The sigmatic forms of the Hittite verb

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Abstract

Central to the problem of the Hittite verbal system is the status of the *ḫi*-conjugation 3 sg. pret. in -š and its relationship to other sigmatic morphemes—the partly overlapping 2–3 sg. ending -sta, 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 – ḫi-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 *-*s*-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 *ḫi*-conjugation (i.e., the conjugational class consisting of verbs with a 1 sg. pres. act. in -(ḫ)ḫu) 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. *mölh₂-e : 3 pl. *mélh₂-rs (> *-nti) ‘grind’) have found considerable acceptance, while “i-presents” (3 sg. *d₁h₁-i-e : pl. *d₁h₁-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. *mölh₂-e ‘grinds’), and b) with forms that functioned both as transitive actives and intransitive middles depending on syntactic context (e.g., 3 sg. pres. *könk-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. *könk-or or *knk-ór ‘dangles, is suspended’; cf. Hitt. kangattari) and an unrenewed neoactive (e.g., *könk-e ‘hangs (up)’; cf. Hitt. künk). 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. *mölh₂-e, *könk-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. But disagreements over the correct reconstruction of this or that putative $h_2e$-conjugation present type mainly concern differences over ablaut grade, relative date of thematicization, and other questions of detail. $h_2e$-conjugation aorists, or at least some of them, raise questions of a more fundamental nature. Aorists with $h_2e$-inflation 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., *lög$h$-e:*lég$h$- $rs$ ‘lay down’) and derivationally associated with other protomiddle-based formations, notably including the perfect, in what I called “stative-intransitive systems.” Stative-intransitive aorists, with paradigmatic ablaut still preserved in the Indo-Iranian “passive” aorist (Ved. 3 sg. ádārsī : pl. adṛśrān ‘appeared’) and the Tocharian class v subjunctive (A 3 sg. wekaš : 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 $h_2e$-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 *nóit$h$-/*néit$h$- ‘lead’ had a 1 sg. *nóit$h$-$h_2e$ (cf. Hitt. néḫḫun) and a 3 pl. *néit$h$-$r̥s$ (: Hitt. naier), but also an unexpected sigmatic 3 sg. *néit$h$-$s$-$t$ (: Hitt. naiṣ), 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 $h_2e$-conjugation root aorist with extraneous $s$-forms, has been sharply contested. 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 Stammbildungs typen.” 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’ (*$lög$h$-e) could not literally have been “stative.” The full phrase “stative-intransitive $h_2e$-conjugation aorist” was coined (HIEV 165) to capture the derivational association of these forms with je/o-presents of the type *$ŷh$-$j̥$e/o- ‘be born’ and root presents of the type 3 sg. *$b$-$ud$-$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: 2165f. 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 *$gnēs$-< *$ǵnēh$_3$-s-, with the regular Eichner’s Law non-coloration of an IE long vowel. Remarkably, a root or stem form *$gnēs$- is also found in Tocharian (cf. A pret. (cl. 111) 1 sg. $kñasu$ ‘I knew’, 2 sg. $kñasāṣt$; Malzahn 2010: 609) and Armenian (pret. 1 sg. $caneay$ ‘I knew’, 3 pl. $canean$ < *cani(s)an < *$gyn$(n)ē-s-nt), showing that the sequence *$ǵnēh$_3$-s-$ 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 *$ǵnēh$_3$-s-$ conforms to what would have been expected of an s-aorist. The root *$ǵneh$_3$-‘know’ makes an unambiguous root aorist in Greek (3 sg. ēgnō (: pres. gignṓskō)); 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-Präz.” On the Tocharian side, the forms A $kñasu$, $kñasāṣt$ are technically classifiable as class 111 (“s-“) preterites, but this observation, due to Hackstein (1993: 151ff.), has been misinterpreted. Normal class 111 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-āṣt). The forms $kñas-u$ (for *$kñas-wā$) and $kñas-āṣt$, 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. *$ǵnēh$_3$-s-ti, pl. *$ǵnh$_3$-s-enti) and attributes the -e- (unconvincingly, in my view) to phonologically regular anaptyxis in the plural.

6 Ved. 2 sg. opt. $jñeyā́ḥ$ (: pres. $jānā́ti$ ‘knows’) would be compatible with an s-aorist as well as a root aorist; cf. § 11 (end).
matic “root” *kñas- (< PToch. *kñæs- < *gnēs-); it is this “root” which matches the Hittite “root” ganeš. 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 *-sṅa/o- (cf. 1 sg. sireč‘, 3 sg. sireac‘ ‘loved’ < virtual *-sṅasket); the origin of the small class of aorists in -eay is unclear in detail.

If PIE *ǵnēh₃-s- was not an aorist, it could only have been an s-present with Narten ablaut (*ǵnēh₃-s-ti : *ǵnēh₃-s-nti).* Such a stem would account directly for Hitt. ganešzi; it would also have given the Proto-Tocharian root *kñæs-, Tocharian being well known for extracting synchronic roots from present stems (cf. the numerous roots in -sk- and -tk- < *-Tsk-). In Armenian, the regular imperfect *ǵnēh₃-s-m, *ǵnēh₃-s-s, *ǵnēh₃-s-t, etc., with Lindeman variants (*ǵṅnēh₃-s-) in the monosyllabic 2–3 sg., would unproblematically have yielded caneay, with regular generalization of stem-final -a- from the 3 pl. in -eay. Elsewhere in the family, the influence of a lengthened-grade s-present is probably also to be seen in Alb. njoh ‘I know’ < *gnēskō, with *-ē- taken from an Albanian counterpart of ganešzi. 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 LIV² there was a change of heart: despite the difficulties just mentioned, the Narten-ablauting stem *ǵnēh₃-s- 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

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7 As in Latin, where vowel-final roots never form s-perfects, vowel-final roots never form class 111 preters in Tocharian. If one nevertheless had to imagine what a “regular” class 111 pret. of PIE *ǵnēh₃- would have looked like, the only real possibility would be Toch. A 1 sg. *kña-wā, 2 sg. *kña-st, 3 sg. *kña-s, etc., with *kña- < *gñē- and no -s- before the endings. The root-like character of Toch. *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. ābhārat = Gk. 3 sg. impf. ἐβηράτ, 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, \textit{inter alia}, the thematic type in \textit{\textasteriskcentered-se/o-} that underlies the Greek future (e.g., \textit{grápsō} ‘will write’), the \textit{i-} reduplicated thematic (< \textit{h₂e-conjugation}) type seen in the Indo-Iranian desiderative and the Old Irish reduplicated s-future (e.g., \textit{Ved. ciktasi} ‘desires to know’, OIr. \textit{ggius < *gwig}”red-s-ō ‘I will pray’), and the future in \textit{\textasteriskcentered-sje/o-} found in Indo-Iranian (e.g., \textit{Ved. vakşyati} ‘will say’), Balto-Slavic (e.g., Lith. \textit{dūsiu} ‘I will give’), and Continental Celtic (Gaul. \textit{pisśiumi} ‘I will see’). More immediately relevant for our purposes is the athematic unreduplicated type exemplified by the Sabellic future (e.g., Osc. \textit{fust} ‘it will be’),\textsuperscript{11} the Old Irish unreduplicated s-future (e.g., \textit{ré < *ret-s-ti} ‘will run’), and the third person (originally 3 sg.) of the Baltic future (e.g., Lith. \textit{duōs} ‘will give’ < \textit{*dūosti}). These forms are discussed by Hill (2004: 152 ff.), who, in basic agreement with \textit{LIV}, sets up a PIE paradigm with \textit{\textasteriskcentered-e} : zero ablaut (e.g., 3 sg. \textit{*dēh₃-s-ti} : pl. \textit{*dh₃-s-énti}). But the \textit{-i-} of the Lithuanian plural and dual (1–2 pl. \textit{duōsiva}, -\textit{site}, 1–2 du. \textit{duōsiva}, -\textit{sita}) suggests (pace Hill 94 ff.) a lost 3 pl. in \textit{\textasteriskcentered-sinti < *s-\textasteriskcentered-nti}, implying Narten ablaut (\textit{*dēh₃-s-ti} : pl. \textit{*dēh₃-s-\textasteriskcentered-nti}). Pointing in the same direction are the optatives associated with the s-future in Italic (e.g., Lat. \textit{faxim}, -\textit{is}, not \textit{faxiem}, \textit{*iēs}) and the Narten profile of some of the Old Irish roots with unreduplicated s-futures (e.g., pre-Ir. \textit{\textasteriskcentered-ret-}, \textit{*tek} ‘run’, \textit{*sed} ‘sit’). If the reconstruction \textit{*dēh₃-s-ti} : \textit{*dēh₃-s-\textasteriskcentered-nti} is correct, the athematic \textit{s}-desideratives/futures of PIE would be in every sense Narten \textit{s}-presents.

\textit{ganešzi/*gnéh₃-s-ti} is not, of course, a desiderative or future. The \textit{\textasteriskcentered-s-} in this form may at an earlier stage have been inceptive/inchoative (‘come into awareness of’, \textit{vel sim.}), like the \textit{\textasteriskcentered-ske/o-} of the typologically more recent present \textit{\textasteriskcentered-\textasteriskcentered-jn(e)h₃-ske/o-} that partly replaced it (cf. Lat. \textit{(g)nōscō}, OPers. \textit{xšnāsa}).\textsuperscript{12} Just as “desiderative” \textit{\textasteriskcentered-s-} was pressed into service to make futures, “inchoative” \textit{\textasteriskcentered-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. \textit{-eš- < *\textasteriskcentered-eh₃-s-} (e.g., \textit{šallešzi} ‘becomes great’ (: \textit{šalli} ‘great’)), together with its typologically more “modern” Latin equivalent in \textit{-èscō} (e.g., \textit{rubèscō} ‘turn red’ (: \textit{ruber} ‘red’)). The desiderative and inchoative semantic “families” are hard to distinguish at the IE level. Thus, the root \textit{h₂eis-} ‘seek’ made a present \textit{h₂is-skē/o-} (cf.\textsuperscript{13})

\textsuperscript{11} To which the Latin future type \textit{faxō} ‘I will do’ was, according to the most common view, the subjunctive.

