope > **manhainhi* by metathesis > *māhāi*.

(2) The alternation in *atra*-/*atla*- 'self' (sense already Bugge, 1901: 107) seems to suggest *r/l* variation. However, we find /-tr-/ only in the accusative and /-tl-/ only in the dative and derived adjective. If Hawkins (1989: 190⁷) is correct in suggesting that the weak stem of the HLuvinian cognate is in /-tn-/, we may have a substitution of /l/ for /n/ rather than /l/ for /r/.

Laroche (1979: 67) compares Lyc. *wedre/i*- 'land' (?) with CLuvian **watna*- 'land', allegedly in *Kizzuwatna*- 'low land', with a change of */-dn-/ to /-dr-/ comparable to that in *Ḫupišna* > *Kybistra* and so forth. Both the meaning of *wedre/i*- and the analysis of *Kizzuwatna*- (**kiz* 'low' ??) remain problematic.

(3) There are apparently two examples where the productive pattern of iterated consonant in Lallwörter blocks or undoes the effect of regular sound changes. Beside regular *xuga*- 'grandfather' < PA **Hauha*- with "lenited" */h/, we also find *xuza*- in the name *Epñxuza*-. I would also explain *ddedi* (clearly a term of relationship) as /*ḫēḫi*/ 'father' with iterated /*ḫ*/ vs. usual *tede/i*- with regular devoicing of pre-Lycian */d/ to /t/ word-initially. For a very different view of *ddedi* see Neumann apud Borchhardt (1988: 121). Initial /*ḫ*/ is rare and always secondary in Lycian. It is always spelled *dd*- when initial, which must reflect some peculiarity of its realization in that unusual environment.

(4) There is evidence for the regular loss of /h/ between like vowels. Note first of all lx *miñta* for *miñtaha*, *miñte* for *miñtehe* and *eptte* for *epttehe*. The forms with restored/preserved /h/ can of course easily be due to analogy. Regular loss of /h/ between like vowels can account for the animate nom. plural ending -*āi* of *a*-stems (see already

Eichner, 1974: 20, contra Oettinger, 1976/77: 131ff, et al.). Lyc. *-āi* continues **-āihi* < **-ainhi* < **-ainsi*. For the secondary spread of the *i*-stem ending cf. Mil. nom. pl. *masaiz* 'gods' to an *a*-stem and CLuv. *wašuienzi* 'good' to a *u*-stem (contra Starke, 1990: 62 et aliter). The *-ēi* of *epewētlmēi* 'πρωτοκου' likewise undoubtedly continues **-ēihi* < **-oinsi*.

(5) Lycian shares with Luvian the sporadic change of initial **s-* to */t-* (cf. 10.1.6.1.6,3). Lyc. **tewe-* 'eye' < PA **sógwo-* is attested in the coll. plural *tawa* (Eichner, 1985: 19, & Melchert, 1989c: 60) and in *ñtewē* 'toward, facing' < pre-Lycian **en tewē* with expected syncope of **en* to *ñ* in proclisis (sim. Eichner, loc. cit.).

(6) I assume that *Tlānn(i)-* 'Tloan' reflects a stem **Tla-* produced by haplology from **Tlawā-wann(i)-*. I cannot accept the claim of Carruba (1964: 80f and 1965: 556) of a general change of medial **-awa-* to *-a-*. Cf. *arawaziye-*, *prñawa-* etc.

12.1.6.3 Vowel Changes

12.1.6.3.1 Syncope

Since we have no independent evidence for the place of the Lycian accent and relatively few words with an absolutely sure morphological prehistory, the following syncope rules are extremely tentative. It is noteworthy, however, that they strongly resemble the syncope rules for Lydian arrived at independently (cf. 14.1.6.3.1).

(1) A posttonic penultimate vowel is deleted following a single consonant (**V > ∅ / VC₁___C₀V*). The relational adjectives *laððe/i-*, *Leððe/i-*, *Punamaððe/i-*, and *teððe/i-* (and *lx Xbidēñhe/i-*) reflect **lādðhe/i-* etc. (see already Laroche, 1979: 114). In these examples the accent of the base noun was carried over to the adjective: cf. *xñnahe/i-* < **xñnahe/i-* with regular accent on the suffix. The "ethnic" suffix *-ñn(i)-* is from **-wēñ(i)-* (cf. CLuv. *-wann(i)-*): *Xbidēñn(i)-* < **Xbidēwñn(i)-* etc. (cf. Mil. *Xbidewñn(i)-* likewise with syncope but preservation of the *w*). See Laroche (1960a: 172f). I derive *ētre/i-* 'lower' and *epre/i-* 'rear-; later' from **ñd(h)pro-/i-* and **ópéro/i-* respectively (= Skt. *ádharma-* and *ápāra-*). Third plurals in *-eiti* (*tubeiti*, *kumezeiti*) continue **-ēyfti* < **-ēyonti* (the denominative examples have taken on the accent of the iteratives): see Melchert (1994c). Likewise *tideime/i-* 'child, son' reflects **didēy-þmo/i-* (orig. 'suckling'). The underlying verb was surely denominative to **tide/i-* 'teat',

with Neumann (1993: 37f) contra Oettinger (1979a: 347¹⁷⁸). The iteratives *astti*, *qastti*, *tasñti*, *asñne* etc. reflect **ásēti* etc. (see already Pedersen, 1945: 27) with generalization of the accent of the base verb. Similarly, *aiti* 'they do, make' < **áyēti* and *ahñtāi* 'property' < **ahāptāi* 'existing' with generalized root accent. As per 12.1.6.1 (1) above, the pre-Lycian anaptyctic vowel is also syncopated in *appdi* < **ápVdi* < **ápVti* < **āpti* (for **ēpti*). Our lack of knowledge about the Lycian accent leaves very few clear counterexamples. The preserved vowel in *aragā* 'I became' (surely *áragā*) could easily be due to the awkward cluster its deletion would produce or (theoretically) to analogy with stems in *-C-xagā*.

(2) A pretonic vowel is deleted in an open syllable (**V > ∅ / C_i V*): cf. already the remarks of Carruba (1964: 279f). This occurs in a number of disyllabic words with accent on the final syllable. In the case of *∅ðē* 'votive object' < **d/tVhē* the oxytone accent appears to be old (cf. Lyd. *tašēv* and see Eichner, 1983: 59ff). Oxytone accent may also be inherited in stems in **-mó-* and **-mmó-* < **-mnó-* (cf. Forssman, 1965: 11ff, and Melchert, 1983b: 23ff): thus *kñme/i-* 'how/as much' < **kē mó/i-* < **k^womó/i-*, ptc. *-hñme/i-* < **-hāp mó/i-*, *hlñme/i-* 'tribute' < **slā mó/i-* (cf. Mil. *slāma* w/Shevoroshkin, 1977: 144⁹), prob. also *plñme/i-* '?'. Since **(o)-mmo-* becomes the productive participial suffix, one also finds examples with non-final accent (cf. *tideime/i-* above): hence *httēme/i-* 'liable' (?) and *Esedeplēme/i-* beside *Sedeplñme/i-* (personal name). We apparently have to assume dat.-loc. *tāi* 'to whom, in which' < **tādi*. The accent on the ending from **(e)i* is perfectly in order, though its preservation seems remarkable. Compare, however, the case of dat. sg. *Trqqñti* < **Trqñti*. Lyc. *qla-* 'precinct' vs. Hitt. *hila-* 'courtyard' presupposes **qilā-*, but I cannot motivate the final accent.

The oxytone accent of *pddē* 'place' < **pēdē* (contrast Hitt. *pēdan* < **pēdom*) could well be inherited (cf. Skt. *padām* beside Grk. *πέδον*). Such an accentuation might(!) also account for HLuv. **pita-* 'place' (see 10.1.5.1). However, it is also possible that the accent of *pddē* is due to the influence of neuter *n-*stems, which likewise show final accent in the nom.-acc.: *hrñmā* < **hērmā*. The accent of the nom.-acc. (and the resulting syncope of the first syllable) is surely secondary from the oblique stem, which would have had **-ēn-*: cf. attested (secondary) dat.-loc. pl. *pddēne*.

With this last example we move to words of more than two syllables, where the situation is considerably murkier. There are some quite certain examples of pretonic syncope when

the syncopated vowel is next to a sonorant (which may then become syllabic). A case with secondary animate *-i-* is *miñte/i-* 'assembly' (of adult males) < **miyēti-* 'grown, adult' (NB the preserved *ñ* vs. total loss in *aiti* and *-eiti* in (1) above). The adjective *xñnahe/i-* 'of one's grandmother' surely reflects **xñnahe/i-*. The failure of this syncope to occur in most adjectives in *-a/ehe/i-* is hardly surprising, since these adjectives function as the genitive of the base noun and are wide open to its influence. The stem *xñtawa-* 'rule' and its derivatives must be derived from a preform **xñtáwa-*, while the adjective *Pillēñn(i)-* is from **Pinlēwēñn(i)-* (see (1) above). The attested *ñ* of *xñtawa-* etc. is not evidence for syllabic **ñ*, contra Kimball (1986: 88f), whose treatment of Lycian syncope (ibid. 95) is grossly inadequate. If we accept Eichner's very attractive analysis (1993: 239f) of *terihe* as a form of 'three', reflecting PA **tēri+* with anaptyxis (cf. 4.1.6.2.2), then Lyc. *trisñni* and Mil. *trisu* 'thrice' must show subsequent syncope of the *e* in a pretonic position. Pretonic syncope is also very likely in words such as (*esi*)-*tñmāta-*, *hpnñterus-*, *kbiññtāta*, *Pññtrēñn(i)-*, *qññākba*, *qññtati* and *sñma-*.

I would also assume a rightward accent shift in the univerbation of various preverbs with the verb (cf. *Pinále* vs. *Pillēñn(i)-*), leading to pretonic syncope: **hēri* + Verb > *hri* '(up)on' (vs. inherited **sēri* in CLuv. *šarri*), **hrēpi* or **hrēpi* + Verb > *hrppi* '(up)on', **ēte* + Verb > *ñte* 'in(to)' (vs. inherited **ēdo* in Hitt. *anda*, CLuv. *ānta*). As previously indicated, I also assume a pretonic syncope in the nom. pl. *māhāi* 'gods' < **manhainhi* < **mahñainhi* < **mahññainhi* (vs. dat. pl. *māhāna* < **mahāna*), again with rightward accent shift. Lyc. *kbatra-* 'daughter' presupposes an immediate preform **dwatra-* (see above 12.1.1.2) which must be syncopated from a **dñwātra-* < **dugatra-*. The lack of syncope in the verb stem *tuwe-* 'place' implies (secondary) accent on the first syllable, as does the iterative stem *tus-*: cf. CLuv. *dūwa-* with unexpected long vowel in the first syllable (prob. also < **dūwV-*) and the similar problem with Lyd. *bid-* and CLuv. *pīya-* (14.2).

As already noted above, it is impossible to know whether the *r* of *prñnawa-* '(grave-)house' continues syllabic **r* directly or reflects a syncopated **pñrñnawa-*. The same applies to the *r* of *Trqqas*, *Trqqñti*.

There are few likely counterexamples to pretonic syncope in the vicinity of sonorants. The *a* of *qanuwe-* may be due to the base verb *qa-*, while *mahinaza* and *manazine* are totally unanalyzable. The most serious problem is posed by *kumaza-* 'priest' and derivatives, where accent on the *u* is quite unlikely.

Note also the unsyncopeated *u* of *munaiti*. Since the example of *kbatra-* < **d̥watra-* involves *uw*, it may be a special case, and /*u*/ may in general not undergo the pretonic syncope rule.

The situation is quite unclear when the pretonic vowel is next to obstruents. The stem *xxza-* 'fight' (and derivatives) appears to continue a **z̥xáH-* (= virtual Hitt. **zab̥bab̥b-*). Heubeck's account (1985) by which initial geminate stops reflect old reduplication also implies syncope between obstruents (see the examples under 12.1.6.1 (12) above). However, examples such as *epenētija-* or *padrātahe/i-* seem likely to contain unsyncopeated pretonic vowels. Obviously, syncope can depend on several factors beside the position of the accent, and we are far from controlling these factors for Lycian.

As demonstrated by Garrett (1991-93), the stem *ebe-* functioning as the third person pronoun shows the full stem *ebe-* in emphatic use (lx *ebehi* 'his'), but syncope of the second vowel elsewhere (*ehbi* < **ebhi* 'his', *ebñē* 'him', *ebtte* 'them'). The latter surely reflect a relatively weak accent in unemphatic use, perhaps even original enclisis.

On the special syncope in final syllables see 12.1.6.4.2.2 below.

12.1.6.3.2 Anaptyxis

On possible regular synchronic anaptyxis in obstruent clusters see 11.3 (2) above. It is impossible to determine whether the anaptyctic *a* of *kbatra-* 'daughter' < **dugatra-* < **dugtr-* < **dugh₂tr-* is pre-Lycian or already PA. As per 12.1.6.1 (1), *appdi* 'takes' reflects a pre-Lycian anaptyxis between stops with later syncope (see preceding section).

12.1.6.3.3 Aphaeresis

Most aphaeresis in Lycian appears in personal names: (*E*)*katamla-*, (*E*)*seimija-*, (*A*)*rKKazumaha*. However, we also find once *rñmazata-* 'monthly tribute' (vs. *Arm̃ma-* 'Moon-(god)'). One example is also found in a name which is analyzable as a native compound: *Sedepl̃me/i-* beside *Esedepl̃me/i-* (cf. *pl̃me/i-* and *ese=de=ñnewe-*). This lends some credence to the suggestion (e.g. Thomsen, 1899: 57ff, & Houwink ten Cate, 1961: 74) that the proclitic conjunction *se* 'and' is an aphaerisized form of *ese* 'together with'. See also Carruba (1964: 279f).

12.1.6.3.4 Contraction

Lycian shares with Luvian and Lydian the umlaut of **yē* to *(y)i*: see 12.1.1.3 and 12.1.5.1. In the case of a preceding vowel there is then reduction of **Vy_i* to **Vy* and regular development of the latter: PA **-áHye-* > **-āyi-* > **-āy-* > *-a-* (in type of *xttadi* 'harms'), PA **-éye-* > **-éyi-* > **-ey-* > *-i-* (in type of *tubidi* 'strikes'). See Melchert (1994c) for detailed arguments. For contractions in final syllables see below.

I am not convinced by any of the examples presented by Neumann (1982: 153) for a contraction of **-iye-* to *-e-*.

12.1.6.3.5 Compensatory Lengthening

Milyan nom. sg. *Trq̄q̄iz* 'Storm-god' is the regular reflex of **trHēnts*, with loss of **n*, compensatory lengthening, and then long **ē* > *i* (via **trq̄ēts*). It is also possible that the *-us* of *arus-* and *Trus-* reflects **-ōs* < **-onts* (cf. Laroche, 1979: 103, but with wrong meaning for *arus-*).

12.1.6.3.6 Denasalization (?)

Accented nasalized vowels alternate with unaccented non-nasalized vowels in Lydian (cf. 13.1.5 (3) after Eichner, 1986b). We should therefore consider seriously whether Lycian shows a similar pattern. In testing this hypothesis, we must first of all take into account one crucial difference between the two languages. While Lydian preserves final nasal consonants in the form of the weak nasal *ν*, Lycian loses final nasals, leaving nasalized vowels in word-final position. These vowels are clearly phonemic and remain nasalized even when unaccented: *ēnē* 'under', *mētē* 'harm' (acc. sg.), and so forth.

Elsewhere, there are several suggestive examples for alternation between accented nasalized vowel and unaccented non-nasalized. Contrast consistent *mahāna* 'gods' (dat. pl.) with the derived adjective *mahanāhe/i-*, where the accent has probably been displaced to the right and which is spelled without nasalization (except perhaps TL 44a,12). Contrast also *mrbbēnedi* and *hēmenedi*, the first of which is probably accented on the second syllable (NB syllabic *-r-*) and the second on the first syllable (NB the non-nasalized second *e*). Aside from likely compounds (*ñtē/e=mlē* and the names *Enē=hineri-* and *Petē=nēne-*), the only word in Lycian (A) with two nasalized vowels outside word-final position is *āmmāma* (also spelled

añmāma). In Milyan *esēnē=mla/asānā=mla* is again probably a compound, but *zrētēni* seems a genuine counterexample.

One example seems clearly to preclude a phonological alternation for Lycian: the enclitic *m=ēne/m=ene* 'him, her' (acc. sg.). Both forms occur frequently in the same unaccented context (after initial *ebēñnē zupā/prñawā*). While *m=ene* is more common, nasalized *m=ēne* is far from rare. Thus, while Lycian does show a tendency to denasalize unaccented nasalized vowels, this change is not rule-governed.

12.1.6.3.7 Other Special Vowel Changes

Other conditioned vowel changes appear to be associated with final syllables and are treated below. Recall also the very powerful synchronic "umlaut" rule described under 11.3 (3), which is common to both Lycian and Milyan and must have already existed in pre-Lycian.

12.1.6.4 "Laws of Finals"

12.1.6.4.1 Consonants

All final single consonants are lost in Lycian: dental stop in nt. nom.-acc. sg. *ti* 'what' < PA **kʷid*, **s*/ in anim. nom. sg. *-V* < **-Vs* and in gen. sg. of names in *-V* < **-Vs* (cf. Neumann, 1970: 61f, but on *-a/eh* see next section). Final **-VN* gives *-V̄* in the case of non-high vowels, simply graphic *-V* in the case of high vowels: anim. acc. sg./gen. pl. **-om* > *-ē*, fem. acc. sg. **-ām* > *-ā*, anim. acc. sg. **-m̄* > **-ān* > *-ā*, nt. nom.-acc. sg. **-m̄* > **-mān* > *-mā*, but anim. acc. sg. **-im* > *-i*. It is possible that the last is phonetically [i] (cf. 11.1.5,3), but this cannot be proven.

Final **-nts* (both original and from **-ns* with epenthesis) leads to Mil. *-(V̄)z* and Lyc. *-s*: nom. sg. **TrH-ēnts* > Mil. *Trq̄qiz*, Lyc. *Trqqas* (w/ 2ary vocalism); anim. acc. pl. **-Vns* > **-Vnts* > Mil. *-V/V̄z* (*marāz*, *lijenuwez*), Lyc. *-Vs* (*ladas*, *tideimis*): see Hrozný (1917: 283); Pedersen (1945: 52f); Gusmani (1964b: 48) and Meriggi (1980a: 264 & 1980b: 261). Cf. CLuv. acc. pl. *-anz(a)*, *-inz(a)*.

12.1.6.4.2 Vowels

12.1.6.4.2.1 Word-final Vowels

Word-final vowels are generally preserved in Lycian. Unaccented short **i/* appears in the present verb endings *-t/di*

and *-ñti/-Viti*. The *-i* of *Trqqñti* and *tdi* may continue **-i* or **-ci*. Unaccented short **/u/* is preserved in the third person imperatives in *-u*. The *u* of *amu/emu/ēmu* is probably accented. The *e* of the enclitic particle *-te* surely reflects unaccented **/e/*, and *tise* 'some/anyone' probably continues **kwis/m-ke* (contra Carruba, 1978a: 172f). Unaccented final **/o/* is found in the preterite endings *-t/de* and *-ñte/-Vite* < **-to* and **-onto* (Yoshida, 1991&1993), the infinitive ending *-Vne* < **-uno*, and in *ēke* 'when' < **en-Ho*. Further, while inflected *-a/ehe-* reflects a possessive adjective in **-ásso-* (4.1.6.1.1,2 and 12.1.6.4.2.2), it is likely that *terihe* 'of a third' (after Eichner, 1993: 239f) and *tihe* 'of/for someone' (thus pace Melchert, 1993a: 75) contain a genitive singular ending **-so*. Cf. HLuvian */-isa/* (10.1.6.3.2) and see Bader (1991: 139f) et aliter. Genitive singulars of names in *-ahe/-ehe* (and only these!), which do not show case agreement, also probably reflect a corresponding ending **-a/o(s)=so*, as per Mittelberger (1966: 104). Since we do not know the fate of **/-sy-/* in Luvian or Lycian, Georgiev's suggestion (1967: 161 et aliter) that */-Vs(s)a/* continues **-(o)syo* cannot be entirely excluded. We find final short **/a/* in the pret. 1st singular *-x/ga* < **-Ha* and infinitive ending *-Vna* < **-una* (i.e. allative **-h₂e* beside competing *-Vne* < thematic allative **-ō* < **-oh₂*). As expected, final long **-ā* is preserved in the nt. nom.-acc. plural ending *-a*.

If the word *nadau* (or *nalau*?) is a pres. 1st singular as often suggested, then apparently **-wi* is apocopated to *-w*. We also find the irregular *httēñ* (3x) beside regular *httēmi* and the odd hapax *kduñ*.

The nasalized vowels */ē/* and */ā/* are occasionally raised to */i/* and */u/* respectively (for the latter see already Neumann, 1969b: 375). The conditioning for this change is quite unclear. What little we know about the chronological and geographic distribution of the Lycian texts does not support the idea of a dialect development (TL 44a contains both */-ā/* and */-u/* as acc. sg. of *a*-stems). While this change is rarely attested in non-final syllables (*muhāi* beside *māhāi*, *azuti* beside *azātī*), it is concentrated in final position (perhaps only unaccented?). My basis for the change of final */ē/* to */i/* is the variant acc. sg. *ebēñni* beside regular *ebēññē*, which is otherwise unexplained.

12.1.6.4.2.2 Other Vowel Changes in Final Syllables

(1) Syncope. There is some evidence that final **-VN* is syncopated to *-ñ* immediately following the accent. Note first of all *epñ* 'after(wards)' < **ōpēm*. Syncope is also regular in

the acc. singulars *-ahn̄* < **-ássom* (Laroche, 1960a: 161) and *-isn̄* < **-i(s)kom*. In view of the forms *qehñedi* and *qehñnite*, *qehñ* probably also reflects **qehñ̄n̄*. The lack of syncope in *ēnē* 'below, under' < **ánnem* would be due to the unacceptability of a sequence ***ēñ̄*. The failure of the gen. pl. ending **-om* to syncope (so far as we know!) would be due to the influence of those cases where it was accented (cf. the similar situation in Lydian, 14.1.6.3.1,1).

Contra Mittelberger (1966: 104) and Neumann (1970: 62), genitives of personal names in *-ah/-eh* cannot be merely apocopated forms of *-ahe/-ehe*, but are nominative singulars of adjectives in **-áso-*, with the same syncope as in the accusative above: **-ássos* > **-áheh* > **-áhēh* > *-ah* (*-eh* with umlaut before the syncope). This is shown by the fact that the predesinential vocalism is *-ah* even to base nouns in *-e*, which is inexplicable if they are old genitive singulars of the nouns: cf. *Szulijah* to *Szulije-* just like *Lusñtrahñ* to *Lusñtre-*. See already Laroche (1960a: 161), Houwink ten Cate (1961: 56), and Meriggi (1980b: 217), but the vowel loss must be syncope (Melchert, 1989a: 30), not apocope, because of the examples given in 12.1.6.4.2.1.

