4. Linnaean linguistics
'Bear', 'horse', 'wolf' and the Indo-European phylogeny from a zoographical perspective

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Abstract

Taking inspiration from the biological taxonomy of mammals, this paper explores the diversification of the Indo-European language family through a zoographical lens. It investigates shared innovations of phonology, morphology, and semantics in zoonyms across language branches. The aim is to uncover evidence for early splits within the family tree. The study primarily centers on Anatolian versus Core Indo-European and features an extensive discussion of *$h_2\acute{r}t\hat{k}o$-* 'bear' (Hittite *ḫartakka-*) vs. *$h_2\acute{r}\hat{k}po$-* (Vedic *ŕkṣa-*, Greek ἄρκτος, Latin *ursus*, etc.), *$h_1\acute{e}\hat{k}u$-* 'horse' (Hittite */ekkus/*, Luwian */azzu-/*) vs. *$h_1\acute{e}\hat{k}uo$-* (Vedic *áśva-*, Latin *equus*, Tocharian B *yakwe*, etc.), and *$u\acute{l}k^wo$-* 'lion' (Luwian *walwa/i-*) vs. *$u\acute{l}k^wo$-* 'wolf' (Vedic *vŕka-*, Lithuanian *vil̃kas*, Tocharian B *walkwe*, etc.). Thorough analysis of these examples will determine their relevance within the proposed scenarios.

1. Introduction

The way individual members of a language family are distributed on a phylogenetic tree is reminiscent of models that have been in use in biology for over 200 years.[1] The hierarchy of parent languages, branches, sub-branches, and individual idioms can be compared to the system of taxonomy established by the Swedish botanist, zoologist, and physician

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[1] I would like to thank Roberto Batisti, Andreas Opfermann, Diether Schürr, Michael Weiss, and an anonymous reviewer for a number of invaluable comments and helpful bibliographical references. Responsibility for any errors is, of course, mine alone.

Carl Linnaeus (1707–1778) who devised a classification of organisms into kingdoms, classes, orders, genera, and species.[2] The greatest change to this system was the widespread acceptance of evolution as the driving force behind biological diversity and the formation of species subsequent to Charles Darwin's (1809–1882) publication of *On the origin of species* in 1859. It became evident that the Linnaean classification reflects the phylogeny of organisms, i.e., their descent by evolution. Interestingly, a similar model for the genealogy of the Indo-European languages had already been claimed some decades earlier.[3]

Without taking the analogy too far, a simple comparison of a traditional phylogenetic tree of the class *Mammalia* (mammals)[4] with a tree of the Indo-European language family[5] shows superficial similarities between the two models in how orders and subfamilies branch off and bifurcate. The ramification of the mammal tree depends (or, in pre-DNA times, depended) on the evaluation and integration of shared innovations and retained archaisms. The order *Monotremata* (monotremes), for example, is generally considered the first (extant) group to branch off. Monotremes (such as the platypus and the echidna) retain a couple of archaisms vis-à-vis the other mammals:[6] they lay eggs and only have one orifice for urinating, defecating, and reproduction (a "cloaca"), both traits of which they share with reptiles. The remaining (extant) mammals, subsumable under the subclass *Theria* (comprising the marsupials and the placental mammals) have a number of innovations in common that distinguish them from monotremes.[7] For one thing, they developed a placenta (in rudimentary form in marsupials) that facilitated nutrient exchange between mother and foetus and allowed them to give birth to live young without a shelled egg, and for another, they developed teats, i.e., projections from the mammary glands from which milk is ejected for the purpose of feeding the offspring.[8]

In linguistics, too, the combination of shared innovations and retained archaisms plays a vital role in establishing a family tree. To be sure, archaisms can be deceiving both in mammals and in language

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[2] For Linnaeus's legacy and its impact and role in modern biology, see Reid 2009.

[3] For a recent concise overview of the history of Indo-European linguistics, see Weiss 2020: 9–10.

[4] For an illustration of the phylogeny of the living orders of mammals, see the two cladograms (one morphology-based, one molecular-based) in Kemp 2005: 223.

[5] For different illustrations of the phylogeny of the Indo-European languages, see Olander 2019: 232; Goldstein 2020: 126, 130 *et passim*.

[6] Cf. Kemp 2005: 1, 173–180; Feldhamer et al. 2007: 218–220.

[7] Cf. Kemp 2005: 1, 162, 190.

[8] Cf. Feldhamer et al. 2007: 240–241.

families, as some seemingly archaic features turn out to be secondary developments, such as the loss of external ears ("pinnae") in whales and some types of seals, or the re-formation of a secondary cloaca in some non-monotreme mammals such as the tenrecs. Within the Indo-European languages, a comparable case is, for instance, the gender system of most Scandinavian languages with a common and a neuter gender, similar to the archaic system of the Anatolian languages. On the other hand, while a certain trait might indeed be a retained archaism, it does not necessarily provide diagnostic evidence for classification. This is because there is a chance that the archaism was retained independently in several subgroups. The fact that Latin, along with certain other branches, preserves (at least in residual forms) the inherited optative, does not move the Italic branch closer to optative-retaining Indo-Iranian and Greek and away from optative-less Celtic. A series of Italo-Celtic isoglosses[9] (such as for example the superlative suffix *-isṃmo-) warrant a closer affinity of these two branches and therefore outweigh a single instance of a unilaterally preserved archaism.[10]

For linguistic subgrouping, shared innovations are therefore the most significant factor. Only a non-trivial change of a feature x to y, that is shared by a group of branches and cannot be explained as a parallel development that happened separately and independently in each branch, can be used for ascertaining a closer genealogical relationship of the group that shares this innovated feature y. In theory, the isogloss under consideration can be from the following areas: phonology, morphology, syntax, semantics, and the lexicon. Since this study will be focused on zoonyms, evidence from syntax will not play a role. All the other areas, however, can be exploited in the following ways.

A. SHARED INNOVATIONS IN SOUND: If a zoonym X in one language branch ɑ is different from the etymologically related zoonym X' in the remaining languages by presenting a phonological trait that seems to be more archaic, while all other languages present a more advanced stage, it might be evidence of an early split-off of language branch ɑ. The sound change leading to X' in the remaining languages would then be a shared common innovation

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[9]   See Weiss 2020: 493–495 for an overview.
[10]   Whether a certain feature of a language is an archaism or an innovation is sometimes difficult to ascertain. See, for example, the detailed discussions about the position of Anatolian and a careful evaluation of the potential archaisms and innovations of this branch in Melchert forthcoming; Rieken 2009; Eichner 2015.

of these languages. Unless the sound change is trivial in nature, this scenario is more economical than assuming that all remaining languages underwent the same sound change independently.

B. SHARED INNOVATIONS IN FORM: If a zoonym X in one language branch a is different from the etymologically related zoonym X' in the remaining languages by exhibiting morphology that seems more archaic, it might be evidence of an early split-off of language branch a. The remodelling of X' in the remaining languages would then be a shared common innovation of these languages.

C. SHARED INNOVATIONS IN MEANING: If a zoonym X in one language branch a has a different meaning 'X' from the etymologically related zoonym X with a meaning 'Y' in the remaining languages whereby the change of 'X' to 'Y' or the other way round is not trivial, it might be evidence of an early split-off of language branch a. The semantic change 'X' >> 'Y' in the remaining languages would then be a shared common innovation of these languages.

D. SHARED INNOVATIONS IN LEXICON: If for a meaning 'Z' one language branch a has a zoonym X but the remaining languages all have an etymologically unrelated zoonym Y, it might be evidence of an early split-off of language branch a. The lexical replacement X >> Y for 'Z' in the remaining languages would then be a shared common innovation of these languages.

It must be stressed from the outset that shared innovations in the latter two dimensions are rather unreliable, since semantic change on the one hand and lexical replacement on the other rarely follow strict systematic rules and are seldom non-trivial. Evidence from phonology is much more useful, especially when it pertains to weird and typologically rare sound changes. The more idiosyncratic a specific change, the less likely it is to have occurred independently. Morphological innovations are generally considered the best indicator for genetic subgrouping, as changes in this component are typically least predictable.[11] As a rule, a combination of shared phonological and morphological traits therefore proves to be most felicitous in establishing a linguistic phylogeny.

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[11] See, for instance, Drinka 1993: 414; Clackson 2007: 6.

The goal of this contribution is quite modest. Outlining a fine-grained diversification of the family tree would not be possible based on zoonyms alone. I will therefore limit myself to trying to establish whether animal names furnish evidence to corroborate an early split-off hypothesis of the Anatolian branch, as this bifurcation is the most widely accepted amongst scholars of Indo-European linguistics.[12] In order to refer to the individual proto-languages at the consecutive stages I will employ the terminology proposed by Olander (2019), in particular the terms "Proto-Indo-European" or "PIE" (proto-language of all the Indo-European languages), "Proto-Indo-Tocharian" or "PIT" (proto-language of the remaining 11 branches[13] after the split-off of Anatolian), and "Proto-Indo-Celtic" or "PIC" (proto-language of the remaining 10 branches after the split-off of Tocharian that is generally[14] – though not universally[15] – assumed to be the second one to branch off). I will examine one significant and much-discussed example for each mentioned scenario. The example for A will be *$h_2\acute{r}t\hat{k}o$- 'bear' (Hitt. ḫartakka-) vs. *$h_2\acute{r}\hat{k}\dot{p}o$- (Ved. ŕkṣa-, Gk. ἄρκτος, Lat. ursus, OIr. art, etc.), for B the u-stem *$h_1\acute{e}\hat{k}u$- 'horse' (Hitt. ANŠE.KUR.RA-uš /ekkus/) vs. thematic *$h_1\acute{e}\hat{k}\underline{u}o$- (Ved. áśva-, Lat. equus, etc.), for C the alleged case of *$u\bar{l}k^wo$- > Luw. walwa/i- 'lion' vs. Ved. vŕka-, Lith. vil̃kas, etc., all 'wolf', and for D the potential replacement of Proto-Indo-European *ulp- 'wolf' by Proto-Indo-Tocharian *$u\bar{l}k^wo$- 'dangerous one' > 'wolf'. All examples will be examined carefully to assess their validity for the proposed scenarios.

2. Phonology – the word for 'bear'

In terms of phonological innovations, the most intriguing zoonym in PIE is the word for 'bear'.[16] It is attested (directly or indirectly through

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[12] The question is how much earlier the Anatolian languages branched off: only somewhat earlier (e.g., a couple of centuries) or long enough to warrant a veritable Indo-Hittite proto-language (with Anatolian and Indo-European being sister clades). Personally, I prefer the former hypothesis; see Höfler 2018 for a weighing of the evidence regarding the stem class of neuter s-stems.