\textsuperscript{12} That the \textit{\textasteriskcentered-s-} of \textit{\textasteriskcentered-ske/o-} is the “same” as the \textit{\textasteriskcentered-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. *iccháti*, 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. *haycem* ‘I ask for’ < *aisk*- < *h₂eis*-; OLith. *ieszku* ‘I seek’ (Mod. Lith. *iešk*-) < *eišk*- < *h₂eis*) points to contamination with an unattested desiderative *s*-present *h₂eis*-s-, formally parallel to the inchoative *s*-present *γnéh₂-s*-.

Still other forms in *-s*- and -*ske/o*- are iterative. “Iterative” -*ske/o*- is well known from the immensely productive Hittite iteratives or imperfectives in -šski/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., *ḥalzišš(a)* ‘call repeatedly’, ɪšš(a)- ‘perform’).

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. *nanakkuši*). 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*-desiderative, inchoative, and iterative—are etymologically one and the same. 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*-present 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-

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13 And similarly, we may presume, *prék-s*- beside *pr(ķ)-ské/o*- ‘ask’; cf. § 14.
14 īšš(a)- < *H(i̯)i-Hih₂-s-*, with the same structure as a desiderative of the Indo-Iranian *cikšsati*-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 *-h₂-s- after sonorants: cf. Ved. *kṛ*- ‘do’, fut. *kāriyati*, desid. *cikšsati* (< *k̥-ś-*); Gk. *ten*- ‘stretch’, fut. *enē[s]ō*; OIr. *cel*- ‘conceal’, fut. *cēla* < *kīklase*-o- (< *-kīls-*). The position taken in HIEV (134–135) was that *h₂-s-* was etymological in all cases, with loss of *-h₂- by sound change after obstruents (i.e., in sequences of the form *-Ch₂-s-*) 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* *ǵnē̆h₃-s- vs. “desiderative” *h₂ēis-s-). The importance of this will be seen as we move from ganeš- to other Hittite sigmatic forms.

3 Impv. paḫši

The verb paḫš- ‘protect’, though claimed for both the mi- and hi-conjugations in the older handbooks, is deponent outside the imperative in older Hittite (3 sg. paḫša, paḫšari) and hence indeterminate as to conjugation. Only in the Neo-Hittite period do active forms of the type 1 sg. paḫhašši (common) and paḫhašmi (hapax) begin to appear. Etymologically, the root is an s-enlarged form of PIE *peh₂- or (LIV) *peh₂(j)- ‘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.

Interestingly, the nearly synonymous root *h₂elk- (cf. Gk. alalkeĩn ‘ward off’) has an s-extended form as well (*h₂lek-s; cf. Gk. aléksō = Ved. rákṣati ‘protect’, presumably likewise originally desiderative). It would be tempting to refer both *peh₂-s- and *h₂lek-s- to virtual Narten s-presents *peḥ₂-s- and *h₂lēk-s-, parallel to the Narten s-present *ǵnēh₂-s- that underlies ganeši. But since the reflexes of *h₂lek-s- show no ablaut and Hitt. paḫš- is effectively medium tantum with generalized e-grade (3 sg. paḫša < *peḥ₂-s-or), this cannot be assured. Alongside the Narten type, PIE had a second class of unreduplicated sigmatic root present, characterized by *o : *e ablaut and h₂e-conjugation inflection. The best example of such a “molō-type” s-present is 3 sg. *h₂uḡ-s-e : 3 pl. *h₂uḡ-s-ts (> *-nti) ‘grow’, whence OHG wahsán ‘grow, wax’ (o-grade) and Gk. a(w)ékso-mai ‘increase’ (e-grade).17 In Hittite itself, the verb paš- ‘swallow’ (3 sg. pašši < *póh₃-s-) probably had *o : *e ablaut, assuming that the hi-inflection is old.18 *peh₂-s-/paḫš- and *h₂lek-s-/aléksō/rákṣati could in principle have been molō-type s-presents as well.

Whatever the deep prehistory of paḫš-, 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.

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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. pāšši 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.
The sigmatic forms of the Hittite verb

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., ráṣi ‘grant!’, máṭsi ‘inspire, intoxicate!’, yágṣi ‘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 Szemerenyi (1966), who showed that they were haplologized 2 sg. subjunctives (-si < *sasi or pre-IIr. *-sesi), mostly based on s-aorists. Szemerenyi 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·rǽ ‘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 (-rá < *ress < *reg-(se)si, -án < *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. rási, máṭsi, yágṣi to the s-aorist subjunctives ráśa-, máṭsa-, and yágṣa-. Subsequently, in Jasanoff 1987: 94ff., I argued that Ved. śróṣi ‘hear!’ formed a virtually exact word equation with Toch. B päklyauş, A päklyoṣ ‘id.’. The importance of the päklyauş/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 *kléu-s-, the generalized lengthened grade of which is still on hand in the Tocharian present (< subjunctive) B 3 sg. klyausām and in the imperative päklyauş itself. There is thus no reason in principle why the s-present underlying Hitt. pahš- could not have given rise to a si-imperative as well.

Whether pahši 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 ḫi-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

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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 pahši itself, the only active form of pahš- attested before Neo-Hittite is the 2 pl. impv. pah-ḫašten beside older pahḥašđumat (Craig Melchert, p.c.), obviously created to supply pahši with a plural.

20 Contrary to the position I took in 1987, the phonologically regular reflex of *kléusi would have been *(pä)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 “pahši group.”

Oettinger made the important observation that pahši-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.)’; hannì ‘decide (a legal case)’!; 3 sg. hannari; huitti ‘pull!’: 3 sg. huettìya(ri); iškalli ‘tear!’: 3 sg. iškallari; karšì ‘remove, cut off!’: 3 sg. karšari; pahši ‘protect!’: 3 sg. pahšìya(ri); šaliki ‘touch!’: 3 sg. šaliga(ri); and šarri ‘divide!’ 3 sg. šarattiya(ri) for šarri(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 in a single lexical item—had an imperative in -i and a transitive 3 sg. in *-or/-ar(ı), and the pattern was generalized. But what verbs could have constituted such a nucleus? eš- ‘sit’ can be eliminated; its old imperative is not ešì but the regular middle form ēšḫut. Also eliminable are huettì-, where the 3 sg. is not *huettìya(ri) but the morphologically anomalous huettìya(ri); and šarra-, where there is no “stative” in -a(ri) at all. This leaves hann(a)-, iškall(a)-, karš-, pahš-, and šalig-. Of these, karš- is an active mi-verb in Old and Middle Hittite; hann(a)- has an active 3 sg. hannāi that is at least as old as the “stative” 3 sg. hannari;21 and iškall(a)- has no attested indicative before Neo-Hittite, where it is mostly active. There remain only pahš-, with its robustly attested imperative pahšì, and šalig-, with its imperative šaliki, found only on a single tablet.22 Everything points to pahšì itself, haplogically reduced from a present subjunctive *peh2-s-esì and synchronically reanalyzed as pahš-i, as the locus of the pahšì group as a whole.

The discovery that pahšì 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 hannari and its imperative hannaru 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. naiieiti ‘id.’), pointing to a root *neih₁- or *neih₂- (we will write *neihH-). 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 *u̯eǵh- ‘move by vehicle’, *u̯edeǵh- ‘move/lead’, *nem- ‘bend’, *pekʷ- ‘ripen’, *dʰeǵʷh- ‘burn’, *gʷes- ‘extinguish/go out’, and others, *neihH- 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; cf. Ved. náyati : aor. naiś- ~ neś-, Ved. váhati : váks- (+ Lat. uēhō : uēxi, etc.), OCS vedọ : vēsš (- OIr. fedid : subj. fess-), Ved. námati : nāṃs-, Ved. pácati : aor. subj. pāksa- (- + Lat. coquō : coxi, etc.), Ved. dáhati : aor. d(h)āks- (+ OCS žegǫ : žasš, Ved. jāśa/-dāśa- : 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-, *pekʷ-e/o-, *dʰeǵʷe/o-, or *gʷes-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 II” (*néiH-e/o-, *u̯eǵh-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. namsate ‘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. namsām, paksām, tsaksām, kesām; 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

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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.
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 nešḥut. The non-dental middle imperative ending -(ḥ)ḥut is never otherwise sigmatized. Since HIEV 182–184 I have compared nešḥut with the Vedic middle imperatives rā́sva, mátśva, yākṣva. The latter are not root aorist forms—the roots in question do not make root aorists—but medializations of the attested si-imperatives ráśi, mátṣi, yākṣi, made by replacing what appeared to speakers as an anomalous active imperative ending -si by the normal middle ending -sva. nešḥut is such a form in Hittite, medialized from an inferrable si-imperative *nēši (< *nēiHsi < *nēiH-(se)sì). 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 -(ḥ)ḥut. It is true that there is no actual *nēši in Hittite; the attested active imperative of nai- is the obviously analogical nā́i (like dai ‘put!’, ḫspā́i ‘be sated!’). But the Vedic si-imperative nēśi 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 nēśa (cf. OAv. naēšat). A PIE si-imperative *néiHsi is thus very nearly guaranteed. nešḥut can be seen as its indirect reflex in Hittite.