(2) Contraction. In the anim. nom. plurals *-āi* and *-ēi* the sequences **-āi+i* and **-ēi+i* have predictably been simplified (see above 12.1.6.2 (4) for the source of the endings). I would also explain the gen. pl. *-āi* of the *a*-stems as a contraction of a pre-Lycian **-a+ē* (i.e. the regular stem plus the productive ending *-ē* < **-om*): cf. Lat. gen. sg. *-ae* < **-a+i*. In the contraction of *a+ē* to *āi* (i.e. [āy]), the nasalization would necessarily be transferred to the syllabic *a*. I do not find credible Carruba (1977: 288).

(3) Sporadic Merger of /e/ with /a/. While the two low vowels are generally kept quite distinct in Lycian (allowing for the effects of the umlaut rule), there are a handful of cases where we find /a/ for regular /e/ (on apparent /e/ for /a/ see above 12.1.4.2). That these cases are secondary is shown by the fact that they are all restricted to final syllables (probably all unaccented): *āka* (lx for *ēke*), *ebāhā* (lx for *ebēhē*), *m=ana* (lx for *m=ene*), and *tuhās* (lx for *tuhēs*). In the first three examples, the irregular final *-a* then regularly umlauts a preceding vowel. Contra Melchert (1992c: 50), infinitives in *-Vna* beside *-Vne* do not reflect this merger. The former show the original athematic allative ending *-a* < **-h₂e*, the latter the generalized thematic allative ending **-ō* < **-oh₂* (cf. 2.3,8).

(4) Prop-vowel

Lycian shares with Luvian the prop-vowel of enclitic nt. nom.-acc. sg. *-ede* 'it' (= Luvian *-ata*). Lycian also adds a prop-vowel to enclitic anim. acc. sg. *-ē* < **-om*: *-ēne* and *-ene* (Houwink ten Cate, 1965: 18). When *-ē/ene* is added to enclitic sequences with preceding vowel, the first vowel is often deleted, leaving simply *-ne* (false Bader, 1982: 104).

12.2 Accent

As already indicated above in 11.2, we have no direct evidence for the synchronic Lycian accent. However, indirect effects such as syncope suggest that in general the place of the PA accent is preserved, with the motivation for most changes being fairly evident.

We would expect *tike* and *tise* 'some/anyone' to be accented on the first syllable < PA **k^wis/m-Ho* and **k^wis/m-ke*. The syncope in the secondarily inflected form *tisñke* (< expected **tisñke*) supports a reading /tike/ and /tise/. Likewise, *tubeiti* 'they strike' < **-éjñti* < iter. **-éyonti*. On the other hand, the absence of syncope in the final syllable of *ebē* 'this' (anim. acc. sg. of adj.) points to /ebé-/ < PA **obó-*: cf. 12.1.6.3.1, end. In view of these examples and in the absence of contrary evidence, we may likewise tentatively assume preservation of the PA accent in nouns such as *ēne/i-* 'mother' (/éne/i-/), *tede/i-* 'father' (/tēde/i-/), and *esbe-* 'horse' (/éswe-/); the adjective *ēme/i-* 'my' (/éme/i-/); the conjunction *ēke* 'when' (/ēke/); the adverb *epñ* (/épn/); and strong verb forms like *adi* 'does', *hadi* 'lets go', and *tadi* 'puts' (all /-ādī/ < PA **-ædī*).

Some examples of posttonic syncope of a penultimate vowel point to generalization of root accent in the verb, hardly a surprising development: hence *aiti* 'they do' < **áyñti* after strong stem *a-* (cf. CLuv. *āya-* likewise reflecting **āya-*). Similarly in the iteratives *astti*, *asñne*, *qastti*, and *tasñti* < **ásñti* etc. after the base stems *a-*, *qa-*, and *ta-*. So also *ahñta-* 'property' < **'existing'* < **áhñta-* with *áh-* after strong stem *és-*.

The oxytone accent in Lyc. *pddē* < **pédē* < could be old (cf. Skt. *padám*), but it may also have been modeled after the neuter *n-* stems, where the accent of nom.-acc. *hrñmā* (< **sñrmā*) is in turn probably generalized from the oblique stem in **-mén-* (cf. attested 2ary dat. pl. *pddēne*).

There is some evidence for a shift of accent to the right with the addition of a further suffix. Cf. *Pinale* 'Pinara' (probably /pinále/) with the derived adjective *Pillēnn(i)-*, which apparently reflects **Pinlélwēni-* with syncope both before and after the accented syllable and assimilation of **-nl-* to *-ll-*. I assume a similar shift in accounting for nom. pl. *māhāi* 'gods' < **masanaĩnsi* vs. dat. pl. *mahāna* < **masána*: see 12.1.6.2 (1) for details. The case of the compound *rēm̄mazata-* 'monthly tribute' vs. *Arēm̄ma-* 'Moon(-god)' is analogous. Since preverbs are usually proclitic to the verb in Lycian, I would ascribe the reduction of the first syllable in several preverbs to a similar rightward shift: *hri* 'upon' < 2ary **hēri* + Verb, *hrppi* 'upon' < 2ary **hrēpi* (or **hrēpi*) + Verb, *ñte* 'in(to)' < 2ary **ñté* + Verb. I concede that I cannot explain the different behavior of *ēti* 'below, down' < **ēdhi* in this respect.

Predictably, the motivation for a few apparent shifts in accent is not clear. The syncope in *qla-* 'precinct' seems to require a Lycian accent **qilá-* vs. Hitt. *hīla-* 'courtyard'.

I must emphasize, of course, that all of these putative shifts in accent are as tentative as the syncope rules on which they are based, for which see above 12.1.6.3.1.

12.3 Changes in Synchronic Rules

The PA rule by which stops are "lenited" between unaccented vowels must have persisted into pre-Lycian (see 12.1.6.1.1), but an example like *pibiti* 'gives', where the accent is almost certainly on the first syllable, confirms that the rule has disappeared by the time of attested Lycian. No other PA synchronic rules survive in Lycian, and all the existing synchronic rules in 11.3 are innovations.

12.4 Relative Chronologies

Set 1:

- (1) **/ġ/* > **/y/* before front vowel must precede
- (2) **/e/* to */i/* after this secondary **/y/* (**ġesr-* > **yesr-* > **yisr-* > **isr-* > *izr-*).

Set 2:

- (1) Delabialization of */kʷ/ before */o/ must precede
- (2) the merger of */o/ with */e/ (*kʷomí- > *komí- > *kēmí- > kēmí-), which must precede
- (3) umlaut of non-high vowels (*Howa- 'sheep' > *Hewa- > zawa-), which must precede
- (4) the conditioned split of */H/ (*HentowaH- > *Hantawa- > *xātawa- > xātawa- but *enHo > *ēHe > ēke), which must precede
- (5) pretonic syncope (*HentowaH- > *xātawa- > xātawa-, but *Hentili- > *qētili- > Mil. qñtili-).

Set 3:

- (1) */ġ/ > */y/ before front vowel and */gʷ/ > /w/ must precede
- (2) devoicing of stops word-initially (see Set 1 and *gʷow+ > wawa-).

Set 4:

- (1) Original *sr > zr (*ġesr- > izr-) must precede
- (2) Pretonic syncope (*serí > *sri), which must precede
- (3) Lycian (A) *s to h (*sri > hri) and Milyan *sR > zr (*sri > zri-).

Note: PA */k/ must have still been distinct from */s/ in Proto-Lycian, because its reflex does not become */h/ in Lycian, but it has become enough like */s/ in pre-Milyan to undergo the change of */s/ > /ts/ after sonorant: Proto-Lycian *kʷin-Se > Lyc. tise but Mil. kize.

Set 5:

- (1) syllabic */N/ to */ã(n)/ must precede
- (2) pretonic syncope (Lyc. nom. sg. Trqqas with vocalism after weak *Trqqāt- before syncope to Trqqñt-).

CHAPTER 13: LYDIAN PHONOLOGY

13.0 Lydian offers us the smallest corpus among the established IE languages of Anatolia next to Palaic. We also thus far lack an extensive Lydian-Greek bilingual. While we can parse most Lydian sentences with some degree of certainty, our grasp of the lexical content is vague (cf. Neumann, 1960: 556). Etymologizing is therefore even more parlous than usual. We can in part make up for the dearth of solid root etymologies through morphological analysis. However, IE derivational and inflectional morphemes contain only a subset of the phonemic inventory. Furthermore, their typical position towards or at the end of the word leaves open the possibility of special developments. The fact that Lydian is attested late and apparently developed apart from the other languages of the first millennium (Lycian and HLUvian) adds to our difficulties: we do not know whether peculiarities are archaisms preserved only here or innovations reflecting a whole series of intermediate steps. Much that is offered below is necessarily tentative and speculative, and all qualifiers should be taken very seriously. Since there are few secure etymologies, I have tried in this instance to cite all examples which seem to me reasonably plausible. Caveat lector! Because all forms and attestations may easily be found in Gusmani (1964, 1980, 1982 and 1986a), I have not thought it necessary to cite text or line numbers, except in special cases.

13.1 Segmental Phonemes

13.1.1 Stops /p/ /t/ /k/ /q/

Lydian has only one set of stop phonemes, in all likelihood underlyingly voiceless. See Gusmani (1965a: 204ff), who demonstrates that graphic *b* = [p]. Since there is no contrast, the stops can be and undoubtedly are realized under favorable conditions as voiced. They are probably regularly voiced after nasals, including nasalized vowels (Meriggi, 1935: 70): note *Alīksāntru-* = 'Ἀλέξανδρος and *ēt-* < **ēndo* beside *dēt-* < **yōnt-*. There is also clearly a tendency towards voicing next to /r/: see *Srkaštu-* rendered Συργάστης, *Atrašta-* = 'Ἀδραστής, and probably *atrgol* beside *atrokl*. Note also the hapax *qig* (*dēt*) for usual *qik*. As shown by the last two examples, the rare letter *g* is used in a few instances to indicate the voiced allophone of the velar stop, but in general the allophonic variation is not marked, as one would expect. Some free variation is also likely: see the Greek equivalents of intervocalic *t* in the list of names apud Gusmani (1988a: 191ff)

and compare already Cuny (1921: 3). As noted above (1.2.9.2.1), the assumption that *q* represents a synchronic labiovelar is likely, but not completely assured (Gusmani, 1965a: 204⁵).

Examples:

/p/ < */p/: (1) *bi(d)-* 'give' < PA **pi(y)-*; (2) *bira-* 'house' < PA **pēr+*; (3) prob. *(wc)-baq-(ēn)-* 'trample on' < PA **pākw-* 'stamp, crush'.

No good examples yet of medial /p/ < */p/!

(1) Carruba, 1960: 42 (root etym.); (2) Hrozný, 1917: 192; (3) Melchert, 1992b: 41 (cf. Hitt. *paktuš-* 'stamp, crush' and for syntax and semantics Eng. 'stomp (on)' beside 'stamp'. Root etym. < PIE **peh₂k-* by Oettinger, 1979a: 212, w/ diff. analysis of Hitt.).

Equation of Lyd. *bita(a)-* with Hitt. *pēda-* 'carry' (e.g. Carruba, 1960: 58⁴¹) is impossible, because intervocalic *-t-* cannot reflect **-d-*.

/p/ < */b/: (1) *bi-* 'he' < PA **obi-*; (2) perh. *bu(k)* 'or' < PA **bū-* (i.e. **buh_x-*) **'be'*; (3) perh. *(f-ēn)-slibi-* 'penetrates, violates' < (virtual) PA **slibyē-* **'slips, glides'*; cf. also (4) *καμβειν* (= **kēpi-*) 'small child' < PA **kómbi-* **'small'* (first two exx. < PIE **b^h*; third < PIE **b*; last ambiguous).

(1) Gusmani, 1964a: 78 (after Hrozný, 1917: 191); (2) Fraser, 1923: 148; (3) Melchert [very tentative, but cf. for semantics Eng. 'strike' beside Germ. *streichen* 'graze against' and Olr. *sligid* 'strikes (down)' (and perh. Hitt. *s(a)lig-* 'violate, accost') beside Eng. 'slick', as per Pedersen, 1913: 2.631f]; (4) Melchert, modifying Neumann, 1961a: 61, & Szemerényi, 1966a: 207.

/t/ < */t/: (1) *tawša-* 'mighty' (or sim.) < PA **te/ow(H)só-*; (2) *kat-* 'down' < PA **kat(V)-*; (3) part. *-(i)t* < PA **-te*; (4) *kot* 'where' or 'as' (?) < PA **k^wóto*; (5) pres. 3rd pers. *-t* < PA **-ti*; (6) *dēt-* 'mobile property' < PA **yónt-* **'walking'*; (7) adj. suff. *-ēt(i)-* < PA **-é/ónt-* (with 2ary *'i-motion'*); (8) *wšta(a)-* 'alive' < PA **Hustó-*; (9) adj. suffix *-ašta/i-* < PA **-ósto-* (w/ 2ary *'i-motion'*).

(1) Haas, 1962: 178, & Gusmani, 1964a: 212; (2) Hrozný, 1917: 193; (3) Carruba, 1959: 37 (ident.); Melchert after Watkins, 1978: 308f (etym., contra Carruba, 1969b: 28); (4) Melchert, 1992b: 31f, & Oettinger, 1978: 82³³ (= Hitt. *kuwatta*), contra Gusmani, 1964a: 154 & 1965a: 208, and Oettinger, 1978: 82; (5) Sommer apud Kahle-Sommer, 1927: 40&75; Meriggi, 1935: 70f (see Melchert, 1992b, for details); (6) Melchert, 1994a; (7) Melchert, 1991a: 133f, & 1992b: 36; (8) Melchert, 1991a: 135 (cf. already Vetter, 1959: 17); (9) Melchert (cf. Lat. *angustus*).

/t/ < */d/: (1) *ta(a)c-* 'votive offering' (or sim.) < PA **dæ-* *di-* 'putting'; (2) prob. *tam-* 'build' < PA **dem-*; (3) prob. *tro(d)-* 'hand over' < (virtual) PA **drowáHye/o-*; (4) *taada-* 'father' < PA **dáda-*; (5) prob. **taša-* 'votive object' (in *tašēv*) < PA **dasó-* (i.e. **d^hh₁esó-*); (6) *ēt-* 'in(to)' < PA **endo-*; (7) perh. *antola-* (part or contents of grave) < (virtual) PA **en-dwaH-ólo-* 'human'; (8) perh. *mētl-* 'to harm' < PA **ménd+*.

(1) Melchert, 1994b; (2) Gusmani, 1964a: 208; (3) Melchert, 1992b: 53f; (4) Gusmani, 1961a: 194, & 1962a: 82f; (5) Eichner, 1983: 60ff, Melchert, 1994b (but cf. Gusmani, 1986b: 161!); (6) Carruba, 1959: 32; (7) Gusmani, 1975a: 5; (8) Melchert, 1992b: 48 (cf. Lyc. *mēte-* 'harm, damage' & perh. Lat. *mendum* 'bodily defect'; so also Innocente, 1986; for first see already Eichner, 1986b: 205⁵).

tešašta/i- 'right' < **dēks-* (Gusmani, 1964a: 212) is extremely dubious.

/k/ < */k/: (1) conj. *(a)k-* < PA **-ke/o*; (2) perh. **kān-* 'dog' < PA **kwón(V)-* (in name Κανδαύλης glossed κυνάγης; (3) perh. *(niku)-mēk* '(not) at all' < (virtual) PA **-mónko*.

(1) Melchert (cf. OLat. *nec* 'not' ≠ *neque*, as per Hamp, 1956, and cf. Gusmani, 1961b: 71); (2) see Kretschmer, 1896: 388f, & Gusmani, 1986a: 161; for details of phonol. see below 14.1.1.6, end; (3) Melchert after Carruba, 1959: 39 & 1961a: 461 (= Hitt. *natta manqa*) contra Gusmani, 1964a: 173f, & Eichner apud Gusmani, 1982: 80.

No sure examples before front vowel!

/k/ < */g/: prob. *kofu-* 'water' < PA **gōbu-* or **gōbuPu-*.

Poetto, 1979: 198ff (cf. Arm. *cov* 'sea').

Only example is initial and before back vowel!

/k/ < */k/: (1) preverb *kan-* < PA **kom-*; (2) *(fa)-karse-* 'cut (out)' < PA **korséye-*; (3) preverb *kat-* 'down' < PA **kat(V)-*; (4) prob. *kawe-* 'priest' < PA **kowé-* 'seer'; cf. also (5) *καρβειν* (= **kēpi-*) 'small child' < PA **kōmbi-* 'small'; (6) prob. *rkal(i)-* 'of the treasury' < PA **Harkā* 'strong-box'.

(1) Kronasser, 1956: 232, & Carruba, 1959: 31 vs. Carruba, 1961a: 461; (2) Gusmani, 1964a: 119 (root etym.); Melchert, 1992b: 46f (morphol.); (3) Hrozný, 1917: 193; (4) Masson, 1950, w/ refs. (cf. esp. Av. *kauuā-*); (5) Melchert, modifying Neumann, 1961a: 61, & Szemerényi, 1966a: 207; (6) Carruba, 1991: 16f (base noun = Lat. *arca*), despite doubts of Wallace (1988: 207).

/k/ < */g/: (1) prob. *klida-* 'earth, ground' < PA **gliyā-*; (2) perh. **ak-* in *ak-ra-* 'of the dead' < PA **e/og-*.

(1) Melchert, 1994a; (2) Diakonoff, 1977: 336 (for meaning & comparison w/Hitt. *ak(k)-* 'die'). See above 4.1.1.3 for root etym. (Melchert).

/k/ < */k^w/: (1) conj. *-k* < PA **-k^we* 'and'; (2) *ko-* in *kot* 'where' or 'as' (?) and *-kod* (generalizing part.) < PA **k^wo-*; (3) *kud* 'as' or 'where' (?) < (virtual) PA **k^w(u)udV*. NB also perh. **kān-* 'dog' < PA **kwón(V)-*.

(1) Littmann, 1916: 78&81; (2) Melchert, 1992b: 31f, Oettinger, 1978: 82³³, & Carruba, 1961a: 461, contra Oettinger, 1978: 82, and Gusmani, 1965a: 208; (3) Sommer apud Kahle-Sommer, 1927: 45, Heubeck, 1959: 42, Eichner, 1974: 34, & Melchert, 1992b: 31f¹, contra Gusmani, 1964a: 156 & 1965a: 208, and Oettinger, 1978: 82. On the phonology of 'dog' see below 14.1.1.6, end.

/k/ < */g^w/: *kāna-* 'wife' < (virtual) PA **g^wónā-*.

Gusmani, 1985a: 127ff.

/q/ < */k^w/: (1) *qi-/qe-* 'who, which' < PA **k^wi-/k^wé-*; (2) perh. *qela-* 'land, estate' < (virtual) PA **k^wélo-* 'plowed/turned land'.

(1) Littman, 1916: 79, & Hrozný, 1917: 191, for first; Gusmani, 1964a: 181, for second, contra Gusmani, 1960a: 292; (2) Georgiev, 1984: 28. On alleged *qira-* < **k^wero-* see immediately below.

/q/ < */kw/ & /kw/: (1) prob. (*wc*)-*baq*-(*ēn*)- 'trample on' < PA **pākw*- 'stamp, crush'; (2) perh. **qas*- 'possess' (in *qasa(a)*- etc.) < PA **kwas*-.

(1) Melchert, 1992b: 41 (see under /p/ above for details); (2) Gusmani, 1976/77: 167f (cf. Grk. *πέπαιμαι* etc. and see 14.1.6.3.1 (2) for possible source of palatal *s*). For merger of */kw/ and */kw/ see 14.1.1.6.

/q/ < */g^w/: (1) prob. (*fi*s)-*qān*- 'destroy' (or sim.) < PA **g^wēn*-; (2) perh. *qira(a)*- 'household' (or sim.) < (virtual) PA **g^wirō*-.

(1) Heubeck, 1959: 44f (root etym.), Melchert, 1992b: 43f (morphol.); (2) Melchert: cf. Av. *gaēdā*- 'household' for sense.

The equation of *qira*- with Hitt. *kuera*- 'field' < **k^wéro*- (Heubeck, 1959: 44) is dubious. The raising of **ɛ* to *i* after **w* does not include **K^w* (13.1.5), and the Lydian accent is wrong (*qirā*- because of *qiraa*- and *qyra*-: see 13.1.5 (1) and 13.2).

13.1.2 Affricates /ts/

/dz/

(1) The letter *τ* is in several clear instances the product of *t* + sibilant: the "particle" -*τ*- consists of -(*i*)*t*- + -*ś*- (reflexive), while *karraadmēs* is transparently *kat-sadmēs* and *karri*- likewise *kat-si*- (for the last two see already Haas, 1962: 200). Its other likely source is PA **[tsy]* (i.e. */*ty*/), as per Ševoroškin (1967: 24&43). For all this see Gusmani (1969a). We should therefore assume a voiceless dental affricate /*ts*/, conceivably with a palatal realization in some circumstances.

(2) The only clear source of the sound represented by the letter *c* is assimilated **d*(^h). See Heubeck (1959: 51ff), van Brock (1968: 120) and below 14.1.1.3. Parallelism with *τ* suggests a voiced dental/palatal affricate, but this is hardly compelling (cf. Hitt. [*ts*] < */*ty*/i vs. [*z*] < */*dy*/i). Possible support for the affricate comes from *ardēc*, which is likely *ardēt* + particle -*ś* (in either reflexive or emphatic function): see Melchert (1991a: 134f). Remember that -*ēt* is [-*ād*]: thus [-*ād-s*] > [-*ādz*]. The forward assimilation is admittedly somewhat surprising, but compare *es-d* (i.e. [*ɛʃ-ð*]) > *est*. The *c* in *acvīl* for 'Αθηνών (now read thus with Neumann, 1967) is puzzling, but substitution of Lydian *τ* ([*ts*]) for Greek *θ* seems reasonable. Despite Neumann's reservations, there must have been a syncope, if his reading is correct. This would lead to *τn*,

and assimilation could then produce *cn* ([dzn]). The bizarre dative ending *-īl* makes one wonder whether the entire reading is correct, despite Neumann's efforts (on the very problematic readings of this Lydian text see now also Gusmani, 1986b). In any case, I tentatively take *c* as a voiced affricate on internal evidence (thus already Haas, 1962: 200). One could certainly entertain other possibilities, especially [ʒ].

Examples:

/ts/ < */ty/ : (1) suffix *-ra-* < PA */-tyo-/ (*[-tsyo-]) (in *armra-*, *akra-*, *wānra-*, etc.); (2) perh. in *ān-ṛēt* 'registers' (or sim.) < (virtual) PA **en-Hats-yónti* (i.e. **en-h₂t-yónti*) 'incise, inscribe'.

(1) Ševoroškin, 1967: 24&43, Gusmani, 1969a: 139, & Melchert, 1994b (last for *wānra-*); (2) Melchert 1992b: 39f (cf. HLuv. *hazi(ya)-* 'inscribe' and note that ModEng. 'register' may now mean merely '(formally) indicate' without writing).

/ts/ < **-t+š/s*: (1) *-ṛ-* < part. *-(i)t-* + *-š*; (2) *karradmēš* < *kat-* + *sadmēš*; (3) vb. stem *karrī-* < *kat-* + *si-* (cf. *fa-si-*); (4) prob. also in *šfardēnr* (= [sfardān-t-s]), nt. nom.-acc. sg. 'Sardian' + emph. *-š*.

