Historical Phonology of Anatolian

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1. Introduction

Anatolian is among the earliest branches of Indo-European in the dates of its attestation, but is one of the last to be investigated. As in other cases, study of its history is complicated by the great discrepancy in the age, quantity and quality of the text corpora for the various languages of the group. Evidence for Hittite far surpasses that for Palaic, Luvian, Lycian and Lydian, the other assured members of the family. As a result, the history of Anatolian has until recently meant essentially the history of Hittite. While the concept of an Anatolian subfamily of Indo-European has been generally recognized for over half a century, little work has been done on reconstructing the features of Common Anatolian. Scholars have quite justifiably treated Common Anatolian as a backward projection of Hittite (abstracting obvious innovations), while citing the other languages selectively where they seem to illuminate the situation in Hittite. Several dramatic discoveries and the efforts of a number of specialists have in recent years considerably improved our understanding of the 'minor' Anatolian languages. We may now attempt a serious reconstruction of Common Anatolian, taking into account all the evidence available. Such an enterprise inevitably includes both elements on which there is broad agreement and more controversial aspects. In the following phonological sketch, I have tried to distinguish carefully between the two, and I ask readers to give full weight to all qualifiers.

I should at the outset make clear certain basic assumptions. While the irrealities of the Stammbaum are well-known, I continue to find it the most fruitful realizable model for describing the interrelationships of the Indo-European languages in general. I personally remain agnostic regarding the issue of 'Indo-Hittite' or 'early separation' of Anatolian, but for purposes of phonology we may treat Anatolian as simply another branch of Proto-Indo-European. On the other hand, I

find the Stammbaum unsuitable for describing the relationships among the Anatolian languages themselves. Current evidence suggests rather a dialect continuum along geographical lines. I consider all previous efforts at subgrouping within Anatolian to be premature, and statements about isoglosses below should be taken as provisional.

As to the phonological system which I assume for PIE, I may be very brief: I follow on all essential points Mayrhofer 1986. Please note the following: (1) I retain the traditional definitions of the PIE stop series and explicitly reject the reanalysis in terms of the 'glottalic theory'; (2) PIE has a phonemic */a/ which has nothing to do with the coloring of */e/ by */h_2/; (3) I posit three, and only three, laryngeals with the usual characteristics; (4) for me */h_2/ does not color either */o/ or */e:/ in PIE (see Mayrhofer 1986: 132ff with references and counteropinions).

2. Common Anatolian

We may assume the following segmental phonemic inventory for Common Anatolian: voiceless stops */p/, */t/, */ḱ/, */k/, */k^w/; voiced stops */b/, */d/, */ĝ/, */g/, */g^w/; voiceless fricatives */s/ and */H/, voiced fricative */h/; sonorants */m/, */n/, */r/, */l/, */w/ and */y/; short vowels */i/, */u/, */e/, */o/ and */a/; long vowels */i:/, */u:/, */ę:/, */e:/, */æ:/, */o:/ and */a:/. There is also a voiceless dental affricate *[ts] as a conditioned allophone of */t/ and probably *[z] as an allophone of */s/. Some features of this list call for justification:

(1) none of the evidence presented thus far for a distinction of voiced and voiced aspirated stops in CA is compelling. 'Čop's Law' in Luvian (see 6.1,1) applies to etymological voiced stops as well as voiced aspirates (contra Čop 1970: 92 *et al.*): note **édwo* -> CLuv. *āḍḍuwa-* 'evil' (after Watkins 1982: 261) or **pé-dh$_1$* > CLuv. *paddunaš* 'of carrying' (= Hitt. *pēd(a)-*). Contra Eichner (1980: 136[55]), non-assibilation of */dh/ before */i/ in **id^{h}i* > Hitt. *it* 'go!' is also non-probative, because CA */d/ from any source fails to assibilate in interior position in Hittite: cf. CA pret. mid. **-oti* > **-odi* > OHitt. *-ati* (Melchert 1992b after Eichner 1980: 146[69] and Neu 1968: 144f). Shevoroshkin's claim (1982: 212) of a different treatment of */d/ and */dh/ in Lycian and Lydian is based on false etymologies or

interpretations. Finally, in the absence of a medial example of PIE */g^w/, the appearance of */g^{w}h/ as /-hw-/ in Palaic *aḫw-* 'drink' may be regular for any medial voiced labiovelar *vs.* velar */g/ > /g/.

(2) For the existence of three distinct sets of tectal stops in CA see Melchert 1987a and 1989.

(3) There is evidence for assibilation of *t to *ts before *y in all languages except Palaic, where its absence may easily be accidental. Since the conditioning *y remains in Hittite (**opítyo-* > OHitt. *appizziya-* 'rear-; later'), I assume that *[ts] is still a mere allophone of */t/ before */y/ in CA.

(4) I use */H/ for the regular CA result of PIE */h_2/ and */h/ for its "lenited" variant, which I identify phonemically with the reflex of word-initial */h_3/: see section 3 for details.

(5) The voiced allophone *[z] of */s/ is rare in CA as already in PIE. Likely examples include 1st pl. mid. **-we/ozd^{h}h$_2$* > Hitt. *-wašta* (Oettinger 1979: 259[2]) and **Ho-zd-wér* > Hitt. *ḫaštuēr* 'branches'.

