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The Anatolian reflexes of Indo-European τομή-, φυγή-, τόμος-, and τομός-type nominals and their historical implications

Abstract: It is widely thought that Proto-Indo-European τόμος-type nouns are robustly continued in the Anatolian languages. I challenge this view, arguing that most of the alleged Anatolian reflexes of this class instead continue τομή- or φυγή-type nouns, or in a few cases, τομός-type adjectives. Based on this reassessment of the Anatolian evidence, I propose a new historical account of the Hittite noun-forming suffix *-ătar/n-* in which inherited τομή- and φυγή-type nouns play a crucial role. This evidence also prompts a reevaluation of the morphology of τομή- and φυγή-type nouns in Proto-Indo-European. I present empirical and morphophonological arguments in support of the view that φυγή-type nouns were primary derivatives, whereas τομή-type nouns were derived from τομός-type adjectives with the same suffix *-eh₂-*.

Keywords: Indo-European, Anatolian, Hittite, nominal derivation, morphophonology

1 Introduction

This paper is primarily concerned with two (or arguably three) classes of animate nouns standardly reconstructed for Proto-Indo-European (PIE), and more specifically, with the historical development of these nouns in the Anatolian languages. Notably, no clear functional difference has (thus far) been discerned between these classes: the semantics of their attested reflexes suggest that all were event or result nouns in PIE, some of which developed more concrete meanings in its daughter languages. They were distinguished formally, however. The first class is comprised by animate nouns formed with a non-ablauting stressed suffix *-éh₂-*, which are continued as such in Anatolian and became feminines in the non-Anatolian IE languages. Among their reflexes two prosodic patterns are observed, but in the absence of an identifiable functional difference, they are plausibly viewed as sub-types of a sin-

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gle morphological class:[1] (i) a "τομή-type" characterized by *o-vocalism of the root; and (ii) a "φυγή-type" characterized by zero-grade of the root. Some non-Anatolian reflexes of these sub-types are given in (1) and (2) respectively along with their reconstructed PIE etyma.[2]

(1) IE reflexes of τομή-type nominals

    a. PIE *$tomh_1$-$éh_2$- > Gk. τομή 'stump'

    b. PIE *$h_x rot$-$éh_2$ > Lat. *rota*; W *rhod* 'wheel'

    c. PIE *kos-$éh_2$- > OCS *kosa*, Russ. *kosá* 'braid'

    d. PIE *$mold^h$-$éh_2$- > Lith. *maldà* 'prayer'

    e. PIE *$molh_2$-$éh_2$- > Lat. *mola* 'ground grain; grindstone'; Gk. μύλη 'mill'

    f. PIE *$srow$-$éh_2$- > Gk. ῥοή 'stream'; Lith. *sravà* 'gush', Latv. *strava* 'current'

    g. PIE *$wloik^w$-$éh_2$ > TB *laiko* 'bath'

    h. PIE *$wrog$-$éh_2$- > Goth. *wraka*, OE *wracu* 'persecution'

(2) IE reflexes of φυγή-type nominals

    a. PIE *$b^h ug$-$éh_2$- > Gk. φυγή; Lat. *fuga* 'flight'

    b. PIE *$h_3 lig$-$éh_2$- > Lith. *ligà*, Latv. *liga*; Alb. *ligë* 'illness'

    c. PIE *$g^w r̥h_3$-$éh_2$- > Lith. *girà*, Latv. *dzira* 'kvass'

    d. PIE *$d^h ig̑^h$-$éh_2$- > OP *didā-* 'wall', Bact. λιζα/λιζο 'city'

    e. PIE *wid-$éh_2$- > W *gwedd* 'aspect'

    f. PIE *wih_x-$éh_2$- > Lat. *via*, U **via** 'road'

As evident in (1), the τομή-type is widely represented across the IE family, and it exhibits productivity within several branches, e.g., in Greek and in Baltic.[3] While none of the IE languages attest such productivity for the φυγή-type in (2), it is similarly found across the IE languages, and its reconstruction is supported by at least one clear cross-branch word equation, Gk. φυγή 'flight' = Lat. *fuga* 'id.' in (2a).

    The other morphological class of central interest in this paper is the "τόμος-type," which was formed with a "simple" thematic suffix *-o- and characterized by

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1 Thus, e.g., Weiss (2020: 320) presents both (i) and (ii) under "τομή-type *nomina actionis*." See further §4, where I argue explicitly that (i) and (ii) were formed with the same *-eh_2-suffix.

2 On the examples in (1–2) see Penney 1978: 310–20 with references to older literature (cf. Lundquist & Yates 2018: 2109; Weiss 2020: 320, i.a.). For specific treatment of (1e) see Vine 1999: 565 (cf. Probert 2006 on the development of initial stress in lexicalized τομή-type formations in Greek); of (1g) Adams 2015: 179; of (2b) DPEWA: #13956; and of (2f) Vine 1998: 258 n. 9.

3 On Greek see Probert 2006 with references to earlier literature, and on Baltic Bammesberger 1973: 15–8.

stressed *$ó$-vocalism of the root. This PIE class has even more robust comparative support, with numerous reflexes across the IE languages as well as cross-branch word equations, e.g., (3).[4]

(3) IE reflexes of τόμος-type nominals

    a. PIE *$tómh_1$-o- > Gk. τόμος 'slice'

    b. PIE *$bʰór$-o- > Gk. φόρος 'tribute'; Ved. *bhára-* 'bearing'

    c. PIE *$bʰródʰ$-o- > Lith. *brãdas*, Latv. *brads*; OCS *brodŭ* 'ford'

    d. PIE *$dóm$-o- > Gk. δόμος; Lat. *domus*; Lith. *nãmas* 'house'

    e. PIE *$dʰóiǵʰ$-o- > Gk. τοῖχος; YAv. *(pairi-)daēza-* 'wall'; Goth. *daigs* 'dough'; Arm. *dēz* 'heap'

    f. PIE *$ǵómbʰ$-o- > TB *keme*, TA *kam*; Ved. *jámbha-*; OCS *zǫbŭ* 'tooth'; Gk. γόμφος 'peg'

    g. PIE *$lógʰ$-o- > Gk. λόχος 'ambush'; TB *leke* 'bed'

    h. PIE *$snóigʷʰ$-o- > Goth. *snaiws*, OE *snāw*; Lith. *sniẽgas*; OCS *sněgŭ* 'snow'

The principal goal of this paper is to reevaluate the Anatolian evidence for each of these PIE nominal classes which, due to the apparent functional identity discussed above, can be distinguished only on formal grounds, and even then only with difficulty, especially in Hittite (cf. §2.3 below). The relevant data is examined in the next section (§2). I argue that the τομή- and φυγή-types were more productive in Anatolian than previous scholarship has recognized, and conversely, that the τόμος-type is less productive, as many of its alleged Anatolian reflexes instead reflect τομή- or φυγή-type formations, and a few instead τομός-type adjectives—viz., a different PIE morphological class of secondary interest here (see further §2.4 and §4.3 below). The rest of the paper focuses on some broader implications of this reanalysis of the Anatolian data. In §3 I show that it offers new insight into the development of *-eh_2-based complex derivational suffixes in Anatolian—in particular, the Hittite abstract-noun forming suffix *-ătar/n-*. In §4 I discuss the morphology of the τομή- and φυγή-types in view of the Anatolian evidence and propose a new account of the prosodic difference between them (viz., root *o-grade vs. zero-grade) in PIE. Finally, §5 concludes with a summary of these results and with brief remarks on some questions about the (pre)history of the τομή-, φυγή-, and τόμος-types that remain outstanding.

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[4] See again Penney 1978: 301–10 with references (cf. Fortson 2010: 129–30; Lundquist & Yates 2018: 2108–9; Weiss 2020: 291, i.a.). On the Vedic outcome of (3b) see in detail Tucker 2013: 236–8.

2 The development of τομή-, φυγή-, and τόμος-type nouns in Anatolian

This section is organized as follows. In §2.1 I discuss the widely held view that τόμος-type nouns are robustly reflected in the Anatolian languages. The alleged reflexes of this type in the Luwic languages and in Hittite are then reexamined in §2.2 and §2.3 respectively, where I contend that the majority instead reflect τομή- or φυγή-type formations and adduce further examples of each of these types. I then turn in §2.4 to the remaining alleged reflexes of PIE τόμος-type in Anatolian, arguing that some are correctly analyzed as such, but that others should instead be traced back to "τομός-type" adjectives. These findings are summarized and discussed in §2.5.

2.1 A productive τόμος-type in Anatolian?

A point of general agreement among specialists in Anatolian and IE morphology is that the PIE τόμος-type is securely continued in Anatolian, where it remained at least somewhat productive in the languages.[5] In support of this claim, these scholars adduce the Hittite nouns in (4), analyzing them as reflexes of PIE τόμος-type nouns. Since these nouns are attested in Hittite beside cognate radical verbs, it is assumed that Hittite speakers treated them as synchronically deverbal, and extended the pattern to create new deverbal event/result nouns—e.g., Hitt. *kuera-* 'field' (< *'section') from Hitt. *kuer-* 'cut'. That Hitt. *kuera-* was formed in this way is evident from its root vocalism: it continues root $*e$, presumably taken over from its verbal base, rather than the root $*o$ of an inherited τόμος-type formation (cf. Melchert 2014b: 211).[6]

    (4)   PIE τόμος-type nouns and their alleged Hittite reflexes

          a.   PIE *$h_2$óns-o-* > Hitt. *ḫā̆šša-* 'progeny' (cf. Hitt. *ḫaš(š)-* 'beget, give birth')

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5 Thus, e.g., Oettinger 1986: 19; Melchert 2014b: 211; 2014: 255; 2016: 214; Nussbaum 2017: 235 (cf. Lundquist & Yates 2018: 2108; Weiss 2020: 291). Melchert (2014b: 211) describes the productivity of the τόμος-type as "moderate".

6 Similarly, Melchert (2012: 177–8) argues that *lāḫḫa-* 'campaign' must be an inner-Hittite deverbal formation (cf. *laḫḫiye/a-* 'go on campaign') in view of its -*ḫḫ*-, which reflects unlenited *h_2 (a τόμος-type formation *$lóh_2$-o-* would have yielded ×*lāḫa-*).

    b. PIE *$h_3órǵ$-o- > Hitt. *ḫarga-* 'destruction' (cf. Hitt. *ḫark-* 'perish')

    c. PIE *$h_3órb^h$-o- > Hitt. *ḫarpă-* 'mound, pile' (cf. Hitt. *ḫarp-* 'reassociate')

    d. PIE *$b^hórs$-o- > Hitt. *paršă-* 'crumb; bit' (cf. Hitt. *parš(i)-* 'break')

    e. PIE *$sórh_3$-o- > Hitt. *šarră-* 'portion, part' (cf. Hitt. *šarr(a)-* 'divide')

    f. PIE *$kórs$-o- > Hitt. *karša-* 'shearing' (cf. Hitt. *karš-* 'cut off')

The most recent treatments of nominal derivation in the Luwic languages report that the situation is approximately the same as in Hittite:[7] the τόμος-type is continued in the Luwian and Lycian nouns in (5), most of which are attested beside Anatolian radical verbs from which they could plausibly be derived synchronically or at a shallow prehistoric stage.[8]

(5)   PIE τόμος-type nouns and their alleged Luwic reflexes

    a. PIE *$h_2órh_3$-o- > CLuw. ^{NA_4}*ḫarra/i-* 'grindstone' (cf. CLuw. *ḫarra-* 'crush')

    b. PIE *$dóm$-o- > Lyc. *m̃me/i-* 'building' (cf. HLuw. *tama-* 'build')

    c. PIE *$h_1ós$-o- > HLuw. *asa-* 'seat' (cf. HLuw. *asa-* 'sit')

    d. PIE *$h_{2/3}ós$-o > HLuw. *hasa-* 'abundance' (cf. Pal. *ḫaš-* 'become sated')

    e. PIE *$h_2ót$-o- > CLuw. *ḫatta-* 'violence', Lyc. *xtta-* 'harm' (cf. Hitt. *ḫatt-* 'pierce')

    f. PIE *$h_3órw$-o- > CLuw. *ḫarwa-* 'road'

    g. PIE *$ǵyóuh_{1/3}$-o- > CLuw. *zūwa-* 'food'

In §2.2 and §2.3, however, I argue that the widely accepted morphological interpretation of these forms is in most cases incorrect; instead, the majority are better analyzed as the reflexes of τομή- or φυγή-type formations. These include at least the Hittite nouns in (4c–f), as well as the Luwian and Lycian nouns in (5c–g). I return to the remaining potential Anatolian examples of τόμος-type nouns in §2.4 below.

2.2 Luwic reflexes of τομή- and φυγή-type nouns

It is natural to begin with the alleged Luwic reflexes of the PIE τόμος-type, since the inherited distinction between τόμος-type formations and τομή- and φυγή-type formations is more clearly maintained in these languages than in Hittite. The crucial

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7 Subgrouping within Anatolian is highly controversial (see Oettinger 1978; Melchert 2003b; Yakubovich 2010: 5–9; Rieken 2017; Melchert 2020b; Sasseville 2020a: 550–2, i.a.), but one undisputed point is that Luwian and Lycian belong to a distinct Luwic branch. For the purposes of this article it is not crucial which other Anatolian languages belong to this branch.

8 Thus, e.g., Melchert 2003a; Melchert 2014b; Melchert 2014a and Kimball 2015: 68; see DCL, s.v. *ḫarri-* on (5a) and eDiAna: #245 on (5b).

fact about the Luwic nouns in (5c–g) above, repeated in (6) below, is that they do not undergo so-called "*i*-mutation," as evident from the stem-final *a*-vowel that appears in their direct case-forms.[9] This is significant, because there is now general agreement that PIE *-*o*-stems were regularly subject to *i*-mutation in Luwian and Lycian, and conversely, that the major source of non-mutating *a*-stems in these languages are PIE *-*eh₂*-stems.[10] It follows from this view that the non-mutating Luwian nouns in (6) reflect τομή- or φυγή-type formations (viz., *-*eh₂*-stems) rather than τόμος-type formations (viz., *-*o*-stems), and indeed, the very latest scholarship on the individual lexemes in (6) correctly draws this conclusion.[11]

(6)   PIE τομή/φυγή-type nouns and their Luwic reflexes[12]

   a.   PIE *h₁os-éh₂- > HLuw. ⟨(MENSA.SOLIUM)*á-sa-sa*⟩ 'seat' (NOM.SG)

   b.   PIE **h₂/₃(o)s-éh₂*- > HLuw. ⟨(LINGERE)*ha-sa-sa*⟩ 'abundance' (NOM.SG)

   c.   PIE **h₂(o)t-éh₂*- > CLuw. ⟨*ḫa-at-ta-aš*⟩ 'violence' (NOM.SG)
       > Lyc. *xtta* 'harm' (ACC.SPL)

   d.   PIE **h₃r̥w-éh₂*- > CLuw. ⟨*ḫa-ru-wa-aš*⟩ 'road' (NOM.SG)

   e.   PIE *ǵyouh₃-éh₂- > CLuw. ⟨*zu-u-wa-an*⟩ 'food' (ACC.SG)

More difficult to determine is which of the Luwian nouns in (6) should be identified with τομή-type formations and which with φυγή-type formations, but it is almost certain that both are represented. The clearest example of a τομή-type is (6e), which has [o:] in the root.[13] To account for both the quality and the quantity (viz., long in a historically unstressed syllable) of this vowel requires reconstructing an inherited diphthong *ou (or *eu) in the root.[14] Meanwhile, (6d) in all likelihood

9 On the inflection of *i*-mutating and non-mutating stems see Yakubovich 2015: §6.2 and Norbruis & Sasseville forthc. Note that the NOM.SG ending -*s* was extended to *-*eh₂*-stems in Luwian (just as in Hittite; cf. §2.3 below), hence ⟨-*sa*⟩ ([-s]) in (6a) and (6b) and -*š* in (6c) and (6d). In (6c) Lyc. *xtta* is attested only in TL 118.2 in the set plural (abbreviated SPL; for the term see Melchert 2014c) and thus lacks case-forms diagnostic for *i*-mutation; I assume it is cognate with CLuw. *ḫatta*- (cf. DCL, s.v.), hence non-mutating.

10 See Sasseville 2015; Sasseville 2018; Sasseville 2020b; Norbruis 2018; DCL, i.a.

11 See eDiAna: #1468 on (6a); eDiAna: #335 on (6b); Sasseville 2020a: 104 and DCL, s.v. on (6c); eDiAna: #3033 and DCL, s.v. on (6d); and DCL, s.v. on (6e).

12 The specific diagnostic forms cited in (6) are attested as follows: (6a) in KARKAMIš A6 §25; (6b) in KARATEPE 1 Hu. §6; (6c) in KUB 35.108+35.87 iv 12; (6d) in KBo 30.190 iii 8; (6e) in KUB 13.4 ii 20.iv 67.71.

13 A root vowel [u:] would here be spelled ˣ⟨*zu-ú-*°⟩, contrary to fact; see Melchert 2010; Melchert 2019 for discussion.

14 Derived from the verbal root of, e.g., OE *cēowan* 'chew.' This root is cited as *ǵyeuhₓ- in LIV²: 168, but the identity of the root-final laryngeal can be ascertained: the absence of a consonantal

continues a φυγή-type formation. A τομή-type pre-form *h_3orw-*éh_2*——adjusting the
$h_3órw$-o- in (5f) posited by Melchert (2014b: 211)—from a root "*h_3erw-" is improbable, since it violates well-established PIE root structure constraints.[15] A φυγή-type
formation, on the other hand, is unproblematic from this perspective, and even salvages Melchert's attractive root etymology: the PIE root is *h_3reu-, continued with a
*k-extension, e.g., in Gk. ὀρύσσω 'dig'.[16]

Less clear are the three nouns in (6a–c). All three can be derived straightforwardly from τομή-type formations, but it is hard to rule out the possibility of φυγή-type formations instead, and in the case of (6a) a recent formation from the corresponding verbal stem, HLuw. *asa*-/CLuw. *aš(a)*- 'sit', cannot be excluded. The difficulty of distinguishing between τομή- and φυγή-type pre-forms stems from the very
limited evidence for the Luwian outcomes of PIE word-initial laryngeals before an
obstruent in a non-ablauting paradigm. There is some Anatolian evidence suggesting that at least *h_1 was lost word-initially before a consonant—e.g., Hitt. *lamniye/a*-,
HLuw. *lamni(sa)*- < PIE *h_1neh_3-mṇ-yé/ó- 'name'—in which case a φυγή-type formation can be excluded for (6a).[17] For *h_2 and *h_3, on the other hand, I am aware of no
direct evidence in the relevant context. A consonantal reflex of *h_2 and/or *h_3 might
be expected in view of Hitt. *ḫašterza* (< PIE *$h_2stér$- 'star'), but the phonological parallel is inexact (#HCC- vs. #HC-), and there is in any case no guarantee that their
Luwian outcome would be the same as in Hittite.[18] At present, then, it cannot be
determined with certainty whether (6b–c) continue τομή- or φυγή-type formations.

The nouns in (6) do not exhaust the Luwic evidence for the PIE τομή- and φυγή-
types. Two further nouns that likely continue the τομή-type are given in (7a–b),
along with a possible third example in (7c).[19]

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reflex in Anatolian precludes *h_2, whereas laryngeal breaking in Tocharian (TB *śuwaṃ*, TA *śwāṣ*
'eats' < *$ǵyúh_3$-ti; see Weiss 2022: 182 for the pre-form with root zero-grade, generalized in Class V
presents per Hackstein 1995: 17–8 and Malzahn 2010: 405–6) rules out *h_1 (I am grateful to Giulio
Imberciadori for calling the latter to my attention). Even so, it remains less attractive to reconstruct
a φυγή-type formation *$ǵyuh_3$-éh_2-, since that would account for the quality of the root vowel, but
not the quantity.

