The sigmatic forms of the Hittite verb

Jay H. Jasanoff

Harvard University

jasanoff@fas.harvard.edu

Abstract

Central to the problem of the Hittite verbal system is the status of the *hi*-conjugation 3 sg. pret. in *-š* and its relationship to other sigmatic morphemes—the partly overlapping 2–3 sg. ending *-šta*, the 2 pl. endings *-šten(i)* and *-šdumat*, and the synchronically unanalyzable **-s-* of *ganeš-* ‘find, recognize’ and other *s*-extended verbal roots. The account of these endings given in Jasanoff 2003 is reviewed and, where necessary, revised.

Keywords

Tocharian – Hittite – sigmatic aorist – *hi*-conjugation

1 Introduction

If the title of this article reminds the reader of Holger Pedersen’s monograph *Les formes sigmatiques du verbe latin et le problème du futur indo-européen* (Pedersen 1921) the *déjà vu* is intentional. Nearly a century ago, Pedersen tried to disentangle the confusing array of Latin verbal forms in **-s-*, **-is-*, and **-(i)ss-* in order to find Latin evidence for his theory of a PIE *s*-future. In the present paper the sigmatic suffixes and endings to be disentangled come from Hittite, and the IE category hovering in the background is the *s*-aorist.

In Jasanoff 2003 (henceforth *HIEV*) I set forth a theory of the PIE verbal system that placed particular emphasis on the evidence of Hittite and Anatolian. The essence of this theory was that the Hittite *hi*-conjugation (i.e., the conjugational class consisting of verbs with a 1 sg. pres. act. in *-(h)hi*) was the continuant of a late PIE formal category that I called the “*h₂e*-conjugation.” PIE *h₂e*-conjugation presents and aorists, I said, were grammatically active, but

characterized by the endings, and in some cases also the ablaut, traditionally associated with the perfect (1 sg. **-h₂e*, 2 sg. **-th₂e*, 3 sg. **-e*, ... 3 pl. **(é)rs*). Since these endings were formally related to those of the middle (1 sg. **-h₂e*, 2 sg. **-th₂e*, 3 sg. **(t)o*, ... 3 pl. **-ro/*-nto*), I posited a pre-IE “protomiddle” diathesis from which the perfect, the *h₂e*-conjugation, and the middle were all descended. At a certain point in the prehistory of the family, I argued, protomiddle forms were either formally renewed as true middles (e.g., provided in typical cases with **-o* (later **-to*) for **-e* in the 3 sg., deprived of paradigmatic ablaut, given “primary” variants with *hic et nunc* **-r*, etc.) or reinterpreted as *h₂e*-conjugation actives. Only one such class of actives—the formation we know as the perfect—was robustly preserved in the IE languages that remained after the separation of Anatolian from the rest of the family. Although I avoided speculation on the precise value of the protomiddle, there is good reason to think that it was originally patient-oriented and intransitive.¹

On the whole, the response to the “*h₂e*-conjugation theory” over the past fifteen years has been gratifying. Inevitably, some particular analyses have found greater favor than others. Thus, “*molō*-presents” (the ideal type 3 sg. **mólh₂-e* : 3 pl. **mélh₂-rs* (> **-nti*) ‘grind’) have found considerable acceptance, while “*i*-presents” (3 sg. **d^héh₁-i-e* : pl. **d^hh₁-i-érs* (> **-énti*) ‘suck’) have called forth

1 My most recent views on the functions of the protomiddle and the prehistory of the perfect, which have developed considerably since *HIEV*, are presented in Jasanoff 2018a. As described there, the pre-PIE protomiddle, marked by endings of the “*h₂e*-series,” included the full range of functions associated with the classical middle, including the formal subtype that some writers (e.g., the editors of *LIV*) call “stative.” Opposed to the protomiddle, both in present and aorist stems (the perfect had not yet emerged as an autonomous category), was the active, with its familiar endings of the “*m*-series” (1 sg. **-m(i)*, etc.). The major functional difference between the protomiddle at this stage and the later classical middle (*sensu lato*) was that, for reasons possibly rooted in the deeper prehistory of the protomiddle as an intransitive “patientive,” the protomiddle endings often also occurred a) with forms that had come to function as ordinary actives (e.g., 3 sg. pres. **mólh₂-e* ‘grinds’), and b) with forms that functioned both as transitive actives and intransitive middles depending on syntactic context (e.g., 3 sg. pres. **kónk-e* ‘hangs (up)’ (trans.) and also ‘dangles, is suspended’ (intrans.)). The transition from this older system to that of late PIE was marked by the formal differentiation of the true middle, with renewed, but still recognizably *h₂e*-aligned endings, from the protomiddles that retained their unrenewed *h₂e*-series endings and henceforth patterned as actives. In the aftermath of this step, one and the same original paradigm could be represented by both a renewed middle (e.g., 3 sg. **kónk-or* or **kṛk-ór* ‘dangles, is suspended’; cf. Hitt. *kangat-tari*) and an unrenewed neoactive (e.g., **kónk-e* ‘hangs (up)’; cf. Hitt. *kānki*). Such paradigm splits, as will be seen below, were particularly characteristic of certain types of protomiddle aorists. Late PIE neoactives of the type 3 sg. **mólh₂-e*, **kónk-e* (1 sg. **-h₂e(i)*, 2 sg. **-th₂e(i)*, etc.), loosely comparable typologically to the deponents of later IE traditions, made up the *h₂e*-conjugation.

a variety of alternative proposals.² But disagreements over the correct reconstruction of this or that putative *h₂e*-conjugation present type mainly concern differences over ablaut grade, relative date of thematization, and other questions of detail. *h₂e*-conjugation aorists, or at least some of them, raise questions of a more fundamental nature. Aorists with *h₂e*-inflection were the focus of chs. 6 and 7 of *HIEV*. In ch. 6 I discussed the relatively straightforward “stative-intransitive” subtype, characterized by *-o- : *-e-/zero ablaut (e.g., **lógh^h-e* : **légh^h-rs* ‘lay down’) and derivationally associated with other protomiddle-based formations, notably including the perfect, in what I called “stative-intransitive systems.”³ Stative-intransitive aorists, with paradigmatic ablaut still preserved in the Indo-Iranian “passive” aorist (Ved. 3 sg. *ádarśi* : pl. *adṛśran* ‘appeared’) and the Tocharian class v subjunctive (A 3 sg. *wekaṣ* : pl. **wikeñc* ‘will disappear’), are in fact as well as or better grounded than *molō*-presents; they will be taken for granted in what follows. In ch. 7 I argued for a second and more controversial *h₂e*-conjugation subtype, likewise with *-o- : *-e-/zero ablaut, but with different semantics and a different derivational profile. In this second subtype, I said, the paradigm was partly infiltrated by sigmatic forms in the parent language, so that an aorist like **nóiH-*/**néiH-* ‘lead’ had a 1 sg. **nóiH-h₂e* (cf. Hitt. *nēh^hhun*) and a 3 pl. **néiH-ṛs* (: Hitt. *naier*), but also an unexpected sigmatic 3 sg. **néiH-s-t* (: Hitt. *naiš*), seemingly based on a suppletive stem in *-s-. The resulting “presigmatic” aorist, I argued, was later fully sigmatized in the classical IE languages, becoming the familiar *s*-aorist. Full sigmatization did not take place in Tocharian, showing this branch to have been the second to leave the IE family.

The idea that the familiar *s*-aorist, with *-s- running through all its forms, was a post-Anatolian and post-Tocharian innovation, and that its PIE ancestor was a *h₂e*-conjugation root aorist with extraneous *s*-forms, has been sharply contested.⁴ It is easy to see why: the traditional reconstruction, with *-s- everywhere, is supported by the evidence of many branches; the Hittite facts are genuinely complicated; and the intricacies of the highly structured Tocharian

2 Contrast the treatment of the two in Kümmel 2015, under “Neue Stammbildungstypen.” On *i*-presents see further § 7 below.

3 Note that the use of the term “stative-intransitive” is largely conventional; an aorist that meant ‘lay down’ (**lógh^h-e*) could not literally have been “stative.” The full phrase “stative-intransitive *h₂e*-conjugation aorist” was coined (*HIEV* 165) to capture the derivational association of these forms with *je/o*-presents of the type **ǵnh₁-jé/ó-* ‘be born’ and root presents of the type 3 sg. **b^hud^h-ór* ‘is awake’—categories to which the label “stative-intransitive” could more intuitively be applied.

4 See, e.g., the summary in Lundquist and Yates 2018: 2165 f. Most of the substantive issues are discussed in Melchert 2015, to which repeated reference is made below.

verbal system remain a closed book to many Indo-Europeanists. Central to the debate is the *hi*-conjugation 3 sg. pret. in *-š* and its relationship to other sigmatic morphemes in Hittite—the partly overlapping 2–3 sg. ending *-šta*, the 2 pl. endings *-šten(i)* and *-šdumat*, and the synchronically unanalyzable **-s-* of *ganeš-* ‘find, recognize’ and other *s*-extended verbal roots. The full gamut of sigmatic forms of the verb has been intensively studied and debated since 2003, settling some questions and raising new ones. The time has come for a fresh look at the evidence.

2 *ganeš-*

The *mi*-verb *ganeš-* (3 sg. *ganešzi*) provides a convenient starting point. The unexpected *-e-* of the root in this form points to a lengthened-grade stem **gnēs-* < **ǵnēh₃-s-*, with the regular Eichner’s Law non-coloration of an IE long vowel.⁵ Remarkably, a root or stem form **gnēs-* is also found in Tocharian (cf. A pret. (cl. III) 1 sg. *kñasu* ‘I knew’, 2 sg. *kñasäšt*; Malzahn 2010: 609) and Armenian (pret. 1 sg. *caneay* ‘I knew’, 3 pl. *canean* < **cani(s)an* < **ǵn̥(n)ē-s-nt*), showing that the sequence **ǵnēh₃-s-* must already have existed in PIE. Whether this was an *s*-present or an *s*-aorist has been debated. Superficially favoring an *s*-aorist (so, e.g., LIV 168–169) are the lengthened grade and athematic active inflection (> Hitt. *mi*-conjugation); the fact that the Hittite verb takes primary as well as secondary endings is unproblematic, since Hittite regularly backforms presents to aorist-based preterites. But nothing else about the profile and distribution of the stem **ǵnēh₃-s-* conforms to what would have been expected of an *s*-aorist. The root **ǵnēh₃-* ‘know’ makes an unambiguous root aorist in Greek (3 sg. *égnō* (: pres. *gignōskō*)); if there was also an *s*-aorist, it would have to have been, in LIV’s words, an “alte Neubildung als Aorist zum durativen bzw. iterativen *ske*-Präs.”⁶ On the Tocharian side, the forms A *kñasu*, *kñasäšt* are technically classifiable as class III (“*s-*”) preterites, but this observation, due to Hackstein (1993: 151 ff.), has been misinterpreted. Normal class III preterites have no *-s-* between the root and the ending in the 1 sg. and 2 sg. (cf., e.g., Toch. A 1 sg. *prak-wā* ‘I asked’, 2 sg. *prak-äšt*). The forms *kñas-u* (for **kñas-wā*) and *kñas-äšt*, therefore, can only be analyzed as containing a *pre-existing and already sig-*

5 Cf. Eichner 1973: 71f. Kloekhorst (2008b: 435f.), who rejects Eichner’s Law, assumes an *s*-present with “normal” ablaut (3 sg. **ǵnēh₃-s-ti*, pl. **ǵnh₃-s-énti*) and attributes the *-e-* (unconvincingly, in my view) to phonologically regular anaptyxis in the plural.

6 Ved. 2 sg. opt. *jñeyāḥ* (: pres. *jānāti* ‘knows’) would be compatible with an *s*-aorist as well as a root aorist; cf. § 11 (end).

matic “root” *kñas-* (< PToch. **kñas-* < **gnēs-*); it is this “root” which matches the Hittite “root” *ganeš-*.⁷ As for Armenian, the profile of *caneay* is likewise quite different from that of an *s*-aorist. Proper *s*-aorists in Armenian are continued by quasi-imperfects in **-ské/o-* (cf. 1 sg. aor. *sirec’i*, 3 sg. *sireac’* ‘loved’ < virtual **-isasket*); the origin of the small class of aorists in *-eay* is unclear in detail.

If PIE **gnēh₃-* was not an aorist, it could only have been an *s*-present with Narten ablaut (**gnēh₃-s-ti* : **gnēh₃-s-nti*).⁸ Such a stem would account directly for Hitt. *ganešzi*; it would also have given the Proto-Tocharian root **kñas-*, Tocharian being well known for extracting synchronic roots from present stems (cf. the numerous roots in *-sk-* and *-tk-* < **-T-sk-*). In Armenian, the regular imperfect **gnēh₃-s-nti*, **gnēh₃-s-s*, **gnēh₃-s-t*, etc., with Lindeman variants (**gnēh₃-s-*) in the monosyllabic 2–3 sg., would unproblematically have yielded *caneay*, with regular generalization of stem-final *-a-* from the 3 pl. in *-ean*.⁹ Elsewhere in the family, the influence of a lengthened-grade *s*-present is probably also to be seen in Alb. *njoh* ‘I know’ < **gnēsḱō*, with **-ē-* taken from an Albanian counterpart of *ganešzi*.¹⁰ It is even possible that the Germanic strong verb **knē(j)an* ‘know’ (cf. OE *cnāwan*, OHG *-chnāen*) reflects the influence of a lost **knēsan*, to which it would have stood in the same relation as **blē(j)an* ‘blow’ (OE *blāwan*, OHG *blāen*) to **blēsan* ‘id.’ (Go. *blesan*, OHG *blāsan*; cf. Jasanoff 1988a: 238f.).

Hitt. *ganešzi* was analyzed (correctly, in my view) as a present in the first edition of *LIV* and assigned, as the only such item, to the Narten *s*-present type (type 1f). In *LIV*² there was a change of heart: despite the difficulties just mentioned, the Narten-ablauting stem **gnēh₃-* was reclassified as an *s*-aorist, and type 1f was abandoned, evidently out of a desire not to have to posit a present class with only a single member. But whether there was one Narten *s*-present or many in PIE is largely a matter of definition. A variety

7 As in Latin, where vowel-final roots never form *s*-perfects, vowel-final roots never form class III preterites in Tocharian. If one nevertheless had to imagine what a “regular” class III pret. of PIE **gnēh₃-* would have looked like, the only real possibility would be Toch. A 1 sg. **kña-wā*, 2 sg. **kña-št*, 3 sg. **kña-s*, etc., with **kña-* < **gnē-* and no *-s-* before the endings. The root-like character of Toch. A *kñas-* is not appreciated by Oettinger (2013: 58) or Kloekhorst (2008b: 435), who speak of it as if it were an ordinary inner-Tocharian combination.

8 So first in Jasanoff 1988a.

9 The development of synchronic aorists from IE imperfects is of ordinary occurrence in Armenian, where, as illustrated by the famous equation Arm. 3 sg. aor. *eber* = Ved. 3 sg. impf. *ábharat* = Gk. 3 sg. impf. *éphere*, the inherited imperfect and aorist fell together as a simple preterite.

10 As pointed out to me long ago by Douglas Adams.

of different sigmatic formations are potentially reconstructable for the parent language. All, with the unique exception of the *s*-aorist, are presents. The largest group originally had desiderative meaning; its members are typically grammaticalized as futures. Here belong, *inter alia*, the thematic type in **-se/o-* that underlies the Greek future (e.g., *grápsō* ‘will write’), the *i*-reduplicated thematic (< *h₂e*-conjugation) type seen in the Indo-Iranian desiderative and the Old Irish reduplicated *s*-future (e.g., Ved. *cíkitsati* ‘desires to know’, OIr. *·gigius* < **g^wig^wed-s-ō* ‘I will pray’), and the future in **-sje/o-* found in Indo-Iranian (e.g., Ved. *vakṣyáti* ‘will say’), Balto-Slavic (e.g., Lith. *dúosiū* ‘I will give’), and Continental Celtic (Gaul. *pissiumi* ‘I will see’). More immediately relevant for our purposes is the athematic unreduplicated type exemplified by the Sabellic future (e.g., Osc. *fust* ‘it will be’),¹¹ the Old Irish unreduplicated *s*-future (e.g., *·ré* < **ret-s-ti* ‘will run’), and the third person (originally 3 sg.) of the Baltic future (e.g., Lith. *duōs* ‘will give’ < **dúosti*). These forms are discussed by Hill (2004: 152 ff.), who, in basic agreement with *LIV*, sets up a PIE paradigm with **e* : zero ablaut (e.g., 3 sg. **déh₃-s-ti* : pl. **dh₃-s-énti*). But the *-i-* of the Lithuanian plural and dual (1–2 pl. *dúosime*, *-site*, 1–2 du. *dúosiva*, *-sita*) suggests (pace Hill 94 ff.) a lost 3 pl. in **-sinti* < **-s-nti*, implying Narten ablaut (**déh₃-s-ti* : pl. **déh₃-s-nti*). Pointing in the same direction are the optatives associated with the *s*-future in Italic (e.g., Lat. *faxim*, *-īs*, not **faxiem*, **-iēs*) and the Narten profile of some of the Old Irish roots with unreduplicated *s*-futures (e.g., pre-*Ir.* **ret-*, **tek-* ‘run’, **sed-* ‘sit’). If the reconstruction **déh₃-s-ti* : **déh₃-s-nti* is correct, the athematic *s*-desideratives/futures of PIE would be in every sense Narten *s*-presents.

ganešzi / **ǵnéh₃-s-ti* is not, of course, a desiderative or future. The **-s-* in this form may at an earlier stage have been inceptive/inchoative (‘come into awareness of’, *vel sim.*), like the **-ské/o-* of the typologically more recent present **ǵn(e)h₃-ské/o-* that partly replaced it (cf. Lat. *(g)nōscō*, OPers. *xšnāsa-*).¹² Just as “desiderative” **-s-* was pressed into service to make futures, “inchoative” **-s-* was productively employed to make derived presents denoting entry into a state. The best-known example is the denominal “fientive” type seen in Hitt. *-eš-* < **-eh₁-s-* (e.g., *šallešzi* ‘becomes great’ (: *šalli-* ‘great’)), together with its typologically more “modern” Latin equivalent in *-ēscō* (e.g., *rubēscō* ‘turn red’ (: *ruber* ‘red’)). The desiderative and inchoative semantic “families” are hard to distinguish at the IE level. Thus, the root *h₂eis-* ‘seek’ made a present *h₂is-ské/ó-* (cf.

11 To which the Latin future type *faxō* ‘I will do’ was, according to the most common view, the subjunctive.

12 That the **-s-* of **-ské/o-* is the “same” as the **-s-* that stands alone is an obvious default assumption, although the identity of the second element is obscure. See Oettinger 2013 for a recent proposal.

Ved. *icchāti*, YAv. *isaiti*), where the function of the suffix **-ske/o-* was presumably to reinforce the desiderative meaning inherent in the root. Yet the variable vocalism of the root syllable in the cognates of this verb (cf. Arm. *hayc'em* 'I ask for' < **aisk-* < **h₂eis-*; OLith. *ieszku* 'I seek' (Mod. Lith. *iešk-*) < **eisk-* < **h₂ēis-*) points to contamination with an unattested desiderative *s*-present **h₂ēis-s-*, formally parallel to the inchoative *s*-present **ġnēh₃-s-*.¹³ Still other forms in **-s-* and *-ské/o-* are iterative. "Iterative" *-ské/o-* is well known from the immensely productive Hittite iteratives or imperfectives in *-ški/a-* (e.g., *memiškizzi* 'keeps saying', *akkiškittari* 'keeps dying', etc.) and the Ionic Greek iterative imperfects in *-ske/o-* (e.g., *phéreske* 'would (repeatedly) bear', *apolésketo* 'would (regularly) be lost', etc.). Bare **-s-* could serve in this capacity as well, as shown by the unproductive Hittite iterative class in *-šš(a)-* (e.g., *halzišš(a)-* 'call repeatedly', *išš(a)-* 'perform').¹⁴

The desiderative, inchoative, and iterative meanings, as I have pointed out elsewhere, are all very close. Desideratives can easily morph into inchoatives, as in Eng. *The sun is wanting to come out* (i.e., beginning to come out) or Ger. *Es will Nacht werden* (= beginning to get dark; cf. Hitt. *nanakkušzi*). Desideratives can also give rise to iteratives. Eng. *would*, historically the preterite of *will* but synchronically an auxiliary denoting past habitual action (*It would rain every afternoon*, etc.), is a familiar example of this tendency. Other cases are mentioned by Bybee, Perkins, and Pagliuca (1994: 156–158). It is thus not out of the question that the three *s*'s—desiderative, inchoative, and iterative—are etymologically one and the same.¹⁵ But whether PIE had one, two, or three *s*'s at some remote point in time is not an issue we will have to consider here. What is significant in the present context is that 1) PIE *s*-presents came in a variety of morphological shapes (Narten, reduplicated, etc.), 2) they also served in a variety of functions (desiderative, inchoative, iterative), and 3) there was no clear one-to-one alignment of function with morphological form (cf. "inchoa-

13 And similarly, we may presume, **prēk-s-* beside **pr(k)-ské/ó-* 'ask'; cf. § 14.

14 *išš(a)-* < **H(i)i-Hih₁-s-*, with the same structure as a desiderative of the Indo-Iranian *cikitsati*-type, was probably the founding member of this class. See *HIEV* 137–139.

