A Note on Assibilation in Hittite*

0. In (at least) two of the standard handbooks on Hittite, Sturtevant (1933: 61) and Kronasser (1966: 534), it is noted that the assimilation of Proto-Anatolian *t (e. g. from PIE *t) to Hittite (2), phonetically an affricate [ts], before *t is blocked after s (graphic š). This restriction is based mainly on the evidence of the neuter nouns in -دت, e. g. *palhš-ši, *paraš-ši, a class of nouns discussed in more detail below. Moreover, accepting this restriction, as Sturtevant (loc. cit.) points out, entails taking the third person singular (3 SG) forms of verbal stems ending in -š, e. g. ešši, damašši, punušši, idalawšši etc. to be the result of the analogical extension of the -zi variant of the *-ti that arose in contexts other than /s/.

Recent remarks, though, by several scholars suggest that the acceptance of this restriction on assimilation in Hittite and the ensuing analogical account of the -zi in ešši, etc. is not necessarily a communis opinio. For example, Oettinger (1979: 89–90, 98) reconstructs *H₁es-ti for *ēšši and *ses-ti for šēšši without comment, seemingly implying that the Hittite forms contain a direct phonetic development of an Indo-European sequence *-es-ti; similarly, Eichner (1975: 80) in discussing the development of the 3 SG present ending (though he may have been more concerned with the fate of the final *-i than with the consonant) says: "3 Sg. Präs. -zi ist regelrecht nach Konsonant. Nach Vokal wäre wohl lautgesetzlich *-a zu erwarten"; finally, Rosenkranz (1978: Section 4.3.4.3), in discussing assibi-

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1 This is not the only case where surface sequences of -ši from PIE *t and PIE *i apparently fail to assimilate. The presence of an intervening laryngeal had the same effect, even if the laryngeal was ultimately lost in that position (i.e. suggesting that the laryngeal loss was subsequent to the assimilation process). This effect is evident in tiyš- 'stand' from PIE *tH₁-(i)š.
lationship of dentals before -di in Hittite says that "t sich in dieser Stellung zu d" (= ts) entwickelt (zum Beispiel Endung der 3. Singular idg. -ti, luw. -ti, heth. -si"), from which one might infer that the -ti to -zi change was phonetically regular throughout the verbal system, for all occurrences, in all environments. 2

Indeed, when one considers the range of data which bears on the development of the sequence *-sti- in Hittite, it becomes clear that there is legitimate cause for concern over the correctness of Sturtevant's restriction on assimilation. In particular, the evidence beyond the -sti- forms mentioned above presents an ambiguous picture, and even some of those forms are ambiguous, as discussed below. It is appropriate, therefore, to reexamine this evidence in some detail and at the same time to bring to bear any additional considerations, even if external in nature, in the hopes of resolving the issue of the fate of *-sti- in Hittite and deciding the question of the development of 3SG forms like ešzi, etc.

1.0. There are three main pieces of evidence which can be taken to support Sturtevant's position. 3 They are the -asti- forms mentioned

1 Additionally, neither Rosenkrantz (loc. cit.) nor Josephson (1979) say anything about possible contextual restrictions on the assimilation process, though that may not have been among the central concerns in their respective works.

2 There is a significant number of forms which are irrelevant for one reason or another despite a superficial appearance of relevance to this question. Among these are several words with the sequence -sti- which are not native Hittite words, including some overtly marked as foreign with Glossenkeil marks, some apparently from Luvian, a language which did not share in Hittite's assimilation process, and some probably from other Anatolian, possibly non-Indo-European, languages: 

3.1. Hittite - (Luvian, according to Reichert 1963: 83), NAH *asti- 'mineral substance' (probably Hurrian, according to Tischler 1978: 317, following Laroce's suggestion), midtin (Glossenkeil, KUB XIII 35 IV 19, with no clear meaning), midtii- (a word of unclear meaning possibly Hurrian in origin), and kaskalpis- 'Torba' (of Proto-Hattic origin, according to Tischler 1980: 535, following Laroce's suggestion). Similarly, there are numerous noun stems in -sta- or -st- in Hittite which in principle could show old IE locative case forms in *-i (as does the adverb *banza 'in front', from *H2.*e(ont-i) but happen not to (or are not so attested); these include *happikulda- 'clasp, hairpin', and *kasti- 'hunger', among others. The existence of forms of these nouns with the sequence -sti- in the synchronic Hittite dative/locative case, e.g. *kast-i or *H2.ester-*i 'in/at/to the mausoleum', is of no import regarding the development of PIE *-sti- in Hittite, since the Hittite -i in these forms derives from PIE *-ei and never triggers assimilation (cf. the dative/locative of the pure t-stems, e.g. karaiti- 'in the flood'). The verbs *kasti- 'expire', markušt- 'disappear, dwindle', and *seld- 'thrive, rest', show no forms in which the -i is followed by an original *-i- and so have no bearing here. The partial word -aštšara