(6) For the preservation of five vowels in CA see Melchert 1992a and 1992c.

(7) CA long */ę/ represents the monophthongization of PIE */ey/.

(8) CA long */æ:/ results from (tautosyllabic) */eh$_1$/. This sequence appears in Luvian, Lycian and Lydian as /a(:)/ but merges with */e:/ in Palaic and Hittite (Melchert 1989: 40f).

3. Changes from PIE to CA

3.1 Stops

In addition to the merger of the voiced aspirates and voiced stops, CA also shows a radical reduction and redistribution of the remaining voiceless/voiced contrast.

(1) voiced stops are generalized in word-final position (cf.

Old Latin): nt. nom.-acc. sg. *-*od* > Hitt.-Pal. -*at*, Lyd. -*ad*, Luv. -*ata* and Lyc. -*ede* 'it' (the last two with a secondary prop-vowel); pret. 3rd sg. *-*t* > -*d* in Hitt. *pait=aš* 'went he'.

(2) voiceless stops become voiced after accented long-vowel or diphthong: **wḗḱ-* > CA **wḗĝ-* > Hitt. *wēk-* 'ask for'; **ḱéyto(r)* > CA **ḱḗdo(r)* > Pal. *kītar* 'lies'; **éyti* > CA **ḗdi* > CLuv. *īti* 'goes'; **dʰéh₁ti* > CA **dǽdi* > Lyc. *tadi* 'puts'; (virtual) **dʰéh₁ti-* *'putting' > CA **dǽdi-* > Lyd. *ta(a)c-* 'votive offering'. This is the first 'lenition' rule of Eichner (1973: 79ff).

(3) voiceless stops become voiced between unaccented vowels: abl.-instr. **-oti* > CA **-odi* > CLuv. -*ati*, HLuv. -*ati/-ari*, Lyc. -*e/adi* (and perhaps Lyd. -*ad*); pret. 3rd sg. med. **-oti* > CA **-odi* > OHitt. -*ati*. This is the second 'lenition' rule of Eichner: see Eichner 1973: 100[86] & 1980: 146[69], Morpurgo Davies 1982/83, and Melchert 1992b.

The change of */t/ to *[ts] before */y/ has already been noted above.

3.2 Fricatives

3.2.1 "Thorn"

There is no trace of PIE *[*þ*] in Anatolian. One may presently interpret this fact in one of two ways. First, one could assume with Mayrhofer (1986: 158) that the development of *[*þ*] as a conditioned allophone of the PIE dental stops is a "late" IE feature not shared by the Anatolian group. However, Mayrhofer (1986: 153) argues that all reflexes of PIE **h₂ŗtḱo-* 'bear' may be derivable without *[*þ*]. Its absence in Hitt. *ḫart(ag)ga-* is thus non-probative. Other Hittite words with preforms containing *[*þ*] would have been subject to paradigmatic leveling: *tēkan/tagn-* 'earth' and *ḫatk-* 'close' (for the latter see Puhvel 1991: 268). It is thus possible that Anatolian did inherit reflexes of *[*þ*] but subsequently eliminated them.

3.2.2 "Laryngeals"

Aside from the two assimilations cited below, */h₁/ is lost in Anatolian without a trace. It never appears as Hitt. *ḫ* (contra

Pedersen 1938: 183, *et al.*). There is now widespread agreement that */h₃/ is also lost or assimilated in medial position: **séuh₃u-* 'full' > Hitt. *šu-u-* /suwu-/ (Melchert 1987b: 23ff with refs.). Hitt. *laḫ(ḫ)u-* 'pour' continues **leh₂w-* (Oettinger 1979: 424, *et al.*), not **leh₃w-*. The regular reflex of */h₂/ is a voiceless fricative */H/ which appears as initial *ḫ-* and medial *-ḫḫ-* in Hittite, Palaic and CLuvian, and as *x/q/k* in Lycian. Under the same three conditions as voiceless stops (see 3.1 above), */h₂/ is "lenited" to a voiced fricative */h/, reflected as medial *-ḫ-* in Hittite, Palaic and CLuvian and as *g* in Lycian. Examples: **wéh₂-* > CA **wéh-* > Hitt. *weḫ-* 'turn' (Oettinger 1979: 99f contra Lindeman 1987: 110f); **bʰéh₂o-* > CA **bého-* > CLuv. *piḫa-* and Lyc. **pige-* 'splendor; might' (Starke 1990: 314ff); pret. 1st sg. mid. **-h₂eh₂e+* > CA **-Haha* > Hitt. *-ḫḫaḫa(ti)* and Lyc. *-xagã* (Melchert 1992b).

One point of major controversy is the fate of word-initial */h₃/. I follow Kimball (1987) and others in assuming that initial */h₃/ is preserved in Hittite, Palaic and CLuvian as *ḫ-*, but lost in Lycian: **h₃ep-* 'work, commerce; wealth' > Hitt. *ḫāppar* 'sale, transaction' etc. but Lyc. *epirije-* 'sell'. Other scholars reject this claim and assume loss of */h₃/ initially as elsewhere. See Melchert 1987b for a full discussion and opposing views.

