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Greek πέδιλον ‘sandal’ and the origin of the e-grade in PIE ‘foot’

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Table of Contents

F A R N A H



Preface	vii
Bibliography of Sasha Lubotsky	ix
Ph.D. Students of Sasha Lubotsky	xvi
List of Contributors	xvii
Peter C. Bisschop , Vedic Elements in the <i>Pāśūpatasūtra</i>	1
Václav Blažek , The Case of Tocharian ‘silver’: Inherited or Borrowed?	13
Michiel de Vaan , The Noncanonical Use of Instrumental Plurals in Young Avestan	21
Desmond Durkin-Meisterernst , Sogdian Plurals in the Vessantara Jātaka	37
Jost Gippert , A Middle Iranian Word Denoting an Office-Holder	43
Stephanie W. Jamison , The Vedic Perfect Imperative and the Status of Modal Forms to Tense-Aspect Stems	55
Michael Janda , Vedisch <i>dhénā-</i> : Bedeutung und Etymologie	64
Jay H. Jasanoff , The Phonology of Tocharian B <i>okso</i> ‘ox’	72
Jared Klein , Syncretism in Indo-European: A Natural History	79
Alwin Kloekhorst , The Origin of the Hittite <i>hi</i> -Conjugation	89
Werner Knobl , Das Demonstrativpronomen <i>ETÁD</i> im Ṛgveda	107
Petr Kocharov , A Comment on the Vocalization of Word-initial and Medial Laryngeals in Armenian	123
Frederik Kortlandt , The Indo-European <i>k</i> -Aorist	137
Guus Kroonen , Lachmann’s Law, Thurneysen’s Law, and a New Explanation of the PIE <i>no</i> -Participles	143
Leonid Kulikov , Vedic <i>ābanás-</i> and Its Relatives/Cognates within and outside Indo-Iranian	153

Table of Contents

Martin Joachim Kümmel , The Survival of Laryngeals in Iranian	162
Rosemarie Lühr , Prosody in Indo-European Corpora	173
Hrach Martirosyan , Armenian <i>Andndayin</i> <i>ōj</i> and Vedic <i>Áhi-</i> <i>Budhnyà-</i> ‘Abyssal Serpent’	191
Ranko Matasović , Iranian Loanwords in Proto-Slavic: A Fresh Look	198
H. Craig Melchert , Semantics and Etymology of Hittite <i>takš̄</i>	209
Benedicte Nielsen Whitehead , PIE <i>*ǵʷh₃-éu-</i> ‘cow’	217
Alan J. Nussbaum , A Dedicatory Thigh: Greek <i>μηρός</i> and <i>μηῆρα</i> Once Again	232
Norbert Oettinger , Vedisch <i>Vivásvant-</i> und seine avestische Entsprechung	248
Birgit Anette Olsen , The Development of Interconsonantal Laryngeals in Indo-Iranian and Old Avestan <i>zaθā ptiā</i>	256
Michaël Peyrot , Tocharian B <i>etswe</i> ‘mule’ and Eastern East Iranian	270
Georges-Jean Pinault , New Look at Vedic <i>sám</i>	284
Tijmen Pronk , Old Church Slavonic (<i>j</i>) <i>utro</i> , Vedic <i>usár-</i> ‘daybreak, morning’	298
Velizar Sadovski , Vedic and Avestan Parallels from Ritual Litanies and Liturgical Practices I	307
George Starostin , Typological Expectations and Historic Reality: Once Again on the Issue of Lexical Cognates between Indo-European and Uralic	327
Lucien van Beek , Greek <i>πέδιλον</i> ‘sandal’ and the Origin of the <i>ǵ</i> -Grade in PIE ‘foot’	335
Michael Weiss , Veneti or Venetes? Observations on a Widespread Indo-European Tribal Name	349
Index Verborum	359

Greek *πέδιλον* ‘sandal’ and the Origin of the *e*-Grade in PIE ‘foot’*

LUCIEN VAN BEEK



In this contribution, I present a new etymological analysis of Greek *πέδιλον* ‘sandal’, and propose a new scenario for the origin of the *e*-grade **ped-* in PIE ‘foot’.

1 The etymology of *πέδιλον*

Greek *πέδιλον* (always with long $\bar{\iota}$) is first attested in Mycenaean (plural nom. *pe-di-ra*, gen. *pe-di-ro*, dat.-loc. *pe-di-ro-i*).¹ In alphabetic Greek the word is known from Homer onwards, again most frequently as a plural *πέδιλα*.²

The etymological dictionaries and handbooks agree that *πέδιλον* contains the inherited word for ‘foot’ in the *e*-grade, but the second part *-ילו-* poses difficulties. No parallel instances of a suffix *-ילו-* (with long $\bar{\iota}$) exist in Greek, and its exact reconstruction is disputed.³ The first issue to be addressed is, therefore, the possible preforms of *πέδιλον*.

Since Ahrens 1839, editors of Sappho and Alcaeus have printed forms of the conjectural *πέδιλλον* (e.g. *χρυσοπέδιλλος* *Αὔως* Sapph. fr. 123 L-P).⁴ This is supported to some extent by the ancient grammatical treatise *Περὶ ὀρθογραφίας* (attributed to Herodian; excerpts in Choeroboscus), which gives *πέδιλλον* as the Aeolic form of *πέδιλον* alongside a few other examples (*Μίλλατος* ~ *Μίλητος*, *ἴμιλλος* ~ *ἴμιλος*). The reality of Aeolic *πέδιλλον* is broadly accepted, and various scholars have based their etymological reconstructions on it.⁵ However, since

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¹ On PY Ub 1318, a tablet dealing with allocations of leather and hides for the production of, among other things, footwear; see Docs.² 490–3.

² The majority of Mycenologists analyze *pe-di-ro* as gen. pl. rather than nom. dual (see DMic. s.v.). The dual of alphabetic *πέδιλον* is not attested either. Since sandals naturally come in pairs, this might seem counterintuitive. However, if the word originally denoted the collection of leather straps or laces by which a sole was bound under the foot, and later came to serve as a *pars pro toto* designation for a pair of sandals or shoes, the neuter plural (from an older collective) would be less surprising.

³ See DELG s.v. *πέδιλον*, GEW 2.485, NIL 530 with n. 99. Recently, Beekes (EDG s.v.) has even considered *πέδιλον* to be of Pre-Greek origin.

⁴ Cf. also Sapph. fr. 103.13; Alc. fr. 327.2.