15 See Cooper 2009 and Sandell 2016 with references to earlier scholarship.

16 A different root etymology is advocated in eDiAna: #3033, but it likewise starts from a φυγή-type
pre-form.

17 See Melchert 1994a: 66–7; 2007: 184 n. 6 (cf. Sasseville 2020a: 179).

18 A closer parallel would be Hitt. *ḫatukzi* 'terrifies', likewise with a consonantal reflex, if it continues PIE *h_2teug- (EDHIL: 336), but see Puhvel 1991: 274–7 for a different etymology.

19 It is suggested in eDiAna: #246 that Lyc. *tāma*- 'building' also reflects a τομή-type formation
*dom-éh_2-, but this analysis is problematized by the failure of the root vowel to undergo syncope,
which occurs in etymologically related Lyc. *mme/i*- 'id.' in (17c) below.

(7)   More Luwic reflexes of PIE τομή-type nouns

    a.   PIE *smor-éh₂- > Lyc. AB *mara-* 'law' (cf. Gk. μόρᾱ 'division (of Spartan army)')

    b.   PIE *wol-éh₂- > HLuw. *wala* 'for death; fatally' (ADV)

    c.   PIE *mors-éh₂- > CLuw. *marša–** 'false act, treachery'

The ACC.PL of Lyc. *mara-* in (7a) is securely attested once in the poetic inscription on the pillar of Xanthos as *marãz*.[20] This form shows that the stem is non-mutating, which is compatible with a τομή-type reconstruction. This reconstruction is also supported by Gk. μόρᾱ 'division', which forms a word equation with Lyc. *mara-* on Kimball's (2017) root etymology.[21] As for (7b), HLuw. *wala* is generally connected with the verb HLuw. *wala-* 'die';[22] though attested only as an adverb, its form and meaning are compatible with derivation from the DAT/LOC.SG of a pre-Luwian event noun *wala-* 'death'. Crucially, this noun must have been non-mutating, since in Luwian only non-mutating stems have a DAT/LOC.SG in *-a* (vs. *-i* in mutating stems). Either a τομή- or φυγή-type reconstruction would account for this property, but the latter would lead to unattested ˣ*ula*.

    Much less certain is CLuw. *marša-** (or *marša(/i)-**) in (7c), which is implied by the genitival adjective ⟨𒈥*mar-ša-aš-ša*⟩ attested once in a Hittite context (KBo 4.14 ii 59, perhaps to be emended with final ⟨*-an*⟩; see DCL, s.v.) and may be the base of the relational adjective CLuw. *maršaya-* 'pertaining to impurity/falsehood' (eDiAna: #2869). Its meaning 'false act, treachery' is consistent with a result noun, and accordingly Sasseville (eDiAna: #2860) derives it from a φυγή-type formation PIE *mr̥s-éh₂-* from the root *mers-* 'forget' (cf. Hitt. *maršant-* 'treacherous; deceitful' discussed in §2.4 below).[23] An equally possible source, though, is a PIE τομή-type formation *mors-éh₂-*, as I suggest in §2.2 below; and in the absence of attested direct case-forms, a PIE τόμος-type formation also cannot be ruled out.[24]

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20 A second instance should probably be restored in TL 44d.24 (*mar*[*ãz*]; see eDiAna: #225 for discussion and references.

21 See Kimball 2017 on the semantic development of the PIE root *smer-* in Lycian (cf. Gk. μείρομαι 'receive a share'; LIV²: 970), but against her assessment (*op. cit.* 215), a pre-form *smor-éh₂-* would regularly yield Lyc. *mara-* with root *a*-vocalism via umlaut (cf. eDiAna: #225). On the innovative root stress in Gk. μόρᾱ see Probert 2006.

22 See Hawkins 1981: 152; an archaic participle of this verb may be continued in CLuw. *w(a)lant-* 'dead' (cf. DCL, s.v.). On the shape of the PIE root see Malzahn 2010: 892–4.

23 The semantic development of this PIE root and its Anatolian reflexes are discussed further apropos (19a) in §2.4 below.

24 Sasseville (eDiAna: #2860) takes the factitive verb Lyc. *mrssxa-* 'desecrate; offend' as support for a root zero-grade, but it may simply be due to inner-Lycian syncope, since factitive verbs were probably inherited with suffixal stress (see further §3.2 below).

Luwic also attests additional nouns that probably or at least potentially continue φυγή-type formations, e.g., (8).

(8)   More Luwic reflexes of PIE φυγή-type nouns

    a.   PIE *$tr̥p$-$éh_2$- > CLuw. *tarpa-* 'ritual substitution'

    b.   PIE *h_2up-$éh_2$- > Lyc. A *xupa-* 'grave(-mound)' (cf. Hitt. *ḫuppa-* 'heap')

That CLuw. *tarpa-* in (8a) continues an *-eh_2-stem is evident from its DAT/LOC.SG CLuw. *tarpa* (KUB 17.15 + KBo 52.215 iii 9, 10), which shows that it is non-mutating. Melchert (DCL, s.v. *tarpa-*) suggests that the root is PIE *$trep$- 'turn' in the sense 'deflect', which is also the source of the related verb CLuw. *tarpa-* 'provide a substitute, replace'. If this root etymology is correct, then a τομή-type reconstruction *$torp$-$éh_2$- is unlikely (contra Sasseville 2018: 306), since this PIE root is robustly "State II."[25] This problem is obviated by the φυγή-type formation in (8a), which simultaneously accounts for the shape of the root in the noun (*tarp-* < zero-grade *$tr̥p$-) and its non-mutating inflection.

Similarly, Lyc. *xupa-* in (8b) is non-mutating, as indicated by multiple attestations of the NOM.SG, *xupa*; the ACC.SG, *xupã*; and the DAT/LOC.SG *xupa*. It was proposed by Eichner (2017: 283) that Lyc. *xupa-* forms an exact equation with Hitt. *ḫuppa-* 'heap', which is transparently related to Hitt. *ḫu(wa)pp-* 'hurl' (Melchert 2007), a *ḫi*-verb derived from the PIE root *h_2wep-.[26] The φυγή-type formation in (8b) accounts for the root vocalism of both Hitt. *ḫuppa-* and Lyc. *xupa-* (viz., a reflex of root zero-grade); their initial consonantism (root-initial *h_2 would have been lost in a τομή-type formation by Saussure-Hirt's Law);[27] and the non-mutating inflection of the latter (cf. eDiAna: #641).

It is clear, then, that both PIE τομή- and φυγή-type formations are well-represented in the Luwic languages. Their robust attestation suggests that these inherited categories remained productive in Anatolian, in which case they can be expected to surface in Hittite as well. This hypothesis is tested in §2.3 below.

2.3 Hittite reflexes of τομή- and φυγή-type nouns

An important difference between Hittite and the Luwic languages is that in Hittite inherited *o-stems and animate *-eh_2-stems have merged into a single inflec-

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25 See the derivatives of the root listed in LIV²: 650 s.v. 2. *trep-*.

26 See Melchert 2012: 175 for detailed discussion of the root shape and arguments against the root-final *h_1 hypothesized by Kloekhorst (EDHIL: 369) (similarly, LIV²: 640 reconstructs "*wep-").

27 Hitt. *wappu-* 'river-bank' (< *$h_2wóp$-u-; Melchert 2012: 176) shows precisely this conditioned loss (cf. n. 32).

tional class ("*a*-stems", cf. EDHIL: 107; Sasseville 2020b: 284, i.a.). The causes of their wholesale merger in Hittite are phonological and morphological. As in the Luwic languages, the inherited contrast in the nominative singular between *-s*-marked *o*-stems and *-s*-less *-eh₂*-stems was eliminated in Hittite by analogically extending the ending *-s* characteristic of this case-form to the latter. Hittite differs from these languages, however, in that it did not develop *i*-mutation; thus when inherited *[o, o:] and *[a, a:] merged qualitatively in Hittite as [a, a:], *-eh₂*-stems and *o*-stems fell together. It is therefore only on the basis of comparison to its probable Luwic cognates in (9b) and its well-established Italic cognates in (9c) that the Hittite word for 'hearth' in (9a) can be traced back to a PIE *-eh₂*-stem with confidence.

(9)   IE reflexes of PIE *h_2eh_1s-éh₂-* 'hearth'

     a. Hitt. *ḫă̆ššă̆-* 'hearth'[28] (NOM.SG *ḫă̆ššă̆š*)

     b. Lyd. [*k*]*asa-*[?], Lyc. *xaha-*[?] 'hearth, altar'[29] (cf. CLuw. *ḫaššanitt(i)-* 'id.')

     c. Osc. **aasa-**, Lat. *āra-* 'altar'

An obvious consequence of this merger is that it is much more difficult in Hittite than in the Luwic languages to determine whether a particular noun reflects a τόμος-, τομή-, or φυγή-type formation. Faced with such aporia, previous scholarship (see n. 5 above) appears to have focused mostly on finding reflexes of the τόμος-type.[30] Nevertheless, it has long been suspected that the τομή-type is continued in Hittite. Watkins (1975: 372) proposed that one reflex of this type is Hitt. *(u)warra-* 'help' in (10). This proposal was motivated by the possessive adjective CLuw. *warraḫitašša/i-* 'of help', which implies a neuter noun *warraḫit-** 'help'. On Watkins' analysis, this neuter noun was derived from the τομή-type formation ancestral to Hitt. *(u)warra-* in (10): the stem-final *h_2 of the base was lost in word-final position by regular sound change, but preserved word-internally as *-ḫ-* in the derived noun *warraḫit-** (cf. Melchert 1994a: 85–7).

(10)   PIE *$worh_1$-éh₂-* >[?] Hitt. *(u)wă̆rra-* 'help' (cf. CLuw. *warraḫitašša/i-* 'of help')

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28 The development of 'hearth' in Hittite is discussed by Harðarson (1994: 35–9); Melchert (1994: 235–6; 2011: 397; 2014: 259); Rieken (1999: 247–8), and Kloekhorst (2008: 322–3; 2014: 262), i.a.; see also Yates 2023 for arguments that the root is unstressed and its long vowel analogical to Hitt. *ḫă̆šš-* 'ash'.
29 See eDiAna: #1525 on the Luwic material. If Lyd. [*k*]*asaān* is to be read as such in LW 50.6 and indeed a reflex of 'hearth', then the absence of *i*-mutation would provide inner-Anatolian support for *-eh₂*-inflection. For Lyc. *xaha-* direct case-forms are not attested, but the stem-final [a] of ABL/INS *xahadi* also suggests it is non-mutating.
30 I agree with Sasseville's (2020b: 284) assessment that "further examples of [the φυγή- and τομή-types] in Hittite, which would make a welcome addition, have never been properly sought." One of the main goals of this paper is to fill that gap.

Yet there are some issues that raise doubts about this historical derivation. First, as pointed out by Kloekhorst (EDHIL: 962), it is not actually certain whether the Hittite noun in (10) is an *a*-stem at all. It is a virtual hapax, occurring only in (11) and its duplicate KBo 12.22 i 4 (*warra ḫalzaiš*), where it can be analyzed in other ways, e.g., as the allative of a root noun (thus Gusmani 1968, comparing Gk. ἧρα 'service').[31] Another problem is the plene spelling of the root vowel observed in (11): this feature suggests that the Hittite noun had root stress rather than the stem-final stress historically expected in a τομή-type formation.

(11) *nu   uwārra ḫalzaiš   kuit   iyanun   kuit*
      CONN for.help   cry:3SG.PST.ACT what:ACC.SG.N do:1SG.PST.ACT what:ACC.SG.N
      'Then he cried for help: "What in the world have I done?" '

                                                  KUB 31.4 + obv. 3; OH/NS, CTH 16

Recently, however, more compelling evidence for the τομή-type-type in Hittite has emerged. Oettinger (2016: 234) argues that Hitt. *warša-* 'mist' continues the PIE τομή-type formation in (12). This morphological analysis is supported by a cluster of convergent facts. First, the root *o*-grade characteristic of the τομή-type neatly accounts for the absence of a consonantal reflex of root-initial $*h_2$ in Hitt. *warša-*, which can be attributed to Saussure-Hirt's Law.[32] While this loss is also compatible with a τόμος-type formation, a further point is not—namely, the intervocalic -*rš*- sequence in Hitt. *warš-*. Such sequences are retained as such in Hittite only when stress falls on the immediately following vowel; otherwise, they undergo assimilation in Hittite, yielding -*rr*- as in (13).[33] A τομή-type reconstruction supplies the correct prosodic context for retained -*rš*-, whereas a τόμος-type should have been subject to assimilation, contrary to fact. Finally, Oettinger's τομή-type reconstruction is supported by Ved. *varṣá-* 'rain; rainy season' in (12), which on his analysis makes an exact word equation with Hitt. *warša-*.[34]

(12)   PIE *$(h_2)wors$-$éh_2$ > Hitt. *warša-* 'mist'; Ved. *varṣá-* 'rain; rainy season'

(13)   PIE *$h_1órso$- > Hitt. *ārra-*, Gk. ὄρρος; CLuw. *arša/i-*, OHG *ars* 'ass, anus'[35]

The possibility that the PIE φυγή-type was likewise continued in Anatolian has also been raised in previous scholarship. Eichner (1973: 56–9) suggested that Hitt.

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31 But see Beekes 2010: 524 on the much-disputed etymology of the Greek word.
32 See Nussbaum 1997 (cf. Beekes 1969: 238–40, 254).
33 See Kimball 1999: 351; 2015: 63–4 for the prosodic conditioning (cf. Melchert 1994a: 163).
34 Nussbaum (2014: 299–300; 2017: 235) etymologically splits the nouns in (12), taking Hitt. *warša-* as the reflex of a τόμος-type and Ved. *varṣá-* as cognate with Gk. ἐέρση 'dew' (Cret. αερσα) from a pre-form *$h_2werseh_2$-. While the latter remains possible, the former fails on phonological grounds.
35 See Yakubovich & Mouton 2023: 347 for identification of its cognate in Luwian, which evidently does not share in this assimilatory change.

miyaḫuwant- 'old' was historically derived from the PIE φυγή-type formation in (14), itself a derivative of the verbal root continued in Hitt. *m(a)i-* 'grow'. As in (10), the stem-final $*h_2$ of the unattested base would have been regularly lost in word-final position, but preserved in its derivative as *-ḫ-* before the possessive-adjective forming suffix *-went-*.[36]

(14) PIE $*mih_1$-*éh₂-* > Hitt. *miya-** 'growth'   (cf. Hitt. *miyaḫuwant-* 'old' < *'having growth')

Since there is independent evidence for the PIE τομή-type and probably the φυγή-type in Hittite, it is worth considering whether there may be further reflexes of these types—in particular, among the historical event/result nouns previously identified with the τόμος-type. To this end, the Hittite nouns in (4c–f) are repeated in (15), but here reanalyzed as the reflexes of τομή- or φυγή-type formations.

(15) PIE τομή/φυγή-type nouns and their Hittite reflexes[37]

    a. PIE $*h_3(o)rb^h$-*éh₂-* > Hitt. ⟨*ḫar-pa-a-aš*⟩ 'mound, pile' (NOM.SG)

    b. PIE $*b^h(o)rs$-*éh₂-* > Hitt. ⟨*pár-ša-a-an*⟩ 'crumb, bit' (ACC.SG)

    c. PIE $*sorh_3$-*éh₂-* > Hitt. ⟨*šar-ra-a-aš*⟩ 'portion, part' (NOM.SG)

    d. PIE *kors-éh₂-* > Hitt. ⟨*kar-aš-šu-uš*⟩ 'shearings' (ACC.PL) (cf. Gk. κουρά 'haircut')

Significantly, these Hittite nouns exhibit formal properties that are explained straightforwardly starting from a τομή- or φυγή-type formation but unexpected from a τόμος-type. One such property can be observed in (15a–c): all three nouns exhibit plene spelling of the stem-final vowel, which indicates that this vowel is long and thus likely stressed. Another is the unassimilated intervocalic *-rš-* sequences in (15b) and (15d): τόμος-type formations would undergo the assimilation seen in (13) above, incorrectly yielding ˣ*pārra-* and ˣ*kārra-*. In contrast, τομή- and φυγή-type formations with stem-final stress account for both of these properties.

    These properties—and how they problematize a τόμος-type reconstruction—were previously noted by Kimball (2015: 62–3), who thus put forward a different analysis. She proposed that the nouns in (15) reflect thematic nominals with zero-grade of the root and stress on the thematic suffix—schematically, *R(∅)-*ó*-. From

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36 See again Melchert 1994a: 85 for the phonological details. The etymology is disputed by Kloekhorst (EDHIL: 568–9), but Clayton (2023: 104–5) provides a cogent critique of his alternative and a defense of Eichner's (1973) analysis.

37 The specific forms cited in (15) are attested as follows: (15a) in KUB 8.62 i 22 (NS); (15b) in KUB 27.62 obv. 10 (NH/NS); (15c) in KBo 10.7 ii 37 (OH/NS); and (15d) in KUB 17.10 iii 6. The last form is discussed in detail by Melchert (2016: 212–4), who justifies the reading and proposes a τόμος-type reconstruction.

a phonological perspective, this analysis mostly works. One small issue is the *-rr*-sequence in (15c):[38] a zero-grade pre-form *$sr̥h_3$-ó*- would yield ˣ*sarḫǎ*-; but the *-rr*-could be analogically imported from the related verb *šarr(a)*- 'divide; separate; apportion'. Morphologically, however, this analysis is less attractive. Despite a potential cognate for Hitt. *parša*- in Gk. φάρσος 'section', there is a dearth of evidence in the ancient IE languages for a morphological class of animate thematic nouns characterized by root zero-grade and event/result semantics.[39] It is thus an advantage of the analysis laid out in (15) that it connects these Hittite nouns with τομή- and φυγή-type formations which, as discussed in §1, are well-established PIE types of event/result nouns.

I therefore conclude that the likeliest sources of the Hittite nouns in (15) are τομή- and φυγή-type formations. Yet a further question remains to be addressed: with which type specifically should each be identified? For Hitt. *šarrǎ*- in (15c) and *karša*- in (15d) there are reasons to suspect the τομή-type in particular. This analysis would align the latter morphologically with Gk. κουρά̄ (see Beekes 2010: 763–4), deriving both from the same PIE lexeme;[40] and for the former, it would obviate need to appeal to analogy with the verb *šarr(a)*-, since *$sorh_3$-éh_2*- would likely yield the attested *-rr*- sequence in the noun by regular sound change (viz., via assimilation of *h_3 to the preceding liquid).[41] On the other hand, for Hitt. *ḫarpǎ*- in (15a) and *paršǎ*-in (15b) both morphological analyses appear to be equally viable.

The analysis in (15) prompts a new evaluation of three further Hittite nouns. These are presented in (16), where they are analyzed as the reflexes of τομή- or φυγή-type formations.

(16)   More Hittite reflexes of PIE τομή/φυγή-type nouns

    a.   PIE *$worǵ$-éh_2*- > Hitt. *warka*- 'fat' (cf. Gk. ὀργή 'passion')

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38 See Kimball 1999: 414 for the reconstruction of the root as *$serh_3$*- (less likely is the root-final *h_1 posited in EDHIL: 840, which would yield just ˣ*-r*- from a zero-grade pre-form). Another potential issue is the consonantal reflex of *h_3 in (15a). Kloekhorst (2006: 90–5; 2008: 308) contends that *h_3 would be lost before *r in the zero-grade, but as per Oettinger (2004) the most compelling evidence for this loss can be explained rather by a combination of Saussure-Hirt's Law (cf. n. 32 above) and analogy (cf. Melchert 2020a: 264).

39 A few IE nominals that appear to reflect the structure *$R(\varnothing)$-ó*- are treated by Nussbaum (2017: 250–2), who suggests that these have multiple sources, e.g., possessive adjectives derived from root nouns.