If one accepts initial cuneiform *ḫ-* from */h₃/, this sound is in complementary distribution with the voiced medial variant of */h₂/. Given other evidence for a voiced quality of */h₃/ (PIE **píbe-* 'drink' < **pí-ph₃-e-*) and its loss in Lycian, I choose to identify the CA reflex of initial */h₃/ phonemically with the voiced medial variant of */h₂/, both being voiced */h/ as opposed to voiceless */H/, the regular continuant of */h₂/. Obviously, for those who assume a general loss of */h₃/, CA voiced *[h] is merely a conditioned allophone of */H/.

Laryngeals undergo at least one important assimilation in CA: a sequence *-*VRHV-* becomes *-*VRRV-*. Examples: **spérh₁V-* > Hitt. *išparr-* 'kick flat' (Melchert 1984a: 16ff after Oettinger 1979: 270); **térh₂o-* > Hitt. tarra- 'be strong, able'; **su-n-h₃-V-* > Hitt. *šunna-* 'fill', Pal. *šunnuttil-* 'outpouring' (or sim.). I also continue to insist that at least */h₁/ and */h₃/ plus */s/ become geminate /-ss-/ (Melchert 1987b: 26f), but this claim is quite controversial. One should compare the summary of

laryngeals given here with that of Eichner (1988).

3.3 Sonorants

The PIE sonorants are generally stable in CA. It is likely that word-initial /r-/ has already been eliminated, but the details of the process are unclear. Since there are no counterexamples in Lydian and Palaic, the loss of word-initial */y-/ before */e/ shown by Luvian, Lycian and Hittite may well be CA. Example: **yéh$_1$-* > CA **éh$_1$-* > **ḗ-* > Luvian and Lycian *a-* and Hitt. *e-* (usually remade to *ye-*) 'do, make'. See Melchert 1984a: 14ff for discussion and references.

3.4 Vowels

CA preserves the PIE vowel system nearly intact. The contraction of (tautosyllabic) **eh$_1$* to CA */æ/ has already been cited in 2 (8). If one assumes as I do the loss of intervocalic */h$_1$/ and */h$_3$/ in CA, then the contraction of the diphthongs */ey/ and */ew/ to */ę:/ and */u:/ must also be CA, since they necessarily precede the former: **néyh$_x$o-* > **nḗh$_x$o-* > **nḗo-* > OH *nēa-* 'turn'; **séwh$_3$u-* > **súh$_3$u-* > **sú-u-* > Hitt. *šu-u-* /suwu-/ 'full' (Melchert 1992c). A preform ***néyo-* would yield Hitt. ***na-* (Melchert 1984a: 32), while ***séwu-* would become ***semu-* (Melchert 1984a: 22ff, with refs.). Contrary to the general view, Kimball (1993) has shown that other short diphthongs do not monophthongize in all positions in Hittite. I therefore assume that */oy/, */ay/, */ow/ and */aw/ remain in CA.

4. Changes from CA to Hittite

I can treat only the most important developments here.

4.1 Stops

The synchronic status of the Hittite stops is probably the greatest remaining controversy in Hittite phonology. The tentative solution sketched here is my own and in no way reflects a consensus.

It is an established fact that Hittite scribes do not use the *CV* signs for voiceless and voiced stops contrastively in either initial or medial position (see Hart 1983: 112). However, in

intervocalic position geminate stops do contrast with single stops. Furthermore, except for the conditioned changes described in 3.1 above, the geminate stops reflect etymological voiceless stops, while single stops continue voiced stops (thus 'Sturtevant's Law', as per Sturtevant 1932). Evidence involving vowel lengthening (Melchert 1992c) argues that the orthographic geminates are true geminates, in that they close a preceding syllable. I follow Petersen (1933: 22) and others in interpreting these facts to mean that the inherited contrast in stops has been reanalyzed from one of voiceless/voiced to fortis/lenis. In intervocalic position fortis stops are realized as geminates, while the contrasting lenis are simple stops which are indifferently voiced or voiceless.

A contributing factor to the above reanalysis would have been that, like all the Anatolian languages, Hittite had devoiced initial stops by the historical period. The unexpected geminate stop of *ti-tti-* 'install' < **d^{h}eh$_1$-* is most easily explained by assuming that the reduplicated stem is formed in pre-Hittite **after** devoicing of initial **d-* to *t-*. Recall that voiced stops had already been generalized in word-final position in CA (3.1). In the chief remaining position of contrast (intervocalically), the phonetic difference was now geminate *vs.* simple. Under these circumstances the proposed reanalysis does not seem implausible and seems to best account for the attested orthography.

One should note the following additional changes in stops from CA to Hittite.

(1) Hittite largely levels out the effects of the voicing rules in 3.1 (1) and (2).

(2) CA */t/ is assibilated to [ts] before /i/ except after /s/. Analogical changes make the affricate /ts/ phonemic. See Joseph 1984 for details.

(3) CA */d/ becomes /s/ initially before /i/ and /y/. For this formulation see Kronasser 1956: 62 and Starke 1990: 150.

(4) CA palatal and velar stops merge as velars.

