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Reflexes of $*h_3$ in Anatolian*

1. Introduction.

It has now been sixty years since Kuryłowicz, *Symb. Rozwadowski* I (1927) 95ff., first identified some examples of Hittite $h(h)$ with the 'coefficients sonantiques' reconstructed for PIE by Saussure a half-century before. This 'glänzende Bestätigung' has weathered a number of assaults, and nearly all Indo-Europeanists now accept the 'laryngeal theory' in some form or other. However, controversy continues over the number and nature of these PIE phonemes and their reflexes in the daughter languages. This debate includes Anatolian, the one family where it is claimed that the laryngeals appear directly as consonants¹.

Eichner, *MSS* 31 (1973) 54ff., has given us a thorough summary of the treatment of $*h_1$ in Hittite which remains valid in all essentials². His chief result may be succinctly repeated here: PIE $*h_1$ is nowhere directly continued as Hittite h . To my knowledge there is no current evidence to suggest that the treatment of $*h_1$ in other Indo-European languages of Anatolia differs from that in Hittite. We may thus provisionally assume the developments summarized by Eichner to be Common Anatolian.

Oettinger, *Stamm bildung* (1979) 546ff., has furnished a summary of the developments of $*h_2$ in Hittite which is correct in all but detail³. PIE $*h_2$

* What follows represents a revised and reduced version of a paper presented at the Fifth East Coast Indo-European Conference, Princeton University, June 13–15, 1986. I am grateful to various participants at the conference for helpful suggestions and corrections.

¹ It would be neither possible nor profitable for me to take issue here with the many competing versions of the laryngeal theory which currently exist. I will state simply that I assume for PIE that system of laryngeal consonants which is sketched by Mayrhofer, *Fs Neumann* (1982) 183, note 19, for reasons which are well presented there.

² A few points do remain uncertain: (1) does $*h_1$ "vocalize" to *a* initially before an obstruent (Hitt. *ašanzi* 'they are' < $*h_1senti$) or disappear as it does before sonant consonant? In the latter case the initial *a-* of *ašanzi* for expected $*šanzi$ would be analogical after *TeT/TaT* roots (*šešzi* : *šašanzi* :: *ēšzi* : *x*). (2) Does a postvocalic $*h_1$ assimilate to a following $*s$ to give double *-šš-*, as I have claimed on several occasions (see 3.3 below with refs.)? (3) Does the sequence $*VRh_1V$ assimilate to $VRRV$ like $*VRh_2V$? See Oettinger, *Stamm bildung* 152 & 270 for likely, but not assured cases.

³ His derivation of the consonant stem collective plural ending *-a* from a dual (!) $*-oh_1e$ is mystifying. That of Kammenhuber, *HbOr* (1969) 303, from $*-h_2$ remains dubious, since this ending may easily reflect $*-eh_2$ spread analogically from the *o*-stems as elsewhere. The hapax *anīat-šet* (*KUB XXXVI* 100 Vs 13; OH ms.)

regularly appears as Hittite *h̥h*, but under certain conditions it may be 'lenited' to *h* or be lost entirely. This statement appears to be valid for Palaic and Luvian as well. Lycian *χ* regularly corresponds to cuneiform *h̥h* and Lycian *g* to cuneiform *h* (notably in the unlenited and lenited forms of the pret. 1st sg. ending: Lyc. *-χα/-ga* = CLuv. *-h̥ha/-ha*)⁴.

So far as I know, no general discussion of the fate of **h₃* in Anatolian has yet appeared. This gap is not accidental. There are relatively few PIE roots with assured **h₃*, and some of the best established either do not occur in Anatolian or are found in unexpected and morphologically ambiguous formations. There is therefore no current agreement on the outcome of **h₃* initially before vowel or intervocalically, two basic positions where a priori one would expect the result to be determinable. I believe that recent scholarship has now provided evidence to settle several key issues regarding **h₃* in Anatolian. A systematic overview thus seems called for.

