

1 **Suffixal *o-vocalism without “Amphikinesis”:**
2 **On Proto-Indo-European *oi-stems and Ablaut**
3 **as a Diagnostic for Word Stress***

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6 **1. Introduction**

7 This paper is concerned broadly with the relationship between word stress and
8 quantitative vowel alternations (ABLAUT) in Proto-Indo-European (PIE) as direct-
9 ly reconstructible by comparison of its daughter languages and, in particular, with
10 the prosodic patterns exhibited by animate nouns formed with the suffix *-oi-.
11 Regarding these patterns there has been general agreement since Schindler (1969:
12 154–5), who argued that PIE *oi-stems had “amphikinetic” (AK) inflectional
13 paradigms (cf. Rix 1992:146–7, Weiss 2011:242, inter alia)—i.e., stressed *é-
14 vocalism of the root and *o-grade of the derivational suffix in the strong cases,
15 and zero-grade of the root and suffix and stressed inflectional endings in the weak
16 cases. Here, I reexamine the evidence for this hypothesis and show that this re-
17 construction encounters empirical problems—above all, mismatching the suffixal
18 stress pattern found in the strong cases in Greek and Hittite. I therefore propose
19 an alternative reconstruction of PIE *oi-stems which, significantly, requires re-
20 jecting the premise that all PIE primary athematic nominals with suffixal *o-
21 vocalism were characterized by intraparadigmatic stress mobility between root
22 and inflectional endings, as assumed in the widely accepted Erlangen Model
23 (EM) of PIE morphophonology (discussed further in §6 below).

24 *1.1. PIE *oi-stems: the basis for the traditional “amphikinetic” reconstruction*

25 PIE *oi-stems are best represented in Ancient Greek and in Hittite, but it is gen-
26 erally held that their original inflectional patterns are best preserved in Indo-
27 Iranian—specifically, in the morphologically isolated word for ‘friend’ in Vedic

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1 Sanskrit, which was treated in detail by Schindler (1969:154–5). Table 1 provides
 2 representative attested forms of this word and their corresponding PIE pre-forms
 3 under the assumption that they directly continue a “pristine” AK paradigm of the
 4 type described above.¹

5 Table 1

	PIE		Vedic Sanskrit	
NOM.SG	* <i>sék^wh₂-ōi</i>	>	<i>sákhā</i>	‘friend’ (e.g., RV IV.4.10c)
ACC.SG	* <i>sék^wh₂-oy-ṃ</i>	>	<i>sákhāyam</i>	” (e.g., RV V.31.12b)
DAT.SG	* <i>s(ə)k^wh₂-y-éi</i>	>>	<i>sákhye</i>	‘for a friend’ (e.g., RV V.29.7a)

6 Under this view, the Vedic paradigm closely reflects the PIE situation; the only
 7 major change between PIE and Vedic is in the weak cases, where Vedic has ana-
 8 logically introduced root stress from the strong stem (thus, e.g., *sákhye* replaced
 9 historically expected **sakhyé*).

10 *1.2. PIE *oi-stems: issues with the traditional “amphikinetic” reconstruction*

11 A problem for the traditional analysis arises, however, when the Hittite and
 12 Greek reflexes of the cognate class are taken into account. The prosodic proper-
 13 ties of these forms are difficult to reconcile with the AK reconstruction—in par-
 14 ticular, the suffixal stress pattern (i.e., *-ó-i-) in the strong case forms that is
 15 consistently observed in both languages. Sample strong and weak case forms are
 16 given for Greek in Table 2 and for Hittite (with approximate phonetic transcrip-
 17 tions) in Table 3.

18 Table 2

	STRONG	WEAK		
a.	φειδῶ	φειδοῖ	‘sparing’	(F.NOM/DAT.SG)
b.	πειθῶ	πειθοῦς	‘persuasion’	(F.NOM/GEN.SG)
c.	χρε(ι)ῶ	χρειοῖ	‘need’	(F.NOM/DAT.SG)

1 For the paradigm in Table 1 see Rix 1992:146 (which offers a different segmentation). Follow-
 ing Rix, I assume that in the weak cases of Table 1 the “root” (i.e., stem-initial syllable) would
 have been a “morphological zero-grade” environment for phonotactic reasons and thus would
 have had a reduced vowel (represented here with *ə), the regular Vedic reflex of which is *a*
 (e.g., PIE **səs-éntu* > Ved. *sas-ántu* ‘let them sleep’). Nothing depends on this assumption,
 however, in particular since I show in §§2.2–3 below that the Vedic forms in Table 1 do not
 reflect a primary AK paradigm of this kind.

1 Table 3

	STRONG		WEAK		
a.	<i>hurđāin</i> [χ ^(w) ort:-á:i-n]		<i>hurtiyaš</i> [χ ^(w) ort:-y-á:s]	‘curse’	(ANIM.ACC/GEN.SG)
b.	<i>zahhāiš</i> [tsaχ:-á:i-s]		<i>zahhiyaš</i> [tsaχ:-y-á:s]	‘battle’	(ANIM.NOM/GEN.SG)
c.	<i>linkāus</i> [liŋk-á:(y)-os]		<i>linkiyaš</i> [liŋk-y-á:s]	‘oath’	(ANIM.ACC.PL/GEN.SG)

2 The Greek and Hittite strong case forms in Tables 2–3 are problematic for the
 3 AK reconstruction of PIE *oi-stems because it is precisely the derivational suf-
 4 fix—the locus of stress in both languages—that is “skipped” in the AK stress al-
 5 ternation between root and inflectional endings. The attested forms in Tables 2–3
 6 thus cannot reflect AK pre-forms via regular sound change. Furthermore, a PIE
 7 AK paradigm provides no viable source from which suffixal stress could be ana-
 8 logically generalized by paradigm leveling.

9 The primary aim of this paper is to advance a new reconstruction of PIE ani-
 10 mate *oi-stems that accounts for the formal properties of their attested reflexes in
 11 the IE daughter languages. I argue that *oi-stems were not “amphikinetic” at all
 12 in PIE. Instead, they had the following two properties:

- 13 i. Stressed *oi-suffix in the strong cases (as in Hittite, Greek)
- 14 ii. Zero-grade suffix (*-y-) (as in Hittite, Vedic) and stressed inflectional end-
 15 ings in the weak cases (as in Hittite)

16 It will become clear below, moreover, that labeling this PIE nominal class “am-
 17 phikinetic” does not adequately explain the variation in the vocalism of the
 18 base—i.e., the root or stem to which *-oi- is suffixed—that is found in the daugh-
 19 ter languages. This issue is treated in §5.

20 1.3. Outline

21 The remainder of this paper is structured as follows. The next three sections
 22 comprise a systematic survey of the attested reflexes of PIE *oi-stems in the an-
 23 cient IE languages that provide direct evidence for their reconstructible stress pat-
 24 terns: Vedic is treated in §2; Greek in §3; and Hittite in §4. In each case, I assess
 25 the evidence for this nominal class not only for its phonological properties but
 26 also for its morphological structure, with special attention to the relationships that
 27 obtain between the reflexes of PIE *oi-stems and their (synchronic) derivational
 28 bases.