[13] I count Indic and Iranian as well as Baltic and Slavic as individual branches for descriptive purposes, thereby not contesting the communis opinio, however, that they constitute sub-entities of two larger branches, viz. Indo-Iranian and Balto-Slavic, respectively.

[14] This chronological order was entertained, for example, by Schindler (apud Eichner 2015: 12 note 5).

[15] See, for instance, Malzahn 2017.

[16] See NIL 343–345. For a recent and very thorough discussion of the word for 'bear' in all branches of Indo-European see Blažek 2017.

a potential derivative) in almost every branch except for Germanic, Slavic, and (presumably) Tocharian: Hitt. *ḫartakka-*, Ved. *ŕ̥kṣa-*, YAv. *arša-*, Pers. *xirs*, Gk. ἄρκτος (f.), Lat. *ursus*, OIr. *art*, Welsh *arth*, Arm. *arǰ*, OAlb. *ar* all continue the simplex; in Lithuanian we find *irštvà* f. 'bear's den', an apparent derivative of $^{(*)}$*iršas* that might still be attested in the phrase *piktas kaip iršas* 'angry as an *iršas*'.[17]

Prior to the discovery and the subsequent decipherment of Hittite, the sound correspondence Ved. *-kṣ-* ~ Av. *-š-* ~ Gk. *-κτ-* ~ Lat. **-ks-* (*ursus* < **orksos*) in this and a handful of other words (e.g., Ved. *tákṣan-* ~ Av. *tašan-* ~ Gk. τέκτων 'carpenter' ~ Lat. *texere* 'fit together, weave') used to be explained by assuming a '*thorn* cluster', i.e., a cluster of a (palato-, labio-, or plain) velar stop followed by a dental fricative **þ*.[18] Accordingly, the 'bear' word was set up as **ŕ̥ḱþo-* (thus, for instance, in IEW: 875; in laryngealistic terms **h₂ŕ̥ḱþo-*) and the root of the 'carpenter' as **teḱþ-*. The correspondence set Ved. *kṣám-* ~ Gk. χθών ~ Lat. *humus* furnished evidence for the voiced-aspirated counterpart **ĝʰþ* (or **ĝʰðʰ*) qua **ĝʰþóm-* 'earth'.

The discovery of Anatolian, however, has challenged this view. The word for 'earth' is attested in Hittite as nom. sg. *tēkan*, gen. *taknaš*, which has led to a revised reconstruction of the word as an ablauting *m*-stem nom. sg. **dʰéĝʰōm*, gen. **dʰĝʰm-él/ós*,[19] i.e., with the dental and the palato-velar in reverse order. Tocharian, too, exhibits a dental plus velar cluster in the word for 'earth' (A *tkaṃ*, B *keṃ* < **dʰĝʰom-*).[20] This suggests that thorn clusters started out as tautosyllabic sequences of a dental and a dorsal stop (**-TK-*) that were preserved in Hittite and Tocharian but metathesized to **-KP-* in the other Indo-European

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[17] See the discussion in Derksen 2015: 204 *s.v. irštva* (with references).

[18] The most important study of thorn clusters is still Schindler 1977 (but see note 24); see also the careful discussion in Mayrhofer 1986: 150–158; Melchert 2003; Ringe 2010. Kloekhorst's (2014b) scenario (i.e., that there never was a thorn cluster, but that all languages treated an inherited PIE **-TK-* cluster in their own way, either by preservation [Anatolian], simplification [Balto-Slavic, Albanian, etc.], metathesis [Greek, Celtic], or else) seems a little uneconomical and, in my view, lacks convincing arguments. A recent paper focusing on the phonetics behind (pre- and post-metathesis) thorn clusters is Jasanoff 2018.

[19] See NIL 88–89 note 1 (with reference to Schindler).

[20] See Ringe 2010: 334; Adams 2013: 205 *s.v. keṃ*; Adams 2017: 9–10 for the details. Adams (2017: 11–13) interprets Toch. B *tarkāntsa* 'carpenter' as the Tocharian B continuant of PIE **tétḱon-* (with **-tḱ-* > *-rk-*).

daughter languages.[21] This dichotomy between Anatolian and Tocharian on the one hand, and the remaining branches on the other, lends itself to a chronological interpretation of the phenomenon. Instead of assuming that the ten remaining branches each developed a metathesis in *-TK- clusters independently, the more economical hypothesis would be to interpret the thorn metathesis as a common innovation of Proto-Indo-Celtic after Anatolian and Tocharian had left the family.[22] The PIE word for 'bear' can therefore be reconstructed as *$h_2\acute{r}tk\hat{o}$- (reflected by Hitt. ḫartakka- /ḫartka-/), which after the secession of Anatolian and Tocharian underwent metathesis to *$h_2\acute{r}\hat{k}bo$- (reflected by Ved. $\acute{r}k\d{s}a$-, Gk. ἄρκτος, Lat. ursus, etc.).[23] Note that the syllabification of this word needs to have been *$h_2\acute{r}.tk\hat{o}$- (and *$h_2\acute{r}.\hat{k}bo$-, respectively) for the thorn cluster to be in tautosyllabic position.[24] This might look counterintuitive at first glance, but since *tk- (*$\hat{k}b$-) was a possible word onset in PIE (and PIC) as shown, for instance, by the root *$\sqrt{tk\acute{e}i}$ > *$\sqrt{\hat{k}b\acute{e}i}$ 'settle' (Ved. $k\d{s}\acute{e}ti$, Gk. κτίζω, Lat. situs, etc.), it follows that it must have also been a possible syllable onset.[25]

The exact phonetic reality behind *-$K\!B$- is a matter of debate. Scholars today are quite certain that the second element was not actually a thorn (i.e., a dental fricative) as proposed by the Neogrammarians.[26] Since the

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[21] Sceptical Melchert 1994: 64; Melchert forthcoming. Kloekhorst (2014b: 51, 65), on the other hand, believes that Anatolian preserves *-TK- clusters intact, but that the further developments of *-TK- in the remaining branches are language-specific and do not point to a common *-KB- stage of non-Anatolian Indo-European (see note 18).

[22] So, for example, Mayrhofer 1986: 158; Ringe 2010; Jasanoff 2018: 138.

[23] If the word were attested in Tocharian, we would expect the pre-metathesis continuant of *$h_2\acute{r}tk\hat{o}$- to have given TB *artke. Blažek (2017: 174) proposes that this form is attested through a derivative, namely TB artkye 'abundant (?)'. As a semantic parallel, Blažek draws the attention to late Sanskrit lexicographers who attest a meaning 'best, most excellent' for $\acute{r}k\d{s}a$-. However, see Adams (2013: 25 s.v. artkiye n. '±abundance') and Peyrot (2020) for alternative suggestions regarding artkye.

[24] Schindler (1977: 33–34), a proponent of 'thorn' as a PIE phenomenon, set up two underlying stem allomorphs of the word for 'bear' with different syllabifications to explain the difference between non-metathesized (°$t.\hat{k}$°) and metathesized (°$.t\hat{k}$° > °$.\hat{k}b$°) outcomes: (1) *$h_2rt.\hat{k}o$- (Hitt. ḫartakka-), (2) *$h_2ar.tk\hat{o}$- > *$h_2ar.\hat{k}bo$- (since according to Schindler, OIr. art, Welsh arth presuppose a full grade; but on the development of *#$H\d{R}C$ in Celtic see now Zair 2012: 34–38), and a third quasi-compromise between (1) and (2), viz. (3) *$h_2r\hat{k}bo$- (Ved. $\acute{r}k\d{s}a$-, etc.). This elaborate scenario becomes unnecessary if one accepts the viable alternative of a chronological difference between *$h_2\acute{r}tk\hat{o}$-and *$h_2\acute{r}\hat{k}bo$-.

[25] Differently, however, Byrd 2015: 70.

[26] But note already Brugmann (1897: 790): "die Zeichen þ und đ sind nur ein Notbehelf."

daughter languages realize the second element of the cluster as either a sibilant (Ved. -*kṣ*-, Lat. *-*ks*-) or a dental stop (Gk. -κτ-, PCelt. *-*xt*-), recent suggestions have identified it as a dental affricate (*-*TK*- > *-*TsK*- > *-*KTs*-; cf. Melchert 2003; Byrd 2015: 24) or – with convincing arguments – as a palatalized dental (*-*TK*- > *-*T⁽ʲ⁾K⁽ʲ⁾*-[27] > *-*KTʲ*-; cf. Jasanoff 2018). For our purposes, the exact phonetics behind the sound change are of lesser concern. Whatever it was, the metathesis in and of itself is not a trivial change that could easily have happened independently in the individual branches, nor is *-*KÞ*- the predictable outcome of a cluster *-*TK*-. In addition, while metatheses generally are a sporadic phenomenon, the thorn metathesis affected all tautosyllabic *-*TK*- clusters throughout the language.[28] It can therefore be used as evidence for phylogenetic subgrouping and fittingly draws a line between Anatolian and Tocharian on the one hand, and the remaining ten branches on the other.

Apart from being an adequate example for a shared non-trivial innovation of Proto-Indo-Celtic, the 'bear' is also an apt illustration of the warning issued in the previous section that retained archaisms cannot be used for subgrouping. As Kümmel (2018) argues, the anlauting *x*-/x/ in Persian *xirs* 'bear' is the reflex of **h₂*-, preserved in some varieties of Western Iranian as *x*- or *h*-. Compare Middle Persian (MP) *xā́yag* 'egg' (**h₂ōu̯io-°*), MP *xām* 'raw' (**h₂oh₂mó*-; cf. Av. *āma*-), MP *hesm* 'firewood' (**h₂eidʰsmo*-; cf. Av. *aēsma*-), etc. In view of the almost ubiquitous loss of any word-initial and word-internal laryngeal in almost all other languages, this archaism is indeed stunning. The only language branch that systematically preserves a consonantal reflex of word-initial **h₂* in general and in **h₂ŕ̥tk̂o*- in particular is Anatolian (Hitt. *ḫartakka*-). However, it would be fallacious to embrace the idea of a closer connection of Western Iranian to the Anatolian branch based on this shared trait. The retention of such an archaism might be an intriguing feature, but it is not diagnostic of phylogenetic closeness.