⁵ Ruijgh (1967:68) reconstructs **ped-íl-no-* for Aeol. *πέδιλλον*, but this combination of suffixes has no further parallels. Schwyzler’s reconstruction **ped-i-wl-o-* (1939:439 n. 6) is refuted by Myc. *pe-di-ro*, as noted by Gallavotti (1961:174).

there is no evidence for *πέδιλλον* in the extant manuscripts or papyri of Sappho and Alcaeus, Voigt (1971) rightly prints *-πεδιλο-* in the relevant places. In *πέδιλλον*, *-λλ-* may well be a hypercorrect spelling, meant to indicate that the syllable is long by nature, a device often encountered in the manuscript tradition of the Lesbian poets.⁶ Therefore, the most straightforward reconstruction of *-ίλο-* is PGk. **-ίλο-*.

Now, **pedīlo-* could be mechanically reconstructed as **ped-iH* plus **-lo-* (cf. Gallavotti 1961:175). There are, however, no parallels for this combination of suffixes in Greek, and from a functional or semantic perspective, it remains unexplained why **-lo-* would be added to an **iH*-stem. I therefore propose, as an alternative, that **-ίλο-* continues PIE **sib₂-l-*, a derivative of the verbal root **sib₂ei-* ‘to bind’.⁷ This *l*-stem is directly attested in Hitt. *išhial-* (n.) ‘bond, band, belt’ < **sib₂i-ól-*. Hittite preserves the original order of the laryngeal and *i*-suffix; before consonants, the zero grade **sib₂i-* was metathesized to **sib₂-*.⁸ In Germanic, too, several *l*-derivatives with meanings like ‘cord, rope, band’ are found:⁹ PGmc. **saila-* < **sib₂oi-lo-* (Kroonen 2013 s.v. *saila/ō-*),¹⁰ **sila(n)-* < **siHlól-* (with Dybo’s shortening), and **sīlan-*. These different formations probably reflect different ablaut grades of the PIE *l*-stem (Kroonen 2011:244).¹¹ Finally, we find Lith. *seīlas* ‘band, tie’, but since the root vocalism cannot go back to PIE (in view of the absence of laryngeal coloring), its evidential value for an inherited *l*-stem is limited.

The reflex of PIE **sib₂i-l-* > **sib₂l-* (or thematic **sib₂lo-*) was Proto-Greek **bīl(o)-*.¹² From this **bīl(o)-*, I propose, a determinative compound with **ped-* ‘foot’ was derived. This compound, probably a collective **ped-bīla* ‘foot-gear’, denoted a device consisting of leather straps or laces by which a sole is bound to the foot.¹³ This reconstruction works out well if the following conditions are met:

- A root allomorph **ped-* ‘foot’ was available. In attested Greek from Mycenaean onwards, the productive stem was /pod-/, cf. Myc. *po-de* (ins.sg.), compounds *po-da-ko* /podargos/ (boonym), *qe-to-ro-po-pi* (inst.pl.) ‘cattle’, Hom. *ποδώκης* ‘swift-footed’, etc. However, the PIE paradigm contained both *o*-grade and *e*-grade forms (cf. Latin *pēs*, gen. *pedis*). As I will argue below, the origin of **ped-* in compounds lies in an older stage of the simplex paradigm.¹⁴

⁶This point is further elaborated by Hamm (1958:20), who remarks that the testimony of Herodian is “nicht unbedingt zuverlässig. Die aiol. Form wird als Beweis dafür angeführt, dass *πέδιλον* mit *-ι-*, nicht mit *-ει-* zu schreiben sei, und solche Formen konnten sicher gelegentlich konstruiert werden nach anderen, in denen gemeingriechischem Langvokal + Liqu. im Aiol. Kurzvokal + geminierte Liqu. gegenüberstand.” Cf. also Gallavotti 1961:175.

⁷See LIV² s.v. **sib₂ei-*; probably from a root **sēb₂-* plus an *i*-suffix.

⁸As recognized by Sasha Lubotsky (2011:110 with n. 15). As he remarks, it is unclear whether the metathesis occurred after the Anatolian branch split off, or already in Proto-Indo-Hittite (*išhi-* might be analogical after full-grade forms like **sib₂ei-* > PAnat. **šyāi-*).

⁹For all relevant forms, see Kroonen 2011:243–4.

¹⁰Other possible reconstructions of PGmc. **saila-* are **sib₂ei-lo-*, **sēb₂i-lo-*, or **sob₂i-lo-*. However, an *o*-grade root is more likely in a thematic derivative, and the vowel slot **sib₂oi-* is implied also by the non-acute root of Lith. *siėti* ‘bind’.

¹¹According to Kroonen (l.c.), the forms could also be derivatives from a verb **sīlan-* of which no direct traces exist.

¹²The singular *πέδιλον* could be recent: see the remarks in n. 2 above. Therefore, *πέδιλα* may be the collective of thematic **pedīlo-* or athematic **pedīl-*.

¹³Such a determinative compound possibly coexisted with a possessive compound **bīlo-ped-* ‘having straps on the feet’, cf. YAv. *aγmō.paidi-* (f.) ‘wearing sandal straps on the feet’ < **ped-ib₂* (cf. Gk. *-πέζα*).

¹⁴Kloekhorst (2015) has recently proposed to read a nominative plural *petes* ‘feet’ in the Old Phrygian inscription G-02. If correct, this proves that Proto-Greco-Phrygian retained qualitative ablaut in ‘foot’.

- The compound was formed after the change $*s- > h-$ before vowels, because a sequence $*ped-s^o$ inherited from PIE would have yielded Proto-Greek $*pess-$ > Attic-Ionic $*πεσ-$.
- When the compound was created, a sequence /d/ + /h/ could not be reinterpreted as /d^h/. Regardless of one’s take on the phonetic interpretation of the PIE stop system, this condition is trivially fulfilled if the compound was created after the separation of Greek from other branches (i.e. after the specifically Greek development of voiceless aspirates /Γ^h/ from PIE $*D^b$). Indeed, in alphabetic Greek, the sandhi development of voiced stop plus $h-$ is loss of aspiration, and we may assume that this treatment is old.