29 This survey culminates in §5, where it provides the basis for a new re-
 30 construction of PIE *oi-stems. I conclude, then, in §6 with a discussion of some

1 implications of this reconstruction for analyses of PIE word prosody—in particu-
 2 lar, for the EM and its foundational assumptions about the relationship between
 3 word stress and ablaut.

4 2. Reflexes of PIE **oi*-stems in Vedic Sanskrit

5 2.1. Data

6 Reflexes of PIE animate **oi*-stems in Indo-Iranian are limited to a single lexical
 7 item, the word for ‘friend’, continued in Ved. *sákhā(y)*- and Av. *haxā(ii)*-.² The
 8 former is extremely well-attested, the majority of simplex paradigmatic forms
 9 occurring already in the Rigveda; these forms are provided in Table 4.

10 Table 4

	SG	DU	PL
NOM	<i>sákhā</i>	<i>sákhāyā</i>	<i>sákhāyas</i>
ACC	<i>sákhāyam</i>	<i>sákhāyā</i>	<i>sákhīn</i>
INSTR	<i>sákh(i)yā</i>	—	<i>sákhibhis</i>
DAT	<i>sákhye</i>	—	<i>sákhibhyas</i>
ABL	<i>sákhys</i>	—	<i>sákhibhyas</i>
GEN	<i>sákh(i)ys</i>	—	<i>sákhīnām</i>
LOC	—	—	—
VOC	<i>sakhe</i>	<i>sakhāyā(u)</i>	<i>sakhāyas</i>

11 In Avestan, simplex forms occur only in Younger Avestan and are somewhat
 12 more limited: *haxa* (NOM.SG), *haśa* (INSTR.SG), *haśe* (DAT.SG), *haxaiia/haśa*
 13 (NOM/ACC.DU), *haxaiiō* (NOM.PL), and *haśqm* (GEN.PL).³ This lexical item is also
 14 attested in cognate compounds in Sanskrit and Avestan: Ved. *su-ṣakhā(y)*- and
 15 OAv. *huš.haxā(ii)*-. These compounds are discussed further in §2.4 below.

16 2.2. The phonology of Vedic **oi*-stems

17 The Vedic forms in Table 4 all show fixed stress on the stem-initial syllable. The
 18 lengthened *ā*-vowel of the suffix observed in the ACC.SG and NOM.PL is the ex-

2 Av. *kauua(ii)*- ‘ruler’ (cf. Ved. *kavi*- ‘sage-poet’) is an **ei*-stem (ACC.SG YAv. *kauuaēm*;
 NOM.PL OAv. *kāuuiias*) with cognates Gk. *κοίης* ‘(type of priest)’ (Hsch.) and Lyd. *kawe*-
 ‘priest’ (cf. *EWA* I 328), the latter clearly supporting this inflectional pattern (cf. Hawkins
 2013:185 n.597); it is therefore not a reflex of PIE **-oi*-.

3 YAv. *haśqm* preserves the inherited GEN.PL PIE **sok^w-(h₂)-y-(oh_{1/3})om* against remodeled Ved.
sákhīnām.

1 pected reflex of prehistoric *o-vocalism in an open syllable (via BRUGMANN’S
 2 LAW). In the weak cases, the Vedic forms consistently show zero-grade of the
 3 suffix, prevocalic -y- and preconsonantal -i-. The stem-initial syllable has para-
 4 digmatic a-vocalism, which is historically compatible with *e, *o, or even a mor-
 5 phological zero-grade *ə (cf. n.1).

6 As noted already in §1.1, these properties may be explained starting from a
 7 primary AK paradigm such as Table 1 above: the a-vocalism of the stem-initial
 8 syllable may continue the mixture of strong *e and weak *ə hypothesized in
 9 Table 1 or the analogical leveling of the former, perhaps concomitant with the
 10 generalization of the initial stress pattern in those case forms. However, the con-
 11 sonantism of the stem makes this analysis problematic. It is generally agreed that
 12 the etymological source of Ved. *sákhā(y)-* and Av. *haxā(ii)-* is the PIE root *sek^w-
 13 ‘accompany; follow’ (EWA II 684–5), but a primary deverbal formation from this
 14 root—the source of Ved. *sácate* ‘id.’ (cf. Lat. *sequitur*, Gk. ἔπομαι, etc.; LIV²
 15 525–6)—cannot account for Ved. *kh* (< PIIr. *k^h). These forms thus require a dif-
 16 ferent morphological analysis.

17 2.3. The morphology of Vedic *oi-stems

18 Recognizing the issue raised by their consonantism, Schindler (1969:164 n.65)
 19 proposed that Ved. *sákhā(y)-* and its Avestan cognate instead reflect a non-
 20 primary formation *sok^w-h₂-oi—derived as in (1) from a collective in *-eh₂-. The
 21 process would be analogous to the widely accepted derivation in (2) (see Meier-
 22 Brügger 2010:248 with references): the addition of the non-primary suffix (*-oi-,
 23 *-o-) induces zero-grade of the preceding morpheme, creating a voiceless stop
 24 plus *h₂ sequence that develops regularly into a Vedic voiceless aspirated stop
 25 (and Avestan voiceless fricative).

(1)	*sek ^w - ‘accompany’	⇒	*sok ^w -eh ₂ - ‘retinue’	⇒	*sok ^w -h ₂ -oi- ‘member of a retinue’
(2)	*ret- ‘run’	⇒	*rot-eh ₂ - ‘runners/wheels of vehicle’	⇒	*rot-h ₂ -o- ‘wheeled vehicle’

26 The output of the derivation in (2) yields Ved. *rátha-* ‘chariot’ and YAv. *raθa-*
 27 ‘id.’; the intermediate step is likely reflected in Lat. *rota* ‘wheel’. The existence
 28 of the intermediate stage is less secure for (1), but may be indirectly reflected in
 29 Gk. ὀπάων ‘comrade, attendant’ as the historical source of its unattested base
 30 ὀπᾶ* (see Beekes 2010:112–3, 1089 with references). This form is one of several
 31 pieces of evidence that point to *o-grade in the stem-initial syllable of *sok^w-
 32 h₂-oi-. Additional support for its reconstruction comes from further derivatives to

1 this stem, produced as in (3) (see Byrd 2015:210–1 and Ringe 2017:131–2 for
2 detailed discussion):

$$(3) \quad *sok^w-h_2-oi- \Rightarrow *sok^w(-h_2)-y-o- \Rightarrow *sok^w(-h_2)-y-e-ye/o- \\ \text{‘member of a retinue’} \quad \text{‘companion’} \quad \text{‘be a companion’}$$

3 Lat. *socius* ‘comrade’ and ON *seggr* ‘id.’ are most economically derived from
4 thematized $*sok^w(-h_2)-y-o-$ with regular deletion of $*h_2$ before $*y$ by PINAULT’S
5 LAW (Pinault 1982; cf. Byrd 2015:208–41); Gk. ἠοσσεῖω ‘help’ continues a pre-
6 fixed form of the denominal verb to this stem ($< *s\eta-sok^w(-h_2)-y-e-ye/o-$).