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[27] Jasanoff 2018: 138: "The input to the metathesis was either *TʲKʲ* or some other point on the phonetic continuum delimited by *TʲK* (with more salient palatalization at the beginning of the cluster) and *TKʲ* (with more salient palatalization at the end)." On Luwian *inzagān* see Melchert 2003; but also Jasanoff 2018: 139 and Simon 2020 (translating it as 'rake (?)' and refuting an etymological connection with the 'earth' word) with an in-depth discussion of the previous scholarship.

[28] At least from looking at Hitt. *ḫartakka*- alone one cannot rule out, however, that an already PIE thorn metathesis in ***h₂ŕ̥tk̂o*- > **h₂ŕ̥k̂þo*- was again undone in Anatolian by speakers who recognized a suffix *-k̂o*- associated with zoonyms (as in Lat. *iuuen-cu-s* 'young bull', etc.), as proposed by Eichner 2015: 16 note 17.

3. Morphology – the word for 'horse'

There is arguably no animal more closely associated with the Proto-Indo-Europeans than the horse. As residents of the Eurasian steppe, the speakers of PIE were probably one of the first people to tame and domesticate the wild horse sometime in the 5th or 4th millennium BCE.[29] The word is attested – directly or indirectly – in every branch of Indo-European except for Slavic. The continuants include Hitt. *ekku-, CLuw. *azzu-, HLuw. á-zú-, Lycian esb(e/i)-, Ved. áśva-, YAv. aspa-, OPers. asa-, Greek ἵππος, Mycen. i-qo,[30] Lat. equus, Venet. acc. sg. ekvon, OIr. ech, MW *eb (in cyf-eb 'in foal', eb-awl 'foal'), Gaul. PN Epo-redorix, Goth. *aihs (in aihva-tundi f. 'bramble'), OE eoh, ON jór, Toch. B yakwe, A yuk, Arm. ēš 'donkey', Lith. ašvà f. 'mare', OPruss. aswinan 'mare's milk', Alb. sasë 'horsetail rush, Equisetum'.[31] All these forms can be traced back to *h₁éku- or *h₁éku̯o-. The u-stem *h₁éku- seems to be limited to Anatolian, whereas all other languages require or are in line with a thematic masculine *h₁éku̯o-.

In Hittite, 'horse' is never spelled out but always written in sumerograms ANŠE.KUR.RA(HI.A/MEŠ) (literally 'donkey of the mountain(s)'). Sometimes, however, the scribes made use of phonetic complements to indicate case endings, thereby revealing a u-stem inflection. Compare the nom. sg. ANŠE.KUR.RA-uš (OS; OH/NS) and the acc. sg. ANŠE.

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[29] See now Librado, Khan, Fages et al. 2021.

[30] The form ἵππος (instead of *ἔπ(π)ος), Myc. i-qo is still somewhat of a mystery. Explanations range from setting up a different preform for Greek alone (Bozzone 2013: *h₁ík̯uo- > *h₁ək̯uo- > *h₁ikku̯o- > /híppos/, implying two sound changes: (1) *ə > Gk. i [as in πίτνημι 'spread out' < *pₐtnéh₂mi], (2) *h₁i- > *h₁ʲi- > Gk. hi- [as in ἵημι 'I send' < *h₁i-h₁i̯eh₁-mi, for which, however, see Peters 1976]; similarly de Vaan 2009) to changing the etymon completely (e.g., *sík-u̯o- 'pacer' as per Klingenschmitt 2008: 407 note 5). This, however, would mean to separate the source of Gk. ἵππος formally from the etymon *h₁éku̯o-, which all other languages point to. Incidentally, the builder of the Trojan horse in Homer is named Ἐπειός, which might preserve the expected Gk. outcome *ἔπ(π)ος. The anlauting h- of ἵππος would then be secondary, as suggested independently by names such as Ἄλκιππος (cf. Bechtel 1917: 221–225). I therefore assume that Gk. ἵππος, Myc. i-qo shows a dialectal raising of a sequence *-eTu̯V- to *-iTu̯V-. This sound change could also be extant in Homeric (traditionally labelled Aeolic) πίσυρες 'four' from *ku̯etu̯ores (vs. Att. τέτταρες, Ion. τέσσερες, Dor. τέτορες, Lesb. πέσ(σ)υρες, Boeot. πέτταρες). Note that the explanation of πίσυρες as reflecting a variant with schwa secundum (*ku̯ₐtu̯ores) would separate this form from the continuants in all other dialects which go back to *ku̯etu̯ores. The discussion of further evidence for this sound change will have to await a separate occasion.

[31] For all these forms cf. NIL 230–233. Alb. sasë is sometimes interpreted as a compound with *h₁éku̯o-° as its first member (see NIL 231 note 1 with references).

KUR.RA^HI.A-*un* (OH/NS).[32] The situation is similar in Cuneiform Luwian, where we have one attestation of a nom. sg. ANŠE.KUR.RA-*uš*.[33] In Hieroglyphic Luwian, however, we find not only a similarly written nom. sg. (ANIMAL)EQUUS-*sa*$_4$, and an acc. sg. (EQUUS) *zú-na*, but also a fully spelled-out dat.-loc. sg. (EQUUS.ANIMAL)*á-zú-wa/i* /azzuwi/, and a dat.-loc. pl. (EQUUS)*á-zú-wa/i-za* /azzuwanz/,[34] indicating that the Luwian word indeed was *azzu-*, the regular outcome of PIE *$h_1éḱu$-*.

To account for the discrepancy between the *u*-stem in Anatolian and the thematic stem elsewhere, Kloekhorst (2008: 10) writes:

> There is no known phonological development through which PIE *$h_1eḱu̯o$-* could yield PAnat. *$h_1eḱu$-* and in view of the productivity of the *o*-stem inflection in Anatolian it is unlikely that PIE *$h_1éḱu̯o$-* would have yielded PAnat. *$h_1éḱu$-* through secondary developments. We therefore must conclude that the PAnat. *u*-stem *$h_1éḱu$-* reflects the original state of affairs and that the thematicization as visible in the non-Anatolian IE languages (which is a trivial development) must be regarded as a common innovation of them.

Instead of assuming that the *u*-stem was thematized in each of the remaining eleven branches independently, it would seem more economical to hypothesize that this thematization happened only once in the predecessor of these eleven branches, i.e., at a time when the Anatolian branch had already split off.[35]

But at closer inspection, this is not the best possible interpretation. It is disfavored by the following factors. For one thing, thematization of nouns in Proto-Indo-Tocharian is not a trivial process. Unlike what the above-mentioned quote would suggest, there is no systematic transfer of *u*-stems to the thematic declension in PIT (because if so, there would be no *u*-stems in Indo-Tocharian). Instead, Anatolian *u*-stems systematically correspond to Indo-Tocharian *u*-stems: compare adjectives like

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[32] For the attestations cf. Kloekhorst 2008: 237–238 *s.v.* *ekku-*. The other attested case forms gen. sg. ANŠE.KUR.RA-*aš* (OS), acc. pl. ANŠE.KUR.RA^MEŠ-*uš* (NS) are inconclusive in terms of underlying stem class.

[33] The dat.-loc. pl. *azzuwanza* might belong here, but the meaning of this word is uncertain. See Melchert 1993: 44 *s.v. azzu(wa)-* and 286 *s.v.* ANŠE.KUR.RA.

[34] For the attestations cf. Sasseville & Yakubovich (2017).

[35] Similarly de Vaan 2009: 198 ("[The thematization of the word for 'horse'] is one of the common innovations of the Indo-European dialects that remained a linguistic unity for some time after Proto-Anatolian split off, and one of the indications for the correctness of the Indo-Hittite hypothesis"); Beekes 2010: 598; Kloekhorst 2014b: 56; Kloekhorst & Pronk 2019: 4.

Hitt. *panku-* 'all, entire' (: Ved. *bahú-* 'many, much, numerous', παχύς 'thick'), substantives such as Hitt. *ḫaššu-* c. 'king' (: Av. *ahu-* 'lord', ON *áss* 'god'), or neuters such as Hitt. *genu-* 'knee' (: Ved. *jā́nu-*, Gk. γόνυ, Lat. *genū*, etc.).

In general, we cannot observe any large-scale transfer of nouns from athematic to thematic inflection at any stage of PIE or PIT.[36] When thematization of athematic nouns does happen, it is an *einzelsprachlich* phenomenon and viable only if there is phonological overlap of case endings (in so-called *Scharnierform*s). As such, it is not limited to post-Anatolian branches of Indo-Tocharian, but occurs in Hittite as well, where the (post-consonantal) athematic acc. sg. ending **-m̥* fell together with the thematic acc. sg. ending **-o-m* as Hitt. *-an*,[37] thus opening the door for inflectional fluctuations.[38] Something similar happened in Vedic where the ending **-m̥ > *-a* was recharacterized by *-m* as Ved. *-am* and fell together with thematic *-am < *-o-m*. As a result, both languages independently exhibit what one could call a sporadic "thematization" of consonant stems. Compare Old Hittite *pā́t-*, *pat-* c.

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[36] The statement in de Vaan 2009: 199 ("The thematization attested outside Anatolian did not change the meaning 'horse', and is therefore best interpreted as the result of a formal reanalysis. Thematization of athematic nouns took place at a larger scale in the prehistory of many Indo-European nouns [sic?]. Well-known examples include the agent noun suffix **-ter-/-tr-* versus the instrument noun suffix **-tro-*, and Hittite *huu̯ant-* 'wind' < **h₂uh₁ent-* vs. Sanskrit *vā́ta-* [...] < **h₂ueh₁nto-*.") is misleading: if **-tro-* is a formal reanalysis of **-ter-*, why does the former create neuter instrument nouns and the latter masculine agent nouns? In addition, **-ter-* and **-tro-* formations are often attested side by side (ἀροτήρ m. 'plower' : ἄροτρον n. 'plow', etc.), which excludes the possibility that one is the replacement of the other. On 'wind' see note 69 below.

[37] What here and below is only spelled out for the acc. sg. is, of course, equally true of the acc. pl.