Myc. *pe-di-ro* shows that PIE $*pédo-$ ‘ground’ and $*pedó-$ ‘footstep’ are excluded as preforms of the first member, for in those cases the Mycenaean form would almost certainly have been $*pe-do-i-ro$, with retained intervocalic /-h-/.¹⁵ This brings us to the issue that occlusive stems used as first compound members are, in alphabetic Greek, usually extended with a linking vowel. In Mycenaean, however, absence of a linking vowel is the rule,¹⁶ and we may also compare *αἴπολος* ‘goatherd’ < PGk. $*aig-k^wolo-$.¹⁷ An example of immediate relevance is *πέλλυτρα* (n.pl.) ‘bandage around the ankle’, which has been traced back to $*ped-wlū-tro-$, with the zero-grade root of *εἰλύω* ‘to wrap around’, cf. middle perfect *εἰλύμαι* < $*we-wlū-$.¹⁸ The semantic proximity of *πέλλυτρα* to *πέδιλα* is immediately obvious, and the formations are also directly comparable (determinative compounds; neuter plural with collective semantics; absence of a linking vowel). Thus, the etymology proposed here for *πέδιλα* strengthens that of *πέλλυτρα*, and vice versa.

In conclusion, the formation $*ped-hīla$ underlying *πέδιλα* must be of considerable antiquity, but its creation postdates the common Greek change $*s- > h-$ before vowels.

2 The accent-ablaut paradigm of PIE ‘foot’

I will now discuss the origin of the e -grade root allomorph $*ped-$ and its place within the paradigm of ‘foot’. As already noted, the PIE paradigm evidently contained both e -grade and o -grade forms. The main issues are: (1) the original accent paradigm, (2) the original locus of $*ped-$.

¹⁵A preform $*pedi-hīla$, with a locative first member and pre-Mycenaean loss of $-h-$ between like vowels, would be a mere theoretical possibility.

¹⁶See Meissner and Tribulato 2002:320–3 with examples.

¹⁷Cf. Schwyzler 1939:439. Among first compound members ending in a resonant, absence of a linking vowel is attested for e.g. *χέρινψ, -ιβος* ‘water for washing the hands’ < PGk. $*k^b elv-nig^w-$.

¹⁸This etymology was first proposed by Schulze (1892:336 n. 1) and is accepted by GEW (s.v. *πέλλυτρα*). Some doubts are reflected in Chantraine’s remark (DELG s.v.) that the absence of a linking vowel, the retention of a first member $*ped-$, and the zero grade $*wlū-$ would make this a formation of high antiquity. As for the phonological developments involved, one possibility is to assume that word-initial $*wl-$ changed to $l-$ early on, and that intervocalic $*dl-$ developed to $-λλ-$. The latter development is paralleled by the well-known Laconian *έλλα* ‘chair’ < $*sed-lā$ and possibly Homeric *νεογίλλός* ‘new-born’ if its second member contains the root of Lith. *žįsti*, 1sg. *žįndū* ‘to suck’. As for *νεογίλλός*, however, its dialectal provenance is unknown, and there is a variant *νεογιλλός* which could represent the corresponding Ionic form. Cf. also the doubts about this etymology in EDBIL s.v. *žįsti* (noting the non-IE root shape $*jēid-$, with two *mediae*). The alternative is to assume that in $*ped.wlū.trā$, d was lost in coda position, and that $*wl-$ subsequently developed to $-λλ-$. In conclusion, although the exact developments are not known for certain, there is no phonological objection to deriving *πέλλυτρα* from $*ped-wlūtrā$.

Since Schindler's work on the relation between accent and ablaut, 'foot' is widely considered an *ó/é*-acrostatic root noun, with R(*ó*) in the strong cases and R(*é*) in the weak cases.¹⁹ Indeed, as far as ablaut is concerned, this reconstruction matches the Vedic facts: weak stem *pad-* < **ped-*, strong stem *pād-* < **pod-* (with Brugmann's Law).²⁰ The accentuation of the Vedic noun, however, is mobile rather than static. In the Schindlerian framework this is argued to be secondary: when the (allegedly original) genitive **péd-s* acquired a full-grade ending, the accent shifted to that ending (at least in Greek and Indo-Iranian) under the influence of accentually mobile root nouns, yielding **ped-és*.²¹ The same shift supposedly occurred in the other weak cases (Schindler 1972:35–6).

The reconstructed static accentuation, however, is not based on actually attested paradigms. Quite the contrary: Kloekhorst (2014a:152–3) recently showed that 'foot' was accentually mobile not only in Vedic, but also in Hittite. This is an important discovery, because it raises the question of why we should assume a productive remodeling of the weak stem(s) that occurred independently in various different branches. Another, more general issue with Schindler's reconstruction is that **ó/é*-ablaut is not matched by anything else in PIE morphophonology: qualitative ablaut usually correlates with (and can be explained by) accentual differences. It would therefore be much more economical if **ó/é*-ablaut had a secondary origin.

In fact, the evidence for a shift from **ó/é*-acrostatic to mobile paradigms remains meager. Among root nouns,²² the best argument is 'house', for which the oldest reconstructible paradigm seems to be PIE **dóm-* (**dōm* > Arm. nom.-acc. *tun*), gen. **déms* (retained only in the lexicalized phrase **déms póti-* 'master'). In view of Arm. gen.-dat. *tan* and Av. *namō vantā* 'housewife', **déms* is thought to have been replaced by **dmés* (Schindler 1967:300). Now, the reconstruction of 'foot' as **ó/é*-acrostatic depends on its having two things in common with 'house': it is a root noun, and it has both *e*-grade and *o*-grade forms. Generally speaking, however, there is no clear motive for replacing static by mobile accentuation. If **péds* existed, one wonders why it was remodeled to **ped-és* rather than **péd-os* (with retained root accent). Moreover, given that **o/e*-ablaut normally occurs with **CeT-* and **CReT-*roots (on which see below), **dóm-/dém-* is a highly atypical example. Finally, it cannot be completely excluded that the first element of **déms póti-* was not a genitive, but has a different origin. In sum, there is no hard evidence for an original genitive **péd-s*, and no compelling reason to treat 'house' and 'foot' on a par.

Apart from presenting new arguments for the accentual mobility of 'foot', Kloekhorst also proposes a different reconstruction of the root ablaut. Although he agrees that the PIE paradigm contained both R(*e*) and R(*o*), he claims that "the original distribution between

¹⁹See Schindler 1972:32–6, Mottausch 2000:29–30 for the alleged evidence for *ó/é*-acrostatic root nouns.

²⁰Thus already Kuryłowicz (1956:110).

²¹"Somit scheint es denkbar, dass die *e*-Stufe des Typus **ped-* zumindest teilweise als gewöhnliche Hochstufe anzusehen ist, die sich vom Lok. **péd(-i)* bzw. vom Gen. **péd-s* (verdeutlicht zu **ped-és*) her ausbreitete." (Schindler 1967:302 n. 7).