above, paradigms in which -sti- occurs as an ablaut variant as in hašši- 'bone' or taštšat- 'to load', and apparent variant 3SG forms such as damašti 'he presses' (KBo V 9 II 26) for regular damasši. There are, however, some problems with each of one of these, so that the net effect is that while suggestive, they are not entirely conclusive as evidence for a development *-sti- to -sti-.

1.1. As is well known, Hittite has three nouns in -asti- built on adjectives of dimension; these are palhasti- 'breadth' (neuter, with a common gender by-form palhastši) from the adjective palši- 'broad', pargašti- 'height' (neuter, with a common gender by-form pargašši) from the adjective parku- 'high', and dalugasti- 'length', from the adjective daluki- 'long'. 4 The suffix -asti- has been connected (for instance by Benveniste 1962: 89ff.) with Old Church Slavonic -ušči as in pGošti 'narrowness', and thus apparently reflects PIE *-osti-. If this etymology is correct, then these forms would indeed show the failure of assimilation of -t- to occur in the environment /s__/. The only problem with this evidence is that other possibilities for the source of the sequence -asti- in these nouns cannot be ruled out entirely. In particular, the attested form of dalugasti- is actually an adverbial usage, dalugasti 'der Länge nach [at full length, lengthwise]' a meaning for which a locative origin seems quite likely. Thus dalugasti might actually reflect a locative of a stem in *-osti-', 5 since the Hittite dative/locative ending -e seems to come from IE *-e (and so does not trigger assimilation (compare a pure -t-stem such as karaiti- 'in the flood' without assimilation), dalugasti, if from *-osti-e, would not be expected to show assimilation. Similarly, the other nouns in -asti- could show a remaking within Hittite of consonant stems as i-stems and thus need not bear directly on the question of the outcome of a PIE sequence *-sti- in Hittite. 6

(Friedrich 1952: 37), if a place name is irrelevant since it has no etymology and if a form of *st- probably has graphic (-) for *e; (*H2.este-r/*H2.ester-). Finally, hapušši- 'a (type of) drink', though suggestive, is to be discounted here since it has no etymology (see Tischler 1977: 168) and so could well be a nonnative word. See footnote 12 for other irrelevant forms.

4 This list purposely omits the Glossenkeil word lu(m)pasi- 'offense, nuisance' since it is not a native Hittite word.

5 This interpretation was suggested to me by H. Eichner (personal communication).

6 H. Eichner has pointed out to me that OCS dešpeš '10' (i-stem) shows a similar remaking from a consonant stem (attested in the old locative dešpeš, a t-stem), possibly through merger in the accusative singular (*-t-m > *-u and *-ti-m > *-u, lautgesetzlich).
Still, there are nouns in *-sti- in other Indo-European languages, and in addition there is the possibility (though discounted by Benveniste loc. cit.) of a word equation between dalugasti- and Common Slavic *dlogosta (based on Polish długoć). These two considerations make it likely, quite apart from the problems noted above, that at least some of the Hittite forms in -ašt- continue an IE sequence *-st-i-. Nonetheless, the relevance of these -ašt- nouns for the question of assimilation cannot be accepted as uncritically as Sturtevant’s (brief) presentation would suggest.

1.2. The second class of forms potentially providing support for Sturtevant’s restriction on assimilation involves instances in which -st- arises as an ablaut variant of a sequence in which the -i- and the -e- are not contiguous, e.g. -stai-. This class includes the oblique forms of ḫaštai- ‘bone’, e.g. genitive ḫaštqyaš, the animate derivative ḫaštqyant- ‘bone’, the participle taitšqyant- (Laws, section 124, varia lectio (KUB XXIX 26), see Friedrich 1959: 66, n. 18) derived from the verb taštai- ‘load’, and the verb ḫuštaiya- ‘soften (the voice)’ which is a variant of ḫuštai- ‘idem’. The noun ḫaštai- is clearly related to Greek σκπόν etc. and so probably reflects *H₂est-o/* (strong) | *H₂est-i/ (weak); thus the -st- in the genitive and in the derivative in -ant would show the sequence -st-i- preserved as such without assimilation, inasmuch as they derive from the weak stem variant. Similarly, the -i- in taitšqyant- and ḫuštqya- would reflect a zero-grade of the suffix in taštai- and ḫuštai-. Thus on the face of it, these forms would tend to support the claim that *-sti- developed into Hittite -sti-.