[38] It is, however, somewhat arbitrary to identify the etymon of Hitt. *ḫuḫḫa-* c. 'grandfather', CLuw. *ḫūḫa-*, Lyc. χuga, Lat. *auus*, etc. as a root noun **h₂éu̯h₂-s*, gen. sg. **h₂uh₂-ós* that would have been thematized independently in Hittite (**h₂uh₂-ó-*), Luwian (**h₂éu̯h₂-o/eh₂-*) and PIT (**h₂éu̯h₂-o-*), as done by Kloekhorst (2008: 110 and 353; followed by de Vaan 2008: 66), simply by virtue of the alternation Hitt. *-ḫḫ-* : Luw. *-ḫ-* that seems to imply initial vs. final stress. In a kinship term, the generalization of the vocative intonation as initial stress is a well-attested phenomenon (cf. Gk. μήτηρ vs. Ved. *mātár-*, PGmc. **mōdēr*) and can explain the Luwian form better than the baseless reconstruction of a root noun. Alternatively, one may reconstruct (as per Sasseville 2021a and Schneider & Steer 2021) an ablauting **-h₂-*stem **h₂éu̯h₂-eh₂-*, **h₂uh₂-éh₂-*. Note that the decisive role that thematization of athematic stems seems to play in Kloekhorst's account of the 'horse' is somewhat undermined by the fact that he uses it so liberally as an explanatory device in the prehistory of Hittite and Luwian.

(acc. sg. GÌR-*an* [OH/NS]) and New Hittite *pata-* c. 'foot'[39] and Ved. *pád-* m. (acc. sg. *pádam*) and *páda-* 'foot'.[40] This metaplasm, however, is not a universal development. In Baltic, where *-ṃ* gave *-im* and fell together with the *i*-stem acc. sg. *-i-m*, consonant stems are not "thematized" but remade as *i*-stems instead. Compare, for instance, the *i*-stem Lith. *žvėrìs*, Latv. *zvêrs*, OPruss. acc. pl. *swīrins* 'animal' vis-à-vis the root noun Gk. θήρ, Lesb. φήρ 'beast'.[41] And in Gothic, the inherited root noun **fōt-* 'foot' became a *u*-stem Goth. *fotus* based on case forms like acc. sg. *fotu* < PGmc. **fōtun* < **pōd-ṃ*.[42] Such a phenomenon remains sporadic unless (as in the case of consonant stems in Baltic) the whole category is moribund.[43]

When it comes to PIT *u*-stems (and, in a parallel fashion, *i*-stems), a thematization of the suffix **-u-* (and **-i-*) and its allomorph **-eu̯-* (and **-ei̯-*) to precisely **-u̯-o-* (and **-i̯-o-*) would not only be highly unexpected. Apart from the 'horse' word under debate, I am not aware of any examples that could be interpreted in such a way in any of the daughter languages. The thematization of athematic (or, more precisely, consonant) stems that we see in some individual languages, and which is made possible by largely *einzelsprachlich* (or at least post-PIE or post-PIT) sound developments, can therefore not be used to explain a purported PIT change of **h₁éku̯-* to **h₁éku̯o-*.[44]

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[39] See Kloekhorst 2008: 653–654; Hoffner & Melchert 2008: 82 note 34.

[40] Cf. EWAia II: 77f.

[41] Cf. Larsson 2001: 53–54.

[42] See Casaretto 2004: 42; Griepentrog 1995: 153–183 for the development of the root noun in the Germanic branch.

[43] Cf. Thöny 2013.

[44] A different route is followed by de Vaan (2009: 199–201): based on theories developed by Beekes and Kortlandt, he assumes that thematic stems in general arose from a reanalysis of a "hysterodynamic" genitive/ablative ending **-ós* as a new nominative, rooted in the belief "that at an earlier, Pre-Indo-European stage, the genitive/ablative could also function as an ergative case, indicating the agent of transitive verbs. […] When the nominative-accusative system of PIE arose, the genitive/ablative ending **-s* was reinterpreted as a nominative ending with animate nouns" (ibid. 199); **h₁éku̯os* would, according to de Vaan (ibid. 200–201), go back to a "hysterodynamic" gen. sg. **h₁ku̯ós* reinterpreted as a new nom. sg. **h₁ku̯ós*, in which the accented full grade in the root was introduced from the nom. sg. **h₁éku̯-* (notabene the precise form de Vaan claims it replaces) in all languages except for Greek where **h₁ku̯o-* > ἵππος (see also note 30). But the reservations brought forth above remain valid also for this account: why was 'horse' the only *u*-stem affected by this reanalysis? And even if the alleged "thematization" of the 'horse' could be explained in this fashion, one would still need another type of "thematization" to account for allegedly "thematized" neuters like **i̯ug-ó-* n. (see note 69), which cannot go back to a reanalysed gen./abl. **i̯ugós*.

In purely descriptive terms, however, there exists a "thematization" of athematic stems in PIE (and PIT) and it is in fact well attested. But this only applies if "thematization" is understood as a derivational process rather than as a functionless inflectional extension. As such, this process derives adjectives from substantives by adding *-ó- to the stem (or, one of the stems) of the base word.[45] Examples of this derivational mechanism can easily be adduced: compare *léu̯k-es- n. 'light' (Av. *rao-cah-* n. 'light, day', Ved. *rókas-* n.) → *luk-s-ó- 'having light' (Ved. *rukṣá-* 'shining'), or Gk. ἔρυμα n. 'fence, defence, guard' (*-mn̥) → Gk. ἐρυμνός 'fenced, fortified, strong' (*-mn-ó-). For *u*-stem bases, one can cite *módʰu-, *médʰu- n. 'alcohol' (Toch. B *mot*,[46] Ved. *mádhu-*, Gk. μέθυ, OIr. *mid*, MW *medd*, etc.) → *medʰu̯-ó- 'having alcohol' (OIr. *medb* 'intoxicating', MW *meddw* 'intoxicated'[47]), or *k̂óru-, *k̂éru- n. 'horn' (cf. Av. *sruu̯ā-* 'horn', Gk. κορυ(-)δός 'crested lark', PGmc. *heru(-)taz 'hart') → *k̂r̥u̯-ó- 'having horns' (MW *carw* 'stag'; with a new full grade Lat. *ceruus* m. 'stag' < *k̂eru̯o-).[48]

The fundamental drawback of this finding for the interpretation of *h₁ék̂u̯o- as a thematized *h₁ék̂u- is that there is no change in meaning between the Anatolian 'horse' and the Indo-Tocharian 'horse'. If the *u*-stem *h₁ék̂u- meant 'horse', the thematic *h₁ék̂u̯o- would have to mean 'having a horse', but it doesn't. On the other hand, if *h₁ék̂u̯o- meant horse, the *u*-stem *h₁ék̂u- reflected by Hitt. *ekku-, Luw. *azzu-* would have to mean something other than 'horse', yet it doesn't. Both *h₁ék̂u- (Hitt. *ekku-, Luw. *azzu-*) and *h₁ék̂u̯o- (Ved. *áśva-*, YAv. *aspa-*, Lat. *equus*, etc.) simply mean 'horse'. Of course, this does not exclude the possibility of analyzing *h₁ék̂u̯o- as a possessive derivative based on a *u*-stem *h₁ék̂u- denoting some property characteristic of a horse, it only excludes (in any plausible way, at least) that the latter is what is reflected by Hitt. *ekku-, Luw. *azzu-* 'horse'.

Indeed, according to Schindler,[49] *h₁ék̂u̯o- goes back to precisely such a possessive formation, viz. *h₁(e)k̂-u-ó- 'having swiftness', derived from an acrostatic *u*-stem *h₁ók̂-u, *h₁ék̂-u- 'swiftness' (preserved as the first member *h₁k̂-u-° in the compound Lat. *acu-pedius* 'swift-footed';

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[45] See Höfler 2015: 220–226 for an overview (with references).
[46] Cf. Peters 1997[2002]: 104.
[47] Cf. Meid 2009: 90.
[48] Cf. Nussbaum 1986: 1–18.
[49] Cf. Schindler 1984 (an unpublished handout, the knowledge of which I owe to Martin Peters), and Schindler *apud* Balles (1997: 221 note 8).

furthermore the basis – in one way or another[50] – of the adjective *$h_x\bar{o}(h_x)\hat{k}\acute{u}$- (vel sim.) 'swift' > Ved. $\bar{a}\acute{s}\acute{u}$-, Gk. ὠκύς, Lat. comp. $\bar{o}cior$, OW *di-auc* 'lazy') and substantivized by accent retraction. If this interpretation is correct (and indeed, it does seem to have gained some acceptance[51]), it would mean that to uphold the idea of Hitt. *ekku- and Luw. *azzu- 'horse' continuing a PIE *u*-stem, we would have to conclude that the adjectival abstract *$h_1\acute{o}\hat{k}$-*u*, *$h_1\acute{e}\hat{k}$-*u*- 'swiftness' was inherited into Anatolian and only there developed a metaphorical meaning 'horse', while in Proto-Indo-Tocharian it served as the derivational base for an exocentric derivative 'swift' that came to be substantivized as the word for 'horse'. This hypothesis is, of course, not very attractive.

Slightly better and a little more refined is the idea that both the Anatolian and the Indo-Tocharian 'horse' are possessive derivatives of the acrostatic *u*-stem *$h_1\acute{o}\hat{k}$-*u*, *$h_1\acute{e}\hat{k}$-*u*- 'swiftness'; the latter in the manner described above (i.e., via *$h_1(e)\hat{k}$-*u*-*ó*- 'having swiftness'), while the former would constitute an internally (i.e., without overt suffixation) derived adjective, ideally of proterokinetic inflection, quasi *$h_1\acute{e}\hat{k}$-*u*-, *$h_1\hat{k}$-*éu*- 'having swiftness' (cf. *dlóu̯k-*u*-, *dléu̯k-*u*- 'sweetness' → *dléu̯k-*u*-, *dluk-éu̯- 'sweet' > Gk. γλυκύς, Lat. *dulcis*[52]), of which Anatolian would have generalized the strong stem allomorph. The Anatolian 'horse' *$h_1\acute{e}\hat{k}u$- and the Indo-Tocharian 'horse' *$h_1\acute{e}\hat{k}u̯o$- would then be isofunctional derivatives of *$h_1\acute{o}\hat{k}$-*u*- 'swiftness', one older and internally derived (*$h_1\acute{o}\hat{k}$-*u*-,*$h_1\acute{e}\hat{k}$-*u*- → *$h_1\acute{e}\hat{k}$-*u*-, *$h_1\hat{k}$-*éu̯*-) and one more recent and externally derived (*$h_1\acute{o}\hat{k}$-*u*-,*$h_1\acute{e}\hat{k}$-*u*- → *$h_1(e)\hat{k}$-*u̯*-*ó*-). Compare the existence of both an internally derived Gk. γλυκύς (< *dléu̯k-*u*-, *dluk-éu̯- 'sweet') and an externally derived Gk. γλυκκός (< *dluk-*u̯*-*ó*- 'sweet'; cf. γλυκκόν· γλυκύ Hsch.) within Greek.