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 : nešḥut, 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.). But since the imperative and preterite were normally identical in the 2 pl., I argued, these forms came also to serve as pretérites. In the latter role, they analogically took on the regular “strong”

24 There is also a 2 sg. pres. naiśtari (NH).
25 In nai-, on the other hand, it is never not sigmatized: a 2 sg. mid. impv. *nēḥḥut would have been perfectly well-formed, but does not occur.
26 So too váṃsva (: subj. vāṃsa ‘grant’) and sákṣva (: subj. sākṣa ‘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 (-štiH) 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., ḥalzai- ‘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

| Verb | Form | Meaning                  |
|------|------|--------------------------|
| au-/u- | ‘to see’ | (uš[ē]ni, aušteni, aušten) |
| ḥalzai-/ḥalsi- | ‘to call’ | (ḥalsišten) |
| ḫanna-/ḫann- | ‘to sue’ | (ḫanništen) |
| išhai-/išhi- | ‘to bind’ | (išhaišten) |
| išpai-/išpi- | ‘to be satiated’ | (išpišten) |
| mai-/mi- | ‘to grow’ | (mašten) |
| mema-/memi- | ‘to speak’ | (memišteni, memišten) |
| nai-/ ‘to turn’ | (naišteni, naištani, naišten) |
| nanna-/nanni- | ‘to drive’ | (nanništen) |
| pai-/pi- | ‘to give’ | (pišteni, pišten) |
| parai-/pari- | ‘to blow’ | (parašteni) |
| peda-/pedi- | ‘to bring’ | (petičten) |
| penna-/penni- | ‘to drive’ | (penništen) |
| šai-/ši- | ‘to seal’ | (šāišten) |
| šunna-/šunn- | ‘to fill’ | (šuništen) |
| dai-/ti- | ‘to put’ | ([t]išteni, daišten) |
| dāla-/dāli- | ‘to let in peace’ | (dālešten) |
| tarna-/tarn- | ‘to release’ | (tarništen) |
| ünna-/ünni- | ‘to send here’ | (ünništeni, ünništen) |
| uppa-/uppi- | ‘to send here’ | (uppešten) |
| zai-/zi- | ‘to cross’ | (ziščen[∫]) |

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28 Kloekhorst appears not to have understood the argument just presented. According to him (493), “Jasanoff connects the ending -šten(i) with the rise of the 2sg.pret.-ending -šta besides older -otta. As this ending -šta is found in NH and NS texts only, we would expect that -šten(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 -šten in verbs other than au- ‘see’ depends on the prior existence of the 2 pl. pret. in -šten. 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 ħi-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 ħi-verbs only, is 1 in 1.2 trillion ... Our conclusion therefore should be that the ending -šten(i) is the original ħi-ending that contrasts with the mi-ending -ten(i).30

A footnote explains the mathematics: “To my knowledge, we find about 210 ħi-verbs and 580 mi-verbs in Hittite. The ratio ħi-verbs : total number of verbs therefore is 210 : 790 = 1 : 3.76. The chance that a random list of 21 Hittite verbs consists of ħi-verbs only then is 1 : 3.7621 = 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 ħi-verbs, which cannot be accidental. But, more to the point, and not emphasized by Kloekhorst, they are ħi-verbs of a very particular type. Eight of the 21 are monosyllabic stems in which -ai- alternates with -i- (išñai-, išpai-, mai-, pai-, parai-, šai-, dai-, zai-). Three others are ħalzai-, 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 ünna(i)-) are compounds of nai-, and a third (nanna(i)-) is somehow related to these.31 uppai(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)-, ünna(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 ħi-verbs is orders of magnitude more significant

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30 ibid.
31 I leave open whether nanna(i)- is a reduplicated form of nai-, as claimed by Kloekhorst (2008b: 609), or an imperfective in -anna/i- as maintained by Melchert (1998: a16). In the latter case it would have to have been influenced by penna(i)- and ünna(i)-.
32 But uppai(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 -štēn and -štēni 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 waternahten (wātarnaḥ- ‘order’) are thus phonologically regular, according to Melchert, while, e.g., ārten (: ar- ‘arrive’) and dattēni, dātten (: daa- ‘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. paḫ(ha)šduma (paḫš-) 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

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34 Only to spread from these later, fitfully and uncertainly, to the non-diphthongal stems šunna-, ḫanna-, 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)en(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 tākās, klyauṣāso ‘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 *-ǝ. 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 *-a, 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 pāklyōssū ‘hear!’ beside regular pāklyosās, 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 *-mǝ (< *-mes?). We can speculate, therefore, that *-sX was remade to *-sǝ in the preterite, giving Toch. A 2 pl. pret. *-s and Toch. B alternating *-s, *-sǝ; in the imperative, where there was no such remodeling, *-sX survived and gave Toch. A -su 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 (< *-sǝ) 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 *-sh2ǝ 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 *-ǝ in absolute final position, as in the nom. sg. of n-stems (okso < PToch. *oksǝ ‘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 *-uV(C), where *C was any consonant that was lost in final position (e.g., yāmu ‘done’ < *-əwə, from rebuilt *-uμus). 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 *-ā in absolute Auslaut fell together with PIE *-ā as PToch. *-ā (cf. B okso < PToch. *oksǝ < PIE *ukso); and
2) PIE *-ā- was shortened to *-ā- before a final nasal as in Latin and Celtic, whence PToch. *-a (cf. obl. sg. B kantwa < PToch. *kontwa < *-ān < PIE *-ānt).
PIE *-ō never gave -u in either language; the endings that have been thought to show this
possibilities of Toch. A -su would be to start from a post-laryngeal-loss *-su̯ō or *-su̯ā(C). A sequence of this type would have given pre-Tocharian *-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 < *swāyus < *suHi̯us). While this would not explain Toch. A -su directly, an early pre-Tocharian *-su̯ō or *-su̯ā(C), if sufficiently old, would have had a Sievers variant *-su̯ū or *-su̯ā(C) after heavy syllables. Combining the “long” Sievers form of the ending with the pre-Tocharian root *klēus ‘hear’ would have given the attested Toch. A pāklyossū (≈ *klyossu) < PToch. *klyæwswå < *klēus-su̯ō.

Our ending(s) are thus most plausibly traced back to a sequence of the type *-s(u)u̯ō. Here, however, we reach an apparent dead end. No PIE desinence of this shape is known. The closest formal lookalikes are the 2 pl. middle ending *-dh(u)ye/o (Ved. -dhvam, Gk. -sthe, etc.) and the Indo-Iranian 2 sg. middle imperative in *-sya (Ved. -sva), which, as I have suggested elsewhere (Jasanoff 2006 [2008]), may go back to a preform *-sh2(u)u̯o. All these contain an underlying *-Cu̯- 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 ḥi-conjugation in Hittite (e.g., dāš ‘took’), as argued by Melchert (cf. below).

7 2 pl. -šten(i), -šduma(t), etc. (part 11)

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 ḥi-conjugation as a whole. The salient distributional

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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 courtuso ‘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” (nešḥut, *nēšten, *nēštuma, later našḥut, našten, našdumat). The nai-/*nēši/nešḥut 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 pišten(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 -Cē-/Cy- < *-Cih1- C-/ -Chy-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 (maï-, p(a)rai-, šai-, dai-) are standard i-presents with, as I have argued, e : zero ablaut (3 sg. *dhēh₁-ı̯-e : pl. *dhēh₁-ı̯-ęnti).\footnote{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. *sė( j)an = Lith. séju = OCS sě́ju ’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 (2000b: 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: *yéid-s-ti : *yid-s-ęnti).} Another, išpái-, as discussed in HIEV 107–109, was probably originally an i-present with Narten ablaut (*spóh₂-ı̯-e : pl. *spóh₂-ı̯-ęnti). The remaining two monosyllabic
diphthongal stems with acceptable etymologies, viz., išḫai- and nai-, began as $h_2$e-conjugation aorists. The case of išḫai- is discussed in Jasanoff 2018a: 144–145, correcting HIEV 94ff. The root was not *seh₂-(i-) or *sh₂eh₁-(i-), as maintained in HIEV, but *sh₂ei-, with a stative-intransitive $h_2$e-conjugation aorist *sh₂óí-/*sh₂eí- that stood in the same well-attested relationship to the stative perfect *sesh₂óí-e ‘holds bound’ (= Ved. sıṣāya, OAav. hiš.hāiiā) as, e.g., Ved. aor. áceti ‘(has) appeared’ to perf. cikéta ‘knows’, mid. cikite ‘appears’. As for nai-, its regular Hittite paradigm (nēḫḫi, nāi, nēanzi, etc.) points to a stem *nóiH-/*néiH- that on internal formal grounds alone could go back to either a $h_2$e-conjugation (molo-) 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 *ueǵh-, *yedh-, *pekʷ-, *dʰegwh-, and others that formed thematic presents and s-aorists in the Inner IE languages. Roots of this type conspicuously did not make molō-present roots — not even in Germanic and Balto-Slavic, which are particularly rich in such forms. 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 *ueǵh-/*yedh-/*pekʷ-/*dʰegwh-type made, among other things, aorists containing an o-grade. In Tocharian, four of these, viz., pāk-, tsāk-, and the identically patterning nāk- ‘destroy/permit’ 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. pakät ‘ripened’, tsakät ‘burned (intr.)’, nākät ‘perished’ (contrast transitive nakās < *nēk-s- ‘destroyed’), tamāt ‘was born’ < *pekʷ-to, *dʰegwh-to, etc.41

40 It is instructive to contrast the way these languages treat a thematic present/s-aorist root like *ueǵh- and a true molō-type root like *bʰerH- ‘strike’. Go. ga-wiğan ‘move’, Lith. vežu ‘convey’, OCS vezq ‘id.’ are all straightforward e-grade thematic presents, as are Lat. uēhō, Greek (Cypriot) wēkhe/o-, and even Alb. vjedh ‘steal’. PIE *bʰerH-, 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 (börjıq ‘fight’) and Old Norse (börjask ‘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 ḫi-conjugation, not especially common.