However, this evidence too is not all that conclusive. Since the forms with -st- are morphologically related, both diachronically and synchronically, to full-grade forms in -stai-, the possibility is real indeed that allomorphy of the sort *-st-i/-stai-, which would have resulted if assimilation were not constrained in the way Sturtevant suggested, would have been levelled out to -st-i/-stai-. Thus, the -e- in these forms could represent the analogical reintroduction of the -e- from full-grade forms and therefore need not be the direct phonetic continuation of IE *t in the sequence *-st-i-.

1.3. The final piece of apparent supporting evidence is a group of problematic verbal forms such as the isolated dadmasi cited above which Sturtevant took to be a 3SG form with -ti as the direct continuation of the IE 3SG present ending *-t-i after the stem-final -s- of damasqi. Other forms of this type include (e-e-ti) ‘sleep(s)’ (KBO XIII 58 II 16, sec Oettinger 1979: 18) and (e-e-ti) ‘is (?)’ (KUB XXXVI 98c, 5, classified as 3SG by Kronasser (p. 389)). These forms, however, are not probative as to the outcome of *-s-ti because they are open to interpretations other than as 3SG Hittite forms.

In particular, damasqi has been taken by some (e.g. Friedrich 1960: 113 and Kronasser (p. 53)) to be a Luwianism and by others (Oettinger (p. 122, fn. 71)) to be the result of a sporadic cluster simplification of the group -ṣ-;10 (e-e-ti) and (e-e-ti), on the other hand, have been classified by Oettinger (pp. 16, 18) as 2SG -ši-conjugation forms which sporadically occur in place of “proper” -mi-conjugation forms (compare ku-e-ti for ku-e-ši), from kuen ‘strike, kill’, as in Oettinger, p. 22).11

2.0. On balance, then, the best positive evidence for Sturtevant’s proposed restriction on assimilation is the -ašt- nouns; tenuous though it may be. Counterbalancing these positive indications supporting Sturtevant, though, there are some negative indications, cases in which assimilation apparently did occur even though an *-s- preceded the *-t-i.12

cognate asthi-, the Sanskrit -th- in this word could have arisen simply by contact with the preceding -s- (as in other words in Sanskrit), rendering a laryngeal reconstruction unnecessary. It is only if no laryngeal is assumed here that this word bears at all on the question of *-asti- in Hittite.

Moreover, as H. Eichner (personal communication) has kindly pointed out to me, damadi cannot be old and it occurs in a chronological level in which 2SG and 3SG forms are occasionally interchanged (due probably to homonymy in the preterite), as with the 2SG form šamamasi (Friedrich 1930: 188); thus this could be a variant (i.e. -ši-conjugation) 2SG used as a 3SG and so need not even be considered Luvian.

However, since (e-e-ti) occurs in a broken context, any interpretation, whether as 2SG or 3SG is necessarily speculative. Similarly, (e-e-ti) occurs in a context in which neither a 2SG nor a 3SG interpretation makes good sense. In any case, whatever the explanation of these forms, the case for their being old 3SG forms is not at all strong. Note also that (e-e-ti) cannot be a Luwianism because the Luwian root for ‘he’ is qāš.13

To be excluded from consideration here are the 3SG forms such as ešzi and bidzi, since they are the focus of the question concerning the effects of analogy; see below also concerning biddzi ‘thrive(s)’, from the root bidzi-. In addition, nominative singular forms such as (ka-a-sa) ‘hunger’ from kast-s/ are irrelevant here inasmuch as the source of the (s) in /t + s/ and not assimilation.