15 The main argument *against* identifying the different *s*-suffixes is that the desiderative **-s-*, but not the other two, takes the form **-h₁s-* after sonorants: cf. Ved. *kṛ-* 'do', fut. *kariṣyati*, desid. *cikīrṣati* (< **-fṣ-*); Gk. *ten-* 'stretch', fut. *tené[s]ō*; OIr. *cel-* 'conceal', fut. *céla* < **kiklāse/o-* (< **-kḷs-*). The position taken in *HIEV* (134–135) was that **-h₁s-* was etymological in all cases, with loss of **-h₁* by sound change after obstruents (i.e., in sequences of the form **-Ch₁s-*) and by analogy after sonorants in iteratives and inchoatives, but not desideratives. The *LIV* view (24), viz., that the laryngeal associated with the desiderative was a secondary accretion from laryngeal-final roots, cannot be excluded in principle either, but seems to me less likely.

tive" **ǵnēh₃-s-* vs. "desiderative" **h₂ēis-s-*). The importance of this will be seen as we move from *ganeš-* to other Hittite sigmatic forms.

3 Impv. *paḥši*

The verb *paḥš-* 'protect', though claimed for both the *mi-* and *hi-* conjugations in the older handbooks, is deponent outside the imperative in older Hittite (3 sg. *paḥša*, *paḥšari*) and hence indeterminate as to conjugation. Only in the Neo-Hittite period do active forms of the type 1 sg. *paḥḫašhi* (common) and *paḥḫašmi* (hapax) begin to appear. Etymologically, the root is an *s*-enlarged form of PIE **peh₂-* or (LIV) **peh₂(i)-* 'protect'; the sigmatized root shape **peh₂-s-* also appears in OCS *pasti* 'graze, protect', Toch. A *pās-* 'protect' (Toch. B renewed *pāsk-*), and Lat. *pāstor* 'shepherd'. Given the semantics, the likeliest assumption is that the *s*-element was taken from a desiderative *s*-present.¹⁶ Interestingly, the nearly synonymous root **h₂elk-* (cf. Gk. *alalkeîn* 'ward off') has an *s*-extended form as well (**h₂lek-s-*; cf. Gk. *aléksō* = Ved. *rākṣati* 'protect', presumably likewise originally desiderative). It would be tempting to refer both **peh₂-s-* and **h₂lek-s-* to virtual Narten *s*-presents **pēh₂-s-* and **h₂lēk-s-*, parallel to the Narten *s*-present **ǵnēh₃-s-* that underlies *ganešzi*. But since the reflexes of **h₂lek-s-* show no ablaut and Hitt. *paḥš-* is effectively medium tantum with generalized *e*-grade (3 sg. *paḥša* < **pēh₂-s-or*), this cannot be assured. Alongside the Narten type, PIE had a second class of unreduplicated sigmatic root presents, characterized by **o* : **e* ablaut and *h₂e*-conjugation inflection. The best example of such a "*molō*-type" *s*-present is 3 sg. **h₂uóg-s-e* : 3 pl. **h₂uég-s-r̥s* (> **-nti*) 'grow', whence OHG *wahsan* 'grow, wax' (*o*-grade) and Gk. *a(w)ékso-mai* 'increase' (*e*-grade).¹⁷ In Hittite itself, the verb *pāš-* 'swallow' (3 sg. *pāši* < **póh₃-s-*) probably had **o* : **e* ablaut, assuming that the *hi*-inflection is old.¹⁸ **peh₂-s-/paḥš-* and **h₂lek-s-/aléksō/rākṣati* could in principle have been *molō*-type *s*-presents as well.

Whatever the deep prehistory of *paḥš-*, it is, like *ganeš-*, synchronically an unanalyzable root verb in Hittite. Standing out from its otherwise deponent Middle Hittite paradigm is the common, morphologically active 2 sg.

16 Otherwise Oettinger (2017: 593), who labels the **-s-* in this case "imperfective."

17 Cf. *HIEV* 75.

18 As it probably is. The *mi*-conjugation 3 sg. pres. *pāšzi* and 3 sg. impv. *pāšdu* were back-formed from the 3 sg. pret. *pāšta*, itself repaired from the etymological 3 sg. pret. **pāš-š*. Cf. Kloekhorst 2008b: 649.

impv. *paḥši* (MH/MS and later).¹⁹ In Jasanoff 1987: 104 I took this to be a “*si*-imperative,” thus explicitly taking issue with Oettinger (1979: 211, n. 66), who had rejected the idea that such a form could have existed in Anatolian. Since our understanding of *si*-imperatives has evolved considerably over the past half century, it may be useful to give a brief summary of what we now know about these forms. Vedic Sanskrit has over thirty apparently deradical forms in *-si* (e.g., *rāsi* ‘grant!’, *mātsi* ‘inspire, intoxicate!’, *yákṣi* ‘sacrifice!’) that mostly have the value of 2 sg. imperatives and have nothing to do with root presents. The fundamental breakthrough in the study of *si*-imperatives was made by Szemerényi (1966), who showed that they were haplologized 2 sg. subjunctives (*-si* < **-sasi* or pre-IIr. **-sesi*), mostly based on *s*-aorists. Szemerényi did not regard the haplology as an inner-PIE process. As I tried to establish in Jasanoff 1986, however, the Old Irish irregular imperatives *at-ré* ‘arise!’ (: pres. *at-reig*), *no-m-ain* ‘spare me!’ (pres. *aingid*, *ainich*), and other forms discussed by Thurneysen (1946: 374–375) were also precisely *si*-imperatives (*-ré* < **ress* < **reg-(se)si*, *-ain* < **aness* < **aneg-(se)si*, etc.), standing in the same relation to the *s*-subjunctives **ress-* < **reg-se/o-*, **aness-* < **aneg-se/o-*, etc. as Ved. *rāsi*, *mātsi*, *yákṣi* to the *s*-aorist subjunctives *rāsa-*, *mātsa-*, and *yákṣa-*. Subsequently, in Jasanoff 1987: 94 ff., I argued that Ved. *śróṣi* ‘hear!’ formed a virtually exact word equation with Toch. B *päklyauṣ*, A *päklyoṣ* ‘id.’. The importance of the *päklyauṣ/päklyoṣ* : *śróṣi* equation lay in the fact that *śróṣi* was one of the few *si*-imperatives in Vedic that was *not* based on an *s*-aorist subjunctive. The subjunctive underlying the PIE *si*-imperative **kléusi* belonged rather to a Narten *s*-present **klēu-s-*, the generalized lengthened grade of which is still on hand in the Tocharian present (< subjunctive) B 3 sg. *klyauṣām* and in the imperative *päklyauṣ* itself.²⁰ There is thus no reason in principle why the *s*-present underlying Hitt. *paḥš-* could not have given rise to a *si*-imperative as well.

Whether *paḥši* really *was* a *si*-imperative, of course, is a separate question. The matter was eventually settled in a pair of complementary contributions by Oettinger and myself (Oettinger 2007, Jasanoff 2012a). Many Hittite *hi*-verbs have imperatives in *-i*. These fall into two groups: those associated with stems ending in *-i*- or *-a(i)*- (e.g., *mēmi* ‘say!’ (pres. 3 sg. *mēmai*, pl. *-ianzi*), *penni* ‘drive

19 In keeping with modern practice, MH/MS denotes a Middle Hittite copy of a Middle Hittite composition, OH/NS a Neo-Hittite copy of an Old Hittite composition, etc. Other than *paḥši* itself, the only active form of *paḥš-* attested before Neo-Hittite is the 2 pl. impv. *paḥ-ḥašten* beside older *paḥḥašdumat* (Craig Melchert, p.c.), obviously created to supply *paḥši* with a plural.

20 Contrary to the position I took in 1987, the phonologically regular reflex of **kléusi* would have been **(pā)klyuṣ* in both Tocharian languages.

off' (pres. 3 sg. *pennai*, pl. *-iyanzi*), etc.), and those not associated with such stems. Of interest here are the latter forms, which we may call the "*paḥši* group." Oettinger made the important observation that *paḥši*-group imperatives are disproportionately often associated with verbs with transitive 3 sg. forms in *-a(ri)*—the so-called "stative" ending more typically associated with intransitivity. The pattern *-i : -a(ri)* is found in seven or eight lexical items: *eši* 'occupy, possess': pres. 3 sg. *eša(ri)* 'sits', but also 'sits on, occupies (trans.)'; *ḥanni* 'decide (a legal case)!: 3 sg. *ḥannari*; *ḥuitti* 'pull!': 3 sg. *ḥuettiya(ri)*; *iškalli* 'tear!': 3 sg. *iškallari*; *karši* 'remove, cut off!': 3 sg. *karšari*; *paḥši* 'protect!': 3 sg. *paḥša(ri)*; *šaliki* 'touch!': 3 sg. *šaliga(ri)*; and *šarri* 'divide! 3 sg. *šarratta(ri)* for **šarra(ri)*. There cannot have been any ancient formal connection between the endings *-i* and *-a(ri)*. The distributional association of *-i* and *-a(ri)* must therefore have come about in some accidental way: a nucleus of verbs—perhaps only a single lexical item—had an imperative in *-i* and a transitive 3 sg. in **-or/-ar(i)*, and the pattern was generalized. But what verbs could have constituted such a nucleus? *eš-* 'sit' can be eliminated; its old imperative is not *eši* but the regular middle form *ēšḫut*. Also eliminable are *ḥuett-*, where the 3 sg. is not **ḥuetta(ri)* but the morphologically anomalous *ḥuettiya(ri)*; and *šarra-*, where there is no "stative" in *-a(ri)* at all. This leaves *ḥann(a)-*, *iškall(a)-*, *karš-*, *paḥš-*, and *šalig-*. Of these, *karš-* is an active *mi*-verb in Old and Middle Hittite; *ḥann(a)-* has an active 3 sg. *ḥannāi* that is at least as old as the "stative" 3 sg. *ḥannari*;²¹ and *iškall(a)-* has no attested indicative before Neo-Hittite, where it is mostly active. There remain only *paḥš-*, with its robustly attested imperative *paḥši*, and *šalig-*, with its imperative *šaliki*, found only on a single tablet.²² Everything points to *paḥši* itself, haplogically reduced from a present subjunctive **peh₂-s-esi* and synchronically reanalyzed as *paḥš-i*, as the locus of the *paḥši* group as a whole.

The discovery that *paḥši* was a *si*-imperative has the important corollary, which will be exploited below, that the PIE subjunctive must have existed prior to the separation of Anatolian from the rest of the family.

4 Impv. mid. *nešḫut*

Hitt. *nai-* 'turn, lead, direct' is a transitive *hi*-verb (3 sg. pres. *nāi*, pl. *nē(y)anzi*) with a well-attested intransitive middle (*nē(y)a(ri)* 'turns (intr.), betakes oneself', pl. *nē(y)anda(ri)*). It is clearly cognate (pace Kloekhorst and Lubotsky

21 Whether or not by chance, the multiply attested *ḥannari* and its imperative *ḥannaru* are confined to Neo-Hittite tablets, while *hannāi* is already found in Middle Hittite.

22 According to *CHD*, KBo 21.22 rev. 46, 47, (48) (OH/MS).

2014) with Ved. pres. *náyati* ‘leads’ (= YAv. *naieiti* ‘id.’), pointing to a root **neih₁-* or **neih₃-* (we will write **neiH-*). *nai-* is one of the relatively small company of Hittite verbs—the rest are mostly old root presents—whose morphological profile actively confirms part of what we know about its PIE averbo from the extra-Anatolian comparative evidence. Like **ueǵ^h-* ‘move by vehicle’, **ued^h-* ‘move/lead’, **nem-* ‘bend’, **pek^w-* ‘ripen’, **d^heg^{wh}-* ‘burn’, **g^wes-* ‘extinguish/go out’, and others, **neiH-* belonged to a specific family of roots that denoted a change of position or physical condition in the parent language. The verbs of this group have thematic presents and *s*-aorists in the “Inner” IE languages;²³ cf. Ved. *náyati* : aor. *naiṣ-* ~ *neṣ-*, Ved. *váhati* : *vākṣ-* (+ Lat. *uehō* : *uēxī*, etc.), OCS *vedq* : *věsz* (+ OIr. *fedid* : subj. *fess-*), Ved. *námati* : *nāṃs-*, Ved. *pácati* : aor. subj. *pákṣa-* (+ Lat. *coquō* : *coxī*, etc.), Ved. *dáhati* : aor. *d(h)ākṣ-* (+ OCS *žegq* : *žasq*), Ved. *jása-/dása-* : aor. inj. *dāsīt*. Anatolian and Tocharian clearly align with this picture, but the match is not exact. These languages lack the thematic presents they might have been expected to show; there is no reflex of a stem **néiH-e/o-* from *nai-* in Hittite (on NH *neya-* see §15 below), or of stems **ném-e/o-*, **pék^w-e/o-*, **d^hég^{wh}-e/o-*, or **g^wés-e/o-* from the roots *nām-*, *pāk-*, *tsāk-*, and *kās-* in Tocharian. The gap is not accidental; as first argued in Jasanoff 1998, thematic presents of “type I1” (**néiH-e/o-*, **ueǵ^h-e/o-*, etc.) may have been an innovation of Inner IE. What Anatolian and Tocharian do have is reflexes of the *s*-aorist. In Tocharian the *s*-aorist, in the special form it takes in this language, is seen both in the class III (*s*-) preterites formed by *nām-*, *pāk-*, etc. (e.g., Toch. B pret. 3 sg. mid. *namtsate* ‘bent (intr.)’; ptcp. *pepeku* ‘ripened’; pret. 1 sg. mid. *tseksamai* ‘I burned (intr.)’; pret. 3 sg. act. *kessa* ‘quenched’) and in the associated class VIII (*s*-) presents, which correspond formally to *s*-aorist subjunctives in the other languages (e.g., 3 sg. *namṣām*, *pakṣām*, *tsakṣām*, *keṣām*; cf. §11). In Hittite, a continuant of the 3 sg. *s*-aorist **néiH-s-t* is traditionally seen in the regular 3 sg. pret. *naiš*. This identification has latterly been contested (wrongly, in my opinion; see below). But even without *naiš* there is unmistakable evidence for an aorist stem **néiH-s-* in the unique 2 sg. mid. impv. *nešhut* ‘turn (intr.)’.

The form *nešhut* (MH/MS; later *naišhut*) provides a bridge between the familiar terrain of the Indo-Iranian verbal system and the more exotic morphological landscape of Hittite. Like most Hittite *hi*-verbs with stems ending in a diphthong, *nai-* takes an unexpected *-s-* before the *-t-* of the second person plural: cf. act. *naišteni*, *naištani* (pres.), *naišten* (impv.), mid. 2 pl. *naišdumat*

23 I use “Inner IE” to refer to the phylogenetic clade consisting of all the IE branches other than Anatolian and Tocharian. The term incorporates my already-mentioned view that Tocharian was the second branch to leave the family, after Anatolian.

(impv.).²⁴ The origin of the “intrusive” -s- in these forms, on which opinions are divided, will be discussed in the following section. But whatever the prehistory of the sigmatized endings -šten(i), -šduma(t), etc., a special explanation is needed for the -s- of *nešhut*. The non-dental middle imperative ending -(h)hut is never otherwise sigmatized.²⁵ Since *HIEV* 182–184 I have compared *nešhut* with the Vedic middle imperatives *rásva*, *mátsva*, *yákšva*. The latter are not root aorist forms—the roots in question do not make root aorists—but medializations of the attested *si*-imperatives *rási*, *mátsi*, *yákši*, made by replacing what appeared to speakers as an anomalous active imperative ending -*si* by the normal middle ending -*sva*.²⁶ *nešhut* is such a form in Hittite, medialized from an inferrable *si*-imperative **nēši* (< **néiHsi* < **néiH-(se)si*). From an inner-Hittite point of view, **nēši* would have been an “*i*-imperative” like *paḥši*, *ḫuitti*, or *šaliki*; its medialization consisted in replacing the perceived active ending **-i* by the middle ending -(h)hut. It is true that there is no actual **nēši* in Hittite; the attested active imperative of *nai-* is the obviously analogical *nāi* (like *dai* ‘put!’, *išpāi* ‘be sated!’, etc.). But the Vedic *si*-imperative *nēši* is found ten times in the Rigveda, making it more common than all the other *s*-aorist forms of the root *nī-* combined. There is also a well-attested subjunctive *nēša-* (cf. OAv. *nāē-šaṭ*). A PIE *si*-imperative **néiHsi* is thus very nearly guaranteed. *nešhut* can be seen as its indirect reflex in Hittite.

5 2 pl. -šten(i), -šduma(t), etc. (part I)

The intrusive -s- of 2 pl. *naišten(i)*, etc. was briefly discussed in *HIEV* (119–120, 184). The explanation offered there was that with the establishment of the *si*-imperative pair **nēši* : *nešhut*, or the forms ancestral to these, the sequence **nēš-* (**neiH-s-*) was interpreted as the “imperative stem” of the verb that later became *nai-*. As such, **nēš-* became the basis for the creation of 2 pl. imperatives **nēšten* (act.) and **nēštuma* (mid.).²⁷ But since the imperative and preterite were normally identical in the 2 pl., I argued, these forms came also to serve as preterites. In the latter role, they analogically took on the regular “strong”

24 There is also a 2 sg. pres. *naištari* (NH).

25 In *nai-*, on the other hand, it is never *not* sigmatized: a 2 sg. mid. impv. **nēḫhut* would have been perfectly well-formed, but does not occur.

26 So too *vámśva* (: subj. *vámśa-* ‘grant’) and *sákšva* (: subj. *sákša-* ‘conquer’), though the corresponding forms in -*si* are not attested.

27 To which was later added the final particle -*t*, presumably identical with the -*t* (< **-dʰi*) of the active imperatives in -*nut* (cf. *arnut* ‘bring’, etc.).

vocalism *nai-* (< **noiH-*), and the new *naišten* and *naištuma(t)* were eventually introduced back into the imperative as well. The final step was the extension of -s- to the present, giving *naišteni* (-š*tani*) and **naišduma(ri)*. From *nai-*, sigmatized endings were extended to the other monosyllabic diphthongal verbs (e.g., *dai-*, *išpai-*, *pai-* 'give'; also *au-* 'see') and to the longer stems that overlapped with them morphologically (e.g., *halzai-* 'call', *mema(i)-* 'say').

An altogether different account of these forms is given by Kloekhorst (2008a).²⁸ Kloekhorst's presentation begins with a complete inventory of the verbs that take intrusive -s- in the 2 pl. active. The list is worth reproducing in full:²⁹

<i>au-i</i> /u- 'to see'	(ušt[ē]ni, aušteni, aušten)
<i>halzai-i</i> /halzi- 'to call'	(halzišten)
<i>hanna-i</i> /hann- 'to sue'	(hanništen)
<i>išhai-i</i> /išhi- 'to bind'	(išhaišten)
<i>išpai-i</i> /išpi- 'to be satiated'	(išpišten)
<i>mai-i</i> /mi- 'to grow'	(maišten)
<i>mema-i</i> /memi- 'to speak'	(memištēni, memišten)
<i>nai-i</i> 'to turn'	(naišteni, naištani, naišten)
<i>nanna-i</i> /nanni- 'to drive'	(nanništen)
<i>pai-i</i> /pi- 'to give'	(pištēni, pišten)
<i>parai-i</i> /pari- 'to blow'	(paraištēni)
<i>peda-i</i> /ped- 'to bring'	(petišten)
<i>penna-i</i> /penni- 'to drive'	(penništen)
<i>šai-i</i> /ši- 'to seal'	(šaišten)
<i>šunna-i</i> /šunn- 'to fill'	(šuništen)
<i>dai-i</i> /ti- 'to put'	([t]ištēni, daišten)
<i>dāla-i</i> /dāli- 'to let in peace'	(dālešten)
<i>tarna-i</i> /tarn- 'to release'	(tarništen)
<i>ūnna-i</i> /ūnni- 'to send here'	(ūnništēni, ūnništen)
<i>uppa-i</i> /uppi- 'to send here'	(uppešten)
<i>zai-i</i> /zi- 'to cross'	(zištēn[i])

28 Kloekhorst appears not to have understood the argument just presented. According to him (493), "Jasanoff connects the ending -š*ten(i)* with the rise of the 2sg.pret.-ending -š*ta* besides older -*tta*. As this ending -š*ta* is found in NH and NS texts only, we would expect that -š*ten(i)*, too, is only found in NH or NS texts. This is not the case however ... This means that Jasanoff's explanation is incorrect as well." In fact, the only connection I make is in the other direction: my account of the 2, 3 sg. pret. in -š*ta* in verbs other than *au-* 'see' depends on the prior existence of the 2 pl. pret. in -š*ten*. See *HIEV* 120–121 and § 8 below.

29 Kloekhorst 2008a: 494.

Kloekhorst has no doubt what conclusion should be drawn from these forms:

When we look at the 21 verbs for which an ending *-šten(i)* is attested ... we immediately see that they are all *hi*-inflected verbs. There is not a single *mi*-inflected verb that shows the ending *-šten(i)*. This cannot be coincidental: statistics show that the chance that a random collection of 21 Hittite verbs consists of *hi*-verbs only, is 1 in 1.2 trillion ... Our conclusion therefore should be that the ending *-šten(i)* is the original *hi*-ending that contrasts with the *mi*-ending *-tten(i)*.³⁰

A footnote explains the mathematics: “To my knowledge, we find about 210 *hi*-verbs and 580 *mi*-verbs in Hittite. The ratio *hi*-verbs : total number of verbs therefore is $210 : 790 = 1 : 3.76$. The chance that a random list of 21 Hittite verbs consists of *hi*-verbs only then is $1 : 3.76^{21} = 1 : 1,212,170,547,718$.”