4.2 Fricatives

Aside from a number of assimilations, CA */s/, */H/ and

*/h/ are generally preserved. I assume that in parallelism to the stops initial */h-/ is devoiced to /H-/ and the contrast of /H/ and /h/ becomes fortis/lenis, but neither of these steps is strictly provable.

4.3 Sonorants

The nasals and liquids are stable, again aside from assimilations. The glide */w/ is dissimilated to /m/ next to /u/: see Kammenhuber 1969: 137 and Melchert 1984a: 22ff (but I now believe the change is specifically pre-Hittite). CA */y/ is lost in Hittite between vowels (Oettinger 1979: 338 and Melchert 1984a: 31ff). Contra Melchert (1984a: 164) this change is specifically pre-Hittite, not shared by Luvian.

4.4 Vowels

Changes from CA to Hittite are numerous and complex. Only an overview is possible here.

(1) All short vowels are lengthened in accented open syllables (Kimball 1983 passim, Eichner 1986: 13), a change shared in my view with Luvian and Palaic. Contra Kimball 1983 only short */e/ and */o/, **not** */a/, */i/ and */u/, are lengthened in accented **closed** syllables. Contrast **órh₂ei* 'I arrive > *ārḫi* with **érh₂o* *'to the boundary' > **árHo* (see below) > *arḫa* 'away' and see Melchert 1992c.

(2) The high vowels */i/ and */u/ are preserved. */o(:)/ merges with */a(:)/ **after** the lengthening in (2).

(3) CA */æ:/ merges with */e:/ as /e:/. On the possibility that */ę:/ remains distinct in Hittite, see Melchert 1984a: 141ff.

(4) The development of short */e/ is complex and much debated. It is reasonably certain that */e/ is raised to /i/ pretonically (**Kest-wént-* > *kišduwant-* 'hungry'), posttonically in closed syllables (**néb(ʰ)es-* > *nēpiš-* 'sky, heaven'), and before non-coronal nasal (**-enkʷo-* > *-inkuwa-* in *manninkuwa-* 'near'): see Melchert 1984a: 103ff with refs. I remain unpersuaded that there is an umlaut of */e/ to /i/ before /i/ in a following syllable (as per Eichner 1973: 76 and 1980: 144[65]). Note *šeppitt-*

(a grain) with consistent /e/ before following /i/.

Following a suggestion of Warren Cowgill, I now assume a change of */e/ to /a/ in posttonic **open** syllables (revising Melchert 1984a: 104ff). This rule explains the distribution of 1st and 2nd plurals in *-wani* and *-tani*, which are found only in verb forms with accent on the stem, and also the oblique form *-aw-* of *u*-stem adjectives (*tēpaw-* 'few' < **d(ʰ)éb(ʰ)-ew-V-* with generalized accented full-grade root).

Short */e/ appears as /a/ before a coronal (dental) nasal (Pedersen 1938: 166), as in **éndo* 'in(to)' > *anda* and pres. 3rd pl. **-énti* > *-anzi*. Present 3rd sg. *kuēnzi* 'kills' is analogical to *kuemi*. I do not find credible the attempt of Kimball (1986: 88ff) to derive all examples of *-an-* plus dental from zero grades. Before /r/ and /l/, neither complete preservation nor a general change of */e/ to /a/ can account for all the facts. Some cases of */e/ to /a/ before liquid are certain, but the precise conditioning remains to be determined.

(5) As per Kimball (1993), the CA diphthongs */ay/, */oy/, */aw/ and */ow/ remain as /ay/ and /aw/ before dental continuants (/s/, /n/, /r/, /l/). Examples: **ḱóyno-* > *gaina-* 'in-law'; **áwlo-* *'pipe, tube' > *aula-* 'windpipe, throat'. Elsewhere we find monophthongization to /ę:/ and /u:/ respectively.

5. Changes from CA to Palaic

The very limited Palaic corpus necessarily makes much of the following provisional.

5.1 Stops

I assume the same reanalysis of the distinctive features of the stops as in Hittite (4.1), for the same reasons. Palaic also shares with Hittite the merger of palatal with velar stops. Based on the example of *aḫw-* 'drink' to the root **egʷ(ʰ)-*, there is apparently a special weakening of the voiced labiovelar in medial position (cf. 2,1 above).

5.2 Fricatives

CA */s/ is maintained, but the distribution of geminate

/-ss-/ *vs.* /-s-/ is problematic. CA */H/ and */h/ are generally preserved, but note two special developments:

(1) As per Watkins (1975: 373), verb stems in **-éh₂yeti* appear in Palaic spelled *-Ca-(a)-ga-ti/-Ca-(a)-ti*. Contra Oettinger 1979: 158&559 and Melchert 1984b: 38, the form *-Ca-a-ga-ti* with long vowel, *-g-* and **single** *-t-* cannot reflect **-éh₂ti*. One must assume **-éh₂yeti* > CA **-áHyedi* (3.1,3). Palaic *-g-*/zero spells a weak voiced palatal fricative [ʒ] which results from the cluster **-Hy-* (for the spelling compare *ši-ga-at-tal-* for *ši-ya-a-tal-*, Carruba 1970: 39).

(2) CA */h/ is lost between accented long vowel and */u/: **éyh₂u* > CA **ḗhu* (3.2.2) > *iu* 'come!' (= Hitt. *eḫu*). Cf. 6.3.2 (1).