41 The corresponding forms were secondarily sigmatized in Tocharian B, but retain the tell-tale o-grade (neksate, 1 sg. tseksamāt, etc.).
That these forms are historically aorists rather than, e.g., imperf...
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 našten (or perhaps of earlier *pešten on the model of *nešten) and the transfer of the -s- from the preterite to the present (”*pitēni” → *pišteni → 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 | Stage II | Stage III |
|---------|----------|-----------|
| (no -s-) | (-s- from nai-) | (-s- → pres.) |
| pret./impv. | *autten | *aušten | aušten |
| pres. | *uttēni | *uttēni | uštēni |

... just like

| pret./impv. | pret./impv. | pres. |
|-------------|-------------|------|
| *daitten | *daišten | daišten |
| pres. | *tittēni | *tittēni |
| tištēni(?) (→ daitteni) |

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)tēṇi was replaced by -štēni in the corresponding present forms.

8 3 sg. aušzi, -štä

A handful of hi-conjugation verbs with intrusive -s- in the 2 pl. also end in -štä 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-štä), and elsewhere, is clearly a Hittite innovation. The oldest attested forms in -štä are aušta (Old Hittite) and memištä (Middle Hittite), from which the ending -štä spread uppa(i)-, the compounds of nai-, and a few other verbs

*bhiH-i- (see HIEV 94). If so, the original form of the strong stem would have been *pyai-< *bhiH-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-conj. 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. uthhi < *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 ħi-conj. 3 sg. pret. in -š (našš, 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 ħi-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 < *gʷhén-ti) beside pres. kuenzi < *gʷhén-ti). There is no reason why there might not similarly have been two treatments for *-st—phonologically regular -š in the ħi-conj. 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.

Possibly just as old, but not so well attested in older texts, is maušzi : maušta ‘fall’.46 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. ištamaššun,-ašta,-ašta; cf. HIEV 121).

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 -ts of forms like OCS pīt ‘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(s)# V...). This was then introduced into other environments, where it had the effect of protecting the otherwise vulnerable final stop.

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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 *aust. If the original ending of the ḫi-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 eš-, 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 ḫi-conjugation once ended in *-st.

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

The question of whether the -š of the ḫi-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 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 ḫāši) ‘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<sup>51</sup> | Toch. A | Proto-Toch. |
|---------------------|---------|--------------|
| sg. 1 prekwa 'I asked' | prakwā | *præk-(ə)wa |
| 2 prekasta | prakāşt | *præk-(ə)sta |
| 3 preksa | prakās | *præk-(ə)sa-[t?] |
| pl. 1 prekam | prakmās | *præk-(ə)mə- |
| 2 *prekas, -kso | *prakās | *præk-(ə)sa- (cf. § 6) |
| 3 prekar | prakār | *præk-(ə)rə[s] |

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.<sup>52</sup> 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 kautāwa | kotā | *kauta-wa |
| 2 kautāsta | kotaṣt | *kauta-sta |
| 3 kauta | kot | *kauta-[t?] |
| pl. 1 kautām | kotpās | *kauta-mə- |
| 2 kautās(o) | kotas | *kauta-sə- |
| 3 kautārē, -ār | kotar | *kauta-rə[nt], -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 śārōwa, -asta, -a, etc.; A śaśērsā, śaśērsāst, śaśērs, etc. ‘made known,

<sup>51</sup> Paradigms taken from Krause-Thomas 1960: 269–270.

<sup>52</sup> The schwa was demonstrated by Winter (1993); see Malzahn’s discussion (2010: 191f.).
taught' (\(kārs\) - ‘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 \(kām\) - ‘come’ and \(lāt\) - ‘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 < \(^{*}\)-r̥s), 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 paprăku ‘asked’ and kakautau/kākotu ‘split’, however, the perfect has left no convincing traces in Tocharian. The \(h_2e\)-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. kārsāte < \(^{*}\)kərsH-/*k̥r̥sH-); reduplicated aorists (e.g., A šasārs), originally thematic; and \(h_2e\)-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 \(h_2e\)-conjugation aorist component of the composite category that we know as the “preterite,” in

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53 Both are significant relics. The preterite of \(kām\)- (Toch. B 3 sg. ʃem(o) : pl. keməni) is the Tocharian reflex of the PIE root aorist \(^{*}\)gʰem- : \(^{*}\)gʰem-, with interesting features (see note 92 below). The preterite of \(lāt\)- (Toch. B 3 sg. lac) is the Tocharian cognate of the well-known PIE thematic aorist (\(^{*}\)h₁ludʰ-éj-ó-), otherwise represented by Gk. ἔλθαν ‘came’ and OIr. lúd ‘went’.

54 Cf. Malzahn (2010: 43–44). \(^{*}\)-rə (< \(^{*}\)-r̥s) is the more archaic variant; \(^{*}\)-ræ (< \(^{*}\)-ront), like the Latin 3 pl. perf. in -rant, is a blend of \(^{*}\)-r̥(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: 82f.; 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:
61ff., 99ff.), the class III preterite bears a striking resemblance to the preterite of
the *hi-conjugation in Hittite. Compare, e.g., the preterite of dā-:

\[
\begin{array}{lll}
\text{sg.} & 1 & \text{dāḫḫun} \\
\text{pl.} & & \text{dāwen} \\
2 & \text{dāṭta} & \text{dāṭten} \\
3 & \text{dāš} & \text{dāîr}
\end{array}
\]

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 dāḫḫun, etc. are the secondary endings of the
*hi-conjugation/h₂e-conjugation, matching the endings of Toch. *praek-(a)wa,
*(a)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 possi-
bility, 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 emphatic-
ally 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

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57 So already \textit{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 -(ḫ)ḫun, 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 dāḫ-ḫun, dāṭta, 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. parksante (A prākse, -sāte, -sāt, 3 pl. prāksānt), exactly like Gk. elusāmēn, -sa[s]o, -sato, Ved. aneṣi, -ṛthāḥ, -ṛṣa, and (NB!) OAv. fraṣī (< *prēk-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. parksate: preksa, he says, is a h₂e-conjugation aorist with originally desinential -s-; parksate 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 IIII preterite is the fully sigmatic present type in *-se/o- (class VIII): cf. Toch. B 1 sg. preksau 'I ask', 3 sg. prekṣāṃ, 3 pl. prekṣem (A praksam, prakāṣ, prakṣeṇc) 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 *prok-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

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\(^{58}\) It is clear from his account that he envisages a PIE 3 sg. *prōk-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 ē-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. *-ōe- with preceding palatalization (cf. Toch. A 3 sg. نىاكاس, pl. نىاكئر ‘destroyed’ < *نىاكئ<s>-< < *نىكئ<s>- (not < *نوكئ<s>-)); Toch. B 3 sg. لىاووسا, pl. لىاوكر ‘illuminated’ < *لىوئوك<s>-< < *لوكئ<s>- (not *لىوك<s>-); cf. Malzahn 2010: 200 ff.). If the class III preterite had simply been a ḫ2-e-conjugation aorist with o-grade in the strong forms and a 3 sg. in *-s, there would be no way to explain the ē-vocalism of these forms. This is why Melchert needs the s-aorist: the similar-looking reflexes of *نىوكئ, *لىوك< (> PToch. *نىوكئ, *لىوئوك), proper to the ḫ2-e-conjugation aorist, and *نىكئ, *لوك< (> PToch. *نىوكئ, *لىوئوك), proper to the s-aorist, were confused, he says, through “the fatal merger of *o and *ē into ... *ē." The result was the intrusion, in effect, of *نىكئ/*نىوكئ- and *لوك-/*لىوئوك-, "borrowed" from the s-aorist, into the ḫ2-e-conjugation paradigm. To the extent the desinential theory is viable at all, it requires an external (i.e., non-ḫ2-e-conjugation) source for the lengthened grade of forms like Toch. نىاكئs.

All this is a major reason why, in my view, the desinential theory is not viable. Melchert is correct that since the Tocharian endings *-wa, *-sta, etc. were generalized from a nucleus of ḫ2-e-conjugation aorists (§ 9), one might have expected the 3 sg. in *-s(t) also to have some kind of deep historical connection to the ḫ2-e-conjugation. But whatever the nature of this connection was, it cannot simply have been that *-s (→ *-st) was the regular Tocharian continuant of the 3 sg. ḫ2-e-conjugation secondary ending, parallel to 1 sg. *-wa and 2 sg. *-sta. If *-s had been the normal 3 sg. ending of a ḫ2-e-conjugation aorist, it would surely have been generalized, like *-wa and *-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 ḫ2-e-conjugation aorists for some reason substituted *-s(t) for *-e in the 3 sg. active. ḫ2-e-conjugation aorists of this special “presigmatic" type were inherited into Anatolian as well. Within Anatolian, *-s(t) was eventually generalized from the presigmatic nucleus to all ḫ2-e-conjugation/ḫi-conjugation preterites in Hittite. It was lost in Luvian.

In support of his case for a desinential *-s in the 3 sg., Melchert cites the supposed identity of this ending with the *-s that he sets up in the 2 pl.: “The
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. vídá ‘you (pl.) know’). 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);

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. (*yóid-e);

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. ádarśi : 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.