2. Initial **h₃*.

2.1. Initial **h₃* before vowel.

There are at present two opposing views on the outcome of **h₃* in this position. Some believe that **h₃* is lost in Hittite (explicitly Oettinger, *Stammbildung* 546n), citing the following examples⁵:

- 2a. Hitt. *arta* 'stands' < **h₃erto* (= Grk. ἄρτο);
- 2b. Hitt. *arki-* 'testicle' < **h₃erǵhi-* (= Grk. ῥρχις);
- 2c. Hitt. *aniya-* 'carry out, execute' < **h₃en-* (cf. Lat. *onus*).

for usual *aniyatta-(šet)* 'his regalia' (coll. pl. to anim. *aniyatt-*) may well be an archaism showing the regular reflex of final **-Th₂*, i.e. zero. Solid evidence for vocalization of laryngeals in Anatolian is still lacking. Internal cases like HLuv. *tuvatri-*, Lyc. *kbatra-* 'daughter' < **dhugh₂tr-* may show anaptyxis rather than vocalization.

Oettinger's exceptional rule by which **h₂g* assimilates to Hitt. *gg* is an ad hoc device invented to save a single etymology: *šakk-* 'know' < **seh₂g-*. The etymology is false, as shown by the real reflexes of **s(e)h₂g-* in Hittite: *šakai-* 'omen', *šakiyahh-* 'give a sign', etc. These show expected single *-k-* and refer specifically to knowledge given by omens. Hitt. *šakk-* 'know' continues **sek-* 'cut' with regular phonology and the same semantics as Lat. *sciō*. PIE **h₂* is lost regularly with compensatory lengthening between a vowel and any following stop.

⁴ For lenition of consonants following an accented long vowel (in Common Anatolian) see Eichner, *MSS* 31.79f. For confirmation of this rule and an additional case of lenition in the Luvian languages see Morpurgo-Davies, *KZ* 96 (1983) 245ff.

The appearance of **h₂* as Lyc. *q* and *k* is problematic (e.g. Lyc. *qla* = Hitt. *h̥ila-* 'courtyard', Lyc. *ēke* = CLuv. *āh̥ha* < **an̥ha* 'when'). However, since all examples occur in clusters of some sort, a conditioned split seems likely (thus also Oettinger, *Stammbildung* 424, n61).

⁵ For derivations 2a-b see Rix, *MSS* 27.92ff., followed by Oettinger, *Stammbildung* 523f. and 415. For 2c see Oettinger, *Stammbildung* 345.

Others assume **h₃* > Hitt. *h-*, citing some or all of the following⁶:

- 2d. Hitt./Pal. *hara(n)-* 'eagle' < **h₃éro(n)-* (Grk. ὄρνις etc.);
- 2e. Hitt. *harp-* 'change one's group' < **h₃erbh-* (cf. Lat. *orbus* etc.);
- 2f. Hitt. *happar-* 'transaction', *happinant-* 'rich' etc. < **h₃ep-* (Lat. *opus*);
- 2g. Hitt. *hastāi-*, CLuv. *h̥ašša-* 'bone(s)' < **h₃ést(h₂)ōi* (Grk. ὀστέον etc.);
- 2h. Hitt. *hark-* 'perish' < **h₃erg-* (cf. OIr. *orgaid* 'slays');
- 2i. CLuv./HLuv. *hawī-/hawī-* 'sheep' < **h₃ewi-* (Lat. *ovis* etc.);
- 2j. Hitt. *haliya-* 'bow', *halh̥altumar-* 'corner' < **h₃el-* (Grk. ὠλένη 'elbow' etc.).

So long as we are restricted to examples of **h₃* before vowel, this controversy may continue indefinitely. This is due to the nature of PIE morphology, where the ablaut grades *e*, *o* and *Ø* alternate within the same paradigm or closely associated paradigms. Thus, proponents of **h₃* > Hitt. *Ø* explain the cases of Hitt. *ha-* = *o-* elsewhere in 2d-j as continuing **h₂o-* (with the commonly held assumption that **h₂* does not color **o* to **a* in PIE)⁷. The absence of non-Anatolian *a-* < **h₂e-* in these roots is ascribed to chance. In a similar fashion, those who believe in **h₃* > Hitt. *h-* interpret the examples of Hitt. *a-* = *o-* elsewhere in 2a-c as reflecting **h₁o-*. It is true that one faces varying degrees of difficulty in justifying the necessary *o*-grade in the different examples, so that one can perhaps form an opinion based on one's view of the plausibility of *o*-grade in the individual cases. In principle, however, it is impossible to exclude entirely **h₂o-* as the source of 2d-j or **h₁o-* as the source of 2a-c. This dilemma is evident in the comment of Rix, *MSS* 27.93: 'Die traditionelle Erklärung, die von einer Wurzel **er-* ausgeht und gr. ὀρ- analogisch von Formen mit *o*-farbiger Vollstufe aus (Pf. ὀρώρε, Intensivum hom. ὀρέοντο) übertragen sein läßt, ist nicht zu widerlegen, aber auch nicht weiter zu stützen.' If we are to determine the fate of initial **h₃* in Anatolian, we must find examples other than before vowel.

