BRILL

The origin of the Indo-European simple thematic presents

The nominal connection

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Abstract

It is now generally agreed upon that the Indo-European simple thematic presents are a post-Anatolian innovation. The origin of this formation, however, remains unclear. In this paper it is argued that the initial core of simple thematic presents was of denominative origin. They go back to an early Core PIE class of denominatives derived from *e*-grade thematic adjectives through conversion, e.g., adj. **léu̯k-o-* 'clear' (Gk. λευκός 'white') → vb. **léu̯k-e/o-* 'be/make clear' (Ved. *rócate* 'shines', TB *lyuśtär* 'will light up'). This derivational pattern became obsolete already within Core PIE and a number of original denominatives like **léu̯k-e/o-* were reinterpreted as primary present stems.

Keywords

1   Introduction

During the last decades the Indo-Hittite hypothesis has gained general acceptance and by now it can be confidently qualified as the *communis opinio*.[1] This imposes a double question on every feature in which Anatolian diverges from the rest of Indo-European: whether we are dealing with an Anatolian archaism

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1   E.g., Oettinger (2017a: 256); Lundquist & Yates (2018: 2080); Kloekhorst & Pronk (2019: 3–7), to mention just a few recent explicit statements.

and, if we answer in the affirmative, how did the rest of Indo-European inno-
vate after the separation of Anatolian. It is my impression that the second
question is often given less attention than the first one. In this article I will
deal with one of these cases: simple thematic presents with full grade of the
root (e.g., *bʰér-e/o- 'carry' > TB paräm, Ved. bhárati, Gk. φέρω, Go. bairan, etc.).
I will first present the basic terms of the problem (§ 2–4) and a critical review
of the major theories of the origin of this formation (§ 5). I will then argue for a
denominative approach to the origin of the simple thematic presents (§ 6–9).

Before proceeding further, a note on terminology. 'Indo-Hittite' is traditional
and self-explanatory. The parent language after the separation of Anatolian
is called 'Core PIE', whereas 'classical Core PIE' refers to the parent language
after the separation of Tocharian. These labels are only used when they are
relevant for the argument; otherwise 'PIE' or 'the parent language' is used in
a non-committal way. I indiscriminately use 'simple thematic presents' or 'the
type *bʰér-e/o-' instead of the more precise, but cumbersome, 'simple thematic
presents with accented full grade of the root' (*vel sim.*). It must be stressed that
this article is concerned with this type alone. Other thematic formations will
only be mentioned where they are relevant for the main topic.

2   Thematic formations in the PIE verb

Classical Core PIE languages like Vedic or Greek require five different thematic
formations inherited from the parent language: 1) **simple thematic presents
with full grade of the root** (*u̯éǵʰ-e/o- 'convey' > Ved. váhati, Lat. uehō, Lith.
vẽža, etc.); 2) **simple thematic presents with zero grade of the root** (*gʷrh₃-
é/ó- 'devour' > Ved. giráti, OCS -žъretъ); 3) the **thematic aorist** (*u̯id-é/ó- 'saw'
> Ved. ávidat, Gk. εἶδον, Arm. egit); 4) the **subjunctive** (*h₁és-e/o- 'shall be, will
be' > Ved. ásat(i), Gk. ἔω, Lat. fut. erit); 5) a variety of **thematic present stem
suffixes**, e.g., *-i̯e/o-, *-ei̯e/o-, *-sḱe/o-, *-se/o-, *-dʰe/o- (*gʷm̥-i̯é/ó- 'come' > Gk.
βαίνω, Lat. ueniō; *gʷm̥-sḱé/ó- > Ved. gácchati, Gk. βάσκω).

Only the antiquity of present stem suffixes like *-i̯e/o- or *-sḱe/o- is absolutely
certain (they are well represented in all Indo-European languages, including
Anatolian). The antiquity of the radical zero-grade formations (both thematic
aorists and *tudáti*-presents) is supported by very few potential word equations.
It is thus generally agreed that both are post-PIE formations that had, at best,
a marginal presence in late (Core) PIE.[2] The subjunctive is secure for classical

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2   On these formations see most recently Jasanoff (2017).

Core PIE (including the long vowel subjunctive $**b^hér\text{-}e\text{-}e\text{-}t(i)/**b^hér\text{-}e\text{-}o\text{-}nt(i) >$ $*b^hér\text{-}ē\text{-}t(i)/*b^hér\text{-}ō\text{-}nt(i) >$ Ved. *bhárāt(i)/bhárān*, Gk. 1 pl. φέρωμεν, Lat. 2 sg. fut. *ferēs*). It is absent, however, from Anatolian and Tocharian, and the few relics that have been proposed are inconclusive.[3] Simple thematic presents with full grade of the root present us with a similar picture. This type was evidently well established in Core PIE. It is extremely well represented in all Core PIE languages, and we have an abundant number of potential word equations (e.g., Ved. *sárpati* = Gk. ἕρπω = Lat. *serpō* < PIE $*sérp\text{-}e/o\text{-}$ 'crawl'). This type, however, is unknown in Anatolian (§ 3) and underrepresented in Tocharian (§ 4).

3   Anatolian

The rarity of simple thematic presents in Hittite has been observed since the beginnings of the scholarly study of this language.[4] There is an important difference, however, between 'uncommon', 'very rare', and 'completely absent'. Oettinger's *Stammbildung* still included a full chapter on simple thematic presents (1979: 259–314). Shortly thereafter, however, almost all of Oettinger's evidence was shown to be incorrect or susceptible to other explanations; see especially Melchert (1984: 16–19); Lehrman (1985, *passim*). By the late eighties the current state of affairs had already been reached: the type $*b^hér\text{-}e/o\text{-}$ is virtually unknown in Anatolian, the question being whether Anatolian has at least one or two reasonable cases. Up to very recently HLuv. *tama-[di]* 'build' (: Gk. δέμω 'build', Go. *ga-timan* 'befit' < $*dem\text{-}e/o\text{-}$) was widely held to be the only certain relic,[5] but Sasseville (2021: 80, 92–93) has convincingly argued that HLuv. *tama-[di]* is a denominative from Luv. **tama-* 'building', cf. Lyc. *tama-* 'id.'. Thus, at present no simple thematic presents are attested in Anatolian.

The significance of this fact can hardly be overstated. As noted at the beginning of this article, the Indo-Hittite hypothesis is now generally accepted. What exactly constitutes an archaism of Anatolian is more controversial, but simple thematic presents rank among the most secure cases. Had Anatolian inherited a robust class of simple thematic presents, their complete absence in the record would be fully unexpected. Anatolian, therefore, certainly split from the continuum before the type $*b^hér\text{-}e/o\text{-}$ became productive. Whether it split before it actually came into existence is a more difficult question. Anatolian *could*

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3   See Rieken (2009: 45–46) and Peyrot (2013: 396–398) for discussion of the alleged relics of the subjunctive in Anatolian and Tocharian, respectively.

4   E.g., Marstrander (1919: 77); Sturtevant (1933: 222).

5   E.g., Jasanoff (1998: 313); LIV: 114; Oettinger (2017a: 266), among others.

have inherited a few simple thematic presents and lost them, but this is not backed by positive evidence. At present, the null hypothesis appears to be a post-Anatolian date and this is the chronology I will adopt in this article.

4   Tocharian

The case of Tocharian is different. This branch has a class of simple thematic presents, but they are rare. This *could* imply that the type arose after the separation of Anatolian, but that it only became productive after the separation of Tocharian.[6] This, however, is uncertain for several reasons.

First, the idea that Tocharian was the second language to branch off is based on less solid evidence than the case of Anatolian. If this is true, the gulf between Tocharian and classical Core PIE is considerably less profound than that between Anatolian and the rest of the family (including Tocharian).[7]

Second, in its stronger form, this view claims that Tocharian presents of Class II include only three inherited simple thematic presents: TB *paräṃ* 'carries' (< *$b^hér$-e/o-*), *āśäṃ* 'leads' (< *$h_2éĝ$-e/o-*), and *śaiṃ* 'lives' (< *$g^wíh_3$-e/o-*). This, however, is slightly overstated. The amount of inherited material among Class II presents is certainly higher (e.g., TB *kaltär* 'stands' < *$ĥléi̯$-e/o-*, *lyaśäṃ* 'lies' < *$lég^h$-e/o-*),[8] and becomes even higher if, as seems likely, Class II subjunctives like TB *lyuśtär* 'illuminates' (< *$léu̯k$-e/o-*) continue PIE thematic presents.[9]

Third, Tocharian A and B have undergone a long and complicated prehistory. Per Rasmussen (2002: 380–383) or Malzahn (2010: 364–365), it is perfectly possible that simple thematic presents became unproductive and were replaced by suffixal formations. The Class II presents and subjunctives that we have would simply be archaisms.[10]

In short, it is clear that Tocharian inherited the type *$b^hér$-e/o-*, but we cannot be certain that its rarity in this branch is historically relevant. In what follows

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6   As first stated by Jasanoff (1998: 314–315) and Ringe (2000).

7   Similar considerations in Adams (2017: 455–456) or Kloekhorst & Pronk (2019: 8), among others.

8   As recently recognized by Jasanoff himself (2016: 127).

9   So, e.g., Malzahn (2010: 321–322). According to an alternative view Tocharian Class II subjunctives continue PIE subjunctives (e.g., Ringe 2000: 132; Kim 2007: 190, among others). This cannot be categorically excluded, but it would be the only case in which a Tocharian subjunctive does not continue a PIE indicative.

10 A parallel is provided by the *i̯e/o*-presents, which are also very rare in Tocharian (as noted by Rasmussen 2002: 379–380).

I will thus treat the presence of a given simple thematic present in Tocharian as significant, but the absence of Tocharian evidence will not be considered decisive.

5   The origin of the simple thematic presents: earlier views

During the last decades the absence of simple thematic presents in Anatolian has been widely acknowledged.[11] The obvious next question (where do they come from?) has received less attention and the whole issue seems to be viewed with a considerable degree of perplexity.[12] The critical discussion that follows is not intended to be exhaustive.[13] Its only purpose is to show that the main approaches that can be seen in the literature are seriously flawed and that, accordingly, the current impasse is fully justified.

5.1   The 'middle voice theory'

A relatively popular theory that, in my view, has been laid to rest by the recognition of the post-Anatolian date of the simple thematic presents is what may be termed the 'middle voice theory', best known from Watkins' 1969 monograph. Its basic tenet is that the *-e- of 3 sg. *b^hér-e-ti goes back to a reanalyzed (pre-)PIE 3 sg. middle *b^hér-e. The way this *b^hér-e came to be enlarged with the 3 sg. active *-t(i) need not concern us here.[14] The 'middle theory' finds strong support in the thematic 1 sg. pres. *-oH (Gk. φέρ-ω, Lith. neš-ù, refl. -úo-si, Go. bair-a, etc.), an ending that most scholars specify as *-o-h_2 and relate to the perfect and middle 1 sg. *-h_2e (Hitt. 1 sg. pres. mid. -ḫḫa(ri), Gk. 1 sg. perf. -α, etc.). This is surely a powerful argument, but there is no reason to believe that the origin of the 1 sg. *-o-h_2 of (e.g.) *g^wṃ-sḱóh₂ 'I come', whatever it might be, is related to the origin of the much younger present type *b^hér-e/o-.[15] The lat-

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11   E.g., Sihler (1995: 494); Fortson (2004: 89); Clackson (2007: 153); Lundquist & Yates (2018: 2162–63); Oettinger (2017a: 266), to mention only some handbook treatments.