5.3 Sonorants

The sonorants are stable in Palaic. Noteworthy is the loss of */w/ in **díwots* > *Tiyaz* 'Sun-god' *vs.* CLuv. *Tiwaz*. The precise conditioning cannot be determined.

5.4 Vowels

I maintain that Palaic preserves /e/ distinct from /i/ and /a/. For opposing views see Carruba 1970: 39, Oettinger 1979: 535, and Wallace 1983: 169.

Palaic shares several developments with Hittite and Luvian. All short vowels are lengthened in accented open syllables. CA */o(:)/ merges with /a(:)/. Short */e/ is probably raised to /i/ pretonically (nt. ptc. **gezd-én(t)* 'extinguished' > *kištām=(mu)*) and lowered to /a/ in posttonic open syllables (pres. 1st pl. **-weni* > *-wani*). */e/ is apparently preserved in posttonic closed syllables (athem. anim. nom. pl. **-es* > *-eš*). In accented closed syllables Palaic lengthens */a/ from any source, like Luvian (**éndo* > *ānta* 'into', pres. 3rd pl. **-énti* > *-ānti*, **ḱó-* > *kā-* 'this'), but it agrees with Hittite in lengthening any remaining cases of */e/ (**wérti* > *wērti* 'calls'). CA */ę:/ is raised to /i:/, like Luvian (**CA ḱę́-* > *kī-* 'lie'). There is almost no evidence for the fate of CA diphthongs in Palaic.

6. Changes from CA to Luvian

The dramatically revised readings of many Hieroglyphic Luvian signs (Hawkins *et al.* 1974) have shown that Hieroglyphic and Cuneiform Luvian are closely related dialects of the same language. Except where noted, the following description applies to both. Due to the limitations of HLuvian orthography, CLuvian must serve as the basis for most statements about the phonology.

6.1 Stops

I again assume the same reanalysis of the distinctive features of the stops as in Hittite (3.1) and Palaic, for the same reasons. Luvian, however, shows a number of other special developments.

(1) A sequence of accented short */e/ in open syllable plus a prehistoric voiced stop appears as /a/ plus geminate stop: **méd(ʰ)u-* > CLuv. *maddu-* = HLuv. *ma-tu-(sa)* 'wine'. This is part of 'Čop's Law' (Čop 1970).

(2) CA */ḱ/ appears as *z*, at least phonemically identified with the affricate /ts/ < CA *[ts]. See Melchert 1987a & 1989 and cf. Morpurgo Davies and Hawkins 1988. Compare 7.1 on Lycian.

(3) The development of the voiced tectals in Luvian is not yet clear. A general loss as per Oettinger (1976: 101f) and Melchert (1987a: 184ff) now seems very unlikely. The voiced labiovelar */gʷ/ does appear to result in /w/ in all positions: **gʷow+* > HLuv. *wa/i-wa/i-i-* 'cow'; **e/agʷ-* > CLuv./HLuv. *u-* 'drink'. Both */ĝ/ and */g/ become */y/ before front vowel, disappearing before /i/: **ĝesro-* > CLuv. *iš(ša)ra/i-*/HLuv. *i-sa-tara/i-* /istra/i-/ 'hand'; virtual CA **bérĝey+* > CLuv. *parray(a)-* 'high'. Initial */ĝ/ (and surely also */g/) is preserved initially before non-front vowel (in my view devoiced to /k/): **ĝodmṛs-* > CLuv. *katmarš(i)-* 'defecate'; **ĝ(o)ut+* *'wall' > CLuv. *kuttašra/i-*/HLuv. *ku-ta-sa+ra/i-* 'orthostat'. */g/ is lost intervocalically in **dʰugh₂tr-* > **dugatr-* > HLuv. *tu-wa/i-tara/i-* 'daughter' and perhaps before nasal in **negna/i-* > CLuv. *nana/i-* 'brother', but preserved between non-syllabics in **b(ʰ)erĝ(ʰ)w-* > CLuv. *papparkuwa-* 'purify'.

(4) In HLuvian */d/ often undergoes rhotacism to /r/, and doublets are frequent: *i-ti/i+ra/i* = /i:di/ and /i:ri/ 'goes', abl.-inst. *-a-ti/-a+r/ai* = /-adi/ and /-ari/. See Morpurgo Davies 1982/83.

6.2 Affricate

CA *[ts] is preserved in Luvian: CA **Hatye/o-* > HLuv. *ha-zi-(ya)-* 'inscribe' (= Hitt. *ḫazziya-* 'strike; play an instrument').

6.3 Fricatives

6.3.1

CA */s/ remains in Luvian. It is subject to 'Čop's Law' (see 6.1,1): CA **wés(V)-* 'good' > CLuv. *waššar-* 'favor', *wašš-* 'be pleasing'.

6.3.2

CA */H/ and */h/ are for the most part maintained, but note the following specially conditioned changes:

(1) */H/ is weakened to /h/, and */h/ is lost, between accented long vowel and /u/ (cf. 5.2,2): CA **páHwr̥* > pre-Luvian **páHur* > CLuv. *pāḫūr* 'fire'; CA **sḗhwr̥/sḗhun-* > **sḗur/sḗun-* > CLuv. *dūr/dūn-* 'urine' (initial */s/ to /t/ is irregular).