2.2. Initial **h₃* before sonant consonant.

Weitenberg, *Die hethitischen u-Stämme* (1984) 223, has now provided a convincing example of initial **h₃* before sonant in Hittite, though he does not seem to realize the full consequences of his derivation. He persuasively relates Hitt. *harg(a)nāu-* 'palm, sole' to Grk. ὀρέγω 'stretch out' (especially

⁶ The attribution of **h₃* to examples 2d-i is due to various scholars. I refer the reader to the respective articles in Tischler, *HEG*, for details. The example offered in 2j is my own. I have included in both lists all examples known to me, but others may have been suggested. As I will show below, the addition of further examples to either list would not affect the issue.

⁷ See for this assumption especially Beekes, *Sprache* 18 (1972) 117ff.

the hand or foot) from PIE $*h_3rēg-$. This crucial etymology is semantically, morphologically and phonologically impeccable. As already noted, Grk. ὀρέγω is used preeminently of the hand or foot. While most reflexes of $*h_3rēg-$ refer to linear extension, Toch. AB *rāk-* 'cover' obviously implies extension over a surface. Weitenberg, *u-Stämme* 221ff., has shown that a $*nu-$ suffix has limited productivity in Anatolian⁸. He finds the attested inflection (instead of an ordinary *u*-stem) problematic, but given the underlying meaning 'surface, extent', an amphikinetic collective $*h_3rēg-nōu$, $*h_3rēg-n(u)wēs$ is in fact expected (type of Hitt. *ḫaštāi-* 'bone(s), Gebeine' < $*h_2r_3est(h_2)ōi$). Hitt. *ḫarg-* is either the regular reflex of $*h_3rēg-$ or the generalized zero-grade $*h_3rēg-$. The main point is that Hitt. *ḫar-* = Grk. *or-* in this example cannot possibly continue $*h_2o-$, since we are dealing with a TRET root. We must conclude that $*h_3$ is preserved as Hitt. *ḫ-* before a sonant consonant. If it is preserved initially before a consonant, it is hardly credible that it was lost initially before a vowel⁹. I therefore conclude that 2a-c above must continue $*h_1V-$, while at least some of 2d-j show the genuine reflex of $*h_3V-$, namely *ḫa-*¹⁰.

⁸ For an additional example of a *nu*-suffix in Anatolian (in Palaic) see Melchert, *KZ* 97 (1984) 42f.

⁹ Strictly speaking, of course, one could claim that $*h_3$ was lost before consonantal $*r$ in the strong stem and that *ḫarg-* reflects only $*h_3rēg-$, but the argument remains the same. If $*h_3R-$ yields *ḫaR-*, then $*h_3V-$ surely gives *ḫV-*.

¹⁰ Possible additional support for $*h_3V- >$ Hittite/Palaic/Luvian *ḫV-* may be found in the contrastive treatment of initial $*h_2$ and $*h_3$ in Lycian, as argued by S. Kimball, *Fs Hoenigswald* (1987) 185ff.: cf. Lyc. *ḫñtawati-* = CLuv. *ḫanda-wati-* 'ruler' < $*h_2ent-$ versus Lyc. *epiriḫe-* = Hitt. *ḫappariya-* 'deliver, hand over' < $*h_3ep-$. Since 'sheep' is attested as Lyc. *ḫawa-*, if the above claim is correct, this word would have to be $*h_2owi-$, not $*h_3ewi-$.