7 Benveniste notes Vedic gabhaśti- ‘hand, arm’ (as a concretization of ‘enclosing, seizing’), Lithuanian varpistis ‘spindle’ (from vērtis ‘spin’), OHG kust ‘knowledge’, among others.
8 As H. C. Melchert has pointed out to me, both the collective sense of ḫaštai- and the Hittite phonology point to such an “amythikonic” IE paradigm for this word.
9 Another possibility concerning the lack of assimilation in ḫaštqyant-, suggested by H. C. Melchert (personal communication), is that a laryngeal intervened between the *t and the *i (cf. footnote 1). While the positing of a laryngeal could be considered to be confirmed by the voiceless aspirate in the Sanskrit cognate asthi-, the Sanskrit -th- in this word could have arisen simply by contact with the preceding -s- (as in other words in Sanskrit), rendering a laryngeal reconstruction unnecessary. It is only if no laryngeal is assumed here that this word bears at all on the question of *-asti- in Hittite.
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2.1. The first set of forms with these negative indications involves some ablative case-forms and adverbs probably derived from ablatives which contain the ablative case-suffix -(a) occurring after a stem-final -s. The ending seems to derive from *(s)ti, as a comparison with the Luvian oblique ending -(a)ti (e.g. iskərat 'with the hand') and Lycian -adidi-edi would suggest, though this etymology is accepted, then the ablative nepiša (Anmitta text, line 2) 'from the sky' and the adverbs tupaša 'alongside' and parša 'backward' would appear to show the development of *(s)s-ti to Hitite -sza, counter to Sturtevant's claim.

However, the weak link in this negative evidence is the assumption that -sza continues *(s)s-ti directly. One form of the synchronic ablative case ending in Hitite, that for athenic nouns, is -za, and Jasanoff (1972) has shown that it was involved in the formation of ablative forms from endlingless locative forms in the paradigm of the -atár nouns, giving synchronic by-forms such as poprananza for popranasto (from poprotašt ‘sin’). In a similar way, nepiša could reflect the suffixation of -za to the attested endlingless locative nepiša ‘in the sky’ (KUB XXXIII 111, 8, see Friedrich 1960: section 87), or even simply to the synchronic stem nepiša. In either case, nepiša need not continue a preform *(s)pēiš-ti directly.

Similarly, tupaša, which is related to the neuter noun tapuwaš ‘side’ and undoubtedly contains the ablative ending -z(a), can be explained in a like manner. It need not be the case that tupaša directly continues an old ablative, with the sequence *(s)us-ti, as Friedrich (1952: s. v.) suggests; the suffixation of -za involved in the formation of -anza ablative tensed (and utilized) above regarding nepiša, was also involved in the derivation of adverbs in Hitite, with an existing (or presumed) adverbial (possibly an endlingless locative) as the base, as in kitkar/kitkarza ‘at the head of’ (see Jasanoff 1972: 125–6). Thus tupaša could well be an internal Hitite development with -z(a) added to an adverbial *tupaš. The independent existence of an adverbial tupaša ‘sideways, aside’ speaks in favor of such an interpretation, for it necessarily presupposes a weak stem *tupaš. Somewhat more problematic is parša, since there is no attested stem *parši to directly to an explanation along the lines of that given for tupaša, kitkarza, or nepiša. Although nothing stands in the way of assuming such a stem and in view of the evidence of tapuwaš and kitkarza, this assumption is certainly reasonable, it is not an altogether satisfying step to have to take. A possible alternative explanation would be to assume that via a resegmentation process so common with synchronically opaque forms, a morpheme -sza was created, possibly from tapuwaš itself, and that this figured in the derivation of parša; such an account, while admittedly ad hoc, does have the advantage of allowing one to explain the relation of parša to parza ‘backwards’ (Friedrich 1952: s. v.), an adverbial with a meaning parallel to that of parša, through the assumption of a stem *par- to which -za and also the “pseudo-morpheme” -sza were added. At the very least, though, parša in itself need not represent a preform *parši-ti directly.

2.2. More problematic yet is the stem taiseti- ‘warehouse, shed’, which is undoubtedly related to the verbal stem taiseti-taisitiya- ‘load’. On the face of it, taiseti- would appear to be from a stem *taiseti-, which could also have served as the basis for a denominative with the suffix *(s)je- which in turn could have yielded taiseti- by whatever process gave such verbal stems (i.e. those in -at-) in Hitite. Moreover, one must further assume that the variant taisitiya- arose later based on taiseti- (see above section 1.2). This derivation would entail, however, recognizing a development of *(s)sti-to *sti- lautgesetzen in taiseti-, and a chronology in which the creation of taiseti- from *taiseti-je- predated the proposed *(s)sti to *sti sound change, for otherwise *taiseti- would be the expected form for the derivative.