It takes no great sophistication with numbers to verify that Kloekhorst's list is, as he says, not random. The 21 verbs on the list are indeed all *hi*-verbs, which cannot be accidental. But, more to the point, and not emphasized by Kloekhorst, they are *hi*-verbs of a very particular type. Eight of the 21 are monosyllabic stems in which *-ai-* alternates with *-i-* (*išhai-*, *išpai-*, *mai-*, *pai-*, *parai-*, *šai-*, *dai-*, *zai-*). Three others are *halzai-*, a disyllabic stem which inflects the same way as the shorter forms (specifically, *pai-*); *nai-*, an alternating monosyllabic stem that differs from the others only in that the weak stem is *nē-* rather than *ni-*; and *au-*, a monosyllabic stem with the mirror-image alternation of *-au-* and *-u-*. Of the remaining ten items, two (*penna(i)-* and *ūnna(i)-*) are compounds of *nai-*, and a third (*nanna(i)-*) is somehow related to these.³¹ *uppa(i)-* has been influenced by *pai-*.³² This leaves only *mema(i)-* and *dāla(i)-*, which have the same inflection in the present as *penna(i)-*, *ūnna(i)-*, etc.; and *hanna-*, *tarna-*, *šunna-*, and *peda-*, where the full sequence *-išten*, with *-i-* reflecting an *i*-diphthong that is not etymological in these stems, was mechanically taken over from *penništen*, etc.³³ The association of the endings *-šten* and *-šteni* with ablauting diphthongal *hi*-verbs is orders of magnitude more significant

30 *ibid.*

31 I leave open whether *nanna(i)-* is a reduplicated form of *nai-*, as claimed by Kloekhorst (2008b: 600), or an imperfective in *-anna/i-*, as maintained by Melchert (1998: 416). In the latter case it would have to have been influenced by *penna(i)-* and *ūnna(i)-*.

32 But *uppa(i)-* is not a compound of *pai-*; cf. Melchert forthcoming.

33 If these forms were archaisms we should have expected **-ašten*. It is clear from Kloekhorst's own discussion that *tarništen* is more recent than *tarnatten*. Apart from the isolated Old Hittite hapax *petišten* (OS), *peda-* has only *pedatten(i)*; the parallel compound *uda-* ‘bring hither’ has only *udatten(i)* (MS+).

than the correlation of these endings with the *hi*-conjugation as a whole. It is therefore incumbent on Kloekhorst, who maintains that *-šten* and *-štenī* were originally the *general* 2 pl. endings of the *hi*-conjugation, to explain how and why these endings came to be restricted to diphthongal stems. It is not an easy task. Kloekhorst's sketchy remarks on this subject are put into clearer form by Melchert (2015: 129–130), who cautiously aligns himself with Kloekhorst's position. Melchert provisionally posits a pre-Hittite loss of **-s-* when preceded by a stop or **h₂* and followed by a stop (i.e., in sequences of the form **-TsT-* and **-h₂sT-*). Forms like *ākten(i)* (: *ak(k)*- 'die') and *watarnahten* (*wātarnah-* 'order') are thus phonologically regular, according to Melchert, while, e.g., *ārten* (: *ar-* 'arrive') and *dattēni*, *dāttēn* (: *dā-* 'take') are analogical for **āršten* and **daštēni*, **dāšten*, respectively. In the end, the only verbs where **-s-* was not replaced by sound change or analogy, under this scenario, were those with stems ending in a diphthong.

None of this, I confess, seems in the least plausible to me. The correlation of *-šten(i)* with stem-final *-ai-* is a stunning fact—too stunning to be explained by ad hoc sound laws and random analogies. Yet this is basically what Kloekhorst and Melchert have to offer. The supposed loss of **-s-* in **-TsT-* and **-h₂sT-* sequences is not an independently grounded sound change; the strongest thing that can be said for it is that apparent counterexamples like 2 pl. pres. *paḥ(ha)šduma* (: *paḥš-*) and 3 sg. pres. *tak(ki)šzi* (: *takš-* 'inflict') contain a morpheme boundary and thus *could*, if necessary, be explained away as analogical. It is entirely unobvious, in the last analysis, why the steady analogical advance of *s*-less *-(t)ten(i)* at the expense of *-šten(i)* should have stopped precisely at the diphthongal stems.³⁴ Particularly striking is the absence of any sign of the theoretically expected sigmatic forms **daštēni* and **dāšten* in the otherwise morphologically archaic verb *dā-*.

From a more general point of view too, it would be quite surprising to find etymologically distinct *mi*- and *hi*-endings in the 2 pl. No one would dispute the possibility—and indeed, the likelihood—that the PIE active (> *mi*-conjugation) and perfect/*h₂e*-conjugation (> *hi*-conjugation) endings were at one point distinct in all paradigmatic positions. Hittite, however, otherwise merged the two conjugations in the plural. Both *mi*- and *hi*-verbs have *-wen(i)* (*-men(i)* after *-u-*) in the 1 pl. and *-(t)ten(i)*, with or without intrusive *-s-*, in the 2 pl. In the 3 pl., both *mi*- and *hi*-verbs have the original *mi*-conjugation ending (*-anzi*) in the present and the original *hi*-conjugation ending (*-er*) in the

34 Only to spread from these later, fitfully and uncertainly, to the non-diphthongal stems *šunna-*, *ḥanna-*, and *peda-*.

preterite. Against this background, it is *a priori* unlikely that the presence or absence of intrusive *-s-* would have a deep IE-level explanation. Nevertheless, Kloekhorst boldly compares (2008a: 498f.) the *-s-* of *-šten(i)* with the hitherto unexplained Toch. B 2 pl. pret. ending *-s, -so* (cf., e.g., *takās* ‘you (pl.) were’) and its Toch. A counterpart *-s (tākas* ‘id.’). According to Kloekhorst, the underlying PToch. **-sə* (*vel sim.*; see below) was the continuant of a PIE perfect-related *s*-ending whose exact form and relationship to the “real” 2 pl. perfect ending **-e* (cf. Ved. *vidā* ‘you (pl.) know’) he is unable to specify. This PIE *s*-ending, he says, gave a pre-Hittite *hi*-conjugation ending that was recharacterized by adding the *-(t)ten(i)* of the *mi*-conjugation to yield the attested *-šten(i)*.

Kloekhorst’s explanation of the ending *-šten(i)*, though a classic case of *obscurum per obscurius*, figures crucially, as we shall see, in a proposal of Melchert’s regarding the prehistory of the *s*-aorist (Melchert 2015: 129ff.; cf. §10 below). Before going further, therefore, it will be worthwhile to take a closer look at the supposedly relevant Tocharian 2 pl. in **-sə* and what it actually tells us.

6 Excursus: Toch. B 2 pl. *-s, -so*

The 2 pl. ending that Kloekhorst sets up as **-sə* is discussed by Malzahn (2010: 42–43, 47, 514–515 and 2011: 48–49). As her presentation shows, not one but two morphemes are actually subsumed under this formula, one the true 2 pl. pret. ending and the other the ending of the 2 pl. imperative. In the preterite, Toch. A has invariant *-s*, while Toch. B has both *-s* and *-so*. The position of the accent (B *takās, klyauśās* ‘you heard’) points to an underlyingly final vowel in both cases. As a rule, the *-o* that participates in this type of variation in Toch. B is the so-called mobile or “bewegliches” *-o*, which surfaces in metrical texts as the realization of an underlying final **-ə*. In this case, however, as Malzahn points out, the longer variant in the 2 pl. pret. is disproportionately common, being found also in prose passages where simple *-s* would have been expected. In the imperative the preference for the longer form is even stronger—so much so that in one imperative class (cl. III) *-so* is found four times and bare *-s* is not attested at all. There is reason to think, therefore, that the *-o* of *-so*, at least in the imperative, might originally not have been **-ə*, but some more substantial syllabic sequence that yielded normal (i.e., non-mobile) *-o* by sound change. Strengthening this impression is the remarkable Toch. A 2 pl. imperative form *päktyossū* ‘hear!’ beside regular *päktyośās*, with *-sū* for normal *-s*.

The patterning of these forms suggests a single historical ending with secondarily differentiated preterite and imperative variants. Let us assume that the

starting point was a 2 pl. pret./impv. of the form **-sX*. In the preterite, this ending would have been subject to pressure from paradigmatically related forms, particularly the 1 pl., which ended in **-mā* (< **-mes?*). We can speculate, therefore, that **-sX* was remade to **-sā* in the preterite, giving Toch. A 2 pl. pret. *-s* and Toch. B alternating *-s*, *-so*; in the imperative, where there was no such remodeling, **-sX* survived and gave Toch. A *-su*³⁵ and Toch. B invariant *-so*. Inevitably, the now distinct preterite and imperative endings would have tended to be confused. This is why *-so* gives the appearance of being overused in the preterite in Toch. B, while *-s* figures as a variant of “correct” *-so* in the imperative. In Toch. A, the *-s* of the preterite (< **-sā*) was introduced into the imperative, where it all but replaced the phonologically regular **-su* that survives in the unique *pāklyossū*.

The question now, of course, is, what was this **-sX*, and how could it have given Toch. A **-su* and Toch. B *-so*? Malzahn (2010: 514) sets up a preform **-sas*, which she explains as “most probably an ending PIE **-sh₂a* reminiscent of both the 2.sg. middle/perfect ending **-th₂a* and the 2.pl. active primary ending **-th₂a*, to which an **-s* had been added that most probably had been taken over analogically from the 1.pl. ending **-mes*.” This is not well-supported. The putative **-sh₂a* is wholly conjectural, and adding **-s* to it would have produced a post-laryngeal sequence **-sas* that in my view would have given PToch. **-sa* and Toch. B **-sa*. The regular sources of final *-o* in Toch. B were 1) post-laryngeal-loss **-ō* in absolute final position, as in the nom. sg. of *n*-stems (*okso* < PToch. **oksā* ‘ox’), and 2) post-laryngeal-loss **-ā* with or without a following obstruent, as in the nom. sg. of *ā*-stems (*kantwo* < PToch. **kantwā* ‘tongue’). Toch. A *-su* cannot have come from either of these sources. The known starting points for Toch. A *-u* were post-PIE **-ōu* (e.g., *wu* ‘two’, *oktu-k* ‘eighty’) and sequences of the form **-uVC*, where **C* was any consonant that was lost in final position (e.g., *yāmu* ‘done’ < **-əwə*, from rebuilt **-uūus*).³⁶ The only way to reconcile the

35 The final *-ū* in *pāklyossū* suggests a discourse-related lengthening or shift of stress, both common in imperatives. For the survival of the form as an archaism, compare archaic English “hear ye!” used to introduce public announcements.

36 These remarks summarize part of a longer discussion of Tocharian final syllables in Jasanoff 2018b. A major conclusion reached there is that PIE post-laryngeal **-ā-* and **-ō-* mostly had the same treatment in final syllables as elsewhere: PIE **-ā-* gave PToch. **-ā-* (cf. nom. sg. B *kantwo* ‘tongue’ < PToch. **kantwā* < **-ā*), and PIE **-ō-* gave PToch. **-a-* (cf. nom. pl. fem./nt. B *yām(u)wa* ‘done’ < PIE nt. pl. **-(u)uōs*). There were, however, two exceptions:

- 1) PIE **-ō* in absolute Auslaut fell together with PIE **-ā* as PToch. **-ā* (cf. B *okso* < PToch. **oksā* < PIE **uksō*); and
- 2) PIE **-ā-* was shortened to **-ǎ-* before a final nasal as in Latin and Celtic, whence PToch. **-a* (cf. obl. sg. B *kantwa* < PToch. **kantwa* < **-ǎn* < PIE **-ām*).

PIE **-ō* never gave *-u* in either language; the endings that have been thought to show this

possible sources of Toch. B *-so* with the possible sources of Toch. A *-su* would be to start from a post-laryngeal-loss **-suō* or **-suā(C)*. A sequence of this type would have given pre-Toch. **-swā*, which would probably have lost its **-w-* and come out as **-sā* in Proto-Tocharian (cf. B *soy* ‘son’ (= A *se*) < PToch. **sāyə* < **sāyus* < **swāyus* < **swayus* < **suHius*). While this would not explain Toch. A *-su* directly, an early pre-Toch. **-suō* or **-suā(C)*, if sufficiently old, would have had a Sievers variant **-suuō*/**-suā(C)* after heavy syllables. Combining the “long” Sievers form of the ending with the pre-Tocharian root **klēus-* ‘hear’³⁷ would have given the attested Toch. A *päktyossū* ($\approx$ **ktyossu*) < PToch. **klyæwssəwā* < **klēus-suuō*.

Our ending(s) are thus most plausibly traced back to a sequence of the type **-s(u)uō*. Here, however, we reach an apparent dead end. No PIE desinence of this shape is known.³⁸ The closest formal lookalikes are the 2 pl. *middle* ending **-d^h(u)ue/o* (Ved. *-dhvam*, Gk. *-sthe*, etc.) and the Indo-Iranian 2 sg. middle imperative in **-sua* (Ved. *-sua*), which, as I have suggested elsewhere (Jasanoff 2006 [2008]), may go back to a preform **-sh₂(u)uo*. All these contain an underlying **-Cu-* cluster and end in a vowel; whether there is any historical significance to this general resemblance is unclear. What *is* minimally clear is that, whatever its antiquity and internal structure, the pre-Tocharian ancestor of Toch. B *-s*, *-so* and Toch. A *-s* (+ impv. *-su*) was not a bare **-s* or some other undercharacterized sequence (e.g., **-su*) that would have invited “clarification” to *-šten(i)* in Hittite, as suggested by Kloekhorst. Nor is there any reason to think that it stood in some primal relationship to the simple sigmatic ending of the 3 sg. *s*-preterite in Tocharian (e.g., Toch. B *preksa* ‘asked’) or the 3 sg. pret. of the *hi*-conjugation in Hittite (e.g., *dāš* ‘took’), as argued by Melchert (cf. below).

7 2 pl. *-šten(i)*, *-šduma(t)*, etc. (part II)

The Tocharian 2 pl. pret. in *-s*, *-so* is thus a red herring; it offers no support for Kloekhorst’s claim that the *-s* of *-šten(i)* comes from an ending that originally characterized the *hi*-conjugation as a whole. The salient distributional

treatment are always actually reconstructable with a *u*-diphthong or a **-VwV(-)* sequence, as in the examples above.

37 With generalized lengthened grade from the Narten *s*-present; cf. note 20.

38 Unless, as Michael Weiss suggests to me (p.c.), a connection can be shown to exist with the Umbrian future perfects *benuso* ‘you will have come’ and *couortuso* ‘you will have turned back’, with *-uso* < **-us-so* < **-swā*. The possible relevance of these forms will be discussed elsewhere.

fact about intrusive *-s-* in Hittite is its intimate association with *hi*-conjugation diphthongal stems, and especially with *nai-*, the only verb where it also appears in the middle. Other things being equal, therefore, Kloekhorst's theory is at a disadvantage vis-à-vis the *HIEV* theory (cf. §5), which places the locus of the *-s-* squarely in the diphthongal stems—specifically, in the *si*-imperative of *nai-* (**nēši*) and its analogically extended “imperative system” (*nešhut*, **nēšten*, **nēštuma*, later *naišhut*, *naišten*, *naišdumat*). The *nai-/nēši/nešhut* scenario, however, has been faulted on other grounds. Melchert (loc. cit.) offers the following critique:

Such a scenario is not impossible, but it rests on a series of unverifiable steps. Most problematic for such an account are the older zero-grade forms *pīšten(i)* and *uštēni*, for which the paradigm of *nai-* (with an allomorphy of strong stem *nai-* versus weak stem *nē-*) provides no model (we expect either some trace of **pe/ēšten(i)* and **u-uš-te-n(i) = /o:sten(i)/* or only renewed *paišten* and *aušten*). One should note that attested 2Pl *pešten* is only late and obviously secondary due to the confusion of *e/i* before *š* in New Hittite. Jasanoff's derivation also requires that a feature of an entire class be based on the alleged pattern of a single verb, one which furthermore did not originally belong to the class (hence precisely the difference of weak stem *nē-* < **néiH-* versus stems in *-Cī-/Cy-* < **Cih₁-C-/Ch₁y-V-*).

Before taking up these points individually, let us pause to recall that the monosyllabic diphthongal stems in *-ai-*, which form the nucleus of the verbs with intrusive *-s-*, are a heterogeneous group. Four of the monosyllabic examples on Kloekhorst's list (*mai-*, *p(a)rai-*, *šai-*, *dai-*) are standard *i*-presents with, as I have argued, *e* : zero ablaut (3 sg. **d^héh₁-i-e* : pl. **d^hh₁-i-énti*).³⁹ Another, *išpai-*, as discussed in *HIEV* 107–109, was probably originally an *i*-present with Narten ablaut (**spéh₂-i-e* : pl. **spéh₂-i-nti*). The remaining two monosyllabic

39 The ablaut pattern of the main group of *i*-presents, discussed in detail in *HIEV* 98ff., remains a contested issue. The case for an *e* : zero alternation, maintained in *HIEV*, rests on the evident etymological identity of these forms with the “verba pura” of the other IE languages, especially Germanic and Balto-Slavic (cf., e.g., PGmc. **sē(j)an* = Lith. *sėjū* = OCS *sějǫ* ‘sow’: Hitt. *šai-* ‘press’). Since *o*-grade is conspicuously lacking in the verbs of this type outside Anatolian, it would be hard to justify a reconstruction with *o* : zero ablaut at the PIE level. The **-oi-* : **-i-* suffix posited by Kloekhorst (2008b: 808), which would be the only ablauting tense-aspect suffix in the PIE verbal system, is even more problematic. For the *non*-ablaut of the **-i-* in *i*-presents compare the standardly assumed non-ablaut of the **-s-* in *s*-presents (cf. *LIV* class Va: **uēid-s-ti* : **uīd-s-énti*).

diphthongal stems with acceptable etymologies, viz., *išhai-* and *nai-*, began as *h₂e*-conjugation aorists. The case of *išhai-* is discussed in Jasanoff 2018a: 144–145, correcting *HIEV* 94 ff. The root was not **seh₂-(i)* or **sh₂eh₁-(i)*, as maintained in *HIEV*, but **sh₂ei-*, with a stative-intransitive *h₂e*-conjugation aorist **sh₂ói-/sh₂éi-* that stood in the same well-attested relationship to the stative perfect **sesh₂ói-e* ‘holds bound’ (= Ved. *siṣāya*, OAv. *hiš.hāiā*) as, e.g., Ved. aor. *áreti* ‘(has) appeared’ to perf. *cikéta* ‘knows’, mid. *cikite* ‘appears’. As for *nai-*, its regular Hittite paradigm (*nēhhi*, *nāi*, *nēanzi*, etc.) points to a stem **nóiH-/néiH-* that on internal formal grounds alone could go back to either a *h₂e*-conjugation (*molō-*) present or aorist. But how we choose to analyze a Hittite verb depends, as in any other language with complex morphology, on more than whether a proposed analysis can be made to work formally. Pace Melchert (2015: 131), *nai-* cannot be a *molō*-present. The root **neiH-*, as discussed in § 4, was one of a company of roots with **ueg^h-*, **ued^h-*, **pek^w-*, **dheg^{wh}-*, and others that formed thematic presents and *s*-aorists in the Inner IE languages. Roots of this type conspicuously did *not* make *molō*-presents—not even in Germanic and Balto-Slavic, which are particularly rich in such forms.⁴⁰ As importantly observed by Villanueva Svensson (2011: 317–318), IE *molō*-presents were primary root presents, and typically not associated with aorists—including *s*-aorists—at all. Thanks to Tocharian evidence now to be discussed, we know that roots of the **ueg^h-/*ued^h-/*pek^w-/*dheg^{wh}-* type made, among other things, aorists containing an *o*-grade. In Tocharian, four of these, viz., *pāk-*, *tsāk-*, and the identically patterning *nāk-* ‘destroy/perish’ and *tām-* ‘bear/be born’, are among the seven verbs that form what Malzahn calls “class o” preterites in Toch. A. Preterites of this type, previously assigned to an anomalous subclass of class III, are suffixless and characterized by *o*-grade of the root. The meaning is intransitive: cf. 3 sg. *pakāt* ‘ripened’, *tsakāt* ‘burned (intr.)’, *nakāt* ‘perished’ (contrast transitive *nākäs* < **nēk-s-* ‘destroyed’), *tamāt* ‘was born’ < **pok^w-to*, **dhog^{wh}-to*, etc.⁴¹

40 It is instructive to contrast the way these languages treat a thematic present/*s*-aorist root like **ueg^h-* and a true *molō*-type root like **b^herH-* ‘strike’. Go. *ga-wigan* ‘move’, Lith. *vežù* ‘convey’, OCS *vezq* ‘id.’ are all straightforward *e*-grade thematic presents, as are Lat. *uehō*, Greek (Cypriot) *wékhe/o-*, and even Alb. *vjedh* ‘steal’. PIE **b^herH-*, on the other hand, is represented by an *o*-grade athematic present in Old Lithuanian (1 sg. *barmi* ‘I scold’), *o*-grade *je/o*-presents in OCS (*borjō sę* ‘fight’) and Old Norse (*berjask* ‘id.’), and an *e*-grade *je/o*-present in Latin (*feriō* ‘strike’). *molō*-presents were a marked type in PIE, and, for all their importance as a source of insight into the *hi*-conjugation, not especially common.