The analysis of examples 2a and 2c as containing $*h_1V-$ renews the problem of accounting for the unexpected *o*-vocalism of these forms. I have no new solution to offer for Grk. ὄρετο = Hitt. *arta*, but I would point out that the assumption of initial $*h_3e-$ in this case is problematic even when one ignores the Anatolian reflexes. Rix, *MSS* 27.100, concludes that 'die "große Bewegungswurzel" idg. $*er-$ enthält also aus der Sicht der Laryngalthorie zwei Wurzeln'. This solution is ingenious, but unacceptable. If there are two roots $*h_1er-$ and $*h_3er-$, they must differ in meaning, and one ought to be able to assign the reflexes of $*[er-]$ to one meaning and those of $*[or-]$ which occur in *e*-grade environments to another. For example, one root might mean 'move vertically' whence '(a)rise' and the other 'move horizontally' whence 'go, come, arrive'. It is clear, however, that one cannot distribute the attested forms in this manner. Hitt. *arummi*, Grk. ὀρνυμι and Skt. *ṛnómi* must be equated morphologically, but the first means '(re)move', the second 'rouse, raise' and the third both 'rise, stir' and 'reach, attain'. Current evidence suggests that the attested meanings are secondary specializations of a single root meaning 'stir, move' (intr.). The existence of $*[er-]$ forms forces a reconstruction $*h_1er-$, however one is to account for the distribution of some of the $*[or-]$ reflexes.

As for Lat. *onus*, Skt. *dnas-* and Hitt. *aniya-*, the first two could be derived from a preform $*h_3énh_xos$: see most recently Mayrhofer, *Etymologisches Wörterbuch*

2.3. Initial $*h_3$ before obstruent.

Further support for the preservation of initial $*h_3-$ as *ḫ-* in Hittite/Palaic/Luvian is found in an example before obstruent. Watkins, *Fs Neumann* 455ff., has related Hitt. *ḫapuš-* 'shaft; penis' to Grk. ὀπύω 'marry' but also 'mount sexually' (< $*h_3pus-ye/o-$). This semantically attractive derivation faces a phonological problem of which Watkins is aware: Hitt. single *-p-* equates to Grk. *p* in apparent contradiction of Sturtevant's Law. As he points out, however, Hittite orthography regularly fails to indicate the geminate stop as the second member of a cluster: cf. standard *šipand-* 'libate' for /spand-/ (= Lat. *spondeō*). If we assume a cluster $*h_3p-$, then the spelling *ḫapuš-* is perfectly regular. This means, however, that once again Hitt. *ḫ(a)-* = Grk. *o-* cannot continue $*h_2o-$. The zero-grade of the root required by the Hittite combined with the *o*-vocalism of the Greek leave only one possible preform: $*h_3pus-$.

PIE $*h_3$ then, like $*h_2$, is generally preserved as *ḫ-* in initial position in Hittite/Palaic/Luvian. As suggested by other evidence, however, (see below) it was undoubtedly weaker in articulation than the reflex of $*h_2$ and was probably lost in Lycian (see note 10).

3. Medial $*h_3$.

3.1. Intervocalic $*h_3$.

As in initial position, two developments have been proposed for intervocalic $*h_3$ in Hittite, but the lines of controversy are much less clearly drawn, in part no doubt because there are even fewer relevant examples. Watkins, *Flexion und Wortbildung* (1975) 378, derives Hitt. *šū-* (/su-u-/) 'full' from $*seuh_3-u-$ with loss of $*h_3$, but he gives no argument for why the laryngeal must be $*h_3$ rather than $*h_1$ ¹¹. Sturtevant, *CGr*¹ (1933) 243 & 249, among others, assumes that *dā-* 'take' continues an unreduplicated perfect stem. This implies a third singular $*doh_3e(i) >$ *dāi* with loss of

des Altindoarischen Bd. 1, Lfg. 1 (1986) 71. The second laryngeal is in fact required independently by the alternation in Hittite between *aniya-* < $*(h_x)enh_x-ye/o-$ with loss of laryngeal before $*y$ and the iterative *anniške-* < $*(h_x)enh_xiske-$, where the syncope of $*ye/o$ to *i* produced the environment for the assimilation rule $VRRV > VRRV$ cited in Sections 3.1 and 3.6 below. However, as Scheller, *KZ* 89 (1975) 191ff., has indicated, Lat. *onus* as well as Skt. *dnas-* could just as well continue $*enos$ (and also $*enh_xos$). Our current knowledge of the Hittite development of $*ēRC$ (especially $*ēRH$) would also permit the derivation of Hitt. *aniya-* and *anniške-* from $*(h_1)enh_x-ye/o-$. This example is therefore not a compelling argument for $*h_3- >$ $Ø$ in Anatolian.