12   See the references given in the previous footnote. References to concrete theories are often provided in a non-committal way (most saliently to Jasanoff 1998), but it is evident that the origin of the simple thematic presents is generally viewed as an open question.

13   Willi (2018: 185–193) provides abundant references to the secondary literature.

14   Here I am tacitly taking for granted that the late PIE 3 sg. was *b^hér-e-ti and not †b^hér-e (as sometimes proposed, e.g., Watkins 1969: passim). See especially Cowgill (2006).

15   The 1 sg. *-oh₂ is not attested in Anatolian (Hitt. wemiya-mi 'I find', daške-mi 'I take [impf.]'), but, in my view, cannot be a post-Anatolian innovation. Its formal properties (especially the lack of the hic et nunc particle *-i, but also the apocope of the middle-perfect 1 sg. *-h_2e) are incompatible with a recent date, whereas the secondary intrusion of the athematic

ter cannot go back to a 'protomiddle' 3 sg. pres. **$b^hér$-e because the only 3 sg. middle present endings that can be reconstructed for late Indo-Hittite are *-o (Hitt. $k\bar{\imath}\check{s}$-a 'becomes', Ved. $\acute{s}\acute{a}y$-e 'lies') and *-to (Hitt. iya-$tta(ri)$ 'marches', Ved. mri-$y\acute{a}$-te 'dies'). There is no evidence for a 3 sg. †-e in the middle present.[16] The only way to maintain this theory would be to operate with an (early!) Indo-Hittite date for presents like *$b^hér$-e/o-, but this is not supported by the available data.

In general terms, the post-Anatolian date of the type *$b^hér$-e/o- makes it unwise to look for its origin in deep prehistorical stages of the PIE (Indo-Hittite) verb. The verb system in which it arose cannot have dramatically differed from the traditional, Greco-Aryan model. Simple thematic presents remained productive after the dissolution of Core PIE and it is thus worth asking whether the mechanisms that account for their expansion may account for their origin as well. Two major frameworks clearly stand out in the literature: thematization and 'subjunctive origin'.

5.2   *Thematization*

Thematization is known to be one of the major sources of the thematic presents attested in the historical languages. Thus, *$ték^w$-e/o- 'flow' (YAv. $tacaiti$, OIr. -$flicht$, Lith. $t\~eka$, OCS $tek\varrho$, Alb. n-$djek$) is shown to be post-Core PIE by Ved. 3 sg. tak-ti and YAv. 2 sg. mid. tax-$\check{s}e$ 'rush' (PIE *$ték^w$-ti/*t_ek^w-$énti$), whereas the contrast in vocalism between Lat. $d\bar{u}c\bar{o}$, Go. $tiuhan$ (< *$dé\u{u}k$-e/o-) and MW dwc, Alb. n-duk (< *duk-e/o-) is best understood if we start from PIE *$dé\u{u}k$-ti/*duk-$énti$ 'draw'. This is well known and requires no discussion.

Thematization, however, does not seem to have been a major trend in early stages of the parent language.[17] The matter can be exemplified with the $mol\bar{o}$-presents attested in Anatolian, one of the few groups of verbs that allow for an objective evaluation of the data. The picture is revealing. *All* Hittite $\hbar\hbar i$-

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1 sg. *-mi one has to assume for Anatolian is well paralleled (cf. Ved. $bhár\bar{a}mi$, Gaulish $uediiumi$ 'I pray', OCS $ber\varrho$ < *-$\bar{o}$-mi, with apocope). Although this is sometimes taken for granted (at least implicitly), there is no proof that the origin of the 1 sg. *-oh_2 must be related to the origin of simple thematic presents like *$b^hér$-e/o-. This ending, therefore, is beyond the scope of this article and will not be further discussed here.

16   See Villanueva Svensson (2014) for the 3 sg. endings of the PIE present middle. Note that, in my view, simple thematic presents had a 3 sg. middle *$b^hér$-e-tor (Villanueva Svensson 2014: 74–76), not an athematic-looking *$b^héror$ (Jasanoff 2003: 49, among others). The only strong evidence for the latter is OIr. pass. $berair$, conj. -$berar$ 'is borne', which in my view is not enough to outweigh the conjoined evidence of more conservative languages like Ved. $sácate$ 'follows', Gk. ἕπεται 'follows' and TB $ai\acute{s}t\ddot{a}r$ 'knows'.

17   Similar considerations in Jasanoff (2017: 198).

conjugation root verbs with cognates in at least two Core PIE branches display variation in root vocalism and/or other features typical of recent thematizations:

– Hitt. *iskalla-ʰʰⁱ* 'tear' ~ Lith. *skélti*, *skẽlia* 'cleave', ON *skilja* 'separate' (< *skelH-i̯e/o-*), Gk. σκύλλω 'rend apart' (< *skolH-i̯e/o-*).
– Hitt. *išpǎnt-ʰʰⁱ* 'libate' ~ Gk. σπένδω, Osc. *spentud* (< *spend-e/o-*), Lat. *spon-deō, -ēre* 'vow' (for *spondō*, cf. perf. *spopondī*, ptcp. *spōnsus*).[18]
– Hitt. *kǎnk-ʰʰⁱ* 'hang (tr.)' ~ Go. *hahan, -iþ* 'hang' (< *ḱonk-e/o-*), Go. *hahan, -aiþ* 'hang (intr.)', Ved. *śáṅkate* 'hesitates' (< athem. 3 sg. mid. *ḱonk-or*).[19]
– Hitt. *mall(a)-ʰʰⁱ* 'grind' ~ Go. *malan*, Lith *málti, mãla* (< *molh₂-e/o-*), OIr. *melid* (< *melh₂-e/o-*), MW *malu*, Umb. 3 sg. impv. **kumaltu** (< *ml̥h₂-e/o-*).
– Hitt. *padda-ʰʰⁱ* 'dig' ~ Lat. *fodiō, -īre* 'dig' (< *bʰodʰh₂-i̯e/o-*), OCS *bosti, bodǫ* 'stab' (< *bʰodʰh₂-e/o-*), Lith. *bèsti, bẽda* 'stick' (< *bʰedʰh₂-e/o-*).

The list could be expanded with less clear-cut material (cf., e.g., Jasanoff 2003: 71–81), but this would not alter the main conclusion: thematization belongs to the individual history of the Core PIE languages,[20] in spite of the fact that *molō*-presents were in an exceptionally favorable position to be thematized at an early stage of Core PIE.

This makes it unlikely that Core PIE presents like (e.g.) *h₂éǵ-e/o-* 'drive' (Ved. *ájati*, Gk. ἄγω, TB *āśäṃ* etc.), *h₁éu̯s-e/o-* 'burn' (Ved. *óṣati*, Gk. εὕω, Lat. *ūrō*), or *stén-e/o-* 'moan' (Gk. στένω, Lith. *stẽna*, OE *stenan*) arose through thematization from Indo-Hittite **h₂éǵ-ti, **h₁éu̯s-ti, **stén-ti. To put it another way, what we know is that late Core PIE had thematic presents from present roots, *h₂éǵ-e/o-*, *h₁éu̯s-e/o-*, and *stén-e/o-* being among the best candidates. What we do not know is where they come from. They may indeed have been thematized from **h₂éǵ-ti, **h₁éu̯s-ti, **stén-ti at an early date, but at present there is no positive evidence supporting such a scenario and the relatively clear-cut case of the *molō*-presents provides evidence against it. Note, in addition, that this framework cannot account for the abundant presence of thematic presents from aoristic roots (*dér-e/o-*, *bʰéu̯dʰ-e/o-*, *ḱléi̯-e/o-*, *kʷélh₁-e/o-*, *sékʷ-e/o-*, *u̯ért-e/o-* etc.; see LIV ss.vv. for justification), which cannot have arisen through thematization because these roots made root athematic

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18 Cf. Jasanoff (2003: 78). If, on the other hand, Lat. *spondeō* continues an iterative *spond-éi̯e/o-* (which cannot be excluded), Gk. σπένδω, Osc. *spentud* become the best candidate for a Core PIE thematization. Note, at any rate, that the meaning of Osc. *spentud* is unclear.

19 The preserved root-final velar of Ved. *śáṅkate* points to an athematic present, as thematic presents in Indo-Iranian otherwise generalized the palatalized variant of the final velar (cf. Ved. *rócate* 'shines' < *léu̯k-e/o-*, *sácate* 'follows' < *sékʷ-e/o-*). This is confirmed by the Germanic 3rd class weak verb Go. *hahan, -aiþ*.

20 Pace Ringe (2012: 132–133).

aorists and not root athematic presents. To be sure, the trend toward thematization *may* have started before the breakup of Core PIE, but it is unlikely to have been a strong trend and, more importantly for present purposes, 'spontaneous' thematization is unlikely to have been the process by which the new type *$b^hér$-e/o-* came into existence.

5.3   *The 'displaced subjunctive theory'*

The other major approach (the 'displaced subjunctive' theory) can be exemplified with the root *b^heid-* 'split'. The PIE paradigm involved a root aorist *$b^héid$-t* (Ved. *ábhet*) and a nasal present *b^hi-né-d-ti* (Ved. *bhinátti*, Lat. *findō*). But what about Go. *beitan* 'bite' and Gk. φείδομαι 'spare; avoid'? The idea that they go back to the aorist subjunctive *$b^héid$-e-t(i)* has enjoyed a remarkable popularity.[21] Some scholars have gone on to propose that the whole type *$b^hér$-e/o-* originated in displaced subjunctives.[22]

In spite of its popularity, I find the 'subjunctive theory' extremely unlikely. The main problem is that the large-scale, continuous transfer of subjunctives (or futures) to indicatives that the subjunctive theory demands must be exceedingly rare from a typological point of view, if it occurs at all.[23] I cannot claim that it is impossible, but I have not been able to find clear parallels.[24]

In my view this fact alone suffices to cast serious doubts on the subjunctive approach, but it is not the only problem. It must be recalled that the antiquity of the subjunctive is itself an open question. Even more importantly, the formal identity between Core PIE aorist subjunctives like *$b^héid$-e/o-* and thematic presents like Go. *beitan* does not make derivation from the former unavoidable. In the particular case of this root, Rau (2016) has convincingly explained Gk. φείδομαι as stemming from a Core PIE *middle* thematic present *$b^héid$-e-tor* that stood in opposition to the *active* nasal present *b^hi-né-d-ti* (Ved. *bhinátti*).[25]

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21   E.g., Bammesberger (1984: 9); LIV: 71; Jasanoff (2003: 182[13]); Ringe (2006: 160), among others.