7 There is therefore convergent evidence for reconstructing a non-primary forma-
8 tion PIE $*sok^w-h_2-oi-$ with $*o$ -grade of the root as the etymon of Ved.
9 *sákhā(y)-*. For present purposes, this result has two important implications. First,
10 Ved. *sákhā(y)-* provides no positive evidence for reconstructing a primary $*oi-$ -
11 stem paradigm like Table 1 with $*e$ -grade of the root in the strong cases. Second,
12 this form (and its own cluster of further derivatives) suggests that non-primary
13 $*oi$ -stems “inherit” the root vocalism of their derivational base—i.e., $*sok^w-h_2-oi-$ -
14 acquires its $*o$ -grade from $*sok^w-eh_2-$. Such base-derivative transfer effects are
15 well known cross-linguistically,⁴ and a characteristic property of PIE non-primary
16 derivation, as observed already by Schindler (1975:260): “Es besteht dabei gene-
17 rell die Möglichkeit, dass spezifische Ablautstufen der zugrundeliegenden Pri-
18 marbildungen auch in den sekundären Ableitungen erscheinen.” This mechanism
19 will factor prominently into the analysis developed below.

20 2.4. Vedic *suṣākhā(y)-*: An accentual archaism?

21 One final Indo-Iranian form merits discussion, since it potentially offers insight
22 into the formal properties of PIE $*oi$ -stems. The form is Ved. *suṣākhā(y)-*, a
23 compound of *su-* ‘well’ and *sákhā(y)-* ‘friend’, which is likely of PIr. antiquity,
24 since Avestan attests a compound built out of the same two elements, OAv.
25 *huš.haxā(ii)-* (NOM.SG *huš.haxā*, Y 32.2; ACC.SG *huš.haxāim*, Y 46.13). This Ve-
26 dic compound is attested four times in the Rigveda, three times with stress on the
27 peninitial syllable of its second member (2M) (*suṣākhāyas*, I.173.9a; *suṣākhā*,
28 VIII.48.9d; *suṣākhāyas*, X.31.1c) and once with stress on the first syllable of its
29 2M (*suṣākhā*, X.91.1d). Oldenberg (1909–12:I.173, II.116, ad locc.) classifies the

4 Kiparsky (2015:3) refers to such transfer effects as “synchronic analogy.” A more common label is “output-output correspondence” (Benua 1997), a topic which has engendered a vast theoretical literature (for one recent overview see Rolle 2018:158–61).

1 two NOM.SG forms (with mismatched stress) as determinative compounds and the
 2 latter two as bahuvrīhis (BV); Jamison and Brereton (2014:373, 1129, 1425,
 3 1540, ad locc.) appear to concur with his assessment, rendering the former as
 4 ‘good comrade’ and the latter as ‘have/be in good fellowship’.

5 The two BV compounds are of particular interest here.⁵ The general rule for
 6 the accentuation of BV compounds with first member *su-* is that they are stressed
 7 on the same syllable of the 2M as the 2M’s simplex form (Wackernagel 1905:
 8 294–5), e.g., *su-vájra-* ‘possessing a good mace (*vájra-*)’; *su-cakrá-* ‘well-
 9 wheeled (*cakrá-*)’. Exceptions to this rule are rare in the Rigveda,⁶ but
 10 *suṣakhā́(y)-* appears to flout it, showing 2M stem-final stress vs. stem-initial stress
 11 in the simplex form *sákhā́(y)-*. This type of mismatch is especially problematic
 12 because any kind of simple analogical explanation—e.g., that the stress of the
 13 compound has been influenced by the simplex—is obviously excluded, since it is
 14 precisely in this respect that the compound diverges from the simplex form.

15 I therefore suggest that this synchronically unmotivated mismatch may be an
 16 archaism. In §5 below, I argue that PIE *oi-stems, both primary and non-primary,
 17 were stressed on the *oi-suffix in their strong case forms. Under this analysis, the
 18 expected Vedic form of the word for ‘friend’ is **sakhā́(y)-*; if this form were then
 19 compounded with the precursor of Ved. *su-* and the same rules of BV accentua-
 20 tion were applied, the output of this derivation would have developed regularly
 21 into attested Ved. *suṣakhā́(y)-*. This compound would thus reflect a historical
 22 stage prior to the “retraction” of stress that yielded the Vedic simplex from
 23 *sákhā́(y)-* with fixed stem-initial stress. A possible mechanism for this diachronic
 24 stress shift is discussed further in §5.3.

5 However the divergent stress pattern of hapax *suṣákhā* at RV X.91.1d is to be explained, it cannot be attributed to the fact that it is a determinative compound, since *suṣakhā́* at RV VIII.48.9d is a compound of the same type. Oldenberg (1909–12:II.116 ad loc.) suggests that *suṣákhā* may be an error. In my view, however, it is most likely analogical to the synchronic base *sákhā́(y)-*. More precisely, it is a nonce form produced by compounding unaccented /su-/ with the synchronic nominal stem /sákhāy-/ with initial accent (cf. Lundquist 2016 on compound *s-*stem adjectives).

6 Wackernagel (1905:295) suggests that *su-* compounds with 2M stem-final stress vs. simplex stem-non-final are analogical to privative (*a(n)-*) compounds, which generally show this pattern. See Melazzo 2010:99–105 for a complete list of exceptions in the Rigveda with discussion.

1 3. Reflexes of PIE **oi*-stems in Ancient Greek

2 3.1. Data

3 PIE animate **oi*-stems are continued semi-productively in Greek in two func-
 4 tions, both of which are attested already in Homer. The Greek reflex of this suffix
 5 is used, first, to form feminine deverbal abstract nouns, and second, to form fem-
 6 inine denominal relational nouns referring to female persons or professions.⁷
 7 Representative examples of each type are given in (4) and (5), respectively:⁸

8	(4) a.	φείδομαι	‘spare’	⇒	φειδῶ	‘sparing’	(Hom.+)
9		b.	πειθῶ	‘persuade’	⇒	πειθῶ	‘persuasion’ (Hes., A.+)
10		c.	λέχομαι	‘lie down’	⇒	λεχῶ	‘woman post-childbirth’ (E.+)
11		d.	χρή	‘need to’	⇒	χρε(ι)ῶ	‘need’ (Hom.+)
12		e.	μέλλω	‘be about to’	⇒	μελλοῦς	‘of hesitation’ (A. <i>Ag.</i> 1356)
13		f.	δοκέω	‘seem; think’	⇒	δοκῶ	‘notion’ (E. <i>El.</i> 747)
14		g.	ἄπειμι	‘be away’	⇒	ἄπεστῶ	‘absence’ (Hdt., Plu.)
15		h.	πύθομαι	‘rot’	⇒	Πῦθῶ	‘Pytho (place)’ (Hom.+)
16	(5) a.	κάμινος	‘furnace’	⇒	καμῖνῶ	‘furnace-woman’	(Hom.+)
17		b.	ἄργος	‘swift’	⇒	Ἄργῶ	‘Argo (ship)’ (Hom.+)
18		c.	γοργός	‘grim’	⇒	Γοργῶ	‘Gorgon (monster)’ (Hes.+)
19		d.	ἔρατός	‘lovely’	⇒	Ἐρατῶ	‘Erato (nymph)’ (Hes.+)
20		e.	κῦμα	‘wave’	⇒	Κῦμῶ	‘Cymo (nymph)’ (Hes.+)
21		f.	κάλλιστος	‘most beautiful’	⇒	Καλλιστῶ	‘Callisto (nymph)’ (E.+)
22		g.	κόσμος	‘order’	⇒	Κοσμῶ	‘Cosmo (priestess)’ (Lycurg.)