41 The corresponding forms were secondarily sigmatized in Tocharian B, but retain the tell-tale *o*-grade (*neksate*, 1 sg. *tseksamai*, etc.).

That these forms are historically aorists rather than, e.g., imperfects, is shown, *inter alia*, by the fact that the remaining two class o preterites, viz., *lyökät* ‘lit up (intr.)’ < **louk-to*⁴² and *wākät* ‘split open’ < **uoh₂ǵ-to*, are medialized versions of the *h₂e*-conjugation aorists that underlie Ved. pass. aor. *aroci* ‘shone forth’ (< **louk-*) and Hitt. *wāki* ‘bites’ (< **uoh₂ǵ-*), respectively. Thus, although the details of the relationship between the active and middle forms remain to be clarified (see §§ 14–15), there can be no reasonable doubt that *nai-*, from a root that patterns in the same way as **pek^w-* and **d^heg^{wh}-*, was originally a *h₂e*-conjugation aorist, not a present.

The near-uniformity of the paradigms of *mai-*, *nai-*, *pai-*, *parai-*, *išḫai-*, *išpai-*, *šai-*, *dai-*, *zai-* is partly due to common inheritance, but partly also to analogy and mutual assimilation. A form like 2 sg. impv. *dai* could conceivably be the phonological reflex of a bare stem form **d^heh₁-i*,⁴³ but there is no way that the corresponding imperatives *išpāi* (as if < **spěh₂-i*) or *nāi* (as if < **noiH*) could have been produced by sound change alone. In the 3 sg., it is hard to know which of the present forms *dāi* (theoretically < **-eh₁-i-ei*), *išḫāi* (< **-o₁-ei*), *nāi* (< **-oiH-ei*), and *išpāi* (< **-ēh₂-i-ei*) were phonologically regular and which were analogical.⁴⁴ Such differences as do occur among the monosyllabic diphthongal stems are late and secondary. Thus, notably, *nai-* retains its inherited weak stem *nē-* < **neiH-* (3 pl. *nēanzi*, etc.), while *išḫai-*, a *h₂e*-conjugation aorist of exactly the same structure, substitutes the productive zero grade (3 pl. *išḫi(y)anzi*). The difference is probably due to the robustly attested middle (*nēa(ri)*, *nēanda(ri)*, etc. < **noiH-* or **neiH-* (see § 15)), which helped sustain the allomorph *nē-* in the active. Only *nai-* has such forms. In *pai-*, the weak stem *pi-* replaced the strong stem *pai-* in the preterite plural (1 pl. *piwen*, 3 pl. *piēr*), possibly under the influence of the formally similar *uppa(i)-*, where the zero grade was normal.⁴⁵

42 With initial palatalization taken from the active (3 sg. *lyökäs*); the original distribution is seen in B mid. *lauksāte* vs. act. *lyauksa*.

43 I know of no evidence that would decisively rule out the possibility that the sequence **-eh₁-i-* retained its laryngeal long enough to escape the regular monophthongization of **-ei-* to Hitt. *-e-* (cf. *HIEV* 99).

44 See *HIEV* 99. If, as generally assumed, PIE **-ei* was the source of the normal *hi*-conjugation ending *-i*, either via a special close mid vowel **-ē* or in some other way, then any of the sequences listed—**-eh₁-i-ei*, **-o₁-ei*, **-oiH-ei*, and **-ēh₂-i-ei*—could in principle have given Hitt. *-āi*.

45 “Normal,” at least, in the sense that it was a general feature of disyllabic stems; cf. 3 pl. pret. *uppier*, *mēmier*, *ḫalzier*, *pennier*, etc. The unexpected scriptio plena of the *-i-* in the forms *pışten* (OH/OS), *pīweni* (MH/MS), and *pīwen* (OH/NS), drawn to my attention by Melchert (p.c.), is perhaps to be interpreted as the phonological reflex of the weak stem

Against this background, it is entirely natural that intrusive -s- should have spread from one member of our class—the extremely common verb *nai*—to the others. The form *pišteni*, singled out as problematic by Melchert, is notable only because, following the creation of pret./impv. **paišten* on the model of *naišten* (or perhaps of earlier **pešten* on the model of **nešten*) and the transfer of the -s- from the preterite to the present (**pittēni* → **pištēni* → *pišteni*), the vocalism of the present (*pi-*) was generalized to the preterite, as just discussed. The case of *uštēni*, also cited by Melchert, is entirely straightforward:

	Stage I (no -s-)	Stage II (-s- from <i>nai-</i>)	Stage III (-s- → pres.)
pret./impv.	<i>*autten</i>	<i>*aušten</i>	<i>aušten</i>
pres.	<i>*uttēni</i>	<i>*uttēni</i>	<i>uštēni</i>
... just like			
pret./impv.	<i>*daitten</i>	<i>*daišten</i>	<i>daišten</i>
pres.	<i>*tittēni</i>	<i>*tittēni</i>	<i>tišteni(?)</i> (→ <i>daitteni</i>)

The spread of intrusive -s-, then, must be envisaged as a two-stage process. First, -s- was extended from the preterite and imperative of *nai-* to the preterite and imperative of the other monosyllabic diphthongal stems; then *-(t)tēni* was replaced by *-štēni* in the corresponding present forms.

8 3 sg. *aušzi*, *-šta*

A handful of *hi*-conjugation verbs with intrusive -s- in the 2 pl. also end in *-šta* in the 2, 3 sg. pret. This ending, though often compared in the older literature with similar-looking sequences in Latin (2 sg. perf. *-istī*), Tocharian (2 sg. pret. B *-sta*), and elsewhere, is clearly a Hittite innovation. The oldest attested forms in *-šta* are *aušta* (Old Hittite) and *memišta* (Middle Hittite), from which the ending *-šta* spread to *uppa(i)-*, the compounds of *nai-*, and a few other verbs

**b^{hi}iH-i-* (see HIEV 94). If so, the original form of the strong stem would have been **pyai-* < **b^{hi}icH-i||i-*.

in the Neo-Hittite period (cf. Hoffner-Melchert 2008: 181, n. 6). The real locus of *-šta* must have been *aušta*, where the corresponding 3 sg. pres. is the unexpectedly sigmatic *mi*-conjugation form *aušzi*.⁴⁶ The present in *-šzi* and preterite in *-šta* of this verb are clearly related. The standard view, obviously correct in principle, is that *aušzi* was a back-formation from *aušta* or some predecessor of *aušta*, and that it was created to replace the synchronically anomalous form **āwi* (< **h₁óu-ei*) that would have been inherited as the 3 sg. pres. of *au-* (contrast 1 sg. *ūhhi* < **h₁óu-h₂ei*, 2 sg. *autti* < **h₁óu-th₂ei*).⁴⁷

The interest of *aušzi* and *aušta* lies in what they tell us about the prehistory of the regular *hi*-conjugation 3 sg. pret. in *-š* (*naiš*, *dāš*, etc.). As will be discussed below, there are two widely held positions on the formal history of this ending. According to one view, the *hi*-conj. 3 sg. pret. ended in simple **-s* from the beginning, either because **-s* was a PIE desinence in its own right or because it was originally some kind of PIE stem formative or enlargement followed by a zero ending. According to the other, more widespread view, the 3 sg. in *-š* was the continuant of earlier **-s-t*, most often interpreted as the **-s-* of the *s*-aorist followed by the normal secondary ending **-t*. In the latter case, the treatment of word-final **-st* would have been parallel to that of word-final **-nt*. Inherited final **-nt* gave both *-n* and *-nta* in Hittite: *-n* was the phonologically regular reflex, seen in the nom.-acc. nt. sg. of *nt*-stems (e.g., ptcp. *appan* ‘taken’ vs. animate nom. sg. *appanza*); *-nta* was the morphological (= analogical) reflex, seen in the 3 sg. pret. of *mi*-verbs, where *-t* was maintained or restored under the influence of primary *-zi* < **-ti* (cf. 3 sg. pret. *kuenta* ‘slew’ (ultimately < **g^{wh}én-t*) beside pres. *kuenzi* < **g^{wh}én-ti*). There is no reason why there might not similarly have been two treatments for **-st*—phonologically regular *-š* in the *hi*-conjugation, and “morphological” *-šta* in the 3 sg. pret. of *mi*-verbs with stem-final *-š-* (e.g., *ganešta* : pres. *ganešzi*, *ēšta* ‘was’: pres. *ēšzi*).⁴⁸ A decision between original **-s* and **-st* is not possible on *a priori* grounds.

46 Possibly just as old, but not so well attested in older texts, is *maušzi* : *maušta* ‘fall’.

47 A later development was the spread of *aušta* to the 2 sg., where it replaced “correct” **autta*. A possible trigger would have been the identity, for independent historical reasons, of the 2 sg. and 3 sg. in the semantically related verb *ištamaš* ‘hear’ (pret. *ištamašun*, *-ašta*, *-ašta*; cf. *HIEV* 121).

48 I take no firm position on the phonetics of the final vowel in these cases. The *-a* was almost certainly real, and can be assumed in the absence of evidence to the contrary to have been identical with the final vowel of the 2 sg. in *-(t)ta* (see the preceding note). Forms like Hitt. *kuenta* recall the Slavic 3 sg. aor. in *-tъ* of forms like OCS *piti* ‘drank’ < pre-Slavic **pīt*. In Slavic the retention of the **-t* in sentence sandhi before vowels (**pīt#V* ...) led speakers to infer an elided schwa (**pīt(ə)# V* ...). This was then introduced into other environments, where it had the effect of protecting the otherwise vulnerable final stop.

In the case of *aušzi* and *aušta*, however, it is easy to see that the back-formation of a present **austi* (> *aušzi*) from a preterite **aust* (> *aušta*) would have been a much more straightforward affair than the creation of a new **austi* on the basis of a *t*-less preterite **aus*. If the original ending of the *hi*-conjugation 3 sg. pret. had been **-st*, there would have been literally dozens of *mi*-conjugation verbs to provide a model for a present in **-sti*—not only discrete lexical items like *ganeš-* and *ēš-*, but also the productive class of fientives in pres. *-ešzi* : pret. *-ešta*.⁴⁹ If, on the other hand, the preterite of *au-* had been **aus* from the beginning, it is unclear by what pathway a new **austi* > *aušzi* would have arisen. A conceivable channel might have been the imperative, where the influence of 2 pl. **austen* (*aušten*) could have led, via a non-proportional analogy, to the replacement of theoretically expected 3 sg. **awu* (*vel sim.*) by **austu* (cf. attested *aušdu*). The new 3 sg. impv. **austu* could then have given rise to 3 sg. indic. **austi*. But this is a much less intuitive scenario than simple back-formation of **austi* from **aust*. The *aušzi* : *aušta* pair thus constitutes meaningful evidence for the view that the 3 sg. pret. of the *hi*-conjugation once ended in **-st*.

9 3 sg. pret. *-š*: the Tocharian connection

The question of whether the *-š* of the *hi*-conjugation 3 sg. pret. goes back to simple **-s* or **-st* is separate from the question of its morphological identity. Many scholars (e.g., Eichner 1975: 79 f., Oettinger 1979: 71, 405 f., Kloekhorst 2008b: 688) identify the ending *-š* with the **-s-* of the PIE *s*-aorist and set up **-s-t*; others (e.g., Pedersen 1938: 97, Watkins 1969: 53) maintain the connection with the *s*-aorist but reconstruct bare **-s*.⁵⁰ Melchert (2015) chooses an unusual third option, denying a connection with the *s*-aorist but still setting up **-s-t*, which he sees as having been renewed from earlier *desinential* **-s* by adding the productive 3 sg. ending **-t*. We will take it for granted here, largely on the strength of *aušzi*, *-šta*, that the immediate source of Hitt. *-š*, however it may have come into being, was **-st*. We must now revisit the question of whether the widespread, but not universal identification of this **-st* with the 3 sg. of the *s*-aorist is justified.

49 Joined in later Hittite by forms like *pāšzi* (for *pāši*) ‘swallows’ (cf. § 3), *hašzi* (for *hāši*) ‘opens’, etc.

50 It would go beyond the scope of this work to engage with the presentation of the Hittite and Tocharian data in Willi 2018: 464–479.

The case for equating Hitt. -š with the canonical *-s-t of the PIE 3 sg. s-aorist receives support from what is usually taken to be the reflex of the s-aorist in Tocharian. The active of the much-discussed Tocharian class III (s-) preterite is actually a root formation outside the 3 sg.:

	Toch. B ⁵¹	Toch. A	Proto-Toch.
sg.	1 <i>prekwa</i> ‘I asked’	<i>prakwā</i>	* <i>præk-(ə)wa</i>
	2 <i>prekasta</i>	<i>prakäšt</i>	* <i>præk-(ə)sta</i>
	3 <i>preksa</i>	<i>prakäs</i>	* <i>præk-(ə)sa-[t?]</i>
pl.	1 <i>prekam</i>	<i>prakmäs</i>	* <i>præk-(ə)mə-</i>
	2 * <i>prekas</i> , -kso	* <i>prakäs</i>	* <i>præk-(ə)sə-</i> (cf. § 6)
	3 <i>prekar</i>	<i>prakär</i>	* <i>præk-(ə)rə[s]</i>

The 1–2 sg. and 1–3 pl. consist formally of the root followed by a personal ending, with an intervening schwa of epenthetic origin.⁵² The 3 sg., however, is different: here the root is extended by an extraneous *-(ə)sa-, which is followed by a zero ending proper (presumably < *-t). To understand what makes this paradigm special, compare the class I preterite of B *kaut-*, A *kot-* ‘split’:

	Toch. B	Toch. A	Proto-Toch.
sg.	1 <i>kautāwa</i>	<i>kotā</i>	* <i>kauta-wa</i>
	2 <i>kautāsta</i>	<i>kotašt</i>	* <i>kauta-sta</i>
	3 <i>kauta</i>	<i>kot</i>	* <i>kauta-[t?]</i>
pl.	1 <i>kautām</i>	<i>kotmäs</i>	* <i>kauta-mə-</i>
	2 <i>kautās(o)</i>	<i>kotas</i>	* <i>kauta-sə-</i>
	3 <i>kautāre</i> , -ār	<i>kotar</i>	* <i>kauta-ræ[nt]</i> , -rə[s]

Here the endings are the same, but there is no *-sa- in the 3 sg. The pattern of *kaut-/kot-*, without *-sa-, recurs in the causative preterites of class II (e.g., Toch. B *šärsawa*, -asta, -a, etc.; A *šäsärsä*, *šäsärsäšt*, *šäsärs*, etc. ‘made known,

51 Paradigms taken from Krause-Thomas 1960: 269–270.
52 The schwa was demonstrated by Winter (1993); see Malzahn’s discussion (2010: 191 f.).

taught' (: *kärs*- 'know')) and in the clearly innovative preterite classes IV, V, and VII, which are based on inner-Tocharian imperfects. This means that with the exception of the irregular "class VI" preterites of the roots *käm*- 'come' and *lät*- 'go out',⁵³ all Tocharian preterites other than those of class III follow the class I pattern, with no **-sa*-. The situation can be summed up as follows:

- 1) all active preterites in Tocharian have the same endings in the first and second persons;
- 2) apart from the variable difference between **-rə* (< **-rəs* < **-rs*), which predominates in class III, and **-ræ* (< **-rænt* < **-ront*), which predominates in the other classes, all active preterites likewise have the same ending in the 3 pl.;⁵⁴
- 3) all preterites have the same ending—zero—in the 3 sg. In class III, however, an element **-sa*- is interposed between the root and the zero ending.

While the relevance of the **-sa*- of class III to our Hittite discussion is obvious, the endings of the 1–2 sg. and 1–3 pl. also have a story to tell. The 1 sg. in PToch. **-wa*, the 2 sg. in PToch. **-sta*, and the 3 pl. in PToch. **-rə*/**-ræ*, are clearly connected in some way with the endings of the PIE perfect; some older works even take them directly from the perfect.⁵⁵ Apart from reduplicated participles of the type B *peparku*/A *papräku* 'asked' and *kakautau*/*kākotu* 'split', however, the perfect has left no convincing traces in Tocharian. The *h₂e*-conjugation theory, which posits the existence of presents and aorists with the perfect endings, opens the door to a more attractive possibility. Tocharian preterites continue a number of different formations: "normal" root aorists with **e* : zero ablaut (e.g., B 3 sg. *šarsa* 'knew', mid. *kärsäte* < **kersH*-/**krsH*-); reduplicated aorists (e.g., A *šasärs*), originally thematic; and *h₂e*-conjugation aorists of various types, including the relatively uncontroversial stative-intransitive type with **o* : **e*/zero ablaut (e.g., A 3 sg. *lip*, pl. *lepar* 'remained' < **loip*-/**l(e)ip*-).⁵⁶ The endings **-wa*, **-sta*, etc. must have been generalized from the *h₂e*-conjugation aorist component of the composite category that we know as the "preterite," in

53 Both are significant relics. The preterite of *käm*- (Toch. B 3 sg. *šēm(o)* : pl. *kamem*) is the Tocharian reflex of the PIE root aorist **g^wem*- : **g^wm*-, with interesting features (see note 92 below). The preterite of *lät*- (Toch. B 3 sg. *lac*) is the Tocharian cognate of the well-known PIE thematic aorist (**h₁lud^h-éló-*), otherwise represented by Gk. *éluthon* 'came' and OIr. *luid* 'went'.

54 Cf. Malzahn (2010: 43–44). **-rə* (< **-rs*) is the more archaic variant; **-ræ* (< **-ront*), like the Latin 3 pl. perf. in *-runt*, is a blend of **-r(s)* and the formally unrelated 3 pl. ending **-ont*. A possible historical reason for the association of **-rə* with class III and **-ræ* with the other classes is offered in note 83.

55 So, e.g., Krause-Thomas 1960: 247, Adams 1988: 82 f.; but see HIEV 175 ff.

56 With, among other apophonic peculiarities, *o*-grade (*lep*- < **loip*-) in the plural. See § 13.

much the same way that the endings of the PIE perfect were generalized in the historical *mélange* that we know as the “perfect” in Latin.

As seen over a half-century ago by Ivanov (1959: 29–31) and Watkins (1962: 61 ff., 99 ff.), the class III preterite bears a striking resemblance to the preterite of the *hi*-conjugation in Hittite. Compare, e.g., the preterite of *dāš*:-

sg.	1	<i>dāḥḥun</i>	pl.	<i>dāwen</i>
	2	<i>dātta</i>		<i>dāttēn</i>
	3	<i>dāš</i>		<i>dāir</i>

Ivanov and Watkins were impressed by the isolation of the sigmatic 3 sg. in both languages, but had no useful framework for dealing with the numerically predominant *s*-less forms. These, however, are equatable as well. Outside the 3 sg., the endings of Hittite *dāḥḥun*, etc. are the secondary endings of the *hi*-conjugation/*h₂e*-conjugation, matching the endings of Toch. **præk-(ə)wa*, **(ə)sta*, etc., which, as just discussed, are the endings of a *h₂e*-conjugation aorist. It is hardly likely that this combination—**-s-* in the 3 sg., *h₂e*-endings elsewhere—could have developed independently in Anatolian and Tocharian. We therefore have no choice but to assume, whatever we make of it, that a type of aorist with a 3 sg. in **-s(t)* and *h₂e*-inflection elsewhere already existed in PIE. In my 2003 discussion of the problem (*HIEV* ch. 7), I characterized this formation as a suppletive “presigmatic aorist,” from which later emerged, by generalization of the **-s-* throughout the active, the fully sigmatic aorist of the Inner IE languages.⁵⁷ I did not at the time seriously consider the logical possibility, recently reintroduced into the discussion by Melchert 2015, that the **-s(-)* of the 3 sg. was a desinence.

10 Desinential **-s*?

As an alternative to assuming a presigmatic aorist for PIE, which he emphatically rejects, Melchert proposes (2015: 129) that “the *original h₂e*-aorist third singular ending was simply **-s* (thus already Watkins 1969: 54 and Yoshida 1993: 33–34), probably renewed already in PIE (though parallel independent renewal cannot be entirely excluded): **-s* → **-s-t*.” He denies any connection between this desinential **-s* and the **-s-* of the *s*-aorist, which he assumes to have been a wholly separate formation, fully developed in PIE. In this respect he differs

⁵⁷ So already *in nuce* Jasanoff 1988b.

from at least Watkins, for whom the radiation of the classical *s*-aorist from the 3 sg. was a cardinal point of doctrine.