22   E.g., Lazzeroni (1997: 46–51); Rasmussen (2002: 382–383); Ringe (2012: 125–131); Kloekhorst & Pronk (2019: 4).

23   The opposite process (old indicatives → new subjunctives or futures) is typologically well attested, cf. Haspelmath (1998).

24   Transfers of modal forms to the indicative certainly occur, but all clear cases known to me involve single endings replacing an inherited ending that had become problematic (e.g., WGmc. 2 sg. pret. *-ī [OE -e, OS, OHG -i] < PGmc. 2 sg. pret. subj. *-īz < PIE 2 sg. opt. *-ih_1-s), or individual verbs in which the transfer to the indicative had an obvious pragmatic motivation (e.g., Go. ind. *wiljau, wileis, wili* 'want' < PIE opt. *$uél$-ih_1-, cf. Lat. subj. *uelim, uelīs, uelit* 'would want'). All unambiguous parallels for the transfer of subjunctives to indicatives given by Dunkel (1998: 91–92) belong to one of these two special cases.

25   The conjugational pattern involving an active-transitive nasal present beside a middle-

As for Go. *beitan*, it may easily be a Germanic coinage on the model of verbs that inherited a simple thematic present beside a root aorist or, later, a perfect. There is no need to trace it back to a PIE formation.

6   Internal summary and further prospects

To summarize the results achieved so far, the original core of simple thematic presents did not consist of activized athematic middles (the 3 sg. middle present was *-o*, not *-e*), of thematized root athematic presents (a process that operated at a much later stage), or of displaced subjunctives (a process that must have been sporadic at best). As noted above (§ 5), this leads us to an uncomfortable impasse. The type *bʰér-e/o-* appeared after the separation of Anatolian. The origin of a relatively late formation like this should not be completely beyond our reach. One would rather predict the current debate to be a choice between two or three logical possibilities. The result of the previous section, however, is that there is no obvious niche in the PIE verb system from which the type could have originated.

An alternative that does not seem to have been explored so far is that the type *bʰér-e/o-* is of denominative origin.[26] From a typological point of view it is well known that denominatives may end up entering the system of primary verbs. A close parallel is provided by the deverbative 'ē-statives', whose original denominative character is clearly preserved in Anatolian and, perhaps, Indo-Aryan (cf. Yakubovich 2014). An advantage of this approach is that it would explain a feature of the simple thematic presents that is not always sufficiently highlighted: their functional indeterminacy. The type *bʰér-e/o-* was made from both present and aoristic roots, could be both transitive and intransitive, and, generally speaking, does not seem to have been limited by formal or functional constraints of any sort (see further below, § 10).

To be sure, there seem to be numerous reasons why a denominative approach has not been previously entertained: the thematic vowel was not used to make denominatives; *e*-grade adjectives that could serve as the derivational base are rare to say the least; there is no obvious scenario accounting for

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intransitive simple thematic present is well known from Vedic examples like *punā́ti* 'purify' : *pávate* 'flow pure; purify oneself' and can be projected into (classical) Core PIE with certainty; see Hollifield (1977: 90–95, 136–137); Rau (2016).

26   Such a possibility has also been suggested by Tichy (2000: 53–54, 107–108). Pace Tichy, however, I see no reason to postulate denominative origin for the whole complex of thematic inflection in the PIE verb.

the intrusion of the type *$bʰér$-e/o- in the verb system; and, overall, there is no compelling reason to believe that the type *$bʰér$-e/o- was a foreign body among PIE deverbatives. The last objection, I believe, has already been answered: at present there is much to be gained by considering the type *$bʰér$-e/o- a foreign body in the PIE verb system. In what follows I will try to show that the other objections are far less decisive today than they might have been just a few years ago.

7   PIE *$gʷíh_3ue$/o- 'to live'

Our starting point will be the verb 'to live'. The adjective *$gʷih_3uó$- 'alive' (Ved. *jīvá*-, Av. *juua*-, Gk. ζωός, Lat. *uīuus*, OIr. *béu*, Go. *qius*, Lith. *gývas*, OCS *živъ*) and the associated present *$gʷíh_3ue$/o- 'to live' (TB *śaiṃ*, TA *śoṣ*, Ved. *jī́vati*, Av. *juuaiti*, Gk. ζώω, Lat. *uīuō*, OPr. *giwa*, OCS *živǫ*) belong to the most secure items of the PIE lexicon. The analysis of the adjective *$gʷih_3$-$uó$- is perfectly clear. It contains the 'oppositional' suffix *-uo- of *$pr̥h_2$-uo- 'first' (Ved. *pū́rva*-, TB *parwe*) or *$deḱs(i)$-uo- 'right' (Gk. δεξι(ϝ)ός, Go. *taihswa*)[27] added to the zero grade of the root *$gʷi̯eh_3$- 'live'.[28] The present *$gʷíh_3ue$/o-, as has often been observed, can only be a denominative of *$gʷih_3$-$uó$-.[29]

It is important to stress that there is no viable alternative. A *u*-present *$gʷi̯éh_3$-u-ti/*$gʷih_3$-u-$énti$ (*vel sim.*)[30] could find support in the apparent full grade of Gk. ζώω, but the *$gʷi̯ō$- of ζώω is also found in the adjective ζωός and is, accordingly, of little probative value.[31] There is, at any rate, no evidence for athematic inflection and, overall, *$gʷíh_3ue$/o- is simply too well established.[32] The acceptance of a derivational channel adj. *$gʷih_3$-$uó$- → vb. *$gʷíh_3ue$/o-, however, immediately raises the question of its *nature*. Two relatively common assumptions are that it was 'anomalous' (e.g., Ringe 2000: 126) or that we are dealing

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27   On this suffix see most recently Oettinger (2017b).

28   I cannot deal here in detail with the derivatives of this root (most of which are in any case irrelevant for the present *$gʷíh_3ue$/o-). See especially Hamp (1976); Klein (1988); Weiss (1994).

29   E.g., Hamp (1976: 89–90); Klein (1988: 258–259); Tichy (2000: 54), among others.

30   E.g., LIV: 215; Jasanoff (2003: 142), among others.

31   It is not of prime importance here whether Gk. ζωός, ζώω has a secondary full grade *$gʷi̯eh_3$- (a relatively common assumption, but see Klein 1988: 260–261 for criticism) or is phonologically regular from PIE *$gʷíh_3$- (see, e.g., Klein 1988: 260–267; Olsen 2009 for defenses of the 'Lex Francis-Normier').

32   In Villanueva Svensson (2016: 52–54) I have argued that *$gʷi̯eh_3$- did not make a primary verb in PIE. If correct, this adds another argument against the assumption of a *u*-present.

with an 'extraordinarily archaic' relic (e.g., Meier-Brügger 2000: 157). Neither option can be categorically excluded, but neither is particularly appealing. I will here limit myself to noting that the pair $*g^wih_3u\acute{o}$- / $*g^w\acute{\imath}h_3ue/o$- need not be older than Core PIE.[33]

The pattern adj. $*g^wih_3u\acute{o}$- → vb. $*g^w\acute{\imath}h_3ue/o$- allows for only two possible analyses: $*g^wih_3u\acute{o}$- → $*g^w\acute{\imath}h_3ue/o$- (conversion) or $*g^wih_3$-$u\acute{o}$- → $*g^w\acute{\imath}h_3u$-e/o- (the thematic vowel was a denominative suffix). There does not seem to be any clear-cut supportive material in favor of either analysis. The second one would imply that the thematic vowel of $*g^wih_3u\acute{o}$- was deleted in $*g^w\acute{\imath}h_3u(e/o)$-$e/o$-, in spite of the fact that the thematic vowel was otherwise not deleted in derivation except for the special case of *i*-stem abstracts like $*h_2\acute{o}/\acute{e}\hat{k}r$-$i$- 'point, peak' ← $*h_2e\hat{k}$-ro- 'pointy, sharp' (cf. Schindler 1976: 351).[34] The first analysis is intuitively simpler and will be upheld in what follows. The question now is whether the conversion $*g^wih_3u\acute{o}$- → $*g^w\acute{\imath}h_3ue/o$- was a unique case or was part of a regular derivational process at a given stage of the parent language.

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33   Hitt. *ḫwiš-*[mi] 'live' may well preserve the Indo-Hittite verb 'to live'. Meanings like those of Ved. *vásati* 'stay, dwell', Gk. ἰαύω 'spend the night', Go. *wisan* 'be', etc. (LIV: 293–294) are easy to understand if in Core PIE $*h_2ues$- 'live' was restricted to 'live' = 'reside' by the emergence of $*g^wih_3(u)$- 'live' = 'be alive'. This possibility may have intriguing ramifications. As J. Jasanoff (p.c.) and B. Fortson (p.c.) point out to me, the Hittite pattern adj. *ḫuišu*- 'fresh, raw' (< **living') / vb. *ḫuišwe/a-*[mi] 'stay alive, be alive' is curiously reminiscent of that of Core PIE adj. $*g^wih_3u\acute{o}$- / vb. $*g^w\acute{\imath}h_3ue/o$-. Hitt. *ḫuišwe/a-*[mi] could even continue a thematic denominative $*h_2ues$-u-e/o-, just like $*g^w\acute{\imath}h_3ue/o$-. As far as the latter possibility is concerned, Hitt. *ḫuišwe/a-*[mi] may equally well continue $*h_2uesu$-ie/o- (e.g., Oettinger 1979: 331) and be entirely unrelated to $*g^w\acute{\imath}h_3ue/o$-. As for the adjective, it cannot be excluded that Core PIE $*g^wih_3u\acute{o}$- was modeled on Indo-Hittite $*h_2u(e)s$-u- and continues a *u*-stem adjective $*g^wih_3$-u- that was thematized at an early date (thus, perhaps, implying an analysis $*g^w\acute{\imath}h_3u$-e/o- for the verb). But we can probably not exclude the opposite option that Hitt. *ḫuišu*- was built on the model of $*g^w\acute{\imath}h_3$-uo- and continues a *thematic* $*h_2u(e)s$-uo- (or, alternatively, that $*h_2u(e)s$-uo- is old and provided the model for $*g^w\acute{\imath}h_3$-uo-). The point to stress is that the parallelism of Hitt. *ḫuišu*- / *ḫuišwe/a-*[mi] and Core PIE $*g^wih_3u\acute{o}$- / $*g^w\acute{\imath}h_3ue/o$-, if real (which is uncertain), can be interpreted in different ways. It is not self-evident to me that it has a bearing on the topic discussed in this article.