²²Apart from 'house', the other major piece of evidence for **ó/é*-acrostatic ablaut is 'night' (nom. **nóǵ^{nh}-t-s*, gen. **néǵ^{nh}-t-s* > Hitt. *nekuz* in *nekuz mēhur* 'in the evening', Schindler 1967), but this was a *t*-stem. Cf. Melchert's comment about **o/e*-acrostatic nominal inflection: "Were it not for a few relics like Av. *dāng* (*paíti-*) and Hitt. *nekuz* (*mēhur*) 'twilight time', one might equally seriously doubt that the **e*-grade weak stem ever existed there" (2013:143 n. 8). For a critical discussion of other alleged pieces of evidence for **ó/é*-acrostatic inflection in suffixed nouns, see Kloekhorst (2014a).

these grades cannot be reconstructed with certainty” (2014a:153). His argument is that the Indo-Aryan paradigm could also be derived from a precursor with generalized *e*-grade, in which the long vowel of the nominative singular would have been generalized throughout the strong stem. As a second step, Kloekhorst proposes assigning $R(\acute{e})$ to the strong cases and explaining the $R(o)$ allomorph as a replacement of $R(\emptyset)$ in forms with final stress: “Since already at an early stage the zero-grade stem **pd-* was subject to assimilation to **bd-*, we can easily understand that the speakers of PIE chose to transfer the full-grade root from the direct cases to the oblique cases” (2014a:161).²³ According to the internal reconstruction of the PIE vowel system by Beekes (1985), which Kloekhorst adopts, this analogical full grade would automatically yield **pod-* if it originated at the appropriate time.

Although I agree with Kloekhorst that acrostatic *ó/é*-ablaut should not be assumed lightly, I cannot accept the above scenario because it fails to take into account some important facts. As Kuryłowicz (1956:57) already observed, **ped-* appears as the base form of Myc. *pe-de-we-sa* /ped-wessa/ ‘provided with feet’ and *πέλλυτρα*, which we encountered above. To these forms, we may now add *πέδιλα* < **ped-h₁la*.²⁴ Since it is usually the weak stem that appears in derivations (cf. also AiGr. 2.1:52–5) and certainly in determinative compounds, the default assumption is that these forms were created when **ped-* was the weak stem of ‘foot’.²⁵ This is also likely for the motional feminine in **^oped-ib₂*, continued in Gk. *-πεζα* (cf. also Skt. *°padī-*, YAv. *°paidī-*, AiGr. 2.2:388). Now, given that the only productive stem allomorph of ‘foot’ in Greek was /pod-/ from Mycenaean onwards (see above), it follows that the earliest reconstructible paradigm for Proto-Greek had strong stem **pod-*, weak stem **ped-*. Since this paradigm also explains the Vedic facts in a direct way, it can hardly be doubted that it represents the original root ablaut, at least for later stages of PIE.²⁶

It has been surmised that the PIE simplex paradigm also contained a third weak stem **pd-*, alongside **pod-* and **ped-* (cf. Kloekhorst 2014a:161). Direct evidence for **pd-* is, however, limited to compounds with second members reflecting **pd-o-* or **pd-i-*.²⁷ Although these are clearly relics in the languages in question, they cannot be used as direct evidence for the simplex in PIE because they contain an additional vocalic suffix.

²³The reconstruction acc. **péd-m*, gen. *pod-és* replacing **pd-és* [bdés] was proposed earlier by Schmitt-Brandt (1967:125), but assuming a different scenario for the genesis of PIE ablaut.

²⁴Apart from Myc. *pe-de-we-sa* and *πέλλυτρα*, Kuryłowicz (ibid.) also adduced Hitt. *kišduwant-* ‘hungry’, *kištant-* ‘hunger, famine’ < **Kest-* beside *kašt-* ‘id.’ < **Kost-*. However, Kloekhorst (2014a:153 with n. 52) points out that the root allomorph underlying *kišduwant-* and *kištant-* might also be **K₁T-*.

²⁵Schindler remarks that the reconstruction of an *e*-grade weak stem is “deskriptiv richtig . . . da in diesen Bildungen im Idg. die Stammform der schwachen Kasus zugrunde liegt” (1967:298 n. 3). This point is left aside without further discussion by Kloekhorst (2014a).

²⁶It is difficult, however, to base the same conclusion on derivations in other branches. Latin forms like *bi-ped-*, *quadru-ped-* or their Sanskrit counterparts *dvi-pad-*, *catus-pad-* (without a reflex of Brugmann’s Law) are not decisive for reconstructing the PIE vocalism, because they contain the synchronic (weak) stem of the simplex (Lat. *ped-*, Skt. *pad-*). It is uncertain whether the Umbrian compounds in *-pursus*, for which the reconstruction **pādo-* is likely but not ascertained (cf. NIL 527 and n. 14 with lit.), are relevant in this connection.

²⁷E.g. Avestan *fra-bda-* ‘front leg’, Ved. *upabdā-* ‘noise of going’, *upabdi-* ‘id.’, Gk. *ἑπιβδα* ‘day after the festival’. According to AiGr. 2.2:75, Ved. *upabdā-* could be deverbal to *pad-* ‘fall’, but this does not seem likely. In any case, **pd-o-* ‘foot’ is unambiguously attested in Av. *fra-bda-*.

3 The origin of unaccented **ped-*

My preliminary conclusion is that **o/e*-ablaut is correctly reconstructed for PIE ‘foot’, but that Kloekhorst is right in insisting on mobile accentuation. The main remaining problem is to account for the unaccented R(*e*) in the weak stem. Since the generally assumed accent shift from **ó/é*-acrostatic to mobile has weak foundations, I propose to explain **ped-és* as a reshaping of **pd-és*, and to reconstruct an earlier, pre-PIE **ó/Ø*-ablaut.