A plausible alternative account of taiseti- is available, however, again making it difficult, if not impossible, to simply take taiseti- at face value as prima facie evidence against Sturtevant’s restriction on assimilation. In particular, if one assumes that taiseti-taisitiya- are extensions of a verbal stem *taiseti-, then a deverbal noun derivation *taišti- (or even *taist-tiɔ) could be the basis for taiseti-, without a direct development of *(s)sti to *sti. That is, a sequence of changes can be posited by which *(s)sti- became *(s)ṣzi-, with the leftmost *(s)ti becoming (z) before a dental and the rightmost

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13 See, for instance, Jasanoff (1972) for this reconstruction. The symbol -z(a), here and elsewhere, is to be taken to indicate the following variants: -(za) after consonants and -(z) after vowels. Other possibilities for the reconstruction of the Hitite ablative exist, especially Sturtevant’s *(s)te (as zero-grade of the IE suffix *(s)te as in Sanskrit tata- ‘from that, then’), though that cannot account for the Luvian and Lycian endings and so probably is to be dismissed. Obviously, however, if one adopts Sturtevant’s reconstruction for Hitite then these forms do not bear on the question of assimilation in Hitite.

14 As noted above, tapuwaš is connected in all probability with the noun tapuwaš, which is a neuter š-stem originally. However, tapuwaš itself passed over into the ō-stem declension (e.g. genitive singular tapuwaš, KUB IX 119 7, see Friedrich 1952: s. v.), suggesting that for some speakers at least, the ō- was not felt as part of the stem. Such a reanalysis of the status of ō in tapuwaš would have facilitated the resegmentation of a new morpheme -sza out of an adverb like tapuwaš (assuming some connection with tapuwaš was still perceived).

15 H. Eichner (personal communication) has suggested that this is a nom-en loci or instrumentum, i.e. “place where one unloads/stores (things)”, though one might then expect taiseti- to be neuter gender and not common gender as it is.
one undergoing the regular assimilation of *t before *i (cf. ezzazzi, phonetically probably [ezetzi] with a phonetically empty vowel ə, 'eats', from *ed-ti for a parallel combination of changes). Simplification of *-ezzi- to -əzzi- would have to be further assumed in order to derive the attested taiazi-, but this is a change which is needed independently to derive tezi- 'thrive's from the root tebəd-, i.e. *tebad-ti > *teezzi > tezezi. In this account, no ad hoc steps are needed, and Sturtevant's restriction can be preserved.14

3.0. Putting the data and analyses from sections 1 and 2 together, one is confronted with a somewhat ambiguous picture concerning Sturtevant's restriction on assimilation. Each piece of positive evidence is open to different interpretations as is each negative piece. As noted earlier, though, the best positive evidence is the nouns in -əzzi-, whereas the strongest negative evidence probably is taiazi-. However, taiazi- is just a single lexical item and can be explained in a way that involves no unreasonable or ad hoc steps and is compatible with Sturtevant's hypothesis, while the -əzzi- nouns, though admittedly forming a small closed class, nonetheless would oblige one to accept two or more alternative explanations, possibly one for each item in the class, if one is to deny Sturtevant's proposal. Thus it seems best to accept Sturtevant's claim that -əzzi- is the regular outcome of *-əzzi- and that assimilation was therefore blocked after *-a-.

Still, this conclusion is quite tenuous, for it involves making judgments as to which alternative explanations "count more" than others, a risky business indeed. Thus it is essential to find any additional evidence bearing on the question of the development of *əzzi in Hittite, even if of an external nature, and to apply it to the results arrived at here. As it happens, a restriction on assimilation by which the change of [t] to [ts] is blocked after [s] turns out to be fairly common crosslinguistically. Thus the slender balance in favor of Sturtevant's restriction arrived at on Hittite-internal grounds finds added support from external considerations.

4. In presenting the proposed contextual restriction on Hittite assimilation, Kronasser (1966: 53–4) noted a parallel between it and the failure of *t before *i in Greek to assimilate to -əs- when it occurred after a Greek -əs- (from whatever source, compare βάσις with πᾶσις); presumably the Greek sequence -ti passed through an affricate stage *-təzi-,17 so the parallel with the Hittite situation is striking indeed.