34   To be sure, a possible parallel for this analysis could be provided by PIE $*p\acute{o}tietor$ 'be master, rule' (Ved. *pátyate*, Lat. *potior*, *-īrī*; see most recently Grestenberger 2016: 135–136). This is clearly a denominative of *póti*- 'master' (Ved. *páti*-, Gk. πόσις) and thus seems to imply *póti*- → $*p\acute{o}ti$-e/o-, but it is the only certain case and, accordingly, the possibility cannot be discarded that $*p\acute{o}tie/o$- rests on some type of local analogy (like, for instance, the unique feminine $*p\acute{o}t$-nih_2- [Ved. *pátnī*-, Gk. πότνια], which is analogical to $*r\acute{e}\hat{g}$-nih_2- [Ved. *rā́jñī*-, OIr. *rígain*]).

8   Conversion in PIE denominatives

To answer this question, it is necessary to take a fresh look at the PIE denominatives. For obvious reasons, only matters directly related to the pattern *$g^{w}ih_{3}\mu\acute{o}$- → *$g^{w}\acute{i}h_{3}\mu e/o$- will be addressed here.

8.1   *The (lack of) evidence*

Our first observation concerns the nature of the evidence. Denominatives are easily replaced and/or adapted to new productive patterns. As a result, they are difficult to study using the material we normally employ to study Indo-European morphology: word equations in at least three branches and fossilized formations that must be old on internal grounds. Cases like Lat. *sepeliō, -īre* 'bury' = Ved. *saparyáti* 'honor', Lat. *arguō, -ere* 'declare, prove' = Hitt. *arkuwā(i)-ᵐⁱ* 'make a plea', or Lat. *rubeō, -ēre* 'be red' = OIr. *ruidid* 'blush' = OCS *rъděti, rъdi- sę* 'id.' = OHG *rotēn* 'turn red' are exceptional (note, in addition, that the last one cannot be formally distinguished from a deverbative). The same holds true for items arrived at through internal reconstruction (e.g., Gk. βλίττω 'cut out the comb of bees, take the honey' < *$mlit\text{-}\mu e/o$-, with archaic zero grade vis-à-vis μέλι, -ιτος 'honey' < PIE *$melit$-).

Let us now assume, for the sake of argument, that adj. *$g^{w}ih_{3}\mu\acute{o}$- → vb. *$g^{w}\acute{i}h_{3}\mu e/o$- was a regular pattern of early Core PIE. What type of evidence can we expect? 'Alive' and 'to live' survived because they became part of the core vocabulary, but this is exceptional. Most denominatives surely disappeared long ago. Those that survived will be predictably hard to distinguish from primary verbs. For present purposes, it is enough to note that the apparent absence of supportive evidence for the pattern adj. *$g^{w}ih_{3}\mu\acute{o}$- → vb. *$g^{w}\acute{i}h_{3}\mu e/o$- is not a conclusive argument against its potential regularity. If the thesis defended in this article is accepted, more potential examples may well show up in the future.

8.2   *Conversion and other non-canonical PIE denominatives*

The second point to be discussed is more important. The dominant PIE denominative suffix was clearly *-$\mu e/o$-. Secondarily productive suffixes like *-ah_{2}-$\mu e/o$-, *-eh_{1}-$\mu e/o$-, *-e-$\mu e/o$- or *-n-$\mu e/o$- only strengthen this impression. Cases of conversion occur (e.g., Ved. *bhiṣáj*- 'physician' → *bhiṣákti* 'heals'), but they are exceptional. This seems to imply that adj. *$g^{w}ih_{3}\mu\acute{o}$- → vb. *$g^{w}\acute{i}h_{3}\mu e/o$- was a sporadic case and not part of a regular derivational process.

This panorama, however, is not fully accurate. Perhaps the only generally accepted denominative suffix without *-$\mu e/o$- is *-ah_{2}-, well known from the Hittite factitives in -*aḫḫ*- (e.g., *nēwa*- 'new' → *nēwaḫḫ*-ʰʰⁱ 'make new'); see espe-

cially Jasanoff (2003: 139–141). In Core PIE this suffix is only seen in the 'Aeolic' inflection of contract verbs in Greek, which is not restricted to denominatives in -άω/-ᾱμι (cf. Rau 2009b), and in Balto-Slavic, where *-ā- is a deverbative suffix (cf. Villanueva Svensson 2020). It otherwise merged with *-ah_2-ie/o- at an early date. It is probably fair to say that *-ah_2- would not have been generally recognized without Hittite, but the status of this suffix has recently changed as a result of closer inspection of the minor Anatolian languages. As argued in detail by Sasseville (2015), the Luvian languages indicate that the aḫḫ-verbs derive from ah_2-stem nominals through conversion, not, as previously thought, from thematic adjectives (e.g., CLuv. *tarpāššā-* 'ritual substitute' → *tarpašša-ti* 'substitute', Lyc. *prñnawa-* 'grave-house' → *prñnawa-ti* 'build (a grave-house)').

This immediately brings the pattern adj. *$g^wih_3uó$-* → vb. *$g^wíh_3ue/o$-* out of isolation. Conversion *could* be a regular pattern at an early stage of the development of the parent language. Although not exactly comparable, it is worth mentioning here two other denominative formations that do not contain the pervasive suffix *-ie/o- and that would be irrecoverable without Anatolian: 1) Hittite fientives in -ēšš-^{mi} < PIE *-eh_1-s- (e.g., *marša-* 'false' → *marš-ēšš-^{mi}* 'become false'), almost certainly containing the PIE desiderative suffix *-(h_1)s-; 2) Hittite (and generally Anatolian) factitives in -*nu*- derived from *u*-stem adjectives (e.g., Hitt. *daššu-* 'strong' → *dašš(a)nu-^{mi}* 'strengthen'). Both formations are evidently old and both involve morphology that is not otherwise associated with denominatives. The second formation has left isolated relics in Core PIE (e.g., Ved. *dabhnóti*, GAv. *dəbənaoiti* 'deceive', cf. Hitt. *tepnu-^{mi}* 'despise' ← *tēpu-* 'small') and is probably continued, in greatly transformed fashion, in the Greek factitives in -ῡνω < *-un-ie/o- (e.g., θρασύς 'bold' → θαρσΰνω 'encourage', cf. Ved. *dhr̥ṣṇóti*, OCS *drъznǫti* 'dare').[35] As for Hitt. -ēšš- (without clear cognates even in Anatolian), possible cognates include Latin inchoatives in -ēscō (e.g., *senēscō, -ere* 'grow old') and the -s- of Gk. fut. -ήσω, aor. -ησα. Be that as it may, it is evident that few scholars would have started from a PIE suffix *-eh_1-(h_1)s- if we did not have the Hittite data.

The gulf between Core PIE and Indo-Hittite need not be exaggerated. The ubiquitous denominative suffix *-ie/o- is productive in Anatolian, including resegmented suffixes like *-ah_2-ie/o-, *-eh_1-ie/o- and *-e-ie/o-. What Anatolian shows is that denominatives in Indo-Hittite presented a more variegated picture. The extension of *-ie/o- as (virtually) the only denominative suffix can

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35   The existence of a class of PIE *nu*-factitives derived from *u*-stem adjectives was established by Koch (1973) and Tucker (1981: 22–29).

thus be seen as a Core PIE trend. It is also reasonable to suppose that in early stages of Core PIE 'non-canonical' denominatives (including conversion denominatives) had a larger presence than in late Core PIE and in the daughter languages.

These considerations, to be sure, only show that the conversion pattern adj. *$g^wih_3u̯ó$- → vb. *$g^wíh_3u̯e/o$- *may* have been regular at an early stage of the development of the parent language, not that it actually was. Clear-cut corroborative evidence is missing, but, as argued above (§ 8.1), this is expected in the case of denominatives and cannot be considered a strong argument against the existence of a *regular* derivational pattern adj. *$g^wih_3u̯ó$- → vb. *$g^wíh_3u̯e/o$-. A stronger argument would be the fact that conversion seems never to have played a major role in PIE word formation, with the result that adj. *$g^wih_3u̯ó$- → vb. *$g^wíh_3u̯e/o$- proves as little for PIE as *bhiṣáj-* → *bhiṣákti* for Vedic. This argument, in my view, has effectively been annulled by the recent recognition that *ah$_2$*-denominatives arose by conversion from *ah$_2$*-nominals. Conversion probably never was a major derivational process, but we now know that it had a presence in early stages of the language and that in specific types it enjoyed a certain productivity for a certain period of time. At present, unfortunately, it is not possible to be more specific.

Another matter that must be left open is the timeframe of the pattern adj. *$g^wih_3u̯ó$- → vb. *$g^wíh_3u̯e/o$-. It may have been an Indo-Hittite pattern that has left no certain traces in Anatolian (or, rather, traces that are still to be found), but it may also have been a specific development of early Core PIE (perhaps, but not necessarily on the model of conversion from *ah$_2$*-stems). For present purposes it is enough to note that there is no principled reason why the pattern adj. *$g^wih_3u̯ó$- → vb. *$g^wíh_3u̯e/o$- could not have been a regular morphological process of early Core PIE—the stage in which the type *$bhér-e/o$- arose.

9 The origin of the PIE simple thematic presents

We can finally return to the simple thematic presents. Let us recall the basic facts. This type appeared after the separation of Anatolian and quickly became productive. By the end of Core PIE it was a robust and numerous class. We will return to the expansion of the type in § 10 below. What concerns us here is the initial core from which the type emerged. As argued above (§ 5), there is no obvious niche in the PIE verb system from which the type *$bhér-e/o$- could have arisen. A possible way out is to postulate that the initial core of simple thematic presents was of denominative origin, an account that would also explain their paradigmatic and functional indeterminacy. As we have just seen (§ 7–8), this

is indeed possible and is supported by at least one excellent piece of evidence, (Core) PIE *$g^wíh_3ue/o$- 'to live'.

9.1   *Derivational base: adjectives of the type λευκός*

Our next task is to test whether this theoretical possibility has any chance of being what actually happened. It will be convenient to begin with the derivational base. In some cases, the thematic present is the only certain old formation of a given verbal root, a fact that within our framework could (but need not) imply that the verbal root itself is of nominal origin. This, however, is the exception rather than the norm. The vast majority of simple thematic presents were built to an already existing verbal root (as is evident, for instance, in the case of aoristic roots). This implies that the derivational base of the type *$b^hér$-e/o*- must be sought in non-suffixal, deverbal *o*-stems.[36] These are the familiar τόμος and τομός types, on which see most recently Nussbaum (2017: 234–242). Since constant *e*-grade is one of the main characteristics of the type *$b^hér$-e/o-*, this would seem to put an end to the whole 'denominative approach'. It makes no sense to look for its origin in a class of nominals characterized by the *o*-grade of the root.