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. didáya ‘shines’, plpf. ádidet; etc.).

62 In two recent publications, Kümmel (2016: 83–86, 2018: 245–250), partly building on
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 h₂-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 *-iḥ (the latter presupposed by precatives of the type jēśma ‘we would win’ and yeśam ‘I would travel’) were originally proper to the s-aorist, and go back, as I have argued, to *-yāst and *-išt, respectively; see HIEV 186–188 and the discussion of the presigmatic aorist optative at the end of this section. The Rigvedic hapax dhāyīḥ likewise looks very much like a preceptive. The isolated 3 sg. s-aorists ápāḥ (: pā- ‘drink’) and aprāḥ (along with dhāḥ, atārīḥ, and a few other post-Rigvedic 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. fratuiiā̃ and *aišitiuš (<*-āh) ‘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, vqš, sqš (vs. dāršt, with -t), but the value of these is undercut, as Kümmel recognizes, by the observable simplification of *-st to *-s in the imperfects ās, ānas, and dīdš. 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, adoršnauš and 3 sg. opt. kāriyaiš, vināšyaiš, frașišyaiš. 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 *-št to *-išt in the prehistory of Old Persian, with *-št subsequently spreading to the present system and taking on preterital value. The basis of the 3 sg. in -š (< *-išt) an analogical 3 pl. in -san was created, seen, e.g., in mā yadiyaiša, ‘they should not be sacrificed to’, akunavaša, beside akunava, ‘they made’, etc. A 3 sg. *abaratorq is inferred by Kümmel from 3 pl. abaraq, abar[ra]hqarq ‘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. ſakas, pl. ſakar, 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

\[
\begin{array}{c|c}
1 & *prók-h₂e & *prók-me- \\
2 & *prók-th₂e & *prók-(t)e- \\
3 & *prék-s-t & *prék-t̥s \\
\end{array}
\]

Compare the slightly different version in HIEV (178). 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 dāh-ḥun and prekwa paradigms in Hittite and Tocharian, respectively. The lengthened grade of the 3 sg. is necessitated by the palatalization of ſakas, -ār in Tocharian and the ablaut of the s-aorist in the Inner IE languages (Ved. ávēt, 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.
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 *parksanai, *sətai, etc. = A *präkse, *səte, 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, *lyokät, and *wakät. These are intransitive (anti-causative) o-grade middle root aorists (< *pokʷ*-to ‘grew ripe’, *dʰogwh*-to ‘burned up’ (intr.), *nok*-to ‘perished’, etc.), synchronically opposed to the (attested or safely inferable) transitive s-preterites *pakäš ‘cooked, made ripe’ (< *pēkʷ*-s-t), *šakäš ‘burned’ (tr.) (< *dʰēgwh*-s-t), and *nakäs ‘destroyed’ (< *nēk-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. *prōk-ʰ₂e ‘asked’ | 1 sg. act. *nōk-ʰ₂e ‘destroyed’ |
| 3 sg. act. *prēk-s-t | 3 sg. act. *nēk-s-t |
| 3 sg. mid. *prēk-s-to ‘asked for oneself’ | 3 sg. mid. *nōk-[t]ō ‘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. *nēḫḫun, *naitta, *naiš, etc. ≈ Ved. *anaiṣam, *anaiḥ, 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)aḥḥat, *ne(y)aṭat, *ne(y)aṭ, etc. must therefore rest on a dentalless 3 sg. mid. of the type *nōiH-o.67

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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. *pārk-, 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 cmetār, ḫsketār, nketār; cf. §15).

67 Or *nōiH-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). 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. klyauṣāṃ, etc.) is historically the subjunctive (*kleu-s-e/o-) of a Narten s-present *kļeu-s- (cf. § 3). And while it is true that full-grade s-aorist subjunctives of the type *nēk-s-e/o-, *dhegwh-s-e/o-, etc. would regularly have given palatalized *nāk-s-, *sāk-s-, etc. rather than the attested nāk-s-, tsāk-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.). 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 pahši was haplologized from a 2 sg. subj. *peh2sesi (§ 3), and the imperative nešḫut implies a si-imperative *nēši, haplologized from a 2 sg. subj. *nejHsesi

68 In this particular case, with analogical root vocalism (*-ae-) from the preterite and subjunctive.
69 It can hardly be accidental that the same inherited subjunctive that underlies the si-imperative pāklyauṣ and the thematic present klyausāṃ in Tocharian was also the source of a si-imperative and a thematic present in Vedic (si-impv. śrōṣi: pres. 3 pl. śroṣan, impv. śroṣantu, ptcp. śrōsamāṇa-). Note also Ved. si-impv. naksī ‘come!’ (< *reach!’) beside pres. nāksati ‘reaches’, ptcp. nāksamāṇa-, etc., evidently based on the subjunctive of a desiderative s-present *h2nēk-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 *h2nēk-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 *prék-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 nešḫut 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 nešḫut, *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 presismatic aorist. It thus inherited, along with the indicative *nóiH-h₂e, *nóiH-th₂e, *nēiH-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 haplologized 2 sg. subj. *neīH-si/*nēši survived long enough to engender nešḫut, *nešt-en (→ naišt-en), and, ultimately, the phenomenon of intrusive -s-. See further §16.

The subjunctive of the PIE presismatic aorist, then, was built to the sismatic “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 1 subjunctive 3 sg. prekâm, pl. parkâm (< pre-Toch. *prók-/*prék-). But synchronic regularities have historical explanations, and in this case the explanation is of considerable interest. The class 1 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-ya- or *-s-i- is expected, we find instead the optative of a root aorist: cf., e.g., Ved. opt. sahyā- beside s-aor. sāks- (: sah- ‘prevail’), yamyā- beside s-aor. yāṃs- (: yam- ‘yield’), GAv. opt. 1 pl. zaēma beside s-aor. *zāh- (: zā- ‘win’), YAv. 3 sg. vainiṃ beside s-aor. subj. vōṅgha- (: 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, $h_2e$-conjugation component of the presigmatic aorist stem. Since aorists of the type *$prōk$-/*$prēk$-, 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. The acrostatic pattern was abandoned in regularized Vedic forms of the type 2, 3 sg. *sahyāḥ, 1 pl. *sāhyāma, and 3 sg. *yamṛyāḥ, 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. *vainīt (< *$u̯én$-$ih₁$-$t$); the equivalent form in Vedic would have been remade to *vanyāḥ; and 2) the Vedic precatives (= sigmatized optatives) in -eṣ-, a formation discussed in HIEV 186–188. The precative in -eṣ- is confined to the roots *ji- ‘conquer’ (1 sg. *jesam, 2 sg. *jeḥ, 1 pl. *jēśma) and *yā- ‘go’ (1 sg. *yesam) 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), gesma (AV), and others). Since the two founding roots, *ji- and *yā-, both made s-aorists (ajaïṣam, ayāsam, etc.), their inherited presigmatic aorist optatives would have been Ir. *$já$-i- (< *$g$-$wē$-$ih₁$) and *$i$-$i$- (< *$jē$-$h₂$-$ih₁$), 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.

\[
\begin{array}{lll}
\text{Optative} & \text{Indicative} \\
\text{sg.} & 1 & *já-$i$-$m$ (< *$jē$-$h₂$-$ih₁$-$m$) \\
& 2 & *já-$i$-$š$ (< *$jē$-$h₂$-$ih₁$-$š$) \\
& 3 & *já-$i$-$t$ (< *$jē$-$h₂$-$ih₁$-$t$) \\
\end{array}
\]

71 As in Narten presents; cf. 3 sg. opt. *$u̯ēl$-$ih₁$-$t$ (> Lat. uelit ‘wants’, Go. wilī ‘id.’, OCS velīts ‘orders’); *$u̯ēl$-$h₁$- ‘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. *vainīt would have been *$u̯āni$ (so HIEV) or *$u̯āni$.$h₁$.

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:

\[2 \text{sg. indic. } *\text{ájās ([-s-s/] : 3 sg. } *\text{ájāst : 2 sg. opt. } *\text{tájš} : 3 \text{sg. X,}\]

where X was solved as *tájšt. From sigmatized *tájšt (> *yēh) was extracted the precative stem *tájš-/yes-. 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. *bhūjāt → *-jāst > bhūyāḥ, 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 | non-sigmatic | non-sigmatic | sigmatic |
| (*prék-h₂e, etc.) | (*neḫḫun, etc.) | (B prekwa, etc.) | (ánaṣam, etc.) | (élusa, etc.) |
| 3 sg. act. indic. | sigmatic | sigmatic | sigmatic | sigmatic |
| (*prék-s-t) | (naiš) | (B preksa) | (ánašt) | (élude) |
| 1–3 sg./pl. mid. a) non-sigmatic | non-sigmatic | non-sigmatic | – | – |
| (*móH-o or *-e)⁷⁶ | (ne(y)at) | (A nakāt) | | |
| b) sigmatic⁷⁷ | – | sigmatic | (ánēšt) | (elusato) |
| (*prék-s-to, etc.) | | (B parksate) | | |
| subjunctive | sigmatic | sigmatic | sigmatic | sigmatic |
| (*prék-s-e/o-) | (nešhut) | (B preksau, etc.) | (néṣa-) | (lúsomen)⁷⁸ |
| optative | non-sigmatic | non-sigmatic | non-sigmatic | sigmatic |
| (*prék-ih₁-) | – | (B paršī) | (yamyā-) | (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.
The presismatic aorist in Tocharian

The presismatic 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. parši), where the $h₂$e-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. *kʰwri-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.  