(2) */H/ is sporadically lost in medial clusters between sonorant and /w/, and */h/ more generally medially before /w/: pre-Luvian **mé-mVlHw-* > CLuv. *mammalw-* 'crush' (beside *mammalḫu-*); pre-Luvian **páhworye-* > CLuv. *pawari(ya)-* 'light a fire'.

6.4 Sonorants

These are mostly stable. They are all subject to 'Čop's Law' (6.1,1): CA **pérem* > CLuv. *parran* 'in front'; CA **mélid-* > CLuv. *mallit-* 'honey'; pre-Luvian **mé-mVlHw/u-* > CLuv. *mammalw-/mammalḫu-* 'crush'; pres. 1st pl. **-wéni* > CLuv. *-wanni* (lx) > *-unni* (by syncope). In HLuvian /l/ is often rhotacized to /r/:

CA **g*^{w}*el-* or **wel-* > HLuv. *wa/i+ra/i-* 'die' (beside *wa/i-la-*).

6.5 Vowels

Luvian shares with Hittite and Palaic the lengthening of all short vowels in accented open syllables. It differs from them in lengthening **all** accented short vowels in absolute initial position. The high vowels are otherwise preserved unchanged. As in Hittite and Palaic, */o(:)/ merges with */a(:)/. The unmarked treatment of short */e/ is /a/, but */e/ is raised to /i/ after */y/ (including from */ĝ/ and */g/ as per 6.1,3): see Oettinger 1976/77: 135. CA long */e:/ and */ę:/ are both raised to /i:/: CA prohibitive negative **nḗ* > CLuv. *nī*/HLuv. *ni-(sa)*; CA **ę́-* 'go' > CLuv./HLuv. *i-*. Note that short */e/ first becomes /a/ and only then undergoes lengthening as per above: CA **néwo-* > CLuv. *nāwa/i-* 'new' *vs.* Hitt. *nēwa-*. This shows that the lengthening in accented open syllable, though common to Hittite, Luvian and Palaic, must be a parallel but independent process. As already discussed, CA */æ:/ appears in Luvian as /a:/: **sǽ-* > CLuv. *šā-*/HLuv. (*69)*sa-* 'let go' (Melchert 1989: 40f). Cf. 7.5 and 8.5 on Lycian and Lydian.

It is worth noting the intermediate position of Luvian, which shares certain developments with Hittite and Palaic on the one hand and with Lycian (and Lydian) on the other.

7. Changes from CA to Lycian

Most of the statements below apply to both Lycian (A) and Milyan (Lycian B). Differences will be noted.

7.1 Stops

Voiceless stops are generally preserved in Lycian, but they are voiced after nasals: CA **tr̥Hn̥t-* > *trqqñt-* 'Storm-god' (= Τερκανδας). Voiced stops are preserved only after nasals, thus becoming merely synchronic allophones of the voiceless stops in this environment: pre-Lycian **endó* > *ñte* 'into' (final accent due to proclisis). Voiced stops are devoiced word-initially: CA **dǽdi* > *tadi* 'places'. Elsewhere, they are weakened to fricatives: *tadi* = [*taði*] (for the fricative value see Pedersen 1945: 42, *et al.*). The spirantization of the voiced stops is the likely reason for the

absence in Lycian of the reanalysis of the stops as fortis/lenis as in the cuneiform languages (cf. 4.1).

A sequence **dw-* becomes Lycian (A) *kb-* (CA **dwi-* > *kbi-* 'two; other' (*vs.* Milyan *tbi-*). Labial and dental stops are otherwise maintained.

CA palatal */ḱ/* appears as Lycian /s/ (Melchert 1989: 23ff): CA **> *ḱe̯-* > *si-* 'lie' (cf. 6.1,2 on Luvian). Although synchronically /s/, this sound must still have been distinct from */s/* in pre-Lycian, because it does not share in the change of */s/* > /h/ in Lycian A. It is also distinct in Lycian from *z* < CA **[ts]*.

CA */k/* results in *k* before front vowel: *tukedr(i)-* 'statue' < CA **tuk+* 'body' (cf. Hitt. *tu(e)kk(a)-*). Labiovelar */kʷ/* becomes /t/ before front vowel in Lycian (A), but *k* in Milyan: CA **kʷi-* > *ti-/ki-* 'who'. The fate of */k/* and */kʷ/* in other environments remains unknown.

Voiced tectals are apparently treated in Lycian as in Luvian (6.1,3), but the evidence is very sparse: for */g/* > /y/ before front vowel note **ĝesr-* > *izr-* 'hand' and **ĝĕmro-* > **ipre-* ([ībre] with epenthesis) 'open country' (= CLuv. *im(ma)ra/i-*). Lycian also shows loss of intervocalic */g/* in **dʰugh₂tr-* > **dugatr-* > **duwatr-* > **dwatra-* > *kbatra-* 'daughter'.