First of all, what could be the motivation for such a reshaping? Previous scholars have assumed that it was induced by an assimilation **pd-* > [bd-].²⁸ In my view, this is not evident: there would be no reason for change as long as the assimilation was subphonemic. Moreover, PIE was generally quite tolerant of heavy word-initial consonantal clusters. A clear motive for restoration would have existed, however, if the root skeleton was mutilated beyond recognition by phonetic reduction. This is, I submit, what may have happened to **pd-*. There is no certainty about the phonetic realization of the PIE *mediae*, but if we assume that some form of regressive assimilation was operative at the relevant stage, and combine this with the well-known fact that PIE **b* is virtually non-existent, we may actually expect a reduction of **pd-* to **d-*. It is true that word-internal /pd/ was tolerated before vowels (cf. Av. *fva-bda-*), but onset clusters are often subject to more severe reduction.²⁹

If the root was restored, why do we find **ped-*, rather than a generalization of the strong stem **pod-*? Kuryłowicz (1956:48–9, see also Schindler 1967:298–9) took as his starting-point the fact that PIE roots of the structure **TeT-* often have an *e*-grade in formations where **TeR(T)-* roots have a zero grade. Thus, from PIE **pek^w-* ‘to ripen, cook’, we find Greek *πέσσω*, *πεπτός* and Ved. *pacyáte*, *pakvá-*. According to Kuryłowicz (1956:110–1), such *e*-grades developed from anaptyctic “weak” vowels that were introduced in **TT*-roots before consonant-initial endings (e.g. **ped-b^{hi}i* < **p_ed-b^{hi}i*) and were subsequently introduced also before vowel-initial endings (gen. **ped-és*). As Schindler (1967:298 n. 3) remarked, however, we do not find such weak vowels in morphologically isolated forms like Gk. *κτεν-* ‘comb’ < PIE **p^hkten-* (or rather **p^tken-*), cf. Latin *pecten*.³⁰ This suggests that unaccented *e*-grades did not arise by anaptyxis, but were introduced analogically. Thus, the allomorph **pek^w-* may have spread from the *s*-aorist **pek^w-s-*.

Applying this to ‘foot’, how can we avoid Schindler’s conclusion that **ped-* was present in the paradigm all along? The alternative I wish to propose, original **ó/Ø*-ablaut, resembles Kloekhorst’s scenario but differs in some important details. As is widely recognized, accent and *e*-grade correlate in PIE: unaccented *e*-grades are relatively rare, and many unaccented vowels are *o*-grades. However, while this may indeed be a general tendency, the situation was certainly more complex. As far as I can see, it has never been explicitly noted that there is hardly any evidence for pretonic PIE **o*—that is, with the exception of thematic nominals.³¹

²⁸E.g. Kuryłowicz (1956:110–1), Schmitt-Brandt (1967:125), Kloekhorst (2014a:161).

²⁹The honorand has recognized a possible trace of word-initial **pd-* before a consonant in PIE **Tper(H)snē₂-* ‘heel’ and **TsperH-* ‘to kick’, which he derives from a compound **pd-sperH-* (Lubotsky 2006:1008). I suspect another remnant of word-initial **pd-* in PIE **deh₁-* ‘to tie up, fasten’, a verbal root which can be derived from a fossilized instrumental **pd-el_h-* ‘with fetter’ > ‘fixed, fastened’. I hope to present arguments for this etymology on a different occasion.

³⁰The PIE root might continue reduplicated **pe-p^hk-*, yielding **pet^hk-* (Pinault 2006:138).

³¹Cf. **b^hor-ó-* (agent noun) and **b^hor-é₂-* (abstract). Although these types are productive in various branches, and

I therefore suggest entertaining the possibility that **ped-* was, at some pre-stage of PIE, the automatic outcome of an analogical full grade introduced in pretonic position.

Before discussing the lack of evidence for pretonic PIE **o*, let me first explain how I am inclined to envisage the genesis of PIE ablaut, following Beekes (1985). Beekes assumes a system with only accented vowels (**é* and **ó*).³² This situation arose by massive vowel reduction (stage 1). Subsequently, when vowels were introduced by analogy in unaccented positions, they were phonologized as /o/ (stage 2). Finally, when unaccented **e*’s became possible as well, forms like **b^hérete* could come into being (stage 3). Although it is not easy to rigorously test this scenario against the evidence we have, it does explain some salient general distributions in PIE nominal inflection. For instance, it explains why the strong stem of suffixed animate stems is almost always of the shape **-(C)oR-* when unaccented, but **-(C)éR-* when accented. In addition, we may understand the difference between the strong stem in **-(C)oR-* (in amphidynamic non-neuters) and that in **-(C)R* (proterodynamic neuters).³³

I propose the following modification of Beekes’s scenario. After the massive vowel reduction in stage 1, when an unaccented root vowel was reintroduced, this pretonic vowel was phonologized as /e/, as opposed to /o/ in posttonic syllables.³⁴ I assume that this phonologization predated the creation of the thematic types **b^hor-ó-*, **b^hor-éh₂-* (etc.).

It is obviously difficult to find direct evidence for the phonetics of pre-PIE,³⁵ but parallel cases exist where the vowel quality in unaccented syllables depends on the position with respect to the main accent. Consider, for instance, the reduction of /a/ and /o/ in Modern Russian. These vowels are reduced to [a] only when they are directly pretonic, but undergo further reduction to [ə] in all other unstressed syllables, including immediately following a stressed syllable. Compare e.g. *górod* [ˈgɔrət] ‘town’, *gorodók* [gɔrəˈdɔk] ‘small town’, *zá gorodom* [ˈzagrədəm] ‘out of town’.

Turning to the actual evidence for pretonic vowels in PIE, there is, to my knowledge, no systematic treatment. The most widely mentioned example of pretonic R(o) in athematic nominal inflection is the paradigm of ‘liver’, which Beekes (1985:5), followed by Kloekhorst (2014a:142–4), reconstructs as **iék^w-r*, gen. **iok^w-én-s* to account for Latin *iecur*, gen. *iocineris*.³⁶ In my view, two other examples deserve discussion: **pob₂i-mén-* > Greek *ποιμήν* ‘herdsman’ (cf. Lith. *piemuō*) and **uok^w-* ‘voice’, which has unaccented R(o) in the genitive Ved. *vācás*, Gk. *ὄπός*. I will leave aside the more speculative examples adduced by

obviously of PIE date, their antiquity beyond that need not be very high. The introduction of pretonic R(o) could be ascribed to influence of the parallel type **b^hór-o-* (action noun).

³²Obviously, also **i* and **u*, probably as allophones of the semivowels. I do not think the evidence for original stressed **ó* can be explained away (as Kloekhorst 2014a assumes) in view of old neuters like **uódr*, **gónu*, **h₂óiu*, **dónu*; cf. also Beekes 1985:156.

³³The analogical introduction of unaccented **-(C)oR-* at stage (2) took place only in non-neuters because there were no neuters with accented suffix in the strong stem.

³⁴This is explicitly rejected by Beekes, who states: “What is said about unaccented vowel[s] holds for both preceding and following vowel(s)” (1985:157).

³⁵According to Beekes, **o* was phonetically weaker than **é* in pre-PIE. In some of the attested branches of Indo-European, however, it was rather the outcome of **e* that was more centralized, shorter, and/or weaker than that of **o* (cf. Indo-Iranian *a* versus *ā* in non-final open syllables, and Tocharian B *ä* versus *e*, respectively). This is somewhat awkward for Beekes’ account. It is also known that in Vedic Sanskrit, the pitch contour reached its peak shortly after the *udātta*. Might this fact somehow be connected with the appearance of **o* in posttonic, but not in pretonic syllables?