From a purely Hittite point of view, *-š* is indeed the synchronic 3 sg. secondary ending corresponding to the 1 sg. in *-(h)hun*, the 2 sg. in *-(t)ta*, etc. Melchert's distinctive move is to project this state of affairs back to PIE, thus eliminating the need for a separate explanation of the Hittite ending on the basis of the *s*-aorist. But the price of assuming both a desinence **-s* and a formally unrelated "classical" *s*-aorist is very high. Since the paradigms *dāḥ-hun*, *dātta*, *dāš*, etc. and *prekwa*, *prekasta*, *preksa*, etc. are "cognate," Melchert has to analyze the *-s* of 3 sg. *preksa* as historically desinential as well.⁵⁸ This forces him to separate the *-s* of *preksa* from the *-s* of a series of other, fully sigmatic paradigms in Tocharian that one might have thought were related. Thus, e.g., the productive form of the *middle* of the class III preterite, which has *-s* throughout, is obviously inseparable from the *s*-aorist *middle* in Greek and Indo-Iranian; cf. Toch. B *parksamai*, *-satai*, *-sate*, 3 pl. *parksaṇte* (A *prākse*, *-sāte*, *-sāt*, 3 pl. *prāksānt*), exactly like Gk. *elusámēn*, *-sa[s]o*, *-sato*, Ved. *aneṣi*, *-ṣṭhāḥ*, *-ṣṭa*, and (NB!) OAv. *frašī* (< **prék-s-*) 'I take counsel'. Melchert cautiously accepts the historical identity of these latter forms. He makes a distinction, however, between 3 sg. act. *preksa* and 3 sg. mid. *parksaṇte*: *preksa*, he says, is a *h₂e*-conjugation aorist with originally desinential *-s*; *parksaṇte* is the formally unrelated 3 sg. middle of a bona fide *s*-aorist with suffixal *-s*. No respecter of Occam's Razor can be comfortable with this position. Also associated with the class III preterite is the fully sigmatic present type in **-se/o-* (class VIII): cf. Toch. B 1 sg. *preksau* 'I ask', 3 sg. *preksām*, 3 pl. *prekseṇ* (A *praksam*, *prakš*, *prakseñc*) beside pret. *prekwa*; further pres. *naksau* 'I destroy' beside pret. *nekwa* 'I destroyed', etc. In *HIEV* 180–182 and earlier publications I identified these as historical *s*-aorist subjunctives—an analysis to which Melchert is apparently well-disposed. Here too, however, he has to deny any hint of a connection with the *-s* of *preksa*.

At this point the reader may be tempted to ask whether a simpler, less stipulative version of Melchert's desinential **-s* scenario might not be more satisfactory. Could the classical *s*-aorist have come into being, for example, through a post-IE Watkins-style reanalysis in which the desinential **-s* of *h₂e*-conjugation forms like **prók-s* 'asked', **nok-s* 'destroyed', etc. was reanalyzed as a tense sign? This would have the advantage of eliminating the full-blown *s*-aorist altogether in PIE proper (i.e., the common ancestor of Anatolian, Tocharian

58 It is clear from his account that he envisages a PIE 3 sg. **prók-s(-t)*, though the form is not explicitly spelled out.

and the “Inner” languages), and with it the awkward redundancies just noted. But the facts are not so simple. The classical *s*-aorist is standardly, and with good reason, reconstructed with Narten ablaut, with $\bar{e}$ -grade in the strong forms of the active. Lengthened grade is also unambiguously present in the Tocharian class III preterite, where it is reflected by PToch. $*\bar{a}$ - with preceding palatalization (cf. Toch. A 3 sg. *ñakäs*, pl. *ñakär* ‘destroyed’ < $*\bar{n}æk$ -(*s*-) < $*\bar{n}ēk$ -(*s*-) (not < $*\bar{n}ok$ -(*s*-)); Toch. B 3 sg. *lyauksa*, pl. *lyaukar* ‘illuminated’ < $*\bar{ly}æwk$ -(*s*-) < $*\bar{l}ēuk$ -(*s*-) (not $*\bar{l}ouk$ -(*s*-); cf. Malzahn 2010: 200ff.).⁵⁹ If the class III preterite had simply been a h_2e -conjugation aorist with *o*-grade in the strong forms and a 3 sg. in $*\bar{s}$, there would be no way to explain the $\bar{e}$ -vocalism of these forms. This is why Melchert needs the *s*-aorist: the similar-looking reflexes of $*\bar{n}ok$ -, $*\bar{l}ouk$ - (> PToch. $*\bar{n}æk$ -, $*\bar{l}æwk$ -), proper to the h_2e -conjugation aorist, and $*\bar{n}ēk$ -, $*\bar{l}ēuk$ - (> PToch. $*\bar{n}æk$ -, $*\bar{ly}æwk$ -), proper to the *s*-aorist, were confused, he says, through “the fatal merger of $*o$ and $*\bar{e}$ into ... $*\bar{æ}$.” The result was the intrusion, in effect, of $*\bar{n}ēk$ -/ $*\bar{n}æk$ - and $*\bar{l}ēuk$ -/ $*\bar{ly}æwk$ -, “borrowed” from the *s*-aorist, into the h_2e -conjugation paradigm. To the extent the desinential theory is viable at all, it requires an external (i.e., non- h_2e -conjugation) source for the lengthened grade of forms like Toch. A *ñakäs*.

All this is a major reason why, in my view, the desinential theory is *not* viable. Melchert is correct that since the Tocharian endings $*\bar{wa}$, $*\bar{sta}$, etc. were generalized from a nucleus of h_2e -conjugation aorists (§ 9), one might have expected the 3 sg. in $*\bar{s}$ (*t*) also to have some kind of deep historical connection to the h_2e -conjugation. But whatever the nature of this connection was, it cannot simply have been that $*\bar{s}$ ($\rightarrow$ $*\bar{st}$) was the regular Tocharian continuant of the 3 sg. h_2e -conjugation secondary ending, parallel to 1 sg. $*\bar{wa}$ and 2 sg. $*\bar{sta}$. If $*\bar{s}$ had been the normal 3 sg. ending of a h_2e -conjugation aorist, it would surely have been generalized, like $*\bar{wa}$ and $*\bar{sta}$, throughout the Tocharian preterite, and not just to class III. The common-sense inference, rather, is that a subset of the numerous pre-Tocharian preterites that rested on h_2e -conjugation aorists for some reason *substituted* $*\bar{s}$ (*t*) for $*\bar{e}$ in the 3 sg. active. h_2e -conjugation aorists of this special “presigmatic” type were inherited into Anatolian as well. Within Anatolian, $*\bar{s}$ (*t*) was eventually generalized from the presigmatic nucleus to all h_2e -conjugation/ hi -conjugation preterites in Hittite. It was lost in Luvian.

In support of his case for a desinential $*\bar{s}$ in the 3 sg., Melchert cites the supposed identity of this ending with the $*\bar{s}$ that he sets up in the 2 pl.: “The

59 As first pointed out by Ringe (1990: 185–186), palatalization is general in Toch. A but confined to the active. In Toch. B palatalization is lexically restricted but found in both voices. On B *lyauksa* vs. *lauksāte* see note 42.

presence of an ending **-s* just in the third singular and second plural of the *h₂e*-aorist can hardly be a coincidence, since it *matches* the same peculiar distribution of the ending **-e* in the *h₂e*-present and is equally unmotivated" (2015: 129). But it is not at all clear that **-e*, rather than some other sequence of the form **(H)e/o*, was the source of the supposed *h₂e*-conjugation ending underlying the Vedic and Avestan 2 pl. perfect in *-a* (cf., e.g., Ved. *vidá* 'you (pl.) know').⁶⁰ And in any case, whether or not the 3 sg. and 2 pl. perfect/*h₂e*-conjugation present endings were segmentally identical, the purported 2 pl. in **-s*, as we have seen, is a fiction, based on an incorrect interpretation of Hitt. *-šten* (§ 5) and Toch B *-s*, *-so* (§ 6).

From a wider theoretical point of view, a *h₂e*-conjugation 3 sg. desinence **-s* makes little sense. The endings of the perfect, *h₂e*-conjugation, and middle are formally related; all go back to a pre-PIE "*H*-series," from which the familiar variants (e.g., 1 sg. perf. **-h₂e*, 1 sg. *h₂e*-conj. pres. **-h₂ei* (pret. **-h₂e*), 1 sg. mid. pres. **-h₂er* (pret. **-h₂e*), etc.) emerged via a process of differentiation. The basic form of the 3 sg. ending is reconstructable as **-e* or **-e/o*. If, as claimed in effect by Melchert, this **-e* or **-e/o* had, so to speak, a "companion form" **-s* that took its place in the *h₂e*-conjugation aorist, the **-s* would have to have been the secondary ending corresponding to primary **-e*. But this is unlikely for several reasons:

- 1) nowhere else in the system of *H*-series endings is the primary : secondary distinction marked by anything more deeply embedded than a *hic et nunc* particle (**-i* or **-r*);⁶¹
- 2) the perfect, a category with only unrenewed and hence "secondary" endings (cf. 1 sg. **-h₂e*, not **-h₂ei* or **-h₂er*), has **-e*, not **-s* in the 3 sg. (**uóide*);
- 3) *h₂e*-conjugation aorists of the stative-intransitive type likewise had **-e*, not **-s* in the 3 sg. This is why the reflexes of this type—the class v subjunctive (type A *wekaš* : **wikeñc*; cf. § 1) and class I preterite (A *lip* : *lepar*; § 9) in Tocharian, and the passive aorist in Indo-Iranian (Ved. *ádarši* : *adṛśran*; § 1)—show no sign of sigmatic morphology (see below).

In short, it is hard to avoid the conclusion that the hypothesis of a *h₂e*-conjugation desinence **-s* creates more problems than it solves.⁶²

60 As authority for the reconstruction **-e* in the 2 pl. Melchert cites *HIEV* 32, where **(H)e* is set up on the strength of Paelign. *lexe* 'you (pl.) have read'. But as Michael Weiss points out to me (p.c.), it is not out of the question that this form was simplified from **leg-s-te*, with ending **-te*.

61 In some cases the endings of the *mi*-series are brought in to help, as, e.g., in the pluperfect (Ved. 3 sg. perf. *dīdāya* 'shines', plpf. *ádīdet*; etc.).

62 In two recent publications, Kümmel (2016: 83–86, 2018: 245–250), partly building on

11 The presigmatic aorist: descriptive

In what follows we will use the term “presigmatic aorist” to refer to the subclass of PIE *h₂e*-conjugation aorists in which the normal ending **-e* was replaced by **-s(t)* in the 3 sg. active. Aorists of this type, *ex hypothesi*, were the source of class III preterites in Tocharian and *hi*-conjugation preterites in Hittite. More can be inferred about them from other facts we know:

- 1) Neither Anatolian nor Tocharian has a classical *s*-aorist. Therefore, since a critical mass of Tocharian class III preterites correspond etymologically to *s*-aorists in the Inner IE languages (e.g., the preterites of *nām-*, *pāk-*,

Melchert's discussion of Hitt. *-š*, argues for a parallel desinence **-s* in Indo-Iranian. The case is very tenuous. On the Indic side, the 3 sg. root aorist optatives in *-yāḥ* and **-īḥ* (the latter presupposed by precatives of the type *jéśma* ‘we would win’ and *yeṣam* ‘I would travel’) were originally proper to the *s*-aorist, and go back, as I have argued, to **-yāst* and **-īšt*, respectively; see *HIEV* 186–188 and the discussion of the presigmatic aorist optative at the end of this section. The R̥gvedic hapax *dhāyīḥ* likewise looks very much like a precativ. The isolated 3 sg. *s*-aorists *ápāḥ* (: *pā-* ‘drink’) and *apráḥ* (along with *dhāḥ*, *atārīḥ*, and a few other post-R̥gvedic forms), so far as I can see, do nothing to strengthen the case for **-s* as opposed to **-st*. In Iranian, Avestan has the much-discussed optatives YAv. *fratuiiā* and **aiṣituiiā* (< **-āḥ*) ‘have power’; following Hoffmann 1967: 28–29, these are most often explained as 2 sg. forms. Avestan also has the *t*-less 3 sg. *s*-aorists *āiš*, *xšnāuš*, *vqs*, *sqs* (vs. *dārōšt*, with *-t*), but the value of these is undercut, as Kümmel recognizes, by the observable simplification of **-st* to **-s* in the imperfects *ās*, *cinas*, and *didqs*. The situation is more puzzling in Old Persian. Here the normal secondary ending **-t* has been uniformly replaced by *-š* in *ruki* environments; cf. 3 sg. impf. *āiš*, *akunauš*, *adəršnauš* and 3 sg. opt. *kəriyaiš*, *vināḍayaiš*, *fraḍtiyaiš*. Given the crosslinguistic tendency of optatives to develop into iterative preterites, it is probably best to look for the formal origin of this *-š* in the optative of the *s*-aorist. As in Vedic, we can assume a remodeling of the 3 sg. *s*-aorist opt. in **-īt* to **-īšt* in the prehistory of Old Persian, with **-št* subsequently spreading to the present system and taking on preterital value. On the basis of the 3 sg. in *-š* (< **-št*) an analogical 3 pl. in *-šan* was created, seen, e.g., in *mā yadiyaiša_n* ‘they should not be sacrificed to’, *akunavaša_n* beside *akunava_n* ‘they made’, etc. A 3 sg. **abara_n* is inferred by Kümmel from 3 pl. *abara_m*, *aba[ra]ha_n* ‘they brought’, but the status of this form is uncertain. The possibility of an original 3 sg. in **-ast* cannot be excluded.

Kümmel further claims (2016: 87–88, 2018: 250–251) that there was a formal relationship between the alleged Indo-Iranian 3 sg. in **-s/-š* and the 3 pl. ending that he writes as **-r-s* (so earlier Cowgill 1979: 39). It is true that the supposed 3 sg. in **-s* is paired with a 3 pl. in **-rs* in some Indo-Iranian optatives and in the PIE paradigm of the presigmatic aorist (see below), but the distribution of the two endings was not otherwise parallel. In my view, the **-s* of **-rs* was not a morpheme, but an organic part of the unanalyzable original 3 pl. ending of the *H*-series, like the **-t* of the active 3 pl. in **-nt* (cf. *HIEV* 32–34).

tsäk-; also of *pärk-*, etc.; cf. § 4), the natural assumption is that the presigmatic aorist, with its partially sigmatic paradigm, was the *source* of the fully developed classical *s*-aorist.

- 2) The Narten ablaut of the classical *s*-aorist and the *ē*-grade of Toch. A 3 sg. *ñakäs*, pl. *ñakär*, etc. show that lengthened grade must have been proper to some position or positions in the presigmatic paradigm.
- 3) Since the *s*-less, non-3 sg. *h₂e*-conjugation component of the presigmatic paradigm had **o* : **e*/zero ablaut, the specific locus of the lengthened grade could only have been the sigmatic 3 sg.

We are thus led to posit a PIE paradigm

sg.	1	<i>*prók-h₂e</i>	pl.	<i>*prók-me-</i>
	2	<i>*prók-th₂e</i>		<i>*prók-(t)e-</i>
	3	<i>*prék-s-t</i>		<i>*prék-rs</i>

Compare the slightly different version in *HIEV* (178).⁶³ It cannot be emphasized too strongly that this composite reconstruction, despite its aberrant and clearly heterogeneous 3 sg., is based on close-to-the-surface comparative evidence. Most of the details of the paradigm, including the **o* : **e* ablaut of the non-3 sg. forms, follow directly from the etymological equatability of the *dāḥ-hun* and *prekwa* paradigms in Hittite and Tocharian, respectively. The lengthened grade of the 3 sg. is necessitated by the palatalization of *ñakäs*, *-är* in Tocharian and the ablaut of the *s*-aorist in the Inner IE languages (Ved. *ávāt*, Lat. *uēxī*, etc.). The basis for locating the “home” of *ē*-vocalism specifically in the 3 sg. will be taken up further in § 14.

Before considering the obviously looming question of how a paradigm of this type could have come into being, we must round out our synchronic picture with a survey of what we know about the distribution of sigmatic and non-sigmatic forms in the presigmatic aorist outside the active indicative. The overview below follows the general outlines of *HIEV* 179–188, with a few differences of emphasis and detail.

Two distinct middle paradigms are associated with the reflexes of the presigmatic aorist in our data. One is the fully sigmatic formation that we recognize

63 The paradigm in *HIEV* has *e*-grade rather than *o*-grade in the 1–2 -pl. But since the 1–2 pl. (and 1–3 du.) were strong positions in the “normal” root aorist (cf. Ved. *ākarma*, *ākarta*, etc.), it is more economical to assume they were strong in the *h₂e*-conjugation root aorist as well (Jasanoff 2013: 108). The assumption of *o*-grade in the 1–2 pl. also comports better with the ablaut patterns of *hi*-verbs in Hittite (cf. Melchert 2013: 142 f.) and class I preterites and class V subjunctives in Tocharian (see § 13).

as the familiar *s*-aorist middle in Indo-Iranian and Greek. Forms of this type, as noted above, are well attested in Tocharian, where they constitute the “normal” middle of the class III preterite (cf. Toch. B *parksamai*, *-satai*, etc. = A *präkse*, *-säte*, etc.). In § 7 we met another, more restricted type of class III-affiliated middle, viz., the “class o” type exemplified by the six Toch. A forms *pakät*, *tsakät*, *nakät*, *tamät*, *lyökät*, and *wäkät*.⁶⁴ These are intransitive (anti-causative) *o*-grade middle root aorists (< **pok^w-to* ‘grew ripe’, **dhog^{wh}-to* ‘burned up’ (intr.), **nok^w-to* ‘perished’, etc.), synchronically opposed to the (attested or safely inferrable) transitive *s*-preterites **pakäs* ‘cooked, made ripe’ (< **pēk^w-s-t*), **śakäs* ‘burned’ (tr.) (< **dhēg^{wh}-s-t*), and *ñakäs* ‘destroyed’ (< **nēk^w-s-t*), etc. Based on their realizations in Tocharian, the two configurations can be displayed as follows:

Pattern 1 (productive)	Pattern 2 (non-productive)
1 sg. act. <i>*prók^w-h₂e</i> ‘asked’	1 sg. act. <i>*nók^w-h₂e</i> ‘destroyed’
3 sg. act. <i>*prēk^w-s-t</i> “	3 sg. act. <i>*nēk^w-s-t</i> “
3 sg. mid. <i>*prek^w-s-to</i> ‘asked for oneself’ ⁶⁵	3 sg. mid. <i>*nók^w-[t]o</i> ⁶⁶ ‘perished’

Only pattern 1, with **-s-* running through the entire middle, is attested in the Inner IE languages (cf. *elusámēn*, *elúsa[s]o*, *-sato*, etc.; see, however, § 15 (end)). Hittite, by contrast, has only pattern 2. The significant and revealing lexical item in Hittite is *nai-*, the one *hi*-verb with an *s*-aorist cognate in Inner IE (Hitt. *nēḫhun*, *naitta*, *naiš*, etc. ≡ Ved. *anaīṣam*, **anaīḥ*, etc.). The profile of *nai-*, with its bivalent semantics (‘turn (tr.)’ (act.), ‘turn (intr.)’ (mid.)), is exactly the same as that of the Tocharian pattern 2 roots *nāk-*, *tsāk-*, etc. The *s*-less middle *ne(y)aḫḫat*, **ne(y)attat*, *ne(y)at*, etc. must therefore rest on a dentalless 3 sg. mid. of the type **nóiH-o*.⁶⁷

64 The preterite of *yām-* ‘do’, which Malzahn also assigns to class o, patterns differently and appears to be unrelated to the other forms.

65 The middle of Toch. *pärk-*, according to Schmidt 1974: 376 ff., means ‘ask, bring up a question’, which I take to be a specialization of the “true” (i.e., non-valency-reducing) middle sense.

66 The **-to* of the class o preterites is a replacement of dentalless **-o*. Inner-Tocharian evidence for bare **-o* is found in the development of the corresponding class III subjunctives (type *emetär*, *tsketär*, *nketär*; cf. § 15).

67 Or **néiH-o*, with analogical *e*-grade; see § 15.

Of the modal forms of the presigmatic aorist, the subjunctive is reflected, as I argued in *HIEV*, in the class VIII (*-se/o-) presents of Tocharian (type B *prek-sau*, A *praksam*).⁶⁸ Malzahn's discussion of the historical position of class VIII (2010: 429–432) shows (though this is not her intent) that there is no coherent alternative to this view. Since class VIII is fully sigmatic and the class III preterites are sigmatic only in the 3 sg., it is hardly credible that class VIII was created *from* class III within the internal history of Tocharian. Adams' objection (1994: 4f.) that PIE subjunctives are not normally the source of presents in Tocharian, though correct as far as it goes, is neutralized by the fact that the well-established class II (thematic) present of the root B *klyaus-/A klyos-* 'hear' (B 3 sg. *klyaušäm*, etc.) is historically the subjunctive (**kleu-s-e/o-*) of a Narten *s*-present **klēu-s-* (cf. § 3).⁶⁹ And while it is true that full-grade *s*-aorist subjunctives of the type **nek-s-e/o-*, **d^heg^{wh}-s-e/o-*, etc. would regularly have given palatalized **ñäk-s-*, **šäk-s-*, etc. rather than the attested *näk-s-*, *tsäk-s-*, etc., root-initial palatalization has been so heavily morphologized in Tocharian that its absence is never probative (pace Hackstein 1995: 159–165, and Adams loc. cit. and 2012: 48f.).⁷⁰ As mentioned earlier (cf. note 59), initial palatalization is also systematically absent in the Toch. A reflex of the *s*-preterite middle indicative (pattern 1), where the root certainly had *e*-grade.