Three major varieties of PIE aorist were “subjunctified” in Tocharian—normal root aorists with *e : zero ablaut, $h₂$e-conjugation aorists of the stative-intransitive type, and presismatic aorists. Although our focus below will be on the presismatic 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-), stām- ‘stand’ (< *stembʰH-), or that were assimilated to the profile of such roots, e.g., kārs- ‘know’ (as if <

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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: 267 f.). The aorist injunctive is favored as a source of Tocharian subjunctives by Peyrot (2013: 407 f.).

80 Not, however, the thematic aorist *h₁ludʰ-é/ó- (cf. note 53) or the reduplicated causative aorist ancestral to preterite class II in Toch. A (e.g., wawik ‘removed’, šasārs ‘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 “ə-grade” in the active singular,\(^1\) 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. *lywa < *leuH-t; B 3 sg. š(c)ama, A šäm < PToch. *šcama < *stembH-t; B 3 sg. šarsa, A šärs < *šarsa < *kersH-t. Stative-intransitive aorists in Tocharian, by contrast, were mostly associated with anīt (i.e., non-laryngeal-final) roots, e.g., märs- ‘forget’ (< *mers-), lit- ‘fall’ (< *leit-), wik- ‘disappear’ (< *ueig- or *uieik-). 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. mārsat (< *mærsa- < *mors-),\(^2\) opt. 3 sg. mid. marsoytär (< *mrs-); A 3 sg. letas (< *læyta- < *loit-), abstract litālune (< *lit-); A 3 sg. wekaṣ (< *wæyka- < *u̯iḱ/g-), abstract wikālune (< *u̯iḱ/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 161ff.). 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) *kersH-m₂ *kersH-me- and 2) *yoig-h₂e *yoig-me-
   *kersH-s *kersH-te *yoig-th₂e *yoig-(t)e?
   *kersH-t *kersH-ent *yoig-e *yoig-rs\(^3\)

---

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: 171ff.) 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 kärs- 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 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 | *kærsa- < *korsa- | ← *kers(H)- | *weyka- | ← *woik- | < *yoig- |
| 2 | *kærsa- < *korsa- | ← *kers(H)- | *weyka- | ← *woik- | < *yoig- |
| 3 | *kærsa- < *korsa- | ← *kers(H)- | *weyka- | ← *woik- | < *yoig- |
| pl. 1 | *korsa- < *krsa- | ← *kers(H)- | *wyka- | ← *wik- | < *yoig |
| 2 | *korsa- < *krsa- | ← *kers(H)- | *wyka- | ← *wik- | < *yoig- |
| 3 | *korsa- < *krsa- | ← *kers(H)- | *wyka- | ← *wik- | < *yoig- |

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

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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 kärs-type.
86 With secondary “weak” vocalism in the 1–2 pl. of the subjunctive.
87 With the standardly assumed substitution of *-ay-, the “morphological” reflex of pre-Toch. *-i-, for phonologically regular *-e-. Cf. Malzahn 2010: 24–25, with literature.
Class I preterite

| PToch. | pre-Toch. | late PIE | PToch. | pre-Toch. | late PIE |
|--------|-----------|----------|--------|-----------|----------|
| sg. 1  | *šǝrsa-  | *kers-   | *kers(H)- | *wǝyka- | *woik-   | *yoig-  |
| 2      | *šǝrsa-  | *kers-   | *kers(H)- | *wǝyka- | *woik-   | *yoig-  |
| 3      | *šǝrsa-  | *kers-   | *kers(H)- | *wǝyka- | *woik-   | *yoig-  |
| pl. 1  | *kærs-   | *korsa-  | *kersH-   | *wǝyka- | *woik-   | *yoig-  |
| 2      | *kærs-   | *korsa-  | *kersH-   | *wǝyka- | *woik-   | *yoig-  |
| 3      | *kærs-   | *korsa-  | *k̥rsH-   | *wǝyka- | *woik-   | *yoig-  |

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, a-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, a-grade was extended from the singular of the kärs-type to the singular of the wik-type, and æ-grade spread from the 1–2pl. 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 items and, more to

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88 a-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 käm- ‘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*em-m > *g*ēm), 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 *nók-h₂e | pl | *nók-me-
|----|-------------|----|-------------
| 2 *nók-th₂e | *nók-(t)e-
| 3 *nék-s-t | *nék-ṛs

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-ṛs became *nek-ṛti, again with the primary ending. In the 3 sg., the theoretically expected form would have been *nēk-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 a-grade), as in class V (cf. above). The preterite was likewise subject to morphological simplification. Unlike the Inner IE languages, which generalized the stem *nék-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. ňakär beside 3 sg. ňakās, 3 pl. šarkār ‘they bound’ (: kār-), Toch. B 3 pl. lyaukar beside 3 sg. lyauksa ‘illuminated’, 1 sg. ňauskwa ‘I squeezed’ (: nusk-), and many other examples; cf. Malzahn’s discussion cited in §10. The result was the attested system:

allomorphs: *gʷēm-, proper to the 1 sg.; *gʷm(m)-, proper to the 3 pl.; and *gʷem-, proper to all the other forms. These resolved into two daughter paradigms—a preterite with *gʷēm- (cf. B 3 sg. šem(o)) and *gʷm(m)- (1 pl. kmem(o), 3 pl. kameṃ), and a subjunctive based on *gʷem- (A 3 sg. šmās, B 2 sg. šāmt). For other theories of these forms see Peyrot 2013: 422–429.
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 $h_2e$-conjugation...
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 Wurzelvokals ... 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-r̥, gen. *uéd-n̥-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

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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. *nešḫut 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. nešḥut < *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 h₂e-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 *prék-ské/o- ‘ask’ (: Ved. pṛcchati, etc.), replacing an older Narten s-present *prék-s/*prék-s- (cf. the replacements
*ǵnē̆́h₃-s* → *ǵn̥h₃-skê/ó- and *h₂eis-s* → *h₂is-skê/ó- (§2)). The Narten imperfect *prék-s-m, *-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-r̥s) were specialized as transitive. The intransitive function devolved onto a specially differentiated middle paradigm with retained o-grade in the 3 sg. (*nóiH-o, *néiH-o), but the weak (e-grade) stem elsewhere (1 sg. *néiH-h₂e, 2 sg. *-th₂e, pl. *néiH-medh₂e, *-dh(u)ye, *-ro).

An effect of 1) was to produce the near-synonymous pair 3 sg. *prók-e (h₂e-conj. aorist) ≡ *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 *néiH-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, *néiH-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 *prék-, 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 *prék-, 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. *nék-e and *néiH-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 *nék-et, *néiH-et or *nék-t, *néiH-t?95 And how sure can we be that pairs of the type *nék-e : *nék-o and *néiH-e : *néiH-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. *néiH-$h_2e$, *-th$_2e$, pl. *néiH-med*$h_2$, *-$dh(u)ye$, *-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 padê (< *pode) ‘fell’ = Ved. 3 sg. “passive” aorist pā́di ‘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

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. *naektₐ < *nokto). Under the new scenario, late PIE 3 sg. *nöiH-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. *nöiH-h₂e ≠ mid. *néiH-h₂e; 2 sg. act. *nöiH-th₂e ≠ mid. *néiH-th₂e; 1 pl. act. *nöiH-me- ≠ mid. *néiH-med₃h₂; 2 pl. act. *nöiH-(t)e- ≠ mid. *néiH-d₃h(u)₃e; 3 pl. act. *néiH-₃s ≠ mid. *néiH-ro), the 3 sg. had only *nöiH-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. *nöiH-e stopped meaning ‘led’, the specific form that replaced it should have been taken from the imperfect of a Narten s-present.97

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Gorbachov, who further compared Slavic -bšde ‘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 *dōh₃-s ‘took’ < *’gave to oneself’) or, more typically, intransitive (as in the stative-intransitive aorist: *yōḥ₃-g-e ‘broke’, *pōd-e ‘fell’, *b’hōud₃-e ‘awoke’, etc.). There is no evidence at all for a transitive active 3 sg. aor. in *-e apart from the purely hypothetical *nöiH-e ‘led’, *nók-e ‘destroyed’, etc. These, of course, are the very forms whose purported near-homophony with the supposed intransitive middles *nöiH-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 *nöiH-h₂e | 1 *néiH-h₂e |
|---------|-------------|-------------|
| 2 *nöiH-th₂e | 2 *néiH-th₂e |
| 3 *néiH-s-t | 3 *nöiH-e |
| pl. | 3 *néiH-₃s | 3 *néiH-ro |

In the 3 sg., the form that “should” have been assigned to the active paradigm (*nöiH-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 *h2ēis-ské/ó- and *prk-ské/ó-, as we have seen, probably replaced earlier Narten s-desideratives *h2ēis-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 méllō gráphein ‘I am about to write/be writing’ (present infinitive) and as méllō grápsai ‘I am about to write/get written’ (aorist infinitive). On the assumption that the *-s- of *h2ēis-s- and *prék-s- had the same property, the pre-PIE subjunctives *h2ēis-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 *h2ēis-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 *h2ēis-/*h2ēis- and *prék-/*prék-.\(^{98}\) From the synchronic point of view of a speaker, then, the aorist inflection of the roots *h2ēis- and *prék- would have included

1) an ordinary h2e-conjugation root aorist indicative (e.g., *prék-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-m, etc.).

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\(^{98}\) 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 *h2ēis- and *prék-on the strength of the s-aorist profiles of these roots in the later languages (cf. OAv. s-aorist injunctive 3 sg. āšiš ‘wishes’; 1 sg. mid. frašši ‘I take counsel’, Ved. aor. 3 sg. āprāṭ ‘asked’, Toch. B prekwa, etc.).