¹¹ If we could demonstrate that $*VRh_1V$ does not lead to $VRRV$ (cf. note 2 end), then of course the geminate in *šunna-* 'fill' would prove $*h_3$, since $*h_2$ is excluded by the loss intervocalically in *šū-*.

intervocalic $*h_3$ ¹². However, a direct equation of the Hittite *hi*-conjugation and the PIE perfect is problematic, and other explanations for *dā*- 'take' have been offered. Risch, *Flexion und Wortbildung* 253, suggests that *dā*- continues a remodeled active root aorist. This account implies $*deh_3e(i) > dāi$, again with loss of intervocalic $*h_3$, but Risch stresses that the attested paradigm may not be entirely derivable by regular sound change. Eichner, *Flexion und Wortbildung* 93f., derives *dā*- from a middle root aorist $*dh_3-$, while Watkins, *Idg. Gram.* III/1.199, starts from $*dh_3o-$. The case of *dā*- 'take' for loss of intervocalic $*h_3$ is thus far from compelling.

On the other hand, the alternate view that intervocalic $*h_3$ is preserved in Hittite as single $-h-$ (versus regular $-hh-$ < $*h_2$) also has very tenuous support: namely, the comparison of Hitt. *lah(u)-* 'pour' with Grk. *λάω*, Lat. *lauō* 'wash', etc. See Cowgill, *Evidence for Laryngeals* (1965) 109, Beekes, *Development of the Proto-Indo-European Laryngeals in Greek* (1969) 231f., and Lindeman, *Einführung* (1970) 61, with refs., for attempts to uphold derivation of these words from $*leh_3(u)-$. Winter, *Evidence* 108, and Oettinger, *Stammbildung* 424, argue rather for $*leh_2(u)-$, and *lah(u)-* must be viewed as a very uncertain example of intervocalic $-h-$ from $*h_3$.

I believe that evidence showing the Hittite result of intervocalic $*h_3$ does exist, but it has been misread (by me among others)¹³. We begin with the adjective *šū*- 'full', which shows super plene writing (nt. nom.-acc. sg. *šū-u-ú*) and an ablauting paradigm (anim. acc. pl. *šuwamuš* regularly dissimilated from $*šuwaw-uš$). Neither of these facts is explainable if we start from a root formation as suggested by Oettinger, *Stammbildung* 298n. We must rather assume with Watkins, *Flexion und Wortbildung* 378 (and Oettinger, *StBoT* 22.39) a proterokinetic *u*-stem adjective $*séuh_3-u-$, $*suh_3-éu-$, which with loss of the intervocalic laryngeal leads regularly to strong stem *šū*- (/su u-/) and oblique stem $*šuwaw-$. Since intervocalic $*h_2$ is preserved as $-hh-$ (or $-h-$), the lost laryngeal must be either $*h_1$ or $*h_3$.

The laryngeal's presence is confirmed by the geminate $-nn-$ of the Hitt. *šunna*- 'fill', which has generalized the weak stem of *šunnanzi* 'they fill' < $*su-n-h_3-énti$, with the same assimilation of *VRHV* to *VRRV* seen in *tarra*- 'be strong, able' < $*terh_2o-$, etc. (see Oettinger, *Stammbildung* 549, and Melchert, *SHHP* 44, n. 91). The Palaic secondary noun *šunnuttil*- 'outpouring, serving' shows that Palaic shares the assimilation rule *VRHV* >

¹² Sturtevant has a similar analysis of *dā*- in *CGr*² (1951) 133, but he assumes a fourth laryngeal (see *ibid.* 51ff.).

¹³ I now withdraw the contents of footnote 61, *Studies in Hittite Historical Phonology* (1984) 29 (henceforth *SHHP*). The stem *šūniya*- 'immerse, sow' is undoubtedly what it appears to be: a deverbative formation in $-ya-$ to the weak nasal-infix stem $*su-n-h_3-$. Since laryngeals are lost before $*y$ in Hittite, the stem $*su-nh_3-ye/o-$ would lead regularly to *šūniya*- with single $-n-$.