23 Especially in epic poetry, derivatives of both types are used as female theonyms.
 24 Yet Homeric forms like (4a) and (4c)–(d) are clear examples of deverbal abstract
 25 nouns, and this usage takes on a modicum of productivity in the tragic poets and
 26 later authors, as evident from nonce formations like (4e)–(f).⁹ Similarly, (5a) es-

7 In some cases, the process by which the **oi*-stem noun is derived is unclear—e.g., ἦχῶ ‘sound’ could be deverbal to the denominative verb ἠχέω ‘make sound’ or denominal from its base ἠχή ‘sound’. In principle, it could also be a primary derivative of a verbal root, although which root exactly is unclear (cf. *DELG* 418).

8 The relationship in (4h) is famously related in *h.Ap.* 371–4. While it is probably a folk etymology (cf. *DELG* 953), the fact that the poet was able to connect them this way shows that this derivational pattern was part of his grammar.

9 On hapax legomena as a diagnostic of morphological productivity, see Sandell 2015:22–5, 34–54 with references. It is perhaps notable that nearly one-third of the **oi*-stem abstracts listed in

1 tablishes the denominal relational usage for Homer, although only in deriving
2 female names does the suffix appear to have any denominal productivity.

3 This Greek class also includes some nouns that lack any identifiable deriva-
4 tional base, e.g., Σαπφώ ‘Sappho’ (h) in Table 5 below; yet since these forms lack
5 secure etymologies or transparent morphological structure, they are of limited
6 relevance for determining the morphological or phonological properties of PIE
7 **oi*-stems.

8 3.2. Morphology of Greek **oi*-stems

9 The majority of the Greek reflexes of PIE **oi*-stems cited in (4)–(5) are unam-
10 biguously non-primary derivatives just like Ved. *sákhā(y)*-. This is true for all of
11 the examples in (5), and particularly clear in (5a) and (5d)–(g), where the **oi*-
12 stem nouns show phonological traces of the derivational suffix(es) used to form
13 the nominals that serve as their derivational bases—e.g., in (5d) Ἐρατώ ‘Erato’
14 contains the [t] of the suffix -το- used to form the verbal adjective ἐρατός from
15 which it is derived.

16 Of the examples in (4) at least (f)–(g) are similarly unambiguous non-primary
17 derivatives. In (4g), the noun is transparently derived from a preverb-verb com-
18 pound. In (4e) and (4f), the verbal stems contain the PIE derivational suffixes **-*
19 *ye/o-* and *-éye/o-*, respectively (*LIV*² 109–11; *DELG* 682–3), traces of which can
20 also be observed in their derived nouns. Example (4d) is somewhat more compli-
21 cated, but there is general agreement that the derivational base is not a verbal root
22 (see *DELG* 1273 with references) and thus that the **oi*-stem nouns are non-
23 primary.

24 The remaining three examples in (4a)–(c) are more difficult to interpret. On
25 the one hand, the **oi*-stem nouns could be primary derivatives of the PIE verbal
26 roots **b^heid-*, **b^heid^h-*, and **leǵ^h-* with the full-grade of the root that is expected
27 under the traditional AK reconstruction of PIE **oi*-stems. On the other hand, they
28 could be non-primary derivatives of the “simple” thematic present stems in (4a)–
29 (c) derived from these roots, in which case their root-full-grade may be inherited
30 from the corresponding verbs. I argue in §5.3 below that the latter account de-
31 scribes the synchronic situation, but it remains possible that (4a)–(c) indirectly
32 reflect inherited primary formations.

Buck and Petersen 1945:24–5 are hapax forms in Hesychius, although the implications of this distribution are unclear at present.

1 3.3. *Phonology of Greek *oi-stems*

2 The Greek reflexes of PIE **oi-stems* exhibit essentially uniform phonological
 3 behavior. All Greek nouns of this type have stress fixed on the suffix throughout
 4 their inflectional paradigm and non-ablauting [o]-vocalism of this suffix. This
 5 pattern is partially obscured by the historical loss of intervocalic yod, but all at-
 6 tested forms can be traced back to Proto-Greek paradigms with NOM.SG **-ῶi*,
 7 GEN.SG **-όγ-os*, and LOC(>DAT).SG **-όγ-i*, e.g., Table 5:

8 Table 5

	STRONG	WEAK		
a.	φειδῶ	φειδοῖ	‘sparing’	(F.NOM/DAT.SG)
b.	πειθῶ	πειθοῦς	‘persuasion’	(F.NOM/GEN.SG)
c.	λεχῶ	λεχοῦς	‘woman post-childbirth’	(F.NOM/GEN.SG)
d.	χρε(τ)ῶ	χρε(τ)οῖ	‘need’	(F.NOM/DAT.SG)
e.	καμῖνῶ	καμῖνοῖ	‘Calypso (goddess)’	(F.NOM/DAT.SG)
f.	Ἄργῶ	Ἄργοῦς	‘Argo’	(F.NOM/GEN.SG)
g.	Γοργῶ	Γοργοῦς	‘Gorgon’	(F.NOM/GEN.SG)
h.	Σαπφῶ	Σαπφοῦς	‘Sappho (PN)’	(F.NOM/GEN.SG)

9 The word-final circumflex in the weak case forms shows that these nouns had
 10 stress on the derivational suffix prior to yod loss and vowel contraction (cf.
 11 Schwyzler 1939:382, 478–9); if they instead had final stress, the result would
 12 have been a final acute—e.g., [×]φειδοῖ rather than φειδοῖ (a) in Table 5.

13 As can be seen in (4) and (5), Greek non-primary **oi-stems* have the same
 14 stem shape as their derivational bases. This generalization holds also for Table 5
 15 a–c, if these are non-primary (cf. §3.2 above); otherwise, they point to inherited
 16 full-grade of the root. None of the Greek **oi-stems* that look synchronically un-
 17 derived (e.g., (4g)) can be traced back to PIE primary **oi-stems* with any confi-
 18 dence; these examples are thus uninformative with respect to the root vocalism of
 19 PIE primary **oi-stems*.

20 **4. Reflexes of PIE **oi-stems* in Hittite**21 *4.1. Data*

22 PIE animate **oi-stems* are continued in Hittite as *a(i)-stems*. This class has been
 23 treated exhaustively by Rößle (2002), who provides a comprehensive collection

1 of forms and their attestations.¹⁰ Much like PIE *oi-stems in Greek, Hittite *a(i)*-
 2 stems are employed in two functions from Old Hittite onward. First, the Hittite
 3 reflex of this suffix was used semi-productively to form animate deverbal abstract
 4 and concrete nouns such as those in (6). In addition, the suffix was used to derive
 5 animate denominal abstract and concrete nouns, although this usage is not as well
 6 attested. Two relatively clear examples are given in (7):