\(^{99}\) Since the sequence *h2ēis-s- would have fallen together with *h2ēis- by the PIE degeneration rule (cf. 2 sg. *h2ēsī ‘you are’ < *h2ēs-sī), 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 *h₂e-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 *h₂e-conjugation aorists *nóíH-*néíH-/*nók-/*nék-/*dhógwh*-/*dhéghwh-, etc., where a) the “native” subjunctives *néíH-e/o-, *nék-e/o-, *dhéghwh-e/o-, etc. were homophonous with emerging thematic presents (cf. Ved. náyati, dáháti, etc.),¹⁰⁰ and b) the 3 sg. active needed an unambiguously transitive replacement for the no longer viable *nóíH-e, *nók-e, *dhóghwh-e, etc. The result was the analogical extension of the subjunctive in *-se/o- and the indicative in *-s-m, *-s-s, etc. to the larger group of bivalent roots, thus clearing the way for the specialization of *néíH-s-t, *nék-s-t, *dhéghwh-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. | *néíH-h₂e (*nék-h₂e) | pl. *néíH-medh₂h₂ (*nék-medh₂) |
|-----|---------------------|---------------------------------|
| 1   | *néíH-th₂e (*nék-th₂e) | *néíH-dh(u)če (*nék-dh(u)če) |
| 2   | *nóíH-e (*nék-e)     | *néíH-ro (*nék-ro)             |

The only difference vis-à-vis HIEV (196) is that the 3 sg. ending now appears as *-e. This *-e is preserved in Slavic padê, -bêde, 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 ii” thematic presents *néíH-e/o-, *nék-e/o-, etc. actually were in origin the subjunctives of the h₂e-conjugation aorists *nóíH-/*néíH-/*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(rī) rest directly on a mechanically back-formed *nōiH-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. *neyaḫḫari or 3 sg. pret. *neyattat, the well-attested Old Hittite forms in -a(rī) and -at(i) are unambiguously athematic. There is thus no possibility of a close connection between Hitt. *nē(y)a- and the true thematic present represented by Ved. *nāyati and YAv. *naiieiti. 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. *nakāt, *pakāt, *tsakāt, *tamāt, and a handful of other intransitive forms (cf. §7); here too belong 3 pl. *tamānt and *lyokānt (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: *nēksate (3 pl. -ante), *temtsate (1 sg. *temtsamai, 1 pl. -amte, 3 pl. -ante), *lauksāte, 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 é-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

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101 The dentalless ending -a (with or without added -rī, etc.) is confined to athematic stems. Thematic stems, best illustrated by the verbs in -ie/-iya- and -ški/-ška-, 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. | *nek-(m)ar | pl. | *nek-medh(ar |
|-----|-------------|-----|--------------|
| 1   | *nek-tar    |     | *nek-dha'ar (vel sim.) |
| 2   | *nek-or     |     | *nek-ŋtor    |

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. sruuiē 'is famed as', Hitt. ištuwāri 'becomes known', and reflected in Tocharian by class 111 presents like Toch. B lipetār 'is left over', märsetār 'forgets', Toch. A pärkatār '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 ("persistence") *-o-, whence the regular inflection: Toch. B -emar, -etar, -etār, etc., A -amār, -atār, -atār, etc. < PToch. *-emar, *-etar, *-etar, etc. < *-o-mar, *-o-tar, *-o-tor. The class 111 subjunctives had precisely the same treatment. Class 111 subjunctives thus inflect exactly like class 111 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. nāyati, the class 111 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. pācāti 'cooks', dāhāti '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. elusáṃen, -sa[š]o, -sato, etc. ("pattern 1"; cf. §11). In Tocharian this serves as the unmarked middle of the class 111 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 111 (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. *-aif and Balto-Slavic stative presents in *-i̯e, as "essives" in *-h1⟨-i̯e⟩/o-.

103 Palatalization also survives in the infinitive īmetsi (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. khūto. The antiquity of the presigmatic aorist in this verb is underscored by the Tocharian class III pret. A 3 sg. śosā-m ‘poured’ beside class I subj. B 1 sg. kewu ‘I will pour’.

Whether Anatolian also once had a fully sigmatic middle like Tocharian is unclear. Only the naiš : nē(y)at(i) = ńakās : nakāt 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 *prék-s-m, *-s-s, *-s-t, etc. was revalorized as a transitive 3 sg. aorist (*prék-s-t), the middle of the narrative imperfect (*prék-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. naeš-). 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

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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 *kwetār (cl. 111), but the productively formed kutār (cl. I) ‘will be poured’. Another probable Inner IE case of pattern 2 is Lat. lūxit ‘illuminated’ (matching Toch. B lyauksa, A lyokās) beside Ved. pass. aor. aroci (matching Toch. B lauk[sā]le, A l[y]okāt).
is not unlikely that there were other verbs in the language with presigmatic aorists/preterites—reflexes of roots like *u̯eǵʰ-, *u̯edʰ-, *dʰeǵʰ-, 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 je/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 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, iššaišten, 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, iššaiš, 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 hi-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 jomamь ‘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 -št/*-s-t to transitivized stative-intransitive aorists like wāk(k)- ‘bite’ (3 sg. pret. wāksiš, 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 hiverbs. 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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References

Adams, Douglas Q. 1988. *Tocharian Historical Phonology and Morphology*. New Haven: American Oriental Society.

Adams, Douglas Q. 1994. The Tocharian Class III preterite and related Indo-European formations. In *In honorem Holger Pedersen: Kolloquium der Indogermanischen Gesellschaft vom 26. bis 28. März 1993 in Kopenhagen*, Jens Elmegård Rasmussen, ed., 1–28. Wiesbaden: Dr. Ludwig Reichert Verlag.
Adams, Douglas Q. 2012. Shedding light on *leuk- in Tocharian and Hittite and the wider implications of reconstructing its Indo-European morphology. TIES 13: 21–55.

Bybee, Joan, Revere Perkins, and William Pagliuca. 1994. The Evolution of Grammar: Tense, Aspect, and Modality in the Languages of the World. Chicago: University of Chicago Press.

CHD: see Güterbock et al. 1989–.

Cowgill, Warren. 1967. Ablaut, accent, and umlaut in the Tocharian subjunctive. In Studies in Historical Linguistics Presented to George Sherman Lane, Walter W. Arndt et al., eds., 171–181. Chapel Hill: University of North Carolina.

Cowgill, Warren. 1979. Anatolian hi-conjugation and Indo-European perfect: installment 11. In Hethitisch und Indogermanisch. Vergleichende Studien zur historischen Grammatik und zur dialektgeographischen Stellung der indogermanischen Sprachgruppe Altkleinasiens, Erich Neu and Wolfgang Meid, eds., 25–39. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.

Eichner, Heiner. 1973. Die Etymologie von heth. meḫur. MSS 31, 53–107.

Eichner, Heiner. 1975. Die Vorgeschichte des hethitischen Verbalsystems. In Flexion und Wortbildung. Akten der v. Fachtagung der Indogermanischen Gesellschaft, Regensburg, 9.–14. Sept. 1973, Helmut Rix, ed., 71–103. Wiesbaden: Reichert.

Gorbachov, Yaroslav. 2014. A diachronically-motivated typology of the early historical Slavic verb. Slavia Iaponica 17, 33–75.

Güterbock, Hans G., Harry A. Hoffner Jr., and Theo P.J. van den Hout. 1989–. The Hittite Dictionary of the Oriental Institute of the University of Chicago. Chicago: The Oriental Institute of the University of Chicago.

Hackstein, Olav. 1993. Osttocharische Reflexe grundsprachlicher Präsentbildungen von idg. *ǵneh3- ‘(er)kennen’. In Indogermanica et Italica. Festschrift für Helmut Rix zum 65. Geburtstag, Gerhard Meiser, ed., 148–158. Innsbruck: Institut für Sprachwissenschaft.

Hackstein, Olav. 1995. Untersuchungen zu den sigmatischen Präsentstammbildungen des Tocharischen. Göttingen: Vandenhoeck & Ruprecht.

HIEV: see Jasanoff 2003.

Hill, Eugen. 2004. Die sigmatischen Modus-Bildungen der indogermanischen Sprachen. Erste Abhandlung: Das baltische Futur und seine Verwandten. International Journal of Diachronic Linguistics and Linguistic Reconstruction 1, 69–171.

Hoffmann, Karl. 1967. Der vedische Prekativtyp yesam, jesma. MSS 20, 25–37.

Janda, Laura A. 1996. Back from the Brink: A Study of How Relic Forms in Languages Serve as Source Material for Analogical Extension. Munich & Newcastle: Lincom Europa.

Jasanoff, Jay H. 1986. Old Irish tair ‘come!’. Transactions of the Philological Society 1986, 132–141.
Jasanoff, Jay H. 1987. Some irregular imperatives in Tocharian. In *Studies in Memory of Warren Cowgill (1929–1985). Papers from the Fourth East Coast Indo-European Conference, Cornell University, June 6–9, 1985*, Calvert Watkins, ed., 92–112. Berlin/New York: de Gruyter.

Jasanoff, Jay H. 1988a. PIE *ǵné- ‘recognize, know’. In *Die Laryngaltheorie und die Rekonstruktion des indogermanischen Laut- und Formensystems*, ed. Alfred Bammesberger, 227–239. Heidelberg: Winter.

Jasanoff, Jay H. 1988b. The sigmatic aorist in Tocharian and Indo-European. *TIES* 2, 52–76.