VRRV. As usual, *šunnuttil*- is derived from the weak stem $*sunh_3-$ ¹⁴. When we then find the Palaic verb *šūna*- 'pour out' (pret. 3rd sg. *šūnat*, inv. 2nd sg. *šūna*) with single $-n-$, it can only represent the original strong stem of the nasal-infix verb: $*su-né-h_3-$ (versus Hitt. *šunna*- < weak stem $*su-n-h_3-V-$). In view of Pal. *wite/i-* 'build' with *e/i*-vocalism from $*wē-dheh_1-$ (see Melchert, *KZ* 97.39f., and Oettinger, *Stammbildung* 130), *šūna*- can hardly continue $*su-né-h_1-$ ¹⁵. We are therefore necessarily led to $*su-né-h_3-$. Hence the lost intervocalic laryngeal in $*seuh_3-u-$ is $*h_3$, as Watkins had surmised.

This result, which I believe is unavoidable, obviously permits derivation of *dāi* 'takes' from either $*doh_3ei$ or $*deh_3ei$. Whether one adopts either of these preforms depends on one's views about the overall status of the *hi*-conjugation. If one accepts the arguments of Hamp, *MSS* 30 (1972) 36f., for assuming $*h_3$ in the "Hoffmann suffix" $*-h_3on-$, then we have an additional example of lost intervocalic $*h_3$ in Hittite. The Hittite noun *aliya(n)-* has previously been unexplained, but it is clear that it refers to a proverbially gentle animal: see *Madd.* Rs 91 *aliyaš-wa ŪL wāi ŪL-ma-wa wāki ŪL-ma-wa išparrizzi* 'The *aliya(n)-* does not cry out, does not bite, does not kick'. I believe that *aliya(n)-* must be taken as 'lamb' (a quasi-universal symbol of gentleness), i. e. $*ali-h_3on-$ $*('the one) having soft, fine wool'$ (*SIG^{ali}*)¹⁶.

¹⁴ The Palaic suffix *-til* equals Hitt. *-zzil* (*tayazzil*- 'theft' etc.). For the connective $-u-$, so favored in Anatolian, compare Hittite animate nouns in $-uzzi-$ < $*-u-ti-$ and Hittite "instrumental" nouns in $-utri-$ < $*-u-t/dhri-$ (e. g. *waššutri*- 'clothing' < *wašše*- 'clothe').

¹⁵ A. Lehrman, in a paper presented at the same conference cited in note ⁴ above, has argued that Anat. $*we/ide/a-$ 'build' represents a causative stem $*woi-deye/o-$ to the PIE root $*weid-$ 'twine, weave' (cf. Lat. *uīdulus* 'woven basket', etc.). The attested inflection (Hitt. *wete-/weda-*) would be perfectly regular by this derivation: cf. *lukke/a-* 'kindle' and *wašše/a-* 'clothe' from causatives (see Melchert, *SHHP* 31ff., with refs.). By this explanation the $-e/i-$ of Pal. *wite/i-* would continue not $*-eh_1-$, but $*-eye-$, with the same loss of intervocalic $*y$ and contraction to \bar{e} as in Hittite. Nevertheless, in a language where \bar{e} < $*eye$ appears as *e/i* and original short $*\bar{e}$ as *e/i* (see Melchert, *KZ* 97.30), it is hardly credible that $*eh_1$ would give *a*. The vocalism of *šūnat* thus would still point to $*su-né-h_3-t$.

¹⁶ The animate *n*-stem *aliya(n)-* with single $-l-$ (!) must be kept separate from the *a*-stem *alliya-* (with geminate $-ll-$), which is a bird of some kind. It is very likely that we have a second example of the suffix $*-h_3on-$ in Hittite *muriya(n)-* 'grape cluster' (anim. *n*-stem) < *muri-* 'grape' (anim. *i*-stem). For obvious reasons, it is difficult to prove the semantic distinction between *muri-* and *muriya(n)-* from the few instances in the texts, but the suggested separation into two paradigms does account for what is otherwise a very peculiar inflection (unparalleled in Hittite to my knowledge).

3.2. **h*₃ between vowel and stop.

Palaic *šūnat* 'poured out' < **su-né-h₃-t* indicates that **h*₃ was lost in this position, like **h*₁ and even **h*₂ (see note 3, end). We would expect this loss to have entailed compensatory lengthening. Attested *šūnat* for expected **šūnāt* may reflect retraction of the accent to the first syllable. This explanation necessarily remains ad hoc, but S. Kimball has called my attention to the similar-looking case of Hitt. *hūni(n)k-* 'wound', where the scriptio plena of the first syllable is likewise unexpected from **h₂u-né-g-*. If one derives *dā-* 'take' from a perfect stem or active root aorist, then second singular *datti* 'you take' may continue directly **dōh₃-th₂ei* or **déh₃-th₂ei*.