7	(6)	a.	<i>ḫuwart/ḫurt-</i>	‘swear’	⇒	<i>ḫurdāin</i>	[χ ^(w) ort-á:i-n]	‘curse’
8		b.	<i>zah(h)-</i>	‘strike’	⇒	<i>zahḫāiš</i>	[tsaχ:-á:i-s]	‘fight’
9		c.	<i>wag-</i>	‘bite’	⇒	<i>wagāiš</i>	[wak-á:i-s]	‘grain pest’
10		d.	<i>link-</i>	‘swear’	⇒	<i>linkāuš</i>	[liŋk-á:(y)-os]	‘oaths’
11		e.	<i>wašt-</i>	‘sin’	⇒	<i>waštāiš</i>	[wast-á:i-s]	‘sin’
12		f.	<i>ištarni(n)k-</i>	‘make ill’	⇒	<i>ištarningain</i>	[ištarniŋk-á:i-n]	‘illness’
13		g.	<i>maniyahḫ-</i>	‘administer’	⇒	[<i>man</i>]iyahḫāiš	[maniyaχ:-á:i-s]	
14								‘administrative district’
15	(7)	a.	<i>ḫullant-</i>	‘defeated’	⇒	<i>ḫullanzāiš</i>	[χol:ants-á:i-s]	‘defeat’
16		b.	<i>ḫukma-*</i>	‘magical’	⇒	<i>ḫukmāiš</i>	[χ ^(w) okm-á:i-n]	‘incantation’

17 This Hittite class also includes nouns that appear to lack a synchronically co-
 18 existing derivational base. Some—in particular, Hitt. *šaklai-* ‘custom’ and *šagai-*
 19 ‘omen’—have been taken to reflect PIE primary formations (e.g., Kloekhorst
 20 2008:539–40, 700–1), but a non-primary denominal origin is more likely (see
 21 Yates 2017:92 n.58). Röbke (2002:115–8) has shown that others continue *i-stem
 22 nouns remodeled within Hittite, e.g., *tuhḫwi-* ‘smoke’ >> *tuhḫwai-* ‘id.’¹¹ The
 23 phonological properties of these forms do not diverge in any significant way from
 24 the synchronically derived non-primary *a(i)*-stems in (6) and (7), which constitute
 25 the focus of the discussion in §§4.2 and 4.3 below.

26 *4.2. Morphology of Hittite a(i)-stems*

27 Both of the denominal *a(i)*-stems in (7) are manifestly non-primary. In each
 28 case, the proximate base is a nominal formation that is itself derived from an at-
 29 tested verbal stem, *ḫulle/a-* ‘fight’ and *ḫuek/ḫuk-* ‘conjure’; the suffixes used to
 30 form these bases (< PIE *-ont-, *-mo-) can be directly observed in the derived

10 Röbke (2002) also gathers and assesses the evidence for Hittite neuter *oi-stems (e.g., *ḫaštai-* ‘bone’, pp.61–71); these nouns are not treated here, as there is no reason to assume a priori that the neuter suffix has the same prosodic properties as the animate one.

11 The clearest examples of this remodeling, *tuhḫwai-* and *zašḫai-* ‘dream’, are themselves non-primary (see Röbke 2002:115–30, Byrd 2011).

1 *a(i)*-stems.¹² Similarly, the deverbal *a(i)*-stems in (6f)–(g) are clearly based on
 2 derived verbal stems: (6f) is a nasal-infix verb (cf. Hitt. *ištark-* ‘be ill’) and (6g)
 3 contains the productive denominal verb-forming suffix *-ahḫ-* (< factitive PIE *-
 4 *eh₂-*).

5 Somewhat less clear are the *a(i)*-stem nouns in (6b)–(e), which stand beside
 6 Hittite radical verbs that have qualitatively invariant stem vocalism. One possibil-
 7 ity for the nouns in (6b)–(d) is that they are primary derivatives of PIE verbal
 8 roots with the full-grade expected under the traditional AK reconstruction.¹³ Yet
 9 such an analysis is excluded for Hitt. *waštai-* in (6e), whose stem-initial [a] can-
 10 not reflect a PIE full-grade.¹⁴ This property is more plausibly explained under the
 11 assumption that *waštai-* is a non-primary derivative formed within Hittite based
 12 on the *ḫi*-verb *wašt-* ‘sin’; the invariant vocalism of the verb—originally proper
 13 to its strong stem (< PIE **o*) (cf. Kloekhorst 2008:985–6)—was then transferred
 14 to the derived noun as in other non-primary derivatives. Significantly, this type of
 15 analysis can also be extended to the nouns in (6b)–(d), whose stem shapes simi-
 16 larly match their corresponding verbal stems; inner-Hittite non-primary deriva-
 17 tion with base-derivative transfer of stem vocalism would account neatly for this
 18 identity.

19 The final example, *ḫurdai-* in (6a), stands beside an ablauting radical verb
 20 *ḫuwart/ḫurt-*. As was the case for *waštai-* in (6e), *ḫurdai-* cannot continue a PIE
 21 primary AK formation (< PIE **h₂wert-*; cf. *LIV*² 291) with full-grade of the
 22 root;¹⁵ rather, its presuffixal stem shape ([*χ*^(w)ort:-]) can only reflect a historical

12 I tentatively follow Hoffner and Melchert 2008:54 in deriving *ḫullanzai-* as in (8a) from the
 PTCP *ḫullant-* of *ḫulle/a-* ‘fight’ (with regular affrication of **-t > z* [ts] before [i] generalized
 from the weak cases), but see Röbke 2002:98–102 for a discussion of alternative analyses (un-
 der any of which *ḫullanzai-* must be a non-primary formation). The non-attestation of the
 proximate base in (8b) may simply be accidental, since deverbal **-mo-* occurs in forms like
 Hitt. *tarma-* ‘peg’ and as part of the semi-productive derivational suffix *-ima-*, e.g., Hitt.
tethima- ‘thundering’ < *tetha-* ‘thunder’ (see Oettinger 2001; see Hoffner and Melchert
 2008:58).

13 The roots (7c) and (7d) are respectively PIE **weh₂ǵ/g-* and **h₁lenǵ^h/g^h-* (cf. Kloekhorst
 2008:526–8, 939–41; *LIV*² 247, 664–5). The root of (7b) is uncertain; see Kloekhorst 2008:
 1019–20 for discussion.

14 The etymology of the verb is unknown (cf. Kloekhorst 2008:985–6), but the root-internal **h_{2/3}*
 that would be needed to yield Hittite [a] from a PIE full-grade is ruled out on structural
 grounds.

15 A PIE full-grade **[h₂wert-]* would probably have yielded **[χ^wert:-]* in Hittite, spelled **ḫu(-u)-*
er-t^o).

1 zero-grade of the root (i.e., *[h₂w_ɾt-]), just as in weak forms of the radical verb’s
 2 inflectional paradigm, e.g., 3PL.IMP.ACT *hurtandu* ‘let them swear’.¹⁶ This root
 3 zero-grade is synchronically unique among Hittite *a(i)*-stems, and in §4.3 below,
 4 I propose that the noun continues an inherited primary formation with this prop-
 5 erty.