7.2 Affricate

The CA affricate **[ts]* is preserved in Lycian *z* ([ts]). Contra Melchert 1987a: 192, the following conditioning */y/* is lost, making /ts/ phonemic: **-tyo-* > CA **-tsyo-* > *-ze-* in *przze-* 'front'. The *-i-* of anim. acc. pl. *przzis* is a "motion-suffix", as per Starke 1990: 65ff.

7.3 Fricatives

7.3.1

CA */s/* is preserved in Milyan, but turns to /h/ in Lycian (A): cf. Lyc. *kbihu* = Mil. *tbisu* 'twice'. There is a special change of */s/* to /ts/ next to sonorant: CA **ĝesr-* > Lyc. *izr-* 'hand'. In Milyan this affects **all** Common Lycian */s/*: ethnic suffix anim. acc. sg. **-i(s)ḱom* > **-isñ* > Lyc. *-isñ* but Mil. *-izñ* (Melchert 1989: 29f).

7.3.2

CA */h/* is preserved in Lycian as *g* ([ɣ]), but one should note that all examples are before back vowel: pret. 1st sg. mid. **-h₂eh₂e* > CA **-Haha* > *-xagã* (Melchert 1992b). There is considerable controversy over the fate of */H/* (unchanged */h₂/*): it is clear that it undergoes a conditioned split into Lycian *k*, *q*, and *x*, but there is wide disagreement over the conditioning and the synchronic value of the sounds represented by those letters. I view *k* as a voiceless palatal stop, *q* as a voiceless (mid-)velar stop, and *x* as a back velar or uvular stop (contra Pedersen 1945: 10, *et al.*). If one accepts this definition of the sounds, then one may view the split as one of fronting: */H/* > *k* (palatal!) **between** front vowels (in Lycian terms, 7.5) **en-h₂o* > pre-Lycian **en-He* > *ẽke* 'when' (Melchert 1992a: 46). **Before** front vowel there is fronting only to *q* (velar!): **tṛHénts* > Mil. *trqqiz* 'Storm-god' (after Oettinger 1979: 222 & Starke 1990: 142). The regular result of */H/* is *x* (back velar or uvular!): CA pret. 1st sg. **-Ha* > *-xa*.

7.4 Sonorants

The sonorants are for the most part maintained. The glide */w/* does become a spirant [v] after consonant: **dwi-* > *kbi-/tbi-* 'two; other'.

7.5 Vowels

Lycian differs from Hittite, Palaic and Luvian by merging */o/* with /e/ instead of with /a/: see Melchert 1992a and Rasmussen 1992. Examples: anim. acc. sg., nt. nom.-acc. sg. **-om* > *-ẽ*; **endó* > *ñte* 'into' (accent due to proclisis). Short vowels are otherwise generally preserved, but note that */e/* is raised to /i/ after /y/, including /y/ from */g/*: **gesr-* > **yesr-* > **isr-* > *izr-* 'hand' (cf. 6.5 on Luvian). Just as in Luvian, long */e:/* as well as */e.:/* is raised to /i/, but */æ:/* becomes /a/: **nḗ* > *ni* (prohibitive negative); **ḱe̯-* > *si-* 'lie'; but **dé-* > *ta-* 'put'. Notice that contrastive vowel length is abandoned in Lycian.

Crucial to understanding Lycian vocalism is recognition of a powerful umlaut rule, by which a non-high vowel appears as *e* or *a* depending on whether the vowel of the following syllable is front (*i*, *e*) or back (*u*, *a*): see Melchert 1992a: 44f for

discussion and examples.

8. Changes from CA to Lydian

In the absence of an extensive Lydian-Greek bilingual, our grasp of the Lydian lexicon is poor. As a result, there are few secure etymologies, and most of what follows should be regarded as hypotheses, not firmly established facts.

8.1 Stops

The contrasting voiceless and voiced stops of CA become conditioned allophones: voiced stops are generalized after nasals (and perhaps /r/), voiceless stops elsewhere. For the letter *b* as /p/ see Gusmani 1965: 204ff. Examples: **éndo* > *ẽt-* 'into' and **(h₁)yónt-* *'walking' > *dẽt* 'mobile wealth' (cf. *Aliksãntru-* = 'Αλεξανδρος); but both **pi(y)-* > *bid-* 'give' and **obí-* *'that' > *bi-* 'he' (with aphaeresis).

The above merger is apparently preceded by several conditioned spirantizations affecting the labial and dental stops. The details of these remain uncertain, but there are some clear examples of */p/ > /f/: conjunction/preverb **po-* > *fa-*. While */t/ is maintained as */t/ ([d] after nasal as per above), CA */d/ undergoes a four-way split. Before */i/ and */u/ it becomes *c*, probably some kind of coronal affricate other than /ts/: **diw-* > *ciw-* 'god'; **duw(V)-* > *(da)-cu(we)-* 'place'. Any word-initial example which does not become *c* is devoiced to /t/: **dem-* > *tam-* 'build'. After nasals it is preserved as [d], synchronically an allophone of /t/ (see above). In other medial positions and word-finally it is spirantized to /ð/, spelled *d*: **dáda-* > *taada-* 'father'; nt. nom.-acc. sg. **-od* > *-ad*. For the fricative value of *d* see Gusmani 1978: 8344 and Melchert 1994.