However, much more can be said concerning the blocking of assimilation by a preceding -s-, adding plausibility to the notion that it is not an unusual or unexpected restriction to find on such a process. In particular, additional parallels which are virtually identical to the Greek case and the presumed Hittite one are to be found. A good example of this type is afforded by the Old High German (Second Germame) sound shift in which the Proto-Germanic voiceless stops *p *t *k became the affricates pf ts kh respectively,18 in a variety of environments including after consonants as in OHG herza 'heart' from Germanic *hert-an- (from PIE *kerd-). However, the shift to an affricate did not occur after a voiceless spirant, including -s-, as shown by forms such as OHG stein 'stone' from Germanic *stainaz (cf. Gothic stains) or OHG gast 'stranger' from Germanic *gastaz (cf. Gothic gaste).19

Furthermore, when one takes into account the given phonetic explanation given for the Greek restriction on assimilation by Lejeune (1972: 63, fn. 2) following Grammont (1965), then numerous other parallels, not exactly similar but relevant nonetheless, become available. Lejeune calls the Greek restriction a case of "differentialisation préventive", defined by Grammont (p. 237) as follows:

La différenciation est toujours préventive en ce sens qu'elle empêche une évolution, en général une assimilation, en remplaçant le changement attendu par un autre; mais on ne lui donne d'ordinaire ce qualificatif que dans les cas où, au lieu de changer la direction de l'évolution d'un phonème, elle empêche un phonème d'évoluer, alors que isolé et abandonné à lui-même il aurait éprouvé un changement déterminé.

17 This is suggested by Lejeune (1972: 63).
18 Only the shift of *t seems to be found throughout the Old High German area, with the *p to pf and *k to kh changes being geographically restricted; see, for instance, Prokosch (1938: 78f.) for details.
19 As R. Wallace has pointed out to me, Umbrian (Buck 1928: 89–90) shows palatalization of -k- to the apparent palatal sibilant z (also written s) before the front vowels -i- and -e-, with the restriction that this sound change does not occur when the -k- is preceded by -s-, as shown by veskeae 'vesiculus' from *yes-kelo-. While this example involves a -k- and not a -t- and so is not an exact parallel to the cases under discussion here, these Umbrian facts are suggestive of a parallel, especially if similar phonetic processes are involved in the assimilation of -t- (to -ts-) and in the palatalization of the velar stop -k-.
Other examples of such preventative differentiation involving the effects of a preceding s include the failure of the PIE voiceless unaspirated stops to shift to Germanic voiceless spirants (presumably through a stage of voiceless aspirated stops) after s, as in Proto-Germanic *pu: 'you' Gothic *pu:; OHG *du:; from PIE *t̪u: but *ster: 'star' (OHG stern(o)) from IE *H₂stér-, and their failure to shift to voiceless aspirates in Armenian after s (Meillet 1936: 29, 32) as in t'e 'that' from PIE *te- (cf. Old English ne, Lithuanian te) but sterf 'sterile' from PIE *ster- (cf. Greek πασφα, Latin teres). The phonetic motivation for this effect, in Grammont's view, is as follows (loc. cit.):20

d’une part l’aspiration de cette consonne [i.e. the preceding consonant] a dépensé une quantité de souffle qui n’en a pas laissé suffisamment disponible pour munir aussi la consonne suivante d’une aspiration… d’autre part… l’augmentation de pression que demande une occlusive venant après un élément spirant attire sur le deuxième phonème l’attention des organes phonateurs, qui le renforcent jusqu’à occlusion de la glotte.

Applying this principle to the case of assimilation in Greek, for instance, Grammont (loc. cit.) says that the “action de l’s… a été si nette pour empêcher le développement d’un élément spirant après l’occlusion”,21 leweded in this light, the case becomes stronger for accepting the evidence of the -adi- nouns22 as being supportive of Sturtevant’s claims about the development of PIE *-sti- in Hittite, for his proposal represents a common and fairly natural restriction on a sound change.

5.0. Additionally, support for this view comes from another source. As noted above, Sturtevant himself pointed out that accepting the proposed contextual restriction on assimilation entails treating the -z of 3SG forms like ekṣi to be an analogical replacement for expected -ti. Thus any way in which the analogical account of -zi in ekṣi etc. can be made more plausible would provide added support for the proposal that *-stį- yielded -sti- and not -eksi- in Hittite.