It may seem a fool's errand to inquire into the fate of the presigmatic aorist subjunctive in Hittite, since the PIE subjunctive was lost in Anatolian. But its disappearance was not total. As seen above, the historical *si*-imperative *paḥši* was haplogized from a 2 sg. subj. **peh₂sesi* (§ 3), and the imperative *nešhut* implies a *si*-imperative **nēši*, haplogized from a 2 sg. subj. **neiHsesi*

68 In this particular case, with analogical root vocalism (*-æ-) from the preterite and subjunctive.

69 It can hardly be accidental that the same inherited subjunctive that underlies the *si*-imperative *päklyauš* and the thematic present *klyaušäm* in Tocharian was also the source of a *si*-imperative and a thematic present in Vedic (*si*-impv. *śróṣi* : pres. 3 pl. *śroṣan*, impv. *śroṣantu*, ptcp. *śróṣamāna-*). Note also Ved. *si*-impv. *nakṣi* 'come!' (< *'reach!') beside pres. *nákṣati* 'reaches', ptcp. *nákṣamāna-*, etc., evidently based on the subjunctive of a desiderative *s*-present **h₂nek-s-* (cf. LIV 282–284). Perhaps there was something about the semantic "chemistry" of the subjunctive + desiderative combination that predisposed some subjunctives in *-se/o- to develop ordinary present indicative readings. Be that as it may, the post-IE profile of the subjunctives **kleu-s-e/o-* and **h₂nek-s-e/o-* removes any obstacle to thinking that a subjunctive **prek-s-e/o-* could have developed into a present in Tocharian, especially if, as claimed below, the specific stem **prek-s-e/o-*, though synchronically part of the presigmatic aorist, was historically the subjunctive of a Narten desiderative *s*-present **prek-s-*. See further § 14.

70 See in rebuttal Penney 1998; further Kim 2006: 133f. I am not persuaded that there is any evidence for the zero-grade *s*-presents to which Adams traces class VIII.

(§ 4). It is no accident that the unique *nešhut* is specifically a form of *nai-*. All *hi*-conjugation verbs belong to one of three types: 1) former *h₂e*-conjugation presents, 2) former *h₂e*-conjugation aorists of one of the non-presigmatic varieties (e.g., stative-intransitive aorists), and 3) former *h₂e*-conjugation aorists of the presigmatic type. Owing to the productivity of the 3 sg. pret. ending -š, which spread from the presigmatic type to the *hi*-conjugation as a whole, it is easy to make the mistake of supposing that the three “input” classes fell together in every other respect as well. That this was not the case is shown by *nešhut*, **nēši* and their analogical spinoffs *naišten*, *naišdumat*, etc. (§§ 4–5). PIE **neiH-* belonged to the small nucleus of roots that passed into Anatolian with a presigmatic aorist. It thus inherited, along with the indicative **nóiH-h₂e*, **nóiH-th₂e*, **néiH-s-t*, etc., a subjunctive **néiH-s-e/o*—the Hittite counterpart, so to speak, of a Tocharian class VIII present. Unlike the 3 sg. indicative in **-s-t*, the subjunctive in **-se/o* never spread to other *hi*-verbs. But the haplogitized 2 sg. subj. **neiH-si*/**nēši* survived long enough to engender *nešhut*, **nešten* (→ *naišten*), and, ultimately, the phenomenon of intrusive -s-. See further § 16.

The subjunctive of the PIE presigmatic aorist, then, was built to the sigmatic “stem” of the indicative. It was otherwise with the optative. Hittite, where the optative has well and truly disappeared, has nothing to tell us here; our sources of information are Tocharian and, unexpectedly, Indo-Iranian. The formation of the Tocharian optative is usually passed over quickly because of the synchronic rule, repeated in all the major handbooks, that the optative is formally based on the subjunctive stem. Thus, e.g., the 3 sg. opt. of *pärk-* ‘ask’ in Toch. B is *parši* (< pre-Toch. **prék-ih₁-t*), descriptively built to the (non-sigmatic) class I subjunctive 3 sg. *prekām*, pl. *parkām* (< pre-Toch. **prók-/prék-*). But synchronic regularities have historical explanations, and in this case the explanation is of considerable interest. The class I subjunctive whose optative was **prék-ih₁-* was a reflex—a second reflex, as we shall see—of the very same *h₂e*-conjugation aorist (**prók-/prék-*) whose indicative furnished the non-sigmatic *h₂e*-conjugation stem of the class III preterite (*prekwa*, etc.). The process of paradigm split by which *h₂e*-conjugation aorists yielded preterites and subjunctives in Tocharian will be discussed in § 13.

As first pointed out by Hoffmann (1967: 31f.), the most important fact about the optative of the *s*-aorist in the oldest Indo-Iranian is that, at least in the active, it is virtually non-existent. Where an *s*-aorist optative in **-s-yā-* or **-s-ī-* is expected, we find instead the optative of a root aorist: cf., e.g., Ved. opt. *sahyā-* beside *s*-aor. *sākṣ-* (: *sah-* ‘prevail’), *yamyā-* beside *s*-aor. *yāmṣ-* (: *yam-* ‘yield’), GAv. opt. 1 pl. *zāēmā* beside *s*-aor. **zāh-* (: *zā-* ‘win’), YAv. 3 sg. *vainūt* beside *s*-aor. subj. *vāngha-* (: *van-* ‘gain’). The reason for this anomaly is the same, *mutatis mutandis*, as in Tocharian: the form that serves as the optative of the *s*-aorist

is historically the optative of the *presigmatic* aorist, which in the case of the optative was based on the non-sigmatic, *h₂e*-conjugation component of the presigmatic aorist stem. Since aorists of the type **prók-/prék-*, unlike “normal” root aorists with **e* : zero ablaut, were acrostatic, they inherited optatives with fixed accent on the root and consistent zero grade of the optative suffix.⁷¹ The acrostatic pattern was abandoned in regularized Vedic forms of the type 2, 3 sg. *sahyāḥ*, 1 pl. *sāhyāma*, and 3 sg. *yamyāḥ*, which were remade to conform to the normal optative type in *-yā-*. But the expected zero grade of the optative suffix is still directly attested in a few forms, notably 1) YAv. *vainī̯t* (< **uén-ih₁-t*; the equivalent form in Vedic would have been remade to **vanī̯āḥ*);⁷² and 2) the Vedic precatives (= sigmatized optatives) in *-eṣ-*, a formation discussed in *HIEV* 186–188. The precativ in *-eṣ-* is confined to the roots *ji-* ‘conquer’ (1 sg. *jeṣam*, 2 sg. *jeḥ*, 1 pl. *jéṣma*) and *yā-* ‘go’ (1 sg. *yeṣam*) in the Rigveda; in later Vedic the type spread to other verbs in *-ā-* (e.g., *sthā-* ‘stand’ (*stheṣam* (VS), 3 pl. *stheṣuḥ* (AV)), *gā-* ‘go’ (*geṣam* (VS), *geṣma* (AV), and others).⁷³ Since the two founding roots, *ji-* and *yā-*, both made *s*-aorists (*ajaiṣam*, *ayāsam*, etc.), their inherited presigmatic aorist optatives would have been Ilr. **já̯i-ī-* (< **g^wé̯i-ih₁-*) and **iá̯i-ī-* (< **iéh₂-ih₁-*), respectively. There was thus a pre-Vedic stage when the indicative of the *s*-aorist had been fully sigmatized and final clusters had not yet been simplified:⁷⁴

Optative				Indicative
sg.	1	<i>*iá̯i-ī̯-m̥</i>	(< <i>*iéh₂-ih₁-m̥</i>) ⁷⁵	<i>*á-iā-s-m̥</i>
	2	<i>*iá̯i-ī̯-š</i>	(< <i>*iéh₂-ih₁-s</i>)	<i>*á-iā-s(-s)</i>
	3	<i>*iá̯i-ī̯-t</i>	(< <i>*iéh₂-ih₁-t</i>)	<i>*á-iā-s-t</i>

71 As in Narten presents; cf. 3 sg. opt. **uélh₁-ih₁-t* (> Lat. *uelit* ‘wants’, Go. *wili* ‘id.’, OCS *-veliti* ‘orders’) : **uělh₁-* ‘choose’.

72 Wrongly listed without the asterisk in *HIEV*. Depending on the interpretation of the Avestan and Old Persian optatives discussed in note 62, the Proto-Indo-Iranian preform corresponding to YAv. *vainī̯t* would have been **uánīt* (so *HIEV*) or **uánīšt*.

73 The classic discussion of these forms is by Hoffmann (1967).

74 That such a stage would have existed is not in doubt, since the sigmatization of the indicative was of Inner IE date and final **-st* survived into Proto-Iranian.

75 With quasi-regular failure of Stang’s Law, the IE-internal rule by which /-VHm/ “should” have developed via **-Vmm* to **-Vm*. Stang’s Law never applies in the 1 sg. optative, suggesting the possibility that **h₁* was not part of the environment for the rule.

A simple proportion now introduced *-s- into the 3 sg. of the optative:

2 sg. indic. *áīās (/s-s/) : 3 sg. *áīāst :: 2 sg. opt. *íāĩš̃ : 3 sg. X,

where X was solved as *íāĩš̃t. From sigmatized *íāĩš̃t (> *yéħ) was extracted the precative stem *íāĩš̃-/yeš-. Later, the rule that the 3 sg. of the athematic aorist optative ended in /-st/ was extended even to the “normal” root aorist type in -yā-, whence the creation of the regular precative in -yās- (3 sg. *bhūīāt → *íāĩst > bhūyāħ, prec. bhūyāsam, etc.).

12 The progress of sigmatization: overview

The progressive sigmatization of the presigmatic aorist from the more to the less archaic branches of the family can be displayed as follows:

	PIE	Hittite	Tocharian	Indo-Iranian	Greek
1–2 sg., 1–3 pl. act. indic.	non-sigmatic (*prók-h ₂ e, etc.)	non-sigmatic (neħhun, etc.)	non-sigmatic (B prekwa, etc.)	sigmatic (ánaīsam, etc.)	sigmatic (élusa, etc.)
3 sg. act. indic.	sigmatic (*prék-s-t)	sigmatic (naiš)	sigmatic (B preksa)	sigmatic (ánaīħ)	sigmatic (éluse)
1–3 sg./pl. mid.	a) non-sigmatic (*nóiH-o or *-e) ⁷⁶	non-sigmatic (ne(y)at)	non-sigmatic (A nakät)	–	–
	[? b) sigmatic ⁷⁷ (*prék-s-to, etc.)	–	sigmatic (B parksate)	sigmatic (áneṣṭa)	sigmatic (elúsato)]
subjunctive	sigmatic (*prék-s-e/o-)	sigmatic (nešħut)	sigmatic (B preksau, etc.)	sigmatic (néša-)	sigmatic (lúsomen) ⁷⁸
optative	non-sigmatic (*prék-ih ₁ -)	–	non-sigmatic (B parší)	non-sigmatic (yamýā-)	sigmatic (lúseie)

76 On the question of whether the ending here was *-e rather than *-o see § 14.
77 See § 15.
78 1 pl. subj., chosen to illustrate the “short-vowel” subjunctive of the s-aorist in Greek.

13 The presigmatic aorist in Tocharian

The presigmatic aorist split into two daughter paradigms in Tocharian, one a preterite (class III), and the other a subjunctive (class I). This double treatment was briefly noted above in connection with the optative **prék-ih₁-* (> Toch. B 3 sg. *parśi*), where the *h₂e*-conjugation aorist stem **prók-/prék-* was the source of both the class I subjunctive (3 sg. *prekäm*, pl. *parkäm*) and the non-sigmatic component of the class III preterite (*prekwa*, *prekasta*, etc.). It is time now to examine this pattern more systematically.

Tocharian subjunctives, which in function combine modal and future value, go back to former indicatives. Sometimes the underlying indicative is a present. When this is the case, the synchronic subjunctive and synchronic present can stand in various possible formal relationships to each other. Thus, e.g., the two stems can be identical, as in the case of many presents in *-sk-*, e.g., B *anā-sk-* (pres. and subj.) ‘breathe’; or the present can be a recharacterized form of the stem that underlies the subjunctive, e.g., B *kär-nā-sk-* (pres.) vs. *kär-nā-* (subj.) ‘buy’ (PIE pres. **k^wri-n(e)-h₂-*); or the present and the subjunctive can be based on completely separate stems, making for no systematic formal relationship at all, e.g., A *ar-s-* (pres.) vs. *ar-ñ-* (subj.) ‘bring forth’. In other cases the subjunctive goes back to an aorist. Here the functional development was evidently by way of the “injunctive” uses of the aorist. Aorist injunctives, to the extent they were employed in a modal or future capacity, were brought into morphological alignment with present-based subjunctives in several ways—most obviously by substituting the primary (= present) for the secondary (= preterite/injunctive) endings.⁷⁹ Three major varieties of PIE aorist were “subjunctified” in Tocharian—normal root aorists with **e*: zero ablaut, *h₂e*-conjugation aorists of the stative-intransitive type, and presigmatic aorists.⁸⁰ Although our focus below will be on the presigmatic aorist, it will be useful first to study the treatment of the other two types.

“Normal” root aorists in Tocharian were mostly formed by roots that either ended in a laryngeal, e.g., *lu-* ‘send’ (< **leuH-*), *stäm-* ‘stand’ (< **stemb^hH-*), or that were assimilated to the profile of such roots, e.g., *kärs-* ‘know’ (as if <

79 Synchronically speaking, all Tocharian subjunctives have the present endings. This does not, however, oblige us to assume that all aorist-based subjunctives passed through a present indicative stage, as seemingly proposed by Malzahn (2010: 267f.). The aorist injunctive is favored as a source of Tocharian subjunctives by Peyrot (2013: 407f.).

80 Not, however, the thematic aorist **h₁lud^h-é/ó-* (cf. note 53) or the reduplicated causative aorist ancestral to preterite class II in Toch. A (e.g., *wawik* ‘removed’, *śaśärs* ‘proclaimed’, etc.).

**kersH-* ← **kers-* ‘cut’). Aorists of the “normal” type are most clearly seen in class I preterites; the attested forms show, where possible, palatalization and “*a*-grade” in the active singular,⁸¹ reflecting the historically expected *e*-grade of the strong stem, and stem-final *-a-*, reflecting the vocalized root-final laryngeal: cf. Toch. B 3 sg. *lyuwa*, A *lyu* < PToch. **lʷəwa* < **leuH-t*; B 3 sg. *ś(c)ama*, A *śām* < PToch. **ścama* < **stemb^hH-t*; B 3 sg. *śarsa*, A *śärs* < **śarsa* < **kersH-t*. Stative-intransitive aorists in Tocharian, by contrast, were mostly associated with *anit* (i.e., non-laryngeal-final) roots, e.g., *märs-* ‘forget’ (< **mers-*), *lit-* ‘fall’ (< **leit-*), *wik-* ‘disappear’ (< **ueig-* or **ueik-*). The characteristic *o* : *e*/zero ablaut of the stative-intransitive aorist surfaces most clearly not in the preterites of these verbs, but in the corresponding class V subjunctives, where the strong forms have “*æ*-grade” < *o*-grade: cf. Toch. B 2 sg. *märsat* (< **mærsa-* < **mors-*),⁸² opt. 3 sg. mid. *marsoytär* (< **mrs-*); A 3 sg. *letaş* (< **læyta-* < **loit-*), abstract *litālune* (< **lit-*); A 3 sg. *wekaş* (< **wæyka-* < **uoik/g-*), abstract *wikālune* (< **uik/g-*). These latter examples have a secondarily acquired stem-final *-a-*, which spread far beyond its etymological boundaries in Tocharian.

If this were the whole story, we could say that normal active root aorists gave class I preterites, with a recognizable reflex of **e* : zero ablaut (this is in fact the *communis opinio*), and that stative-intransitive aorists gave class V subjunctives, with a recognizable reflex of **o* : **e*/zero ablaut (this was the position taken in *HIEV* 161 ff.). None of this would be wrong, but the picture is more complicated. In point of fact, the roots of the first (*kärs-*) type make class V subjunctives *as well as* class I preterites, and the roots of the second (*wik-*) type make class I preterites *as well as* class V subjunctives. We therefore have to envisage a historical scenario with both paradigm splitting and contamination between the *kärs-* and *wik-* root profiles. At the outset, each of the two input classes, viz.,

1) * <i>kersH-ṃ</i>	* <i>kersH-me-</i>	and	2) * <i>uoig-h₂e</i>	* <i>uoig-me-</i>
* <i>kersH-s</i>	* <i>kersH-te</i>		* <i>uoig-th₂e</i>	* <i>uoig-(t)e?</i>
* <i>kersH-t</i>	* <i>krsH-ent</i>		* <i>uoig-e</i>	* <i>uig-rs</i> ⁸³

81 Palatalization and vocalism are generalized to the plural in Toch. B.

82 Pre-Toch. **æ* was lowered to **a* before an *a*-vowel in the following syllable (“*a*-umlaut”). There has traditionally been some uncertainty as to whether *a*-umlaut applied identically in both languages. Cowgill (1967: 171 ff.) famously thought that it did not; other views are reported by Malzahn (2010: 10–11). My own position (Jasanoff 2013: 107, note 7) is that the rule was an across-the-board sound change of late Proto-Tocharian, overlaid by analogical developments in Toch. A. The question is of no immediate relevance here.

83 **-rs*, rather than **-ér* (< **-érs*), would have been the expected ending here, since the stative-intransitive aorist, prior to the late substitution of zero grade for “weak” *e*-grade, was

would have had two spheres of usage, corresponding to what would later become the preterite and the subjunctive. The emergent “preterite” and “subjunctive” paradigms for each root type would initially have been identical. But differences would inevitably have crept in. Under pressure from the subjunctives that were based on presents, the emergent aorist-based “subjunctives” took on the primary endings (cf. above); they also substituted zero grade for *e-* or *o-*grade in the 1 pl. and 2 pl., which were strong paradigmatic positions in the aorist but weak in the present and present-based subjunctive. Leveling then set in between the *kārs-* and *wik-*types, eventually resulting in the unified subjunctive paradigm that we call class v and the unified preterite that we call class i. On the eve of *a*-umlaut (note 82) the two originally distinct root profiles had merged:

Class v subjunctive								
	PToch.	pre-Toch.	late PIE		PToch.	pre-Toch.	late PIE	
sg.	1	<i>*k̑arsa-</i>	< <i>*k̑orsa</i> - ⁸⁴	←	<i>*kers(H)-</i>	<i>*w̑eyka</i> - ⁸⁵	← <i>*woik-</i>	< <i>*ȗoig-</i>
	2	<i>*k̑arsa-</i>	< <i>*k̑orsa-</i>	←	<i>*kers(H)-</i>	<i>*w̑eyka-</i>	← <i>*woik-</i>	< <i>*ȗoig-</i>
	3	<i>*k̑arsa-</i>	< <i>*k̑orsa-</i>	←	<i>*kers(H)-</i>	<i>*w̑eyka-</i>	← <i>*woik-</i>	< <i>*ȗoig-</i>
pl.	1	<i>*k̑arsa-</i>	< <i>*k̑rsa</i> - ⁸⁶	←	<i>*kers(H)-</i>	<i>*w̑ayka</i> - ⁸⁷	← <i>*w̑ik</i> - ⁸⁶	← <i>*ȗoig</i>
	2	<i>*k̑arsa-</i>	< <i>*k̑rsa-</i>	←	<i>*kers(H)-</i>	<i>*w̑ayka-</i>	← <i>*w̑ik-</i>	← <i>*ȗoig-</i>
	3	<i>*k̑arsa-</i>	< <i>*k̑rsa-</i>	<	<i>*k̑rs(H)-</i>	<i>*w̑ayka-</i>	← <i>*w̑ik-</i>	< <i>*ȗig-</i>

acrostatic. Contamination between the *r*-ending proper to the “*wik-*” component of the class i preterite and the *nt*-ending proper to the “*kārs-*” component may have been responsible for the actual ending PToch. **-raē* (B *-re*) < **-ront*. In the class III preterite, where there was no input from an *nt*-ending, **-rs* remained unchanged. Ringe (1990: 205–206) argues for **-rən* (as if < **-rnt*) in these forms.

84 *o*-grade in the subjunctive singular, imported from the *wik*-type.

85 Here and throughout the *wik*-type, with analogical final **-a-* from the *kārs*-type.

86 With secondary “weak” vocalism in the 1–2 pl. of the subjunctive.

87 With the standardly assumed substitution of **-əy-*, the “morphological” reflex of pre-Toch. **-i-*, for phonologically regular **-ə-*. Cf. Malzahn 2010: 24–25, with literature.