Jasanoff, Jay H. 1998. The thematic conjugation revisited. In *Mír Curad. Studies in Honor of Calvert Watkins*, Jay H. Jasanoff, H. Craig Melchert, and Lisi Oliver, eds., 301–316. Innsbruck: Institut für Sprachwissenschaft.

Jasanoff, Jay H. 2002–2003 [2004]. Stative *-ē- revisited. *Die Sprache* 43, 127–170.

Jasanoff, Jay H. 2003. *Hittite and the Indo-European Verb*. Oxford/New York: Oxford University Press.

Jasanoff, Jay H. 2006 [2008]: The ending of the PIE 2 sg. middle imperative. *Die Sprache* 46, 2013–212.

Jasanoff, Jay H. 2012a. Did Hittite have *si*-imperatives? In *The Sound of Indo-European 2: Papers on Indo-European Phonetics, Phonemics and Morphophonemics*, Roman Sukač and Ondřej Šefčík, eds., 116–132. Munich: Lincom Europa.

Jasanoff, Jay H. 2012b. Long-vowel preterites in Indo-European. In *The Indo-European Verb. Proceedings of the Conference of the Society for Indo-European Studies, Los Angeles 13–15 September 2010*, H. Craig Melchert, ed., 127–135. Wiesbaden: Reichert.

Jasanoff, Jay H. 2013. The Tocharian subjunctive and preterite in *-a-. In *Multi Nominis Grammaticus: Studies in Classical and Indo-European Linguistics in Honor of Alan J. Nussbaum on the Occasion of his Sixty-fifth Birthday*, Adam I. Cooper, Jeremy Rau, and Michael Weiss, eds., 105–120. Ann Arbor and New York: Beech Stave.

Jasanoff, Jay H. 2018a. What happened to the perfect in Hittite? A contribution to the theory of the *h2e*-conjugation. In *Morphosyntaxtische Kategorien in Sprachgeschichte und Forschung: Akten der Arbeitstagung der Indogermanischen Gesellschaft vom 21. bis 23. September 2015 in Marburg*, Elisabeth Rieken, ed., 137–156. Wiesbaden: Reichert.

Jasanoff, Jay H. 2018b. The phonology of Tocharian B okso ‘ox’. In *Farnah. Indo-Iranian and Indo-European Studies in Honor of Sasha Lubotsky*, 72–76. Ann Arbor and New York: Beech Stave.

Kim, Ronald I. 2005. Review of Jasanoff 2003, *Diachronica* 22, 191–200.

Kim, Ronald I. 2006. Review of Burlak, *Istoriceskaj Fonetika Toxarskij Jazykov*. *Kratylos* 51, 130–136.

Kim, Ronald I. 2012. Unus testis, unicus testis? The ablaut of root aorists in Tocharian and Indo-European. In *The Indo-European Verb. Proceedings of the Conference*
of the Society for Indo-European Studies, Los Angeles 13–15 September 2010, H. Craig Melchert, ed., 137–149. Wiesbaden: Reichert.

Kloekhorst, Alwin. 2008a. The Hittite 2pl.-ending -sten(i). In VI Congresso Internazionale di Ittitologia. Roma, 5–9 settembre 2005. Parte 11, Alfonso Archi and Rita Francia, eds. [Studi Micenei ed Egeo-Anatolici 50], 493–500. Roma: CNR.

Kloekhorst, Alwin. 2008b. Etymological Dictionary of the Hittite Inherited Lexicon. Leiden/Boston: Brill.

Kloekhorst, Alwin, and Alexander Lubotsky. 2014. Hittite nai-, nē-, Sanskrit nī-, and the PIE verbal root *(s)neh₁-. In Munus Amicitiae. Norbert Oettinger a collegis et amicis dicatum, H. Craig Melchert, Elisabeth Rieken, and Thomas Steer, eds., 126–137. Ann Arbor and New York: Beech Stave.

Krause, Wolfgang, and Werner Thomas. 1960. Tocharisches Elementarbuch. Band 1: Grammatik. Heidelberg: Winter.

Kümmel, Martin. 2015. Addenda und Corrigenda zu LIV². http://www.martinkuemmel.de/liv2add.html, accessed 7 May, 2018.

Kümmel, Martin. 2016. Is ancient old and modern new? Fallacies of attestation and reconstruction (with special focus on Indo-Iranian). In Proceedings of the 27th Annual UCLA Indo-European Conference, David M. Goldstein, Stephanie W. Jamison, and Brent Vine, eds., 79–96. Bremen: Hempen.

Kümmel, Martin. 2018. Anatolisches und indogermanisches Verbum: Erbe und Neuerung. In Morphosyntaktische Kategorien in Sprachgeschichte und Forschung: Akten der Arbeitstagung der Indogermanischen Gesellschaft vom 21. bis 23. September 2015 in Marburg, Elisabeth Rieken, ed., 239–257. Wiesbaden: Reichert.

LIV = Lexicon der indogermanischen Verben. Die Wurzeln und ihre Primärstammbildungen. Zweite, erweiterte und verbesserte Auflage bearbeitet von Martin Kümmel und Helmut Rix. Wiesbaden: Reichert. 2001.

Lundquist, Jesse and Anthony D. Yates. 2018. The morphology of Proto-Indo-European. In International Handbook of Indo-European Linguistics, vol. 3, Matthias Fritz, Brian D. Joseph, and Jared Klein, eds., 2079–2195. Berlin: de Gruyter.

Malzahn, Melanie. 2010. The Tocharian Verbal System. Leiden/Boston: Brill.

Melchert, H. Craig. 1998. Aspects of verbal aspect in Hittite. In III Uluslararasi Hittoloji Kongresi Bildirleri. Acts of the IIIrd International Congress of Hittitology, Çorum, September 16–22, 1996, S. Alp & A. Süel, eds., 413–418. Ankara: Uyum Ajans.

Melchert, H. Craig. 2013. Ablaut patterns in the Hittite ḫi-conjugation. In Proceedings of the 24th Annual UCLA Indo-European Conference, Stephanie W. Jamison, H. Craig Melchert, and Brent Vine, eds., 137–150. Bremen: Hempen.

Melchert, H. Craig. 2015. The Tocharian s-preterite. In Tocharian Texts in Context. International Conference on Tocharian Manuscripts and Silk Road Culture, June 25–29th, 2013, Melanie Malzahn, Michaël Peyrot, Hannes Fellner, and Theresa-Susanna Illés, eds., 127–135. Bremen: Hempen.
Melchert, H. Craig. Forthcoming. Hittite and Luvian uppa- and Hittite uya-, to appear in Proceedings of the Ninth International Congress of Hittitology, A Süel, ed.
Oettinger, Norbert. 1979. Die Stammbildung des hethitischen Verbums. Nürnberg: Carl.
Oettinger, Norbert. 2007. Der hethitische Imperativ auf *-i vom Typ pahši ‘schütze’! In Tabularia Hethaeorum. Hethitische Beiträge Silvin Košak zum 65. Geburtstag, Detlev Groddek and Marina Zorman, eds., 561–568. Wiesbaden: Harrassowitz.
Oettinger, Norbert. 2013. Die Herkunft des indogermanischen Verbalsuffixes *-ske/o-.
MSS 67, 57–64.
Oettinger, Norbert. 2017. Lateinisch lūcēscit aus *lūcēs-cit oder *lūcē-scit? Überlegungen zur indogermanischen Wortbildung. In Miscellanea Indogermanica. Festschrift für José Luis García Ramón zum 65. Geburtstag, Ivo Hajnal, Daniel Kölligan, and Katharina Zipser, eds., 593–602. Innsbruck: Innsbrucker Beiträge zur Sprachwissenschaft.
Pedersen, Holger. 1938. Hittitisch und die anderen indoeuropäischen Sprachen. Copenhagen: Levin & Munksgaard.
Penney, John H.W. 1998. Review of Hackstein 1995. Kratylos 43, 92–96.
Peyrot, Michaël. 2013. The Tocharian Subjunctive. Leiden/Boston: Brill.
Ringe, Donald A., Jr. 1990. The Tocharian active s-preterite: a classical sigmatic aorist.
MSS 51, 183–242.
Szemerényi, Oswald. 1966. The origin of the Vedic “imperatives” in -si. Language 42, 1–7.
Schmidt, Klaus T. 1974. Die Gebrauchsweisen des Mediums im Tocharischen. Diss. Göttingen.
Thurneysen, Rudolf. 1946. A Grammar of Old Irish. Dublin: Institute for Advanced Studies.
Villanueva Svensson, Miguel. 2006. Traces of *o-grade middle root aorists in Baltic and Slavic. HS 119, 295–317.
Villanueva Svensson, Miguel. 2007–2008 [2009]. Indo-European middle root aorists in Anatolian (Part I). Die Sprache 47, 203–238.
Villanueva Svensson, Miguel. 2010–2011 [2012] Indo-European middle root aorists in Anatolian (Part II). Die Sprache 49, 6–25.
Villanueva Svensson, Miguel. 2011. The accentuation of the infinitive type Latv. kaļt, Sl. *kölśti and the development of Indo-European molō-present in Balto-Slavic. Baltistica, Supplement 7, 301–326.
Watkins, Calvert. 1969. Indogermanische Grammatik. 111/1. Geschichte der indogermanischen Verballf lexion. Heidelberg: Winter.
Willi, Andreas. 2018. Origins of the Greek Verb. Cambridge: Cambridge University Press.
Winter, Werner. 1993. The development of underlying accented “schwa” before dental in Tocharian. TIES 6, 197–205.
Yoshida, Kazuhiko. 1993. Notes on the prehistory of preterite verbal endings in Anatolian. HS 106, 26–35.