5.1. The case for analogical reformation of the 3SG ending can be bolstered even more by a consideration of some facts internal to Hittite concerning the form of this verbal ending. As noted above, based on a comparison of the Hittite ablative ending -az/-z(a) with Luvian -ati and Lycian -adi-adi, and the Hittite reflexive particle -z(a) with Luvian -ti and Lycian -ti, it has been suggested, e.g. by Jasanoff (1972: 125, 127 fn. 2), that the regular development of Proto-Anatolian *ti (e.g. from PIE *sti) in absolute final position is -z(a)23 in Hittite; one would expect then that the 3SG ending would have developed into -z(s) also.24 Accordingly, as Jasanoff (loc. cit.) points out, “-z in the ending of the third singular… could well have restored the final vowel by analogy with other present endings [e.g. 1SG -mi, 2SG -si]. In this account, then, Hittite shows evidence of a move towards morphological uniformity in the mi-conjugation present endings through the analogical reformation of the 3SG ending. Thus, the generalization of the 3SG allomorph with -z- at the expense of the post-s variant with -t- can be seen as a consequence of the same system-internal pressures leading to an absence of paradigmatic allomorphy of any sort in the mi-conjugation endings. Thus from an original

20 As my colleague R. Fox has kindly informed me, there are problems with Grammont’s phonetic explanation because the volume of air expended in the production of a voiceless fricative would not in itself rule out the possibility of aspiration or spirant formation with a following stop consonant; questions of timing may be more relevant. Nonetheless, since there are numerous examples of his effect of a preceding -s-, presumably a phonetic explanation for it does exist. Grammont’s is offered here as the only one currently available in the historical phonological literature.

21 Based on the relatively small number of examples presented here for differentiation préventive2 by a preceding -s-, it would be dangerous to posit this effect as an absolute universal, but it seems safe to call it at least a tendency. Moreover, there are potential counterexamples to this effect attributed to -s-; for instance, the change of -(h)-alkh before -i- is parallel to the assimilation of -l-, then the existence of Modern Greek dialects with -(h)- and -(h)U- from earlier sequences of -(h)alkh- as in στελλó from στελλει from στελλοει (with ου from secondarily), noted by Thumb (1964: 17) provides such counterevidence.

22 Concomitantly, one must also therefore accept the derivation of laikirom *laikid-ti-.

23 See footnote 13 regarding the interpretation of -z(a).

24 There are occasional 3SG present forms in -za in Hittite, some of which are old, e.g. (e-e-ba) (Laws, article 98, from the Old Hittite version, Signum A in Friedrich 1959), (hs-ara-am) (KBo IX 73 Vs. 12, an Old Hittite manuscript), and (tsa-ru-za) (KUB XLIII 75 Rs. 9, classified as New Hittite by Oettinger (p. 220) but actually a New Hittite copy of an Old Hittite text according to H.C. Meichert (personal communication)), among others. These forms may well show the preanalological stage at which -z(a) was the 3SG ending, presumably with *-ti as an allomorph (assuming the correctness of Sturtevant’s restriction on assimilation). The existence of such forms is easy to explain under an analogical account of the formation of the ending zi, thus they can be taken to support this position.
system of endings in early Hittite: 1 SG -m'i, 2 SG -ši, 3 SG -z(a)/-ti, a new system developed which displayed uniformity in two respects — each ending had a -Ci shape and furthermore, each ending had one and only one phonetic realization. The fact that one analogy involving the 3 SG ending -z(a) > -zi is independently needed makes another such case (-ti > -zi) that much more likely and therefore that much more reasonable a development to posit, for in both instances the 3 SG ending was the target of analogical pressures towards uniformity with the other endings.

5.2. In fact, if (e-e-za) 'he is', of the Hittite Laws (article 98, see discussion in footnote 24) really does reflect the stage before the analogical reformation of the 3 SG ending to -zi, then the relative chronology of the two analogies can be worked out — the elimination of the -z(a)/-ti allomorphy must have preceded the -z(a) to -zi change. From this observation, one can infer that the first analogy provided the impetus for the second, that is, one move towards uniformity in one of the endings set the stage for the second and more decisive analogy involving the whole system. In a sense, then, this situation is reminiscent of, in an inverse way though, the developments covered by Kurylowicz’ First Law of Analogy and so may have been governed by the same tendencies he was trying to characterize: in this case, it seems that the system tolerated a doubly-“deviant” 3 SG ending with two allomorphs and with aberrant vocalism for one allomorph as well (-z(a)/-ti) better than it did a singly-“deviant” one, with -z(a) only. The parallel with Greek is instructive again, for in Greek, -n/-n allomorphy in the 3 SG ending was retained and there was no independent movement towards a uniform -Ci shape for the -μα-conjugation endings; thus the two types of analogies seem to go together in both languages, positively so in Hittite and negatively so in Greek.