(1) Gusmani, 1969a: 140ff; (2)–(3) Haas, 1962: 200, Gusmani, 1969a: 138; (4) Melchert, 1991a: 134, vs. Gusmani, 1969a: 138.

/dz/ < */d/ / **u/i/y*: (1) *ta(a)c-* 'votive offering' (or sim.) < PA **dæ-dī-* 'putting'; (2) *cīw-* 'god' < PA **dīw-*; (3) *(da)-cu(we)-* 'establish, dedicate' (or sim.) < (virtual) PA **duw(V)-*; (4) perh. *ca-* 'give a sign' < PA **dyā-* (i.e. **d^hyéh₂-*); (5) prob. also after **u* in *wc-* 'up(on)' < PA **ud-*.

(1) Melchert, 1994b; (2) Kretschmer, 1940: 113, & Heubeck, 1959: 52; (3) Heubeck, 1959: 55 (< PIE **dou-*), Melchert, 1994b (< virtual **d^h(e)h₁w-*), Oettinger, 1979: 483 (< IPI **d^hh₁uweni*); (4) Melchert, 1994b, after Watkins, pers. comm.; (5) Carruba, 1959: 29f.

13.1.3 Fricatives /f/ /s/ /ç/
 /v/ /ð/

(1) A fricative pronunciation for *w* is made likely by alternations such as *lewś/lefś* 'Zeus'. However, the sound clearly alternates morphophonemically with /u/: note pres. 1st sg. ending /-Vv/ but /-Cu/. See Gusmani (1964a: 31f & 1965a: 206) and Heubeck (1969: 404).

(2) The distribution of the letter awkwardly transcribed *s* indicates a palatal: see Sommer apud Kahle-Sommer (1927: 24, note), Meriggi (1935: 96⁴⁸) and Gusmani (1964: 34). On the other hand, *š* represents the voiceless dental sibilant!

(3) The letter *d* is certainly not a stop. The borrowings *lew/f-* and *lamētru-* 'Zeus' and 'Demeter' show that there was no initial voiced dental stop, but Lydian *d* occurs initially. The likeliest possibility is a voiced (inter)dental fricative. See among many already Littmann (1916: 11&63), Cuny (1921: 3), Gusmani (1978: 834⁴) contra Gusmani (1964a: 32 & 1965a: 209f), and in detail Melchert (1994a).

Examples:

/f/ < */p/: (1) preverb & conj. *fa-* < PA **pe/o-*; (2) prob. *afara/i-* 'descendant' < PA **ópero-* **'rear-*; later; younger' (w/ 2ary "i-motion"); (3) prob. *(fa-)korfi-* 'undertakes' (or sim.) < PA **kérp(i)ye-*; (4) prob. *bif(e)-* 'give, grant' < (virtual) PA **pípV-*.

(1) Heubeck, 1959: 45f & 76f, Carruba, 1959: 34f; (2) Melchert (cf. CLuvian **appara/i-* 'younger'); (3) Gusmani, 1964a: 120 (but for phonol. see Eichner, 1986a: 21, & Melchert, 1992b: 48); (4) Gusmani, 1964a: 80, & Ševoroškin, 1967: 48 (cf. Lyc. *pibi(je)-*).

The connection of *farā-* with Hitt. *pahš-* 'protect' by Gusmani (1964a: 123 & 1982: 55) is formally implausible, and the meaning is wholly indeterminate.

/f/ < */b/: *kofu-* 'water' < PA **góbu-*.

Poetto, 1979: 198ff.

The only example of /f/ < */b/. Since the only cognate is Arm. *cov* 'sea', one could also suppose **gó(w)pu-*.

/f/ < */w/ (regular in **sw* > *śf*): (1) *śfarwa-* 'oath' (or sim.) < PA **swórwo-*; (2) **śfa-* in *fa-śfēn-* 'possess' < PA **swo-* 'one's own'; (3) prob. *weśfa-* 'living' < (virtual) PA **Hwéswo-*.

(1) Gusmani, 1975b: 171; (2) Haas, 1962: 170, Ševoroškin, 1967: 25, & Gusmani, 1975b: 167ff; (3) Gusmani, 1985c.

ásfa* 'goods' (in *ásfāw*) < PA **áswā* (Gusmani, 1975b: 169) is problematic. One would expect *ásfaw* like *anlolaw* and *laqrīaw*.

/v/ < */w/: (1) *ciw-* 'god' < PA **diw-*; (2) prob. *kawē-* 'priest' < PA **kowē-* 'seer'; (3) *wāna-* 'grave' < PA **wVno-* (IE source obscure); (4) pres. 1st sg. -(V)w < PA *-wī; (5) prob. pret. 1st pl. -wv < PA *-wen; (6) prob. *weśfa-* 'living' < (virtual) PA **Hwēswo-*; (7) prob. *wīśī-/wiświ-* 'good' < PA **wēsu-* + 2ary 'i-motion'; (8) perh. *rawa-* 'set free' < PA **arówaH-*; (9) perh. **walwe-* 'lion' (in *walwel*) < PA **wīkwō/i-*.

(1) Kretschmer, 1940: 113, & Heubeck, 1959: 52 (cf. above under /dz/); (2) Masson, 1950 (cf. above under /k/ for vocalism); (3) Carruba, 1960: 347; (4) Kronasser, 1956: 168f, Heubeck, 1959: 78; (5) Melchert after Gusmani, 1960a: 288ff, and Bossert, 1944: 125, contra Carruba, 1960: 52 and passim (cf. Carruba, 1969a: 69); (6) Gusmani, 1985c; (7) Gusmani, 1964a: 226 (NB different treatment of secondary vs. original *sw above); (8) Gusmani, 1982: 86 (= Hitt. *arāwahh-*, but no independent evidence for meaning of Lydian); (9) Wallace, 1986: 64 & 1988 (for meaning), Lehrman, 1978: 228ff (etym.).

/v/ < */u/ /#_: (1) preverb *wc-* < PA **ud(s)-*; (2) *wšta(a)-* 'alive' < PA **Hustó-* via **ustó-*.

(1) Carruba, 1959: 29f; (2) Melchert, 1991a: 135.

/v/ < */g^w/ medially (?): (1) perh. **walwe-* 'lion' (in *walwel*) < PA **wīg^wo/i-* (< PIE **wīkwō-* 'wolf'); (2) perh. *saw-* 'see' < PA **seg^w-* (< PIE **sek^w-*); (3) perh. *ow-* 'proclaim' or 'vow' < PA **éwg^w-* (< PIE **ewg^wh-*).

(1) Wallace, 1986: 64 & 1988 (for meaning), Lehrman, 1978: 228ff (etym.); (2) Melchert, 1992b: 40 (cf. Carruba, 1969a: 52, for sense); (3) Ševoroškin, 1978: 235. See above 4.1.1.1 (3) for PA *g^w in (1)-(2).

This assumed development is quite tentative!

/s/ < */s/: (1) anim. nom. sg. -a/uś < PA *-o/us; (2) *šfarwa-* 'oath' (or sim.) < PA **swórwo-*; (3) **šfa-* in (fa)-*šfēn-* 'possess' < PA **swo-* 'one's own'; (4) *tawša-* 'mighty' (or sim.) < PA **te/ow(H)só-*; (5) perh. (kat)-*šare-* (*karare-*) 'stand watch' < (virtual) PA **soréye-*; (6) reflexive & emphasizing part. -š < PA *-soy; (7) *wšta(a)-* 'alive' < PA **Hustó-*; (8) adj. suff. -*ašta/i-* < PA *-ósto- (w/ 2ary 'i-motion'); (9) prob. *weśfa-* 'living' < (virtual) PA **Hwēswo-*; (10) prob. **taśa-* 'votive object' (in *tašēv*) < PA

*dasó- (i.e. *d^h_{ts}ó-); (11) prob. wiśsi-/wiświ- 'good' < PA wésu- + 2ary "i-motion"; (12) perh. eśa- 'child, offspring' < PA *Hónso-.

(1) Sturtevant, 1925: 72; (2) Gusmani, 1975b: 171; (3) Haas, 1962: 170, Ševoroškin, 1967: 25, & Gusmani, 1975b: 167ff; (4) Haas, 1962: 178, Gusmani, 1964a: 212; (5) Melchert, 1992b: 47; (6) Melchert, 1991a; (7) Melchert, 1991a: 135; (8) Melchert (cf. Lat. *angustus*); (9) Gusmani, 1985c; (10) Eichner, 1983: 60ff, Melchert, 1994b: (but see Gusmani, 1986b: 161!); (11) Gusmani, 1964a: 226; (12) Gusmani, 1964a: 104 (on very problematic vocalism see 14.1.5.2, note, below).

/ç/ < */s/ / *i: (1) adj. anim. nom. sg. -is < PA *-is (also in bis 'he'); (2) perh. preverb is- < *ēs- < *eks-.

(1) Haas, 1962: 174, Gusmani, 1964a: 34 (the -is of i-stem nouns must be analogical after -a/uš); (2) Melchert, 1992b: 43¹⁹.

/ç/ < */s/ / *i: (1) serli- 'supreme (authority)' < PA *sérli- 'high' (also in (kat-)sarloki- 'bring defeat to' (or sim.); (2) -karse- 'cut (out)' < (virtual) PA *korséye-; (3) sirma- 'temenos' < (virtual) PA *sērmó- 'of the precinct'; (4) prob. pres. 2nd sg. -s < PA *-si (in karaḷres 'look/walk down'); (5) prob. adj. suff. -si- < PA *-assī- (in brafrsi-, mḷwēsi, ibsimsi-, kulumsi-); (6) perh. sarēta- 'protector' or sim. < (virtual) PA *serṇito- (also in saroka- 'protection'); (7) perh. saw- 'experience, see' < PA *segw- (also in sawtaar- 'watchman' or sim. & sawtari- 'to guard'); (8) perh. sadmēv- 'relief(?)' < (virtual) PA *sedmṇ-; (9) perh. anim. nom./acc. pl. -Vs < pre-Lyidian *-Vnsi; (10) perh. preverb si- (w/ privative meaning) < PA *sē-.

(1) Neumann, 1960: 558, Gusmani, 1961a: 198, & 1962b: 46f; (2) Gusmani, 1964a: 119 (root etym.); Melchert, 1992b: 46f (morphol.); (3) Melchert, after Innocente, 1987/88 (cf. Lyc. hrēmā 'land-section' < (virtual) *sermṇ- and for root Hitt. ṣarr(a)- 'divide'); (4) Heubeck, 1959: 60f; (5) Carruba, 1959: 187, Ševoroškin, 1967: 31, & Georgiev, 1984: 10 (unlikely Bader, 1991: 129); (6) Melchert, 1992b: 47 (cf. karare- under /s/ above); (7) Melchert, 1992b: 40 (for sense see Carruba, 1969a: 51f); (8) Gusmani, 1968: 53 (cf. formally Skt. sadman-, but meaning is quite uncertain!); (9) Melchert, 1991a: 138, modifying Heubeck, 1961: 78 & 1965: 78f; (10) Melchert (cf. Lat. sē-), after Vetter, 1959: 41f, and Gusmani, 1964a: 195.

The suggestion of Haas (1962: 175) that *t > /ç/ before *i is unproven (there is no "set" of action nouns in -si-!), but cannot yet be excluded.

(1) The only clear source of the sound spelled by ν is original(!) final nasal (both $*m$ and $*n$). This suggests some kind of weakened articulation (a nasal fricative?): cf. Gusmani (1978: 842ff). The fact that ν never occurs between vowel and following consonant supports the idea of a weakly articulated consonant. Where one would expect ν in such an environment, it either is deleted (e.g. final $-\nu$ before particle $-\acute{s}$ or conjunction $-k$), or it appears as n ($\acute{s}fard\acute{e}n\tau$ for $\acute{s}fard\acute{e}\nu+d+\acute{s}$). Note that with one exception ($iskon$) all examples of final $-n$ substituted for regular $-\nu$ are after consonant: $alarmn$ (beside $\acute{e}tam\nu$), $d\acute{e}tn$, esn (beside $es\nu$), $katofn$, $tacn$ (beside $tac\nu$). This could reflect a tendency to strengthen the articulation following a consonant. Some synchronically internal cases of ν may also be derived from final nasal: e.g. $f\acute{e}tam\nu$ - after $\acute{e}tam\nu$, ethnic suffix $-m\nu$ - with generalized $-\nu$ - < $*(u)mon\#$; dat. pl. $es\nu\nu$ with iterated ending. Lyd. $ciwvali$ - 'divine' = Hitt. $\acute{s}iunali$ - (Heubeck, 1959: 65, & Werner, 1961: 83). I take these as based on the respective acc. sg. $ciw\nu$ and $\acute{s}iun$ (contra Watkins, 1974, 104&108f). Other internal examples are thus far totally obscure. Only a compelling account of one or more of them can clarify the situation. There is absolutely no basis for the suggestion that ν represents a palatal (Gusmani, 1964a: 33, et al.). This is based purely on a facile and false parallelism with $/\lambda/$ and $/\varsigma/$.

(2) $/\lambda/$ is certainly a palatalized or palatal lateral. Due to the loss of the conditioning $*y$ in some cases it is phonemically distinct from $/l/$. Note $\Lambda\lambda iks\acute{a}ntru$ - for $\Lambda\lambda\acute{\epsilon}\xi\alpha\nu\delta\rho\acute{o}\varsigma$. For the non-palatal $/l/$ in the relational suffix $-l(i)$ - see under examples below.

(3) It seems certain that in internal position between consonants the sonorants are realized as syllabics. For $/m/$ note exx. like $fa-k-m-\acute{s}-ad$, for $/v/$ $bas\nu\acute{s}akn\acute{a}ki$ -, for $/r/$ $caqrla$ -, $\acute{s}rf\acute{a}\acute{s}ta/i$ -, $srmli$ -, for $/\lambda/$ $b\lambda tarwo$ -, $m\lambda w\acute{e}nda$ -, $q\lambda d\acute{a}n$:- see Heubeck (1969: 404), West (1972: 166) et al. The lack of exx. for $/n/$ and $/l/$ is surely due to chance. The regular realization of final $[-R]$ after a consonant is also surely $[R]$. The fact that final $[-CR]$ can optionally also be treated as $[-CR]$ in verse is hardly surprising: see for this Eichner (1986a: 16f, with refs).

Examples:

/m/ < */m/ & */mm/: (1) *amu* 'I, me' < PA **emú* (cf. also *ēmi-* 'my' < PA **āmmi-*); (2) conj. *-(u)m-* < PA **-mo-*; (3) *ētamu* 'designation' (or sim.) < (virtual) PA **ñmñ* 'name'; (4) ethnic suff. *-mv-* < PA **(u)m(o)n-*; (5) **arma-* 'Moon-god' (in *armta-*) < PA **ārma-*; (6) *sirma-* 'temenos' < (virtual) PA **sērmó-* 'of the precinct'; (7) prob. dative/reflexive *-(i)m* 'me' < **-mē-*; (8) prob. *tam-* 'build' < PA **dem-*; (9) perh. *mētlī-* 'to harm' < (virtual) PA **mēnd+*; (10) perh. *-mēk* 'at all' (in *nik(u)mēk*) < (virtual) PA **mónko-*; (11) perh. *sadmēv-* 'relief(?)' < (virtual) PA **sedmñ-*; (12) perh. *-mś* 'to them/you' < PA **-smos*.

(1) Sturtevant, 1925: 73, & Meriggi, 1935: 72ff (root etym.); Eichner, 1986a: 128 (for accent) (on *ēmi-* see 4.1.4.1); (2) Heubeck, 1959: 74, Carruba, 1959: 35f; (3) Bossert, 1949: 110, & Heubeck, 1959: 65ff (for preform see above 4.1.6.1.2); (4) Carruba, 1959: 187, Ševoroškin, 1967: 31, & Georgiev, 1984: 10; (5) Jongkees, 1938: 365, & Heubeck, 1959: 31f; (6) Melchert, after Innocente, 1987/88 (see above under /s/ for details); (7) Eichner, 1974: 32&68 (cf. already Carruba, 1969a: 60), Melchert, 1991a: 138¹⁴; cf. alternate analysis by Gusmani (1971) & (1972); (8) Gusmani, 1964a: 208; (9) Melchert, 1992b: 48 (cf. already Innocente, 1986, and Eichner, 1986b: 205⁵); (10) Melchert after Carruba, 1959: 39, & 1961a: 461 (= Hitt. *natta manqa*) contra Gusmani, 1964a: 173f, & Eichner apud Gusmani, 1982: 80; (11) Gusmani, 1968: 53 (formally = Skt. *sadman-*, but meaning quite uncertain!); (12) Carruba, 1969a: 70ff & 1969b: 44.

/n/ < */n/ & */nn/: (1) *nid* 'not' < PA **nē+* (& prefix *ni-*); (2) conj. *nāw* 'for' (or sim.) < PA **nām*; (3) *kāna-* 'wife' < (virtual) PA **gʷónā-* 'woman'; (4) preverb *ēn-* (before consonant) < PA **ēn-*; (5) prob. asseverative part. *-(i)n* < PA **nu-*; (6) prob. *ān(a)-* 'this' < PA **ōno-*; (7) *ēna-* 'mother' < PA **ānna-*; (8) *ēn(a)-* 'that' < PA **ānno-*; (9) "durative" suff. *-ēn(i)-* < PA **-ānni-*; (10) perh. *antola-/anlola-* (part or contents of grave) < (virtual) PA **en-dwaH-ōlo-* 'human'.

(1) Gusmani, 1964a: 173 w/refs.; (2) Melchert, 1992b: 37 (cf. already Carruba, 1961a: 462); (3) Gusmani, 1985a; (4) Meriggi, 1936b: 287, Carruba, 1959: 31f; (5) Carruba, 1959: 37 & 1969b: 51ff (cf. Vedic *nū* for function and position); (6) Melchert, 1991a: 137ff; (7) Gusmani, 1962a: 83; (8) Melchert, 1991a: 139¹⁷ (cf. already Sturtevant, 1925: 73); (9) Melchert, 1992b: 40ff w/refs.; (10) Gusmani, 1975a: 5.

/n/ < */m/+dental: preverb *kan-* (in *kan-tro-* etc.) < PA **kom-* (implicit in Kronasser, 1956: 232, & Carruba, 1959: 31, vs. Carruba, 1961a: 461).

/v/ < */m/ & */n/ /_#: (1) anim. acc. sg./dat.-gen. pl. -aw < PA *-om; (2) pret. 1st sg. -v < PA *-om; (3) *ētamu* 'designation' < (virtual) PA **ēm̥* 'name'; (4) suffix -mw- in gen. pl. *ibsimvaw* 'Ephesians' and *kulumva(v)-k* 'Coloans' < PA *-umon; (5) conj. *nāw* 'for' (or sim.) < PA **nām*; (6) prob. pret. 1st pl. -wu < PA *-wen.

(1) for sg. implicitly Sturtevant, 1925: 73, et al.; for pl. Heubeck, 1963: 547, contra Carruba, 1961b: 398; (2) Gusmani, 1960a: 288⁴⁹; (3) Bossert, 1949: 110, & Heubeck, 1959: 65ff (for preform see above 4.1.6.1.2); (4) Carruba, 1959: 187, Ševoroškin, 1967: 31, & Georgiev, 1984: 10; (5) Melchert, 1992b: 37 (cf. already Carruba, 1961a: 462); (6) Melchert, after Gusmani, 1960a: 288ff, and Bossert, 1944: 125, contra Carruba, 1960: 52 & passim (cf. Carruba, 1969a: 69).

/r/ < */r/: (1) *bira-* 'house' < PA **pēr+*; (2) *serli-* 'supreme (authority)' < PA **sérli-* 'high' (& in (*kat-*)*sarloki-*); (3) *šfarwa-* 'oath' < (virtual) PA **swórwo-*; (4) *sirma-* 'temenos' < (virtual) PA **sěrmó-* 'of the precinct'; (5) -karse- 'cut out' < PA **korséye-*; (6) **arma-* 'Moon-god' (in *armra-*) < PA **arma-*; (7) prob. -korfi- 'undertake' (or sim.) < PA **kérp(i)ye-*; (8) prob. *tro(d)-* 'hand over, grant' < (virtual) PA **drowáHye/o-*; (9) prob. *aara-* 'courtyard' (or sim.) < PA **árH+*; (10) prob. *afara/i-* 'descendant' < PA **ópero-* 'rear-; later'; (11) perh. (*kat-*)*-šare-* (*karare-*) 'stand watch' < (virtual) PA **soréye-* (also in *sarēta-* 'protector' or sim. < virtual **serřto-* and *saroka-* 'protection'); (12) perh. *rawa-* 'set free' < PA **arówaH-*; (13) perh. *qira(a)-* 'household' (or sim.) < (virtual) PA **g^wiró-*.

(1) Hrozný, 1917: 192; (2) Neumann, 1960: 558, & Gusmani, 1962b: 46f; (3) Gusmani, 1975b: 171; (4) Melchert, after Innocente, 1987/88; (5) Gusmani, 1964a: 119 (root etym.), Melchert, 1992b: 46f (morphol.); (6) Jongkees, 1938: 365, & Heubeck, 1959: 31f; (7) Gusmani, 1964a: 120 (but for phonol. cf. Eichner, 1986a: 21, & Melchert, 1992b: 48); (8) Melchert, 1992b: 53f; (9) Neumann, 1965b: 273; (10) Melchert (see under /f/ for details); (11) Melchert, 1992b: 47; (12) Gusmani, 1982: 86 (but meaning of Lydian quite indeterminate!); (13) Melchert (see above under /q/ for details).

/l/ < */l/: (1) relational suffix -(V)l(i)- < (virtual) PA **-Vl(i)-* (non-palatal /l/ generalized from neuter and oblique forms w/o -i-); (2) prob. pret. 3rd person -l < PA **-l(o)*; (3) *serli-* 'supreme authority' < PA **sérli-* 'high'; (4) perh. *antola-* (part or contents of grave) < (virtual) PA **en-dwaH-ólo-* 'human'; (5) perh. *qela-* 'estate' (or sim.) < PA **k^wélo-* 'turned/plowed land'.

(1) Gusmani, 1964a: 36 (phonol. per Eichner, pers. comm., after Starke, 1982: 408f; for athematic stem see Bader, 1988a: 176); (2) Meriggi, 1936b: 284, Kronasser, 1956: 232, et al., contra Eichner, 1975a: 80, & Oettinger, 1976/77: 135 & 1978: 86 (cf. isolated Hitt. *dalug(a)nula* and Slavic parallels—also in infinitive in *-Vŋ*); (3) Neumann, 1960: 558, and Gusmani, 1962b: 46f; (4) Gusmani, 1975a: 5; (5) Georgiev, 1984: 28.

The putative change of final **-t/dV* to *-l* proposed by Eichner and Oettinger is extremely unlikely, in view of third person present *-t/d < *-t/di* and *kud* 'as' or 'where' *< *k(w)udV*.