Class I preterite

	PToch.	pre-Toch.	late PIE	PToch.	pre-Toch.	late PIE
sg. 1	*śarsa-	< *kersa-	< *kers(H)-	*wəyka- ⁸⁸	← *woik-	< *uoig-
2	*śarsa-	< *kersa-	< *kers(H)-	*wəyka-	← *woik-	< *uoig-
3	*śarsa-	< *kersa-	< *kers(H)-	*wəyka-	← *woik-	< *uoig-
pl. 1	*kārsa-	< *korsa- ⁸⁹	← *kersH-	*wəyka-	← *woik-	< *uoig- ⁹⁰
2	*kārsa-	< *korsa-	← *kersH-	*wəyka-	← *woik-	< *uoig-
3	*kārsa-	< *korsa-	← *krsH-	*wəyka-	← *woik- ⁹¹	← *uig-

Compare the similar displays in Jasanoff 2013: 113–115. Proto-Tocharian forms (pre-*a*-umlaut) are shown in bold; analogical ablaut vowels and analogical stem-final *-a-* are underlined. Different analogical strategies were pursued in the subjunctive and preterite. In the subjunctive, *ə*-grade was generalized as the weak vocalism through the plural of both types, and *æ*-grade, proper to the singular of the *wik*-type, spread to the *kärs*-type. In the preterite, partly to maximize the contrast with the subjunctive, *ə*-grade was extended from the singular of the *kärs*-type to the singular of the *wik*-type, and *æ*-grade spread from the 1–2 pl. to the 3 pl. of the *wik*-type and from there to the 1–3 plural of the *kärs*-type. Additionally, the *wik*-type took on stem-final *-a-* from the *kärs*-type, thus acquiring the synchronic trappings of “*ā*-character.” It is worth noting explicitly that all the *æ*-grades (< *o*-grades) in the class V/I complex, including the much-discussed *æ*-grade of the class I preterite plural (cf. Kim 2012), had their origin in 1–3 sg. and 1–2 pl. of the *wik*-type, i.e., the stative-intransitive aorist.

The history of the class V subjunctive and class I preterite is instructive because it shows how one and the same aorist paradigm could split into very different-looking subjunctive and preterite daughter paradigms. Other aorists had the same twofold treatment, both individual lexical items⁹² and, more to

88 *ə*-grade in the pret. sg. imported from the *kärs*-type.
89 *o*-grade in the pret. pl. imported from the *wik*-type.
90 With inherited strong vocalism in the 1–2 pl. of the aorist.
91 *o*-grade analogically extended to the 3 pl. from the 1–2 pl.
92 This was the case, in my view, with *kām*- ‘come’, which inherited an active root aorist from PIE (cf. Ved. 3 sg. *ágan*, pl. *ágman*). The 1 sg. of this stem developed a long **-ē-* by sound change (**g^wem-m* > **g^wēm*), leading to a pre-Tocharian paradigm with three root

the point, the core membership of the presigmatic type. The inner-Tocharian history of the presigmatic aorist (using **nek-* instead of **prek-* to show palatalization effects) began with the paradigm given in § 11:

sg.	1	<i>*nók-h₂e</i>	pl.	<i>*nók-me-</i>
	2	<i>*nók-th₂e</i>		<i>*nók-(t)e-</i>
	3	<i>*nék-s-t</i>		<i>*nék-ɾs</i>

From this array emerged a nascent subjunctive and a nascent preterite. In the subjunctive, 1 sg. **nók-h₂e* and 2 sg. **nók-th₂e* were remade to **nok-mi* and **nok-si* (*vel sim.*), respectively, with the primary endings; 1 pl. **nók-me-* and 2 pl. **nók-(t)e-* were remade to **nek-me-* and **nek-te*, with weak root vocalism; and 3 pl. **nék-ɾs* became **nek-ɳti*, again with the primary ending. In the 3 sg., the theoretically expected form would have been **nek-s-ti*, based on inherited **nék-s-t*. But in an emergent subjunctive paradigm that was in the process of becoming distinct from the emergent preterite, another possibility for the 3 sg. would have been **nok-ti*, the analogical *o*-grade companion to 1 sg. **nok-mi* and 2 sg. **nok-si*. It was this **nok-ti* that was selected, creating the canonical class I subjunctive alternation of strong *o*-grade (later *æ*-grade) and weak *e*/zero grade (later *ə*-grade), as in class V (cf. above). The preterite was likewise subject to morphological simplification. Unlike the Inner IE languages, which generalized the stem **nek-s-* throughout the active indicative, Tocharian generalized the lengthened grade throughout the preterite paradigm *without* generalizing the **-s-*. It thus maximized the distinctiveness of the emergent preterite while maintaining its decidedly *presigmatic* character. The vowels **ē* and **o* subsequently fell together by sound change, but the generalization of **-ē-* throughout the active is confirmed by the palatalization of forms like Toch. A 3 pl. *ñakär* beside 3 sg. *ñakäs*, 3 pl. *śarkär* ‘they bound’ (: *kärk-*), Toch. B 3 pl. *lyaukar* beside 3 sg. *lyauksa* ‘illuminated’, 1 sg. *ñauskuwa* ‘I squeezed’ (: *nusk-*), and many other examples; cf. Malzahn’s discussion cited in § 10. The result was the attested system:

allomorphs: **g^wēm-*, proper to the 1 sg.; **g^wṃ(m)-*, proper to the 3 pl.; and **g^wem-*, proper to all the other forms. These resolved into two daughter paradigms—a preterite with **g^wēm-* (cf. B 3 sg. *śem(o)*) and **g^wṃ(m)-* (1 pl. *knem(o)*, 3 pl. *kamem*), and a subjunctive based on **g^wem-* (A 3 sg. *śmäš*, B 2 sg. *śämt*). For other theories of these forms see Peyrot 2013: 422–429.

Class I subjunctive				Class III preterite		
	PToch.	pre-Toch.	late PIE	PToch.	pre-Toch.	late PIE
sg.	1	*næk- < *nok-	< *nok-	*ñæk- < *nēk-	← *nok-	
	2	*næk- < *nok-	< *nok-	*ñæk- < *nēk-	← *nok-	
	3	*næk- < *nok-	← *nēk-s-	*ñæk-s- < *nēk-s-	< *nēk-s-	
pl.	1	*nək- ⁹³ ← *nek-	← *nok-	*ñæk- < *nēk-	← *nok-	
	2	*nək- ← *nek-	← *nok-	*ñæk- < *nēk-	← *nok-	
	3	*nək- ← *nek-	< *nek-	*ñæk- < *nēk-	← *nek-	

The intimate relationship between the class III preterite and the class I subjunctive, like the relationship between the class I preterite and the class V subjunctive, is essential to understanding the historical position of these forms (cf. further § 15). It is impossible to explain the shape of the class III preterite without reference to the shape of the class I subjunctive, and vice versa: the two categories, historically speaking, are one and the same. Failure to appreciate the position of the class I subjunctive has been one of the reasons for the surprising lack of focus or consensus in the literature on the class III preterite; see the summary in Malzahn 2010: 208–212. Much of this literature reflects an older stage in the “culture” of Tocharian studies, when Tocharian tended to be treated as a grabbag of exotic-looking forms, to be extracted from their morphological context and made sense of by mechanically projecting them back into the protolanguage. Within Tocharian grammar, this approach is particularly ill-suited to the verbal system, where inherited ablaut and palatalization patterns were systematically altered in the course of morphological restructuring.

14 The origin of the presigmatic aorist

The presigmatic aorist, as described above and in earlier publications, was transparently a suppletive category, made up of forms that originally belonged to two different paradigms. The core of the active indicative was a *h₂e*-conjuga-

93 With non-palatalization before the weak *ə*-grade. It is hard to know whether this was simply analogical to the lack of palatalization in the singular, or whether a non-palatalizing **-ə-* was actually substituted for pre-Toch. **-e-* at a date prior to the phonological change of **e* to PToch. **ə*.

tion root aorist that also supplied the optative, while the 3 sg. active, along with the whole subjunctive, came from a sigmatic formation with Narten ablaut, strongly recalling the Hittite type *ganešzi*. Since the very idea of a suppletive *s*-aorist has struck some observers as *a priori* unlikely, it is important to bear in mind that suppletion has been part of the discourse surrounding the *s*-aorist for the better part of a century. Under the long-standard “perfect” theory of the *hi*-conjugation, *hi*-conjugation preterites like Hitt. *dāḥhun*, *dātta*, *dāš*, etc. were taken to be a mixture of the classical *s*-aorist and the perfect. Exactly the same explanation was given for the Tocharian *s*-preterite: “in dem toch. *s*-Pt. sind der idg. *s*-Aorist ... das idg. Perfekt mit Abtönung des Wurzels vokals ... sowie nur im Otoch. der idg. athematische Wurzelaorist ... kontaminiert” (Krause-Thomas 1960: 247); “those PIE perfects which did not take the preterital *-ā* became amalgamated with the sigmatic aorist” (Adams 1988: 82). The novelty of the presigmatic aorist hypothesis is that instead of assuming suppletion twice, once in Anatolian and once in Tocharian, it assumes suppletion once, in PIE itself.

It goes without saying that, as a general principle, caution has to be exercised in setting up mixed paradigms in protolanguages; inner-paradigmatic suppletion is so potent a “trick” that it can be made to generate a pseudo-explanation for almost anything. Nevertheless, as an actual phenomenon that occurs in real languages, suppletion cannot in principle be disallowed for the languages or language fragments we recover by comparative reconstruction. The heteroclitic (“*r/n*-stem”) declension (e.g., **uód-r*, gen. **uéd-n-s* ‘water’) is a case in point. The alternation of *r*- and *n*-stem forms must already have been present in the parent language; it is unthinkable that precisely the same suppletive pattern could have arisen separately in the individual branches. The same is true of the presigmatic aorist. It is, of course, logically possible that the association of *o/e*-ablauting root-based forms and Narten-ablauting *s*-forms was due to parallel innovations in Anatolian, Tocharian, and (to a limited extent) Indo-Iranian. But anyone who makes this claim must explain

- a) why it was precisely these two formations, and not, e.g., the “normal” root aorist or the perfect, that independently combined into a single paradigm in both Anatolian and Tocharian;⁹⁴

94 Melchert’s approach, by positing a 3 sg. ending *-*s* and avoiding direct reference to suppletion as such, might seem to be exempt from this and the questions that follow. But both in his acceptance of Toch. *parksate* and Hitt. *nešhut* as reflexes of the classical *s*-aorist and in his contamination-based account of the palatalization in the active of the Tocharian *s*-preterite (cf. § 10), Melchert assumes a merger or intersection of two paradigms as well.

- b) why it was specifically the 3 sg., and no other form in the active indicative paradigm, that was independently targeted for sigmatic morphology in both branches;
- c) why, outside the indicative, the subjunctive was sigmatized in both branches (cf. Hitt. *nešḫut* < **néiH-s-e/o-*), not just in the 3 sg., but throughout the paradigm; and
- d) why the optative nevertheless remained non-sigmatic in both Tocharian and—notably—Indo-Iranian.

The scenario that would have to be devised to explain these details as independent innovations would be like the independent creation scenario for *r/n*-stems—too inefficient and repetitious to be viable.

Sometimes the historical background of a suppletive relationship—or of any synchronic anomaly—is known; sometimes it is not. In *HIEV* 179 I laid stress on

the importance of distinguishing between the synchronic grammar of late PIE, which is partly accessible to us through the comparative method, and the historical rationale or ‘explanation’ for this synchronic grammar, which we can only recover by internal reconstruction ... It would clearly be desirable, at a deeper level of analysis, to know *why* the expected 3 sg. **prók-e* ‘asked’ and **nóiH-e* ‘led’ were replaced by **prék-s-t* and **néiH-s-t* in pre-PIE ... But the problem of motivating the replacement **prók-e*, **nóiH-e* ⇒ **prék-s-t*, **néiH-s-t* must be viewed in perspective from the outset. Even if it should prove impossible, six or seven thousand years after the fact, to discover the rationale for the peculiar PIE mixed inflection of the inaccurately named ‘s-aorist’, it is still far simpler to operate with a single unexplained suppletion in the parent language than to assume two separate and unexplained suppletions, one in Hittite and one in Tocharian.

Again, the *r/n*-stems furnish a useful parallel: no one doubts their status as a PIE type, even though there is no widely accepted view of where the alternation came from. Yet, that said, the transparency of the suppletion in the presigmatic aorist—the almost palpable infiltration of sigmatic forms into a *h*₂*e*-conjugation paradigm—cries out for an explanation. A conjectural scenario, clearly identified as such, was accordingly proposed in *HIEV* 193–195. The “origin myth” of the presigmatic aorist, as set forth there, centered on two assumed events:

- 1) the creation of the *ske/o*-present **prók-ské/ó-* ‘ask’ (: Ved. *pr̥cchati*, etc.), replacing an older Narten *s*-present **prék-s-/prék-s-* (cf. the replacements

- *ǵnēh₃-s- → *ǵ_ṇh₃-ské/ó-* and **h₂é̌is-s- → *h₂is-ské/ó-* (§ 2)). The Narten imperfect **prék-s-ṇ*, **-s-s*, etc., I argued, was not lost, but survived in the role of a non-iterative, non-durative simple preterite (what I would later (Jasanoff 2012b: 131 ff.) call a “narrative imperfect”), similar in meaning to the *h₂e*-conj. aorist **prók-h₂e*, **-th₂e*, **-e*, etc.
- 2) the split of bivalent *h₂e*-conjugation aorists of the type **nóiH-/néiH-* ‘lead’ (tr.)/‘turn’ (intr.) and **nók-/nék-* ‘destroy’ (tr.)/‘perish’ (intr.) into separate transitive active and intransitive middle paradigms. The inherited *h₂e*-conjugation forms (sg. **nóiH-h₂e* (**nók-h₂e*), **-th₂e*, **-e*, pl. **nóiH-me-*, **-(t)e*, 3 pl. **néiH-ṛs*) were specialized as transitive. The intransitive function devolved onto a specially differentiated middle paradigm with retained *o*-grade in the 3 sg. (**nóiH-o*, **nók-o*), but the weak (*e*-grade) stem elsewhere (1 sg. **néiH-h₂e*, 2 sg. **-th₂e*, pl. **néiH-med^hh₂*, **-d^h(u)ue*, **-ro*).

An effect of 1) was to produce the near-synonymous pair 3 sg. **prók-e* (*h₂e*-conj. aorist) $\cong$ **prék-s-t* (narrative imperfect) ‘asked’; an effect of 2) was to produce near-homophonous pairs of the type **nóiH-e* ‘led’ beside **nóiH-o* ‘turned (intr.)’, **nók-e* ‘destroyed’ beside **nók-o* ‘perished’, etc. in the 3 sg. My proposal in *HIEV* was that the inconvenient formal similarity of the transitive and intransitive 3 sg. forms was eliminated by introducing **néiH-s-t*, **nék-s-t*, etc. to replace **nóiH-e*, **nók-e*, etc. A model for the creation of the new **néiH-s-t*, **nék-s-t*, I said, would have been provided by the root **prek-*, where the 3 sg. forms **prék-s-t* and **prók-e* would have been partly interchangeable.

The object of this frankly speculative account was not to convince anyone of its literal facticity, but to show how a mixed paradigm of the type seen in the presigmatic aorist *could* have come about through a succession of ordinary changes within the PIE system. Some parts of the proposed scenario were more compelling than others. I still think it likely that the specific root **prek-*, which had its foot in both the sigmatic and *h₂e*-aorist doors, so to speak, was prominently involved in the blending process that created the presigmatic paradigm. On the other hand, Melchert is entirely right to point out (2015: 128) that there would have been much simpler ways to clarify the active, transitive nature of forms like 3 sg. **nók-e* and **nóiH-e* than by remaking them to **nék-s-t* and **néiH-s-t*, respectively. Why, e.g., were the active forms not just renewed as **nók-et*, **nóiH-et* or **nók-t*, **nóiH-t*?⁹⁵ And how sure can we be that pairs of the type **nók-e* : **nók-o* and **nóiH-e* : **nóiH-o* ever existed in the first place? As long as there are no satisfactory answers to these questions, Melchert’s verdict on

95 Adams (2012: 37) asks the same question.

the *HIEV* scenario—“not remotely credible” (133)—is a legitimate opinion that others will no doubt share. What Melchert actually says, however, goes further:

I contend that the attested facts of Tocharian, Hittite, and “Core Indo-European” can be accounted for without attributing to Proto-Indo-European a hybrid “pre-sigmatic” aorist created by an unmotivated and not remotely credible suppletion.

Here, I submit, is an instance of the kind of confusion I cautioned against above: blurring the distinction between a well-grounded, evidence-based reconstruction—the presigmatic aorist—and the scenario we speculatively invent to explain how it may have come about. To appreciate the methodological point, the reader should substitute the words “hybrid ‘heteroclitic’ declension” for “hybrid ‘pre-sigmatic’ aorist” in the lines just quoted.

As it happens, the *HIEV* scenario for the origin of the presigmatic aorist can be substantially improved with a few changes of causation and relative chronology. I will continue, in what follows, to assume a split of h_2e -conjugation aorists of the type $*nóiH-/ *néiH-$, $*nók-/ *nék-$, etc. into separate transitive and intransitive paradigms, with the inherited h_2e -conjugation forms mostly being interpreted as active and transitive, and new middle forms mostly being created by adding the normal middle endings to the weak stem (1–2 sg. $*nóiH-h_2e$, $*-th_2e$, pl. $*néiH-med^h h_2$, $*-d^h(u)ue$, $*-ro$). The crucial difference between the account in *HIEV* and what I would now propose lies in the treatment of the 3 sg. form. In the “old” scenario I envisaged a split of 3 sg. $*nóiH-e$ into an active $*nóiH-e$ ‘led’ and a middle $*nóiH-o$ ‘turned (intr.)’, with retained o -grade. Later, I said, the near-homophony of $*nóiH-e$ and $*nóiH-o$ made it necessary for one of the two to be replaced. A question left unanswered was why, if the near-homophony of 3 sg. act. $*nóiH-e$ and 3 sg. mid. $*nóiH-o$ was to prove so inconvenient in the not-too-distant future, the new 3 sg. middle form was not simply remade as e -grade $*néiH-o$ from the beginning, with the same vocalism as the rest of the middle. Everything falls into place if we instead assume that pre-split h_2e -conjugation forms of the type 3 sg. $*nóiH-e$, $*nók-e$ were *themselves* assigned to the emerging intransitive middle paradigm. As pointed out by Villanueva Svensson (2006: 297–299), word equations like 3 sg. OCS *spade* (< $*pode$) ‘fell’ = Ved. 3 sg. “passive” aorist *pádi* ‘id.’ strongly suggest that the PIE form of the dentalless (“stative”) 3 sg. middle ending in the root aorist was not $*-o$, as assumed in *HIEV*, but $*-e$.⁹⁶ Hittite and, separately, Tocharian later modernized

96 The same idea was independently suggested to me at around the same time by Yaroslav

this to **-o*, which in turn became **-to* in Tocharian (cf. Hitt. *nē(y)at* ‘turned’, with back-formed present *nē(y)a*, *nē(y)ari*; Toch. A *nakät* ‘perished’ < PToch. **naektæ* < **nokto*). Under the new scenario, late PIE 3 sg. **nóiH-e* and **nók-e* would have meant ‘turned (intr.)’ and ‘perished’, respectively, and the replacement of intransitive **-e* by **-o* would have been an event of the post-PIE period.

If it is indeed the case that **-e* was specialized with middle and/or intransitive value in the *h₂e*-conjugation root aorist, an obvious difficulty would have arisen in the marking of transitivity in the 3 sg. While a distinction between transitive active and intransitive middle forms would have existed in most paradigmatic positions (1 sg. act. **nóiH-h₂e* ≠ mid. **néiH-h₂e*; 2 sg. act. **nóiH-th₂e* ≠ mid. **néiH-th₂e*; 1 pl. act. **nóiH-me-* ≠ mid. **néiH-med^hh₂*; 2 pl. act. **nóiH-(t)e-* ≠ mid. **néiH-d^h(u)ue*; 3 pl. act. **néiH-rs* ≠ mid. **néiH-ro*), the 3 sg. had only **nóiH-e*, historically bivalent but tending increasingly to become aligned morphologically with the intransitive middle. It was this problem that the introduction of the unequivocally transitive sigmatic form **néiH-s-t* was intended to solve. The question is why, once the inherited 3 sg. **nóiH-e* stopped meaning ‘led’, the specific form that replaced it should have been taken from the imperfect of a Narten *s*-present.⁹⁷

Gorbachov, who further compared Slavic *-bъde* ‘awoke’ with Ved. ablauting *ábodhi*, pl. *ábudhran* ‘id.’ (see now Gorbachov 2014: 52–53). My reluctance to entertain this idea in *HIEV* was rooted in my view that at the time of the breakup of PIE, **-o* was consistently “middle” and **-e* was consistently “active.” If true, this would have implied that the ancestor of the passive aorist, which had to be middle on semantic grounds, also had to end in **-o*. Villanueva Svensson, however, has made a strong case (op. cit. and 2007–2008 [2009], 2010–2011 [2012]) that the canonical alignment of **-e* with the functions of the active and **-o* with the functions of the middle, though valid for the present system, did not hold in the root aorist. Specifically, he argues that the 3 sg. aor. in **-e* was always either specifically middle in the narrow sense (as, e.g., in **dóh₃-e* ‘took’ < **gave to oneself*) or, more typically, intransitive (as in the stative-intransitive aorist: **uóh₂g-e* ‘broke’, **pód-e* ‘fell’, **b^hódud^h-e* ‘awoke’, etc.). *There is no evidence at all for a transitive active 3 sg. aor. in *-e apart from the purely hypothetical *nóiH-e ‘led’, *nók-e ‘destroyed’, etc.* These, of course, are the very forms whose purported near-homophony with the supposed intransitive middles **nóiH-o* ‘turned (intr.)’ and **nók-o* ‘perished’ was supposedly responsible for their replacement by **néiH-s-t* and **nék-s-t* in the scenario presented in *HIEV*.