6. To sum up, the facts as presented here tend to support the restriction proposed by Sturtevant on the assemblage of *τι to (z) in Hittite and the subsequent analogical development of the 3 SG present ending with verbal stems ending in -δ. This conclusion is of interest for a number of reasons.

First, since it confirms an aspect, albeit a minor one, of the historical phonology of Hittite, and bears on the development of the system of personal endings in the language as well, this result is of consequence for Hittitologists.

Second, in what it says about the types of analogical pressures that have to be recognized as operating within verbal systems, this account of the development of *τι in Hittite is noteworthy from the point of view of general historical linguistics.

Finally, the facts discussed here raise an important methodological point. In arriving at the results reported above, a range of possibilities for each form in question needed to be considered, and even then external considerations, having to do with cross-linguistic parallels of a typological nature and with morphological developments, needed to be brought into

26 One must assume that the final *-i remained after an unassibilated -e- but ot after the asssibilated outcome [-a]. However the imperative (i-t) 'go!' from Pre-fittite *-i-t(h) or *-d(h) from PIE *h₁- /-dhi, shows the loss of final *-i after a asssibilated dental. Presumably the difference between PIE *H₁- and *dhi did not otherwise condition the retention (or loss) of final *-i, and numerous instances of nai *-i are retained elsewhere in Hittite (e.g. in -m'i and -δ). Thus in order to count for (i-t), it seems that one must assume a sporadic apocope of final vowels of the imperative, similar to that found in Latin and in Modern Greek. Latin shows lexically governed but nonetheless optional and sporadic loss of final -e (from PIE *e and *e in the imperatives duc, dix, and fac (and a few others, see Meillet-endroye 142, for example), all of which occur in Old Latin together with byrms with the final -e intact, and ultimately predominate in Classical Latin. In Modern Greek, as Thamb (1945: 155) notes, “the termination e of the 2nd sing. imperative] is occasionally dropped, particularly if a conjunctive pronoun of the rd pers. follows: *ἀπο- to [leave it!] . . . *άδη- to [cut it!]”.

27 Kurylowicz (1945: 125) states this “law” as follows: “Un morphème uni à s’assimiler un morphème isofonctionnel consistant uniquement en des deux éléments, c.-à-d. le morphème composé remplace le morphème simple”. The situations described by Kurylowicz involve morphemes with same notion, whereas here the 3 SG ending is not doubly characterized functionally, but rather in terms of how it fits into patterns of allomorphy in the overall system of endings. Thus it is only when viewed in this general sense of morphemes having double characterization of any sort instead of simply a double functional marking that the case discussed here becomes parallel to those given by Kurylowicz.

28 Eichner (op. cit.) gives a different account of the 3 SG ending, namely that *-i became -z after consonants (but see above footnote 3 regarding *h₁- from *H₁- and i- but -a after vowels and therefore that the uniform -zi ending is the result of the generalization of the post-consonantal variant. A form like (e-e-za) for Eichner is the result of the analogical extension of the post-vocalic variant. In this account, then, two analogical reformations are needed for the 3 SG ending (the widespread -V-z > -V-zi and the sporadic -C-Ci > -C-C) and the generalization of the ending -zi can be seen as a move towards paradigmatic uniformity inasmuch as the 1 SG and the 2 SG endings -m'i and -δ respectively would apparently have retained the final *-i in all contexts. Thus his account differs in detail from the one presented here but this effect and the motivations are largely parallel.

29 It is well worth noting, for instance, that the 2 SG ending of these verbs was not generally remade to -n (excepting Homerice kē-zë) and that 2 SG forms like kīdë remained unaffected by any analogical pressures (excepting Epid. mëₜ₉ną).
the picture to strengthen the tenuous decision made on internal (especially phonological) grounds. Thus the case of *-st- in Hittite demonstrates quite vividly how difficult it can be in practice to determine the regular (i.e. lautgesetzlich) outcome of a sequence of sounds, even when an abundance of potentially relevant forms is available.

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