³⁶Rix (1965:87), followed by Mottausch (2000:35–6), places the *o*-grade in the loc. **iok^w-én*.

Beekes (1985:158), such as his idea that the iterative-causative type **CoC-éie-* arose from the type **CC-éie-* by introducing a secondary full grade.³⁷

I will first consider ‘voice’, because this shows interesting parallels with ‘foot’. The combined evidence of Vedic, Latin, and Greek points to **uók^w-* (nom.sg.), **uok^w-* (all other cases). However, the Avestan paradigm (OAv. *vāxš*, acc. *vācim*, gen. *vacō*) seems to reflect **o/e-*ablaut. It is reasonable to assume that the Avestan situation is old, since a mobile PIE paradigm with (original) non-ablauting *o*-vocalism would be unparalleled.³⁸ As with ‘foot’, we are again faced with a choice: was the original paradigm acrostatic **uók^w-/*uék^w-* (with secondary mobile accent in Vedic) or mobile **uók^w-/*uk^w-*? Schindler (1972:33) chooses the first option, noting the lack of evidence for zero grade weak-stem forms. Reflexes of accented **uék^w-*, however, are not attested either. On the other hand, if we start from mobile **uók^w-/*uk^w-*, the *samprasāraṇa* ablaut in combination with delabialization (**uk-*) would provide an excellent motive for reintroducing the root in the weak stem. If this reshaping took place sufficiently early, the scenario suggested here explains why the pretonic vowel turned up as **e*.

As for hysterodynamic **pob₂i-mén-*,³⁹ this form and **pob₂i-u-* (Gk. *πῶν* ‘herd’, Skt. *pāyú-* ‘protector’) contain an *i*-extension of the root **peh₂-* ‘to pasture’.⁴⁰ In view of the root extension, one could assume a deverbal origin for **pob₂i-*. The type **ph₂-oi-/*ph₂-i-*, attested for Hittite (Kloekhorst 2006) and continued in Indo-Iranian (Lubotsky 2011), would explain the *o*-grade. However, a reconstruction **ph₂oi-* is contradicted by the acute root of Lithuanian *piemuō* (cf. acc. *piemenį*) and the root vowel of Gk. *πῶν*. On the other hand the formation of the neuter **póh₂i-u* looks identical to that of, for example, **dór-u* ‘wood’. It cannot therefore be excluded that the root of **pob₂i-mén-* ‘herdsman’ was influenced by **póh₂i-u-* ‘herd’, replacing earlier **pob₂i-mén-*. This influence may have occurred in the proto-language, but after the above vowel reduction rules had ceased to be operative.

More complex is Latin *iecur*. Rix (1965) has argued that *iocineris* is the most archaic genitive form, while *iecoris* and *iecinoris* (a cross between **iecinis* and analogical *iecoris*) can be explained analogically. The exact origin of *iocineris* is heavily debated. Klingenschmitt (1992:118) proposed that it originated by metathesis from *iecinoris*, by which the inflection was aligned with that of *iter*, *itineris*. However, as de Vaan (EDL s.v. *iecur*) rightly objects, in this case one would expect a reshaping **iecinoris* >> **iecineris* rather than a metathesis. De Vaan remarks that *io-* occurs almost exclusively in forms of four or five syllables, and suggests that *io-* might be due to weakening in pretonic position, comparing “*ianitrices* < *ienitrices*.” He concludes skeptically, however, by noting that the idea is difficult to test “since *io-* further occurs only in the disyllabic *iocus*.” Kloekhorst (2014a:143) is also critical of this idea, remarking that the difference in vocalism with *ianitricēs* would remain unex-

³⁷Without a scenario explaining in detail how these iterative-causatives were derived, Beekes’s reconstruction remains pure speculation; in any case, the antiquity of the formation **CoC-éie-* does not seem very high, because it has no ablaut and three full stem-vowels.

³⁸It is theoretically possible that the Avestan ablaut *vāc-/vac-* is analogical after *āp-/ap-* ‘water’, but there is no particular reason to make such an assumption.

³⁹Since the paradigm of Lith. *piemuō* may be the result of merger of the *-én-* and *-on-* stems in the prehistory of Baltic, the nom. *piemuō* need not directly reflect a PIE form in **-mōn*.

⁴⁰The root must be **peh₂-* ‘to protect’ rather than **peh₃-* for semantic reasons (cf. LIV² 460, pace EWAia 2:112). In Vedic, there is more evidence for an extended root **ph₂-i-*, e.g. *mī-pīti-* ‘Männerschutz’, *go-pīthá-* ‘Schutz’ (EWAia 2:112).

plained. He therefore returns to the reconstruction PIE **iok^wén-* proposed by Beekes, but also remarks that “the root ablaut between **e* in the direct cases and **o* in the oblique cases is unique” (2014a:144). While Kloekhorst views this uniqueness as a sign of archaism, for EDL (l.c.) it casts doubt on the reconstruction **iok^wén-*.

For this reason, and in view of the correlation between *io-* and the number of syllables, it would be preferable to explain *iocineris* by pretonic weakening of **iē*. Such a weakening would have to be dated after the fixation of the classical accentuation rules and the weakening of non-initial syllables preceding that. Moreover, it would have to be conditioned by the surrounding consonants. Rix (1965:85) mentions counterexamples to a general pretonic development *e > o* before *c*. For *iocineris*, however, it is conceivable that both the preceding *i̇-* and the following (labio)velar played a role. Indeed, after *i̇-* Latin vowels were apparently more liable to be influenced by a following consonant: cf. the raising in *ieiūnus* ‘fasting’ < *iaiūnus* < **iagiūno-* (as opposed to *maior* < **magios-*), which probably took place somewhere in the 2nd c. BCE.⁴¹ In roughly the same period, we find the typologically similar change *uo > ue* before dentals (cf. Weiss 2009:140, e.g. *voster* > *vester*), where the preceding labial glide caused centralization of a back vowel, after which the following dental caused further fronting. Similarly, for *iē-* we may envisage a centralized realization of the vowel, after which the following velar may have caused backing to /o/.⁴² Apparently, this development occurred only with unaccented *iē-* in forms with four or five syllables. I will not draw any conclusions from *ianitrīcēs* because this is only attested in Late Latin glosses, and various competing explanations of its root vocalism have been proposed.⁴³

If this explanation is viable, we may reconstruct a Proto-Italic paradigm **iēk^wor*, **iēk^wen-*. In fact, Nussbaum has recently argued that the stem **iēk^wen-* might be indirectly attested in the gloss *iecumānum: victimarium* ‘assistant at a sacrifice’ (Paulus ex Festo), which seems to consist of the productive suffix *-ānus* added to an older weak stem of ‘liver’. In Nussbaum’s words, “the default assumption must be that Latin in the not too distant past had a stem *iecum-* in the paradigm, reflecting **iēk^wen-* entirely regularly, and that the inflection there was simply **iēk^wor*/**iēk^wen-*. The stem *iociner-* is therefore an innovation that is not even quite prehistoric” (2014:233).