Fortunately, this is not the whole story about deverbal *o*-stems. Scattered *e*-grade deverbal adjectives are attested all over the family, e.g., Gk. λευκός 'white' (*$leuk$- 'shine'), Lat. *fīdus* 'trusting' (*b^heid^h- 'trust'), Lith. *gẽras* 'good' (*g^werH- 'praise'), Arm. *cer* 'old' (*$ĝerh_2$- 'grow old'), etc. The type λευκός (as it will be called in what follows) has now been placed in a completely new light by Nussbaum (2017: 243–250 and *passim*). I refer to Nussbaum's article for full discussion of the data and simply take his results for granted.[37]

The type λευκός is not as marginal as usually thought. Nussbaum's evidence includes about 25 items (excluding evidence from Germanic, the only branch in which the type acquired a secondary productivity, as well as indirect evidence of one or another sort). Most λευκός-type adjectives are *einzelsprachlich*, but, it is important to stress, they cannot be generated within their respective traditions and must thus be relatively old. The picture that emerges is that of a regular type that at some point became obsolete. Nussbaum (2017: 258–259) further argues that the type λευκός was derived from *nomina actionis* of the type τόμος (schematically: R(ó)-o- → R(e)-ó-):

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36   Denominal *o*-stems and thematic suffixes will thus be left out of consideration in what follows. See Weiss (2009: 270–273) for a short, but essentially complete survey of the PIE non-suffixal *o*-stems.

37   For convenience in this section I maintain Nussbaum's reconstruction in all its details. We will return to the formal and derivational properties of the type λευκός below in §9.2.

Verb *leu̯k- 'shine' (Ved. aor. *ároci* 'shone forth', Hitt. *lukta* 'grows bright, dawns') → subst. *lóu̯k-o-* 'brightness' (Ved. *róka-* m. 'light', Arm. *loys* 'light', Lat. *lūcus* 'grove', Lith. *laũkas* 'open land', OE *léah* 'open land') → adj. *leu̯k-ó-* 'bright' (Gk. λευκός 'white', perhaps OIr. *lóch* 'bright'; indirectly Gk. λεύκη 'white rash', Lith. *liaukà* 'gland' < coll. *leu̯k-eh₂-*).

Still within the parent language the derivational pattern R(ó)-o- → R(e)-ó- was replaced by the familiar R(ó)-o- → R(o)-ó- (perhaps by simply adopting the vocalism of the derivational base):

Subst. *lóu̯k-o-* 'brightness' → adj. *lou̯k-ó-* 'bright' (Ved. *rocá-* 'bright', Lith. *laũkas* 'with a white spot on the forehead', perhaps OIr. *lóch* 'bright').

The chronology of this replacement cannot be determined with certainty. The type τομός is not attested with certainty in Anatolian and Tocharian (two branches in which the type τόμος is well attested), but neither are *e*-grade *o*-stem adjectives productive.[38] It is reasonable to suppose, in any case, that the type λευκός, though no longer a productive formation, was still well represented at an early stage of Core PIE.

9.2 *Conversion denominatives and the origin of the simple thematic presents*

The importance of the type λευκός for the origin of the simple thematic presents should by now be evident. If, as argued above, early Core PIE could make denominatives from thematic nominals through conversion, there is no reason why the type λευκός should have been excluded. The above schema can now be extended as follows:

Vb. *leu̯k-* 'shine' → subst. *lóu̯k-o-* 'brightness' → adj. *leu̯k-ó-* 'bright' → vb. *léu̯k-e/o-* 'be/become/make bright' (Ved. *rócate* 'shine', YAv. *raociṇt-* 'shine', TB Cl. II subj. *ḷyuśtär* 'lights up').

Once *e*-grade adjectives like *leu̯k-ó-* were replaced by *o*-grade *lou̯k-ó-* as the productive formation, both the adjective *leu̯k-ó-* and its denominative *léu̯k-e/o-* became free, so to speak, to follow their own course. Adjectives of the type λευκός slowly disappeared, leaving a number of mostly *einzelsprachlich* and/or lexically specialized relics. Denominatives like *léu̯k-e/o-* were also bound to disappear, leaving behind a limited number of relics that in most cases would be hard to distinguish from primary verbs. To a certain degree this is what happened, but in an indeterminable number of cases original denominatives like *léu̯k-e/o-* were reinterpreted as primary presents. This was the origin of the type *bʰér-e/o-*.

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38   Malzahn's (2013) survey for Tocharian includes almost 50 nouns of the type τόμος (sometimes difficult to distinguish from the type τομός), but only 7 instances of the type λευκός, some of them dubious and most of them lexicalized.

It is almost otiose to speculate what may have triggered such a remarkable (but not unparalleled) development. The process was probably favored by several circumstances: 1) there already was a robust class of thematic present stem suffixes that rendered thematic inflection 'natural' in the PIE verb; 2) the conversion process *$g^{w}ih_3u\acute{o}$- → *$g^{w}\acute{i}h_3ue/o$- (*$leu\math464{k}$-ó- → *$l\acute{e}u\math464{k}$-e/o-) became obsolete at a certain (probably early) stage of the development of Core PIE; 3) in many cases the derivational relationship between the λευκός-type adjective and its conversion denominative must have become unclear at an early date. It is perfectly possible that in many cases the adjective was lexicalized and the original denominative kept a general meaning closer to that of the primary verbal root.[39] It is also possible that in other cases the adjective was reinterpreted as built to what now looked like a primary present.

As for the verb system, we will probably never know what made the integration of a new present stem *$l\acute{e}u\math464{k}$-e/o- in the individual verbal system of roots like *$leu\math464{k}$- desirable or at least acceptable. In some cases, it may have provided a present for a root that did not have one (e.g., *der- 'split', *uert- 'turn'). In other cases, it may have provided an intransitive middle present contrasting with a different active-transitive present stem (e.g., *$b^{h}ei\underline{d}$- 'split', *$\hat{k}lei$- 'lean') or, conversely, an active-transitive present contrasting with a different middle present (e.g., *$\hat{g}enh_1$- 'give birth', *pek^{w}- 'cook'). It may have provided a semantically specialized present that contrasted with older present stems (e.g., *$b^{h}eud^{h}$- 'wake up; notice', *$sneig^{wh}$- 'stick; snow'). Whatever the reasons might have been (and

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39   As B. Fortson (p.c.) points out to me, a potential problem in this scenario is that it requires the base verbal adjectives to have had a rather general meaning, even though one would rather expect many of them to have had concrete meanings from the very beginning. The same *caveat* applies to an even greater degree to the denominatives, with the result that few of them would have had any chances of being reinterpreted as directly built to an already existing verbal root. This is part of a more general problem. The tendency to reconstruct general, abstract meanings for PIE etyma is probably unavoidable, as the concrete meanings that they may have had are often not accessible to us. This, however, becomes a major problem when one operates with complex derivational channels that for the most part are posited for formal and/or morphological reasons. The lack of attention to semantics may result in formally impeccable scenarios that have little chance of ever having taken place in reality ('redness', to give an often quoted example, is as unlikely to have been an everyday concept for the Indo-Europeans as it is for us). This is certainly true, but, in my view, is a more pressing problem for nouns than for (verbal!) adjectives. At least some λευκός-type adjectives must have displayed the general meaning of the verbal root and there is no reason why denominatives could not have been derived from them. Our scenario only requires this for *some* λευκός-type adjectives and their associated denominatives, not for all or even most of them. The key element, in any case, is not the semantics or productivity or these formations, but the fact that *some* denominatives, for reasons that will probably never be recovered, were reinterpreted as directly built to the verbal root.

they probably diverged from verb to verb), there is no reason to consider such a development problematic.

A final issue that needs to be addressed is that of accent. Hitherto I have tacitly operated with the assumption that there was an accent shift in adj. *leu̯k-ó- → vb. *léu̯k-e/o-.[40] This is of course quite problematic. One would rather expect the conversion denominative of adj. *leu̯k-ó- to keep its accentuation (3 sg. *leu̯k-é-ti, 3 pl. *leu̯k-ó-nti) and there is no obvious reason why the alleged *leu̯k-é-ti/*leu̯k-ó-nti should have shifted the accent to the root. Luckily, there is a simple way to solve this problem that has, in addition, important consequences for the derivational status of the type λευκός.

Let us begin by noting that the derivational pattern subst. *lóu̯k-o- 'brightness' → adj. *leu̯k-ó- 'bright' is slightly counterintuitive. The full grade is normally accented in archaic PIE formations (except for *vr̥ddhi* derivatives, which are irrelevant here) and, overall, I am not aware of clear parallels. Since adjectives of the type λευκός can usually be interpreted as directly built to the verbal root, one may wonder whether the extra step *lóu̯k-o- 'brightness' is actually necessary. A logical alternative is that both subst. *lóu̯k-o- and adj. *leu̯k-ó- were primary derivatives that only secondarily became associated to each other. As for the oxytone agential *lou̯k-ó- 'bright', it can perhaps be interpreted as a cross of *leu̯k-ó- and *lóu̯k-o-, but it seems more likely that it was an internal derivative of *lóu̯k-o- that had nothing to do, originally, with *leu̯k-ó-.[41] From a certain point, then, PIE possessed two formally and semantically very similar formations. It is only expected that one of them would oust the other from usage. It is also reasonable to expect some interference between the two formations and, more specifically, some influence of the productive type τομός on the unproductive type λευκός. The constant *e*-grade of the type λευκός may be taken as an indication that this type was originally accented on the root (*léu̯k-o-). The oxytonesis of *leu̯k-ó- can be easily explained as secondary, adopted from the type *lou̯k-ó- and, conceivably, from other oxytone *o*-stem adjectives (*vr̥ddhi* *dei̯u̯-ó-, 'possessive' *u̯ets-ó-, etc.). The accent of thematic presents like *léu̯k-e/o- is thus an archaism predating the adoption of oxytonesis in adj. *léu̯k-o- >> *leu̯k-ó- (which *ex hypothesi* has to be late Core PIE or even post-Core PIE).[42]

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40 Also in adj. *gʷih₃u̯ó- → vb. *gʷíh₃u̯e/o-, though *gʷíh₃u̯e/o- may simply have adopted its root accent from the emergent type *bʰér-e/o-.

41 This is probably the *communis opinio* concerning the origin of the type τομός, cf. Weiss (2009: 272) among others.

42 The evidence for oxytone accentuation in the type λευκός is predictably slim. In addition to λευκός itself, it is reduced to Germanic forms like *(-)werda- 'turned' < *u̯ertó-, *dreuza- 'blood' (OE *drēor*) < *dʰreu̯só- and to a few Vedic candidates (*padá-* nt. 'step', *bhrājá-* 'shin-

As a consequence, the above schema can now be rewritten in a simple way:

Vb. ***leu̯k-*** 'shine' → adj. ***léu̯k-o-*** 'bright' (Gk. λευκός 'white') → vb. ***léu̯k-e/o-*** 'be/become/make bright' (Ved. *rócate* 'shines', TB Cl. II subj. *lyuśtär* 'lights up').

9.3   *The evidence*

The original core of thematic presents of denominative origin can of course not be determined with any degree of certainty. What can be done is to check whether a significant number of adjectives of the type λευκός have an old simple thematic present beside them.