40 This word equation is significant, since the *-rs*- sequence in Hitt. *karša*- might otherwise be attributed to analogy with the verb *karš*- 'cut'.

41 On this assimilatory change see further n. 44 below. Another advantage of a τομή-type pre-form for Hitt. *šarrǎ*- 'portion, part' in (15c) is that it can then be derived from the τομός-type adjective continued in Hitt. *šarra*- '(tool for separating)' in (19b); see further §4.2 below.

    b. PIE **m(o)rh₂-éh₂-* > Hitt. ^(TU₇)*marḫă̆-* '(type of stew)'

    c. PIE **h₃(o)rǵ-éh₂-* > Hitt. *ḫarga-* 'destruction'

Hitt. *warka-* in (16a) is a hapax *a*-stem noun recently identified by Goedegebuure (2021: 124) in KBo 3.46 obv. 13 (OH/NS). She plausibly suggests (*op. cit.* 132–3) that it is the base of the much better attested adjective *warkant-* 'fat', and traces it back to a τόμος-type formation to the PIE root **werǵ-* 'swell'.[42] However, the τομή-type reconstruction in (16a) likewise accounts for the form and function of the noun in its single attestation (which does not exhibit plene spelling), and has the advantage of aligning it morphologically with Gk. ὀργή 'passion', which would reflect the same pre-form.

    Hitt. *marḫă̆-* in (16b) is an *a*-stem noun that probably refers to a type of stew (CHD: L–N, 182). It has thus been related (e.g., by Starke 1986: 161–2; Kimball 2015: 62) to the verb Hitt. *marriye/a-* 'melt; dissolve; cook until tender, stew', which per Oettinger (1979: 277–81) derives from the PIE root **merh₂-* (cf. LIV²: 440).[43] Notably, the word exhibits plene spelling of the stem-final vowel in IBoT 2.5 obv. 14, ACC.SG ⟨⌜*mar*⌝-*ḫa-a-an*⟩. To account for this property Kloekhorst (EDHIL: 565) and Kimball (2015: 62) reconstruct **mr̥h₂-ó-* with stem-final stress. Morphologically, this pre-form would be an animate thematic noun with root zero-grade of the same type proposed by Kimball for the Hittite nouns in (15) and rejected just above. For the reasons outlined there, it is preferable to trace Hitt. *marḫă̆-* back to a φυγή-type formation, since that accounts not only for its stem-final plene spelling but also for its result noun semantics, which are clearly evident vis-à-vis the verb *marriye/a-*. Equally possible, too, is a τομή-type formation, if Oettinger (1979: 548–9) is correct that PIE *h₂ is preserved in Hittite as -*ḫ(ḫ)-* between a post-vocalic liquid and stressed vowel (i.e., in the context **VLHV́*).[44] An advantage of his claim is that it can potentially account for

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42 Goedegebuure (2021: 133) takes the root shape to be **werhₓǵ-* following, e.g., EWAia: 1, 243, and attributes the loss of the root-internal laryngeal to Saussure-Hirt's Law (cf. 32 above), which would apply in a τόμος- or τομή-type formation. Clayton (2022) presents compelling arguments that the root-internal laryngeal is unnecessary, however.

43 For the meaning of the verb see CHD: L–N, 180–1. Puhvel (2004: 62–4) proposes an alternative etymology from a PIE root **(s)merh₂-* with cognates such as OE *smorian* 'smother, steep'.

44 Contra Melchert 1994a: 80–1. Non-assimilation of *h₂ in this context would thus be parallel to non-assimilation of *s (cf. (13) and n. 33 above), whereas *h₁ and *h₃ assimilate to the preceding liquid even when before a stressed vowel. It should be noted, however, that there is no clear evidence for the outcome of **VLh₃V́* in Hittite or Luwian, so non-assimilation remains possible (i.e., *VLḫV́*). If so, I would suggest that the τομή-type pre-form in **sarḫā-* in (15c) was analogically remodeled after the Hittite verb *šarra-* 'divide' (likewise the noun *šarra-* '(tool for separating)' in (19b) below), whence the observed -*rr*- sequence.

the preserved -lḫ- sequence in HLuw. *salha-* 'power' treated in §2.4 below. I therefore follow his view here.

Lastly, Hitt. *ḫarga-* in (16c) has traditionally been traced back to a τόμος-type noun as in (4b) above (see §2.1 for discussion). It should be noted, however, that its form (viz., no plene spelling attested) and function are also compatible with a τομή-type formation, *$h_3orǵ$-éh₂-, or a φυγή-type formation, *$h_3ṛǵ$-éh₂-. Indeed, either of these alternatives are perhaps more likely, since it has now been shown that most of the Anatolian nouns previously taken as the reflexes of τόμος-type are better analyzed as τομή- or φυγή-type formations.[45] In any case, Hitt. *ḫarga-* cannot be regarded as a secure example of the τόμος-type. The remaining Anatolian evidence previously adduced for this type is treated in §2.4.

2.4 Anatolian reflexes of the τόμος-type—or τομός-type?

In §2.2 and §2.3 it was argued that many—in fact, the majority—of the Anatolian examples adduced in previous scholarship (discussed in §2.1) as reflexes of PIE τόμος-type nouns are more likely to continue τομή- or φυγή-type formations. Of those examples only the three repeated in (17) remain (= (4a), (5a–b) above).

(17) PIE τόμος-type nouns and their alleged Anatolian reflexes
    a. PIE *$h_2óns$-o- > Hitt. *ḫăšša-* 'progeny' (cf. Hitt. *ḫaš(š)-* 'beget, give birth')
    b. PIE *$h_2órh_3$-o- > CLuw. ^{NA_4}*ḫarra/i-* 'grindstone' (cf. CLuw. *ḫarra-* 'crush')
    c. PIE *dóm-o- > Lyc. *m̃me/i-* 'building' (cf. HLuw. *tama-* 'build')

Hitt. *ḫăšša-* in (17a) has clear result noun semantics vis-à-vis the verb *ḫaš(š)-* 'beget, give birth' and is attested with plene spelling of the root, e.g., NOM.PL ⟨*ḫa-a-aš-še-eš*⟩ (KBo 25.122 ii 6; OH/OS), ALL.SG ⟨*ḫa-a-aš-ša*⟩ (KUB 43.23 obv. 7; OH/MS). The latter property is incompatible with a τομή- (or φυγή-)type formation, and thus strongly recommends the traditional τόμος-type reconstruction (cf. eDiAna: #3436).

The case for tracing the other examples in (17) back to τόμος-type formations is less compelling, however. While the pre-form *dóm-o- in (17c) has strong comparative support (cf. (3d) above), Lyc. *m̃me/i-* exhibits syncope of the root vowel, which

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45 A possible additional argument for a τομή- or φυγή-type formation is Hitt. *ḫargatar/n-* 'destruction' in (23d) and Tab. 3 (a), which as discussed in §3.3 could be a direct reflex of the derivative of an *-eh₂-stem but not an *-o-stem. Yet given the productivity of the suffix -*ătar/n-* in Hittite, this evidence is relatively weak; compare, e.g., Hitt. *ḫaššătar/n-* 'birth' in (23h) from *ḫaš(š)-* 'beget, give birth', attested beside the related τόμος-type reflex Hitt. *ḫăšša-* 'progeny' in (17a) but no τομή- or φυγή-type reflex.

is unexpected in a τόμος-type formation because the root vowel would be stressed (cf. eDiAna: #245). Melchert (1994a: 319) posits a post-PIE stress shift to the stem-final vowel (i.e., *$dóm$-o- > *dom-$ó$-), but this is simply ad hoc. One might therefore consider the possibly of a τομή- or φυγή-type formation, but these are ruled out because the stem undergoes *i*-mutation, e.g., NOM.SG *m̃mi* (TL 44c.6).

As for CLuw. *ḫarra/i*- in (17b), it is likely that the DAT/LOC.SG ⟨[NA₄ *ḫar*]-*ri*⟩ should be restored in KUB 22.143 i 8 (see DCL s.v.). If so, then the stem is mutating (cf. §2.2 above), as expected in the reflex of a τόμος-type formation. Yet the meaning of CLuw. *ḫarra/i*- vis-à-vis the related verb *ḫarra*- 'crush' raises questions about this derivation. The noun appears to refer to an instrument used for grinding grain into flour or meal—e.g., in (18) (see Yakubovich & Mouton 2023: 352–3)—rather than an event ('act/process of grinding') or its result ('ground stuff; flour, meal').

(18)   *zaš=pa=tta*   *kuwatin zammitātiš*   NA₄ *ḫar-ra-a-ti* [...] *awīmmiš*
       this:NOM.SG.C=TOP=PTC as   flour:NOM.SG.C grindstone:ABL   come:PTCP:NOM.SG.C

       awidu=p=aš=ta   *malḫaš⟨šaš⟩šiš*   EN-*aš*   *ḫ*[*aratnāti*]
       come:3SG.IMP.ACT=TOP=3SG.NOM.C=PTC of.ritual:NOM.SG.C   lord:NOM.SG.C   offense:ABL

       waškulimmā[*ti*]
       fault:ABL

       'As this flour/meal is coming (out) from the grindstone [(and) ...], let the ritual patron (likewise) come (out) from offense (and) fault.'

                                      KUB 29.6 + KUB 35.70 i 22–4; NS, CTH 762

The meaning in (18) suggests rather that the etymological sense of CLuw. *ḫarra/i*- is *'crusher'. I therefore propose that the historical source of this noun is a PIE τόμος-type adjective, *h_2orh_3-$ó$- 'crushing', which was substantivized in Luwian (see §4.1 below for further discussion of this PIE type). This diachronic trajectory is well-established in IE: compare, e.g., Ved. *vará*- 'suitor' < PIE *$wolh_1$-$ó$- 'choosing' (cf. Ved. *vṛṇīté* 'choose'); or with semantically inanimate referent, Gk. τροχός, OIr. *droch* 'wheel' < PIE *d^hrog^h/$ǵ^h$-$ó$- 'running; dragging' (cf. Gk. τρέχω 'run').[46]

Whether the same type of analysis can be extended to Lyc. *m̃me/i*- in (17c) is less clear. Nussbaum (2017: 239–42) argues that PIE τόμός-type adjectives could have (or develop) passive meanings (beside more typical active/agentive sense; cf. §4.1 below), e.g.: Gk. δορός 'leather bag' < PIE *dor-$ó$- 'torn; hewn' (cf. Gk. δέρω 'flay'); Ved. *bhāgá*- 'portion' < PIE *b^hog^h-$ó$- 'apportioned' (cf. Ved. *bhájati* 'apportion'); ON *tamr*, OE *tam* 'tame' < PIE *$domh_2$-$ó$- 'subdued' (cf. Gk. δάμνημι 'subdue').[47] If so, then Lyc. *m̃me/i*- could be analyzed in the same way—i.e., as the reflex of a PIE adjective

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46 For the etymologies see respectively Jasanoff 2017: 21–2 and Beekes 2010: 1506–7 with references.
47 But see Tucker 2013 for arguments that in Vedic at least some apparent reflexes of τομός-type adjectives with passive value are actually backformed from compounds.

dom-ó- 'built', which was substantivized in Lycian. On the other hand, Melchert (2004: 42, 60) analyzes Lyc. *m̃me/i-* as an inner-Lycian derivative of *tama-* 'building' (cf. n. 19 above).

From a morphological perspective it would be unsurprising if CLuw. *ḫarra/i-* and perhaps also Lyc. *m̃me/i-* reflected inherited τομός-type adjectives, since it is clear that this PIE class is continued in Anatolian. Some other likely examples are given in (19).

(19) PIE τομός-type adjectives and their Anatolian reflexes

    a. PIE *$mors$-$ó$- > Hitt. *marša-* 'profane; desecrated'

    b. PIE *$sorh_3$-$ó$- > Hitt. $^{(GIŠ)}$*šarra-* '(tool for separating)'

    c. PIE *$swolh_2$-$ó$- > HLuw. *salha-* 'greatness; power'

Hitt. *marša-* in (19a) is an *a*-stem adjective attested just three times, only in KBo 5.2 (i 4, 5; iv 64), where it refers to items that should not be consumed by someone in a ritually pure state (Hitt. *šuppi-*), hence 'profane; desecrated' (cf. CHD: L–N, 195: 'unholy, unfit for sacred use'). Kimball (2015: 64) has proposed that it reflects a τομός-type adjective **mors-ó-* from the PIE root **mers-* 'forget' (cf. Ved. *mŕṣyate*, Lith. *miřšti* 'forget'), which neatly accounts for the retained intervocalic -*rš*- sequence in Hittite (cf. (13) above).[48] On this etymological analysis, the semantic development might have been, first, from *'forgetting; forgetful' to *'neglectful; heedless'.[49] Used in the context of political or legal obligations, it may have acquired the sense 'treacherous; deceitful' that is attested for Hitt. *maršant-* (CHD: L–N, 197), which may be regarded as an extended variant of *marša-* in accordance with a well-known Hittite derivational pattern.[50] The attested meaning of *marša-* 'profane; desecrated' in ritual contexts can reflect a more general sense 'false; incorrect, improper', which developed from 'deceitful' following an established semantic pathway (cf. PDE *false*, borrowed from Lat. *falsus*, past participle of *fallō* 'deceive').

The initial steps in this semantic development are somewhat questionable, however. Melchert (p.c.) therefore suggests that the source of Hitt. *marša-* is a homophonous PIE root **mers-* 'act falsely', which is continued in Anatolian and Germanic (e.g., Goth. *gamarzjan* 'annoy, offend'; *afmarzeins* 'deception'; cf. Kroo-

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48 PIE **mors-ó-* may also have comparative support: according to Klingenschmitt (1982: 126–7), it is the derivational base of the Classical Armenian verb *moṙanam* 'forget'.

49 See Puhvel 2004: 85–6 and Nussbaum 2017: 240 for alternative views on the semantic development from **mers-* 'forget'.

50 Thus, e.g., Puhvel (2004: 86), registering this pattern. See Kronasser 1966: 265–6 for a longer list of Hittite adjectives extended by a suffix -*ant*- with the same meaning as the basic adjective.

nen 2013: 356).[51] The τομός-type adjective from such a root would have the meaning 'acting falsely', which would almost directly yield the attested sense of Hitt. *marša(nt)*- 'treacherous; deceitful', and from there the semantic development may have proceeded as described above.

Hitt. *šarra*- in (19b) is an animate *a*-stem noun, which is attested four times (3× with determiner GIš) and appears to refer to an instrument used to remove unwanted things from the body, like a scraper or tweezers (CHD: š, 228). This interpretation is reinforced by its transparent connection to the verb *šarra*- 'divide; separate', which it occurs beside in (20) and functions as the means by which the action of the verb is accomplished (cf. CHD: š, 235).

(20) *kāša* ᴳᴵˢ*šarran* *ḫarmi* ... *kinun=a=tta* *IŠTU* 12 ᵁᶻᵁÚR *idalu*
now š-tool hold:1SG.NPST.ACT now:TOP:2SG.DAT from 12 body.parts evil
papratar alwazatar āštayaratar DINGIR.MEš-*aš karpin aggandaš ḫatugatar*
impurity sorcery magic god:GEN.PL anger dead:GEN.SG terror
awan arḫa šarriškemi
off separate:IPFV:1SG.NPST.ACT
'I am now holding a *šarra*- ... Now I am separating off from each of your twelve body parts the evil, impurity, sorcery, magic, anger of the gods, (and) terror of the dead.' KUB 7.53 i 5–6; NS, CTH 409

According to Kimball (2015: 64) Hitt. *šarra*- may reflect a PIE τομός-type adjective *sorh₃-ó-.[52] I propose that this developed into a pre-Hittite adjective *sarrā- 'dividing; separating' with active/agentive semantics vis-à-vis the verb *šarra*- 'divide; separate' of the kind typical for PIE τομός-type adjectives (cf. §4.1 below);[53] it was then substantivized as an instrument noun, just like CLuw. *ḫarra/i*- discussed above.

Finally, HLuw. *salha*- in (19c) is a relatively well-attested neuter noun treated by Rieken (2010: 655), who argues that it is cognate with Hitt. *šulle(šš)*- 'become arrogant' and Hitt. *šalli*- 'big', all ultimately derived from the PIE root listed in LIV²: 609–10 as *swelhₓ- 'swell'.[54] Melchert (DCL, s.v. *šalḫa-) proposes that HLuw. *salha*-

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51 A connection between Goth. *gamarzjan* and other Germanic material and Hitt. *marša*- was suggested already by Juret (1942: 25). Puhvel (2004: 87) rejects it on semantic grounds, but compare Kroonen 2013: 356, who observes that "[t]he Germanic meaning ... can be understood more easily from Hittite 'to be deceitful' than 'to forget'".

52 Contra Kimball 2015, however, assimilation of *h₃ to the preceding liquid is phonologically regular (cf. n. 44 above).

53 The exact semantics of the PIE root are uncertain (e.g., LIV²: 535 reconstructs "'(in feindlicher Absicht) losgehen auf')". I assume the meaning of the Hittite verb and related adjective developed in parallel.

54 See Melchert 2005 for the root etymology of Hitt. *šulle(šš)*- (but the root-final laryngeal must be *h₂ rather than *h₁), and Brosch 2011 for the connection between this verb and the adjective

reflects a pre-form *$swolh_2$-ó- (viz., with root-final *h_2), which can be morpholog-ically identified with a PIE τομός-type adjective meaning *'swelling'.[55] Crucially, this pre-form has stem-final stress, which offers a possible account for (i) non-assimilation of *h_2 to the preceding liquid (as in Hittite; cf. (16b) and n. 44 above); and (ii) dissimilatory loss of *w between a coronal consonant and inherited *o, which did not occur after a stressed vowel in Luwian (cf. CLuw. *ādduwal-* 'evil' << *$h_1$édwo-; see DCL, s.v.). The attested meaning of HLuw. *salha-* 'greatness; power' is substantivized from *'strong', which developed via *'swollen'. PIE *$swolh_2$-ó- 'swelling' also accounts for the semantics of inner-Luwian derivatives of this adjec-tive, CLuw. *šalḫ(i)anti-* 'growth' and *šalḫitti-* 'id.', which arose via *'growing'.

The nominals in (19) thus demonstrate that PIE τομός-type adjectives were in-herited into Anatolian, and offer support for the reanalyses proposed above of (17b) and perhaps also (17c) as reflexes of this morphological class rather than τόμος-type nouns. These reanalyses in turn further bleed the Anatolian evidence for the PIE τόμος-type, though they do not wholly eliminate it. In §2.5 below I take stock of the Anatolian evidence for the four PIE morphological classes discussed above, i.e., the τομή-, φυγή-, τόμος-, and τομός-types.

2.5 Summary: τομή-, φυγή-, τόμος-, and τομός-type nominals in Anatolian

In §§2.2–2.4 the Anatolian evidence for the PIE τομή-, φυγή-, τόμος-, and τομός-types was reassessed. The results are summarized in Tab. 1 (p. 111), where the Anatolian reflexes of these four inherited nominal classes are sorted by type and by language (uncertain examples are marked with "$^?$"). The most significant finding is that PIE τομή- and φυγή-types are much better represented in Anatolian than previously thought: taken together, at least sixteen distinct reconstructible nominals of these types have reflexes in the Anatolian languages. This finding is partially anticipated by very recent work on the Luwic languages, which has already identified most of

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Hitt. *šalli-*. Traditionally, Hitt. *šalli-* is etymologized as a *i-stem derivative of the thematic adjec-tive *$sol(h_x)$-wo- continued in Gk. ὅλος, Ved. *sárva-*, and Lat. *sollus* 'whole' (see, e.g., Weiss 2020: 123). Whether this pre-form would yield Hitt. *šalli-* is questionable (cf. Melchert 1994a: 50–1; EDHIL: 709–11), and would in any case require attributing the attested connection between it and *šulle(šš)-* to folk etymology. It is therefore attractive to trace all three of these words (and their further deriva-tives) back to PIE *$swelh_x$- 'swell'.