*/λ/ < */l/ / _*y/i:* (1) *αλα-* 'other' *< PA *alyó-*; (2) prob. *klida-* 'earth' *< PA *gliyā-*; (3) perh. dat. sg. *-λ < PA *-li*; (4) perh. (*fēn-*)*sλibi-* 'penetrate, violate' *< (virtual) PA *slibyē-*.

(1) Meriggi, 1935: 77; (2) Melchert, 1994a; (3) Schmidt, 1968: 236, & Meriggi, 1980a: 278 (cf. Lyc. locative adverbs *ebe-li* 'here', *te-li* 'where'). Cf. other proposals by Heubeck, 1963: 547 (*-λ* generalized from pron. *δλ* 'to him' *< *obēl* = Hitt. *apēl-*—thus also Sommer, 1947: 33, & Georgiev, 1984: 8—and by Oettinger, 1978: 86 (*-λ < *-du*); (4) Melchert (see under */p/ < *b* for details).

Oettinger can offer no parallels for the "cerebralization" of **d* to *λ* before *u*. However, exx. like *mλola-/mλwēnda-* make it likely that **l* is also palatalized by preceding front vowel, so the derivation from **-ēl* seems phonologically possible.

13.1.5 Vowels: */i/* */u/*
/e/ */o/*
/a/, /ā/, /ā:/

(1) As indicated above (1.2.9.2.3), the vowel written as *y* is a variant of */i/*. The suggestion of Gusmani (1983: 57ff) that it represents an allophone of */i/* such as [i] which appears in unstressed position now seems confirmed by the independent rules of Eichner (1986a). For *qyrāλ* compare *qiraas/qiraaλ*. For *ártymu(s)* and *ártymali-* note the metrical evidence of *ártimul* in 11,9 (Eichner, 1986a: 18). The example *sarys* in 13,3 is also in a metrically unstressed position. While one must be cautious with so few examples, it is also noteworthy that all three examples of the relative spelled with *qy-* in text 23 are in non-initial position (*qys*, *qyd*, *qysk*). Eichner himself (1986a: 8) lists *y* as occurring under the accent, but he gives no examples. Presumably he is thinking of *syrma-* beside *sirma-*, which he takes as *sírma-* (1986a: 20). However, the metrical evidence

for the latter is weak. I would assume rather proclisis before a postposition in *sirmā ēn* and a metrical pattern $\sim\sim\sim$, as often: cf. *šfatrrás* $\sim\sim\sim$ in the very next line. The word may therefore be *sirmā-*. There is no evidence against taking the *i/y* of *arī/yllī-* as unstressed. Since *y* thus appears to be a conditioned allophone of */i/*, I will take no further notice of it here.

(2) There is some indication that */e/* and */o/* are relatively close and perhaps long mid vowels. Note the consistent rendering of Lydian */e/* by Greek eta (see the names collected by Gusmani, 1988a). See also the likely sources of the vowel below. The fact that the only clear sources of Lydian */o/* are **Kwó* and **wó/á* suggests that it too may have been a close long [o:], but this is hardly assured. Otherwise Cuny (1921: 3-5).

(3) The synchronic distribution of *ē* suggests that it is a nasalized vowel (see Gusmani, 1964a: 31, 1965a: 208, & 1985b: 79f, & Eichner, 1986b: passim (esp. 211²¹), contra Bossert, 1944: 111f, and Gusmani, 1988b: 247). However, it alternates with *a* in unaccented position (*cēqra-* vs. *caqlá-*, anim. acc. sg. *-ēv* vs. *-av*, as per Eichner). It also originates in clear cases from a short vowel before nasal in closed syllables. I therefore view it as a short nasalized low back or central vowel. For the short "a" quality see already Bossert. The appearance of *ē* in *lamētru-* for 'Demeter' is admittedly surprising, but perseveration of the nasality of the *m* (thus Eichner, 1986b: 211) cannot be excluded: cf. my own pronunciation of 'municipal' as [myunĩntsipl].

(4) The distribution of *ā* also points to a nasalized vowel (Gusmani, 1964a: 30, 1965a: 208, & 1985b: 79f, & Eichner, 1986b: passim), pace Bossert (1944: 111) and Gusmani (1988b: 247). Since it originates either in short vowels in open syllables or in long vowels, one may still accept Bossert's claim that the vowel is relatively long, probably [ā:].

(5) Vowel length does not appear to be distinctive in Lydian. The status of the spellings in *aa*, however, remains problematic: see Gusmani (1975c: 263ff, w/ refs). Since some of these (e.g. *taada-* 'father') are not limited to the "poetic" texts, "metrical lengthening" will not account for all of them. However, the spelling *aa* does seem to indicate a phonetically long vowel and to be restricted to accented syllables: see West (1972: 166) and Eichner (1986b: 215f). In view of other sporadic indications of allophonic variation (see above on *g* and *y*), I tentatively assume that */a/* was realized as long [a:] in certain

environments (see below 14.1.5.16 for an attempt at stating the distribution).

Examples:

/i/ < */i/: (1) *qī-* 'who, which' < PA **kwī-*; (2) *bi(d)-* 'give' < PA **pi(y)-*; (3) *ēmi-* 'my' < PA **āmmi-*; (4) *ciw-* 'god' < PA **diw-*; (5) vbl. suffix *-ēn(i)-* < PA **-ānni-* (i.e. **-enh₂i-*); (6) *bi-* 'he' < PA **obī-*; (7) prob. *bif(e)-* 'give, grant' < PA **pīpV-*; (8) prob. *klīda-* 'earth' < PA **gliyā-*; (9) perh. (*fēn-*)*slībi-* 'penetrate, violate' < (virtual) PA **slībyē-*.

(1) Littmann, 1916: 79, & Hrozný, 1917: 191; (2) Carruba, 1960: 42 & 1961a: 460; (3) Meriggi, 1935: 72ff (see above 4.1.4.1 for PA preform); (4) Kretschmer, 1940: 113, Heubeck, 1959: 52; (5) Melchert, 1992b: 40ff; (6) Gusmani, 1964a: 78, after Hrozný, 1917: 191 (cf. esp. Hitt. *apiya* 'there'); (7) Gusmani, 1964a: 80, & Ševoroškin, 1967: 48; (8) Melchert, 1994a; (9) Melchert (see under /p/ above for details).

/i/ < */i:/ (*i_h): (1) *i-* & *ina-* 'do, make' < (virtual) PA **i-(naH)-*; (2) anim. adj. stems with "i-motion" < PA **-ī-*; (3) perh. *qīra-* 'household' (or sim.) < PA **g^wiró-*.

(1) Carruba, 1960: 42 (root etym.), Melchert, 1992b: 42f (morph.); (2) Starke, 1982: 408f, & Oettinger, 1987; (3) Melchert (see above under /q/ for details).

/i/ < */e/: (1) *bira-* 'house' < PA **pēr+*; (2) *nīd* 'not' (& prefix *nī-*) < PA **nē+*; (3) *sīrma-* 'temenos' < (virtual) PA **sērmó-* 'of the precinct'.

(1) Hrozný, 1917: 192 (phonol. implicit); (2) Gusmani, 1964a: 173 w/ refs. (NB: cannot be **nē* < **néy*, see under /e/ below); (3) Melchert, after Innocente, 1987/88.

/i/ < */e/ / *y___: (*fa-kat-*)*wāmid* 'meets with' < PA **wēmyedi* (and other exx. in *-id* < **-yedi* and preterites in *-il* < (virtual) **-yelo*).

Oettinger, 1976/77: 135 & 1978: 77. Cf. Melchert, 1992b: 48ff (but doubts about general rule unjustified).

/i/ < */e/ / *w___ [+coronal](?): prob. *wīssī-* / *wīswi-* 'good' < PA **wēsu+* (NB: *nīwīswa* w/o "i-motion").

Gusmani, 1964a: 226. This change is far from assured. See 14.1.5.4 for discussion.

/u/ < */u/: (1) *amu* 'I, me' < PA **emú*; (2) prob. *kud* 'as' or 'where' < (virtual) PA **k(w)udV*; (3) (*da*)-*cu(we)*- 'establish, dedicate' < (virtual) PA **duwV*-; (4) *kofu*- 'water' < PA **góbu*-.

(1) Sturtevant, 1925: 73, Meriggi, 1935: 72ff (root etym.), Eichner, 1986a: 128 (for accent); (2) Sommer apud Kahle-Sommer, 1927: 45, Heubeck, 1959: 42, Eichner, 1974: 34 & Melchert, 1992b: 31f¹, contra Gusmani, 1964a: 156, and Oettinger, 1978: 82; (3) Heubeck, 1959: 55, Melchert, 1994b; Oettinger, 1979a: 483; (4) Poetto, 1979: 198ff (Arm. *cov* is also a *u*-stem).

/u/ < */u/: (?): perh. *bu(k)* 'or' < PA **bū*- *'be' (i.e. **b^hu_h*-).

Fraser, 1923: 148 (by no means certain!).

/e/ < */e/ (accented before non-nasal): (1) (*fa*)-*karse*- 'cut (out)' < PA **korséye*- (sim. in *qisre*-, *kaṛaḷre*-, *kaṛare*-); (2) prob. *weśfa*- 'living' < PA **Hwéswo*-; (3) perh. *qela*- 'estate' (or sim.) < (virtual) PA **k^wélo*- *'turned/plowed land'.

(1) Gusmani, 1964a: 119 (root etym.), Melchert, 1992b: 46f (morph.); (2) Gusmani, 1985c; (3) Georgiev, 1984: 28.

teśaáta/i- 'right' < **deks*- (Gusmani, 1964a: 212) is extremely dubious. On *serli*- 'supreme authority' < PA **érlí*- see below.

/e/ < */e:/ (PIE **ey*): (1) *ge*- 'who, which' < PA **k^wé*-; (2) *kawe*- 'priest' < PA **kowé*- 'seer' (orig. **-éy*!).

(1) Gusmani, 1964a: 181 (tentative) (see Gusmani, 1960a: 292, for alternative account); (2) Masson, 1950 (root etym.).

The /e/ of **walwe*- 'lion' vs. Luv. *walwa/i*- must have the same source as that of *kawe*- (but perhaps only by analogy).

/e/ < */a/ / __Ci (?): (1) *es*- 'this' < PA **ósi*; (2) *serli*- 'supreme authority' < **sárlí*- < (virtual) PA **serlí*-.

(1) Neumann, 1969a: 219f (PA **ási*- < **ési*- also poss. preform; cf. CLuv. **ási*-, 4.1.2.1,3); (2) Neumann, 1960: 558, Gusmani, 1961a: 198 & 1962b: 46f.

See 14.1.5.6 for more on this uncertain umlaut rule. Cf. the alternative account of *es-* by Gusmani, 1981: 284 (rarely inflected anim. nom. sg. **ēs*).

/e/ < */Vns/ (via **[āns]*) (??): perh. *esá-* 'child, offspring' < PA **Hónso-*.

Gusmani, 1964a: 104, and Diakonoff, 1977: 336. This otherwise attractive etymology can be rescued only by assumption of **[āns]* > *es* with compensatory lengthening. Cf. 14.1.5.2.

/o/ < */o/ / **Kw* : (1) *kot* 'where' or 'as' (?) < PA **kwóto*; (2) *-kod* (generalizing) < PA **-kwód*.

(1) Melchert, 1992b: 31, & Oettinger, 1978: 82³³, contra Gusmani, 1964a: 154 & 1965: 208, and Oettinger, 1978: 82; (2) Melchert, 1992b: 32, & Carruba, 1961a: 461, contra Gusmani, 1964a: 153, & Oettinger, 1978: 82.

/o/ < */wo/ & */wa/ after dental(?): (1) prob. *tro(d)-* 'hand over' < (virtual) PA **drōwáHye-* (with syncope); (2) prob. *(fa)-do-l* 'put in' (or sim.) < (virtual) PA **duwV-*; (3) perh. *antola-* (part or contents of grave) < (virtual) PA **en-dwaH-ólo-*.

(1) Melchert, 1992b: 53f; (2) Gusmani, 1964a: 116, & Melchert, 1992b: 52; (3) Gusmani, 1975a: 5.

The development is hardly assured, but *arwo-* and *wora-* point in same direction (cf. 14.1.4.8 and 14.1.5.10).

/o/ < */Vw/ under accent (?): (1) prob. *os-* 'that' < (virtual) PA **ówsí-* (stem after *es-* < **ósi-*); (2) perh. vbl. suff. *-no-/-vo-* < PA **-néw-*; (3) perh. *ow-* 'proclaim' (or. sim.) < PA **éwgw-*.

(1) Melchert (for **ow-* with far-deixis see Dunkel, 1988a: 109ff)---cf. Eichner, 1988a: 55; (2) Melchert, 1992b: 52, modifying Oettinger, 1978: 77; (3) Ševoroshkin, 1978: 235.

/o/ < pre-Lyidian **a* between dorsal & labial (?): (1) prob. *(fa-)korfi-* 'undertakes' (or sim.) < PA **kérp(i)yedi* (via **karpíd*); (2) perh. *kofu-* 'water' < PA **góPu-* (via **kafu-*), but **gówPu-* also possible.

(1) Melchert, 1992b: 48, after Eichner, 1986a: 21; (2) Melchert after Poetto, 1979: 198ff. This "labial umlaut" rule is quite tentative!

/a/ < */o/: (accented) (1) *aλa-* 'other' < PA **alyó-*; (2) *tawša-* 'mighty' (or sim.) < PA **te/ow(H)só-*; (3) *wšta(a)-* 'alive' < (virtual) PA **Hustó-*; (4) prob. adj. suff. *-ašta/i-* < PA **-ōsto-* (+ "i-motion"); (5) prob. *afara/i-* 'descendant' < PA **ōpero-* 'rear-; later'; (unaccented) (6) encl. *-aš, -aw, -ad* < PA **-os, -om, -od*; (7) dat.-gen. pl. *-aw* < PA **-om*; (8) preverb *kan-* < PA **kom-*; (9) prob. *kawe-* 'priest' < PA **kowē-*; (10) *-karse-* 'cut (out)' < PA **korsēye-*; (11) NB also conj. *fa-* < PA **po*.

(1) Meriggi, 1935: 77; (2) Haas, 1962: 178, Gusmani, 1964a: 212; (3) Melchert, 1991a: 135; (4) Melchert (cf. Lat. *angustus*); (5) Melchert; (6) Gusmani, 1964a: 51; (7) implicitly Gusmani, 1964a: 36, contra Carruba, 1961b: 398; (8) Carruba, 1959: 31; (9) Masson, 1950 (phonol. implicit); (10) Gusmani, 1964a: 119 (root etym.), Melchert, 1992b: 46f (morphol.); (11) Heubeck, 1959: 45-46 (phonol. implicit).

For the accent of all but (4) and (5) see Eichner (1986a, *passim*).

/a/ < */a/: (1) *aλa-* 'other' < PA **alyó-*; (2) *ēna-* 'mother' < PA **ánna-*; (3) *taada-* 'father' < PA **dáda-*; (4) *kat-* 'down' < **kat(V)-*; (5) perh. *aara-* 'courtyard' < PA **árH-*.

(1) Meriggi, 1935: 77; (2)-(3) Gusmani, 1962a: 81-83. (4) Hrozný, 1917: 193, Ševoroshkin, 1978: 233¹¹ (latter insisting on PA **a*); (5) Neumann, 1965b: 273 (root etym.); see 4.1.6.2.1 (1) for PA preform.

/a/ < */a:/ & */aH/: (1) nt. nom.-acc. pl. *-a* < PA **-ā*; (2) *kāna-* 'wife' < (virtual) PA **gʷónā-*; (3) prob. suffix *-na-* (in *ina-*, *labtāna-*) < PA **-naH-*; (4) prob. *klida-* 'earth' < PA **gliyā*, (5) prob. *(wc)-baq-(ēn)-* 'trample on' < PA **pākū-* 'stamp, crush'; (6) prob. *rkal(i)-* 'of the treasury' < PA **Harkā-* 'strong-box'.

(1) Sturtevant, 1925: 71, Carruba, 1959: 16ff; (2) Gusmani, 1985a: 127ff; (3) Melchert, 1992b: 42; (4) Melchert, 1994a; (5) Melchert (see above under /p/ for details); (6) Carruba, 1991: 16f, despite doubts of Wallace, 1988: 207.

/a/ < */æ:/ (i.e. **eh₁*): *ta(a)c-* 'votive offering' < (virtual) PA **dædi-* (i.e. **d^héh₁ti-*) 'putting'.

Melchert, 1994b.

/a/ < unaccented */e/: (1) *amu* 'I, me' < PA **emú*; (2) *-sarlV-* in (*kat*)-*sarlóki-* 'bring humiliation to' (or sim.) < PA **serlV-*; (3) prob. *afara/i-* 'descendant' < PA **ópero-* 'rear-; later' (with "i-motion"); (4) prob. *sarēta-* 'protector' (or sim.) < (virtual) PA **serŋto-* (likewise in *saroka-* 'protection'); (5) perh. *antola-* (part or contents of grave) < (virtual) PA **en-dwaH-ólo-*; (6) perh. *sadmēv-* 'relief' < (virtual) PA **sedmŋ-*; (7) NB also preverb *fa-* < PA **pe-*.

(1) Meriggi, 1935: 72 (root etym.), Eichner, 1986a: 128 (accent); (2) Gusmani, 1961a: 198 & 1962b: 42f; (3) Melchert; (4) Melchert, 1992b: 47; (5) Gusmani, 1975a: 5; (6) Gusmani, 1968: 53 (but meaning quite uncertain!); (7) Heubeck, 1959: 45-46 & 77 (but w/o explicit phonol.).

Place of accent is assured in all but (3) by the rules of Eichner, 1986a&b.

Lyd. /a/ can also reflect unaccented **ē* before stop (see 14.1.4.2).

/a/ < */e/ /__R.C (?): perh. *-korfi-* 'undertake' < PA **kérpye-* via **karpī-*.

Melchert, 1992b: 48, after Eichner, 1986a: 21.

I tentatively assume that the apparent counterexample *serli-* has undergone i-umlaut from an intermediate **sarli-* < PA **sérli-*.

/ā/ < accented */e/, */o/ & */a/ /__N.(C): (1) preverb *ēn-* 'in(to)' < PA **ēn* (before consonant); (2) preverb *ēt-* 'in(to)' < PA **ēndo*; (3) vbl. suffix *-ēn(i)-* < PA **-ēnni-* (i.e. **-énh_ii-*); (4) perh. *mētli-* 'to harm' < PA **ménd+*; (5) *ēna-* 'mother' < PA **ánna-*; (6) *ēmi-* 'my' < PA **ámmi-*; (7) *ēn(a)-* 'that' < PA **ánno-*; (8) *dēt-* 'mobile property' < PA **yónt-* 'walking'; (9) anim. acc. sg. & dat.-gen. pl. *-ēv* < PA **-óm*; (10) adj. suff. *-ēt(i)-* < PA **-é/ónt-* (w/ 2ary "i-motion"); (11) prob. nt. nom.-acc. sg. *amēd* '?' < PA **-món(+d)*; (12) prob. adj. suff. *-ēm(i)-* < PA **-ómmo-* (w/ 2ary "i-motion"); (13) perh. (*niku*)*mēk* '(not) at all' < (virtual) PA **-mónko*; (14) perh. *sadmēv-* 'relief' (or sim.) < (virtual) PA **sed-mŋ* (for details see 14.1.4.4); NB also (15) *ētamu* 'designation' (or sim.) < (virtual) PA **ŋmŋ* 'name' via *[*án-mān*] and prob. (16) *sarēta-* 'protector' (or sim.) < (virtual) PA **serŋto-*.

(1)–(2) Carruba, 1959: 31–32; (3) Melchert, 1992b: 40ff; (4) Innocente, 1986; Melchert, 1992b: 48; (5) Gusmani, 1962a: 83; (6) Meriggi, 1935: 72ff (for PA preform see above 4.1.4.1); (7) Melchert, 1991a: 139¹⁷; (8) Melchert, 1994a: ; (9) Eichner, 1986b: 218f (implicitly Gusmani, 1964a: 31, et al.); (10) Melchert, 1992b: 36; (11) Melchert, 1992b: 34; (12) Melchert, after Gusmani, 1964a: 66; (13) Melchert after Carruba, 1959: 39 & 1981a: 461; (14) Melchert, after Gusmani, 1968: 53; (15) Bossert, 1949: 110, Heubeck, 1959: 65ff (see above 4.1.6.1.2 for preform); (16) Melchert, 1992b: 47.

/ā:/ < accented */e/, */o/, & */a/ /___NV: (1) *kāna*– 'wife' < (virtual) PA **gʷónā*– 'woman'; (2) prob. *ān(a)*– 'this' < PA **óno*–; (3) perh. **kān*– 'dog' (in *Κανδαύλης*) < **kwónV*–; (4) prob. (*ja*–*kat*)–*wāmi*– 'meet with' < **wēmi*– < PA **wēmye*–; (5) prob. –*qān*– 'strike' < PA **gʷén*– (generalized from 1st sg. **gʷénu* < **gʷénw*); (6) perh. *ān*– in *ānrēt* 'registers' (or sim.) < (virtual) PA **én*–*Hats*–*yónti* 'inscribe' (w/ loss of **H* and eventual syncope).

(1) Gusmani, 1985a: 127ff; (2) Melchert, 1991a: 137ff; (3) Melchert, after Kretschmer, 1898: 388f; (4) Gusmani, 1964a: 119 (root etym.), Melchert, 1992b: 48ff (morph.); (5) Heubeck, 1959: 44f (root etym.), Melchert, 1992b: 43f (morph.); (6) Melchert, 1992b: 39f.

No good examples yet for **a*, but development seems likely. Cf. merger to /ā/ before **-N.C.* The Anatolian word **wVno/a*– (Lyd. *wāna*–, HLuv. *wa/i-ni*–) also surely belongs here, but the quality of the first vowel cannot be determined without an IE etymology. On the *a* of *tamv* 'I built' for expected *ā* (< virtual PA **dēmom*) see Eichner (1986a: 11).

/ā:/ < */a:/ (& */o:/ ?) /___N: (1) conj. *nāw* < PA **nām*; (2) anim. acc. sg. –*āw* < PA **-ām* and dat.–gen. pl. –*āw* < **-ām* < 2ary **-āom*; (3) prob. anim. nom. sg. *amās* '?' < PA **-mōn+s*) (cf. nt. *amēd* above).

(1) Melchert after Carruba (see above under /n/ for details); (2) Melchert, 1992b: 37; (3) Melchert, 1992b: 34&37 (contra Gusmani, 1964a: 57).

13.2 Accent

Thanks to the brilliant detective work of Eichner (1986a and 1986b), we know a great deal about the synchronic Lydian accent. While certain details remain open to question and further investigation, Eichner's analysis accounts for too many facts of Lydian phonology to justify doubts about the principal claims, pace Gusmani (1988b). I cite among others: (1) the alternation of *ē* and *a*; (2) the distribution of the nasalized vowels *ā* and *ē* in relation to each other, to *aa* and to syllabic

sonorants; (3) the distribution of *y* as already suggested by Gusmani himself, 1983: 57ff (see above 13.1.5.1).