This scenario requires us to assume that at some stage of post-Anatolian Proto-Indo-Tocharian, the speakers had an old word for 'horse', *$h_1\acute{e}\hat{k}u$-, that they still analysed as 'swifty' (i.e., as being derived

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[50] There are a number of different explanations available for this adjective, viz. (1) reflecting a different root structure *$h_{1/3}eh_{3/1}\hat{k}$-*u*- (and *$h_{1/3}\acute{o}h_{3/1}\hat{k}$-*u*- n. 'swiftness' → *$h_{1/3}h_{3/1}\hat{k}$-*u*-*ó*- > *$h_1\hat{k}$-*u*-*ó*- → *$h_1\acute{e}\hat{k}u̯o$-; see below), or (2) continuing a compound *$(h_2)o$-$h_1\hat{k}$-*u*- 'having swiftness to it', or (3) a reduplicated formation *h_1o-$h_1\hat{k}$-*u*- (see also note 56), or (4) representing a formation with $\bar{o}$-grade *$h_1\bar{o}\hat{k}$-*u*- 'swift' (cf. *$m\bar{o}lu$- 'black' > Gk. μῶλυ n. 'black garlic'?). See NIL 200–201 note 1 for a discussion of options (1) and (2).

[51] See, for example, Balles 1997: 221 note 8; Schaffner 2001: 150; Neri 2003: 71 note 168; Lipp 2009 I: 75; Hackstein 2013: 99–100; Opfermann 2017.

[52] Compare *krótu-, *krétu- 'power' (cf. Ved. krátu- m., Av. xratu- m. 'magical power') → *krétu-, *kr̥t-éu̯- 'having power' (Gk. κρατύς, -έος 'strong').

from the *u*-stem *$h_1ók$-u, *$h_1ék$-u- 'swiftness'), and that they decided (for whatever reason) to re-derive a new word from the underlying *u*-stem abstract that had the same meaning, 'swifty', but was created by a different morphological process (overt suffixation and subsequent accent retraction).[53] This is a rather complicated, albeit not entirely implausible scenario. To be sure, there must have been a time when these two ways of forming denominal possessives (i.e., the internal and the external mechanism) existed side by side, with the external option slowly gaining ground, so that there were a certain number of isofunctional doublets (as, for example, Av. *raocah*- adj. 'light' < *$leu̯k$-és- vs. Ved. *rukṣá*- 'bright' < *luk-s-ó-; both derived from an *s*-stem *$léu̯k$-es- n. 'light'; cf. also Gk. γλυκύς and γλυκκός from above) that potentially encouraged a re-derivation of internally derived adjectives from their underlying bases by use of overt suffixes (such as *-ó-). What complicates the matter slightly is that despite having arguably been the fully lexicalized PIE and PIT standard word for 'horse' for some time, we must assume that the formation *$h_1ék$u- was still transparent enough for the speakers of Proto-Indo-Tocharian to perform such a re-derivation. Another drawback to this analysis is that while the above-mentioned example of an internally derived *s*-stem simplex adjective (Av. *raocah*- adj. 'light' < *$leu̯k$-és-) belongs to a residual class that nowhere shows any signs of productivity, the *u*-stems (both substantival and adjectival) are a well-established class in most ancient IE languages. It is therefore quite difficult to justify the motivation for replacing a perfectly fine *$h_1ék$u- 'swift' (and/or 'horse') by its isofunctional counterpart *$h_1(e)k̑$uó- 'swift' (and/or *$h_1ék̑$u̯o- 'horse').[54]

One last complication that has only been skated over so far concerns the probability of the reconstruction of an adjective *$h_1ék̑$u- 'swift' (the purported source of PAnat. *ek̑u- 'horse') in the first place. Strictly speaking, there is only evidence for a *$h_xō(h_x)k̑ú$- (vel sim.) 'swift' (as in Ved. *āśú*-, Gk. ὠκύς, Lat. comp. *ōcior*, OW *di-auc* 'lazy'). This form,

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[53] A similar situation is probably behind the group of words for 'hedgehog' that seem to be derived from a word for 'snake' by means of different suffixes (*$h_1eg̑^hi$-h_1no- > Gk. ἐχῖνος; *$h_1eg̑^hi$-lo- > PGmc. *igilaz, *$h_1eg̑^hi$-i̯o- > Lith. *ežỹs*, OCS *ježь*), suggesting similar isofunctional re-derivations of a formation that was still interpretable as 'snake-y' (i.e., a homage to the fact that hedgehogs are gifted snake killers).

[54] Kloekhorst 2008: 239; de Vaan 2009: 201; Kloekhorst 2014b: 56 depart from an idiosyncratic "hysterodynamic" *u*-stem of the Leiden model with a nom. sg. *$h_1ék̑$-u(-s), acc. sg. *$h_1k̑$-éu̯-m̥, gen. sg. *$h_1k̑$-u̯-ós. I fail to understand, however, the benefit of this reconstruction for the explanation of the attested forms.

however, is hardly reconcilable with a purported *$h_1ék̂u$- 'swift', unless one invokes a series of additional hypotheses, all of which would be hard to argue for based on the attested facts alone. One would have to explain the unique substitution of a well-formed *$h_1ék̂u$- 'swift' (the evidence for which is limited to the etymological interpretation of the alleged PIE *$h_1ék̂u$- and PIT *$h_1ék̂u̯o$- 'horse') by an ō-grade *$h_1ōk̂ú$- or a reduplicated *h_1o-$h_1k̂$-u-[55], neither of which is easy to account for morphologically.[56]

Note that the explanation of the 'horse' as derived from the *abstract* 'swiftness' does not encounter these problems: starting from a root *$\sqrt{h_1ek̂}$ and an abstract *$h_1ók̂u$- 'swiftness', the adjective can be interpreted as a compound *$(h_2)o$-$h_1k̂u$- 'having swiftness to it' (see note 50). Departing from a different root altogether, namely *$\sqrt{h_1eh_3k̂}$ or *$\sqrt{h_3eh_1k̂}$ (again see note 50) with an adjective *$h_{1/3}eh_{3/1}k̂$-$ú$- and an abstract *$h_{1/3}óh_{3/1}k̂u$-, it seems natural to assume that in the expected possessive derivative *$h_{1/3}h_{3/1}k̂u̯$-$ó$- 'swift', *h_3 (in whichever position) was lost through expected cluster reduction to give *$h_1k̂u̯$-$ó$-, which was then substantivized to *$h_1ék̂u̯o$-.

All attempts to justify the existence of a PIE *$h_1ék̂u$- 'horse' next to a PIT *$h_1ék̂u̯o$- 'horse' therefore require costly assumptions and a concatenation of uneconomical hypotheses, and should be considered in earnest only if there is no other explanation available. But in fact, there is a more convincing alternative at hand to account for the *u*-stem in Hitt. *ekku*-, Luw. *azzu*- 'horse'. One could assume (as indeed has been done, among others, by Starke 1995: 120; Sasseville 2017) that an already PIE *$h_1ék̂u̯o$- 'horse' was inherited into Anatolian and only on the way to Hittite and Luwian was remade into a *u*-stem. The reason for this could be phonological, as a sporadic syncope of -(*u*)*wa*- sequences to -*u*- is a common phenomenon in both Hittite (cf. *šanḫuwanzi* ~ *šanḫunzi* 'they roast', *kuwaliu*- ~ *kuliu*- 'blue (?)', etc.[57]) and Luwian (cf. *wanattiš* ~ *unattiš* 'woman', *walipna/i*- ~ *ulipna/i*- 'wolf'[58]). For this to work for Hitt. *ekku*-, Luw. *azzu*- 'horse', we need to assume that the syncope of -(*u*)*wa*- to -*u*- happened in the nom. sg. *$ék̂waš$ > *$ék̂uš$ already in Proto-Anatolian and led to a reclassification as a *u*-stem, which is, however, not a very attractive hypothesis given that this

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[55] Kloekhorst 2008: 239; de Vaan 2008: 424.

[56] But see Kloekhorst 2008: 224 for a potential formal parallel *h_1o-h_1s-u- 'good' > Hitt. *āššu*-.

[57] See Melchert 1984: 52–53; Melchert 1994: 173; Rieken 2001.

[58] See Melchert 1994: 276.

syncope is a synchronic phenomenon in both Hittite and Luwian and leads to a situation where syncopated and unsyncopated forms occur alongside each other and "do not seem to show any particular chronological distribution" (Melchert 1984: 53 for Hittite).

The alternative to this phonological scenario is to consider an analogical origin for the *u*-stem. While in the above-mentioned examples phonological overlap of certain case endings ("*Scharnierform*s") led to a thematization of consonant stems in Indo-Iranian, the reverse effect (a "de-thematization") seemingly resulted in a transfer of certain former thematic stems to an athematic inflection in Hittite. A clear example are the Old Hittite (OH) adjectives in *-zz(i)ya-* (< *-*t̯io*-) that merge with *i*-stems on the way to New Hittite (NH), e.g., OH *ḫantezziya-* 'in front, first' > NH *ḫantezzi-*.[59] Though this development was probably aided by the fact that *-(i)ya-* sequences, too, undergo a sporadic syncope to *-i-*,[60] the main factor that paved the way for the change in stem class was certainly the fact that the case endings of (*sc.* non-ablauting) *i*-stems and thematic stems in *-iya-* are identical in all cases of the paradigm except for the nom. and acc. sg.[61] The same is true, *mutatis mutandis*, for consonant stems in *-il-* and *-ul-* and thematic stems in *-ila-*, *-ula-*; in fact, according to Rieken (2008), the extraordinarily large group of consonant stems in *-il-* and *-ul-* in Hittite finds an explanation by assuming that they represent former thematic stems (i.e., formations in *-*i-lo*-* and *-*u-lo*-) that had been "de-thematized" already in pre-Hittite times.[62] It is not difficult to see that a similar scenario would work for non-ablauting *u*-stems and thematic stems in *-wa-* as well.[63] They, too, share the same set of endings outside the nom. and acc. sg.