55 The CLuw. equivalent of HLuw. *salha-* is perhaps attested once in the ABL/INS ⟨*ša-al-ḫa-a-ti*⟩ (KUB 35.121: 7; DCL, s.v. *šalḫa-*), but since it occurs only in an oblique case-form, its gender and inflec-tional class cannot be confirmed.

the individual examples listed in Tab. 1 as such, recognizing that their earlier analyses as τόμος-type are untenable in view of their non-mutating inflection (§2.2). I have argued that a similar situation obtains in Hittite, despite the fact that this diagnostic is unavailable: the relevant Hittite nouns in Tab. 1 show signs of (historical) stem-final stress and/or have exact cognates in other IE languages that betray their status as erstwhile τομή- or φυγή-type formations (§2.3). In combination, the Hittite and Luwic evidence for these PIE nominal classes strongly suggests that both remained productive within Anatolian.

A second finding is that PIE τομός-type adjectives are continued in Anatolian. Two possible Hittite reflexes of this type were suggested by Kimball (2015). I argued in support of her proposal, and furthermore, that there is convergent evidence from Luwic, where at least two further reflexes are attested (§2.4). Since the evidence is considerably less robust, it is uncertain whether the τομός-type adjectives retained some productivity within Anatolian or whether their reflexes in Tab. 1 should be viewed as isolated relics. A renewed search for their reflexes is necessary if a satisfactory answer is to be attained.

A further consequence of recognizing these Anatolian nominals as reflexes of the PIE τομή-, φυγή-, and τομός-types is that they do not continue the PIE τόμος-type, as previously held for many of the examples (§2.1). At least one alleged example of this class does withstand scrutiny, however: Hitt. ḫā̆šša- 'progeny' in Tab. 1 (= (4a)/(17a) above). As pointed out in §2.4 above, Hitt. ḫā̆šša- is well-attested with plene spelling of the root vowel, clearly indicating that this vowel is long ([á:]). Only a τόμος-type pre-form can account directly for this long vowel (viz., by historical lengthening of stressed *ó). I therefore take this lexeme as evidence that the τόμος-type was inherited into Anatolian.

The apparently meagre representation of this PIE class gives rise to a puzzle, though. As noted in §2.1, Hittite attests deverbal event/result nouns like *kuera-* 'field' (⇐ *kuer-* 'cut'), whose root stress suggests it was formed on the analogical model of the similarly root-stressed τόμος-type. It is not clear how such nouns could have been created unless Hittite once had a more robust core of inherited τόμος-type formations. Will future research turn up more of their reflexes? Or should *kuera-* be explained differently? I leave these questions open, pending further research.

3 The development of *-eh₂*-based derivation in Anatolian

It was established in §2 that the PIE τομή- and φυγή-types are much more robustly reflected in Anatolian than previously assumed. In this section I argue that this find-

Table 1: Anatolian reflexes of τομή-, φυγή-, τόμος-, and τομός-type nominals

Language	Anatolian nominal			PIE pre-form	PIE type
Hitt.	*karša-*	'shearing'	<	**kors-éh₂-*	τομή-type
	šarrǎ-	'portion'	<	**sorh₃-éh₂-*	"
	warka-	'fat'	<	**worǵ-éh₂-*	"
	warša-	'mist'	<	**h₂wors-éh₂-*	"
CLuw.	*marša–**	'treachery'	<	**mors-éh₂-?*	"
	zūwa-	'food'	<	**ǵyouh₃-éh₂-*	"
HLuw.	*asa-*	'seat'	<	**h₁os-éh₂-*	"
	wala	'for death'	<	**wol-éh₂-*	"
Lyc.	*mara-*	'law'	<	**smor-éh₂-*	"
Hitt.	*miya-**	'growth'	<	**mih₁-éh₂-*	φυγή-type
CLuw.	*ḫarwa-*	'road'	<	**h₃ṛw-éh₂-*	"
	tarpa-	'ritual substitution'	<	**tṛp-éh₂-*	"
Lyc.	*xupa-*	'grave(-mound)'	<	**h₂up-éh₂-*	"
Hitt.	*ḫarga-*	'destruction'	<	**h₃(o)rǵ-éh₂-?*	τομή/φυγή-type
	ḫarpǎ-	'mound'	<	**h₃(o)rbʰ-éh₂-*	"
	marḫǎ-	'(type of stew)'	<	**m(o)rh₂-éh₂-*	"
	paršǎ-	'crumb'	<	**bʰ(o)rs-éh₂-*	"
CLuw.	*ḫatta-*	'violence'	<	**h₂(o)t-éh₂-*	"
HLuw.	*hasa-*	'abundance'	<	**h₂/₃(o)s-éh₂-*	"
Lyc.	*xtta-*	'harm'	<	**h₂(o)t-éh₂-*	"
Hitt.	*marša-*	'profane'	<	**mors-ó-*	τομός-type
	šarra-	'(tool for separating)'	<	**sorh₃-ó-*	"
CLuw.	*ḫarra/i-*	'grindstone'	<	**h₂orh₃-ó-*	"
HLuw.	*salha-*	'greatness'	<	**swolh₂-ó-*	"
Lyc.	*m̃me/i-*	'building'	<	**dom-ó-?*	"
Hitt.	*ḫǎšša-*	'progeny'	<	**h₂óns-o-*	τόμος-type

ing helps explain the emergence in Hittite of the highly productive derivational suffix *-ǎtar/n-*. It is widely thought that from a historical perspective this suffix is morphologically complex and incorporates a suffix **-eh₂-*, but the details of its origin are poorly understood and disputed. In §3.1 I provide a synchronic description of the suffix; survey and critique previous views on its historical development; and in view of their issues, propose a new etymological analysis that, crucially, accounts for its manifold derivational usages in Hittite. In §3.2 I contend that the deadjectival usage of Hittite *-ǎtar/n-* develops from a reanalysis of nouns derived with PIE **-ter/t(n)-* from deadjectival verbs formed with the inherited factitive suffix **-eh₂-*. In §3.2 I examine the use of *-ǎtar/n-* in derivation from radical verbs, tracing it back to a reanalysis of τομή- and φυγή-type event/result nouns extended by **-ter/t(n)-*.

The use of -*ătar/n-* to form nouns from other nouns and from complex verbal stems is then treated in §3.4, where I suggest that these patterns developed along similar lines. Finally, I draw together these analyses in §3.5, arguing that they support a polygenetic origin of Hittite -*ătar/n-*.

3.1 What is Hittite *-atar/n-* ?

Hittite has a productive derivational suffix -*ătar/n-*, which forms neuter abstract and concrete nouns with heteroclitic inflection (NOM/ACC.SG -*ătar* vs. OBL -*ănn-*) from nouns, adjectives, and verbs (cf. Hoffner & Melchert 2008: 126–8). According to Eichner (1973: 80), this Hittite suffix formally continues (transponat) PIE *-*éh₂-tr̥/t(e)n-*, which is a combination of two inherited suffixes, *-*eh₂-* and *-*tr̥/t(e)n-* (cf. Melchert 1994a: 86; 2020: 262). Crucially, this historical derivation accounts for the phonological properties of the suffix via Proto-Anatolian (PA) lenition, which caused voicing of PA voiceless stops and *h_2 after stressed long vowels, including those that arose via compensatory lengthening upon loss of a tautosyllabic laryngeal.[56] Its development is laid out in (21).

(21) Phonological development of Hittite -*ătar/n-*

   a. NOM/ACC.SG *-*éh₂-tr̥* > *-*ǻ-tr̥* > PA *-*ǻ-dr̥* > Hitt. -*ătar* ([-á:tar])

   b. OBL *-*éh₂-tn-* > *-*ǻ-tn-* > PA *-*ǻ-dn-* > Hitt. -*ănn-* ([-á:n:-])

   c. NOM/ACC.PL *-*éh₂-tōr* > *-*ǻ-tōr-* > PA *-*ǻ-do* > Hitt. -*ăta* ([-á:ta])

In need of further explanation, however, is the morphological background of Hitt. -*ătar/n-*, which has not yet been adequately addressed. In particular, previous literature has not been sufficiently explicit about the identity of the *-*eh₂*-suffix contained therein. That there is confusion on this point is evident from its treatment by Kloekhorst (EDHIL: 226) who, in disputing the etymology of -*ătar/n-* (cf. Kloekhorst 2014: 294–6, 553–4),[57] attributes to Melchert (1994a: 86) the view that this *-*eh₂*- is the PIE verb-forming factitive suffix (in, e.g., Hitt. *newahh-* 'renew' < PIE *new-éh₂*-; cf. Lat. *renovāre* 'id.').[58] Meanwhile, Eichner (1973: 80) connects it with the stem-final

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56 See Eichner 1973 for the initial formulation of PA lenition, with modifications in Melchert 1994a: 60–2, 68–9; 2020: 262. For a reformulation in moraic terms see Adiego Lajara 2001 (cf. Yoshida 2011).

57 Kloekhorst (2008: 262; 2014: 294–6, 553–4) proposes to derive -*ătar/n-* instead from *-*ó-tr̥/t(e)n-*. I reject this derivation as phonologically untenable: *$ó$ did not condition lenition of a following voiceless stop in PA (see Melchert 2012). Meanwhile, the *e*-vowel observed in Lycian forms like *huwedr(i)-* 'all' taken by Kloekhorst as decisive support for *-*ó-tr̥/t(e)n-* can be attributed to umlaut triggered by *i*-mutation; see eDiAna: #813.

58 I do not think that Melchert (1994a: 86) actually holds this view, although I believe the confusion is justified. His account there depends on an early change of *-*eh₂# to *-*ā# in word-final position,

*-*eh₂*- of PIE animate nouns, but since he does not identify any Hittite reflexes of the inherited *-*eh₂*-stems that would have been involved in the creation of -*ătar/n*-, one might justly be skeptical: does Anatolian really have enough *-*eh₂*-stem nouns (and of the right kind) for this analysis to be morphologically plausible? In any case, neither of these two accounts of the Hittite suffix -*ătar/n*- are on their own sufficient to account for its full range of uses in Hittite, as I show below.

Accordingly, I propose here a new morphological analysis of Hitt. -*ătar/n*-. On this analysis, the suffix has a polygenetic origin. One source is event/result nouns derived with the PIE suffix *-*tr̥/t(e)n*- from PIE factitive verbs in *-*eh₂*-.[59] The other is PIE event/result nouns formed with the suffix *-*eh₂*- seen in the τομή- and φυγή-types, which were extended by the same *-*tr̥/t(e)n*- suffix.

3.2 The development of deadjectival -*atar/n*- in Hittite

That the PIE factitive suffix *-*eh₂*- was involved in the creation of Hitt. -*ătar/n*- is suggested by derivational patterns like (22), which are common in Hittite (cf. Oettinger 1979: 239–51): from the same adjective are synchronically derived both (i) an abstract with the suffix -*ătar/n*- and (ii) a factitive verb with the suffix -*aḫḫ*-.

(22)   Parallel deadjectival derivatives in Hittite

    a.   *kallar*- 'inauspicious' ⇒ *kallaratar/n*- 'inauspiciousness'
                                      ⇒ *kallaraḫḫ*- 'make inauspicious'

    b.   *nakkī̆*- 'dignified; burdensome' ⇒ *nakkiyatar/n*- 'dignity; burden'
                                        ⇒ *nakkiyaḫḫ*- 'dignify; make
                                                                   burdensome'

    c.   *idalu*- 'bad, evil' ⇒ *idălawatar/n*- 'badness'
                       ⇒ *idălawaḫḫ*- 'treat badly'

    d.   *marša*- 'profane, desecrated' ⇒ *maršătar/n*- 'treachery, deception'[60]
                                  ⇒ *maršaḫḫ*- 'desecrate; commit
                                                        treachery'

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which makes sense only in *-*eh₂*-stem nouns, where the NOM.SG provides the relevant environment. Note that Melchert (2020a: 262) now supports the simpler account of this suffix in (21), since he accepts tautosyllabic *-*éh₂*- as a trigger of PA lenition on a following voiceless obstruent (cf. n. 56).
59 Following Melchert (1994a: 86) I take the Luwian suffix -*attar* (OBL -*att(a)n*-) with unlenited stop as originating in nouns like CLuw. *karšattar* 'parcel of land' (DAT/LOC.SG *karšaddani*) in which the same *-*tr̥/t(e)n*- suffix is added directly to the verbal root (cf. CLuw. *karš*- 'cut').

> e. *šarăzzi(ya)-* 'upper; superior' ⇒ *šarăzziyatar/n-* 'summit'
> ⇒ *šarăzziaḫḫ-* 'make win (in a legal case)'
>
> f. *šuppi-* 'pure' ⇒ *šuppiyatar/n-* 'purity'
> ⇒ *šuppiyaḫḫ-* 'purify'

Not every Hittite adjective attests both a derived *-ătar/n*-noun and a factitive verb. Some adjectives serve as the base for a factitive but not for an *-ătar/n*-noun, e.g., from Hitt. *šanezzi-* 'pleasant' is derived *šanezziyaḫḫ-* 'make pleasant', but there is no trace of a corresponding neuter abstract ˣ*šanezziyătar/n-* 'pleasantness'.[61] Conversely—and more significantly—there are Hittite adjectives that serve as the base for an *-ătar/n-* abstract, but do not stand beside a factitive verb, e.g., from Hitt. *ḫatuga-* 'frightful' is derived *ḫatugătar/n-*, but no ˣ*ḫatugaḫḫ-* 'make frightful' is attested. These facts argue that, from a synchronic perspective, examples of the type in (22) involve parallel derivation from an adjectival base.

From a historical perspective, however, the frequency with which derived pairs like (22) are attested make it plausible to assume that they once stood in a derivational relationship with each other, as represented in Tab. 2 (= (22a–c) above). On this analysis, the Hittite *-ătar/n*-nouns in (22) are the result of a two-step chain whereby deadjectival verbs were formed with the PIE factitive suffix *-eh₂-*; then from these factitive verbs were derived neuter event/result nouns with PIE *-tr̥/t(e)n-*.

Table 2: Historical two-step derivation of deadjectival of Hittite *-ătar/n*-abstracts

	adjective	⇒	factitive	⇒	event/result (n)
a.	*-ró-*		*-r-éh₂-*		*-r-éh₂-tr̥/n-*
>	*kallar-*		*kallaraḫḫ-*		*kallaratar/n-*
	'inauspicious'		'make inauspicious'		'inauspiciousness'
b.	*-íhₓ-*		*-ihₓ-éh₂-*		*-ihₓ-éh₂-tr̥/n-*
>	*nakkī̆-*		*nakkiyaḫḫ-*		*nakkiyatar/n-*
	'burdensome'		'make burdensome'		'burden'
c.	*-(é)w-*		*-ew-éh₂-*		*-ew-éh₂-tr̥/n-*
>	*idălu-*		*idălawaḫḫ-*		*idălawatar/n-*
	'bad'		'treat badly'		'badness'

60 The derivative in *-ătar/n-* reflects the sense attested for its extended variant *maršant-* 'treacherous, deceitful' (see §2.4 and n. 50).

61 In some cases, the apparent absence is probably just due to chance. For instance, given the semantically parallel set in (22e), it seems very likely that from Hitt. *kattera-* 'lower; inferior' was derived both *katteraḫḫ-* 'make lose (in a legal case)' and unattested *katterătar/n–** 'bottom'.

The consistent geminate -ḫḫ- of the Hittite factitive suffix -aḫḫ- indicates that such verbs were regularly stressed on this suffix—i.e., *-éh₂-, otherwise PA lenition would have applied, yielding ˣ-ḫ- (Yates 2017: 158 n. 99). The further addition of *-tr̥/t(e)n- therefore gave rise to the configuration *-éh₂-tr̥/t(e)n-, which developed regularly to Hitt. -ătar/n- by PA lenition of *t and the other sound changes laid out in (21) above. At a later stage, the neuter nouns formed in this way were morphologically reanalyzed as derived directly from adjectives with a unitary suffix -ătar/n-, "telescoping" the originally two-step derivational process.[62] Because nouns formed with this suffix were consistently stressed on the initial syllable of the suffix, Hittite speakers generalized that the suffix was stress-attracting and used it to form new -ătar/n-nouns stressed in the same way.[63]

3.3 The development of deradical *-atar/n-* in Hittite

This cannot be the whole story for -ătar/n-, though. Kloekhorst (EDHIL: 226) raises a cogent objection to a de-factitival account of -ătar/n- of the kind proposed above—namely, that it "would be unable to account for the many deverbal formations in -ātar / –ānn-." He calls attention, in particular, to (23a) and the other Hittite formations in (23) in which the synchronic base of the -ătar/n-noun is a radical verb.

(23) Hittite -ătar/n-nouns derived from radical verbs

    a. *epp/app-* 'take' ⇒ *appătar/n-* 'taking'

    b. *ed/ad-* 'eat' ⇒ *adătar* 'eating'

    c. *eku/aku-* 'drink' ⇒ *akuwătar/n-* 'drinking'

    d. *ḫark-* 'perish' ⇒ *ḫargatar/n-* 'destruction'

    e. *kuen/kun-* 'kill' ⇒ *kunătar/n-* 'killing'

    f. *ak(k)-* 'die' ⇒ *akkătar/n-* 'death'

    g. *au/u-* 'see' ⇒ *uwătar/n-* 'seeing'

    h. *ḫaš(š)-* 'beget, give birth' ⇒ *ḫaššătar* 'birth'

    i. *m(a)i-* 'grow' ⇒ *miyatar/n-* 'growth'

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62 On "affix telescoping" as a cross-linguistically common morphological change see Haspelmath 1995.

63 Viz., accented dominant /-átar/, /-án:-/ in the sense of Yates (2017: 153–5, 158–61), who argues that all Hittite -ătar/n-nouns were stressed on the initial syllable of this suffix.

    j.   *eš/aš-* 'sit' ⇒ *ašătar/n-* 'sitting'

    k.   *ḫatt-* 'pierce' ⇒ *ḫattătar/n-* 'wisdom'[64]

A solution to this problem is now available. Building on Eichner's (1973) proposal, I suggest that the Hittite *-ătar/n*-nouns in (23) were not originally deverbal, but rather denominal derivatives of τομή- and φυγή-type formations, the inner-Anatolian productivity of which was established in §2. This hypothesis is recommended by the fact that for several of the *-ătar/n*-nouns in (23) the corresponding **-eh₂*-stem historical bases are actually attested in Anatolian, having been identified as such in §2.2 and §2.3 above. Thus the Hittite *-ătar/n*-nouns in (23d), (23i), (23j), and (23k) may have been formed within Anatolian as in Tab. 3 (a–d) respectively—i.e., by extending inherited τομή- and φυγή-type formations with the neuter noun-forming suffix **-tr̥/t(e)n-*.

Table 3: Historical derivation of Hittite *-atar/n*-nouns from τομή/φυγή-type nouns

	τομή/φυγή-type nouns			*-atar/n*-nouns		
a.	**h₃(o)rǵ-éh₂-?*	'destruction'	⇒	**h₃(o)rǵ-éh₂-tr̥/n-*	'id.'	cf. (16c)
>	Hitt. *ḫarga-*	'destruction'		Hitt. *ḫargatar/n-*	'destruction'	
b.	**mih₁-éh₂-*	'growth'	⇒	**mih₁-éh₂-tr̥/n-*	'id.'	cf. (14)
>	Hitt. *miya–**	'growth'		Hitt. *miyatar/n-*	'growth'	
c.	**h₁os-éh₂-*	'sitting'	⇒	**h₁os-éh₂-tr̥/n-*	'id.'	cf. (6a)
>	HLuw. *asa-*	'seat'		Hitt. *ašātar/n-*	'sitting'	
d.	**h₂(o)t-éh₂-*	'piercing'	⇒	**h₂(o)t-éh₂-tr̥/n-*	'id.'	cf. (6c)
>	CLuw. *ḫatta-*	'violence'		Hitt. *ḫattatar/n-*	'wisdom'	
>	Lyc. *xtta-*	'harm'				

Although its motivation remains unclear, the extension of animate **-eh₂*-stem nouns with neuter heteroclite suffixes is paralleled elsewhere in IE.[65] Building on Nussbaum (1986: 31–4), Clayton (2023: 82–98, 101–21) adduces numerous exam-

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64 The semantics of the derivative may have been influenced by the related adjective *ḫattant-* 'wise' (< **'sharp'; see Melchert 2013: 145 n. 13 on the development).