The following survey is based on Nussbaum's evidence (2017), with the addition of a few other candidates. I have made the list as complete as was possible for me, but it does not claim to be exhaustive. If the framework presented here is accepted, new examples will surely show up in the future. I have excluded from consideration thematic presents only attested in generally innovative areas (e.g., Italo-Celtic or Balto-Slavic), but apart from this the only criterion for inclusion has been the absence of positive evidence indicating that the material I quote is not old. A detailed treatment of every item would be out of place here. Global reference is henceforth made to LIV for the simple thematic presents and to Nussbaum (2017) for the base adjectives.[43]

– *bʰei̯dʰ-o-* 'trusted, trusty' (Lat. *fīdus* 'faithful, trusting') → *bʰéi̯dʰ-e/o-* 'trust' (Gk. πείθομαι, Lat. *fīdō, -ere*, Go. *beidan* 'wait').
– *bʰer-o-* 'bearing, supporting' (implied by PIE *bʰéristo-* 'best supporting' > Gk. φέριστος 'bravest, best', Av. *bairišta-* 'helping best')[44] → *bʰér-e/o-* 'carry' (TB *paräṃ*, Ved. *bhárati*, Gk. φέρω, Go. *bairan*, OCS *berǫ*, etc.).

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ing', *sahá-* 'powerful'). But Vedic is inherently ambiguous and Germanic includes some counterexamples: Gmc. *stīfa-* 'stiff' (OE, MHG *stīf*) < *stéi̯po-, *wīha-* 'holy' (Go. *weihs*, OHG *wīh*) < *u̯éi̯ko-. Overall, it is probably fair to say that the evidence mildly points to oxytone accentuation in late Core PIE, but that this is not completely certain (it could even be an exclusive Germanic innovation). The initial accent of substantives like *u̯érĝo-* nt. 'deed, work' (Gk. ἔργον), *pédo-* nt. 'site, place' (Gk. πέδον, Hitt. *pēdan*) *can* be due to accent retraction in the process of substantivization, but can also be, like the initial accent of the simple thematic presents, an archaism pointing to early PIE barytone in *léu̯ko-* 'bright'.

43   Since the evidence for the original accentuation of adjectives of the type λευκός is not completely clear (see above in §9.2), I do not specify it in the list. In my view, λευκός-type adjectives were root-accented when the conversion denominatives were created (i.e., adj. *bʰéi̯dʰ-o-* → vb. *bʰéi̯dʰ-e/o-*).

44   This option seems better to me than taking PIE *bʰéristo-* as directly built to the verbal root. Deverbal comparatives and superlatives are only found with certainty in Indo-Iranian (Ved. *jávīyas-* 'faster', *jáviṣṭha-* 'fastest', from *javⁱ-* 'quicken') and are probably an innovation of this branch.

- ? *$bʰreh_1ĝ$-o- 'shining' (Ved. *bhrājá-*, YAv. *brāza-*) → *$bʰréh_1ĝ$-e/o- 'shine' (Ved. *bhrā́jate*, YAv. *brāzaiti*).[45]

- *$ĝenh_1$-o- 'born' (Lat. *indi-gena* 'native'; OIr. *ingen* 'daughter', Ogham *INI-GENA* < Celt. *eni-genā*; Gaul. PN *Andagenus*; OIr. PN *Sogen*, Ogham gen. sg. *SOGINI* < Celt. *su-geno-* < PIE *h_1su-ĝenh_1o-; Skt. *su-jana-* ep. 'good by nature'; Arm. *cin* 'birth', *əndo-cin* 'house-born (slave)')[46] → *$ĝénh_1$-e/o- 'make born; give birth' (Ved. *jánati*, OLat. *genō, -ere*).

- *$ĝerh_2$-o- 'aged' (Arm. *cer* 'old') → *$ĝérh_2$-e/o- 'make old' (Ved. *járati*).

- *$gʷerH$-o- 'praised' (Lith. *gẽras* 'good') → *$gʷérH$-e/o- 'greet, praise' (Ved. *járate*).

- *$h_1reṷdʰ$-o- 'red' (Go. *-riuþs*, ON *rjóðr*, OE *rēod*)[47] → *$h_1réṷdʰ$-e/o- 'make red' (Gk. ἐρεύθω, ON *rjóða*, OE *rēodan*).

- *$h_1ṷers$-o- 'dewy' (Gk. ἔρση, Hom. ἐέρση, Cret. ἀέρσα 'dew', Ved. *varṣá-* nt. 'rain', *varṣā́-* 'rainy season') → *$h_1ṷérs$-e/o- 'rain' (Ved. *várṣati* 'rains').[48]

- *$ḱel$-o- 'covered, covering' (MIr. *téit for cel* 'go to concealment')[49] → *$ḱél$-e/o- 'conceal' (Lat. *oc-culō*, OIr. *ceilid*, OE *helan*).

- ? *$ḱeṷk$-o- 'shining' (TB *śuke* 'shining, sparkling',[50] Ved. *śoká-* 'shining, glowing' AV) → *$ḱéṷk$-e/o- 'shine' (Ved. *śócati* 'shine, burn', Av. *saociṇt-*).

- *$kʷelh_1$-o- 'going round' (substantivized OPr. *kelan* 'wheel', ON *hvel* 'wheel') → *$kʷélh_1$-e/o- 'go around' (Ved. *cárati*, Av. *caraitĭ*, Gk. πέλομαι, Lat. *colō, -ere*).

- *$leĝʰ$-o- 'lying down' (TB *lyake* 'obstacle')[51] → *$léĝʰ$-e/o- 'lie down' (TB Cl. II pres./subj. *lyaśäṃ*, Gk. λέχεται· κοιμᾶται Hsch., perhaps OIr. *laigid*, Fal. ⟨*lecet*⟩).

- *$leṷk$-o- 'bright' (Gk. λευκός 'white') → *$léṷk$-e/o- 'be/make bright; shine' (Ved. *rócate*, YAv. *raociṇt-* 'shine'; TB Cl. II subj. *lyuśtär* 'lights up'). See above §9.2.

- ? *$pekʷ$-o- 'cooked' (if implied by Gk. πέπων 'cooked, ripe') → *$pékʷ$-e/o- 'cook' (Ved. *pácati*, Lat. *coquō*, Lith. *kẽpa*, etc.).

- *$seĝʰ$-o- 'standing fast' (MW *hy* 'brave', substantivized MIr. *seg* 'vigour'; perhaps Ved. *sahá-* 'powerful') → *$séĝʰ$-e/o- 'hold (on)' (Ved. *sáhate* 'overpower', Gk. ἔχω 'have').

45　Only Indo-Iranian. See Rau (2009a: 97, 148) for Ved. *bhrājá-* as a primary Caland adjective.
46　The evidence for *$ĝenh_1$-o- is mostly indirect, but strong; cf. Nussbaum (2017: 247).
47　See Rau (2009a: 71 and *passim*) for the *o*-stem adjective as part of the Caland system of *$h_1reṷdʰ$- 'red'. The *e*-grade *$h_1reṷdʰ$-o- is only assured for Germanic, which also has *o*-grade *$h_1roṷdʰ$-o- (Go. *raups*, ON *rauðr*, OE *rēad*). The rest of the evidence is ambiguous.
48　LIV: 291 reconstructs the root as *$h_2ṷers$-. The nature of the initial laryngeal is immaterial for present purposes.
49　According to Merritt (2019), with a detailed study of the nominal derivatives of this root.
50　Uncertain, cf. Malzahn (2013: 172).
51　Cf. Malzahn (2013: 171).

- ? *$sreu$-o- 'flowing' (if derivational base of Ved. $sravát$- 'stream') → *$sréu$-e/o- 'flow' (Ved. $srávati$, Gk. ῥέει).
- ? *$steiĝʰ$-o- '(way) walked' (ON $stígr$, OE $stīg$ 'path')[52] → *$stéiĝʰ$-e/o- 'walk' (Gk. στείχω 'walk', OIr. $tíagu$ 'go', Go. $steigan$ 'climb').
- *$ueĝʰ$-o- '(course) ridden' (Go. $wigs$, OE weg 'route') → *$uéĝʰ$-e/o- 'convey, ride' (Ved. $váhati$, Lat. $uehō$, Lith. $vě̃ža$, etc.).
- *$ueid$-o- 'seen; appearance' (OIr. $fíad^L$ 'in the presence of', Go. id-$weit$ 'reproach, disgrace', Lith. $véidas$ 'appearance; face', OCS $vidъ$ 'appearance') → *$uéid$-e/o- 'appear' (Gk. εἴδομαι 'appear, seem', OIr. $ad·fét$ 'tell', Go. fra-$weitan$ 'avenge', perhaps GAv. $vaēda$- 'recognize').
- *$uert$-o- 'turned' (Gmc. *(-)$werda$- 'turned': ON $gagn$-$verðr$ 'opposite', OS for-$werd$ 'forward' etc.)[53] → *$uért$-e/o- 'turn' (Ved. $vártate$, Lat. $uertō$, Go. $wairþan$ 'become').

As noted above, it makes no sense to insist on the correctness of every example. The list could be extended with indirect evidence,[54] but the material presented above is probably enough. We know the type λευκός was *in statu moriendi* in late PIE. Accordingly, the number of items that have a simple thematic present beside them (about half of Nussbaum's evidence) is sufficiently high to be regarded as significant. As for the thematic presents, this is a productive formation and we can never be certain that a given item belonged to the original core. Nevertheless, our list includes some of the best established simple thematic presents of PIE (*$bʰer$-, *$kʷelh_1$-, *$ueĝʰ$-, *$uert$-, etc.).

In short, it seems fair to say that the evidence is fully compatible with the hypothesis of the origin of the simple thematic presents sketched above (§ 9.2). The type *$bʰér$-e/o- originated in a group of denominatives from adjectives of the type λευκός that arose through conversion at an early stage of Core PIE. Their recategorization as primary present stems was also an early development. If correct, this scenario raises a number of new issues.[55] Within the limits of this article I can only deal with the early development of the type *$bʰér$-e/o-.

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52   Only attested in Germanic and thus of limited probative value.

53   Only attested in Germanic, but probably old on internal grounds, cf. Nussbaum (2017: 244).

54   Thus, Nussbaum (2014: 236) postulates an unattested adjective **der-o- 'split' as the derivational base of the u-stem *$dór$-u- *'splent' > '(piece of) wood' (Ved. $dáru$, Gk. δόρυ, etc.). If correct, the adjective **der-o- could have been the derivational base of the thematic present *$dér$-e/o- 'split' as well (Gk. δέρω, Go. -$tairan$, OCS $derǫ$, etc.).

55   I will limit myself to mentioning two of them. First, the recognition of the denominative origin of the class of simple thematic presents has obvious potential interest for the link between simple thematic presents and the Caland system established by Rau (2009a: 146–160). Second, the subjunctive now emerges either as a formation fully unrelated to the type *$bʰér$-e/o- or, perhaps more likely, as a classical Core PIE creation based on the latter (as recently proposed by Bozzone 2012 and Dahl 2013). Needless to say, both issues require a large-scale study.