What little evidence we have suggests that Lydian merges the palatal with the velar stops. I follow Heubeck (1959) and Gusmani (1964: 33f) in viewing Lydian *q* as a voiceless labiovelar. As Gusmani emphasizes, this value is supported by the apparent dissimilation of *q* to *k* before rounded vowel: e.g. **kʷod* > *-kod* (generalizing particle).

8.2 Affricate

The letter τ is in several clear cases the result of /t+s/. I also follow Shevoroshkin (1967: 24&43) in interpreting the suffix *-τa-* as /-tsa-/ < CA **-tsyo-* < **-tyo-* (2,3 above).

8.3. Fricatives

CA */s/ is regularly preserved as /s/, confusingly transliterated as *ś*, while it is palatalized to /ʃ/ (= *s!*) before */i/ and */e/ and probably also **after** */i/: CA **korséye-* > *-karse-* 'cut (out)'; CA **sĕrmó-* *'of the precinct' > *sirma-* 'temenos'; adj. anim. nom. sg. **-is* > *-is*.

The CA fricatives */H/ and */h/ are both apparently lost without a trace in Lydian, but examples are predictably scarce. Note at least **Hwéswo-* > *weśfa-* 'living'.

8.4 Sonorants

The liquids and nasals are for the most part preserved, but note the following two special changes:

(1) Original final */m/ and */n/ appear as ν, a weakly articulated nasal, whose other sources are obscure: anim. acc. sg. **-om* > *-aν*; pret. 1st sg. **-om* > *-ν* (cf. Gusmani 1978: 842f).

(2) */n/ is lost before a following stop, leaving only a nasalized vowel *ẽ*: **éndo* > *ẽt-* 'into' , **yónt-* > *dẽt-* 'mobile property', etc. This means that all attested sequences of /n/ plus stop must be secondary due to syncope.

(3) CA */l/ is palatalized at least before */y/ and */i/: **alyo-* > *aλa-* 'other'. Note the loss of the conditioning */y/.

*/w/ becomes a voiced fricative /v/, as shown by alternations such as *lewś/lefś* 'Zeus' (I use *w* instead of *v* only to avoid confusion with ν in (1) above). After */s/, the fricative is regularly devoiced to /f/: **Hwéswo-* > *wešfa-* 'living'.

As noted above, */y/ disappears after a consonant: **-tsyo-* > *-τa-*; **alyó-* > *aλa-*. I have argued in Melchert (1994) that initially and intervocalically */y/ becomes Lydian *d* ([ð]): **píyom* > *bidν* 'I gave'; *yónt-* *'walking' > *dẽt-* 'mobile property' (= Hitt. UDU*(i)yant-* 'sheep').

8.5 Vowels

The high vowels are generally stable. Word-initial (unstressed?) **u-* is apparently reduced to /v/: **Hustó-* > *wśta(a)-* 'alive'.

When accented(!), the non-high vowels */e/, */a/ and */o/ merge before a nasal, becoming *ẽ* in a closed syllable, but *ã* in an open syllable. Examples: **éndo* > *ẽt-* 'into'; **ánna-* > *ẽna-* 'mother'; **yónt-* > *dẽt-* 'mobile property'; but **wémyedi* > **wémyidi* > *wémidi* > *(fa-kat)-wãmid* 'meets with'; **gʷónā-* > *kãna-* 'woman'. Unaccented short */e/, */a/ and */o/ all merge as /a/: CA **emú* > *amu* 'me'; **alyó-* > *aλa-* 'other'; preverb **kom-* > *kan-*.

As in Luvian and Lycian, short */e/ is raised to /i/ after */y/: pres. 3rd sg. **-yedi* > pres. 3rd person *-id* (Oettinger 1976/77: 135). Accented short */e/ is apparently preserved before non-nasal: **Hwéswo-* > *weśfa-* 'living'.

Accented short */o/ is definitely preserved after labiovelar, which is delabialized by the o: **kʷod* > *-kod* (generalizing particle). Some other cases of *o* probably continue **Cwó*, but the source of most examples of *o* in Lydian is obscure.

Aside from before nasal and after */Kʷ/ and */w/, accented */o(:)/ appears to merge with /a/: *alyós* > *aλaś*.

CA long */e:/ is raised to /i/, and */æ:/ lowered to /a/, as in Luvian and Lycian: **né* > *ni-d* 'not'; **dǽdi-* (**dʰéh₁-ti-*) **'putting' > *taac-* 'votive offering'. However, it is likely that CA */ę:/ appears as *e*: **kʷéy-* > CA **kʷę́-* > *qe-* 'who' (= Lat. *quī*). Despite some spellings in *-aa-*, it seems unlikely that vowel length is contrastive in Lydian.

9. Accent

I have made no attempt to describe the accent systematically in the various languages. Several important secondary effects of the accent have been noted, both in CA (3.1,2-3) and in the prehistory of the various languages (4.4,1; 5.4; 6.1,1; 6.5; 8.5). Widespread syncope in Lycian and Lydian is also surely conditioned in part by the accent. All these changes suggest that the accent in Anatolian contains an element of stress as well as pitch. Several facts argue that the position of the accent is mostly maintained into the attested languages. Eichner (1986) has successfully determined the

basic synchronic distribution of the accent in Lydian.

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