65 It was suggested by Eichner (1973: 92 n. 35) that the similar extension of **-eh₂*-stem nouns by **-wr̥/w(e)n-* was associated with "collective" semantics, a view which has acquired some currency (Melchert 1984: 63–4; Pinault 2011: 460, i.a.). After his comprehensive assessment of the IE evidence, Clayton (2023) concludes that "nowhere … is there clear evidence for … collective semantics" (120) and that all their reflexes "either represent result nouns or extensions of the base **-éh₂*-abstracts with no discernible change in meaning" (110). Similarly, Nussbaum (1986: 32–3) and Vine (1994: 35–6) analyze Hitt. *ašăwar/un-* in Tab. 4 (d) and Gk. ὄπεαρ in Tab. 4 (a) as concretized abstracts.

ples of IE nouns that continue animate $*-eh_2$-stems—including τομή- and φυγή-type formations—extended by neuter $*-wr̥/w(e)n$-. Some examples are provided in Tab. 4.[66]

Table 4: Derivation of $*-eh_2-wr̥/w(e)n$-nouns from $*-eh_2$-stem nouns across IE

	$*-eh_2$-stem nouns			$*-eh_2-wr̥/w(e)n$-nouns	
a.	$*h_3(o)k^w-éh_2-$	'opening'	⇒	$*h_3(o)k^w-éh_2-wr̥/n-$	'id.'
>	Gk. ὀπή	'opening'		Gk. ὄπεαρ, ὀπέᾱτος	'awl'
b.	$*ub^h-eh_2-$	'webbing'	⇒	$*ub^h-éh_2-wr̥/n-$	'id.'
>	Gk. ὑφή	'web'		Gk. ὕφεαρ, ὑφέαρος	'mistletoe'
c.	$*dh_2-ey-éh_2-$	'distribution'	⇒	$*dh_2-ey-éh_2-wr̥/n-$	'id.'
>	Ved. *dayā́-*	'dole; pity'		Skt. *dayālu-*	'charitable'
d.	$*h_1os-éh_2-$	'sitting'	⇒	$*h_1os-éh_2-wr̥/n-$	'id.'
>	HLuw. *asa-*	'seat'		Hitt. *ašāwar/un-*	'pen, sheepfold'

The potential Anatolian example in Tab. 4 (d) is of special interest. It was first proposed by Nussbaum (1986: 32–3) that Hitt. *ašāwar/un-* is an inner-Anatolian derivative of a PIE τομή-type formation $*h_1os-éh_2-$ prior to the identification of HLuw. *asa-* 'seat' as the latter's direct reflex (= (6a) above). This chronology is crucial, since the shape of the suffix— *-āwar/un-*, not ×*-ah̬(h̬)war/un-* —requires that $*-wr̥/w(e)n$- was added after the PA development of word-final $*-eh_2\#$ to $*-ā$ (see Melchert 1994a: 86). Now that HLuw. *asa-* 'seat' has been established as such, Nussbaum's morphological analysis in Tab. 4 (d) becomes even more attractive (cf. Clayton 2023: 105–7, 110). If it stands, it would furnish a nearly exact parallel for the derivation in Tab. 3 (c) above.

Consequently, the derivation of Hittite *-ātar/n-*-nouns from τομή- and φυγή-type formations proposed in Tab. (3) is not only supported by empirical evidence in the Anatolian languages, but also justified on morphological grounds. This historical derivation was then subject to reanalysis: speakers related Hittite *-ātar/n-*-nouns like Tab. 3 (a–d) not to their immediate bases, but instead directly to the radical verbs in (23d), (23i), (23j), and (23k) respectively, treating them as derived with a unitary suffix *-ātar/n-* (< $*-éh_2tr̥/tn-$).[67] For the same reasons as the new deadjectival suffix *-ātar/n-*

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[66] Analysis of Tab. 4 (a) per Vine (1994). For Tab. 4 (b) Clayton (2023: 113) refines Schwyzer's (1939: 519 n. 8) earlier proposal, observing that the older oblique stem of the derivative is preserved in the denominative verb Gk. ὑφαίνω 'weave'. Clayton (2023: 34–5, 85–6) also treats Tab. 4 (c) in detail, arguing more broadly that Sanskrit *-ru-* and *-lu-*-stem adjectives historically derive from PIE $*-wr̥/w(e)n$-heteroclites (*op. cit.* 39–99).

[67] This reanalysis may have been facilitated by instances like Tab. 3 (c) and Tab. 3 (d), where it appears that the nominal base was lost in Hittite.

discussed above, this innovative deverbal *-ătar/n-* was treated as stress-attracting, and so when it was extended to form novel primary derivatives from Hittite radical verbs of the type in (23), it conditioned the weak root allomorphy (viz., historical zero-grade) that is phonologically regular in pretonic position and thus observed in the PIE φυγή-type (see further §4.3 below).

3.4 The development of denominal and deverbal *-atar/n-* in Hittite

Two final properties of Hittite suffix *-ătar/n-* require further discussion. The first is its usage in deriving neuter nouns from other nouns, e.g., (24).

(24)   Hittite *-ătar/n-*-nouns derived from nouns
   a. *antuḫša-* 'person; human' ⇒ *antuḫšătar/n-* 'population; humanity'
   b. *ăššŭl* 'well-being' ⇒ *ăššulatar/n-* 'id.'
   c. *kăina-* 'in-law' ⇒ *kainatar/n-* 'in-lawship'
   d. *takšŭl-* 'peace' ⇒ *takšulatar/n-* 'state of peace'
   e. *tayazzil-* 'theft' ⇒ *tayazillatar/n-* 'thievery'

I suggest that the pattern in (24) arose by a reanalysis of deadjectival *-ătar/n-*-derivatives like (22), the origin of which was discussed above.[68] The impetus for this reanalysis was provided by cases like (24b) and (24d–e), where the base of the Hittite *-ătar/n-*-noun is synchronically a noun, but from a historical perspective likely an adjective (< ADJ *-ú-lo-*, *-í-lo-*; see Rieken 2008: 246–53). These historical adjectives were subsequently lexicalized as nouns, at which point their corresponding *-ătar/n-*-nouns were reinterpreted as derived from nouns, thereby providing an analogical model for deriving *-ătar/n-*-nouns directly from nouns that were inherited as such.

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68 Against the general consensus Sasseville (2020a: 69–70) argues that the derivation of factitives not from adjectives but from nouns—more specifically, from *-eh₂*-stems—was the PA and perhaps even PIE pattern. I do not find the evidence cited for this claim—limited and coming principally from Lycian—compelling, though it is beyond the scope of this paper to present a full critique. It is in any case immaterial to the main claim advanced here. If Sasseville were correct, the diachronic accounts proposed here of the of the *-ătar/n-*-nouns derived from adjectives in Tab. 2 and of the *-ătar/n-*-nouns derived from nouns in (24) would essentially be reversed: the latter would arise from a reanalysis of *-tr̥/t(e)n*-nouns derived from factitives in *-eh₂-* derived in turn from nouns, whereas the former would reflect an inner-Hittite extension of *-ătar/n-* into deadjectival derivation (hence generally, denominal). Hittite *-ătar/n-* would therefore still have the polygenetic origin in (28).

Potentially more interesting is the remaining property of the Hittite suffix *-ătar/n*——namely, its usage in derivation from morphologically complex verbal stems, e.g., (25).

(25) Hittite *-ătar/n*-nouns derived from complex verbal stems

    a. *ḫalluw(a)i-* 'quarrel' ⇒ *ḫalluwătar/n-* 'anger'

    b. *ḫulle/a-* 'fight' ⇒ *ḫullătar/n-* 'fighting strength'

    c. *maniyaḫḫ-* 'administer' ⇒ *maniyaḫḫatar/n-* 'administration'

    d. *walliye/a-* 'exalt; boast' ⇒ *walliyatar/n-* 'praise'

    e. *waršiye/a-* 'soothe, calm' ⇒ *waršiyatar/n-* 'soothing, calming'

This usage cannot be based directly on the reanalysis of **-tr̥/t(e)n*-extended τομή- and φυγή-type formations, as was case for the deradical *-ătar/n*-nouns in (23). One possibility is that they are indirectly based on these formations: after *-ătar/n-* was reanalyzed as a unitary suffix and used to derive neuter nouns from radical verbs specifically, Hittite speakers arrived at the generalization that this suffix could be added to any verbs, and accordingly extended it to complex verbal stems like (25). A more intriguing hypothesis, however, is suggested by the recent findings of Sasseville (2020b), who shows that in Luwian *a*-stem (< **-eh₂*-stem) event/result nouns were productively derived from morphologically complex verbal stems formed with the inherited suffix **-ye/o-*, e.g., (26). In view of its formal and functional identity with the **-eh₂*-suffix in τομή- and φυγή-type formations, he plausibly assumes that these deverbal formations are derived with the same suffix (cf. §4.3 below).

(26) **-eh₂*-stem event/result nouns in Luwian derived from **-ye/o*-verbs

    a. CLuw. *arraḫḫani-* 'curse' ⇒ CLuw. *arraḫaniya-* 'curse'

    b. CLuw. *tarăwi-* 'deliver' ⇒ CLuw. *tarăwiya-* 'delivery'

    c. CLuw. *tummanti-* 'hear, listen to' ⇒ CLuw. *tummantiya-* 'obedience'

    d. CLuw. *walli-* 'raise' ⇒ HLuw. *waliya-*[?] ([walliya-]) 'glory'

From a wider comparative-historical perspective, Sasseville (2020b: 284–6) further observes that a suffix **-eh₂-* is also used to derive event/result nouns from verbal stems formed with the suffix **-ye/o-* in both Vedic Sanskrit (e.g., Ved. *tr̥ṣ-yá-* 'be thirsty' ⇒ *tr̥ṣyá-* 'thirst'; Ved. *namasyá-* 'do reverence' ⇒ *namasyá-* 'act of reverence'; cf. Wackernagel & Debrunner 1954: 243–4) and Old Irish (e.g., OIr. *guidid* 'pray' ⇒ *guide* 'prayer, plea'; cf. Stüber 2015: 113–4). Since this same usage is also evident in Luwian examples like (26), he reasonably concludes that it existed already in PIE and was inherited into each of these three language branches.[69]

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69 To be precise, Sasseville (2020b: 284–6) distinguishes between the use of **-eh₂-* in derivation from deradical verbs formed with **-ye/o-* (found in Luwian, Vedic, and Old Irish) and from denom-

If this hypothesis is correct, then Hittite must also have inherited the process whereby *-eh₂- was used to derive event/result nouns from verbal stems formed with *-ye/o-. In fact, there is reason to suspect it could be suffixed to complex verbal stems generally. There is inner-Anatolian evidence for derivation from factitive verbs: the Lycian animate *a*-stem noun *mrssxa-* 'offense' reflects a result noun historically derived with *-eh₂- from the factitive stem continued both in Hitt. *maršaḫḫ-* 'desecrate; commit treachery' in (22d) and in CLuw. *marša-* 'id.' (cf. Sasseville 2020a: 48). Similarly, in Sanskrit *-eh₂- is used to derive event/result nouns from other types of complex verbal stems, such as desideratives (e.g., Ved. *jígīṣa-* 'want to win' ⇒ *jigīṣā́-* 'a desire to win'), *-śḱe/o*-presents (e.g., Ved. *icchá-* 'seek' ⇒ Skt. *icchā-* 'desire'), and (historical) nasal-infix presents (e.g., Ved. *nind-* 'scorn' ⇒ *nindā́-* 're-buke').[70] Thus by inheritance (cf. §4.3 below) or by a typologically trivial inner-Anatolian extension, it seems likely that Hittite inherited *-eh₂- as a means to form event/result nouns from complex verbal stems, and indeed, Hittite attests a few nouns that could directly reflect this process, given in (27).

(27)   Possible *-eh₂-stem event/result nouns in Hittite derived from complex verbal stems

    a.   Hitt. *man(n)i(n)kuwaḫḫ-* 'draw near; shorten' ⇒ *manninkuwaḫḫa-*[?] 'vicinity'

    b.   Hitt. *maniyaḫḫ-* 'administer' ⇒ *maniyaḫḫa-* 'deputy, confidant'

    c.   Hitt. *patalliye/a-* 'tie the feet, fetter' ⇒ *patalliya-*[?] 'fetter(ing)'

It should be noted that for none of these examples is this analysis secure. Hitt. ⟨ma-an-ni-in-ku-wa-aḫ-ḫi⟩ 'in the vicinity; nearby' in KUB 24.9 ii 18 (MH/NS) is probably the DAT/LOC.SG of the hapax *a*-stem in (27a), but it may or may not be animate. Hitt. *maniyaḫḫa-* in (27b) is clearly an animate *a*-stem in KUB 35.148 iii 9–13 (NS), ⟨ma-ni-ya-aḫ-ḫa-aš=ti-iš⟩ 'your confidant' (cf. CHD: L–N, 167); but its semantics are somewhat unexpected for an event/result noun of *maniyaḫḫ-* 'administer'. Lastly, if Hitt. ⟨pa-tal-li-ya-aš-š=a⟩ in KBo 21.45 i 14–15 (NS) really means 'and (the birds) of the fetter' or 'of fettering', then it has the right semantics vis-à-vis *patalliye/a-* 'tie

inative verbs formed with *-ye/o- (found in Luwian and Vedic), arguing that only the former is reconstructible for PIE. I am skeptical of this distinction, as there is little reason to believe that PIE had suffixes that attached to some derived bases, but not to other bases derived with the same suffix. See just below and in more detail §4.3 for arguments that PIE *-eh₂- could be used to form event/result nouns from a broad range of verbal and nominal bases.

70 See Wackernagel & Debrunner 1954: 245–8. Alternatively, Ved. *nindā́-* 'rebuke' is synchronically derived from the Sanskrit Class I present stem *nínda-* (thematized from the PIE nasal-infix present per LIV²: 303), which would add a different type of complex verbal stem to the set of possible bases for *-eh₂-stem event/result nouns.

the feet, fetter' in (27c), but whether it is the GEN.SG of an *a*-stem *patalliya-* is indeterminate (an *i*-stem is possible), as is the gender of this stem. Moreover, even if the nouns in (27) are both (i) animate *a*-stems and (ii) event/result nouns derived from the corresponding verbs, it remains possible that they were created analogically on the model of the τόμος-type with suffixal *o rather than derived with *-$éh_2$-.

Still, supposing that the analysis of Hitt. *maniyaḫḫa-* in (27b) is correct, then this deverbal *-eh_2-stem noun might have been extended by *-$tr/t(e)n$- just like the τομή- and φυγή-type nouns in Tab. 4 above; the resulting formation would yield Hitt. *maniyaḫḫatar/n-* 'administration' in (25c). Similarly, if Hittite inherited the deverbal *-eh_2-stem noun ancestral to HLuw. *waliya-* in (26d) and it were extended by *-$tr/t(e)n$-, the outcome would be Hitt. *walliyatar/n-* in (25d). The final two steps of the derivational process that would have produced these Hitt. *-ătar/n*-nouns are represented in Tab. 5.

Table 5: Historical two-step derivation of deverbal Hittite *-ătar/n*-abstracts

	derived verb	⇒	event/result (anim)	⇒	event/result (n)
a.	*-$éh_2$-		*-$(e)h_2$-$éh_2$-		*-$(e)h_2$-$éh_2$-tr/n-
>	Hitt. *maniyaḫḫ-*		Hitt. *maniyaḫḫa-*		Hitt. *maniyaḫḫatar/n-*
	'administer'		'deputy'		'administration'
b.	*-$yé/ó$-		*-y-$éh_2$-		*-y-$éh_2$-tr/n-
>	Hitt. *walliye/a-*		HLuw. *waliya-*		Hitt. *walliyatar/n-*
	'exalt'		'glory'		'praise'

The historical derivations in Tab. 5 were then susceptible to essentially the same reanalysis (i.e., morphological telescoping) as those in Tab. 4 above: the neuter nouns were treated as derived directly from the corresponding complex verbal stems with a unitary suffix *-ătar/n*- (< *-$eh_2tr/t(e)n$-), which was then used to derive new deverbal *-ătar/n*-nouns in accordance with the productive Hittite pattern in (25).

For present purposes it does not matter which of the two diachronic accounts discussed just above of the *-ătar/n*-nouns derived from complex verbal stems in (25) is correct. The essential point is that, either indirectly or directly, this usage of the suffix is based on a renalysis of neuter nouns with a stem-final complex *-$éh_2$-$tr/t(e)n$- that incorporates the PIE event/result noun-forming suffix *-eh_2- seen in τομή- and φυγή-type nouns.

3.5 The polygenetic origin of Hittite -atar/n-

In §§3.2–3.4 I adduced Anatolian evidence and discussed IE morphological considerations that support the origin of the Hittite suffix *-ătar/n-* proposed in §3.1 above—namely, that it arises from the reanalysis of nouns with stem-final bimorphemic *-éh₂-tr̥/t(e)n-* in which the *-eh₂-*element has two distinct inherited sources, the PIE factitive suffix *-eh₂-* and the homophonous event/result noun-forming suffix *-eh₂-*. This analysis is laid out in (28).

(28)   Polygenetic origin of Hittite *-ătar/n*-nouns

  a.   Factitive verb-forming *-eh₂-* + *-tr̥/ten-*
  b.   Event/result noun-forming *-eh₂-* + *-tr̥/ten-*

A key feature of the proposal in (28) is that it accounts directly or indirectly for the very broad morphological distribution of *-ătar/n-* in Hittite, which is used productively in derivation from verbal bases, both radical and derived, and from nominal bases, both adjectives and nouns. I take this as an important advantage over the earlier analyses discussed §3.1 above, and therefore conclude that it is the likeliest historical source of this Hittite suffix.

4 The morphology of the τομή- and φυγή-types in Anatolian and PIE

While there is widespread agreement that τομή- and φυγή-type formations should be reconstructed for PIE (cf. §1 above), there is less consensus about the morphological structure of these types. In view of their apparent functional identity and the segmental identity of their stem-final element, it seems all but certain that both types were derived with the same derivational suffix *-eh₂-*—but if so, why do both types exist with differing root vocalism, viz., *o-* vs. zero-grade? In this section I consider whether the Anatolian reflexes of the τομή- and φυγή-types can shed light on this question. It is organized as follows. Previous views on the morphology of the τομή- and φυγή-types are discussed in §4.1. In §4.2 I present Anatolian evidence in support of a derivational relationship between τομός-type adjectives and τομή-type nouns. In §4.3 I argue that this derivational relationship is key to understanding the prosodic contrast between the τομή- and φυγή-types: the former are non-primary derivatives and accordingly take over the root vocalism of their base, whereas the latter are primary derivatives of verbal roots and therefore exhibit phonologically regular root zero-grade in pretonic position (cf. Yates 2022a). I bring together these

claims in §4.4 in order to argue for a new morphological analysis of the PIE τομή- and φυγή-types. The deeper prehistory of these types is then briefly considered.