Following Eichner, I assume that each Lydian word has at most one principal accent, which is free to fall on any syllable. Certain morphemes are always unaccented (enclitics), while other words may become cliticized. In simplex words the vowels /e/, /o/, /ā/, and /ā:/ are always accented. If a word contains more than one of these vowels, this is the result of a univerbation. As Eichner himself points out (1986a: 12ff), most such cases had already been interpreted as compounds on independent grounds. In fact, all but a handful of examples involve specifically the preverbs *ēn and *ēndo, which lead to Lydian ēn-/ān- and ēt-. Metrical evidence suggests that the synchronic accent in univerbations with these preverbs is on the verb, as in all other preverb+verb combinations. The irregular vocalism of just ēn-/ān- and ēt- (as if they were accented) may be due to association with the attested postposition ēn 'in'. The long allomorph of /a/ spelled aa is always accented: see Eichner (1986b: 215f) and 13.1.5 (5) above.

The vowels /a/, /i/ and /u/ may be accented or unaccented. As indicated above in 13.1.5 (1), I assume contra Eichner (1986a:8) that *y*, an allophone of /i/, occurs only in unaccented syllables.

Words containing only /a/, /i/ and /u/ are thus in the first instance ambiguous as to the place of the accent. However, we know that accented /ā/ alternates with unaccented /a/: see Eichner (1986b: 211ff) and already West (1974: 136). It is also likely that syllabic sonorants are always unaccented. Therefore when we find *caqla-* beside *cēgra-*, the accent in the first must be *caqlā-*, while *srml-* must be *srmlí-*. I refer the reader to Eichner's discussion for further examples of such indirect determination of the accent.

Since some of the Lydian texts are in verse, we can also use metrical evidence to determine the position of the accent in certain words: see Eichner (1986a: 15ff). However, it is in my view crucial to distinguish between metrical evidence and direct linguistic evidence as described above. The metrical pattern of the best-preserved Lydian verse texts generally supports Eichner's analysis of the accent. The cadence in particular is extremely regular, as one would predict. However, in other parts of the verse line one must assume either an irregular accent or an irregular metrical pattern. For example, in 11,12 one would have to assume accent on an enclitic (*f=ak=mλ=at=áv*) in order to achieve the same metrical pattern

as in other lines of the text. In view of this and similar irregularities, I do not feel bound by the metrical evidence for an accent *šfarwád* in 11,1 to assume that the word *šfarwa-* is oxytone, contrary to the linguistic evidence (see 14.1.5.9).

I have followed Eichner's analysis of the synchronic accent throughout this work except where noted. For reasons just cited, I have explicitly indicated instances where I am relying on metrical evidence alone to determine the position of the accent.

13.3 Synchronic Phonological Rules

(1) Voicing is non-distinctive in stops in Lydian and therefore only rarely indicated in the spelling (see 13.1.1 above). This makes it impossible to determine the status of the regressive voicing assimilation seen in the hapax *qig dēt* (for usual *qik*), as suggested by Swanson (1947: 205f). However, even a glance at the list of occurring fricative plus obstruent clusters (13.4.1 (4)–(5) below) makes it clear that regressive voicing assimilation in obstruents is not regular in Lydian. To cite but one example, one finds both *lewš* and *lefš* 'Zeus'. In underlying combinations of the fricative /ð/ with /ç/ or /s/ there appears to be dissimilation of /ð/ to a stop and devoicing, regardless of the order: the nt. nom.-acc. sg. **es-d* 'this' (i.e. [eç-ð]) appears as *est*, while we find *šfardēnr* ([-ānts]) for **šfardēd+š* [-āð-s] (i.e. nt. nom.-acc. sg. 'Sardian' + emphatic -š): see on the latter Melchert (1991a: 134). The preservation of the -d- in *eds* 'this' (anim. nom. sg.) would be due to paradigmatic analogy. I have suggested, Melchert (1991a: 134f), that *ardēc* ([-ādz]) may represent *ardēt+š* (i.e. [-ād-s]). If correct, this example would show progressive voicing assimilation in a stop+fricative combination. The differing outcome in stop+fricative vs. fricative+fricative could reflect some kind of feature hierarchy, but more evidence is sorely needed.

(2) Sandhi Rules

Word-final -š, -d, -t and -ν are all regularly deleted before the enclitic -k: see Gusmani (1964a: 35). Word-final -ν is also deleted before the enclitic -š: e.g. *brwāν* 'years' (dat. pl.) + emph. -š > *brwāš* (Melchert, 1991a: 132, contra Gusmani, 1964a: 85). Cf. also *nām* = *nāν+ -m-* (cf. Carruba, 1959: 38, and Gusmani, 1964a: 170).

13.4 Phonotactics

One of the ways in which Lydian differs strikingly from its sister languages, particularly those of the first millennium (Hluvia and Lycia), is in its phonotactics. It has relatively few final vowels, while final consonants are common, and it is rich in consonant clusters. The following summary was made immeasurably easier by the fine reverse index of Gusmani (1986a: 176–185).

13.4.1 Consonants

(1) All Lydian consonants occur in word-initial position except /λ/ and /v/. Note the initial /r/ in *rawa*!

(2) Among stops, /t/ and /k/ are found word-finally (the latter is always the enclitic *-k*). The absence of word-final /p/ and /q/ is expected (cf. PA). The affricates /ts/ and /dz/ occur in final position only as the result of sandhi involving the enclitic particle *-s*. Final /f/ is rare (only in the odd *sof*, apparently with sporadic devoicing from **sow*, as per Bossert, 1944: 125). The other fricatives /s/, /ç/, /v/ and /ð/ occur freely in final position. All sonorants are found in final position except /r/: /m/, /n/, /v/, /l/ and /λ/.

(3) Initial consonant clusters: as one would predict, there are no initial stop+stop clusters. One finds as expected initial stop plus liquid: /pλ-/ , /pr-/ , /tr-/ , /kλ-/ , /qλ-/ . The absence of **kr-* and **qr-* and combinations with non-palatal /l/ is surely accidental. The initial sequence of *kšbλta-* is remarkable. For the possibility that fricatives function as syllabics see West (1972: 167) and Eichner (1986a: 8 w/note 4). Note also the name *bšadwo(li)-*.

The lack of initial /sT-/ is surprising: cf. 14.1.6.1 (3) below for the possibility that pre-Lydian **sT-* > *isT-*. One finds initial /sf-/ (due to **sw* > /sf-/; 14.1.4.9). The /dzf-/ of *cfišad* is striking. Ševoroškin's derivation from **dwiš* (1979: 185) is phonetically plausible (cf. 11.1.2, end, on a similar change in Milyan), but there is no contextual support for the meaning 'twice', and the non-palatalized *š* after *i* is disturbing. Initial /s/ plus sonorant is represented by /sλ-/ and /sn-/.

One also finds other combinations of initial fricative plus sonorant: /fr-/ , /vr-/ , /vv-/ . The initial sequences of *wšta(a)-*, *wbaqēnt* and *dctāid* recall *kšbλta-* cited above.

Finally, initial /mλ-/ and /mr-/ also occur.

In assessing initial consonant clusters, I have excluded sequences of *CRC-*, since the sonorant here surely is functioning as a syllabic: see 13.1.4 (3).

(4) Word-final consonant clusters. Lydian eliminates a number of potential final clusters by special sandhi rules: see 13.3 (2). Enclitic combinations do produce rare /-kt/ and /-kts/. The final sequence [.]retk is quite unexpected.

One does find final sibilant plus stop: /-st/, /-çt/, /-sk/ and /-çk/ (the last two all w/ enclitic -k). Final sequences of obstruent plus sibilant are also well-established: /-ts/ (spelled -τ), /-ks/, /-fs/, /-vs/, /-ss/(!), /-vç/ and /-ðç/.

Final sonorant plus stop is represented by /-nt/, /-lt/, /-λt/, /-rt/, /-mk/, /-nk/, /-lk/, and /-λk/ (the latter as usual all w/ enclitic -k). The sequence /-nts/ is unusual: see 13.3 (1). All sonorants are found before final /-s/: /-ms/ (even /-rms/!), /-ns/, /-ls/, /-λs/, /-rs/. The one occurrence of /-nç/ is problematic (*kāns*, emended), but the sequence is expected.

In the case of final sequences of /-VCR/, one faces the difficulty of deciding whether the sonorant is functioning as a syllabic or non-syllabic. We would strongly expect [-VCR] in the case of preceding obstruent, but in the case of [-VRR] the result is less predictable. Obviously, the syllabicity of the final sonorant could even depend on whether the following word begins with a vowel or consonant. The treatment of verse-final /-VCR/ as either [-VCR] or [-VCR] by "poetic license" is fully expected. The following list of such final sequences is based purely on orthography, and each case must be scrutinized individually. Cf. 13.1.4 (3) and Eichner (1986a: 16f, w/ refs).

Attested final obstruent plus sonorant: /-km/, /-ðm/; /-tn/, /-tsn/, /-fn/, /-çn/; /-tv/, /-tsv/, /-çv/, /-vv/, /-ðv/; /-kl/, /-pl/, /-tl/, /-tsλ/, /-sλ/, /-çλ/, /-ðλ/.

Final sonorant plus sonorant: /-mn/ (/ -rmn/ & /-λmn/!), /-rn/; /-mv/, /-nv/, /-lv/; /-ll/; /-ml/, /-l(l)λ/, /-rλ/.

(5) Internal consonant clusters. I list occurring internal clusters below, arranged after the initial consonant. I wish to note explicitly that the examples below are genuinely word-internal: i.e., they occur within verbal and nominal stems.

Only the clusters /-ðk(t)-/, /-ðts-/ and /-ðs-/ are due to the special conditions of enclitic sequences. It is true that some of the more complex clusters below are due to univerbations. Given the restricted data base, it did not seem useful to attempt to give them a separate treatment.

Stop plus obstruent: /-pt-/; /-pts-/; /-ps-/; /-tq(r)-/; /-tts-/; /-tv(n)-/; /-tç-/; /-kt-/; /-kts-/; /-ks-/; /-kç-/; /-qt-/.

Affricate plus obstruent: /-tsts-/; /-tsf(λ)-/; /-dzp-/; /-dzt-/; /-dzð-/.

Fricative plus obstruent: /-fdz-/; /-vt-/; /-vk-/; /-vv-/; /-vdz(n)-/; /-vs-/; /-vð-/; /-st-/; /-sq-/; /-sts(n)-/; /-sdz-/; /-sf-/; /-sv-/; /-ss-/; /-çt(r)-/; /-çk-/; /-çq-/; /-çf-/; /-çv-/; /-ðt(r)-/.

Stop plus sonorant: /-pl-/; /-pλ-/; /-tl-/; /-tr-/; /-tn-/; /-tv-/(?); /-kr-/; /-km-/; /-kn-/; /-kv-/; /-qr-/.

Affricate plus sonorant: /-tsλ-/; /-dzn-/.

Fricative plus sonorant: /-fl-/; /-fr-/; /-fn-/; /-vl-/; /-vλ-/; /-vr-/; /-vn-/; /-vv-/; /-sl-/; /-sr-/; /-sm-/(?); /-sn-/; /-sv-/; /-çl-/; /-çλ-/; /-dm-/.

Sonorant plus obstruent: /-lv-/; /-ldz-/; /-λt-/; /-λk-/; /-λts-/; /-λdz-/; /-λð-/; /-rp-/; /-rpt-/; /-rpts-/; /-rpl-/; /-rt(r)-/; /-rk(t)-/; /-rf-/; /-rft-/; /-rfdz-/; /-rfλ-/; /-rv(ts)-/; /-rs-/; /-rsk-/; /-rstts-/; /-rsm-/; /-rç-/; /-rð-/; /-mp-/; /-mts-/; /-mv-/; /-mç-/; /-mð-/; /-nt(r)-/; /-nk-/; /-nts-/; /-nv(n)-/; /-ns(t)-/; /-nç(λ)-/; /-nð-/.

Sonorant plus sonorant: /-ll-/; /-λm-/; /-λmð-/; /-λmλ-/; /-λr-/; /-rm-/; /-rml-/; /-rmts-/; /-rl-/; /-ml-/; /-mλ-/; /-mr-/; /-mn-/; /-mv-/; /-nl-/.

(6) Gemimates

Lydian apparently simplifies all gemimates inherited from PA: see 14.1.6.1 (9). Some of the occurring gemimates listed above reflect recent assimilations of consonant clusters: see 14.1.6.1, passim. A similar source is likely for a number of others, particularly the most common geminate, which is /-ll-/: *arlylli-* (but cf. *arkili-*), *citollad*, *fēllakin*, *isfollad*,

niqaaslla (but also *niqaasla*), *tarwalli-* and several patronymics in *-Vlli-*. A few instances are probably due to secondary combinations of like consonants: *dummlis* and *dumms* = conj. *dum-* + *-ml(-is)* and *-ms*; *saw-waštal* = cpd. with *saw-*; nom. sg. *saristrošs* = stem *saristroš+š*.

A number of Lydian words with geminates also occur spelled with single consonants. Note in addition to the examples listed above: *bil* beside *bill*, *eš* beside *ešš*, *dumlis* beside *dummlis*, *wiši-* beside *wišši-*, *niwišcv* beside *niwiššcv*, and *karare-* (and *katsarloki-*) beside *karri-* and *κατταδμῆν-*. The hapax spelling *ēnslibb.d* for usual *ēnslibid* is bizarre. The alternations just cited suggest that the language does not tolerate geminates. New geminates formed by assimilations are thus in turn quickly eliminated.

13.4.2 Vowels

(1) All Lydian vowels appear to occur freely in word-initial position.

(2) Only /a/ is frequent in word-final position. The final /u/ of *amu* 'I, me' is undeniable, but isolated. The examples for final /i/, /e/ and /ā/ are all dubious (*lěkqugi*, [] *re*, *we*, *lašzē*), while there are none for /o/ or /ā:/.

(3) The only attested sequence of two vowels in Lydian is in the problematic *wrauλ*, on which see Gusmani (1964a: 228), Carruba (1969a: 49) and Eichner (1986a: 20).

CHAPTER FOURTEEN: CHANGES FROM PA TO LYDIAN

14.1 Segmental Phonemes

14.1.1 Stops

14.1.1.1 The contrastive voiceless and voiced stops of PA become conditioned allophones in Lydian: the voiced stops are generalized after nasals (and perhaps next to /r/), the voiceless stops elsewhere. There may also be some free variation (cf. 13.1.1).

Examples:

* /p/ > /p/: PA **pi(y)-* 'give' > *bi(d)-*; PA **pēr+* 'house' > *bīra-*; prob. PA **pākū-* 'stamp, crush' > (*wc*)-*baq-(ēn)-* 'trample on'.

* /b > /p/: PA **obī-* 'that (one)' > *bi-* 'he'; perh. PA **bū-* 'be' in *bu(k)* 'or' (NB: both PIE **bʰ*); perh. (virtual) PA **slībīyē-* 'slips, glides' in (*f-ēn-*)*slībīd* 'penetrates, violates' (if correct, PIE **b*); cf. also prob. PA **kōmbi-* 'small' in *καμβειν* 'small child' (**kēbi-*).

* /t/ > /t/: PA **te/ow(H)só-* 'mighty' (or sim.) > *tawśa-*; PA **kat(V)-* 'down' > *kat-*; PA particle **-te* > *-(i)t*; PA **yónt-* 'walking' > *dēt-* 'mobile property'; etc.

* /d/ > /t/: PA **dæ̌di-* (virtual PIE **dhéh₁-ti-*) 'putting' > *ta(a)c-* 'votive offering' (or sim.); prob. PA **dem-* 'build' > *tam-*; PA **dáda-* 'father' > *taada-*; PA **éndo* 'in(to)' > *ēt-*; etc.

* /k/ > /k/: PA part. **-kē/o* > *-k* in *ak/fak*, perh. also in PA **-mónko* 'at all' > (*niku*)*mēk*, perh. PA **kwón(V)-* 'dog' > **kān-* (in name Κανδαύλης) (cf. 14.1.1.6 below for treatment of cluster).

* /g/ > /k/: prob. PA **gōbu-* (or **gō(w)Pu-*) 'water' > *kofu-*.

* /k/ > /k/: PA **kom-* (preverb/adverb) > *kan-* (cf. Hitt. *-kan*); PA preverb **kat(V)-* > *kat-*; PA **korséye-* (iter.) 'cut (out)' > (*fa-*)*karse-*; etc.

* /g/ > /k/: prob. PA **gliyā-* 'earth, ground' > *klīda-*; perh. PA **og-* 'die' > *ak-* in *akra-* 'of the dead'.

*/k^w/ & */k^w/ > /k/: PA *-k^we 'and' > -k; PA *k^wó- > ko- in kot 'where' or 'as' and -kod (generalizing); prob. (virtual) PA *k^(w)udV > kud 'as' or 'where'; perh. also PA *k^wón(V)- > *kân- 'dog' (cf. below 14.1.1.6).

*/g^w/ > /k/: (virtual) PA *g^wónā- *'woman' > kāna- 'wife'.

*/k^w/, */kw/ & */k^w/ > /q/: PA *k^wi-/k^wē- 'who, which' > qi-/qe-; perh. (virtual) PA *k^wélo- *'turned/plowed land' > qela- 'estate'; prob. PA *pākw- 'stamp' in (wc-)baq-(ēn)- 'trample on'; perh. PA *kwas- 'possess' > qa(a)s- in nīqaasla/i- etc.

*/g^w/ > /q/: prob. *g^wén- 'strike' > (fis-)qān- 'destroy'; perh. (virtual) PA *g^wiró- 'household' (or sim.) > qira(a)-.

14.1.1.2 The above general merger seems to have been preceded by several conditioned changes affecting various stops. In the case of the labials the relevant change is spirantization to /f/. With so few examples for PA */p/ or */b/ in Lydian, we can at present only make an educated guess at the conditioning for the change. Aside from the obscure noun fara-, we find initial f- only in fa-, the preverb and conjunction, and in fratini-, which could also contain a preverb fra- from *pro-. Here the spirantization could easily be due to weak accentual position. Note that the clearest examples of medial /f/ also appear to reflect labial stops which followed the accent in pre-Lydian: (fa-)korfi- < PA *kérpye-, bif(e)- < PA *píp(V)-; prob. kofu- 'water' < PA *kó(w)Pu-; afara/i- 'descendant' < PA *ópero- *'rear-; later'. On the other hand, the best examples of /p/ < *p/b probably preceded an accented vowel in pre-Lydian: bi(d)- 'give' < *pí(y)-, bira- 'house' < *pēr-, bi- 'he' < *obí-. Note perhaps also -slibi- < *-slibyé- (NB once fēnslibid). In καμβειν 'small child' < *kómbi- spirantization would have been blocked by the preceding nasalized vowel (cf. below on the dentals). It is also possible that Lyd. ifro- (and its derivative ifrli-), for which a meaning 'take' is suitable, reflects ultimately PA *ēp- 'take, seize' (see Melchert, 1994b). Note further the stem brafrsi-, which must express a reciprocal relationship ('the one...the other'), whose shape suggests a reduplicated *Pró-Pro-.

While I have stated the above in general terms, note that the only example for /f/ < */b/ (*kofu-*) could continue */p/ instead. It may well be, then, that the spirantization affects only */p/, before the merger with */b/ as Lydian /p/. This would account for the /p/ of *bu(k)* 'or' (if < PA **bū* 'be'), which is likely to be in a weak accentual position like *fa-*. I thus very tentatively assume a change of pre-Lydian *p (PA */p/ alone or */p/ and */b/) to /f/ except before accented vowel. Obviously, much more evidence is needed to confirm this proposal. On the entire problem and also on sporadic synchronic substitution of /f/ for /p/ see Gusmani (1964a: 31f & 1965a: 206f).

14.1.1.3 The development in the dentals is considerably clearer, though questions remain. PA */t/ is generally preserved as a stop /t/: [d] after nasal consonant and vowel, [t] elsewhere (see the examples above). Notice that this includes the presumably unaccented particle *-(i)t-* < PA **-te* (as elsewhere, Lydian has apocopated the original vowel and introduced a new anaptyctic vowel where necessary to break up awkward clusters: see 14.1.6.3.2).

PA */d/ undergoes a four-way conditioned split in Lydian. Before *i and *u it becomes *c*, probably a voiced dental affricate /dz/ (see 13.1.2.2). Examples: PA **diw-* 'god' > *ciw-*; (virtual) PA **duw(V)-* 'put, place' > (*da*)-*cu(we)-*; PA **dædi-* 'putting' > *ta(a)c-* 'votive offering'. We would expect the same change before *y, and this is surely attested in the verb stem *ca-*, whether the etymology offered above in 13.1.2 (< **d^hyeh₂-*) is correct or not. The same change is probably also attested after *u in PA **ud-* 'up(on)' > preverb *wc-*.

After nasals PA */d/ is preserved phonetically as [d], but merges phonemically with /t/ (cf. 13.1.1). The surest example is PA **endo* 'in(to)' > *ēt-*.

In other internal positions and word-finally, PA */d/ is spirantized to /ð/ (spelled *d*; see above 13.1.3.3). Examples: PA encl. nt. nom.-acc. sg. **-od* > *-ad* (and other pronominal nt. nom.-acc. sg. in *-d*, spread secondarily to nouns and adjectives); PA particle **-k^wod* > *-kod* (generalizing); PA **dāda-* 'father' > *taada-*; etc.

In initial position any */d/ which does not become *c* (see above) devoices to [t] (/t/). See above 14.1.1.1 for examples. NB: Lydian *dāw* is a postposition meaning 'from, since' and has nothing to do with the root **deh*₃- 'give/take' (Melchert, 1994b).

The above picture is complicated by two morphemes whose initial *d*- is not likely to be derived from */y/ (see 14.1.4 below): the preverb *da*- and the conjunction *dum*. While neither has a certain etymology, the presence of the conjunction **to* in Anatolian (Hitt. *ta*) suggests that the Lydian preverb is from pretonic **to*- (cf. OIr. *do*-) and the conjunction could be from a virtual **to*-*mo* (but this is mere speculation so long as its meaning remains undetermined). The weakening of */t/ here would be comparable to that of */p/ in *fa*- (see above 14.1.1.2). However, it is admittedly hard to see how */t/ can be preserved in the particle -(i)t- while weakened to *d* ([ð]) in *da*- (and *dum*). Perhaps, then, despite appearances the latter have quite another source than a dental stop.

14.1.1.4 The few examples we have suggest that the PA palatal stops merged with the velars in Lydian (14.1.1.1), but I must emphasize that none is absolutely certain, and one should notice furthermore that we have no examples at all which must reflect a palatal before front vowel! Since assibilation/palatalization of dental stops before non-high vowels is non-trivial, we may in particular ask whether instances of *c* and *τ* before *ē* (< **én*) and *a* (< unaccented **ē* and **en*) continue palatals (and even velars) instead.

14.1.1.5 Not surprisingly, the PA labiovelars delabialize to velars before **o* or **u* (examples above in 14.1.1.1): see Heubeck (1959: 41) and Gusmani (1964a: 33f). One may wonder whether the delabialization in *kud* 'as' or 'where' < **k(w)udV* already took place in PA. The delabialization in the conjunction -*k* < PA **kwe* 'and' could be due to enclisis or to word-final position after loss of the final unaccented short vowel: cf. Heubeck (1959: 74).