10   The expansion of the simple thematic presents in Core PIE

The original core of denominative simple thematic presents that were rein-terpreted as primary presents cannot be recovered. Presents like *$b^h\acute{e}r$-e/o-*, *$k^w\acute{e}lh_1$-e/o-*, *$l\acute{e}\underset{.}{u}k$-e/o-*, *$\underset{.}{u}\acute{e}\hat{g}^h$-e/o-*, and others mentioned above are excellent candidates, but this is as much as can be said. There is no reason to suppose that it was a small group, but this is not of paramount importance.[56]

A more important feature for present purposes is the functional and paradig-matic indeterminacy of the type *$b^h\acute{e}r$-e/o-*. Simple thematic presents could be both transitive and intransitive, be made to both present and aoristic roots, cor-relate with root aorists, with sigmatic aorists, or with no aorist at all. They were not linked to any specific Aktionsart and freely occurred beside other present stems. This, as noted above, may be regarded as a consequence of their denom-inative origin (though, needless to say, it cannot be regarded as proof of such an origin). Nevertheless, individual items entered into more specific configura-tions within their individual verbal systems or even roots. Recent research has highlighted the connections of some subgroups of simple thematic presents to Narten presents (Jasanoff 1998: 305–307), to sigmatic aorists (Jasanoff 1998: 307–311), to the Caland system (Rau 2009a: 146–160), or to the middle voice (Rau 2016: 358–363; so already Hollifield 1977: 90–95, 136–137). It must be noted that the most specific groups (e.g., Jasanoff's "Narten profile" and "sigmatic aorist" groups) are not numerous (around five certain roots in each case),[57] whereas the "Caland group" and the "middle-intransitive group" are too loosely defined to be truly useful. In addition, it is not difficult to find potentially old simple thematic presents that do not belong to any of these groups (e.g., *der-* 'split', *$ple\hat{k}$-* 'plait', *seg-* 'fasten'). The point to stress is that it would be arbi-trary to pick one subgroup as the original one. Rather, the unmarked reading of the evidence is that by the breakup of (classical) Core PIE simple thematic presents constituted an extraordinarily variegated class. There is no reason to believe that it was ever otherwise.

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56   It is well known that productive formations may develop out of a rather modest core. Well-known examples include the expansion of the athematic 1 sg. -*mь* in Western and Southern Slavic or the expansion of the 'alphathematic' aorist in Greek.

57   "Narten affinities" are certain (or, at least, very reasonable) for *b^her-* 'carry', *$h_2e\hat{g}$-* 'drive', *$le\hat{g}$-* 'gather', *nem-* 'take', and *nes-* 'come back'. Old sigmatic aorists are certain for *d^heg^{wh}-* 'burn', *pek^w-* 'cook', *$\underset{.}{u}ed^h$-* 'lead', and *$\underset{.}{u}\acute{e}\hat{g}^h$-* 'convey'. But the list of absolutely certain examples practically stops here. Other "Narten roots" did not acquire a thematic present or did so only after Core PIE (e.g., *$ple\underset{.}{u}$-* 'float, swim', *klep-* 'steal'). Old sigmatic aorists correlate with other present stems as well (e.g., *$dei\hat{k}$-* 'show', *$pre\hat{k}$-* 'ask for').

The existence of specific subgroups, on the other hand, may be impor-
tant to understand the expansion of the thematic presents (or, to be more
precise, the paths along which the expansion took place). It has also been
observed that some of the oldest simple thematic presents cluster around
specific semantic groups, e.g., verbs of burning (*pek^w- 'cook', *d^heg^{wh}- 'burn',
$h_1eu̯s$- 'burn') or verbs of bringing (b^her- 'carry', *$u̯eǵ^h$- 'convey', *$h_2eǵ$- 'drive',
*$u̯ed^h$- 'lead', *$nei̯H$- 'lead').[58] In other cases a formal resemblance is also self-
evident (e.g., *$u̯eǵ^h$- ~ *$u̯ed^h$-). If, for instance, *$b^hér$-e/o- 'carry' and *$u̯éǵ^h$-
e/o- 'convey' belonged to the original core of simple thematic presents (see
above §9.3), *$h_2eǵ$- 'drive' and *$u̯ed^h$- 'lead' may well have acquired the familiar
present stems *$h_2éǵ$-e/o- and *$u̯éd^h$-e/o- on analogy with them. This is virtu-
ally certain for *$néi̯H$-e/o- 'lead' (Ved. *náyati*, YAv. *naiieiti*), which built a *molō-*
present in Indo-Hittite (Hitt. *nai-ḫḫi* 'turn'). Similarly, *$pléu̯$-e/o- 'float, swim'
(Ved. *plávate*, Gk. πλέω, Lat. *pluit*, OCS *plovǫ*) may be a classical Core PIE
coinage on the model of the rhyming *$sréu̯$-e/o- 'flow' (see above §9.3); con-
trast TB Cl. I subj. *plyewäṃ* 'will float' < *$plēu̯$-, which points to a PIE Narten
present *$pléu̯$-ti/*$pléu̯$-ṇti. It is reasonable to suppose that the existence of a lim-
ited number of old thematic presents beside Caland roots (e.g., *$h_1reu̯d^h$- 'red',
*$leu̯k$- 'shine', *$pleth_2$- 'broad') served as a model for the creation of others. The
same holds true for other subgroups like that of middle thematic presents in
opposition to active nasal presents.

In short, the bulk of the early expansion of the simple thematic presents
must have taken place in the form of local analogies like these, even though
the details are probably irrecoverable. This, however, need not have been the
only way. It has been observed that many of the roots that made simple the-
matic presents in Core PIE are missing in Anatolian (e.g., *$leǵ$- 'collect', *pek^w-
'cook', *sek^w- 'follow', etc.).[59] At least some of them probably entered the PIE
lexicon after the separation of Anatolian and may well have made a simple
thematic present from the very beginning. Another source may have been pro-
vided by fossilized suffixal presents. Thus, PIE *$h_2léks$-e/o- 'protect' (Ved. *rák-
ṣati* 'protect', Gk. ἀλέξω 'ward off, defend') is clearly a fossilized desiderative of
*h_2elk- 'protect' (LIV: 264). We do not know when *$h_2lék$-se/o- was reanalyzed as
*$h_2léks$-e/o-, but cases like this may well be old. Finally, although neither themati-
zation nor displaced subjunctives are acceptable frameworks to account for
the origin of the type *$b^hér$-e/o- (see above, §5), they may have been additional

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58   As already highlighted by Hollifield (1977: 99).

59   Lehrman (1985: 262) gives a list of about 30 roots. Some of them are incorrect or question-
      able, but a significant number of cases remain.

contributing factors in the expansion of the type. Inner Core PIE thematizations will be hard to distinguish from local analogies, if this is possible at all. Simple thematic presents can only sporadically go back to displaced subjunctives, but specific cases like *$\hat{k}l\acute{e}\mu s$-e/o- 'listen' (Ved. *śróṣati*, TB *klyauṣäṃ*) may be quite old (cf. Jasanoff 2003: 182).

   The (classical) Core PIE expansion of the simple thematic presents continued in the prehistory of the historical languages, in ways that partly differed from earlier stages (thematization, for instance, acquired an importance that it did not previously have). This, however, is beyond the scope of this paper.

11   Conclusion

The results of this paper can be summarized as follows. At the oldest stage of the parent language that we can reach by the historical-comparative method, thematic inflection in the verb was a property of some present stem suffixes (*-$\mu e/o$-, *-$s\hat{k}e/o$-, etc.). The Indo-Hittite (or even Core PIE) antiquity of all other verbal thematic formations is questionable. The clearest case is that of the simple thematic presents with full grade of the root, the type *$b^h\acute{e}r$-e/o-. Anatolian has no inherited simple thematic presents, which almost certainly implies that the type *$b^h\acute{e}r$-e/o- arose after the separation of Anatolian (whether its productivity postdates the separation of Tocharian is much less certain). There is, however, no obvious way to account for the origin of this formation in the early Core PIE verb system.

   The main goal of this article has been to argue for an alternative denominative approach, an approach that has only become possible after some recent findings (Sasseville 2015; Nussbaum 2017). At an early stage of Core PIE denominatives could be made from thematic nominals through conversion, a pattern clearly seen in adj. *$g^w ih_3\mu\acute{o}$- 'alive' → vb. *$g^w\acute{i}h_3\mu e/o$- 'to live'. One particularly salient subtype was conversion from *e*-grade thematic adjectives, a marginal type in the historical languages that must still have been well represented at this stage: adj. *$l\acute{e}\mu k$-o- 'bright' (Gk. λευκός 'white') → vb. *$l\acute{e}\mu k$-e/o- 'be/make bright; shine' (Ved. *rócate* 'shines', TB *lyuśtär* 'will light up'). Still within Core PIE, this derivational pattern became obsolete and a number of original denominatives like *$l\acute{e}\mu k$-e/o- were reinterpreted as primary present stems. They made up the initial core of the class of simple thematic presents.

Acknowledgements

References

Adams, Douglas Q. 2017. Tocharian. In *The Indo-European languages*[2], ed. Mate Kapović, 452–475. London: Routledge.

Bammesberger, Alfred. 1984. Die urgermanischen Aoristpräsentien und ihre indogermanischen Grundlagen. In *Das Germanische und die Rekonstruktion der indogermanischen Grundsprache. Akten des Freiburger Kolloquiums der Indogermanischen Gesellschaft, Freiburg, 26–27. Februar 1981*, ed. Jürgen Untermann & Bela Brogyanyi, 1–24. Amsterdam: Benjamins.

Bozzone, Chiara. 2012. The PIE subjunctive. Function and development. In *The Indo-European verb. Proceedings of the conference of the Society for Indo-European Studies, Los Angeles 13–15 September 2010*, ed. H. Craig Melchert, 7–18. Wiesbaden: Reichert.

Clackson, James. 2007. *Indo-European linguistics. An introduction.* Cambridge: Cambridge University Press.

Cowgill, Warren. 2006. The personal endings of thematic verbs in Indo-European. In *The collected writings of Warren Cowgill*, ed. Jared Klein, 535–567. Ann Arbor: Beech Stave Press.

Dahl, Eystein. 2013. The Indo-European subjunctive and its origin as a present. *Journal of Indo-European studies* 41: 392–420.

Dunkel, George E. 1998. On the 'thematisation' of Latin *sum*, *volo*, *eo*, and *edo* and the system of endings in the IE subjunctive active. In *Mír Curad. Studies in honor of Calvert Watkins*, ed. Jay H. Jasanoff, H. Craig Melchert, & Lisi Olivier, 83–100. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.

Fortson, Benjamin. 2004. *Indo-European language and culture. An introduction.* Oxford: Wiley-Blackwell.