In sum, I propose that a combination of *o/e*-ablaut and mobile accentuation arose in the pre-PIE paradigms of ‘foot’ and ‘voice’. This happened when the zero grades **pd-* and **uk^w-* were rendered opaque by sound change; after reintroduction of the root, the vowel was phonologized as **e* in pretonic position.

⁴¹This raising is post-Plautine and probably limited to certain sociolects (cf. Weiss 2009:141).

⁴²Phonetically speaking, it would be attractive to explain the change to *io-* by invoking the following **k^w*. However, as Nussbaum (2014:233) remarks, the weak stem **iēk^wen-* would most probably have yielded **iecum-*: medial vowel reduction and subsequent coloring by the labiovelar, which was then delabialized (cf. **perk^watiō* > *percutiō* beside *quatiō* ‘shake’). One would therefore have to assume a (post-vowel reduction) reshaping **iēk^w-iner-* based on the nom.-acc. **iēk^wor* (after *iter*, *itineris*), and a subsequent leveling of *-c-* after **iēk^wor* turned into *iecur*. Such a scenario cannot be excluded, but it would certainly complicate matters.

⁴³See Weiss 2009:309, EDL l.c. Assuming a pre-Latin input form with **iēn-*, one could envisage the following scenario: (i) after word-initial *i̇-*, the unrounded short vowels /e, a/, when pretonic, merged into a centralized vowel; (ii) this vowel was then backed under influence of a following velar (*iocineris*), fronted by a following palatal glide (cf. *ieiūnus*), and lowered to /a/ at least before /n/ (*ianitrīcēs*), but perhaps more generally.

4 Further evidence for analogical pretonic *e?

Are **ped-* and **uek^w*- special cases, or is there more evidence for the introduction of pretonic *e in pre-PIE? First of all, we should note that *é was the most widespread accented root vowel in PIE, especially in athematic nominals. Therefore, most instances of unaccented R(e) can be ascribed to normal analogical leveling. For example, possessive compounds in **-men-és-* have the same root vowel as the base form **mén-os*, but a different accent. The R(e) of **-men-és-* could be the regular reflex of an old pretonic vowel of analogical origin, but it may also be due to leveling.

We therefore have to restrict ourselves to other instances of **o/e*-ablaut, and ask under which conditions the *e*-grade may have plausibly originated as an analogical introduction. In fact, Kloekhorst has recently explained a number of alleged instances of **o/e*-ablaut in Hittite in a similar way, but at shallower time depth. Consider the word for ‘water’, Hitt. *wátar*, gen. *we/iténas*. The root vowel of the weak stem is often thought to reflect an unaccented *e*-grade. In order to explain this R(e), Schindler posited an original acrostatic paradigm PIE **uód-r*, **uéd-n-*, after which an introduction of the accented suffix allomorph **-én-* yielded the weak stem **ued-én-*. Kloekhorst, however, convincingly explains the Hittite paradigm in a different way: he notes that Hitt. *e/i* can also be read as a schwa-like phoneme /i/, and sets up PIE **uód-r*, **ud-én-*; the oblique stem was replaced by **u_od-én-* in Proto-Anatolian, and then yielded Hitt. /witénas/ (2014a:154). The motive for reshaping was, according to Kloekhorst, a general avoidance of *samprasāraṇa* ablaut in Proto-Anatolian.

A second example is the Hittite verbs with *ā/e*-ablaut, which have been claimed to continue inherited **ó/é*-ablauting verbs. Kloekhorst (2012, 2014b) has shown that many such verbs are best explained by inner-Anatolian processes, and concludes that there is no decisive evidence for acrostatic **ó/é*-ablaut in the PIE verbal system. The only old *ā/e*-verbs within Hittite are *karāp-/karep-* ‘to devour’ and *sarāp-/sarep-* ‘to sip’. In Kloekhorst’s view, the allomorphs *karep-* and *sarep-* do not reflect an **e*-grade, but contain the vowel /i/. This vowel arose when the inherited zero grades with **r̥* had developed into pre-Hittite **/gərb-/* and **/sərb-/*. After that, the *Schwebeablaut* with **/grāb-/*, **/srāb-/* was eliminated by creating secondary zero grades **/grəb-/* **/srəb-/*, which yielded the attested *karep-* and *sarep-*.⁴⁴

The scenario I propose for ‘foot’ in pre-PIE is comparable to that posited by Kloekhorst for cases of anaptyxis in pre-Hittite, but there are differences. First, I assume that the analogical root vowel in ‘foot’ had merged with **e* already in PIE, while the anaptyxis assumed by Kloekhorst took place within Anatolian. Secondly, the factors causing the introduction of an analogical root vowel in PIE were in part different from those in pre-Hittite Anatolian. This clearly appears from ‘water’: Vedic loc. *udán* and Umbrian *utur*, abl. *une* strongly suggest

⁴⁴Melchert does not accept Kloekhorst’s claim that Hittite synchronically had a vowel /i/, and avers that “there is no motivation whatsoever for creating a weak stem with an anaptyctic vowel, whether /sreb-/ , /srib-/ , or /srib-^h” (2013:140). However, this merely amounts to saying that there was no *synchronic* model for analogically creating such a weak stem. Kloekhorst’s reconstruction is historical: *sarāp-/sarep-* (and *karāp-/karep-*) originated as *srāb-/srāb-* when *hi*-verbs of *TeRT*-roots still had the shape *CāRC-/CāRC-* (i.e. before **əR* merged with *aR*). Whether this **srāb-* eventually emerged as /sreb-/ or /srib-/ is a different matter (as Melchert notes, there is one instance of a plene-spelled 3pl. *karre-e-pé-er* [MH/MS]), but this has no bearing on how plausible it is that the vowel originated in the way proposed by Kloekhorst.

that PIE preserved a zero grade root in the oblique, illustrating that in PIE *samprasāraṇa* ablaut was by itself not problematic.