3.3. **h*₃ between vowel and **s*.

Unlike **h*₂, which is preserved before **s* (*pašš-* 'protect' < **peh₂s-* etc.), the weaker **h*₃ assimilates to a following **s*, producing a geminate -šš-. The one sure example is *pašš-* 'swallow' < **peh₃s-* seen in Hitt. *pa-pašš-ala-* 'esophagus' (*'the swallowing one') and CLuv. infinitive *paššuna*. The single -š- of the attested Hittite third singular *pāši* is secondary, remodeled after the type of *aki*, *akkanzi* 'die', *ištāpi*, *ištappanzi* 'shut, stop up' etc., which shows an alternation of single versus double stem-final consonant in the third singular and plural¹⁷.

I have suggested elsewhere (SHHP 92, n31, and 100) that a sequence **h₁s-* also assimilates to -šš-, citing Hittite inchoative verbs in -ešš- < **eh₁s-* (following Watkins, TPS 1971 (1973) 51ff.) and *išš(a)-* 'do, make' < **ih₁s-* or **i-ih₁s-*. However, we now have solid though limited evidence that **s* geminates in Hittite in any consonant cluster, not just next to a sonant: note not only *šaš(ša)nu-* 'cause to sleep' and the like but also *waššapa-* for *wašpa-* 'garment', *tiššake-* for *tiške-* (iter. to *tiya-* 'step') and Hitt. *haššik-* 'be satisfied' < **hask-* with gemination and then anaptyxis versus Pal. *haš-* with single -š-. Since both inchoatives in -ešš- and (originally) *išš(a)-* are invariant athematic stems, they would have regularly ended in a geminate -šš- before -*mi*, -*ši*, -*zi*, -*ten(i)*, and -*ta*, and could easily

¹⁷ The origin of this type is too complex an issue to treat here: for one account see Oettinger, *Stammbildung* 447f. Note that this pattern also affects athematic *hi*-verbs in final -*h₂*: *zāhi* 'strikes' to *zahh-*, *nāhi* 'frightens' (impersonal use) to *nahh-*. There is also a clear tendency to generalize the single -*h-* from the pres. 3rd sg. to the rest of the paradigm in these verbs. The single -*h-* of the athematic stem *lāh-* 'pour' (and hence *lāhu-*) probably is due to the same phenomenon. The Hittite verb therefore is from **leh₂-* with secondary single -*h-* (so also Oettinger, *Stammbildung* 424). Whether one should still attempt to relate the family of Lat. *lauō* and Grk. *λωω* is another question. The Hittite verb *šāh-* 'stuff full, clog up' (sic!), which is an athematic *hi*-verb with consistent single -*h-*, probably reflects **seh₂-* with single -*h-* generalized from the pres. 3rd sg. *šāhi*. The root is that of Lat. *satis* 'enough', etc. Cf. Oettinger, *Stammbildung* 512.

have generalized the -šš- to the other persons. These verbs are thus not compelling evidence for an assimilation **h₁s-* > -šš-.

I stress that I also know of no good evidence against the rule¹⁸. At this point one may either continue to assume that both **h₁s* and **h₃s* yield šš, or alternatively (on the basis of **peh₃s-* > *pašš-*) assign all indeterminate cases to **h₃s*¹⁹. The situation here is similar to that of the rule *VRHV* > *VRRV*, which may or may not include **h₁* (see note 2, end).

3.4. **h*₃ between vowel and sonant consonant.

In this position **h*₃ probably is lost with compensatory lengthening. The only example known to me, however, is Hitt. *lāman* 'name' < **h₁neh₃-mn-* (note the frequent scriptio plena of the first syllable). Despite Toch. AB *ñem/ñom*, this remains the likeliest PIE preform (likewise Eichner, MSS 31.55). Another less controversial example would be welcome.

3.5. **h*₃ between obstruent and vowel.

Here **h*₃ is apparently lost without a trace. The best example is the plural of *dā-* 'take', which by any analysis surely continues zero-grade of the root: **dh₃-énti* > *danzi*. The compound verbs *uda-* 'bring' and *peda-* 'carry (off)' probably reflect accented preverb and zero-grade of the root as well. It is also possible to suppose with Watkins, *Idg. Gram.* III/1.199, that the singular stem of *dā-* 'take' continues **dh₃o-*.