14.1.1.6 The probable derivation of (*wc*-)*baq*-(*ēn*)- 'trample on' from PA **pākw*- 'stamp, crush' makes it likely that a sequence */kw/ merged with the labiovelar */k^w/ (cf. Latin *equus* and *qui*-/*quo*-). Gusmani (1976/77: 168) suggests the same for */kw/ in **kwas*- > **qa(a)s*- 'possess', but the unexpected palatal *s* makes this derivation uncertain: see 14.1.6.3.1 (2) for a possible source of *s*. Such a merger can also account for apparent **kān*- 'dog' (in Κανδαύλης):

**kʷón* V- > **kʷón* V- > **qón* V- > **kān*- (by delabialization as per above).

14.1.1.7 I now consider the meaning 'of the lion' for *walwel(i)*- to be established (Wallace, 1986&1988). The alternative derivation of Carruba (1991: 18f) is phonologically impossible for both Luvian and Lydian (cf. 1.2.7.2.1 against **kʷ* > Luvian *kw*-). The base **walwe*- is obviously related to Luvian *walwa/i*- 'lion' (on the *e*-vocalism of **walwe*- see 14.1.5.8 below). Since we must apparently accept a change of word-medial PIE */*kʷ*/ to PA */*gʷ*/ (4.1.1.1,3), I find attractive the derivation of this word from PA **w₁gʷo/i*- (PIE **w₁kʷo*- 'wolf') by Lehrman (1978: 228ff). This implies a change of PA */*gʷ*/ to /*v*/ in this word in Lydian as well as in Luvian. Given Lyd. *kāna*- 'wife' vs. Luv. *wāna*- < PA **gʷónā*-, the Lydian change */*gʷ*/ > /*v*/ must be independent of the Luvian and restricted to medial position. The other examples for this change offered above in 13.1.3 are at this point quite tentative: *saw*- 'see' < **segʷ*- < PIE **sekʷ*- and *ow*- 'proclaim' (or sim.) < **éwgʷ*- < PIE **ewgʷh*-.

14.1.2 Affricate

The PA affricate [ts], an allophone of /*t*/ before /*y*/, becomes contrastive in Lydian by loss of the conditioning /*y*/ (cf. 14.1.4.8). Example: adj. suffix *-*tyo*- > -*ṛa*- (in *arm-ṛa*-, *akṛa*-, *wān-ṛa*-, etc.). See above 13.1.2 (1), *w*/refs.

14.1.3 Fricatives

14.1.3.1 PA */*s*/ is regularly preserved in Lydian as /*s*/ (written *ś*). Whether the allophone [z] survives is impossible to determine. Examples: PA anim. nom. sg. *-*o/us* > -*a/uś*; PA **swórwo*- 'oath' (or sim.) > *śfarwa*-; PA **te/ow(H)só*- 'mighty' (or sim.) > *tawśa*-; PA **Hustó*- 'alive' > *wśta(a)*-; etc.

PA */*s*/ is palatalized to /*ç*/ (spelled *ś*) before **i* and **ē*. Examples: prob. PA pres. 2nd sg. *-*si* > -*ś*; PA **sérli*- 'high' > *serli*- 'supreme (authority)' (also unaccented in *kat-sarłoki*- 'bring humiliation to' (or sim.); PA **korséye*- 'cut (out)' > -*karse*-; (virtual) PA **sěrmó*- 'of the precinct' > *sirma*- 'temenos'; etc.

PA */*s*/ is also definitely palatalized after **i*: PA anim. nom. sg. *-*is* > -*is* (in adjectives & in *bi*- 'he'). The dental -*ś* of *i*-stem nouns must be analogical to nouns of other stem classes. It is an open question whether */*s*/ is also palatalized

after *e. This possibility is raised by examples like *kasno-*, where we do not yet know whether the palatal *s* is due to a preceding unaccented *ē or a following *i/e which has been syncopated.

14.1.3.2 There is no trace of either PA */H/ or */h/ in Lydian. I know of no examples for PA */h/ (it is very unlikely that *afara/i-* means 'bill of sale' or the like and reflects PA **hop-*, contra Gusmani, 1964a: 52). However, since the stronger PA */H/ is lost everywhere in Lydian, we would expect the same for the weaker */h/.

Examples for */H/: prob. PA **Hustó-* 'alive' > *wšta(a)-* and **Hwéswo-* 'living' > *weśfa-*; prob. PA **Harkā-* 'strong-box' > *rkal(i)-* 'of the treasury'; perh. PA **Hónso-* 'offspring' > *eśa-*; prob. **ārH+* 'land section' > *aara-* 'courtyard' (or sim.); PA vbl. suff. **-naH-* > *-na-* (in *labtāna-* and *ina-*); perh. **en+H_etyó-* 'incise; inscribe' (PA **[en-Hatsyo-]*) > *ān-ṛēt* 'registers' (via **en-atsyónt*).

14.1.4 Sonorants

14.1.4.1 Original word-final */m/ and */n/ appear as Lydian *ν*, some kind of weakly articulated nasal (see 13.1.4.1). In some cases this final treatment is secondarily generalized to internal position (cf. Hitt. *takn-*, oblique to 'earth' < nom.-acc. *tēkan*). Examples: PA anim. acc. sg./gen. pl. **-om* > *-av* (anim. acc. sg./dat.-gen. pl.) (note also dat. pl. *esuvav* 'these' with iterated ending); PA pret. 1st sg. **-om* > *-ν*; (virtual) PA **ḡmṇ* 'name' > *ētamv* 'designation' (or sim.) (also in *fētamvi-* 'to designate'); etc.

If *žen* in text 12,7 is a postposition 'in' < PA **én*, as is likely (Gusmani, 1964a: 104f), it must owe its final *-n* (instead of regular *-ν*) to the influence of the preverb *žen-* (contra Hamp, 1988: 89).

14.1.4.2 Original */n/ plus dental stop definitely results in nasalized vowel plus *t* ([d]). Examples: PA **éndo* 'in(to)' > *ēt-*; PA **yónt-* 'walking' > *dēt-* 'mobile property'; PA adj. suff. **-é/ónt-* > *-ēt(i)-* (w/ 2ary 'i-motion'); prob. PA pres. 3rd pl. **-(e/o)nti* > *-Ṽt* (Melchert, 1992b: 39f). The same development almost certainly takes place before velars: NB *cēgra-*. As shown by *caqlrá-* beside *cēgra-* (Eichner, 1986b: 211), *ē* appears as simply *a* when unaccented. This means that *śfató-* and *śfatrrá-* are probably regular secondary derivatives of the base *śfēn-* seen in *śfēn(i)-* (contra Gusmani, 1975b: 167ff). There are no examples for **mP*, but *καμβειν* 'small child' < PA **kómbi-* would probably appear in Lydian

as **kēbi-*. One may also wonder if *kabrdoki-* represents an old compound with an unaccented treatment of **kom-*: **komP- > *kēp- > kab-*.

The above treatment means that attested sequences of *nt* and *nd* must be secondary! Some are manifestly due to univerbations: *ēn-tarʃlo-*, *kan-tro-* (with trivial assimilation of **m* to *n* before *t*). Others result from syncope: e.g. *int* 'does, makes' < **īnat* (< virtual **ināti*). See below 14.1.6.3.1 (1)–(2) and Melchert (1992b: passim).

14.1.4.3 In other internal positions and initially **/m/* and **/n/* are preserved as */m/* and */n/*. Examples: perh. PA **mēnd+* 'harm' > *mētli-*, PA **emú* 'me' > *amu*; PA emph. part. **-mo* > conj. *-(u)m*, etc.; PA **nē* 'not' > *ni-d*, (virtual) PA **gʷónā-* 'woman' > *kāna-* 'wife', PA **ánna-* 'mother' > *ēna-*, etc.

14.1.4.4 The only sure example of a PA syllabic nasal appears in (virtual) PA **ñmñ* 'name' (w/ generalization of $\emptyset$ -grade of root) > *ētamv* 'designation' (or sim.). The development to */ã/* is expected, since this is the result of any accented non-high vowel plus tautosyllabic nasal (see 14.1.5.2 below). The final unaccented **-ñ* in the above example is represented by *-v*, with regular development to **-Vv* in final position and syncope: see 14.1.6.3.1, (1). If *sadmēv-* represents an old neuter **men-* stem (Gusmani, 1975a: 5), then it has generalized oxytone accent (presumably after the oblique stem **-mén-*), and *sadmēv-* may represent a virtual **sedmñ-*. The secondary animate stem in nom. sg. *sadmēs* is not a problem (cf. anim. acc. sg. *tašēv* 'votive object' prob. = HLuv. nt. nom.-acc. sg. *ta-sa(n)-za*), but the meaning of *sadmēv-* is quite uncertain. Elsewhere we would expect unaccented **ñ* to appear as *a(n)*: see 14.1.4.2.

14.1.4.5 PA **/r/* is regularly preserved in Lydian. Examples: PA **pēr+* 'house' > *bira-*; PA **sérli-* 'high' > *serli-* 'supreme (authority)' (also in *kat-sarloki-* 'bring defeat to' or sim.); PA **korséye-* 'cut (out)' > *-karse-*; etc.

14.1.4.6 PA **/l/* is palatalized in Lydian before **y* and **i*. Examples: PA **alyó-* 'other' > *ala-*; prob. PA **gliyā-* 'earth, ground' > *klida-*; perh. PA **-li* > dat.-loc. sg. *-λ*. Note that the loss of the conditioning **y* makes */λ/* phonemic (cf. below 14.1.4.8 and also next paragraph). The appearance of */λ/* before */ã/* and */a/* (e.g. *slēcad*, *mλatalad*) makes it likely that **/l/* is also palatalized before **e*, but none of the examples yet has a persuasive etymology. Note that the alternative

derivation of dat. sg. $-\lambda < \text{PA } *-\bar{e}l$ (cf. Hitt. pronominal gen. sg. $-\bar{e}l$), as per Heubeck (1959: 68ff, et al.), implies that $*/l/$ is also palatalized by a preceding non-low front vowel. Other examples for this are thus far lacking, but it is admittedly hard to see another source for the first $-\lambda-$ of $qalmlu-$ or that in cases like $m\lambda w\bar{e}nda-/m\lambda ola-$.

Elsewhere PA $*/l/$ appears as Lydian $/l/$. The best example is the PA relational suffix $*(V)l(i)-$, which is productive in Lydian $-(V)l(i)-$. The lack of palatalization before $*i$ here is due to the neuter and oblique forms, which never had $*i$ (Eichner, pers. comm., following Starke, 1982: 408f). The so-called "endingless" or "abbreviated" forms in $-VI$ (Gusmani, 1964a: 44f) are simply the regular nt. nom.-acc. sg. (cf. CLuv. *nanuntarriyal*, etc.). The use for nt. nom.-acc. plural is unsurprising (cf. Lyd. *qid* likewise for nt. pl. in text 2, line 3). The neuter nom.-acc. sg. forms in $-id$ (e.g. *manelid*) are a quite predictable innovation. The source of non-palatalized l in *mētlid* 'harms' is similar, if one follows Innocente (1986) in deriving it from a base $*mētVI(i)-$ comparable to CLuv. *mantalla/i-* 'slanderous'. The pret. 3rd person ending in $-VI$ probably reflects an old participle in $*-lo$: cf. isolated Hitt. *dalug(a)nula* and (typologically) Slavic preterite forms. See the references in 13.1.4 above. The lack thus far of an inherited example of initial $l-$ is surely accidental.

14.1.4.7 If $*walwe-$ 'lion' in *walwel(i)-* represents PA $*w\bar{l}gwo/i-$ (see 14.1.1.7), then we have a clear example of PA syllabic $*\bar{l} > \text{Lyd. } al$. Finding parallel examples for $*\bar{l} > ar$ is difficult, since syllabic $*\bar{l}$ and $*l$ are generally in unaccented position. I am not aware of any good examples for syncope of unaccented $CVRC$ to CRC , and there are several apparent counterexamples: *bltarwó-*, *karftó-*, *sirmá-*, etc. I therefore tentatively take *brwá-* 'year' beside *bórla* as reflecting directly a pre-Lydian $*\bar{l}$. Likewise *murwa(a)-/mruwaa-* 'stele' presupposes a preform $*mrwó-$ (cf. 14.1.6.3.2). Obviously, our understanding of Lydian syncope is hardly profound enough to exclude the possibility of unaccented $*\bar{l} > *ar > r$. Cf. 14.1.6.3.1, end.

14.1.4.8 PA $*/y/$ between consonant and vowel is lost in Lydian. This is obvious in the case of dentals, where palatalization shows the previous presence of $*/y/$. Examples: PA $*alyó-$ 'other' $> ala-$; PA nom. suffix $*[-tyo-]$ ($*[-tsyo-]$) $> -\tau a-$ (in *arm-\tau a-* and *wān-\tau a-*). For the non-palatalized l of *mētlid* see 14.1.4.6. Other instances are complicated by the fact that an original sequence $*-Cye-$ has become $*-Cyi-$ (14.1.5.4) and hence $-Cid$. That is, the loss

of */y/ here may be specially conditioned by the following *i. Examples: PA *wēm-yedi 'meets with' > (fa-kat)-wāmid; also denom. *-ye- in sawtarid 'guards' (or sim.) < sawtaar- 'watchman' (or sim.) and verbs in -okid (kabrdokid, katsarlokid 'brings defeat to' or sim., warbtokid). For the nominal base of the latter cf. sar-oka- and ałt-oka-: see for all of these Melchert (1992b: 47ff). Thus it remains possible that original sequences of non-dental consonants (notably dorsals) plus */y/ plus a vowel other than *i result in as yet unrecognized palatalizations.

Intervocally and initially before vowel PA */y/ becomes Lydian /ð/ (spelled d). Examples: PA pret. 1st sg. *-Vyom > -Vāw (note esp. biāw 'I gave' < (virtual) *pīyom); PA *yōnt- 'walking' > dēt- 'mobile property'; PA nom. suffix *-iyo- > -da- (in taac-da-, šfēn-da-, etc.); prob. PA *gliyā- 'earth, ground' > klīda-. See Melchert. (1994a, passim).

For *VyC see the discussion below under diphthongs.

14.1.4.9 PA */w/ regularly appears as Lydian /v/ (for the pronunciation see 13.1.3.1). Examples: prob. PA *wēsu- 'good' + Zary "i-motion" > wišši-/wišwi-; PA *diw- 'god' > ciw-; prob. PA *kowē- 'seer' > kawē- 'priest'; etc.

PA */w/ becomes Lydian /f/ after *s. Examples: PA *swōrwo- 'oath' (or sim.) > šfarwa-; PA *swo- 'one's own' > *šfa- in fa-šfēn- 'possess', etc.; prob. PA *Hwēswo- 'living' > wešfa-.

The paradigm of *wēsu- 'good' would have had forms with and without an *-sw- cluster. In this case the latter remains (wišwi- with i-motion and niwišwa) and eventually is assimilated: wišši-.

Pre-Lydian *wó/á apparently contracts to /o/ after tautosyllabic dental (cf. the development of labiovelar + *o to ko-/kā above in 14.1.1.4). Examples: prob. (virtual) PA *drowáHye/o- 'hand over' > tro(d)- (via syncopated *drowáye/o-); perh. (virtual) PA *en-dwaH-ólo- 'human' > antola- (part or contents of grave) (via *en-dwá-lo-). Neither of the above examples is assured, but the development is suggested by attested wo in wora- and arwo-, for which the only likely source is *wó/á: see further 14.1.5.10 and for the syncope in tro(d)- 14.1.6.3.1 (3).

For *VwC see the discussion under diphthongs below.

14.1.5 Vowels

14.1.5.1 The PA high vowels */i/ and */u/ are generally stable in Lydian. Examples: PA **k^wi-* 'who, which' > *qi-*; PA **pi(y)-* 'give' > *bi(d)-*; PA **ámmi-* 'my' > *ēmi-*; etc.; PA **amú* 'I, me' > *amu*; prob. (virtual) PA **k^wudV* 'as' or 'where' > *kud*.

For PA long */i:/ one may cite (virtual) PA **i-(naH)-* 'make, do' (i.e. **ih₁-(neh₂)-*) > *i(na)-*; PA fem. adj. suffix **-ī-* > anim. adj. suff. *-i-*; perh. (virtual) PA **g^wiró-* 'household' > *qira-*. The example of PA **bū-* 'be' > Lyd. *bu(k)* 'or' is quite uncertain, but we have no reason to suspect any other result of PA long */u:/.

Pre-Lyidian (unaccented?) word-initial **u-* apparently is reduced to /v/: note PA preverb **ud-* 'up(on)' > *wc-*; PA **Hustó-* 'alive' > *wsta(a)-* (via **ustó-*).

14.1.5.2 When accented (!), the short non-high vowels */e/, */o/, and */a/ merge in Lydian before a nasal. They become /ā/ in a closed syllable (i.e. *-VN.C or *-VN#), /ā:/ in an open syllable (*-V.NV). Examples:

*-VN.C > /ā/: PA **éndo* 'in(to)' > *ēt-*; PA **én-* 'idem' > *ēn-* (before consonant); PA **ánna-* 'mother' > *ēna-*; PA **ámmi-* 'my' > *ēmi-*; PA anim. acc. sg. **-óm* > *-ēv*; PA **yónt-* 'walking' > *dēt-* 'mobile property'; etc. Note also PA **ñ* > /ā/ in **ñmñ* 'name' > *ētamu* 'designation' and perh. in (virtual) PA **sed-mñ* 'relief' (or sim.) > *sadmēv-* (see 14.1.4.4 above).

*-V.NV > /ā:/: prob. PA **wémyedi* 'meets with' > (*fa-kat*)-*wāmid* (via **wém(y)id*); prob. PA **g^wén-* 'strike' > Lyd. *-qān-* (generalized < 1st sg. **-qānu* < **g^wēnu* < **g^wēnuw*); perh. (virtual) PA **en-Hatsyónti* 'inscribe' > *ān-rēt* 'registers' (or sim.) (via **en-atsyónt*; for accented treatment of preverb see 13.2); PA **g^wonā-* 'woman' > *kāna-* 'wife'; perh. PA **kwonV-* 'dog' > **kān-* (in Κανδαύλης). Lack thus far of exx. for **a* is surely accidental.

We have no attested examples of *ē* (or *ēn*) before dental *s* in medial position. It is therefore conceivable that PA **Hónso-* 'offspring' > **ēnía-* > Lyd. *éśa-*, with loss of **n* before **s* and compensatory lengthening: see Diakonoff (1977: 336), following Gusmani (1964a: 104). The [e] quality is unexpected (we would predict rather [a:]), and supporting examples are needed to confirm this development.

14.1.5.3 Unaccented short */e/, */o/ and */a/ all merge as Lydian /a/. Examples: PA *emú > amu; PA *ser- 'above; high' > sar- (in *kat-sarloki*- 'bring defeat to' or sim.); PA enclitic *-os, *-om, *-od > -as, -aw, -ad; PA preverb *kom- > kan-; PA *korséye- 'cut (out)' > -karse-; PA *alyó- 'other' > ala-; PA *ánna-/dáda- 'mother/father' > éna-/taada- (2nd vowel); etc.

14.1.5.4 As per Oettinger (1976/77: 135 & 1978: 77), Lydian shares with Luvian and Lycian the change *yē > *yi > i. This accounts for third person presents in -id and preterites in -il from verbs in *-ye/o-, such as PA *wémyedi 'finds' > (fa-kat)-wāmid. However, the Lydian animate nom. pl. in -is represents *-insi, not *-yes (Melchert, 1991a: 138). I tentatively assume with Wallace (1983: 54) that the appearance of i for *ē in PA *wésu- 'good' > Lyd. wiświ-/wiśsi- is due to the same sporadic raising between *w and dental seen in Hittite and Palaic (cf. 6.1.5.17 & 8.1.5.2). This explanation rather than a more general i-umlaut of *ē is supported by the i of ni-wiśwa 'evils, bad things', without i-motion. The absence of the change in wésfa- 'alive' < *Hwéswo- is not surprising, since this change is not regular in the other languages either. Further confirmatory examples are obviously needed.

14.1.5.5 Evidence for PA accented short *ē other than before nasal is very limited, and the few examples are suggestive rather than compelling. The following interpretation of the facts should be viewed as merely one possibility.

(1) The unmarked development appears to be preservation: (virtual) PA *Hwéswo- 'living' > wésfa-, PA *kwélo- 'cultivated land' > qela-. Contra Melchert (1992b: 46f), I would now derive the e of verbs in -ed via the change in 14.1.5.4: *-éyedi > *-éyidi > *-éydi > -ed, with secondary *ey yielding e just like PA *ē. On the apparent example PA *sérli- 'high' > serli- 'supreme (authority)' see the next section. With Gusmani (1981: 283ff) I find no good evidence for the proposal of Oettinger (1978: 81f) of a general change of PA short */e/ to Lydian /a/ and then secondary /a/ to /e/.

(2) There is circumstantial evidence that short *ē before liquid plus consonant becomes a. The o of (fa-)korfid 'undertakes' (or sim.) probably reflects an intermediate stage *kárpyedi < PA *kérpyedi. I take this word with Eichner (1986a: 2126) as

showing "labial umlaut" between a dorsal and following labial. A stage **kárp̥ye-* allows comparison with *kofu-* 'water', likewise with an unexpected *o* between dorsal and labial (if from **kábu-* < **kóbu-*, as per Poetto, 1979: 198ff). However, the latter could also reflect **kówp̥u-*, with *o* regularly from accented **ów* (14.1.5.17). Like Eichner (1986a: 21), I find no merit in the alternative view of Gusmani (1980: 22f) and Oettinger (1978: 87⁵⁴) that Lyd. *or* in *-korfid* reflects PA **r̥*. For an argument against a zero-grade root see Melchert (1992b: 48). The apparent counterexample *serli-* 'supreme (authority)' is discussed immediately below.

14.1.5.6 I find attractive the derivation by Neumann (1969a: 219f) of Lyd. *es-* 'this' < PA **ósi* (= Hitt. *aši* 'the aforementioned'): for the secondary end-inflection cf. Hitt. *uniuš* to *uni*. If one accepts my limited version of "Čop's Law" for PA (4.1.2.1,3), PA **ássi* (> CLuv. **áss̥i-* in *áss̥iwantattar* 'poverty') is also a possible preform. In either case, one must assume an umlaut of pre-Lyidian **a* to *e* by the following *i*. This rule would also explain why pre-Lyidian **sárli-* 'high' < PA **sérli-* (14.1.5.5,2), appears as *serli-*. None of the numerous apparent counterexamples to the umlaut is compelling. The numerous patronymics in *-al(i)-* may all be influenced by the base names. Furthermore, these all show "i-motion" and thus have several forms of the paradigm without the *-i-*. The same may apply to examples like *afara/i-* 'later' > 'descendant'. On the other hand, since *serli-* arguably may represent a directly preserved **sérli-* (despite 14.1.5.5), positive evidence for the umlaut of **a* to *e* effectively consists at present of the single example of **ósi/ássi* > *es-*.

14.1.5.7 PA long **/e:/* is raised to Lydian */i/*. Examples: PA **nē* 'not' > *ni-* (prefix) and *ni-d* 'not'; PA **pēr-* 'house' > *bira-*; (virtual) PA **sērmo-* 'of the precinct' > *sirma-* 'temenos'.