6 *4.3. Phonology of Hittite a(i)-stems*

7 The phonological behavior of Hittite *a(i)*-stems is in most respects uniform. The
 8 forms in Table 6 are representative of the formal patterns of the oldest attested
 9 Hittite *a(i)*-stems:

10 Table 6

	STRONG (NOM.SG/ACC.PL)		WEAK (GEN.SG)	
a.	<i>hurdaiš</i>	[χ ^(w) ort:-á:i-s]	<i>hurtiyaš</i>	[χ ^(w) ort:-y-á:s] ‘curse’
b.	<i>zaḥḥāiš</i>	[tsaχ:-á:i-s]	<i>zaḥḥiyaš</i>	[tsaχ:-y-á:s] ‘battle’
c.	<i>linkāus</i>	[liŋk-á:(y)-os]	<i>linkiyaš</i>	[liŋk-y-á:s] ‘oath’
d.	[<i>man</i>]iyahḥāiš	[maniy-aχ:-á:i-s]	<i>maniyahḥiyaš</i>	[maniy-aχ:-y-á:s] ‘administrative district’
e.	<i>ḥukmāuš</i>	[χ ^(w) okm-á:(y)-os]	<i>ḥukmiyaš</i>	[χ ^(w) okm-y-á:s] ‘incantation’

11 All positive evidence in this Hittite noun class supports consistent suffixal stress
 12 (i.e., prehistoric *-ó*i*-) in the strong cases. This property is evident from plene
 13 spellings of the suffixal *a*-vowel (i.e., [á:]), which are found for all well-attested
 14 nouns belonging to this class.

15 In the weak cases, Hittite *a(i)*-stem nouns exhibit zero-grade of the suffix and
 16 stressed inflectional endings. Plene spellings of nominal inflectional suffixes in
 17 Hittite are relatively rare and happen to be unattested in this class. Nevertheless,
 18 ending stress is secure, as no alternative position is viable: the derivational suffix
 19 cannot be stressed, since the syllable nucleus is deleted (*-y-); and stress cannot
 20 precede the derivational suffix, since the presuffixal stem is paradigmatically
 21 invariant, exhibiting the same prosodic properties in the weak cases as in the

16 Per Kloekhorst 2008:373 the *ḥuwart/hurt-* alternation (< *ó/∅) was clearly the verb’s original ablaut pattern (based on Middle-Script attestations), but in later Hittite this distribution was no longer consistently maintained; as a result, there are historical weak-stem forms attested in strong-stem contexts (e.g., 1SG.PST.ACT *hurtaḥhun*) and vice-versa (e.g., PTCP *ḥuwartant-*). It is not plausible that this change affected the stem shape of *hurda-*, however, as the noun is robustly attested as such already in MS texts (see Röble 2002:23–7).

1 clearly unstressed strong cases.¹⁷ Röβle (2002:324) arrived at the same conclu-
 2 sion, stating that Hittite *a(i)*-stems exhibited a “voralthethitisch virtuell hysterod-
 3 dynamisches Paradigma”—i.e., intraparadigmatic stress mobility from the suffix
 4 in the strong cases to inflectional endings in the weak cases with concomitant
 5 deletion of the suffixal vowel.

6 As discussed in §4.2, Hitt. *ḫurdai-* in (6a) and Table 6 a cannot be derived
 7 from a traditional primary “amphikinetic” paradigm and thus requires an alterna-
 8 tive analysis. I propose that *ḫurdai-* is indeed a primary formation, but continues
 9 the (partial) prehistoric paradigm in Table 7 with the zero-grade of the root and
 10 stress mobility between suffix and inflectional endings that is standardly recon-
 11 structed for PIE “hysterokinetic” nominals:

12 Table 7

	PIE		Hittite	
NOM.SG	* <i>h₂w_ṛt-ōi</i>	>>	<i>ḫurdāiš</i>	[χ ^(w) ort:-á:i:s] ‘curse’
GEN.SG	* <i>h₂w_ṛt-y-é/ós</i>	>	<i>ḫurdiyaš</i>	[χ ^(w) ort:-y-á:s] ‘of the curse’

13 The PIE paradigm in Table 7 would develop into the attested Hittite forms in Ta-
 14 ble 6 via regular sound change (modulo the regular recharacterization of animate
 15 NOM.SG forms with *-s).

16 This proposal for *ḫurdai-* has implications for the morphological analysis of
 17 the *a(i)*-stem nouns in (6b)–(d). Specifically, if Table 7 accurately represents the
 18 prehistoric paradigm of Hittite primary *a(i)*-stems, then the nouns in (6b)–(d)
 19 cannot direct reflect primary **oi*-stems, since they do not show (historical) zero-
 20 grade of the root; rather, they must be non-primary derivatives formed within Hit-
 21 tite from the corresponding verbal stems in (6b)–(d) just like (6e)–(g), or else be
 22 analogically remodeled after these stems as suggested in §3.2 above for the Greek
 23 forms in (4a)–(c) (see §5.3 below for further discussion).

24 5. A new reconstruction of PIE **oi*-stems

25 Sections 2–4 presented an overview of the comparative evidence for PIE **oi*-
 26 stems in the ancient IE languages that testify directly to their reconstructible
 27 stress patterns. Having critically assessed the attested reflexes of PIE **oi*-stems

17 Moreover, presuffixal stress in the weak cases would violate the generalization—otherwise exceptionless in Hittite and Vedic and standardly assumed for PIE (e.g., under EM)—that stress mobility within inflectional paradigms was always rightward (viz., with respect to its position in the strong cases).

1 with respect to their morphological and phonological properties, I now develop a
 2 new formal reconstruction of this nominal category. The proposed morphological
 3 reconstruction is outlined in §5.1 and the phonological reconstruction in §5.2.
 4 The diachronic developments necessary to account for divergent properties ob-
 5 served in the daughter languages are laid out in §5.3.

6 5.1. Morphology of PIE **oi*-stems

7 There is evidence from Vedic, Greek, and Hittite that the PIE animate noun-
 8 forming suffix **-oi-* was used to derive non-primary deverbal and denominal
 9 nouns. Both of these usages are well attested in Greek and Hittite; the denominal
 10 function is also supported by Indo-Iranian, as this usage historically underlies
 11 Ved. *sákhā(y)*- ‘friend’ (and Av. *haxā(ii)*- ‘id.’).

12 There is also evidence, albeit more limited, that this PIE suffix was used in
 13 primary derivation. It was argued in §4.3 that Hitt. *ḫurdai-* ‘curse’ continues a
 14 PIE primary **oi*-stem noun derived from the root **h₂wert-*, which is also the
 15 source of the Hittite radical verb *ḫuwart/ḫurt-* ‘swear’. Hitt. *ḫurdai-* thus provides
 16 the strongest evidence for **-oi-* as a primary suffix in PIE. In addition, there may
 17 be indirect support for primary **-oi-* from forms like Gk. φειδῶ ‘sparing’ and
 18 Hitt. *lingai-* ‘oath’, the development of which is discussed further in §5.3 below.

19 Overall, the comparative evidence suggests that at the directly reconstructible
 20 stage of PIE, animate **-oi-* was productive in non-primary deverbal and denomi-
 21 nal derivation, but was also employed in primary deverbal derivation.

22 5.2. Phonology of PIE **oi*-stems

23 Vedic, Greek, and Hittite provide convergent evidence for reconstructing PIE
 24 **oi*-stems with the three prosodic properties in (8):

- 25 (8) Prosodic properties of PIE **oi*-stems
- 26 a. Stressed suffixal [ó]-vocalism in the strong cases.
- 27 b. Zero-grade of the suffix (**[-y-]*) in the weak cases.
- 28 c. Stressed inflectional endings in the weak cases.