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[59] Cf. Melchert 1984: 58f.; Kloekhorst 2008: 264 and 292. A similar origin has been claimed for Hitt. *tuzzi-* c. 'army, camp' < *teut̯io-* 'belonging to the people' (cf. Eichner *apud* Hoffmann 1968: 215 note 11). The arguments brought forth by Melchert (1984: 166) against a former *tuzziya-* are not conclusive; we merely have to assume that the reclassification as an *i*-stem happened early enough for the *i*-stem to be able to serve as the basis of a denominal verb *tuzziya-* 'to encamp'.

[60] Cf. Melchert 1984: 58–59; Melchert 1994: 173.

[61] So Melchert *apud* Kloekhorst 2008: 264.

[62] Rieken (2008: 247–253) departs from a sophisticated scenario of phonological changes (viz. a syncope in the nom. and acc. *sg.* *-í/úlos*, *-í/úlom* to *-í/úls*, *-í/úlm* and subsequent cluster simplification). See also the comments in Melchert 2014: 209–210.

[63] This explanation might also apply to seemingly denominal *u*-stems with possessive semantics – a type that lacks a parallel outside Hittite – such as *ma/iliddu-* 'sweet' (as if *mlit-u-*, but perhaps better *mlit-u̯ó-*).

in both Hittite and in Luwian,[64] and this situation probably goes back to Proto-Anatolian. Given these premises, it is not hard to imagine that the inherited thematic word for 'horse' *eḱwa- was transformed into a u-stem *eḱu- already in Proto-Anatolian, nor is it unthinkable – given the predictability of the process – that this transformation happened independently in the respective prehistories of Hittite and Luwian.[65] The latter option is actually made somewhat more plausible when an up-to-now neglected Anatolian continuant of *h₁éḱu(o)- is added to the discussion, namely Lycian esb(e/i)- 'horse', which according to Sasseville (2017) and Schürr (2019: 564–565) also continues the thematic stem. The only case form securely attested (apart from the poss. adj. nom. sg. c. esbehi) is the abl./instr. esbedi with the ending -edi matching other former thematic stems.[66] On the other hand, it has been argued that esbedi and esbehi need to be segmented as esb-edi, -ehi with -edi, -ehi simply reflecting the expected endings (cf. the CLuw. counterparts -āti and -ašša/i-) and esb- continuing the u-stem PAnat. *eḱu- (or rather *eḱu̯-).[67] At present, our knowledge about the synchronic nominal system of Lycian and its diachronic developments is too limited to ascertain definitively the (former) stem class of the Lycian substantive.[68] For our purposes, however, either option would be in line with the two scenarios outline above: a (former) u-stem esb- would confirm that the remodelling of the stem in *-wa- to *-u- happened already in Proto-Anatolian; a (former) thematic stem esbe/i-, on the other hand, would virtually guarantee that the Hittite and the Luwian u-inflection are secondary. Either way, Anatolian can indeed have inherited a thematic

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[64] Cf. Starke 1990: 35, 78, 89.

[65] A typological parallel is found in Gothic, where masculine stems in *-wa- are reclassified as u-stems due to phonological overlap of several case endings (see Casaretto 2004: 159). I thank Riccardo Ginevra for this parallel.

[66] Cf. Hajnal 1994: 141 note 14.

[67] So Kloekhorst 2008: 239; de Vaan 2009: 198; but cf. also already Starke 1995: 118–119. Hajnal (1995: 140–141 with note 14; 156) notes that a gen. adj. in -ahi and an abl./instr. in -adi are indicative of an a-stem, while -ehi and -edi are ambiguous: they can either belong to a thematic stem or go back to *-ahi, *-adi with e/i-umlaut. A further possibility is that -ehi and -edi were taken over analogically from the thematic stems just like, e.g., the dat. sg. ending -i. See now also Norbruis (forthcoming) who argues for esbi- and against *esbe- and *esb-.

[68] But see Schürr 2019: 564–565 with convincing arguments against the assumption of a u-stem Lyc. *esu and 565–566 for a detailed discussion of possible hippophoric place names in the area.

*$h_1ék̂u̯o$- of PIE age. The consequence of this is that the word cannot be used to demonstrate an early split-off of Anatolian.[69]

4. Semantics and Lexicon – the word for 'wolf'

The third case study, the word for 'wolf', serves as a potential example for a shared innovation in both semantics and the lexicon. The word *$u̯ĺk̂^wo$- is represented by Ved. *vŕka*-, Av. *vəhrka*-, Pers. *gorg*, Lith. *vil̃kas*, Latv. *vìlks*, OCS *vlьkъ*, Czech *vlk*, Gk. λύκος, Lat. *lupus*,[70] PGmc. *wulfaz* (Goth. *wulfs*, ON *úlfr*, OE *wulf*, OHG *wolf*),[71] Alb. *ujk*, Toch. B *walkwe*, but it is missing from Anatolian, at least in a meaning 'wolf'. It has been claimed, however (first by Lehrman 1978; see also Lehrman 1989), that *$u̯ĺk̂^wo$- lives on in CLuw. *walwa(li)*- 'lion' (which was subsequently equated with Lyd. *walwe*- by Wallace 1986), and some have contended (e.g., Mallory & Adams 2006: 138) that the meaning 'lion' is the original one. One could therefore hypothesize that PIE *$u̯ĺk̂^wo$- in the first instance meant 'lion' (reflected by CLuw. *walwa(li)*-) and that Proto-Indo-Tocharian shifted the meaning of the word to 'wolf', preserved in Toch. B *walkwe*, Ved. *vŕka*-, and so on.

   Kloekhorst (2008: 951), however, levelled criticism against the assertion of a CLuw. *walwa(li)*- 'lion' for being based on weak evidence:

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[69] The other two alleged examples of a Proto-Indo-Tocharian thematization of athematic stems cited by Kloekhorst & Pronk (2019: 4) are not conclusive either. The first one is PIE *$i̯éu̯g$- 'yoke' (Hitt. *yūk*- n.) vs. PIT *$i̯ug-ó$- 'yoke' (Ved. *yugá*-, Gk. ζυγόν, etc.). Since Hittite preserves the latter as well (Hitt. *yuka*- n.), it is perhaps preferable to assume two independent formations in PIE, a neuter root noun *$i̯éu̯g$- or *$i̯úg$- (this cannot be reflected, *pace* Kloekhorst 2014a: 503, by the masculine Ved. *yúj*- 'yoke fellow'; see Rieken 1999: 62) and an oxytone thematic neuter *$i̯ug-ó$- with similar semantics. See also Nussbaum 2017: 251. Nothing is won by alleging that Hitt. *yūk*- was thematized to *yuka*- within Hittite itself. The second example is PIE *h_2uh_1-ent- 'wind' (Hitt. *ḫuwant*- c.) vs. PIT *$h_2ueh_1n̥t-o$- 'wind' (Ved. *vā́ta*-, Lat. *uentus*, etc.). Again, the alleged thematization is only a chimera: the formation *h_2uh_1-ent- is attested in Gk. ἀείς, ἀέντος 'blowing (of winds)' and nothing suggests that *$h_2ueh_1n̥t-o$- is a thematized substitution of this *h_2uh_1-ent- rather than just an independent formation or (more likely) a derivative (on which cf. Lipp 2009 II: 142–143; Neri 2016: 16). See also the cautious remarks in Eichner 2015: 17–18.

[70] A loan from a Sabellic language with (taboo-motivated?) metathesis, similar to Gk. λύκος. The *gens Ulpia* (best known from the emperor Trajan who was born as *Marcus Ulpius Traianus*), originally from Umbria, might be derived from the non-metathesized Umbrian word for 'wolf'.

[71] PGmc. *wulfaz* for expected *wulhwaz* is explained as the product of a sporadic assimilation process similar to *fimfe* for *finhwe* < *$pénk^we$ 'five' (so Kroonen 2013: 140 and 598), but see note 88. The labiovelar is preserved in the feminine ON *ylgr* < *$u̯l̥k^wíh_2s$.

walwa(/i)- is only attested as an element in names and according to him, it cannot be unambiguously identified as the spelled-out version of UR.MAḪ 'lion'. While this scepticism has subsequently been countered with rebuttal by Melchert & Yakubovich (2013: 313, referring to Hawkins) and by Oettinger (2014: 312 with note 25)[72] who draws attention to the fact that Lyd. *walwe-* is found on several coins in combination with a lion's head (see also Dale 2015 especially 162–163; Sasseville 2021b), the phonological reservations of Kloekhorst's criticism seem substantial: *$-k^w$- is not expected to yield Luw. -*w*- in this position, at least judging from the example he mentions, namely CLuw. *papparkuwa-* 'to cleanse' < *prk^w- (cf. Hitt. *parkui-* 'pure, clean'), representing a comparable phonological context.

However, with Hitt. *tarku-*, CLuw. *taru-* 'dance' < *$terk^w$- 'twist' (cf. Lat. *torquēre*) and Hitt. *šākuwa-*, CLuw. *tāwa/i-* 'eye' < *$sók^wo$- 'seeing' (?) (cf. Goth. *saihvan* 'see', etc.), there are two famous examples that seem to guarantee a change *$-k^w$- > PAnat. *$-g^w$- (> Luw. -*w*-) in medial position.[73] In addition, the assertion that Luw. *walwa(/i)-* contains *$-k^w$- (and not simply *$-u$-) is all but guaranteed by the hybrid Luwo-Hittite personal name ᵐ*Ura-walkui-* in an attractive interpretation as 'big lion' (cf. HLuw. MAGNUS-LEO- = *$Ura-walwi$-).[74] The element is also extant in the names *Walkuwa-*, *Walkui-*, which might just mean 'Lion' (quasi *Leo*).[75] The reconstruction of a PAnat. *$walk^wa$-, *$walg^wa$- 'lion' seems therefore unavoidable.

Postulating a simple chronological difference between an alleged PIE *ulk^wo- 'lion' and a PIT *ulk^wo- 'wolf' is, however, not very attractive. In principle, nothing precludes that the original meaning was 'wolf' rather than 'lion' and that Anatolian innovated on its part. The change 'wolf' > 'lion' is just as plausible (or implausible, for that matter) as a change 'lion' > 'wolf'. In fact, if we assume a PIE "*Urheimat*" somewhere in the Pontic Steppe, we can be quite certain that the speakers of PIE did not come in close contact with lions. Even though the historical habitat of the lion stretched north until the Caucasus, it did not reach beyond this mountain range. Anatolia, on the other hand, was populated

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[72] See now also the discussion in Bauer 2021.