Nevertheless, ablauting zero grades may have been subject to an early, pre-PIE reshaping not only in **TeT*-roots like **ped-* and **uek^w-*, but perhaps also in **CReT*-roots. This is suggested by the distinct ablaut behavior of **CReT*-roots and **CeRT*-roots in PIE. As is well-known, root nouns of the structure **CeRT*- usually appear exclusively in the zero grade (e.g. **snig^{wb}-* ‘snow’, **uik-* ‘settlement’), whereas in root nouns of the structure **T(R)eT*- or **ReT*- (e.g. **b^hlog-* ‘flame’), evidence for zero grade forms is lacking.⁴⁵ As Schindler saw, this distribution invites us to reconstruct a single type of ablaut for *o*-grade root nouns, but his explanation for the difference (1972:35–6) is unnecessarily complicated,⁴⁶ and he does not motivate why **CReT*-roots were treated differently from **CeRT*-roots. In my view, the most straightforward motivation would be that zero-grades to both root structures were realized as [CəRT-] at a relevant pre-stage, and that the reason for reshaping the weak stem of **CReT*-roots was avoidance of *Schwebeablaut* within a paradigm.⁴⁷ In fact, we may just have one example suggesting that R(*e*) was introduced in the weak stem: **prók-* (reflected in Ved. [AV] acc.sg. *prásam* ‘questioning in a lawsuit’) beside **prek-* (Lat. *prex* ‘prayer’). It must be admitted, however, that this example is somewhat ambiguous: it has R(*o*) beside R(*e*), but in contrast with ‘foot’ and ‘voice’ there is no indication concerning their original distribution.

5 Conclusion

Direct evidence for analogical pretonic **e* is limited to a few lexemes.⁴⁸ This is not unexpected, however, because **é* was also the default accented root vowel in PIE. By contrast, what is remarkable is the absence of unambiguous traces of PIE pretonic **o* in athematic nominals. It is true that large-scale leveling may have taken place in root syllables, but if pretonic **o* ever existed, one would expect to find at least some clear traces of it, just as we find many traces of posttonic **o*.

For Indo-European inflection and conjugation, we may reconstruct ablauting paradigms

⁴⁵Cf. Gk. *φλόξ* ‘flame’ and probably Ved. *bhrāj-* ‘id.’, with mobile accent and generalization of R(*o*) (cf. *vác-* ‘voice’). In my view, generalization of R(*o*), possibly under influence of the root noun, may also explain the vocalism of the verb *bhrājate* ‘to shine, sparkle’; the semantic and formal correspondence to Gk. *φλέγω* and *φλόξ* cannot be coincidental (pace EWÁia 2:269–70).

⁴⁶Setting up an old **o/e*-ablauting type, Schindler assumes that in **CeR(T)*-roots, the genitive in **-éR(T)-s* (“flexion fermée”) was replaced by **-R(T)-és* (“flexion ouverte”), with an allegedly productive replacement of unaccented **eR* by zero-grade **R*. On the other hand, he claims that in **eT*-roots the genitive in **-eT-s* was replaced by **-eT-és*; here, the *e*-grade was allegedly retained because the replacement of unaccented **eT* by **T* was no longer productive at the relevant stage. There is no principled way to verify or falsify this scenario.

⁴⁷There was, of course, no general avoidance of zero grades to **CReT*-roots, witness forms like pres. **prk-ske/o-* ‘to request’, or **b^hlj-ró-* reflected in Lat. *flagrare* ‘to be ablaze’.

⁴⁸An important category where pretonic **e* is attested is the PIE perfect. It is often speculated that the reduplicating syllable originally carried the accent by invoking the **k^wetúóres*-rule, which states that a trisyllabic word with the vowels *é-o-X* and initial accent shifts its accent to the following syllable (LIV² 21–2). There is, however, no clear-cut evidence proving this rule, which lacks phonetic motivation. Rather, if the basic form of the PIE perfect was originally non-reduplicated, as in the Hittite *hi*-conjugation and various relics elsewhere (see Kloekhorst, this volume), the accented R(*o*) of the strong perfect stem is old. Within the scenario proposed here, we may then understand why the unaccented reduplicating vowel was realized as **e*.

where $R(\acute{e})$ alternates with $R(\emptyset)$, and paradigms where $R(\acute{o})$ alternates with $R(\emptyset)$. The former type happens to be more widespread, but examples of the latter also belong to the oldest stratum, both for verbs (*hi*-conjugation, perfect) and nouns (cf. **uód-r*, *ud-(é)n-* ‘water’). I have argued that in the root nouns **pód-* and (probably) **uók^w-*, an anaptyctic vowel was secondarily (but already before PIE) introduced into the weak stem in order to repair phonetic accidents. This anaptyctic vowel merged with PIE **e* in pretonic position. In this way, PIE **o/e*-ablaut came into being, but only on a small scale, as a result of secondary developments.

Abbreviations

- AiGr. = Wackernagel, Jakob. 1896-. *Altindische Grammatik*. 3 vols. Göttingen: Vandenhoeck & Ruprecht.
- DELG = Chantraine, Pierre. 1968–80. *Dictionnaire étymologique de la langue grecque: Histoire des mots*. Paris: Klincksieck.
- DMic. = Aura Jorro, Francisco. 1985–93. *Diccionario micénico*, 2 vols. Madrid: Consejo Superior de Investigaciones Científicas.
- Docs.² = Ventris, Michael, and John Chadwick. 1973. *Documents in Mycenaean Greek*. 2nd ed. Cambridge, UK: Cambridge University Press.
- EDBIL = Derksen, Rick. 2015. *Etymological Dictionary of the Baltic Inherited Lexicon*. Leiden: Brill.
- EDG = Beekes, Robert. 2010. *Etymological Dictionary of Greek*. 2 vols. Leiden: Brill.
- EDL = de Vaan, Michiel. 2008. *Etymological Dictionary of Latin and the Other Italic Languages*. Leiden: Brill.
- EWAia = Mayrhofer, Manfred. 1986–2000. *Etymologisches Wörterbuch des Altindoarischen*. 3 vols. Heidelberg: Winter.
- GEW = Frisk, Hjalmar. 1960–72. *Griechisches etymologisches Wörterbuch*. 3 vols. Heidelberg: Winter.
- LIV² = Kümmel, Martin, and Helmut Rix. 2001. *Lexikon der indogermanischen Verben*. Wiesbaden: Reichert.
- NIL = Wodtko, Dagmar, Britta Irslinger, and Carolin Schneider. 2008. *Nomina im indogermanischen Lexikon*. Heidelberg: Winter.

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