4.1 On the morphology of the PIE τομή- and φυγή-types

The prevailing view with respect to PIE τομή-type formations is that they are derived from τομός-type adjectives; see, e.g., Nussbaum (2017: 233), who refers to this analysis—endorsed already by Brugmann (1904: 341–2)—as the "null hypothesis". On this view, the τομός-type consists of verbal adjectives, typically with active/agentive meaning when their verbal root is fundamentally transitive,[71] which as discussed in §2.4 often develop into agent or instrument nouns in the IE languages; the suffix *-eh_2- then nominalizes the actions associated with these verbal adjectives, producing τομή-type formations with event/result noun semantics. This derivational relationship—and the further developments commonly undergone by τομός-type adjectives—are illustrated in Tab. 6 with non-Anatolian data.[72]

Table 6: Reflexes of PIE τομός- ⇒ τομή-type derivations in non-Anatolian IE

	τομός-type			τομή-type	
a.	*$tomh_1$-ó-	'cutting'	⇒	*$tomh_1$-éh_2-	'cutting; slice'
>	Gk. τομός	'cutting'		Gk. τομή	'cutting; slice'
b.	*b^hor-ó-	'bearing'	⇒	*b^hor-éh_2-	'bearing; load'
>	Gk. φορός	'bearing'		Gk. φορ$\acute{\bar{α}}$	'bearing; load'
>				Alb. *ba(r)rë*	'load, burden'
c.	*d^hrob^h-ó-	'thickening'	⇒	*d^hrob^h-éh_2-	'thickening; thickness'
>	Gk. τροφός	'nourisher; nurse'		Gk. τροφή	'nurture; nourishment'
>				Lith. *drabà*	'viscous substance'
d.	*$g^{wh}on$-ó-	'slaying'	⇒	*$g^{wh}on$-éh_2-	'slaying; slaughter'
>	Gk. φονός	'murderer'		Gk. φονή	'bloodshed'
>	Ved. *ghaná-*	'slayer; cudgel'			

As evident in Tab. 6, this morphological analysis neatly accounts for numerous instances in Greek in which τομός- and τομή nominals are attested side by side, in some cases supported by comparative evidence. Some scholars also cite morpho-

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71 There is some IE evidence for passive meanings as well; see Nussbaum (2017: 239–42) and the discussion of Lyc. *m̃me/i-* 'building' in (17c) in §2.4 above.

72 On Tab. 6 (b) see NIL: 18 (cf. DPEWA: #14755); on Tab. 6 (c) Smoczyński 2018: 238; and on Tab. 6 (d) Beekes 2010: 1586.

logical or phonological reasons for adopting this analysis. According to Kuryłow-icz (1935: 199), the derivations in Tab. 6 are also part of a broader pattern whereby *-eh₂- was used to form abstract nouns from thematic verbal adjectives, a process observed within various IE languages, e.g.: Gk. πινυτός 'prudent' ⇒ πινυτή 'wis-dom'; Lith. *geĩtas* 'yellowish' ⇒ *geltà* 'yellowness; bile'; Gk. θερμός 'warm' ⇒ θέρμη 'heat' (cf. Brugmann 1904: 343–6).[73] On the phonological side, these derivations are thought to explain the *o-grade in the root of the τομή-type. This idea (and its un-derlying rationale) are not always spelled out clearly, but Penney (1978: 311) states it explicitly: "If it is held to be a secondary category, the τομή-type might appear to require no further investigation since the *o-grade is merely taken over from the adjectival base-form." I develop this idea further in §4.3 below.

Regarding the φυγή-type, on the other hand, there is no clear consensus. Brug-mann (1906: 154–5) situates the origin of the type in remodeled zero-grade root nouns, which were extended with the suffix *-eh₂-. This hypothesis finds support es-pecially in Greek, where there is an established diachronic tendency for root nouns to be replaced or renewed by *-eh₂-stems—e.g., ἀλκ- 'strength' by ἀλκή 'id.'; ἰωκ- 'rout' by ἰωκή 'id.'; and prehistorically, *diḱ- (> Ved. *diś-* 'direction') by Gk. δίκη 'jus-tice'.[74] The same pattern may also be observed within Indic where, e.g., the Vedic root noun *diś-* just noted was extended by *-eh₂- to yield *diśā-* 'id.' in later Sanskrit (MBh.+), and in the same way, the inherited root noun *bʰug- (> Gk. φύγ-α-δε 'to flight') to yield *bhujā* 'bending' (MBh.+). The resulting nouns formally match, Gk. δίκη and Gk. φυγή/Lat. *fuga* 'flight', but the agreement would be illusory, the result of parallel developments (cf. Penney 1978: 315–6).

This hypothesis encounters some obstacles, however. It has been widely ac-cepted since Schindler (1972) that originally "acrostatic" root nouns tend to develop intraparadigmatic stress mobility and concomitant root zero-grade (initially, in oblique case-forms) over time, starting in PIE and continuing into the IE languages (cf. Yates 2022b); still, one may wonder whether enough of the relevant root nouns— in Schindler's conception, *ó/é-ablauting result nouns—had acquired innovative zero-grades already in PIE to form the basis for the creation of the φυγή-type, which is reconstructible as an independent class for PIE (cf. §1 above). Moreover, for a number of φυγή-type nouns that are likely to be reconstructible—e.g., *h₃lig-éh₂- in (2b), *gʷr̥h₃-éh₂ in (2c), *dʰiǵʰ-éh₂- in (2d)—there is no trace of a cognate root noun in the IE languages (with root zero-grade or otherwise).[75]

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[73] A potentially reconstructible example is PIE *temh ₓ-s-ro- 'dark' (> OHG *dinstar* 'id.') ⇒ *temh ₓ-s-r-eh₂- 'darkness' (> Ved. *támisrā-*, Lat. *tenebrae* 'id.').

[74] See Chantraine 1933: 3–4, 18–25; Risch 1974: 6; Probert 2006: 123; Lundquist 2023: 88, i.a.

[75] A verbal root attested as the second member of a compound does not constitute evidence for a PIE root noun (hence the label "Wurzelkomposita" of Scarlata 1999: 1; contra NIL, i.a.). Similarly,

A different possibility is raised by Penney (1978: 310–26), who suggests that the φυγή-type was derived from thematic (verbal) adjectives with root zero-grade. An upshot of this analysis is that it provides a morphologically simple, unified account of the τομή- and φυγή-types: both are formed with a single non-primary suffix *-eh₂- that attached only to thematic adjectives. Unifying these types is especially attractive for Penney because he sees in the attested reflexes of the τομή- and φυγή-types and of their thematic adjectival bases the remnants of an earlier phonologically conditioned distribution: root zero-grade in (at least) roots of the shape *TeRT and *o-grade in (at least) roots of the shape *TeR. He attributes this distribution to a pre-PIE sound change that produced pretonic *o-grades in the latter environment and thereby gave rise to the contrast in root vocalism between the thematic bases of PIE τομή- and φυγή-type formations, and in turn, between these formations themselves (*op. cit.* 447–57).

Yet while it is conceivable that *h₃lig-éh₂- in (2b) was derived from the thematic adjective with root zero-grade *h₃lig-ó- (> Alb. *lig* 'ill'; Gk. ὀλίγος 'small; few'; cf. DPEWA: #13956), for the other φυγή-type formations discussed above there is no independent evidence for the thematic base. In addition to this empirical problem, there are complications on the morphological side. A purely deadjectival PIE *-eh₂- is difficult to reconcile with the manifestly deverbal character of this suffix in the IE languages, which would require that the τομή- and φυγή-types were reanalyzed as deverbal in multiple IE branches. Importantly, it is also directly at odds with the reconstructible usage of what appears to be the same event/result noun-forming suffix in derivation from complex verbal stems. As discussed in §3.4 above, this non-primary usage is securely reconstructible for PIE in at least some complex verbal stems—viz., the *-ye/o-stems treated by Sasseville (2020b)—and may well have been used in other complex stem types as well.

In view of these problems, I propose an alternative morphological analysis of the PIE τομή- and φυγή-types. While I maintain the traditional derivation of τομή-type nouns from τομός-type adjectives, I suggest that the φυγή-type is derived directly from verbal roots using the same suffix *-eh₂-. In §4.2 I discuss some Anatolian evidence relevant to the former point, then in §4.3 argue in support of this analysis on phonological and morphological grounds.

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these compounds are excluded by Schindler (1972: 31) in his study of the prosodic properties of (P)IE root nouns.

4.2 Anatolian reflexes of the τομός ⇒ τομή pattern

A major reason why τομή-type nouns are thought to derive from τομός-type is that especially in Greek they are frequently attested in cognate pairs, as is the case for the *Paradebeispiele* of these classes and the other data cited in Tab. 6 above (cf. §4.1 above). The Anatolian languages may furnish additional empirical support for this analysis. Among the data discussed in §2 are two likely reflexes of τομός-type adjectives, *marša-* 'profane; desecrated' in (19a) and *šarra-* '(tool for separating)' in (19b); these are attested beside cognate nouns, CLuw. *marša–** 'desecration; treachery' in (7c) and Hitt. *šarră-* 'portion, part' in (15c), that may be historically related to them in precisely this way. The historical derivations that would underlie these pairs are given in Tab. 7.

Table 7: Reflexes of PIE τομός- ⇒ τομή-type derivations in Anatolian

	τομός-type			τομή-type	
a.	**mors-ó-*	'acting falsely'	⇒	**mors-éh₂-*	'false act'
>	Hitt. *marša-*	'profane'		CLuw. *marša–ʔ*	'desecration; treachery'
b.	**sorh₃-ó-*	'dividing'	⇒	**sorh₃-éh₂-*	'division'
>	Hitt. ⁽ᴳᴵˢ⁾*šarra-*	'(tool for separating)'		Hitt. *šarră-*	'portion, part'

The status of the pair in Tab. 7 (a) is somewhat uncertain, since the root **o*-grade in the base adjective is not assured and since the Luwian reflexes of its derivative may or may not continue an **-eh₂*-stem. The pair in Tab. 7 (b), however, exhibits neither of these ambiguities and requires only minimal semantic changes—notably, the development from agentive adjective to instrument noun, which is paralleled within Anatolian and elsewhere in the IE family (cf. §2.4 above).

  While the limited nature of the Anatolian data calls for caution, the facts are highly suggestive. Given that the total number of τομή-type nouns identified thus far is between eight and fifteen and of τομός-type adjectives five or fewer (§2.5), it seems non-trivial that one or two of the former are attested beside cognate formations of the latter type, a situation otherwise preserved only in Greek. To at least some extent, then, the Anatolian evidence bolsters the Greek, corroborating the long-standing view that in PIE τομή-type nouns were derived from τομός-type adjectives. I turn now to the formal aspects of this relationship in §4.3.

4.3 Event/result noun-forming *-eh₂- and the morphophonology of PIE

It was proposed in §4.1 above that the PIE τομή- and φυγή-types are derived with the same *-eh₂- suffix but from different types of bases: the τομή-type from τομός-type adjectives (cf. §4.2 above); and the φυγή-type from verbal roots. I defend this proposal here, advancing two claims: (i) that this analysis provides a principled morphophonological explanation for their contrast in root vocalism, i.e., root zero-grade in the φυγή-type vs. *-o-grade in the τομή-type; and (ii) that this dual usage of *-eh₂- —viz., as a primary deverbal and non-primary denominal suffix—is morphologically plausible.

The first of these claims builds on recent work on PIE morphophonology. Developing an observation made by Schindler (1975b: 260); Yates (2019: 213–4; 2021: 257–61; 2022: 269–75) has argued that PIE primary and non-primary derivatives systematically exhibited different prosodic behavior. One aspect of his hypothesis is uncontroversial: PIE morphemes regularly appeared in their zero-grade forms in immediately pretonic syllables. This phonologically conditioned distribution can be observed within and across primary nominal and verbal paradigms: note, e.g., the intraparadigmatic alternations exhibited by the PIE agent noun suffix *-ter- in (29a); in the root *h_1es- 'be' in (29b); and in both the root *pent- 'find' and the suffix *-oh₂- in (29c). It can also be seen within roots across derivational contexts. For instance, the PIE roots *$\acute{g}^heu$- 'pour' in (29d) and *pleth₂- 'broad' in (29e) appear in their zero-grade forms when the following adjectival suffixes, *-to- and *-u/ew- attract stress, but surface with full-grade when stressed, as is the case when they combine with the neuter noun-forming suffixes *-men- and *-es-.[76]

(29) Zero-grade in PIE morphemes in pretonic position

    a. PIE *-tr-´: DAT.SG *dh_3-tr-éi » Ved. dātré 'for the giver'
        cf. *-tér-: NOM.SG *dh_3-tér > Gk. δοτήρ 'giver'

    b. PIE *h_1s-´: 3PL.PRS *h_1s-énti > Ved. sánti, Osc. **sent**, Goth. sind 'are'
        cf. *$h_1és$-: 3SG.PRS *$h_1és$-ti > Ved. ásti, Hitt. ēšzi, Osc. **est**, Goth. ist 'is'

    c. PIE *$p\d{n}t$-h₂-´: GEN.SG *$p\d{n}t$-h₂-é/ós > Ved. pathás, YAv. paθō 'of the path'
        cf. *pént-oh₂-: ACC.SG *pént-oh₂-m > Ved. pánthām, YAv. paṇtạm 'path'

    d. PIE *$\acute{g}^hu$-´: NOM.SG *$\acute{g}^hu$-tó-s > Ved. hutás; Gk. χυτός 'poured'
        cf. *$\acute{g}^héu$- NOM.SG *$\acute{g}^héu$-m\d{n} > Ved. hóma 'libation'; Gk. χεῦμα 'outpouring'

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76 All of the PIE forms are standardly reconstructed as such; see, e.g., Beekes 2010: 1628–9; Fortson 2010: 66, 124, 234, 342; NIL: 61, 364–5 (cf. Yates 2022a: 270–1).

  e. PIE *$p\mathring{l}th_2$-: GEN.SG *$p\mathring{l}th_2$-*éw-s* >(>) Ved. *p$\mathring{r}$thós*; Gk. πλατέος 'broad:GEN.SG'
   cf. *$pléth_2$- NOM.SG *$pléth_2$-os* > Ved. *práthas*; OIr. *leth* 'page; side'

It is rather with respect to the prosody of non-primary derivatives that Yates (2022a: 271–5) advances a novel claim—namely, that they regularly preserve the root vocalism of their base even in pretonic position. More precisely, he argues that the phonological process responsible for zero-grade formation underapplied in PIE non-primary derivatives because the root vowels of derived stems were transferred cyclically to their derivatives.[77] This synchronic transfer process would account for pretonic root *e- and *o-grades in PIE non-primary derivatives like those in Tab. 8.[78]

Table 8: Cyclic transfer of root vocalism in PIE non-primary derivatives

		Primary base			Non-primary derivative	
a.	PIE	*$wét$-*es*-	'year'	⇒	*wet-*s*-ó-	'having a year'
	>	Gk. ἔτος	'year'		Ved. *vatsá*-	'calf' (< *'yearling')
b.	PIE	*$tómh_1$-*o*-	'slice'	⇒	*$tomh_1$-ó-	'cutting'
	>	Gk. τόμος	'slice'		Gk. τομός	'cutting'
c.	PIE	*$h_2éug$-*men*-	'strength'	⇒	*h_2eug-*món*-	'strengthening'
	>	Lat. *augmen*	'increase'		Ved. *ojmán*-	'strength'
	>				Lith. *augmuõ*	'sprout'
d.	PIE	*$b^héid^h$-*e/o*-	'persuade'	⇒	*b^heid^h-ói-	'persuasion'
	>	Gk. πείθω	'persuade'		Gk. πειθώ	'persuasion'
		Lat. *fīdō*	'trust'			

If this claim is correct, then the difference in root vocalism between PIE τομή- and φυγή-type formations finds a principled morphophonological explanation. Taken together with morphological analyses of these types proposed above, the cyclicity hypothesis predicts this prosodic contrast. φυγή-type formations are primary

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[77] For theoretical and typological discussion of cyclicity see Bermúdez-Otero 2011 and Kiparsky 2015, i.a.

[78] There is broad agreement that derivations in Tab. 8 (a–c) should be reconstructed for PIE: on Tab. 8 (a) see, e.g., Stüber 2002: 31, 187–8; Schaffner 2004: 292–3; Meissner 2005: 153 n. 82, 165; on Tab. 8 (b) see, e.g., Schaffner 2001: 98; Widmer 2004: 32; Fortson 2010: 122; Nussbaum 2014b: 243–51; 2017: 237–9; Jasanoff 2017: 21–2; Lundquist & Yates 2018: 2108–9; Weiss 2020: 287; on Tab. 8 (c) see, e.g., Schindler 1975a: 63–4; Widmer 2004: 69; Rau 2009: 134; Fortson 2010: 122–3; Nussbaum 2014b: 244, 248; Weiss 2020: 281–2, and for the prosodic reconstruction of the derived *-mon-stem Yates 2022a. For the derivation in Tab. 8 (d) see Yates 2019: 207, 216.

derivatives: the suffix *-eh₂- attaches directly to the root and attracts stress, and as phonologically expected in pretonic position, the root surfaces in its zero-grade form. τομή-type formations, on the other hand, are non-primary derivatives: the suffix *-eh₂- attaches to a derived stem, a τομός-type adjective, and receives stress; the verbal root is thus pretonic but surfaces in *o-grade, since the root vocalism of the τομός-type adjective is transferred from base to non-primary derivative.[79] These differing derivations—viz., primary, non-cyclic vs. non-primary, cyclic—are laid out in Tab. 9. Notably, the cyclic derivation in Tab. 9 (b) explicitly captures the (perhaps widely held) intuition expressed by Penney (1978: 311) that in the τομή-type "the *o-grade is merely taken over from the adjectival base-form" (cf. §4.1 above).

Table 9: Derivation of PIE τομή- and φυγή-types

		Base			τομή- and φυγή-types	
a.	PIE	*bʰeug-	'flee'	⇒	*bʰug-éh₂-	'flight'
	>				Gk. φυγή	'flight'
	>				Lat. *fuga*	'flight'
b.	PIE	*tomh₁-ó-	'cutting'	⇒	*tomh₁-éh₂-	'cutting; slice'
	>	Gk. τομός	'cutting'		Gk. τομή	'cutting; stump'

The morphology of the PIE τομή- and φυγή-types calls for further comment, however. It was proposed above that the suffix *-eh₂- could be used to derive event/result from verbal roots in PIE. This idea is not novel; it appears to be shared, for instance, by Sasseville (2020b: 284–5), who takes this primary usage of the suffix as "original" and sees its use in non-primary deverbal derivation, though "safely reconstructed for the proto-language" (cf. §3.4 above), as "an extension of the derivational process of *-eh₂- suffixation from verbal roots."[80] It is also recommended by the similar selectional behavior of other PIE deverbal suffixes, which attach to both roots and derived stems. One example of a deverbal suffix for which both usages are probably reconstructible is PIE *-mon-. It was used to form nouns or adjectives from derived verbal stems (especially "simple" thematic presents) in at least three IE branches, e.g., Gk. ἡγεμών 'leader'; OIr. *fethem* 'watching over; guard'; TB *aiśamo* 'wise'; it was also used with verbal roots, as assured by one securely reconstructible lexeme: PIE

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79 The pretonic root *o-grade of τομός-type adjectives is owed in turn to their τόμος-type bases, as shown in Tab. 8 (b) above.

80 Perhaps also by Rix (1979: 736), who treats *-eh₂- together with a group of PIE primary suffixes (e.g., animate *-ti/tey-).

sh₂ei- 'bind' ⇒ *sh₂i-món-* > Hitt. *išḫimǎn-* 'bond'; Ved. *sīmán-* 'hairline; boundary'; OIr. *sím* 'chain'; OSax. *sīmo*, OE *sīma*, ON *sími* 'rope' (see Yates 2021: 252–4 and references therein). Another likely example is the PIE animate noun-forming suffix *-oi-*. Both Greek and Hittite testify to its use with derived verbal stems, e.g., Gk. πειθώ in Tab. 8 (d), Gk. μελλώ 'hesitation', Hitt. *ištarni(n)kai-* 'illness'; Hittite also reflects its use in primary derivation, e.g., PIE *h₂wert-* 'swear' ⇒ *h₂wrt-ói-* > Hitt. *ḫurdǎi-* 'curse'; PIE *seh₂g-* 'track' ⇒ *sh₂g-ói-* > Hitt. *šagǎi-* 'sign; omen' (see Yates 2019: 206–14; Frantíková 2023: 37–8).