[73] See the discussion in Melchert 1994: 61 and 360 (refuted by Kloekhorst 2008: 843), and now also Sasseville & Rieken 2021 ("the labio-velar was lenited in Proto-Anatolian perhaps following a heavy accented syllable").

[74] See Oettinger 2014: 313 with reference to Melchert for the hybrid nature of the formation.

[75] See Lehrman 1978: 229.

by lions up until the late 19th century. If anything, this favours the view that the speakers of Anatolian re-used an old word for 'wolf' to designate a hitherto unknown and unnamed large predator. Of course, it does not really help this scenario that wolves are quite common in Anatolia up to this day, which makes the repurposing of an old word for 'wolf' rather unattractive.

In addition, the historical phonology of Anatolian renders this account almost impossible. Judging from examples like Hitt. *ūrki-* c. 'track, trace' (*$\mathring{u}_r g$-i-), Hitt. *ḫulana-* c. 'wool' (*h_2ulh_1n-°) Hitt. *ḫurkil-* n. 'perversity', CLuw. gen. adj. acc. pl. c. *ḫurkilaššinza* 'id.' (*$h_2\mathring{u}_r g/\hat{g}^{(h)}$-°), the expected Proto-Anatolian outcome of a PIE *$\mathring{u}l\acute{k}^w o$- should have been *$ulk^w a$- (or *$ulg^w a$-, see above) and not *$walk^w a$- (*$walg^w a$-).[76] Melchert's (1994: 127) scenario of complementary sandhi variants (-C# #uRC- *vs.* -V# #wR̥C-) that would have been generalized in different ways (i.e., the post-consonantal variant for all above-mentioned words and the post-vocalic variant only in the word for 'lion') is hardly convincing. Keeping in mind the problems that an identification of *$walk^w a$- (*$walg^w a$-) 'lion' and *$\mathring{u}l\acute{k}^w o$- 'wolf' poses on the semantic side, we might prefer to take up a suggestion made by Oettinger (2014: 313) that the Anatolian forms in reality reflect a different ablaut grade in the root.[77] Indeed, a thematic stem with an *o*-grade *$\mathring{u}olk^w o$- would explain the Anatolian facts effortlessly and it can be accounted for on a formal level, too.

Lehrman (1978: 228–230) connected PIE *$\mathring{u}l\acute{k}^w o$- 'wolf' etymologically with the adjective Ved. *avṛká-* 'safe', which lends itself to an interpretation as a compound with a meaning 'not *vṛká-*', implying a simplex *vṛká-* 'harmful, dangerous (vel sim.)'. The same element seems to be extant in *vṛkátāt-* 'danger (?)', though this abstract is a *hapax* at RV 2.34.9 and could rather mean 'wolfishness (vel sim.)'. In any event, PIE *$\mathring{u}l\acute{k}^w o$- 'wolf' may be analysed as a substantivized adjective 'the dangerous one', derived through accent retraction (see above) from an underlying *$\mathring{u}lk^w\acute{o}$- 'dangerous' (~ Ved. *vṛká-* 'harmful, dangerous (vel sim.)'). The latter might even be directly attested in OIr. *olc* 'evil, bad, wrong', reflecting a strangely vocalized *$ulk^w o$- < *$\mathring{u}lk^w\acute{o}$- (instead

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[76] See Melchert 1994: 55–56 and 126.

[77] Oettinger himself (2014: 313) argues for an internal derivative (*$\mathring{u}lk^w$-o- → *$\mathring{u}olk^w$-o-) with "Zugehörigkeitsbedeutung" for Luwian, but for a collective *$\mathring{u}olk^w$-$\acute{e}(i)$ 'pack of wolves' for Lyd. *walwe-*.

of expected *$\mathit{\mathring{u}lik^w o}$-), which is reminiscent of OIr. *olann* f. 'wool' < *$\mathit{*ulan\bar{a}}$ instead of *$\mathit{*\mathring{u}lan\bar{a}}$ (cf. MW *gwlan* 'id.') from *$\mathit{*h_2u\mathring{l}h_1néh_2}$-.[78]

If the underlying root *$\mathit{*\sqrt{u̯elk^w}}$ 'harmful, dangerous' had an adjectival profile similar to *$\mathit{*\sqrt{(h_1)reu̯d^h}}$ 'red' and *$\mathit{*\sqrt{leu̯k}}$ 'bright', we would not be too surprised to find a zero-grade thematic adjective *$\mathit{*\mathring{u}lk^w-ó}$- of the likes we see in *$\mathit{*h_1rud^h-ó}$- (Lith. *rùdas*) and *$\mathit{*luk-ó}$- (Ved. *rucá-*) next to a synonymous *o*-grade adjective *$\mathit{*u̯olk^w-o}$- parallel to *$\mathit{*h_1roud^h-o}$- (PGmc. *$\mathit{*raudaz}$) and *$\mathit{*lou̯k-o}$- (Lith. *laûkas*). In fact, this *$\mathit{*u̯olk^w-o}$- 'dangerous, harmful' might not only be the source of the ostensible taboo term PAnat. *$\mathit{*walk^wa}$-, *$\mathit{*walg^wa}$- 'lion' (qua 'dangerous one'), it might also underlie the Hittite word *walkuwa-* c. that is found in two separate texts, of which only one – the Old Hittite tale of the city Zalpa (KBo 22.2) – furnishes enough context to allow a determination of its meaning. After giving birth to 30 sons, the Queen of Zalpa asks [k]*ī=wa kuit walkuwan ḫāšḫun* 'What is this *walkuwa-* that I have born?' Since Otten's (1972) edition of the text, *walkuwa-* has been interpreted as 'bad omen, portentous thing' and it is easy to see how this meaning could have developed from a substantivization of an adjective 'dangerous, harmful'.[79] To distinguish the 'lion' word from this formation, one could even surmise that the former represents an inner-Anatolian substantivization of the adjective *$\mathit{*u̯olk^w-ó}$- 'monstrous' (the type *$\mathit{*\hat{k}ok-ó}$- > Ved. *śāká-* 'mighty'), while the latter continues an inherited corresponding abstract *$\mathit{*u̯ólk^w-o}$- m. 'monstrosity' (: *$\mathit{*\hat{k}ók-o}$- > Ved. *śā́ka-* m. 'might').[80]

In this light, the (probably) taboo-motivated use of a substantivized adjective meaning 'dangerous, harmful' in both PIE and Proto-Anatolian to refer to a large predator (the 'wolf' here and the 'lion' there) seems entirely plausible.[81] In fact, the respective analyses of the two terms seem to substantiate each other's plausibility reciprocally: if an adjective derived from *$\mathit{*\sqrt{u̯elk^w}}$ 'harmful, dangerous' was able to

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[78] For the phonology, see McCone 1985.

[79] The other passage KBo 3.40b+ breaks off right after the acc. sg. *walkuwan* (cf. Kloekhorst 2008: 950–951).

[80] Others, however, have translated 'mob' (Hoffner & Melchert 2008: 351 [2×]) or '(unerwünschte) Brut; Bande, Horde' (Tischler 2016: 270–271 *s.v. walkuwa(n)-*; with references) instead, in which case the word may be unrelated to the zoonyms (or together may point to the verbal root mentioned in note 82). Tischler (*loc.cit.*) connects Lat. *uolgus* n. 'the common people'. Sasseville & Rieken 2021, however, defend the meaning 'monstrosity'.

[81] Cf. as a parallel PGmc. *$\mathit{*berō(n)}$- 'the brown one' and PSlav. *$\mathit{*medvědъ}$ 'honey-eater', replacing the inherited word for 'bear'.

serve as the term for a predator in PIE, it seems very likely that the avatar of another adjective of the same root could serve as the term for a different predator in Proto-Anatolian. There is thus no need and, indeed, no reason to assume that the Anatolian word for 'lion' represents an example of semantic change, be it from 'lion' to 'wolf' in Proto-Indo-Tocharian, or from PIE 'wolf' to Proto-Anatolian 'lion'.[82]

The only question that this raises, however, is whether it is a plausible scenario to assume that Proto-Anatolian had both an *ulk^wa-, *ulg^wa- 'wolf' (inherited from PIE *$u\acute{l}k^wo$- but subsequently apparently lost) and a *$walk^wa$-, *$walg^wa$- 'lion' (newly created within Proto-Anatolian). The latter presupposes the existence of an inherited adjective *$u̯olk^w$-ó-, which might have still been close enough to the continuant of *$u̯l̥k^wo$- to allow the speakers an interpretation of the latter as 'dangerous one'. It is questionable whether this association would have encouraged rather than prevented the creation of a superficially very similar formation PAnat. *$walk^wa$-, *$walg^wa$- 'dangerous one' > 'lion' for the purpose of naming a different animal. In other words, it might be worthwhile to ask ourselves whether Anatolian did in fact inherit a word *$u̯l̥k^wo$- in the meaning 'wolf' from PIE in the first place. There are some clues at hand that indicate that it did not.

The word for 'wolf' in Hittite is usually written in sumerograms as UR.BAR.RA. As with the 'horse' discussed earlier, we sometimes find phonetic complements attached to it as in dat. sg. UR.BAR.RA-*ni*. These forms indicate that the stem of the word ended either in -*n*- or -*na*-, which has led to the identification of UR.BAR.RA-*n(a)*- with *ulip(a)n(a)*-, a word referring to some kind of predator in other texts. The attested forms of this word present a couple of difficulties on their own:[83] the acc. sg. *ulipanan* (NH) is ambiguous in terms of stem class of the underlying word, as is the nom. pl. (or sg.?) *ú-li-ip-ni-eš*. The nom. sg. *ú-li-ip-za-aš(-ša-an)* (NH), on the other hand, looks like an error for *$^*ú$-li-ip-pa¹-aš* and could, then, represent an *n*-stem nom. sg. (cf. *ḫārāš* 'eagle' quasi *$h_3érōn$+s; acc. sg. *ḫāranan*). In this case,

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[82] Picking up on a long-forgotten idea by de Saussure, Stiles (2022) has now identified the root of the 'wolf' (quite convincingly in my view) with the verbal root underlying Gothic *wilwan* 'to seize, snatch; plunder'. This novel analysis as a verbal rather than an adjectival root does not really change anything about the interpretation of the forms presented here; the morphology of both *$u̯olk^w$-ó- and *$u̯l̥k^w$-ó- 'marauding, rapacious' fits well with other deverbal and typically agentive derivatives (cf. Nussbaum 2017).