Grestenberger, Laura. 2016. Reconstructing Proto-Indo-European deponents. *Indo-European linguistics* 4: 98–149.

Hamp, Eric. 1976. *$g^w eiH_o$*- 'live'. In *Studies in Greek, Italic, and Indo-European linguistics offered to Leonard R. Palmer on the occasion of his 70. birthday June 5, 1976*, ed. Anna Morpurgo Davies & Wolfgang Meid, 87–91. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.

Haspelmath, Martin. 1998. The semantic development of old presents. New futures and subjunctives without grammaticalization. *Diachronica* 15: 29–62.

Hollifield, Patrick Henry. 1977. *On the system of conjugation in Indo-European*. Ph.D. dissertation, Harvard University.

Jasanoff, Jay H. 1998. The thematic conjugation revisited. In *Mír curad. Studies in honor of Calvert Watkins*, ed. Jay H. Jasanoff, H. Craig Melchert, & Lisi Olivier, 301–316. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.

Jasanoff, Jay H. 2003. *Hittite and the Indo-European verb*. Oxford: Oxford University Press.

Jasanoff, Jay H. 2016. Toch. AB *ākl*- 'learn'. In *Tavet tat satyam. Studies in honor of Jared S. Klein on the occasion of his seventieth birthday*, ed. Andrew Miles Byrd, Jessica DeLisi, & Mark Wenthe, 123–129. Ann Arbor: Beech Stave Press.

Jasanoff, Jay H. 2017. PIE *$ueid$*- 'notice' and the origin of the thematic aorist. In *Etymology and the European lexicon. Proceedings of the 14th Fachtagung of the Indogermanische Gesellschaft, 17–22 September 2012, Copenhagen*, ed. Bjarne Simmelkjær Sandgaard Hansen, Benedicte Nielsen Whitehead, Thomas Olander, & Birgit Anette Olsen, 197–208. Wiesbaden: Reichert.

Kim, Ronald. 2007. The Tocharian subjunctive in light of the h_2e-conjugation model. In *Verba docenti. Studies in historical and Indo-European linguistics presented to Jay H. Jasanoff by students, colleagues, and friends*, ed. Alan J. Nussbaum, 185–200. Ann Arbor: Beech Stave Press.

Klein, Jared S. 1988. Proto-Indo-European *$g^w iH_3$*- 'live' and related problems of laryngeals in Greek. In *Die Laryngaltheorie und die Rekonstruktion des indogermanischen Laut- und Formensystems*, ed. Alfred Bammesberger, 257–279. Heidelberg: Winter.

Kloekhorst, Alwin, & Tijmen Pronk. 2019. Introduction. Reconstructing Proto-Indo-Anatolian and Proto-Indo-Uralic. In *The precursors of Proto-Indo-European. The Indo-Anatolian and Indo-Uralic hypothesis*, ed. Alwin Kloekhorst & Tijmen Pronk, 1–14. Leiden: Brill.

Koch, Harald. 1973. *Indo-European denominative presents in* -nu-. Ph.D. dissertation, Harvard University.

Lazzeroni, Romano. 1997. Congiuntivo indoeuropeo e indicative germanico. Ipotesi sulla formazione della flessione tematica indoeuropea. In *Scritti scelti di Romano Lazzeroni*, ed. Tristano Bolelli & Saverio Sani, 39–52. Pisa: Pacini.

Lehrman, Alexander. 1985. *Simple thematic imperfectives in Anatolian and Indo-European*. Ph.D. dissertation, Yale University.

LIV = Rix, Helmut, Martin Kümmel, Thomas Zehnder, Reiner Lipp, & Brigitte Schirmer. 2001. *Lexicon der indogermanischen Verben. Die Wurzeln und ihre Primärstammbildungen*. 2., erweiterte und verbesserte Auflage bearbeitet von Martin Kümmel und Helmut Rix. Wiesbaden: Reichert.

Lundquist, Jesse, & Anthony D. Yates. 2018. The morphology of Proto-Indo-European. In *Handbook of comparative and historical Indo-European linguistics*, vol. 3, ed. Jared S. Klein, Brian D. Joseph, & Matthias Fritz, 2079–195. Berlin: de Gruyter.

Malzahn, Melanie. 2010. *The Tocharian verbal system*. Leiden: Brill.

Malzahn, Melanie. 2013. Cutting around '*temós*'. Evidence from Tocharian. 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*, ed. Adam I. Cooper, Jeremy Rau, & Michael Weiss, 165–174. Ann Arbor: Beech Stave Press.

Marstrander, Carl J.S. 1919. *Caractère indo-européen de la langue hittite*. Christiania: Jacob Dybwad.

Meier-Brügger, Michael. 2000. *Indogermanische Sprachwissenschaft*. Berlin: de Gruyter.

Melchert, H. Craig. 1984. *Studies in Hittite historical phonology*. Göttingen: Vandenhoeck & Ruprecht.

Merritt, Andrew. 2019. κέλῡφος and καλύπτω. Paper presented at the 5th Indo-European Research Colloquium, Leiden University.

Nussbaum, Alan J. 2014. The PIE proprietor and his goods. In *Munus amicitiae Norbert Oettinger a collegis et amicis dicatum*, ed. H. Craig Melchert, Elisabeth Rieken, & Thomas Steer, 228–254. Ann Arbor: Beech Stave Press.

Nussbaum, Alan J. 2017. Agentive and other derivatives of 'τόμος-type' nouns. In *Verbal adjectives and participles in Indo-European languages. Proceedings of the conference of the Society for Indo-European Studies* (*Indogermanische Gesellschaft*)*, Paris, 24th to 26th September 2014*, ed. Claire Le Feuvre, Daniel Petit, & Georges-Jean Pinault, 233–266. Bremen: Hempen.

Oettinger, Norbert. 1979. *Die Stammbildung des hethitischen Verbums*. Nürnberg: Carl.

Oettinger, Norbert. 2017a. The morphology of Anatolian. In *Handbook of comparative and historical Indo-European linguistics*, vol. 1, ed. Jared S. Klein, Brian D. Joseph, & Matthias Fritz, 256–273. Berlin: de Gruyter.

Oettinger, Norbert. 2017b. Das Suffix *-u̯ó-* im Indogermanischen und Anatolischen. *Indogermanische Forschungen* 122: 253–263.

Olsen, Birgit Anette. 2009. The conditioning of laryngeal breaking in Greek. In *Protolanguage and prehistory. Akten der XII. Fachtagung der Indogermanischen Gesellschaft, vom 11. bis 15. Oktober 2004 in Krakau*, ed. Rosemarie Lühr & Sabine Ziegler, 348–365. Wiesbaden: Reichert.

Peyrot, Michaël. 2013. *The Tocharian subjunctive. A study in syntax and verbal stem formation*. Leiden: Brill.

Rasmussen, Jens Elmegård. 2002. The Slavic verbal type *bьrati* and some key issues of the verbal system of Indo-European and Tocharian. In *The linguist's linguist. A collection of papers in honour of Alexis Manaster Ramer*, vol. 2, ed. Fabrice Cavoto, 373–386. München: Lincom.

Rau, Jeremy. 2009a. *Indo-European nominal morphology. The decads and the Caland system*. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.

Rau, Jeremy. 2009b. Myc. *te-re-ja* and the athematic inflection of the Greek contract verbs. In *East and west. Papers in Indo-European studies*, ed. Kazuhiko Yoshida & Brent Vine, 181–188. Bremen: Hempen.

Rau, Jeremy. 2016. Ancient Greek φείδομαι. In *Indo-Iranian and Indo-European studies in honor of Stephanie W. Jamison*, ed. Dieter Gunkel, Joshua T. Katz, Brent Vine, & Michael Weiss, 357–366. Ann Arbor: Beech Stave Press.

Rieken, Elisabeth. 2009. Der Archaismus des Hethitischen. Eine Bestandsaufnahme. *Incontri linguistici* 32: 37–52.

Ringe, Don. 2000. Tocharian class II presents and subjunctives and the reconstruction of the Proto-Indo-European verb. *Tocharian and Indo-European studies* 9: 121–142.

Ringe, Don. 2006. *A linguistic history of English*, vol. 1: *From Proto-Indo-European to Proto-Germanic*. Oxford: Oxford University Press.

Ringe, Don. 2012. The *hi*-conjugation as a PIE subjunctive. In *Multilingualism and history of knowledge*, vol. 2: *Linguistic developments along the Silk Road. Archaism and innovation in Tocharian*, ed. Olav Hackstein & Ronald I. Kim, 121–140. Wien: Österreichische Akademie der Wissenschaften.

Sasseville, David. 2015. Anatolische verbale Stammbildung: das Faktitivsuffix *$*-eh_2-$*. *Münchener Studien zur Sprachwissenschaft* 69: 281–297.

Sasseville, David. 2021. *Anatolian verbal stem formation. Luwian, Lycian and Lydian*. Leiden: Brill.

Schindler, Jochem. 1976. On the Greek type ἱππεύς. In *Studies in Greek, Italic, and Indo-European linguistics offered to Leonard R. Palmer on the occasion of his 70. birthday June 5, 1976*, ed. Anna Morpurgo Davies & Wolfgang Meid, 349–352. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.

Sihler, Andrew L. 1995. *New comparative grammar of Greek and Latin*. New York: Oxford University Press.

Sturtevant, Edgar H. 1933. *A comparative grammar of the Hittite language*. New Haven: Yale University Press.

Tichy, Eva. 2000. *Indogermanistisches Grundwissen*. Bremen: Hempen.

Tucker, Elisabeth. 1981. Greek factitive verbs in -οω, -αινω and -υνω. *Transactions of the Philological Society* 79: 15–34.

Villanueva Svensson, Miguel. 2014. The distribution of the 3rd sg. endings of the Indo-European middle present. *Historische Sprachforschung* 127: 68–100.

Villanueva Svensson, Miguel. 2016. Zero-grade denominative nasal and *sta*-presents in Baltic. *Baltistica* 51: 37–59.

Villanueva Svensson, Miguel. 2020. The Balto-Slavic *ā*-aorist. *Transactions of the Philological Society* 118: 376–400.

Watkins, Calvert. 1969. *Indogermanische Grammatik*, vol. III/1: *Geschichte der indogermanischen Verbalflexion*. Heidelberg: Winter.

Weiss, Michael. 1994. Life everlasting. Latin *iūgis* 'everflowing', Greek ὑγιής 'healthy', Gothic *ajukdūþs* 'eternity' and Avestan *yauuaēĵī-* 'living forever'. *Münchener Studien zur Sprachwissenschaft* 55: 131–156.

Weiss, Michael. 2009. *Outline of the historical and comparative grammar of Latin*. Ann Arbor: Beech Stave Press.

Willi, Andreas. 2018. *Origins of the Greek verb*. Cambridge: Cambridge University Press.

Yakubovich, Ilya. 2014. Reflexes of Indo-European '*ē*-statives' in Old Indic. *Transactions of the Philological Society* 112: 386–408.