14.1.5.8 PA long **/e:/* < PIE **ey* and **ēy* probably appears as Lydian */e/*. Examples: PA **k^wē-* 'who, which' > Lyd. *qe-*; PA **kowē-* 'seer' > *kawe-* 'priest' (here < PIE **-ēy*; cf. Av. *kauuā-*). The */e/* of the stem **walwe-* 'lion' vs. Luv. *walwa/i-* must also ultimately reflect **-ē-*, but this case may be analogical.

14.1.5.9 PA */æ:/ (< *eh₁) is (lowered and) backed to Lydian /a/, judging from the one example we have: (virtual) PA *dædi- 'putting' > ta(a)c- 'votive offering'.

14.1.5.10 PA accented short */o/ is definitely preserved as /o/ after a labiovelar, which is delabialized by the o. Examples: PA *k^woto 'whither' > kot 'where' or 'as', PA *-k^wod > -kod (generalizing).

As indicated above (14.1.4.9), a pre-Lydian sequence *wō/á appears as /o/ after a tautosyllabic dental consonant (see examples there). Since o must be accented by Eichner's rule (13.2), I also see no likely source for the attested wo of wora- 'son', arwo- 'to appropriate' (or sim.), and ḅḷtarwo- except pre-Lydian *wō/á. This implies that all attested sequences of wa must be unaccented: arsmawa-, rawa-, silawa-/fasitawa-, šfarwa-. This presents no problem in the first four, and accent on the syllable preceding the w would account for the lack of syncope in several of them (cf. 14.1.6.3.1). We would expect šfarwa- 'oath' to reflect *šwōrwo- on morphological grounds, and I do not feel bound to assume an oxytone šfarwá- on metrical grounds alone (see 13.2, end). The regular change of the accented first *ō to a in šfarwa- is due to the change of *sw to šf, which removes the protecting w.

The examples thus far presented for a contraction of *uwa to /o/ are either false or dubious. Both kot and -kod directly reflect sequences of labiovelar plus *o (pace Oettinger, 1978: 82). The lenited ending -n/vod is as likely to continue PA *-nēwdi as it is secondarily "thematized" *-nuwVti, as per Oettinger (1978: 89): see Melchert (1992b: 52). The meaning 'swear' for ko- is quite uncertain, as is Gusmani's derivation (1975c: 256) from *kuwa-. The latter is in any case hardly the base of kawc- 'priest'. Eichner (1988a: 55) takes os- as contracted from *(u)wasi-, but the meaning 'that' points to *ōw+ instead. The likely derivation of (fa)-do- 'put in' (or sim.) < *duwV- does point to *uwa/o > /o/, but this may take place via a syncope to *dwa/o-. Cf. 14.1.5.17 and 14.1.6.3.1 (3) below.

14.1.5.11 Aside from the position before nasal (14.1.5.2) and after *K^w and *w (preceding paragraph), PA accented short */o/ appears to yield Lydian /a/. Examples: PA *alyó- 'other' > ała-; PA *te/ow(H)só- 'mighty' (or sim.) > tawśa-; PA *Hustó- 'alive' > wśta(a)-; etc. One should note, however, that the source of o in sequences such as -to- and -λo- is quite unclear.

14.1.5.12 Evidence for PA long */o:/ is very scanty. I can cite only amāś, which is probably the anim. nom. sg. of a stem

in *-mon-: *-m^hon+s > -mās (cf. nt. nom.-acc. sg. amēd < *amón + 2ary -d). Accented long */o:/ before nasal thus merges with long */a:/ as /ā:/ (see 14.1.5.14 below). Whether it merges with long */a:/ in other positions is quite unknown.

14.1.5.13 Accented short */a/ before a non-nasal appears as Lydian /a/. The examples we have are spelled with aa, probably indicating a long allophone (see 14.1.5.16 below): PA *dāda- 'father' > taada-; perh. PA *kwas- 'possess' > -qaas- (niqaasli- etc.).

14.1.5.14 PA accented long */a:/ before nasal leads to Lydian /ā:/. Examples: PA conj. *nām > nāw, PA fem. acc. sg. *-ām > -āw (cf. also 2ary gen. pl. *-ā+om > *-ām > dat.-gen. pl. -āw). The outcome of unaccented PA long */a:/ before nasal is unknown, but /a/ is likely: cf. 14.1.4.2, 14.1.5.2, and 14.1.5.3.

14.1.5.15 PA long */a:/ before non-nasal and all sequences of */aH/ become Lydian /a/. Examples: PA nt. nom.-acc. pl. *-ā > -a; (virtual) PA *g^wónā- 'woman' > kāna- 'wife'; PA vbl. suff. *-naH- > -na- (in i-na-, labtāna-); etc.

14.1.5.16 As indicated above (13.1.5,5 and 13.2), the digraph aa indicates a long allophone of /a/. Determining the conditions for its appearance is difficult. Since examples occurring in verse texts could be due to metrical lengthening, we must base our analysis in the first instance on those instances which occur in prose. The word taada- 'father' reflects PA *dāda-, with an accented short vowel in an open syllable. Lyd. aara- 'courtyard' (or sim.) probably also continues an accented short vowel in an open syllable (after loss of *H): *á/órH(o)- > *árHa- > *ára- > aara-. In the case of ta(a)c- and taacda- we are dealing with a reflex of a PA accented long vowel: *dāēdi- 'putting' > *tādi- > ta(a)c(i)-. In āsaāw the spelling āā merely reinforces ā as a long nasalized vowel (13.1.5.4), which probably reflects a PA feminine in *-ām. The examples qasaas and tafaas appear to reflect oxytone stems in *-ós.

That pre-Lydian accented short *ā would be lengthened in an open syllable is consistent with the development before nasal in 14.1.5.2 and the general lengthening in this environment in other Anatolian languages. The lengthening of an accented short *ō in a closed syllable suggested by qasaas and tafaas is more problematic. Such a change does occur in Hittite (see 6.1.5.22), but the development of *-óm# to Lyd. -ēv (14.1.5.2) contradicts this. One would have to assume that

the merger of accented short non-high vowels as $\bar{e}$ before nasal precedes the lengthening of accented short $*\bar{o}$ in closed syllables. The ad hoc nature of this assumption is obvious. While the details for the lengthening process(es) remain uncertain, I tentatively assume that pre-Lyidian accented long $*\bar{a}$ (from any source) remains allophonically long and is sporadically spelled as such with *aa*. Many of the examples of *aa* in verse texts fit the types just described, but many are predictably unanalyzable. I know of none which **must** be taken as resulting from "metrical lengthening".

14.1.5.17 Information on PA diphthongs in Lydian is scanty. I know of no examples for PA $*/ay/$ or $*/oy/$.

The only certain example of a PA $*/Vw/$ diphthong is attested as Lydian *aw* (/av/) in *tawśa-* 'mighty' (or sim.), which surely continues a PA $*te/ow(H)só-$. One may notice that this example stands in an unaccented syllable. The sequence /av/ is also unaccented in *awła-*, *cawło-*, *ēntawło-*, and the compounds *saw-karblo-*, *saw-korfl̥*], and *saw-waśta-*.

On the other hand, there are several uncertain but suggestive examples for PA $*/Vw/ > \text{Lyd. } /o/$ under the accent: PA vbl. suff. $*-néw- > -no-/-vo-$; PA $*éwgw-$ 'proclaim' (or sim.) $> ow-$; (virtual) PA $*ówsi-$ 'that' $> os-$. I therefore provisionally assume that accented PA $*/Vw/$ leads to Lyd. /o/, while unaccented PA $*/Vw/$ appears as Lyd. /av/. The accented /av/ of *áwka-* and *sáwv* may result from syncope or reflect something other than $*/Vw/$ (cf. 14.1.1.7).

I know of no evidence for the outcome of PA long diphthongs in Lydian.

14.1.6 Special Developments

14.1.6.1 Consonant Clusters

Given its remarkable tolerance for synchronic clusters, one would expect Lydian to be conservative with respect to inherited clusters. What evidence we have suggests that this is true (with the notable exception of geminates), but the data is predictably very limited.

(1) None of the attested stop+stop clusters has a clear prehistory, although the structure of examples like *labta-* and *takto-* (with labial/velar plus dental) is certainly compatible with their being inherited. It is conceivable that *warbtokid* means 'enclose, envelope' and is based on a (virtual) **wVrP-to-*: cf. Hitt. *warpa-* 'enclosure' and (*anda*) *warpāi-* 'enclose'.

(2) Secondary **t+s* (i.e. [ç]) results in a geminate *tt*:
 verb stem *karrī-* < **kat+si-* and *karradmēv-* < **kat+sadmēv-*.

(3) Based on the likely example **Hustó-* 'alive' > *wšta(a)-*, internal clusters of **s/* + stop are preserved (but the absence of verb stems with *-šk-* raises the possibility of a special treatment of **-šk-*). Note also the directional adjectives *šrfašta/i-* and *tešašta/i-* 'left/right', 'upper/lower' (or sim.) with an apparent suffix **-ósto-* plus "i-motion" (cf. Lat. *angustus* 'narrow', etc.). The lack of such clusters initially is striking, and a development of initial **sT-* to *isT-* seems likely (with prothetic *i* and then regular palatalization of the **s*). However, the best example thus far is merely possible: *istamin-* 'family' < **stomVn-* (thus tentatively Benzing apud Gusmani, 1964a:137, comparing Germ. *Stamm*, but the second *i* vowel is problematic). A secondary cluster of palatal *s* plus dental *š* is assimilated to *šš*: nom. sg. *ešš* < **es-š*.

(4) Pre-Lylian clusters of stop plus sonorant are probably preserved in *klida-* 'earth' < PA **gliyā-* and *sadmēv-* 'monument' < (virtual) PA **sedmē-*. Whether *fašakna-kil* contains the oblique stem of 'excrement' (cf. Hitt. obl. *šakn-*) is very uncertain. Ševoroškin's suggestion (1979: 185) that *trismv* contains **tri-* 'three' is a mere guess.

(5) Original PA clusters of nasal plus stop are reduced to nasalized vowel plus stop: see above 14.1.4.2 for details. If (!) the comparison of *warptoki-* with Hitt. *warpa-* 'enclosure' is correct, we would have an example of inherited **-rP-*.

(6) Inherited **sw* leads regularly to Lyd. *šf* (14.1.4.9). In the paradigm of **wésu-* 'good', which would have had alternating **wésu-C/wésu-V-* in pre-Lylian, **sw* remains and is eventually assimilated to *šš*: *wišwi-* and *wišši-* prob. 'good' < **wésu-* + 2ary "i-motion". The cluster **sm* is reduced to *m* in *-mš*, if this means 'to them/you' and continues **-smos*, as per Carruba (1969a: 70ff & 1969b: 44f). Cf. also the alternate interpretation by Gusmani (1971 and 1972) of some cases of *-(i)m* as 'I am' < PA **esmi*. While the reduction in both of these cases could be due to enclisis, it is noteworthy

that synchronic medial clusters of sibilant plus nasal are rare (*kasno-*, *aršmawa-*). Lyd. *-slibi-* 'penetrates' may continue a (virtual) PA **slibyē-*. As per Gusmani (1964a: 35 & 85), the dat.-loc. *brafrl* is assimilated from **brafrsλ* < **brafrsiλ* beside anim. nom. sg. *brafrsi-*. Likewise *ibšiml* < **ibšims(i)λ* beside *ibšimsis*, dat.-loc. *qeλ* < **qes(i)λ* to *qesīs* and perh. dat.-loc. *borλ* 'year' < **bors(i)λ* (but **borli-* is also possible for the latter). Pret. 3rd pers. *bill* 'gave' < **bidl* shows assimilation of **dl* to *ll*.

(7) I know of no certain evidence for original nasal plus **s*. As already indicated in 14.1.5.2, in the absence of any synchronic medial clusters *-nš-*, it is possible that *eša-* 'offspring, child' reflects PA **Honso-* with loss of **n* before **s* and compensatory lengthening. In secondary combinations involving final nasal, the nasal consonant is lost: anim. nom. sg. *amāš* < **-mōn+s* and *sadmēs* 'relief' (or sim.) < (virtual) **sedmā+s*. These cases may reflect merely the regular sandhi rule of final *-v* > $\emptyset$ before consonant: see 13.3 (2). The stem *mλwē-si-* beside *mλwēn-da-* suggests that secondary **-ns-* (i.e. [nç]) is reduced to nasalized vowel plus *s*: **mλwēnasi-* > **mλwēnsi-* (see 14.1.6.3.1 (2)) > *mλwēsi-*. The sequence *-mvs-* is simplified to *-ms-* in adjectives in *-mvs(i)-*: anim. nom. sg. *kulumsis* and *ibšimsis* < **-mv(a)si-* (see already Georgiev, 1984: 10). Original **/-ms-/* here, as per Bader (1991: 129), is unlikely, given the existence of the forms in *-mva-*. An inherited **-rs-* is probably preserved in *-karse-* 'cut (out)' < PA **korséye-*.

(8) The *-mv-* of the ethnic adjectives *kulumva-* and *ibšimva-* (functioning synchronically as nouns) probably reflects an original weak stem in **-mn-* with secondary final treatment of **n* as *v* (cf. 13.1.4.1). The pret. 3rd pers. *katwēl* shows assimilation of **-nl* to *-ll* and then simplification to *-l*: **-ēnil* > **-ēnl* > **-ēll* > *-ēl* (cf. 13.4.1 (6)). Likewise dat. sg. *mλiml* < **mλimnλ* and surely also *fēlla-*. We find probable inherited **-rm-* in *arm-ra-* 'of the Moon-god' and in *sirma-* 'temenos' < (virtual) PA **sērmó-* 'of the precinct'. Whether the lack of attested *-rn-* is accidental is unclear. Lyd. *serli-* 'supreme (authority)' and *(kat)-sarloki-* 'bring defeat to' (or sim.) show inherited *-rl-* (note also the assimilated variant *sellī-*). PA liquid plus **w* appears in *šfarwa-* 'oath' (or sim.) < PA **swórwo-*.

(9) PA geminates are simplified in Lydian. Note PA **-NN-* > Lyd. *-N-* in **ánna-* 'mother' > *ēna-*, **ámmi-* 'my' > *ēmi-*, vbl. suffix **-ánni-* > *-ēn(i)-*, and **anno-* 'that' > *ēn(a)-*.

14.1.6.2 Other Special Consonant Changes

(1) Regular *alarm*- 'oneself' beside hapax *ararm*- 'idem' reflects a dissimilation $r...r > l...r$. Eichner (1985: 13) relates *mruwaa*-/*murwaa*- 'stele' with Sidetic *malwa*-. I would see the closest Lydian cognates of the latter rather in *mlola*-, *mlwēnda*- and *mlwēsi*-, which refer to parts of the grave complex, whatever their precise meaning. If *murwaa*-/*mruwaa*- also belongs here, then one would have to assume an *l/r* alternation. Which is original depends on the ultimate etymology. If we could be certain that this group always refers to things sepulchral, a derivation from **mer*- 'vanish; die' would be attractive.

(2) If(!) *antola*- (part or contents of grave) really reflects a virtual PA **en-dwaH-ólo*- 'of a (hu)man' (13.1.1 under /t/), then the more common form *anlola*- shows a distant assimilation. A priori, a dissimilation of *l...l* to *t...l* seems at least as likely, and the etymology is far from certain.

(3) The epenthetic [d] of *ētamu* 'designation' < (virtual) PA **imn* 'name' is probably already PA or at least pre-Lydian (see 4.1.6.1.2).

14.1.6.3 Special Vowel Changes

14.1.6.3.1 Syncope

As already noted by West (1974: 133), the complex consonant clusters and the syllabic sonorants (and probably fricatives) of Lydian suggest widespread syncope. Syncope is usually conditioned by accent and syllable structure. We can determine the synchronic Lydian accent in a number of cases (13.2), and in general Lydian seems to have preserved the accent of PA (14.2). Nevertheless, the accent in many words remains indeterminate. Our understanding of Lydian and pre-Lydian morphological structure is very limited. Therefore the conditioning given for syncope below should be taken merely as first approximations.

There is evidence for three separate syncope rules in Lydian. For reasons given in Melchert (1992b: 43), the first two apparently must be ordered after apocope of final unaccented vowels (see 14.1.6.4.2.1).

(1) Unaccented vowels in final syllables are syncopated. Examples: anim. nom. sg. *alarmś/ararmś* 'self' < **-mos*

(Innocente, 1987/88: 117; an original *m*-stem is hardly conceivable), prob. anim. nom. sg. *āns* 'that (one)' < **ónos*, as per Melchert, 1991a: 137 (likewise other nom. sg. in *-ns* such as *qādnās*), prob. anim. nom. sg. *sawtaarś* 'watchman' (or sim.) < *-*tóros*; perh. nom./acc. pl. *kāns* 'wives/women' < **kānas*; anim acc. sg. *alarmn* 'self' and *siwralmn* 'avenger' (or sim.) < **mon*; pret. 1st sg. *tamv* < **démom*; *niwiś(š)cv* 'evilly' (or sim.) < dat.-loc. pl. (less likely acc. sg.) **om*, perh. dat.-loc. pl. **esv* in *esvav* (but cf. (2) below); note also *ētamv* 'designation' < pre-Lyidian **ētāmēv* (14.1.4.4); pret. 3rd pers. *bill* 'gave' < **bīdl* < **pīyol* and *inl* 'made, did' < **īnal*; *int* 'makes, does' < **īnat* and pres. 3rd pers. in *-ēnt* < **-ēnit* (Melchert, 1992b: 41f); anim. acc. sg. *-Cv* < **-Cim* and dat.-loc. sg. *-Cλ* < **-Cīλ* (Gusmani, 1964a: 39); pret. 3rd pers. *cēnal* < **cēnl* < **cēnil* and *katwēl* < **-ēll* < *-ēnl* < **-ēnil* (Melchert, 1992b: 42); prob. pret. 1st pl. *-wv* < **-wen*.

There are obviously many apparent counterexamples to the rule stated in this strong form. All of these can to my knowledge be accounted for in one of two ways. First, it seems reasonable that even in a language as tolerant of consonant clusters as Lydian, the syncope would be blocked if it would lead to unacceptable clusters. Hence pres. 3rd pers. *fakórfid*, *warptókíd* etc., in order to prevent final *-*fd*, *-*kd*, and so forth. Likewise pres. 3rd sg. *siláwad*, *tárbíad*, etc. and neuter nom.-acc. singulars in *-Cad* such as *altókad*, *ānad*, and *šfárwad*. While this same explanation could account for nt. nom.-acc. singulars in *-Cíd*, it would not explain the corresponding animate nom. singulars in *-Cis*. The *-i-* in these forms is secondary and governed by morphological rules (Starke, 1982: 408, and Oettinger, 1987: passim).

Impermissible consonant sequences will not account for the preservation of the endings *-ás*, *-av*, and *-aλ* in most barytone stems in *-a-* (nor for the animate plurals *ānas* and *ēminas*). The contrast between retention of the *-a-* here and the absolutely regular deletion of *-i-* in the acc. and dat.-loc. singular of *i*-stems is striking. I attribute the usual retention of the *-a-* in the *a*-stems to the existence of a large class of oxytone *a*-stems, which would have regularly retained their stem-final *-a-* under the accent: *-ás*, *-ēv*, *-aλ*. While the place of the accent is not certain in the denominative verbs *da=wicil* and *fa=šaknakil*, it is probably not on the last syllable. The retention of the *-i-* here would be analogical to the pres. 3rd pers. ending *-id*. As indicated above, 14.1.6.1 (2), the structure of *istamin-* is problematic, so the place of the accent is quite uncertain.

Most of the examples cited above for syncope in final syllables are either disyllabic or trisyllabic with penultimate accent. There is thus no question of the application of syncope rules (2) and (3) described below. However, in the preterite first singulars *fadofidv*, *qistoridv*, and *cēnsidv*, and in *ētamv*, the accent is definitely on the antepenult, contrary to the claim of West (1974: 137) that syllabic sonorants and fricatives always appear directly adjacent to the accent. It is true that in these examples with antepenultimate accent we might have expected syncope rule (2) below to apply and delete the penultimate vowel. Rather than appeal to some kind of analogy, I prefer at present to assume that syncope in final syllables applies also in cases of antepenultimate accent, before the syncope of penultimate vowels described in (2) immediately below. The latter rule would then be blocked in the examples in *-Cidv* and in *ētamv* because of consonant cluster constraints.

(2) A posttonic penultimate (short) vowel in an open syllable is deleted. Solid examples for this syncope are found with the suffixes *-ta-* and *-da-*: *arm-ta-* 'of the Moon-god' must reflect **arma-ta-* (thus already Innocente, 1987/88: 117). I would also add *wān-ta-* '(something) of the grave' < **wāna-ta-*. Likewise probably *siwétis*, which is most easily taken as an anim. nom. plural to a stem **siwét-ta-*, and the denominative verbs *tarbra-* and *kibra-*. Similarly, *taac-da-* '(something) of a votive offering' continues **tác-ida-*, and the structure of *šfēn-da-* and *mλwēn-da-* must be the same: see Melchert (1990: 206). While the place of the accent is not assured, one may probably also include *ni-wis(s)c-* 'evil' (noun) < **niwíssi-c(i)-*. The palatized /ç/ of *niga(a)sla/i-*, and *sēsua-* suggests syncope of an **i* or **e* under the same conditions, while acc. sg. *siwraλmn* may continue **siwráli/emon* with syncope first in the ultima and then in the penult. Since the relational suffix *-s(i)-* probably reflects PA **-assī-*, we should also assume penultimate syncope in *mλwēsi-* < **mλwēnasi-*, in *brafrsi-* < **bráfrasi-*, and in ethnic adjectives in *-ms(i)-* < **-mvasi-*. One could also suppose that *esvav* 'these' (dat. pl.) reflects **ēsav-av*, but cf. (1) above. Note further that *katowalis* in 11,7 must be scanned *katówlis* (Eichner, 1986a: 17).

The only obvious counterexamples known to me are the plural stem *ēmina-* 'my' and *afara/i-* 'descendant'. The extended stem *ēmina-* is clearly secondary to *ēmi-*, but its source and synchronic status are totally obscure (since the stem also occurs in the anim. nom./acc. pl. *ēminas*, there is no basis for taking the *-n-* of *ēminav* as reflecting an old dat.-loc. pl. ending as in *esvav*). For *afara/i-* < **ópero-* I have no

explanation, and the derivation is thus perhaps false. On preterite first singulars in *-Cidv* see (1) above, end.