A further question is whether the same PIE morpheme could function in both primary deverbal and non-primary denominal derivation, as hypothesized for *-eh₂-* above. This selectional behavior is likewise paralleled by other PIE suffixes. One possibility is the PIE adjective-forming suffix *-to-* (cf. Weiss 2020: 312). It is best established in primary derivation, e.g., *gʷʰen-* 'slay' ⇒ *gʷʰn̥-tó-* > Ved. *hatá-*, Gk. φατός 'slain'; but it is also attested as a non-primary denominal suffix—e.g., in derivation from neuter *-es-*stems, a usage directly reflected in Latin (e.g., *wénhₓ-o/es-* 'desire' ⇒ *wenhₓ-os-to-* > Lat. *venustus* 'desirable'), and indirectly in Slavic and Hittite (*-os-to-* ⇒ *-os-t-i-* > OCS *-ostĭ-*, Hitt. *-ašti-*; see Schindler 1980: 390; Melchert 1999: 365–6).[81] It may also be reconstructible for the two suffixes discussed just above, PIE *-mon-* and *-oi-*. The former is attested in non-primary denominal derivation in Italic and Celtic (e.g., *séǵʰ-ó-* ⇒ *séǵʰ-e-món-* >> Osc. **Seemun-**, Gaul. **Segomon-* '(a martial deity)'; Weiss 2017), as well as in Greek (*h₂(e)ḱ-ró-* ⇒ *h₂(e)ḱr-e-món-* > Gk. ἀκρεμών 'branch'; see Yates 2021: 253). Similarly, PIE *-oi-* is used to form animate nouns from derived nominals in Greek and Hittite (e.g., Gk. καμῑνώ 'furnace-woman'; Hitt. *ḫullanzǎi-* 'defeat'), and a trace of this usage is found in Indo-Iranian, where Ved. *sákhǎy-* 'friend' and YAv. *haxāii* 'id.' continue *sokʷ-h₂-ói-*, i.e., an *-oi-*stem derived from an *-eh₂-*stem base (Schindler 1969: 164 n. 65; Yates 2019: 203–4). The further derivatives of *sokʷ-h₂-ói-* attested across the IE family—e.g., Lat. *socius*, ON *seggr* 'comrade'; Gk. ἀοσσέω 'help'—guarantee that this lexeme is reconstructible for PIE, and so too the non-primary denominal use of *-oi-*.

Relatedly, some PIE verb-forming affixes exhibit the same "double" functionality. For instance, the PIE nasal-infix *-ne-* is mostly attested in primary deverbal derivation, e.g., *yeug-* 'yoke' ⇒ *yu-né-g-ti* > Ved. *yunákti* 'yokes'); yet at least one deadjectival verb formed with this suffix is standardly reconstructed for PIE: *dʰebʰ-u/ew-* 'small' ⇒ *dʰebʰ-né-u-* > Hitt. *tepnuzi* 'belittles'; Ved. *dabhnóti* 'deceives' (see, e.g., Lundquist & Yates 2018: 2161–2). Likewise, it seems probable that the stress-

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81 One complication, however, is the possibility of homophony: it is conceivable, e.g., that these two uses of *-to-* correspond to separate, segmentally identical suffixes (cf. n. 82 below). Further arguments may be necessary to establish that the same suffix is used in both cases.

attracting suffix *-ye/o- used to form primary zero-grade present stems (e.g., *mr̥-yé-tor > Ved. *mriyáte*, Lat. *moritur* 'dies') is the same *-ye/o- used to form denominative verbs across the IE languages (cf. Lundquist & Yates 2018: 2164).

In view of these morphological parallels, it seems unproblematic to assume that the event/result noun-forming suffix *-eh₂- could attach to both verbal roots and to derived nominal stems in PIE.[82] It may therefore underlie both the τομή- and φυγή-types, the former as non-primary denominal formations, the latter as primary deverbal formations.

4.4 The morphology of the PIE τομή- and φυγή-types reassessed

In §4.2 and §4.3 I advanced a morphological analysis of PIE τομή- and φυγή-type formations whereby both are formed with the same suffix *-eh₂- but from different types of bases: the τομή-type is derived from τομός-type adjectives, while the φυγή-type is derived from verbal roots. Two main arguments were adduced in support of this analysis. The first was empirical: new evidence was identified in Anatolian for cognate nominal pairs that could continue a τομός-type adjective and τομή-type noun. Just as in Greek, the existence of such pairs finds an economical explanation under the traditional view that these nominals historically stood in a derivational relationship (cf. §4.1 above). The second argument was theoretical and grounded in recent work on PIE morphophonology: the contrast between the root zero-grade characteristic of the φυγή-type and the *o-grade of the τόμος-type falls out directly from this morphological analysis. The former exhibit the root zero-grade that was phonologically regular in pretonic position in PIE, while the latter cyclically preserve the root vocalism of their τομός-type adjectival bases.

I also addressed the plausibility of this analysis on purely morphological grounds. In §4.3 several PIE affixes were examined that exhibit the same selectional properties as proposed for *-eh₂-, attaching to both verbal roots and derived nominal stems. From the perspective of PIE morphology, then, the behavior of *-eh₂- is not at all anomalous; nevertheless, one may wonder whether it reflects the original state-of-affairs. I offer one speculative possibility here—namely, that *-eh₂- was once used exclusively in primary deverbal derivation. A potentially attractive feature of this scenario is that it would capture the correlation observed by Penney (1978: 310–20) between root shape and root vocalism in the IE reflexes of this

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82 I leave aside here whether this *-eh₂- is the same *-eh₂- used to form endocentric animate nouns referring to persons, as argued by Melchert (2014c: 260–5), who implicates this usage in the post-Anatolian development of the feminine gender.

category (cf. §4.1): **TeRT* roots tend to attest zero-graded (i.e., φυγή-type) reflexes, whereas **TeR* roots tend to attest **o*-graded (i.e., τομή-type) reflexes. In this conception, root zero-grade was originally the rule in **-eh₂*-formations. **TeRT* roots would continue this situation, making φυγή-type event/result nouns in PIE; in contrast, the derivatives of **TeR* roots would have undergone a pre-PIE sound change that introduced **o*-grade in roots of this shape, thereby developing into τομή-type formations. This analysis would straightforwardly account for the reconstructible deverbal usage of **-eh₂*- (unlike Penney's deadjectival hypothesis), but would require the derivational relationship between τομός-type adjectives and τομή-type nouns to be innovative, the result of a diachronic reanalysis (perhaps facilitated by their formal affinities to one another). I leave it to future research to evaluate the likelihood of this deeper, pre-PIE reconstruction of PIE τομή- and φυγή-type nouns.

5 Conclusions and discussion

This paper was concerned with the development of PIE τομή-, φυγή-, τόμος-, and τομός-type nominals in the Anatolian languages. It was demonstrated in §2 that τομή- and φυγή-type nouns are robustly represented, and that τομός-type adjectives are continued as well (§2). These findings have broader historical implications. First, they offer insight into the diachrony of the productive Hittite derivational suffix *-ătar/n-*, which historically incorporates an element **-eh₂*-. I argued in §3 that this **-eh₂*- element has two distinct historical sources: (i) the inherited factitive suffix **-eh₂*-; and (ii) the animate event/result noun-forming suffix **-eh₂*- seen in τομή- and φυγή-type nouns. That the latter played a significant role has long been suspected, but the identification of additional Anatolian reflexes of these inherited types—including some attested side-by-side with *-ătar/n*-formations—provides a context in which it can be understood as a natural development. In this way, it would also inform a further historical question: did event/result noun-forming **-eh₂*- also factor into the creation of other **-eh₂*-based suffixes in the Anatolian languages? One possible candidate is the Hittite denominative verb-forming suffix *-a(i)-* and its Luwic cognates (described in Hoffner & Melchert 2008: 176–7 and Sasseville 2020a: 78–106 respectively), the origin of which remains controversial.[83] This interesting question merits further inquiry in view of the results of this study.

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83 A derivation from **-éh₂-ye/o-* was first proposed by Watkins (1975: 371–2) and supported by Melchert (1984: 38–9; 1997: 133–4), who identified **-eh₂*- with the factitive suffix. See Sasseville 2020a: 113–25 for a recent defense of this derivation against the alternative **-o-ye/o-* proposed by Oettinger (1979: 357–8) and endorsed by Kloekhorst (2008: 132–3; 2014: 280–2).

Although τομός-type adjectives were not the focus of this study, the identification of several of their likely reflexes in fact provides important evidence that this morphological class was inherited into Anatolian (regarded as uncertain, e.g., by Kimball 2015: 69; Oettinger 2017: 261). This finding may also have theoretical implications for PIE morphology and its interface with phonology, as discussed in §4. The fact that one or perhaps even two of the reflexes of τομός-type adjectives are attested beside reflexes of cognate τομή-type nouns appears to corroborate the traditional view that these two PIE classes stood in a derivational relationship. The Anatolian evidence thus reinforces the new morphological analysis proposed here, which relies crucially on the assumption that τομή-type nouns are derived from τομός-type adjectives, whereas φυγή-type nouns are primary derivatives of verbal roots. A virtue of this analysis is that it brings these classes into line with a phonological pattern observed by Yates (2022a: 271–5) in PIE primary vs. non-primary derivatives of other kinds: in the former the root surfaces in zero-grade in pretonic position, while in the latter the root vocalism of the base is preserved in its derivative even in pretonic position. The prosodic split between PIE τομή- and φυγή-type nouns would thus be added to a growing body of evidence that these phonological generalizations obtained regularly in PIE, and might therefore be applied in the future as one diagnostic of morphological structure.

Finally, it should be recalled that many of the Anatolian forms identified in this study as τομή-, φυγή-, or τομός-type nominals examples were treated in previous scholarship as reflexes of τόμος-type formations, giving rise to the impression that this type was relatively productive in Anatolian. My reanalysis of the data leaves just a single direct reflex of the τόμος-type, though I regard this example, Hitt. *ḫā̆ššǎ-* 'progeny', as relatively secure (cf. §2.5 above). For the present, then, I maintain that the τόμος-type was inherited into Anatolian, and indeed, on my analysis the root vocalism of the PIE τομή-type ultimately depends on their existence: the stressed root *o*-grade of τόμος-type formations was synchronically transferred to their τομός-type adjectival derivatives, where it is pretonic (see Tab. 8 (b) above); and then from these adjectives further transferred to their τομή-type derivatives (see Tab. 9 (b) above). With respect to τόμος-type in particular, then, I conclude with a more pressing call for renewed investigation: is the evidence for this type in Anatolian really as scarce as it now seems? And if so, why is that the case?

Sergio Neri, and above all, Craig Melchert and Brent Vine. I owe thanks, too, to the audience of the 43rd Annual East Coast Indo-European Conference, where an earlier version of this paper was presented, and to the editors at IF.

Abbreviations

CHD	Hans G. Güterbock, Harry A. Hoffner Jr & Theo P. J. van den Hout, eds. (1980–). *The Hittite Dictionary of the Oriental Institute of the University of Chicago*. Chicago: Oriental Institute of the University of Chicago.
DCL	H. Craig Melchert (forthc.). *A Dictionary of Cuneiform Luvian*. Ann Arbor: Beech Stave Press.
DPEWA	Bardhyl Demiraj & Olav Hackstein, eds. (2018–). *Digitales Philologisch-Etymologisches Wörterbuch des Altalbanischen*. URL: https://www.dpwa.gwi.uni-muenchen.de/.
EDHIL	Alwin Kloekhorst (2008). *Etymological Dictionary of the Hittite Inherited Lexicon*. Leiden & Boston: Brill.
eDiAna	Olav Hackstein, Jared Miller, Elisabeth Rieken & Ilya Yakubovich, eds. (2014–). *The Digital Philological-Etymological Dictionary of the Minor Anatolian Corpus Languages*. URL: https://www.ediana.gwi.uni-muenchen.de/.
EWAia	Manfred Mayrhofer (1986–2001). *Etymologisches Wörterbuch des Altindoarischen*. 3 vols. Heidelberg: Winter.
LIV²	Helmut Rix & Martin J. Kümmel (2001). *Lexikon der indogermanischen Verben*. 2nd ed. Wiesbaden: Reichert.
NIL	Dagmar S. Wodtko, Britta Irslinger & Carolin Schneider (2008). *Nomina im indogermanischen Lexikon*. Heidelberg: Winter.

Bibliography

Adams, Douglas Q. (2015). *Tocharian B. A Grammar of Syntax and Word-Formation*. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.

Adiego Lajara, Ignacio J. (2001). "Lenición y acento en protoanatolico". In: *Anatolisch und Indogermanisch*. Ed. by Onofrio Carruba & Wolfgang Meid. Innsbruck: Institut für Sprachen und Literaturen der Universität Innsbruck, 11–18.

Bammesberger, Alfred (1973). *Abstraktbildungen in den baltischen Sprachen*. Göttingen: Vandenhoeck & Ruprecht.

Beekes, Robert S. P. (1969). *The Development of Proto-Indo-European Laryngeals in Greek*. Den Haag: Mouton.

Beekes, Robert S. P. (2010). *Etymological Dictionary of Greek*. 2 vols. Leiden & Boston: Brill.

Bermúdez-Otero, Ricardo (2011). "Cyclicity". In: *The Blackwell Companion to Phonology*. Vol. 4: *Phonological Interfaces*. Ed. by Marc Oostendorp, Colin J. Ewen, Elizabeth V. Hume & Keren Rice. Chichester: Wiley-Blackwell, 2019–2048.

Brosch, Cyril (2011). "Zum hethitischen Lautgesetz *Two > Ta*". In: *Historische Sprachforschung* 124.1, 59–65.

Brugmann, Karl (1904). *Kurze vergleichende Grammatik der indogermanischen Sprachen*. Strassburg: Trübner.

Brugmann, Karl (1906). *Grundriss der vergleichenden Grammatik der Indogermanischen Sprachen*. Vol. 2: *Lehre von den Wortformen und ihrem Gebrauch*. 1. *Allgemeines, Zusammensetzung (Komposita), Nominalstämme*. 2nd ed. Strassburg: Trübner.

Chantraine, Pierre (1933). *La formation des noms en grec ancien*. Paris: Klincksieck.

Clayton, John (2022). "The lengthening of *i, *u > ī, ū / _ rC in Sanskrit". Paper presented at the 232nd Annual Meeting of the American Oriental Society, Boston, 18 March 2022.

Clayton, John (2023). *The Development of the Indo-European* *-wr̥-/-wen-*Heteroclites in Sanskrit and Beyond.* PhD thesis. University of California, Los Angeles.

Cooper, Adam I. (2009). "Similarity avoidance in the Proto-Indo-European root". In: *University of Pennsylvania Working Papers in Linguistics* 15.1, 55–64.

Eichner, Heiner (1973). "Die Etymologie von heth. *mehur*". In: *Münchener Studien zur Sprachwissenschaft* 31, 53–107.

Eichner, Heiner (2017). "Ein philologisch-sprachwissenschaftlicher Blick auf den Fortgang der lykischen Studien seit Emmanuel Laroche". In: *Hittitology Today*. Studies on Hittite and Neo-Hittite Anatolia in honor of Emmanuel Laroche's 100th birthday. Ed. by Alice Mouton. Istanbul: Institut Français d'Études Anatoliennes Georges Dumézil, 277–299.

Fortson, Benjamin W. (2010). *Indo-European Language and Culture. An Introduction*. 2nd ed. Chichester & Malden: Wiley-Blackwell.

Frantíková, Dita (2023). "Hittite common gender *āi*-stems revisited". In: *Proceedings of the 33rd Annual UCLA Indo-European Conference*. Ed. by David M. Goldstein, Stephanie W. Jamison & Anthony D. Yates. Hamburg: Buske, 27–41.

Goedegebuure, Petra (2021). "The fat and the furious. *worĝ*- 'fat, furious, strong' and derivatives in Hittite and Luwian". In: *Proceedings of the 31st Annual UCLA Indo-European Conference*. Ed. by David M. Goldstein, Stephanie W. Jamison & Brent Vine. Hamburg: Buske, 121–137.

Gusmani, Roberto (1968). "Confronti etimologici greco-ittiti". In: *Studi micenei ed egeo-anatolici* 6, 14–28.

Hackstein, Olav (1995). *Untersuchungen zu den sigmatischen Präsensstammbildungen des Tocharischen*. Göttingen: Vandenhoeck & Ruprecht.

Harðarson, Jón Axel (1994). "Der Verlust zweier wichtiger Flexionskategorien im Uranatolischen". In: *Historische Sprachforschung* 127.1, 30–41.

Haspelmath, Martin (1995). "The growth of affixes in morphological reanalysis". In: *Yearbook of Morphology 1994*. Ed. by Geert Booij & Jaap van Marle. Dordrecht: Kluwer, 1–29.

Hawkins, John David (1981). "Kubaba at Karkamiš and elsewhere". In: *Anatolian Studies* 31.3, 147–176.

Hoffner, Harry A. Jr. & H. Craig Melchert (2008). *A Grammar of the Hittite Language*. Vol. 1: *Reference Grammar*. Winona Lake: Eisenbrauns.

Jasanoff, Jay H. (2017). *The Prehistory of the Balto-Slavic Accent*. Leiden & Boston: Brill.

Juret, Étienne A. (1942). *Vocabulaire étymologique de la langue hittite*. Limoges: Bontemps.

Kimball, Sara E. (1999). *Hittite Historical Phonology*. Innsbruck: Institut für Sprachwissenschaft.

Kimball, Sara E. (2015). "Oxytone simple thematic nouns in Anatolian". In: *Historische Sprachforschung* 128.1, 59–71.

Kimball, Sara E. (2017). "Luwic *mar-*". In: *Indogermanische Forschungen* 122, 207–218.

Kiparsky, Paul (2015). "Stratal OT". In: *Capturing Phonological Shades Within and Across Languages*. Ed. by Yuchau E. Hsiao & Lian-Hee Wee. Newcastle upon Tyne: Cambridge Scholars Publishing, 2–44.

Klingenschmitt, Gert (1982). *Das altarmenische Verbum*. Wiesbaden: Reichert.

Kloekhorst, Alwin (2006). "Initial laryngeals in Anatolian". In: *Historische Sprachforschung* 119, 77–108.

Kloekhorst, Alwin (2014). *Accent in Hittite. A Study in Plene Spelling, Consonant Gradation, Clitics, and Metrics*. Wiesbaden: Harrassowitz.

Kronasser, Heinz (1966). *Etymologie der hethitischen Sprache*. Vol. 1. Wiesbaden: Harrassowitz.

Kroonen, Guus (2013). *Etymological Dictionary of Proto-Germanic*. Leiden & Boston: Brill.

Kuryłowicz, Jerzy (1935). *Études indo-européennes I*. Kraków: Gebethner & Wolff.

Lundquist, Jesse (2023). "The source of strength: ἀλκί, ἀλκι-, ἀναλκιδ-, and related". In: *Proceedings of the 33rd Annual UCLA Indo-European Conference*. Ed. by David M. Goldstein, Stephanie W. Jamison & Anthony D. Yates. Hamburg: Buske, 81–100.

Lundquist, Jesse & Anthony D. Yates (2018). "The morphology of Proto-Indo-European". In: *Handbook of Comparative and Historical Indo-European Linguistics*. Ed. by Jared S. Klein, Brian D. Joseph, Matthias Fritz & Mark Wenthe. Vol. 3. Berlin & Boston: De Gruyter Mouton, 2079–2195.

Malzahn, Melanie (2010). *The Tocharian Verbal System*. Leiden & Boston: Brill.