[83] Cf. Tischler 2010 *s.v.*; Watkins 1972; Rieken 2021. According to the latter (following Melchert), the word is a Luwian borrowing in Hittite. See also note 89.

however, it would be remarkable that the form is spelled with a gem-inate *p* while the two other instances point to a lenis consonant. Rieken (2021) therefore prefers to read *ú-li-ip-naʾ-aš*, i.e., a stem in *-na-* (*ulipna-*). The latter is also presupposed by the Cuneiform-Luwian cognate *ulipn(i)-/walipn(i)-* 'wolf'.[84] If the identification is correct, it follows that Anatolian either replaced the inherited PIE word *u̯l̥kʷo-* 'wolf' by a new term, or that it did not inherit such a word at all. While the former scenario would constitute an obvious but inconspic-uous case of lexical replacement, the latter would potentially entail the conjecture that PIE did not possess a *u̯l̥kʷo-* in the meaning 'wolf' at the time the Anatolian branch split off. Hittite *ulip(a)n(a)-* might, then, reflect the original PIE word for 'wolf', which was replaced in Proto-Indo-Tocharian by the taboo term *u̯l̥kʷo-* 'dangerous one'. Under this scenario, the lexical replacement of the word for 'wolf' would reflect the phylogenetic position of Anatolian on the language tree.[85]

In purely theoretical terms, neither scenario would seem superior or more plausible than its alternative unless it could be shown that Hitt. *ulip(a)n(a)-* does in fact continue an older word for 'wolf'. And indeed, the term looks suspiciously similar to another PIE zoonym *u̯l̥p-* that is found in a number of animal names denoting different types of pred-ators: compare Lat. *uolpēs/uulpēs*, gen. sg. *uolpis* f. 'fox', Av. *urupi-* m. 'marten', *raopi-* m. 'fox',[86] Lith. *vilpišỹs* m. 'wildcat', and Middle Persian *gurbag* 'cat' < *u̯l̥paka-*. Against this backdrop, Hitt. *ulip(a)n(a)-* could be interpreted as either *u̯l̥p-ōn-* or *u̯l̥p-no-*.[87] This *n-* (or *-no-*) stem, however, is somewhat difficult to reconcile with the variety of suffixes (*-(e)i-*, *-i-k̂-°*, *-(o)-ko-*) that the other languages point to. There is no indication that the Anatolian *n-* (or *-no-*) stem is in any way more pristine than the *i*-stem seen in Latin and Avestan, nor is it in fact likely that words for smaller predators such as 'fox', 'marten',

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[84] Cf. Melchert 1993 *s.v.* *walipna/i-/ ulipna/i-*; Rieken 2021.

[85] This assertion would, of course, be challenged if it could be shown definitively that the terms *Lukkā, Luwiya, Λύκιοι* are derivatives of *u̯l̥kʷo-* in a meaning 'wolf'. See the recent discussion in Eichner (2016) but also the criticism in Schürr (2021 [2022]).

[86] With metathesis. On the Avestan words cf. de Vaan 2000.

[87] Was there a lenition of *u̯l̥p-* to PAnat. *u̯lb-* similar to *u̯olkʷo-* > PAnat. *walgʷa-* (see above)? In any event, the *i*-vowel in *ulip(a)n(a)-* < *u̯l̥p-no-* might be anaptyctic, similar to *ulkiššara-* 'skilled, experienced, able' < *u̯l̥k-s-ró-* 'having power' (cf. *u̯élk-os n.* '(miraculous) power' in OAv. *varəcah-* n. 'energy', Ved. *várcas-* 'splendor, esteem', *varco-dhā́-* 'bestowing vigor'; *u̯l̥k-s-u̯ó-* 'having (miraculous) power' > OCS *vlъxvъ* 'wizard'; see Schaffner 2019: 173 note 60 with reference to Klingenschmitt).

'wildcat' continue or were derived from an earlier word for 'wolf' that was supposedly placed under a taboo. Intriguing as this scenario might be, at present it cannot be substantiated.[88] The mere fact, however, that Anatolian continues a different word for 'wolf' than the remaining languages, while it uses similar lexical material and a parallel naming motivation to designate the 'lion' that the other branches employ to refer to the 'wolf', might be counted as a noteworthy feature that sets Anatolian apart from the rest of the languages, though its diagnostic value is of course limited.

5. Conclusion

Zoonyms constitute a very stable and certainly quite important part of the core lexicon and can therefore play a significant role in ascertaining archaisms and innovations on several levels. The word for 'bear' *$h_2ŕt$-ko-, for instance, is one of the most widely attested words containing a tautosyllabic *-$tk̂$- sequence, which is preserved in Anatolian (Hitt. *ḫar-takka*-) and Tocharian (where the word for 'bear' is not preserved) but was metathesized to a so-called thorn cluster in the remaining branches (*$h_2ŕtk̂o$- > *$h_2ŕk̂þo$-). As such, it can be regarded as an important piece in the discussion of phonological changes that purportedly divide Anatolian (and Tocharian) from the rest of the family.

The word for 'horse' has sometimes been claimed to represent an example of morphological change. Hitt. *ekku*- and Luw. *azzu*- are thought by some to continue a PIE *u*-stem *$h_1ék̂u$-, which was subsequently thematized in Proto-Indo-Tocharian to give *$h_1ék̂uo$- (Ved. *áśva*-, Lat. *equus*, etc.). This postulation, however, runs into a plethora

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[88] It is tempting to assume that PIE had a word *$ul̥po$- 'wolf' (enlarged by a *-$n(o)$-suffix in Anatolian) that in PIT underwent a taboo deformation of the root-final consonant to *$ul̥k^wo$-, which incidentally also had a lexical meaning (viz. 'dangerous, rapacious one'). There are innumerable instances of taboo deformations that only affect one phoneme of the base, compare the expletives *Gosh!* for *God!*, *Shoot!* for *Shit!*, Germ. *Scheibe!* for *Scheiße!*, or, from PIE times, the different continuants of the word for 'tongue': *$dn̥ĝ^huel_2$- (OLat. *dingua*, PGmc. *tungō*-), *$d^hn̥ĝ^huel_2$- (Osc. acc. sg. **fangvam**), *$tn̥ĝ^huel_2$-(t-) (OIr. *tengae*), *$ln̥ĝ^huel_2$- (Lat. *lingua*, Arm. *lezow*, Lith. *liežùvis*; independently remodelled after *lingere, lizem, liežti* 'lick'), *$n̥ĝ^hu(e)l_2$- (OPruss. *insuwis*, PSlav. *$ęzy$-$k̄$), *$siĝ^huel_2$- (Av. *hizuuā*-), *$Giĝ^huel_2$- (Ved. *jihvā́*-). Note, that *$ul̥po$- would directly give PGmc. *wulfaz* 'wolf' (see also note 71). It is still not clear, however, how the 'fox' and '(wild)cat' words would have to be interpreted formally and semantically under this account. Lastly, for all we know, Hitt. *ulip(a)n(a)*-, CLuw. *walipna/i-/ulipna/i*- might just as well have denoted the 'fox' and the Hittite word behind UR.BAR.RA-*n(a)*- could be an entirely different etymon ending in -*n(a)*-.

of difficulties as I have tried to show in Section 3. The converse development seems therefore preferable: Proto-Anatolian inherited a thematic *$h_1ék̂uo$- (perhaps preserved in Lyc. *esb(e/i)*-), which was reanalysed as a *u*-stem in Hittite and Luwian, possibly through a combination of inflectional overlap of stems in *-u- and *-wa- in all cases except for the nom. and acc. sg., and a general tendency towards syncope of *-(u)wa- sequences to *-u- in these two languages. Even though changes in morphology are generally the best indicator for phylogenetic subgrouping, the word for 'horse' does not lend itself to such a purpose.

Lastly, the word for 'wolf' was scrutinized as a possible example for both semantic and lexical change. The supposition that the PIE word *$u̯l̥k̂^wo$- originally meant 'lion' and is continued in this meaning in Hitt. *walkuwa/i*-, Luw. *walwa/i*-, Lyd. *walwe*-, while Proto-Indo-Tocharian underwent a semantic shift from 'lion' to 'wolf', could not be substantiated, nor could, in fact, the converse scenario, i.e., that PIE *$u̯l̥k̂^wo$- 'wolf' shifted to 'lion' only in Anatolian. The formal interpretation of *$u̯l̥k̂^wo$- as a substantivization of the adjective *$u̯l̥k̂^wó$- (OIr. *olc* 'evil, bad', Ved. *a-vr̥ká-* 'safe') paved the way for analyzing PAnat. *$walk^wa$-, *$walg^wa$- 'lion' as a similar albeit not identical formation, namely the substantivization of an adjective *$u̯olk^wo$- based on the same root *√$u̯elk^w$ 'harmful' (or 'rapacious'; see note 82). Since Anatolian exhibits a different word for 'wolf', however, viz. Hitt. UR.BAR.RA-*n(a)*- (= Hitt. *ulip(a)n(a)*-, Luw. *walipna/i-/ulipna/i-?*), which is reminiscent of certain words for 'fox' (Lat. *uolpēs*, Av. *raopi-*) and '(wild)cat' (Lith. *vilpišȳs*, Middle Persian *gurbag*) in the other branches, one last speculation was entertained according to which Anatolian would preserve an older word for 'wolf' (*$u̯l̥p$-), which was replaced by the taboo formation *$u̯l̥k̂^wo$- 'dangerous one' after the split-off of the Anatolian branch in Proto-Indo-Tocharian. However, this scenario was deemed inconclusive, as it cannot be demonstrated beyond doubt that PAnat. *ulip(a)n(a)*- really continues an archaic PIE word for 'wolf'.[89]

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[89] After the completion of this manuscript, I learned that Elisabeth Rieken (2021) analyzes Hitt. *ulipna*- 'wolf' as a loan from Luw. *ulipn(i)-/walipn(i)*- 'id.'. She derives the latter (see also Sasseville & Rieken 2021) from the root *√$u̯elk^w$ (i.e., the same as in Luw. *walwa(li)*- 'lion', Hitt. *walkuwa*- 'monstrosity') as PAnat. *$u̯Elg^w-no$- (E being either *e or *o) > *$u̯Elu̯no$- > *$u̯Elβno$- > (with *i*-anaptyxis) *ulipn(i)*-. In that case, the alleged connection with *$u̯l̥p$- would be no longer tenable and the Anatolian branch would likewise continue the PIE 'wolf' word derived from the root *√$u̯elk^w$ (albeit with different morphology).

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