3.6. **h*₃ between sonant and vowel.

If one accepts the arguments presented above in 3.1, then Hitt. *šunna-* 'fill' and Pal. *šunnuttil-* 'outpouring' reflect **su-n-h₃-V-*, with the same assimilation of *VRHV* to *VRRV* attested for **h₂*²⁰. If the first *o* of Grk. *ἄροτρον* 'plow' is original and not due to assimilation, then Hittite *harra-* 'crush, smash' likewise continues **h₂erh₃e/o-* (cf. *tarra-* 'be strong' < **terh₂o-* etc.). For a different view see Oettinger, *Stammbildung* 506.

¹⁸ The derivation of 'sit' (Hitt. *ēš-* etc.) from a root **eh₁s-* (e.g. Eichner, MSS 31.54) is quite dubious. It is far more likely that medial **ēs-* 'sit (down)' is a derived lengthened-grade present to **h₁es-* 'be'. Note OH *ēša* 'sits down' beside *ēšzi* 'sits' and 'is'.

¹⁹ I have in mind here examples like Hitt. *hišša-* 'thill' (= Skt. *iṣṭā-*) and *hašša-* 'hearth' (= Lat. *āra*), where the Hittite geminate -šš- and the long vowel elsewhere together require either **h₁s-* or **h₃s-*.

²⁰ It is also possible that HLuv. *ma-na-wa/i su-na-tà* (SULTANHAN 4), a blessing which is to come down from heaven, means 'gentle outpourings' or the like (for the adjective nom.-acc. pl. *manawa* cf. CLuv. *mannu-*, dat.-loc. pl. *mannauwanza*). HLuvian orthography cannot display the geminate, but a *sunata-* 'outpouring', a secondary derivative from the nasal-infix verb stem, would surely be based on the weak stem **su-n-h₃-*.

3.7. $*h_3$ between consonants.

What evidence we have suggests loss in this position, but more examples would be helpful. Once again, if Grk. $\acute{\alpha}\rho\omicron\tau\rho\omicron\nu$ 'plow' does show $*h_2erh_3-$, then Hitt. $harš-$ 'to harrow' necessarily must be $*h_2erh_3s-$, with the $-s$ 'enlargement' found elsewhere in Hittite (cf. Oettinger, *Stammbildung* 193). If one accepts $*h_1neh_3-$ as the root shape of 'name', then HLuv. $at(a)man-$ 'name' shows the result of $*h_1nh_3-mn-$, with generalized zero-grade of the root like Grk. $\acute{\epsilon}\nu\omicron\mu\alpha/\acute{\epsilon}\nu\upsilon\mu\alpha$. I assume regular loss of initial $*h_1$, development of $*n$ to an , loss of $*h_3$ between consonants, then dissimilation: $*anhman- > *anman- > atman-$. The derivation of $atiman-$ (sic!) from $*h_1neh_3-mn$ by Oettinger, *Stammbildung* 457, is phonologically implausible. Furthermore, HLuv. (LOQUI) $lamniya-$ 'call' (attested in the iter. 3rd pl. (LOQUI) $la-ma-ni-sà-ti$) shows that HLuv. treated the full-grade stem in the same manner as Hittite (I see no independent basis for viewing the verb as a borrowing from Hittite).

4. Final $*h_3$.

Since $*h_3$ does not occur as the final element of any PIE inflectional ending, examples of word-final $*h_3$ are hard to find. We would expect loss (with compensatory lengthening after vowel), and this may be shown in the 2nd sg. inv. $dā$ 'take!', which can be the bare root $*deh_3$.

5. Conclusion.

We have seen that $*h_3$ in Anatolian occupies an intermediate position between $*h_2$ and $*h_1$. It appears as h initially in Hittite/Palaic/Luvian but is apparently lost in Lycian (in contrast to the more strongly articulated $*h_2$). Elsewhere it disappears, not only in the environments where $*h_2$ is lost, but also intervocally and before a sonant (like $*h_1$). $*h_3$ is indirectly reflected in the assimilation of $*h_3s$ to $šš$ and $*VRh_3V$ to $VRRV$, developments which may or may not be shared with $*h_1$.

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