Meissner, Torsten (2005). S-*Stem Nouns and Adjectives in Greek and Proto-Indo-European. A Diachronic Study in Word Formation*. Cambridge: Cambridge University Press.

Melchert, H. Craig (1984). *Studies in Hittite Historical Phonology*. Göttingen: Vandenhoeck & Ruprecht.

Melchert, H. Craig (1994a). *Anatolian Historical Phonology*. Amsterdam & Atlanta: Rodopi.

Melchert, H. Craig (1994b). "The feminine gender in Anatolian". In: *Früh-, Mittel-, Spätindogermanisch*. Ed. by George E. Dunkel, Gisela Meyer, Salvatore Scarlata & Christian Seidl. Wiesbaden: Reichert, 231–244.

Melchert, H. Craig (1997). "Denominative verbs in Anatolian". In: *Studies in Honor of Jaan Puhvel*. Vol. 1: *Ancient Languages and Philology*. Ed. by Dorothy Disterheft, John A. C. Greppin, Martin E. Huld, Edgar C. Polomé & Jaan Puhvel. Washington, DC: Institute for the Study of Man, 131–138.

Melchert, H. Craig (1999). "Two problems of Anatolian nominal derivation". In: *Compositiones indogermanicae in memoriam Jochem Schindler*. Ed. by Heiner Eichner & Hans Chr. Luschützky. Praha: Enigma, 365–375.

Melchert, H. Craig (2003a). "Language". In: *The Luwians*. Ed. by H. Craig Melchert. Leiden & Boston: Brill, 170–210.

Melchert, H. Craig (2003b). "The dialectal position of Lycian and Lydian with Anatolian." In: *Licia e Lidia prima dell'Ellenizzazione*. Ed. by M. Giorgieri, M. Salvini, M.-C. Trémouille & P. Vannicelli. Roma: Consiglio Nazionale delle Ricerche, 265–272.

Melchert, H. Craig (2004). *A Dictionary of the Lycian Language*. Ann Arbor: Beech Stave.

Melchert, H. Craig (2005). "Latin *insolesco*, Hittite *šulle(šš)-* and PIE statives in *-ē-*". In: *Hṛdā́ mánasā*. Studies Presented to Leonard G. Herzenberg on the Occasion of his 70th Birthday. Ed. by Nikolai N. Kazansky. Saint Petersburg: Nauka, 90–98.

Melchert, H. Craig (2007). "ḫuu̯app-, ḫǔppā(i)- and ḫuppii̯a-". In: *Tabularia Hethaeorum*. Hethitologische Beiträge Silvin Košak zum 65. Geburtstag. Ed. by Detlev Groddek & Marina Zorman. Wiesbaden: Harrassowitz, 513–519.

Melchert, H. Craig (2007–2008). "Neuter stems with suffix *-(e)n-* in Anatolian and Proto-Indo-European". In: *Die Sprache* 47.2, 182–191.

Melchert, H. Craig (2010). "The verbal prefix "u-" and <u> vs. <ú> spellings in Anatolian cuneiform". Paper presented at the 29th Annual East Coast Indo-European Conference, Ithaca, NY, 18–20 June 2010.

Melchert, H. Craig (2011). "The PIE collective plural and the "τὰ ζῷα τρέχει rule"". In: *Indogermanistik und Linguistik im Dialog*. Ed. by Thomas Krisch & Thomas Lindner. Wiesbaden: Reichert, 395–400.

Melchert, H. Craig (2012). "Hittite *ḫi*-Verbs of the Type *-āC₁i, -aC₁C₁anzi*". In: *Indogermanische Forschungen* 117, 173–185.

Melchert, H. Craig (2013). "Ablaut patterns in the Hittite ḫi-conjugation". In: *Proceedings of the 24th Annual UCLA Indo-European Conference, October 26th and 27th, 2012*. Ed. by Stephanie W. Jamison, H. Craig Melchert & Brent Vine. Bremen: Hempen, 137–150.

Melchert, H. Craig (2014a). "'Narten formations' versus 'Narten roots'". In: *Indogermanische Forschungen* 119, 251–158.

Melchert, H. Craig (2014b). "Anatolian nominal stems in *-(C)o-". In: *Das Nomen im Indogermanischen. Morphologie, Substantiv versus Adjektiv, Kollektivum*. Ed. by Norbert Oettinger & Thomas Steer. Wiesbaden: Reichert, 205–214.

Melchert, H. Craig (2014c). "PIE *-eh₂ as an 'individualizing' suffix and the feminine gender". In: *Studies on the Collective and Feminine in Indo-European from a Diachronic and Typological Perspective*. Ed. by Sergio Neri & Roland Schuhmann. Leiden & Boston: Brill, 257–272.

Melchert, H. Craig (2016). "Marginalia to the myth of Telipinu". In: *Audias fabulas veteres*. Anatolian Studies in Honor of Jana Součková-Siegelová. Ed. by Šárka Velhartická. Leiden & Boston: Brill, 210–220.

Melchert, H. Craig (2019). "Hittite and Luvian *uppa-* and Hittite *uiya-*". In: *Acts of the IXth International Congress of Hittitology, Çorum, September 8–14 2014*. Ed. by Yayına Hazırlayan & Aygül Süel. Vol. 1. Çorum: Dumat, 567–578.

Melchert, H. Craig (2020a). "Hittite historical phonology after 100 years (and after 20 years)". In: *Hrozný and Hittite. The First Hundred Years*. Ed. by Ronald I. Kim, Jana Mynářová & Peter Pavúk. Leiden & Boston: Brill, 258–276.

Melchert, H. Craig (2020b). "The Anatolian subgroup of Indo-European in the light of the "minor" languages". In: *Chatreššar* 2, 32–41.

Norbruis, Stefan (2018). "The origin and spread of the '*i*-mutation' paradigm and the prehistory of the Luwic nominal stem classes". In: *Historische Sprachforschung* 131, 11–45.

Norbruis, Stefan & David Sasseville (forthc.). "The distribution of the Luwian dative-locative singular endings -*a* and -*i*". In: *Münchener Studien zur Sprachwissenschaft* 76.

Nussbaum, Alan J. (1986). *Head and Horn in Indo-European*. Berlin & New York: De Gruyter.

Nussbaum, Alan J. (1997). "The 'Saussure Effect' in Latin and Italic". In: *Sound Law and Analogy*. Papers in honor of Robert S. P. Beekes on the occasion of his 60th birthday. Ed. by Alexander M. Lubotsky. Amsterdam & Atlanta: Rodopi, 181–203.

Nussbaum, Alan J. (2014a). "Feminine, abstract, collective, neuter plural. Some remarks on each". Expanded handout. In: *Studies on the Collective and Feminine in Indo-European from a Diachronic and Typological Perspective*. Ed. by Sergio Neri & Roland Schuhmann. Leiden & Boston: Brill, 273–306.

Nussbaum, Alan J. (2014b). "Greek τέκμαρ 'sign' and τέκμωρ 'sign'. Why both?" In: *Das Nomen im Indogermanischen. Morphologie, Substantiv versus Adjektiv, Kollektivum*. Ed. by Norbert Oettinger & Thomas Steer. Wiesbaden: Reichert, 215–260.

Nussbaum, Alan J. (2017). "Agentive and other derivatives of 'τόμος-Type' nouns". In: *Verbal Adjectives and Participles in Indo-European Languages*. Ed. by Claire Le Feuvre, Daniel Petit & Georges-Jean Pinault. Bremen: Hempen, 233–266.

Oettinger, Norbert (1978). "Die Gliederung des anatolischen Sprachgebietes". In: *Zeitschrift für vergleichende Sprachforschung* 92, 74–92.

Oettinger, Norbert (1979). *Die Stammbildung des hethitischen Verbums*. Erlangen & Nürnberg: Carl.

Oettinger, Norbert (1986). *"Indo-Hittite"-Hypothese und Wortbildung*. Innsbruck: Institut für Sprachwissenschaft.

Oettinger, Norbert (2004). "Die Entwicklung von *h₃* im Anatolischen und hethitisch *arāi* ,erhebt sich'". In: *Per aspera ad asteriscos*. Studia Indogermanica in honorem Jens Elmegård Rasmussen sexage-

narii Idibus Martiis anno MMIV. Ed. by Adam Hyllested, Anders R. Jørgensen, Jenny H. Larsson & Thomas Olander. Innsbruck: Institut für Sprachen und Literaturen, 397–407.

Oettinger, Norbert (2016). "Luwisch *ārrazza*- und gr. ὄρχις ‚Hode' (mit einer Bemerkung zu gr. ἔνδον)". In: *Anatolica et indogermanica*. Studia linguistica in honorem Johannis Tischler septuagenarii dedicata. Ed. by Henning Marquardt, Silvio Reichmuth & José Virgilio García Trabazo. Innsbruck: Institut für Sprachen und Literaturen, 231–239.

Oettinger, Norbert (2017). "The morphology of Anatolian". In: *Handbook of Comparative and Historical Indo-European Linguistics*. Ed. by Jared S. Klein, Brian D. Joseph, Matthias Fritz & Mark Wenthe. Berlin & Boston: De Gruyter Mouton, 256–273.

Penney, John H. W. (1978). *Problems of Greek and Indo-European Ablaut. The Origin and Development of the O-grade*. PhD thesis. University of Oxford.

Pinault, Georges-Jean (2011). "Some Tocharian abstract suffixes". In: *Indogermanistik und Linguistik im Dialog*. Ed. by Thomas Krisch & Thomas Lindner. Wiesbaden: Reichert, 453–562.

Probert, Philomen (2006). "Accentuation in Ancient Greek deverbative *ā*-stems". In: *Oxford University Working Papers in Linguistics, Philology & Phonetics* 11. Ed. by Daniel Kölligan & Ranjan Sen, 122–142.

Puhvel, Jaan (1991). *Hittite Etymological Dictionary*. Vol. 3: *Words beginning with H*. Berlin & New York: Mouton de Gruyter.

Puhvel, Jaan (2004). *Hittite Etymological Dictionary*. Vol. 6: *Words beginning with M*. Berlin & New York: Mouton de Gruyter.

Rau, Jeremy (2009). *Indo-European Nominal Morphology. The Decads and the Caland System*. Innsbruck: Institut für Sprachen und Literaturen.

Rieken, Elisabeth (1999). *Untersuchungen zur nominalen Stammbildung des Hethitischen*. Wiesbaden: Harrassowitz.

Rieken, Elisabeth (2008). "The origin of the -*l* genitive and the history of the stems in -*īl* and -*ūl* in Hittite". In: *Proceedings of the 19th Annual UCLA Indo-European Conference, Los Angeles, November 3–4, 2007*. Ed. by Karlene Jones-Bley, Martin E. Huld, Angela Della Volpe & Miriam Robbins Dexter. Washington, DC: Institute for the Study of Man, 239–256.

Rieken, Elisabeth (2010). "Das Zeichen <*sà*> im Hieroglyphen-Luwischen". In: *Acts of the VIIth International Congress of Hittitology*. Ed. by Aygül Süel. Ankara: T. C. Çorum Valiliği, 651–660.

Rieken, Elisabeth (2017). "The dialectology of Anatolian". In: *Handbook of Comparative and Historical Indo-European Linguistics*. Ed. by Jared S. Klein, Brian D. Joseph, Matthias Fritz & Mark Wenthe. Berlin & Boston: De Gruyter Mouton, 256–273.

Risch, Ernst (1974). *Wortbildung der homerischen Sprache*. 2nd ed. Berlin & New York: De Gruyter.

Rix, Helmut (1979). "Abstrakte Komplemente im Urindogermanischen". In: *Studies in Diachronic, Synchronic, and Typological Linguistics*. Festschrift for Oswald Szemerényi on the occasion of the 65th birthday. Ed. by Bela Brogyanyi. Amsterdam: Benjamins, 725–747.

Sandell, Ryan (2016). "R̥gvedic *śáktīvant*-. Accentuation and statistical learning of allomorph selection in Vedic -*mant/vant*-stems". In: *Proceedings of the 27th UCLA Indo-European Conference*. Ed. by David M. Goldstein, Stephanie W. Jamison & Brent Vine. Bremen: Hempen, 143–162.

Sasseville, David (2015). "Luwian and Lycian agent nouns in *-*é-leh₂*". In: *Die Sprache* 51.1, 105–124.

Sasseville, David (2018). "New evidence for the PIE common gender suffix *-*eh₂* in Anatolian: Luwian -*ašša*- (c.) and Lycian B -*asa*- (c.)'" In: *100 Jahre Entzifferung des Hethitischen. Morphosyntaktische Kategorien in Sprachgeschichte und Forschung*. Ed. by Elisabeth Rieken, Ulrich Reupel & Theresa M. Roth. Wiesbaden: Reichert, 303–318.

Sasseville, David (2020a). *Anatolian Verbal Stem Formation. Luwian, Lycian and Lydian*. Leiden & Boston: Brill.

Sasseville, David (2020b). "Luwian and Sanskrit action nouns in *-i̯-eh₂-". In: *Indo-European Linguistics* 8.1, 275–288.

Scarlata, Salvatore (1999). *Die Wurzelkomposita im R̥gveda*. Wiesbaden: Reichert.

Schaffner, Stefan (2001). *Das Vernersche Gesetz und der innerparadigmatische grammatische Wechsel des Urgermanischen im Nominalbereich*. Innsbruck: Institut für Sprachen und Literaturen der Universität Innsbruck.

Schaffner, Stefan (2004). "Mittelirisch *fethid* ,geht, macht seinen Weg', althochdeutsch *wadalōn, wallōn* ,umhergehen, wandern; umherwogen', altenglisch *waðuma* ,Woge, Welle', *waðol* ,Vollmond', und Verwandtes". In: *Die Indogermanistik und ihre Anrainer*. Ed. by Thorwald Poschenrieder. Innsbruck: Institut für Sprachen und Literaturen, 277–314.

Schindler, Jochem (1969). "Die idg. Wörter für ,Vogel' und ,Ei'". In: *Die Sprache* 15, 144–167.

Schindler, Jochem (1972). "L'apophonie des noms-racines indo-européens". In: *Bulletin de la Société de Linguistique de Paris* 67.1, 31–38.

Schindler, Jochem (1975a). "Armenisch *erkn*, griechisch ὀδύνη, irisch *idu*". In: *Zeitschrift für vergleichende Sprachforschung* 89, 53–65.

Schindler, Jochem (1975b). "Zum Ablaut der neutralen *s*-Stämme des Indogermanischen". In: *Flexion und Wortbildung*. Ed. by Helmut Rix. Wiesbaden: Reichert, 259–267.

Schindler, Jochem (1980). "Zur Herkunft der altindischen *cvi*-Bildungen". In: *Lautgeschichte und Etymologie*. Ed. by Manfred Mayrhofer, Martin Peters & Oskar E. Pfeiffer. Wiesbaden: Reichert, 386–393.

Schwyzer, Eduard (1939). *Griechische Grammatik*. Vol. 1: *Allgemeiner Teil. Lautlehre, Wortbildung, Flexion*. München: Beck.

Smoczyński, Wojciech (2018). *Lithuanian Etymological Dictionary*. Ed. by Axel Holvoet & Steven Young. 5 vols. Berlin: Lang.

Starke, Frank (1986). Rev. of CHD. In: *Biblioteca Orientalis* 43, 157–165.

Stüber, Karin (2002). *Die primären* s-*Stämme des Indogermanischen*. Wiesbaden: Reichert.

Stüber, Karin (2015). *Die Verbalabstrakta des Altirischen*. 2 vols. Bremen: Hempen.

Tucker, Elizabeth (2013). "Old Persian *asabāra-* 'horse-borne', RV *kṣīrapāká-* 'cooked in milk', and the restructuring of vowel quantities in Indo-Iranian thematic verbal nouns". In: *Proceedings of the 24th Annual UCLA Indo-European Conference, October 26th and 27th, 2012*. Ed. by Stephanie W. Jamison, H. Craig Melchert & Brent Vine. Bremen: Hempen, 229–242.

Vine, Brent (1994). "Greek ὄπεας/ὄπεαρ 'awl'". In: *Glotta* 72, 31–40.

Vine, Brent (1998). "Remarks on the Archaic Latin "Garigliano Bowl" inscription". In: *Zeitschrift für Papyrologie und Epigraphik* 121, 257–262.

Vine, Brent (1999). "On 'Cowgill's Law' in Greek". In: *Compositiones indogermanicae in memoriam Jochem Schindler*. Ed. by Heiner Eichner & Hans Chr. Luschützky. Praha: Enigma, 555–600.

Wackernagel, Jacob & Albert Debrunner (1954). *Altindische Grammatik*. Vol. 2.2: *Die Nominalsuffixe*. Göttingen: Vandenhoeck & Ruprecht.

Watkins, Calvert (1975). "Die Vertretung der Laryngale in gewissen morphologischen Kategorien in den indogermanischen Sprachen Anatoliens". In: *Flexion und Wortbildung*. Ed. by Helmut Rix. Wiesbaden: Reichert, 358–378.

Weiss, Michael (2017). "An Italo-Celtic divinity and a common Sabellic sound change". In: *Classical Antiquity* 36.2, 370–389.

Weiss, Michael (2020). *Outline of the Historical and Comparative Grammar of Latin*. 2nd ed. Ann Arbor: Beech Stave.

Weiss, Michael (2022). *Kuśiññe kantwo. Elementary Lessons in Tocharian B*. Ann Arbor & New York: Beech Stave.

Widmer, Paul (2004). *Das Korn des weiten Feldes. Interne Derivation, Derivationskette und Flexionsklassenhierarchie. Aspekte der nominalen Wortbildung im Urindogermanischen*. Innsbruck: Institut für Sprachen und Literaturen.

Yakubovich, Ilya (2010). *Sociolinguistics of the Luwian Language*. Leiden & Boston: Brill.

Yakubovich, Ilya (2015). *The Luwian Language*. URL: http://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780199935345.001.0001/oxfordhb-9780199935345-e-18.

Yakubovich, Ilya & Alice Mouton (2023). *Luwili. Hittite-Luwian Ritual Texts Attributed to Puriyanni, Kuwattalla and Šilalluḫḫi (CTH 758–763)*. Vol. 1: *Edition and Commentary*. Wiesbaden: Harrassowitz.

Yates, Anthony D. (2017). *Lexical Accent in Cupeño, Hittite, and Indo-European*. PhD thesis. Los Angeles: University of California.

Yates, Anthony D. (2019). "Suffixal **o*-vocalism without "amphikinesis": On Proto-Indo-European **-oi*-stems and ablaut as a diagnostic for word stress". In: *Proceedings of the 30th Annual UCLA Indo-European Conference*. Ed. by David M. Goldstein, Stephanie W. Jamison & Brent Vine. Bremen: Hempen, 199–221.

Yates, Anthony D. (2021). "The phonology and morphology of Anatolian **-mon*-stems". In: *Proceedings of the 31st Annual UCLA Indo-European Conference*. Ed. by David M. Goldstein, Stephanie W. Jamison & Brent Vine. Hamburg: Buske, 245–264.

Yates, Anthony D. (2022a). "A new prosodic reconstruction of Proto-Indo-European **-mon*-stems". In: *Indo-European Linguistics* 10.1, 214–288.

Yates, Anthony D. (2022b). "Emergent mobility in Indo-European **-r/n*-stems and its implications for the reconstruction of the neuter plural". In: *Proceedings of the 32th Annual UCLA Indo-European Conference*. Ed. by David M. Goldstein, Stephanie W. Jamison & Brent Vine. Hamburg: Buske, 271–295.

Yates, Anthony D. (2023). "ḫašš- 'ash', ḫašša- 'hearth' and the properties of non-primary derivatives in Hittite and Indo-European". Paper presented at the 41st Annual East Coast Indo-European Conference, Cambridge, MA, 24 June 2022.

Yoshida, Kazuhiko (2011). "Proto-Anatolian as a mora-based language". In: *Transactions of the Philological Society* 109.1, 92–108.