29 (8a) is observed across the board in Hittite and Greek: all attested reflexes of
 30 PIE **oi*-stems are stressed on the suffix in the strong cases. Inherited suffixal
 31 stress is also likely preserved in the Vedic compound *susákhā(y)*-. Both (8b) and
 32 (8c) are found in Hittite, where all weak case forms have the shape [-y-*́*]. Vedic
 33 also shows (8b), i.e., suffixal *-y/i-*, which—given (8a)—is best explained under
 34 the assumption that nouns in this class were stressed on their weak inflectional

1 endings in the prehistory of Vedic (and Avestan) as per (8c).¹⁸ The properties in
2 (8) are thus established by straightforward comparative reconstruction.

3 While these properties were common to all PIE **oi*-stems, the stem shape of
4 these nouns was not uniform, and depended above all on whether the suffix was
5 used in primary or non-primary derivation. I propose here that PIE primary ani-
6 mate **oi*-stem nouns were characterized by zero-grade of the root. This recon-
7 struction accounts directly for Hitt. *ḫurdai-* ‘curse’, which was shown in §4.3 to
8 require a historical zero-grade root. This property is also expected for primary
9 athematic nominals with the “hysterokinetic” stress pattern described in (8) such
10 as **ter*-stem agent nouns (e.g., Gk. *δοτήρ* < PIE **dh₃-tér* ‘giver’) and, more gen-
11 erally, for primary nominals in which the root is pretonic, such as thematic adjec-
12 tives in **-to-* (e.g., Gk. *φατός*, Ved. *hatá-* < PIE **g^wh₂-tó-* ‘slain’; Gk. *κλυτός*,
13 Ved. *śrutá-* < PIE **klu-tó-* ‘heard (of)’).¹⁹

14 For PIE non-primary animate **oi*-stems the comparative evidence is abun-
15 dant and effectively uniform: in unambiguous non-primary derivatives attested in
16 the daughter languages, the stem of the derivational base surfaces presuffixally in
17 the derived noun.²⁰ This pattern is thus securely reconstructible for PIE as well.
18 The phonological properties of PIE primary and non-primary animate **oi*-stem
19 nominal paradigms can thus be represented schematically as in Table 8:

20 Table 8

	PIE <i>*oi</i> -STEM NOUNS	
	PRIMARY	NON-PRIMARY
NOM.SG	*R(∅)- <i>ói</i>	*STEM- <i>ói</i>
GEN.SG	*R(∅)- <i>y-é/ós</i>	*STEM- <i>y-é/ós</i>

18 Ending stress in the weak cases is also assumed under the traditional AK reconstruction. I leave open here whether root stress could induce suffixal zero-grades in the weak cases of PIE primary nominals; a PIE or pre-Vedic paradigm with suffixal stress in the strong cases and root stress in the weak cases can in any case be safely excluded for the reasons outlined in n.17 above.

19 On the post-PIE emergence of full-grade root vocalism in **ter*-stems see Kiparsky 2018:144–6, and on **to*-adjectives see Probert 2006:174–96.

20 One complication should be noted here. In non-primary derivatives of thematic stems, the **oi*-suffix descriptively appears to “replace” the stem-final thematic vowel (**-o/e-*). One possibility is that the thematic vowel undergoes regular pretonic vowel deletion in this context. How this pattern is best understood must be determined within the context of a broader analysis of PIE morphophonology, a task which necessarily calls for further research.

1 5.3. *The einzelsprachlich development of PIE *oi-stems*

2 If the formal reconstruction of PIE *oi-stems advanced in §§5.1 and 5.2 is cor-
 3 rect, then the daughter languages must have introduced certain innovations into
 4 this class. I discuss two such innovations below, along with a third possible de-
 5 velopment.

6 In Greek, the attested reflexes of PIE *oi-stems have stressed [ó]-vocalism of
 7 the suffix in the weak cases as well as the strong (e.g., *πειθοῶς* ‘of persuasion’ <
 8 **-óy-os*). This development can be attributed to simple paradigm leveling: the
 9 strong stem was generalized at the expense of the weak. Within Greek, it has a
 10 close analogue in other classes with inherited “hysterokinetic” stress mobility,
 11 such as the PIE **ter*-stems mentioned already in §5.2, which have similarly elim-
 12 inated suffixal ablaut and exhibit fixed suffixal stress—e.g., DAT.SG *δοτῆρι* ‘for
 13 the giver’ (<< LOC.SG PIE **dh₃-tr-i*).²¹ Moreover, the same innovation is found in
 14 Hittite *a(i)*-stems (< **-oi-*), which in later Hittite (only New Script) begin to ap-
 15 pear with suffixal [-á:(y)-] in the weak cases, e.g., Table 9:

16 Table 9

	STRONG	OLDER WEAK	INNOVATIVE WEAK (DAT/GEN.SG)
a.	<i>hurdāi-</i>	<i>hurtiya</i>	<i>hurtāi</i> [χ ^(w) ort:-á:(y)-i]
b.	<i>linkāi-</i>	<i>linkiya</i>	<i>lenqāi</i> [liŋk-á:(y)-i]
		<i>linkiyaš</i>	<i>lingayaš</i> [liŋk-á:y-as]
c.	<i>maniyahhāi-</i>	<i>maniyahhiyaš</i>	<i>maniya[h]hayaš</i> [maniy-aχ:-á:y-as]

17 A second innovation is the fixed word-initial stress found in ‘friend’ in Vedic
 18 (NOM.SG *sákhā*; DAT.SG *sákhye*). I attribute this development to the general pho-
 19 nological preference for word-initial stress in PIE and in Vedic (cf. §6 below),
 20 which thus tends to emerge diachronically. The tendency to replace word-internal
 21 with word-initial stress can be observed as an inner-Vedic development in PIE
 22 **ti*-stems (Lundquist 2015): this category had final stress in PIE, which is mostly
 23 preserved in early Vedic (e.g., PIE **mṛ-tí-* > RV *matí-* ‘thought’), but in later
 24 Vedic texts some of the same lexical items are attested with initial stress (ŚB,

21 More specifically, Greek has analogically leveled the stem of the NOM.SG, including its charac-
 teristic long vowel. Vedic preserves the original mobile stress pattern of this class, although
 against Greek it has innovated full-grade of the root in this noun class (cf. n.19 above), e.g.,
 Vedic DAT.SG *dāvré* ‘for the giver’ << PIE **dh₃-tr-éi*).

1 Pāṇ. *māti-*).²² It is likely that the shift to initial stress in ‘friend’ is also a quite
 2 recent (if pre-Rigvedic) innovation, since the inherited stress pattern may be
 3 maintained in the Vedic compound *suśakhā(y)-*.