(3) In words of more than two syllables, a pretonic sequence RV is reduced to R: *caqlá-* surely continues **cēqra-lá-* (cf. *cēqra-*); likewise *srmlí-* 'of the temenos' must reflect **sirma-lí-* (note also the loss of the **i* two syllables before the accent). The pattern of *ifrlí-* beside *ifró-* and *atrgól-* beside *atrókl* points to the same loss, and the structure of *altóka-* and *kabrdóki-* may be accounted for as well. Since metrical evidence suggests that they are accented on the final syllable, *balrá-* and *sfatrrá-* probably reflect the same change. I would also account by this rule for the syncope in *tro(d)-* 'hand over' < **drowāye-* (see 14.1.5.9) and in *ānrēt* 'registers' < **en-(H)atsyónti*. The sequence *-nt-* in *winta-* must reflect syncope (see 14.1.4.2, end). The place of the accent is indeterminate, but on structural grounds **winVtó-* is more likely than **wínVto-*, so I put this example here and not under (2) above. In the possible counter-example *mlatala-* the crucial place of the accent is indeterminate. The stem *baritó-* constitutes a genuine counterexample. The example *blasó-* suggests that this syncope did not take place in disyllabic words. Since *borli-/borsi-* 'year' indicates original **PVr-* (not **PrV-*), *brwá-* 'year' probably does not show this syncope. It may reflect directly an unaccented syllabic **r* (**Pṛwā-*), but we cannot exclude the possibility that such a preform first became **Parwā-* and then underwent syncope. Likewise, *murwaa-/mruwaa-* 'stele' with anaptyxis (see the next paragraph) implies an immediate preform **mrwaa-*, which may continue **mrwó-* directly or via **marwó-* with syncope (Eichner, 1985b: 13). Cf. also *rkal(i)-* < **(H)arkal(i)-*, which can be viewed as syncope or aphaeresis. The three rules sketched here undoubtedly do not exhaust the possibilities for syncope in Lydian. Cf. 14.1.4.7 and also 14.1.5.10 above on *(fa)-do-* < **d(u)wa/o-*.

14.1.6.3.2 Anaptyxis

The enclitic particles *-(u)m* and *-(i)t-* reflect PA **-mo* and **-te* respectively. As already seen by Carruba (1959: 35ff) and Heubeck (1969: 405), the allomorphs with preceding vowel show a pre-Lydian anaptyxis. I would also add the reflexive particle *-ś/-is* < PA **-soy* (see Melchert, 1991a: 142) and the first person singular dative pronoun *-(i)m* < PA **-mē* (Eichner, 1974: 32&68, and Melchert, 1991a: 137f, contra Gusmani, 1971 and 1972). As Carruba indicates, the anaptyxis here is no longer a synchronic rule of Lydian, but the original distribution of the allomorphs with preceding vowel before words

beginning with a consonant is still quite unmistakable. I also follow Carruba (1969a: 70ff and 1969b: 44) in deriving the asseverative particle *-in* from PA **-nu*, with generalization of the anaptyctic allomorph in this case. As per Eichner (1985b: 13), one also finds anaptyctic *-u-* in *murwaa-/mruwaa-* 'stele' < **mrwá-* < **mrwó-*: cf. 14.1.6.3.1, (3). See likewise dat. sg. *buł* 'him' beside *bł* and *ašturko-* beside *aštrko-*. The anaptyctic vowel in all these cases is *i* or *u*, but the ratio for the choice between the two is not clear. With Carruba (1959: 36f), I assume assimilation of the anaptyctic vowel in *fak=at=aw* and *fak=mł=at=aw* for **fak=(mł)=it=aw*. The anaptyctic *a* of *ētamv* 'designation' < **'name'* is probably already PA: cf. Lyc. *adamān-* 'name' and 4.1.6.1.2.

In contrast with the above cases of pre-Lyidian anaptyxis with *i* and *u*, we find sporadic synchronic anaptyxis with *a* to break up word-final consonant clusters. I follow Gusmani (1964a: 31), Heubeck (1969: 404) and Oettinger (1978: 87) in viewing the last *a* of *młimnaš*, *inal* and *alarmāš* as anaptyctic beside the attested variants *inl* and *alarmš*. The last *a* of *alarmāš* in 13.1 is only graphic in any case, since the word must be scanned as *alarmš*: see West (1972: 166) and Eichner (1986a: 17). The *a* of *cēnal* must be anaptyctic from **cēnl* like *inal* < *inl*, because the stem is originally **cēni-*: see Melchert (1992b: 41f). There are thus three treatments of final *-nl*: preservation, anaptyxis with *-a-*, and assimilation and simplification: see *katuwēl* in 14.1.6.1 (6).

14.1.6.3.3 Contraction

Since the change of PA **yē* to **yi* (14.1.5.4) is shared by Lydian with Lycian and Luvian, the account of verbs in **-Vye/o-* given in Melchert (1992b: 46ff) must be modified. We should rather assume a contraction of **-ēyedi* > **-ēyidi* > **-ēydi* > *-ed* (cf. PA **ē* > Lyd. *e*), and likewise **-āHyedi* > **-āyedi* > **-āyidi* > **-āydi* > *-ad* (cf. Luvian and Lycian, 10.1.6.2.4 and 12.1.6.3.4). I suggest merely as a possibility that an innovative PA type of denominative in **-ōyedi* (for which cf. Oettinger, 1979a: 358) led in similar fashion to Lydian denominatives in *-od*: **-ōyedi* > **-ōyidi* > **-ōydi* > *-od*. This last change is admittedly rather unexpected in phonetic terms.

14.1.6.3.4 Aphaeresis

Lyd. *bi-* 'he, she' < PA **obí-* apparently shows loss of the initial unaccented **o*. Although the sense is quite uncertain, it is also tempting to take Lyd. *rawa-* as 'set free'

or the like (= Hitt. *arāwabb-*): see Gusmani (1982: 86). In any case the initial /r-/ (which occurs elsewhere in Anatolian only secondarily in HLuv. /ruwan/) suggests aphaeresis. Cf. also *rkal(i)-* < **(H)arkal(i)-*, but here the loss of the first *a* could also be viewed as syncope (cf. 14.1.6.3.1,3). The initial vowel in each of these examples would have been unaccented, but why only these were lost and not other unaccented initial vowels is not clear.

14.1.6.4 "Laws of Finals"

14.1.6.4.1 Word-final Consonants

(1) PA final **-d* is preserved as Lyd. *-d* (now = [ð]!): PA nt. nom.-acc. sg. **-od* > *-ad*, etc. Other word-final stops would have been rare in PA, and we have no evidence for their outcome in Lydian.

(2) PA final **-Vs* is preserved in anim. nom. sg. *-Vś* (w/ **-is* > *-is* = [iç]). Anim.(!) nom. sg. *dēt* (text 24, line 22) 'mobile property' < PA **yōnt-s* seems to indicate that original final **(n)ts* > *-(V)t*. The endless nom. sg. *dēt* would then be the starting point for the shift to neuter gender (Melchert, 1994a). Animate nominative singulars in *-ēs* and *-ās* most likely reflect *n*-stems with secondary **-s* (14.1.6.1,7), not old participles in **-Vnts*, contra Gusmani (1964a: 42&57). It is also unlikely that animate nominative singulars in *-āns* and *-ēns* continue **-Vnts*, contra Heubeck (1959: 30) and Gusmani (1964a: 158&188). Given its palatal quality, the final *-s* of anim. nom./acc. pl. *-as/-is* cannot be derived directly from PA anim. acc. pl. **-Vns*, as per Heubeck (1961: 78), but must reflect **-Vnsi*: see Melchert (1991a: 138f).

(3) PA final nasals lead to Lyd. *-ν* (with possible secondary change to *-n* after consonant): see 13.1.4 (1).

(4) PA final **-l* is definitely preserved in the nt. nom.-acc. sg. of rel. adj. in *-Vl*:- *atraśtal*, etc. (see 14.1.4.6 above). The preterite third person verbal ending may or may not have contained a following vowel (cf. below 14.1.6.4.2.1). There is no trace of PA final **-r* in Lydian.

(5) For synchronic sandhi rules involving final consonants see 13.3 (2) above.

14.1.6.4.2 Vowels in Final Syllables

14.1.6.4.2.1 Vowels in Word-Final Position

(1) PA unaccented final short vowels are regularly lost in Lydian (see Carruba, 1964: 280). For short **i* note pres. 1st sg. **-wi* > *-w/u*, pres. 3rd sg. **-di/ti* > *-d/t* (and prob. pres. 3rd pl. **-nti* > *-Ńt* and pres. 2nd sg. **-si* > *-s*). If the ending *-ad* really is an inst.-abl., then it surely continues PA **-odi*. Short **u* is probably lost in the asseverative particle *-in* < **-nu*. Short **e* disappears in **-k^we* 'and' > *-k*. Short **o* is lost in conj. **-mo* > *-(u)m*, in **k^woto* 'whither' > *kot* 'where; as', and perhaps also in pret. 3rd person *-l* < **-lo* (cf. isolated Hitt. *dalug(a)nula* and Slavic parallels). It is, of course, conceivable that the Lydian stem comes directly from an athematic form in **-l*. Cf. 14.1.6.4.1 (4) above. The "preservation" of the particle *-a* in *qid-a* and *nāqid-a* is a special case. This particle, which equals Hitt. non-geminating *-a* (contra Gusmani, 1964a: 49; and Carruba, 1960a: 63f), is of the elemental sort which can be renewed at anytime (cf. the Chinese "pause particle" *-a* or English "uh" with similar functions).

(2) The derivation of *-(i)m* 'to/for me' < PA **-mē*, as per Eichner (1974: 32&68) and Melchert (1991a: 138¹⁴) and of reflexive/emphasizing *-ś* < PA **-soy* (Melchert, 1991a: 142) requires that Lydian lose the unaccented final vowel, probably /e/, which results from an *i:-*diphthong.

(3) PA **amú* 'me' > Lyd. *amu* 'I, me' suggests that accented final short vowels are preserved in Lydian (there would have been few other examples inherited from PA).

(3) PA final long **-ā* is continued in Lyd. /a/: nt. nom.-acc. pl. **-ā* > Lyd. *-a*, (virtual) PA **g^wónā* 'woman' > Lyd. *kāna* (since the **-s* of other anim. nom. singulars is preserved, this word could hardly have acquired a secondary **-s* in Lydian).

14.1.6.4.2.2 For the syncope of vowels in unaccented final syllables see above 14.1.6.3.1, (1).

14.2 Accent

So far as we can tell, Lydian in general seems to preserve the place of the principal accent from PA: see Eichner (1986a: 12ff & 1986b: 218f). In the noun we may note PA **dáda-* > *taada-*, PA **ánna-* > *ēna-*, PA **g^wónā-* > *kāna-*; PA

**daēdi-* > *ta(a)c-*, PA **Hustó-* > *wsta(a)-*, and prob. PA **dasóm* > *tašēv* 'votive object' (= HLuv. *ta-sa(n)-za* and Lyc. *ṭṭē*, per Eichner, 1983: 60ff, despite uncertainty of reading in Lydian). Note also pronominal PA **emú* > *amu* vs. PA **ām-m-* > *ēmi-* (cf. above 4.1.4.1). In the verb we may cite PA suffix **-ānni-* (i.e. **-ēnh₂i-*) > *-ēn(i)-*, PA **-éyedi* > *-ed* (in the "iteratives" *-karsed* and *-sared*), and PA **kérpyedi* and **wēmyedi* > *(fa-)korfid* and *(fa-kat-)wāmid*. Although its root etymology is quite unclear, *bita(a)d* also surely continues PA **-āHyedi*: for all of these verb forms see Melchert (1992b). The synchronic accent in all these Lydian examples is assured by the rules of Eichner (1986a): see 13.2.

Processes like syncope and aphaeresis described above also point to general preservation of the PA accent, although one must bear in mind that, strictly speaking, these phenomena guarantee only the position of the pre-Lydian accent.

Most of the changes in accent which we must assume are of an expected sort. As already noted by Eichner (1986b: 217f), Lydian so far as we can tell has eliminated mobile accent within synchronic paradigms.

By the rules of Eichner, the synchronic accent of most denominative verbs in *-i-* must be earlier than the final syllable: i.e., the *-i-* cannot reflect directly accented **-yé-*. The retraction of the accent here may be attributed to the influence of the primary root-accented type of *(fa-)korfid* and *(fa-kat-)wāmid* (to which the denominatives owe their lenited ending *-id*) and to that of the corresponding nominal bases: see Melchert (1992b: 47ff). Likewise the accent of denominatives *silāwa-* and *rāwa-* (see 14.1.5.9) would be due to the unattested nominal bases: cf. at least formally Hitt. *arāwahḫ-* 'set free' after *arāwa-* 'free'.

Since **pi(y)-* 'give' seen in Lyd. *bi(d)-* is generalized from the weak stem, we would not expect root accent, but CLuv. *pīya-* with a long *ī* also requires **pīy-* with secondary root accent, however this is to be motivated.

Also unclear is the motivation for the apparent retraction of the accent in stems in **-naH-*. In the denominative *labtāna-* (cf. *labta-*) the *ā* must be accented, while the syncope in *int* 'makes, does' and *inl* 'made' (beside *inal*) also presupposes an immediate preform **ina-*: see again Melchert (1992b: 42). Once again, however, this problem is not unique to Lydian: cf. the similar apparent retraction in Hittite verbs in *-ni(n)k-* (and perhaps *-nu-*): see 4.2.

14.3 Changes in Synchronic Phonological Rules

14.3.1 Losses/Modifications of PA Phonological Rules

(1) The PA "lenition" rules produce alternations between voiceless and voiced stops and between two forms of the PA "laryngeals". Since the distribution of voiceless and voiced stops in Lydian is now governed by other factors (13.1.1), while the PA laryngeals are entirely lost (14.1.3.2), it is obvious that neither form of lenition survives as a synchronic rule in Lydian.

(2) PA geminates are simplified in Lydian (14.1.6.1,9), so the rule by which initial $*/\acute{e}C_1V-/ > */\acute{a}C_1C_1V-/$ has been lost.

(3) The regressive voicing assimilation rule for obstruents of PA has been radically modified in Lydian, but the details are not clear: see 13.3 (1) above.

14.3.2 New Synchronic Phonological Rules

The three syncope rules described in 14.1.6.3.1 above are all apparently living synchronic rules of Lydian. The synchronically transparent relationship of *cēgra-* and *caḡrla-* suggests that the replacement of unaccented $/\tilde{a}/$ by $/a/$ is governed by a synchronic rule: thus already Eichner (1986b: 211²¹). The consonant changes described in 13.3 (1) are due to synchronic processes (but the details are quite unclear!), as are the "sandhi-rules" of 13.3 (2).

14.4 Relative Chronologies

The phonological changes posited above presuppose the following relative chronologies.

Set 1:

- (1) Palatalization of $*l$ before $*y$ must precede
- (2) Loss of $*y / C\_V$ ($a\lambda a- < *alyó-$).

Set 2:

- (1) Spirantization of $*p$ to $/f/$ except before $*\acute{V}$ probably must precede
- (2) Merger of $*b$ with $/p/$ (but see 14.1.1.2 for detailed discussion).

Set 3:

- (1) Palatalization of **s* (and perhaps **ʃ*) before **i* (2nd sg. **-si* > *-s*, anim. pl. **-Vnsi* > *-a/is*, perh. dat.-loc. **-Vli* > *-λ* and
- (2) Umlaut of **ē* to */i/* / __ *Ci* (**-Cyedi* > *-Cid*) must precede
- (3) Apocope of final **-i*, which must precede
- (4) Palatalization of **d* before **i* and **u* (**-di* > *-d*) and
- (5) Merger of **ē/ō/ǣ* to *ā* / __ *NV* and to *ē* / __ *N*. (1st sg. **g^wēnwi* > **g^wēnu* > **-qānu*, whence *-qānt*), which must precede
- (6) Simplification of geminates (**-ānni-* > *-ēn(i)-*) and
- (7) Loss of **n* before stop (**éndo* > *ēt-* etc.), which must precede
- (8) Syncope in unaccented final syllables (**inat* > *int*, etc.), which must precede
- (9) Syncope in posttonic penultimate syllables (*qistoridv*, etc.).

Note: (3) must also be ordered before (8) for independent reasons (to account for the difference in syncope of *inānidv* and *inānt*).

Set 4:

- (1) Palatalization of **d* before **i* and **u* must precede
- (2) Devoicing of **d* word-initially (*ciw-* < **dīw-* vs. *taada-* < **dāda-* etc.) and
- (3) Spirantization of **d* elsewhere before vowel (*taac-* < **dœēdi-* vs. *taada-* < **dāda-* etc.).

Set 5:

- (1) **k/kw* > **k^w* must precede
- (2) **k^w* > *k* before **o* and **u* (**kān-* < **k^wónV-*), which must precede
- (3) **o* > *ā* / __ *N.V* (**kān-* < **k^wónV-* & *kāna-* < **g^wónā-*).

Set 6:

- (1) $*H > \emptyset / \# \_ V$ must precede
- (2) $*u > w / \# \_ (wsta(a)- < *Hustó-)$.

Set 7:

- (1) $*H > \emptyset / C \_ V$ must precede
- (2) $*ē > ā / \_ N.V (ānrēt < *en-Hatsyónti)$ and
- (3) $*á > aa / \_ C_1 V (aara- < *árHo-)$.

Set 8:

- (1) Palatalization of $*s$ before $*ē$ must precede
- (2) Change of unaccented $*ē$ to a ($kat-sarlóki-$ etc.).

Set 9:

- (1) $*ē/ō/ā > ā / \_ NV$

and

- (2) $*á > aa / \_ C_1 V$

must precede

- (3) Syncope in final syllables ($ānś < *ónos$, etc.; $sawtaarś < *-tóros$), which in turn

must precede

- (4) Assimilation of $*dl/nl$ to $*ll$ ($bil(l) < *bidl < *píyol$; $katwēl < *-ēll < *-ēnl < *-ēnil$).

Set 10:

- (1) Syncope in posttonic penultimate syllables

must precede

- (2) Loss of $*n$ before $*s$ (i.e. $[ç]$) and $*-mvs- > -ms-$ ($mλwēsi- < *mλwēnasi-$ and $-msi- < *-mvasi-$).

WORD INDEX

The alphabetical order is that of the Latin alphabet, with the following exceptions. In the Anatolian cuneiform languages, as is customary, the voiced stops *b*, *d*, and *g* are treated as *p*, *t*, and *k* respectively, and geminate consonants are treated as simple. The arrangement is oriented according to the normal transliteration, not the phonological analysis. In the Anatolian alphabetic languages (and other languages), special symbols are ordered after the corresponding regular letters: nasalized vowels after simple vowels, *τ* after *t*, *ś* after *s*, and so forth. The Anatolian languages are listed first, in the order presented in the text. The ordering of the other languages follows that of Pokorny (1949).

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- AION. *Annali del istituto orientale di Napoli. Sezione linguistica*. Naples.
- AJP. *American Journal of Philology*. Baltimore.
- AnSt. *Anatolian Studies*. London.
- AOAW. *Abhandlungen der österreichischen Akademie der Wissenschaften*. Vienna.
- APA. *Transactions and Proceedings of the American Philological Association*. Middletown, CT.
- ArOr. *Archiv Orientalní*. Prague.
- ASNP. *Annali della scuola normale superiore di Pisa, classe di lettere e filosofia*. Pisa.
- AulaOr. *Aula Orientalis*. Barcelona.
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- BB. *Beiträge zur Kunde der indogermanischen Sprachen*, ed. Adalbert Bezzenberger. Göttingen.
- BoSt. *Boğazköy-Studien*. Leipzig.
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- BOR. *Babylonian and Oriental Record*.
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- HuI.** *Hethitisch und Indogermanisch*, edd. Erich Neu and Wolfgang Meid (IBS 25). Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck. 1979.
- IBS.** *Innsbrucker Beiträge zur Sprachwissenschaft*. Innsbruck.
- IF.** *Indogermanische Forschungen*. Berlin.
- IJAL.** *International Journal of American Linguistics*. Chicago.
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- IncLing.** *Incontri Linguistici*. Pisa.
- IstMitt.** *Istanbuler Mitteilungen*. Berlin.
- JAC.** *Journal of Ancient Civilizations*. Changchun.
- JAOS.** *Journal of the American Oriental Society*. New Haven.
- JEA.** *Journal of Egyptian Archaeology*. London.
- JHS.** *Journal of Hellenic Studies*. London.
- JIES.** *Journal of Indo-European Studies*. McLean VA.
- JOAI.** *Jahreshefte des Österreichischen Archäologischen Instituts*. Vienna.
- JKF.** *Jahrbuch für Kleinasiatische Forschung*. Heidelberg.
- JSFOu.** *Journal de la société finno-ougrienne*. Helsinki.
- KfF.** *Kleinasiatische Forschungen*. Weimar.
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- LF.** *Listy filologické*. Prague.
- Lg.** *Language*. Baltimore.
- LP.** *Lingua Posnaniensis*. Poznan.
- MDOG.** *Mitteilungen des Deutschen Orientgesellschaft*. Berlin.
- MIO.** *Mitteilungen des Instituts für Orientforschung*. Berlin.
- MSS.** *Münchener Studien zur Sprachwissenschaft*. Munich.
- MVAeG.** *Mitteilungen der vorderasiatischen-ägyptischen Gesellschaft*. Leipzig.
- NAWG.** *Nachrichten der Akademie der Wissenschaften*, Göttingen.
- NTS.** *Norsk Tidsskrift for Sprogvidenskap*. Oslo.
- OA.** *Oriens Antiquus*. Rome.
- OLZ.** *Orientalistische Literaturzeitung*. Berlin.
- Or.** *Orientalia*. Rome.
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REAnc. *Revue des études anciennes*.

RelChron. *Rekonstruktion und Relative Chronologie. Akten der VIII. Fachtagung der Indogermanischen Gesellschaft, Leiden, 31. August–4. September, 1987*, ed. Robert Beekes et al. Innsbruck: Inst. f. Sprachw. d. Univ. Innsbruck. 1992.

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RIL. *Rendiconti del Istituto Lombardo di Scienze e Lettere. Classe di lettere e scienze morali e storiche*. Milan.

RivFil. *Rivista di Filologia e di struzione classici*. Turin.

RLA. *Reallexikon der Assyriologie und Vorderasiatischen Archäologie*, ed. Dietz O. Edzard. Berlin/New York: de Gruyter.

RO. *Rocznik Orientalistyczny*. Warsaw.

SCO. *Studi classici e orientali*. Pisa.

SlavRev. *Slavistična Revija*. Ljubljana.

SMEA. *Studi micenei ed egeo-anatolici*. Rome.

SÖAW. *Sitzungsberichte der Österreichischen Akademie der Wissenschaften*. Vienna.

SPAW. *Sitzungsberichte der preussischen Akademie der Wissenschaften*. Berlin.

StBoT. *Studien zu den Boğazköy-Texten*. Wiesbaden: Harrasowitz.

THeth. *Texte der Hethiter*. Heidelberg: Winter.

TIES. *Tocharian and Indo-European Studies*. Reykjavik.

TPS. *Transactions of the Philological Society*. Oxford.

TRAS. *Transactions of the Royal Asiatic Society*.

WO. *Welt des Orients*. Göttingen.

Wortschatz. *Studien zum indogermanischen Wortschatz*, ed. Wolfgang Meid. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck. 1987.

WZKM. *Wiener Zeitschrift für die Kunde des Morgenlandes*. Vienna.

ZA. *Zeitschrift für Assyriologie und verwandte Gebiete*. Berlin.

ZDA. *Zeitschrift für deutsches Altertum und deutsche Literatur*. Wiesbaden.

ZDMG. *Zeitschrift der deutschen morgenländischen Gesellschaft*. Stuttgart.