97 The problem becomes clear when the final paradigms are put side by side:

act. sg.	1	<i>*nóiH-h₂e</i>	mid. sg.	1	<i>*néiH-h₂e</i>
	2	<i>*nóiH-th₂e</i>		2	<i>*néiH-th₂e</i>
	3	<i>*néiH-s-t</i>		3	<i>*nóiH-e</i>
		⋮			⋮
pl.	3	<i>*néiH-rs</i>		3	<i>*néiH-ro</i>

In the 3 sg., the form that “should” have been assigned to the active paradigm (**nóiH-e*) was

The adoption of **néiH-s-t* as the new transitive 3 sg. is best understood by considering the spread of the sigmatic 3 sg. and the spread of the sigmatic subjunctive (**néiH-s-e/o-*, **nék-s-e/o-*, **prék-s-e/o-*, etc.) as parts of a single process. The *-ské/o-* presents **h₂is-ské/ó-* and **prk-ské/ó-*, as we have seen, probably replaced earlier Narten *s*-desideratives **h₂éis-s-* ‘seek’ and **prék-s-* ‘ask’ (cf. § 2 with note 13). In Greek, the desiderative (> future) marker *-s-* has the effect of neutralizing the present : aorist opposition: a form like *grápsō* ‘I will write’ can equally well be paraphrased as *méllo gráphein* ‘I am about to write/be writing’ (present infinitive) and as *méllo grápsai* ‘I am about to write/get written’ (aorist infinitive). On the assumption that the **-s-* of **h₂éis-s-* and **prék-s-* had the same property, the pre-PIE subjunctives **h₂éis-s-e/o-* and **prék-s-e/o-* would have had two readings, one more presential (‘be inclined to (want to) be looking for’, ‘be inclined to (want to) ask’), and the other more aoristic (‘be inclined to (want to) find/obtain’, ‘be inclined to (want to) get an answer’). In their “presential” value, these subjunctives would have retained their synchronic link to the underlying sigmatic presents **h₂éis-s-* and **prék-s-*, even as the latter forms were gradually restricted to “narrative” (i.e., less vivid, more aorist-like) imperfect functions. But the aoristic readings ‘be inclined to (want to) find/obtain’ and ‘be inclined to (want to) get an answer’ would effectively have merged with the non-sigmatic aorist subjunctives corresponding to the *h₂e*-conjugation root aorists **h₂óis-/h₂éis-* and **prók-/prék-*.⁹⁸ From the synchronic point of view of a speaker, then, the aorist inflection of the roots **h₂éis-* and **prék-* would have included

- 1) an ordinary *h₂e*-conjugation root aorist indicative (e.g., **prók-h₂e*, etc.);⁹⁹
- 2) an ordinary *h₂e*-conjugation root aorist subjunctive (**prék-e/o-*); and
- 3) a sigmatic subjunctive (**prék-s-e/o-*) which also—via the “presential” reading of the underlying desiderative—served as the subjunctive of the associated narrative imperfect (**prék-s-ṃ*, etc.).

forced by the intransitive specialization of the ending **-e* into the middle, and a Narten sigmatic form (**néiH-s-t*) was generated in the 3 sg. active to take its place.

98 That is, the meanings “be inclined to want to get X done,” proper to the aoristic reading of the sigmatic subjunctive of the desiderative, and “be inclined to get X done,” proper to the non-sigmatic subjunctive of the *h₂e*-conjugation aorist, would have been operationally indistinguishable. *h₂e*-conjugation aorists can be assumed for **h₂éis-* and **prék-* on the strength of the *s*-aorist profiles of these roots in the later languages (cf. OAv. *s*-aorist injunctive 3 sg. *āiš* ‘wishes’; 1 sg. mid. *fraši* ‘I take counsel’; Ved. aor. 3 sg. *ápṛāt* ‘asked’; Toch. B *prekwa*, etc.).

99 Since the sequence **h₂éis-s-* would have fallen together with **h₂éis-* by the PIE degemination rule (cf. 2 sg. **h₄ési* ‘you are’ < **h₄és-si*), the discussion will henceforth focus on **prék-*.

It would have been surprising, under these circumstances, if the narrative imperfect, with a subjunctive (**prék-s-e/o-*) that also functioned as a subjunctive of the aorist, would not itself occasionally have strayed into aorist territory.

Sigmatic byforms like those associated with the aorist of **prék-* would at first have been confined to the very few roots with inherited h_2e -conjugation aorists and desiderative *s*-presents. But a sigmatic “package” parallel to the *s*-forms of **prék-* would have filled an obvious need in the inflection of the bivalent h_2e -conjugation aorists **nóiH-/néiH-*, **nók-/nék-*, **dhóg^{wh}-/dhég^{wh}-*, etc., where a) the “native” subjunctives **néiH-e/o-*, **nék-e/o-*, **dhég^{wh}-e/o-*, etc. were homophonous with emerging thematic presents (cf. Ved. *náyati*, *dáhati*, etc.),¹⁰⁰ and b) the 3 sg. active needed an unambiguously transitive replacement for the no longer viable **nóiH-e*, **nók-e*, **dhóg^{wh}-e*, etc. The result was the analogical extension of the subjunctive in **-se/o-* and the indicative in **-s-ṃ*, **-s-s*, etc. to the larger group of bivalent roots, thus clearing the way for the specialization of **néiH-s-t*, **nék-s-t*, **dhég^{wh}-s-t*, etc. as the new 3 sg. transitive forms.

15 The middle(s) of the presigmatic aorist

It is time now to survey the treatment of the middle forms just discussed in the daughter languages. Corresponding to the active paradigm in § 11, the middle of the presigmatic aorist, at least in bivalent verbs, was

sg.	1	<i>*néiH-h₂e</i>	(<i>*nék-h₂e</i>)	pl.	<i>*néiH-med^hh₂</i>	(<i>*nék-med^hh₂</i>)
	2	<i>*néiH-th₂e</i>	(<i>*nék-th₂e</i>)		<i>*néiH-d^h(u)ṃe</i>	(<i>*nék-d^h(u)ṃe</i>)
	3	<i>*nóiH-e</i>	(<i>*nók-e</i>)		<i>*néiH-ro</i>	(<i>*nék-ro</i>)

The only difference vis-à-vis *HIEV* (196) is that the 3 sg. ending now appears as **-e*. This **-e* is preserved in Slavic *pade*, *-bъde*, etc. and, according to the revised scenario in § 14, probably also survived in Indo-Iranian until it was replaced by

¹⁰⁰ I say “emerging” thematic presents because there is reason to doubt whether such presents existed in undivided PIE; cf. § 4. It is conceivable that the Inner IE “type 11” thematic presents **néiH-e/o-*, **nék-e/o-*, etc. actually *were* in origin the subjunctives of the h_2e -conjugation aorists **nóiH-/néiH-*, **nók-/nék-*, etc., and that, though not yet full-fledged present indicatives at the time of the formation of the presigmatic aorist, they had already taken on some special function that made it useful for them to be replaced in their aorist subjunctive role.

*-i. Elsewhere, including in Hittite and Tocharian, it was renewed as *-o (> *-to), the ending that played the same role in the present system.

The middle of Hitt. *nai-* is largely built on a stem *nē(y)a-*, which was extracted from the 3 sg. pret. *nē(y)at(i)* and its back-formed present *nē(y)a*, *nē(y)ari*. Whether *nē(y)at(i)* and *nē(y)a(ri)* rest directly on a mechanically back-formed **nóih-o(r)*, with *o*-grade, or on an *e*-grade preform **néih-o(r)*, with vocalism leveled from the rest of the paradigm, is impossible to tell. What is certain is that despite the thematic appearance of Neo-Hittite forms of the type 1 sg. *neyahhari* or 3 sg. pret. *neyattat*, the well-attested Old Hittite forms in *-a(ri)* and *-at(i)* are unambiguously athematic.¹⁰¹ There is thus no possibility of a close connection between Hitt. *nē(y)a-* and the true thematic present represented by Ved. *náyati* and YAv. *naieiti*. As already noted, the absence of evidence for a thematic stem **néih-e/o-* in Hittite is of a piece with the absence of evidence for thematic presents beside class III preterites in Tocharian.

The treatment of the presigmatic aorist middle of bivalent verbs in Tocharian provides yet another example of the now-familiar split of an aorist into a preterite and a subjunctive. Just as the presigmatic active gave rise to both the class III preterite active and the class I subjunctive, and just as the other root aorist types gave class I preterites and class V subjunctives (cf. § 13), the middle of the presigmatic aorist was simultaneously parent to the “class o” preterite and the class III subjunctive, both exclusively middle formations. The class o preterite is seen in Toch. A 3 sg. mid. *nakät*, *pakät*, *tsakät*, *tamät*, and a handful of other intransitive forms (cf. § 7); here too belong 3 pl. *tamänt* and *lyökänt* (with secondary *ly-* for **l-*). In Toch. B, as we have seen, the corresponding preterites were secondarily sigmatized, but are still recognizable by their *o*-grade: *neksate* (3 pl. *-ante*), *temtsate* (1 sg. *temtsamai*, 1 pl. *-amte*, 3 pl. *-ante*), *lauksäte*, etc. The main formal development in the history of these class o middles, apart from the replacement of *-e by *-(t)o and other desinential renewals, was the generalization of *o*-grade from the 3 sg. to the rest of the paradigm. The parallel with the corresponding preterite active (class III), where the *ē*-vocalism of the 3 sg. was generalized, could hardly be clearer.

Given the generalization of *o*-grade as the root vocalism in the class o preterite, the form of the *subjunctive* that would emerge from the presigmatic aorist middle might almost have been predicted on grounds of patterning alone. Here it was the *e*-vocalism of the non-3 sg. forms (1 sg. **nék-h₂e*, 3 pl. **nék-ro*, etc.) that was extended to the historically *o*-grade 3 sg. In keeping with

101 The dentalless ending *-a* (with or without added *-ri*, etc.) is confined to athematic stems. Thematic stems, best illustrated by the verbs in *-ie-/i-ya-* and *-ški-/š-ka-*, have only *-(t)ta* (*-ietta/-iyatta*, *-škitta/-škatta*).

the normal rule that aorist-based subjunctives substituted the primary for the secondary endings, the new 3 sg. subj. form was fitted out with the primary “stative” ending **-or*, leading to a paradigm of the type

sg. 1	<i>*nek-(m)ar</i>	pl.	<i>*nek-med^har</i>
2	<i>*nek-tar</i>		<i>*nek-d^huer</i> (vel sim.)
3	<i>*nek-or</i>		<i>*nek-ŋtor</i>

This, as it happens, was also the pre-Tocharian inflection of “root stative-intransitive presents”—the PIE type represented by Ved. *duhé* ‘gives milk’, OAv. *sruiiē* ‘is famed as’, Hitt. *ištuwāri* ‘becomes known’, and reflected in Tocharian by class III presents like Toch. B *lipetār* ‘is left over’, *mārsetār* ‘forgets’, Toch. A *pārkatār* ‘goes up’, etc.¹⁰² The characteristic innovation in the inner-Tocharian history of paradigms of this type was the renewal **-or* → **-otor* in the 3 sg. From renewed **-otor* was extracted a quasi-thematic stem in non-alternating (“persistent”) **-o-*, whence the regular inflection: Toch. B *-emar*, *-etar*, *-etār*, etc., A *-amār*, *-atār*, *-atār*, etc. < PToch. **-æmar*, **-ætar*, **-ætār*, etc. < **-o-mar*, **-o-tar*, **-o-tor*. The class III subjunctives had precisely the same treatment. Class III subjunctives thus inflect exactly like class III presents: cf. Toch. B 1 sg. *cmemar* ‘I will be born’ (: *tām-*, with palatalization from the etymological *e*-grade),¹⁰³ 2 sg. *cmetar*, 3 sg. *cmetār* (= Toch. A *cmatār*), 3 pl. *cmentār*. Like Hitt. *nē(y)a-* in relation to Ved. *náyati*, the class III subjunctives of roots like *pāk-* (B *pketār*, A *pkatār*), *tsāk-* (B *tsketār*, A *tskatār*), and *nām-* (B *nmetār*) have nothing to do with the thematic presents formed by the same roots elsewhere in the family (e.g., Ved. *pācati* ‘cooks’, *dāhati* ‘burns’, and *nāmati*, *-te* ‘bows’).

Tocharian and all the Inner languages, but not Hittite, also have a fully sigmatic *s*-aorist middle of the type seen in Toch. B *parksamai*, *-satai*, *-sate*, Gk. *elusámēn*, *-sa[s]o*, *-sato*, etc. (“pattern 1”; cf. § 11). In Tocharian this serves as the unmarked middle of the class III preterite, in complementary distribution with the specifically intransitive and anticausative *s*-less type (class o) in the handful of verbs with the bivalent *nāk-/pāk-/tsāk-* profile. The Tocharian situation, where the sigmatic forms cover the full range of middle functions while the *s*-

¹⁰² My views on the Tocharian class III (and IV) presents, which go back to PIE middles of the *duhé*-type, are summarized in the context of a more general discussion in Jasanoff 2002–2003 [2004] (esp. 140–141, 158–159). *LIV* analyzes these forms, along with the allied Germanic weak presents in 3 sg. **-aiþ* and Balto-Slavic stative presents in **-ŕ*, as “essives” in **-h₁-ie/o-*.

¹⁰³ Palatalization also survives in the infinitive *ñmetsi* (Malzahn 2010: 324); otherwise it has been eliminated in these forms.

less type is lexically restricted and specifically valency-reducing, is no doubt an archaism vis-à-vis the situation in Indo-Iranian and Greek. Yet even in these branches we find echoes of “pattern 2.” Such a case is the Vedic pair *ahauṣīt* (MS) ‘poured’ (cf. *si*-impv. impv. *hoṣi* (RV)) vs. passive aorist *áhāvi*, matching Gk. act. *ékheua* ‘id.’ (< **ǵʰéu-s-*) : mid. *khúto*.¹⁰⁴ The antiquity of the presigmatic aorist in this verb is underscored by the Tocharian class III pret. A 3 sg. *śosā-ṇ* ‘poured’ beside class I subj. B 1 sg. *kewu* ‘I will pour’.¹⁰⁵

Whether Anatolian also once had a fully sigmatic middle like Tocharian is unclear. Only the *naiš* : *nē(y)at(i)* = *ñakäs* : *nakät* pattern (pattern 2) is actually attested, but pattern 1 could theoretically once have been present in Hittite as well. It is suggestive that pattern 1 is associated with (*inter alia*) the root **prek-*, a “donor” of **-s-* in our framework, while pattern 2 is associated with the roots **nek-* and **neiH-*, which were **-s-* “receivers.” It is thus not out of the question that at the time in pre-PIE when the 3 sg. active of the narrative imperfect **prek-s-ṇ*, **-s-s*, **-s-t*, etc. was revalorized as a transitive 3 sg. aorist (**prek-s-t*), the middle of the narrative imperfect (**prek-s-h₂e*, **-s-th₂e*, **-s-to*, etc.) was put to use as a specifically *non*-intransitive, self-benefactive aorist middle. In the absence of any actual sigmatic forms of this type in Hittite or elsewhere in Anatolian, however, it is difficult to be sure.

16 The root **neiH-* in Hittite

The *HIEV* picture of the presigmatic aorist, an updated version of which has been presented above, places a great deal of emphasis on the profile of Hitt. *nai-*. The question now arises: how reliable is the testimony of this verb? Is this one lexical item in fact a unique repository of archaic features, or is too much being made of a handful of scattered oddities?

In approaching this question, the first point to understand is the sense in which *nai-* is special. *nai-* is the only verb in Hittite that is linked by word equation to an inherited *s*-aorist elsewhere in the family (Ved. *naiṣ-/neṣ-*, Av. *naēš-*). This does not mean (although it is a useful worst-case assumption) that *nai-* was the only verb from which the 3 sg. in **-s* or **-st* spread to the *hi*-conjugation as a whole. At the time of the pre-Hittite propagation of **-s(t)* it

104 With, as always in Greek, generalization of **-to* and the weak or zero-grade stem.

105 The 3 sg. middle corresponding to *kewu*, however, is not **kwetär* (cl. III), but the productively formed *kutär* (cl. I) ‘will be poured’. Another probable Inner IE case of pattern 2 is Lat. *lūxit* ‘illuminated’ (matching Toch. B *lyauksa*, A *lyökäs*) beside Ved. pass. aor. *aroci* (matching Toch. B *lauk[sā]te*, A *[y]okät*).

is not unlikely that there were other verbs in the language with presigmatic aorists/ preterites—reflexes of roots like **ueǵʰ-*, **uedʰ-*, **dʰegʷh-*, etc. that were later lost, or verbs whose ancient morphological profile is for one reason or another no longer recoverable. It is hardly surprising that no other *s*-aorist word equations are quotable for Hittite; Hittite, we must recall, is a language where there are no word equations at all for obviously inherited categories like the nasal-infix presents (type *ḫarnikzi* ‘destroys’) or zero-grade *ie/o*-presents (type *parkiye/a-* ‘go up’).¹⁰⁶

Many cases are known around the IE family of productive morphology taking off from a small nucleus of inherited forms. The Sanskrit inflectional pattern 3 sg. perf. *papāta* ‘fell’: pl. *petuḥ*, where *-e-* takes the place of reduplication in the weak stem, was originally proper to only two roots, *sad-* ‘sit’ and *yam-* ‘yield’.¹⁰⁷ In Slavic, the *-m* that serves as the almost universal 1 sg. present ending in Serbo-Croatian (e.g., *vedem* ‘I lead’, *čitam* ‘I read’, *lomim* ‘I break’) was generalized from four or five Late Common Slavic forms, only three of which (*jesmь* ‘I am’, *jěmь* ‘I eat’, and *damь* ‘I will give’) go back to actual PIE preforms in **-mi*.¹⁰⁸ In Hittite, it would be easy to specify a route, if we had to, by which **-s(t)* could have spread from *naiš* or **noi(H)st* alone to the rest of the *ḫi*-conjugation. Since the *-š-* of 2 pl. impv. and pret. **nēšten* (→ *naišten*) was imported into the 2 pl. of the other diphthongal stems (*daišten*, *pešten*, *išḫaišten*, etc.; § 7), the *-š-* of the sigmatic 3 sg. *naiš* (*vel sim.*) could unproblematically have spread to the 3 sg. pret. forms ancestral to *daiš*, *paiš*, *išḫaiš*, etc. at the same time. Only later would the 2 pl. and 3 sg. have parted company, with the *-š-* of the 2 pl. remaining confined to diphthongal stems, while the *-š* of the 3 sg., perhaps aided by its usefulness as a transitivity marker, went on to colonize the *ḫi*-conjugation as a whole.¹⁰⁹

106 Kim (2005: 194) expresses unease about *HIEV*’s focus on the roots **prek-* and **neiH-*: “I find it unlikely ... that **prek-s-t* “asked” ... was the source of the intrusive lengthened-grade and **-s-* in the “presigmatic aorist” act. 3sg ..., or that Hittite *ḫi*-conj. pret. 3sg. *-š* originated in *nai-* “turn” alone ...: the starting point for these innovations must surely have comprised other verbs as well.” I share Kim’s intuition on both points. As a practical matter, however, we have to build our arguments on the forms we know, not the ones we do not know.

107 *sed-* < **sa-zd-*; *yem-* < **ya-ym-*.

108 *vě(d)mь* ‘I know’ replaced *vědě* (< 1 sg. **-a-i*) within historical times, and *jьmamь* ‘I have’ is a purely Slavic creation. For a detailed account of the spread of *-m* in Slavic see Janda 1996: 9–81.

109 The mechanism of the propagation of the sigmatic 3 sg. is not a topic that can be properly discussed here. Other conceivable scenarios will be explored elsewhere, including the possibility that the spread of *-š*/**-s-t* to transitivized stative-intransitive aorists like *wāk(k)-* ‘bite’ (3 sg. pret. *wākiš*, *wakkiš*, etc.) was already established in the parent language.

The odds that the uniquely *s*-rich morphological profile of *nai-* in Hittite is unrelated to its particular history and etymology are vanishingly small. Suppose, as a thought experiment along the lines of Kloekhorst's probabilistic speculations in §5, that the only facts we knew about PIE **neiH-* were that it made a sigmatic or presigmatic aorist in PIE and that it had a lexical reflex in Hittite. Morphologically speaking, what would we expect a purely random Hittite continuant of **neiH-* to look like? Would it have been a *mi*-verb or a *hi*-verb? The *mi*-conjugation, according to Kloekhorst's statistics, is almost three times as populous as the *hi*-conjugation; yet *nai-* is a *hi*-verb, with a 3 sg. pret. in *-š*. Is it credible that *nai-*, the only Hittite verb etymologically linked to a (pre)sigmatic aorist, would also have been—by pure chance—the only Hittite verb with intrusive *-s-* in the 2 sg. imperative *and* in the middle (**nēši*, *nešḫut*, *naišdumat*)? Is it likely, *a priori*, that the *general* phenomenon of intrusive *-s-* would have been specifically associated with verbs of the same diphthongal shape as *nai-*? No actual calculations are needed to answer these questions. The special properties of *nai-* cannot be explained on the basis of a dubious 3 sg. *s*-ending that would have been common to all *hi*-verbs. The inflection of this verb in Hittite only makes sense as a continuation of the special paradigm that also gave rise to the Tocharian *s*-preterite and the Inner IE *s*-aorist—a *h₂e*-conjugation root aorist with suppletive sigmatic forms.

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