4 The broad take-away from the discussion above is that the developments
 5 needed to reconcile the Greek and Vedic reflexes of PIE **oi-* stems with the re-
 6 construction of this class proposed above are relatively few in number and inde-
 7 pendently motivated, having clear parallels within the history of these languages
 8 and/or elsewhere in the IE family. Before proceeding, however, one final point
 9 merits further discussion in this context. I previously raised the possibility (in
 10 §§3.2, 4.3, and 5.1 above) that Greek forms like φειδῶ ‘sparing’ and πειθῶ ‘per-
 11 suasion’ and Hittite forms like *lingai-* ‘oath’—although non-primary derivatives
 12 of verbal stems within their synchronic systems (Gk. φειδομαι ‘spare’, πειθω
 13 ‘persuade’; Hitt. *link-* ‘swear’)—nevertheless ultimately reflect primary for-
 14 mations. Under this scenario, primary **oi-* stem nouns **b^{hid}-ói-*, **b^{hid}^h-ói-*, and
 15 *h₁lŋĝ^h/g^h-ói-* (with zero-grade root per §5.2 above) would have been inherited into
 16 Greek and Hittite beside cognate verbal stems (**b^{heid}-elo-*, etc.); these nouns
 17 were then remodeled after the verbs (i.e., with full-grade root vocalism) and
 18 thereby integrated into the set of non-primary derivatives formed with **-oi-*,
 19 which in this capacity remained productive going into these languages. In my
 20 view, this type of diachronic scenario seems likely for at least some primary PIE
 21 **oi-* stems, but need not have been the case for these specific examples, which
 22 may well have been non-primary derivatives already in the protolanguage. Under
 23 either analysis, however, there is no good reason to take these forms as evidence
 24 for root full-grade in PIE primary **oi-* stems; rather, these—like all other secure
 25 examples of root full-grades in reflexes of PIE **oi-* stems—can be explained by
 26 transference from their (perceived) base, a mechanism that is independently nec-
 27 essary to account for the formal similarities between base and derivative that are
 28 regularly observed in synchronic non-primary derivation.

22 The same type of prosodic change—i.e., the diachronic emergence of the “default” or phono-
 logically preferred stress pattern—is also observed in the history of Greek and Anatolian (see
 Probert 2006:128–44, 291–4 and Yates 2015:167–74, respectively). Note, too, that this pattern
 of change is especially common in synchronically non-derived lexical items (cf. Sandell
 2015:192–214, Yates 2015:176–8), a category in which Ved. *sákhā(y)-* would undoubtedly be-
 long.

1 **6. PIE **oi*-stems and their implications for reconstructing PIE word prosody**

2 It was noted in §1 that the EM and related “paradigmatic” models of PIE word
 3 prosody assign all athematic primary nominal derivatives with suffixal **o*-
 4 vocalism—and thus PIE primary **oi*-stems—to the AK nominal class, which is
 5 defined by stressed full-grade of the root and **o*-vocalism of the suffix in the
 6 strong cases, and zero-grade of the root and suffix and stressed inflectional end-
 7 ings in the weak cases. In the preceding sections, however, I have argued that PIE
 8 primary **oi*-stem paradigms did not have these formal properties at the stage of
 9 PIE that can be inferred by comparative reconstruction; rather, these paradigms
 10 were—in the terminology of the EM—“amphikinetic” insofar as they were char-
 11 acterized by **o*-vocalism of the suffix in the strong cases, but “hysterokinetic”
 12 insofar as they were characterized by intraparadigmatic stress mobility from suf-
 13 fix to inflectional endings and fixed zero-grade of the root.

14 This formal reconstruction of PIE **oi*-stems has two broader implications for
 15 the reconstruction of PIE word prosody: (i) PIE had primary athematic nominals
 16 with suffixal **o*-vocalism that did not have “amphikinetic” stress patterns; and
 17 (ii) since the EM does not posit a nominal class with suffixal **o*-vocalism and
 18 non-“amphikinetic” stress, it undergenerates the set of reconstructible formal
 19 types.²³

20 That the EM undergenerates in this respect is not fatal, of course. One possi-
 21 ble fix within the context of this framework would be to posit an additional
 22 “amphi-hysterokinetic” nominal class that does have the formal properties of PIE
 23 primary **oi*-stems. This type of approach has been previously employed to ac-
 24 count for other athematic nominal classes that do not neatly fit EM—e.g., a
 25 “mesostatic” class has been suggested for (some) **eh₂*-stems (see Meier-Brügger
 26 2010:353 with references)—although this class and others have not won wide
 27 acceptance.

28 Yet even if the EM were expanded in this way, it would still leave the pro-
 29 sodic behavior of PIE **-oi-* in non-primary derivation—the more productive us-
 30 age in the daughter languages and perhaps also in PIE itself—wholly
 31 unaddressed. Like other non-primary derivatives, PIE non-primary **oi*-stems

23 Whether the PIE primary **oi*-stem paradigm can be derived from the traditional AK paradigm by the so-called “**k^wetwóres*-Regel” (Rix 1985:348) is a separate question. In my view, the evidence generally cited for this development is unconvincing (cf. Rasmussen 2001), but even if it did occur, it must be dated to a pre-PIE stage, since the attested reflexes of PIE **oi*-stems are effectively uniform in showing suffixal stress (per §5.2 above).

1 stand outside the scope of the EM, which is formulated to account only for primary
 2 athematic nominal derivation. Yet it is clear that PIE **-oi-* exhibits the same kind
 3 of prosodic behavior in non-primary derivation as in primary derivation: the suffix
 4 attracts stress in the strong cases and yields it to inflectional endings when it is
 5 deleted in the weak cases. Any analysis that separates the suffix's usage in primary
 6 and non-primary derivation therefore misses an important prosodic generalization.
 7

8 Whether or not the EM could be extended in such a way as to capture this
 9 generalization is unclear to me. In any case, an alternative is available: the word
 10 stress and ablaut of PIE **oi-* stems can be modeled within the general framework
 11 articulated by Kiparsky (2010). This class's formal patterns fall out straightforwardly
 12 from the assumption that the suffix is [+accent, +dominant] (i.e., PIE
 13 **-/óí-/*). While I cannot develop a full analysis here (due to space limitations),²⁴ a
 14 brief explanation is in order. The [+accent] property of the suffix explains why, in
 15 the strong case forms, it attracts stress away from the left edge of the word, where
 16 it is phonologically preferred in accordance with Kiparsky and Halle's (1977)
 17 Basic Accentuation Principle (BAP).²⁵ In the weak cases, deletion of the suffixal
 18 vowel nucleus is conditioned by the similarly accented prevocalic weak case inflectional
 19 endings; this deletion triggers what Kiparsky (2010:146) refers to as
 20 "secondary mobility," which allows stress to shift onto these inflectional endings.
 21 The analysis of PIE primary **oi-* stems is thus identical to that of other "hystero-
 22 kinetic" classes, modulo the vocalism of the derivational suffix. In non-primary
 23 derivation, however, its [+dominant] property becomes relevant; this property
 24 allows **-/óí-/* to "override" any accents associated with the stem to its left despite
 25 the BAP-driven preference for left-edge word stress (e.g., Hitt. /maniyáχ:-ái-s/ →
 26 [maniyáχ:-ái:s] (d) in Table 6).

27 This alternative framework thus offers a unified explanation for the word-
 28 prosodic behavior of PIE primary and non-primary **oi-* stems. Its capacity to do
 29 so must at a minimum be regarded as an advantage over previous analyses, and
 30 more generally suggests that adopting its core assumptions will facilitate what
 31 can only be the ultimate goal of reconstructing PIE word prosody: an explanatory

24 A provisional formal analysis of this class was presented in the oral version of this paper (Yates 2018); it includes most essential details, but I intend to publish a fuller treatment elsewhere.

25 The reconstructibility of the BAP for PIE itself is now assured by its operation in Anatolian (see Yates 2017:177–96).

1 account of the prosodic systems of the IE daughter languages and their diachronic
2 developments.

3

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