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Indo-Slavic lexical isoglosses and the prehistoric dispersal of Indo-Iranian

Palmér, A.I.

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3. Lexical isoglosses shared by Indo-Iranian and Balto-Slavic

3.1. Introduction

In this chapter, potential lexical isoglosses shared by Indo-Iranian and Balto-Slavic proposed by Schmidt (1872), Meillet (1926), Arntz (1933), and Porzig (1954) are compiled and evaluated etymologically. Additionally, Derksen's Baltic (2015) and Slavic (2008) etymological dictionaries, as well as Fraenkel's LEW (1962), have been mined for potential exclusive isoglosses with Indo-Iranian.

All potential isoglosses are evaluated based on three criteria (summarized in Table 1): 1) Indo-Slavic exclusivity, 2) validity of the etymology, 3) likelihood of being a shared innovation.

The first criterion is fulfilled if the etymon in question is not found in any Indo-European branch other than Indo-Iranian and Balto-Slavic. If there is a potential cognate in another branch, which cannot be explained away, but for formal or semantic reasons is not a compelling cognate to the Indo-Iranian-Balto-Slavic words, the Indo-Slavic exclusivity is classified as uncertain. If the isogloss is shared with another branch, or must be reconstructed for another branch as the basis for an attested derivative, the isogloss is non-exclusive and is rejected.

The second criterion is fulfilled if the words forming the lexical isogloss are formally and semantically compelling cognates, i.e., if they are plausibly inherited from a common source. If there are indications that this is not the case, the isogloss is classified as doubtful or rejected.

The third and arguably most important criterion is whether the isogloss in question is a plausible shared innovation. As discussed in Chapter 2, in most cases it is difficult to determine with a high level of confidence whether isoglosses are shared innovations, archaisms, or independent innovations, either because other branches may have lost them (lack of *identifiability*) or because the *ancestral state* cannot be determined (or a combination of both). The result is that most isoglosses are classified as possible shared innovations. However, if an Indo-Slavic isogloss can be shown to reflect an innovative state

vis-à-vis an ancestral state attested in other branches, it is classified as a plausible shared innovation. If there are compelling reasons to assume that an isogloss is an archaism or independent innovation, it is classified as a rejected shared innovation.

To allow the reader to get a quick overview of a given potential isogloss, the three criteria are treated independently as much as possible, even though they are often interdependent. For example, the etymology of **b^hag-o-* 'god' (cf. 3.5.1) is classified as *rejected*, since the Indo-Iranian and Slavic forms are not regular cognates. However, since there are no compelling arguments against a shared innovation per se, the shared innovation criterion is classified as *possible*. In reality, of course, the etymology criterion must be fulfilled for an isogloss to be considered compelling. Inevitably, the criteria sometimes intersect, since, e.g., indications that a proposed isogloss reflects independent innovations in the branches may lead to the etymology being classified as doubtful or rejected.

The potential lexical isoglosses are further classified according to type. The typological categories are:

1) borrowing (shared borrowings from known or unknown source)
2) nominal derivation (shared nominal derivatives from inherited roots)
3) verbal derivation (shared verbal derivatives from inherited roots)
4) root (shared root without shared derivatives)
5) semantics (shared semantics in a root or derivative)

The material is grouped into four sections. Etyma that fulfil the exclusivity and etymology criteria are classified as compelling isoglosses. These are subdivided into plausible and possible shared innovations (sections 3.2–3.3). Etyma for which the exclusivity is uncertain, or the etymology is doubtful, are classified as uncertain isoglosses (3.4). Etyma for which either the exclusivity, etymology, or shared innovation criterion is rejected, are classified as rejected isoglosses (3.5).

Within each section, the isoglosses are listed in alphabetical order according to their reconstructed form. Below the classification header for each potential isogloss, the Indo-Aryan, Iranian, Baltic, and Slavic cognates are listed. For Indo-Aryan, mainly Vedic Sanskrit is listed. For Iranian, cognates in the following languages are listed in sections 3.2–3.4: Avestan and Old Persian, Middle Persian (or Parthian), Modern Persian (or Balochi), Sogdian and Khotanese (or Khwarezian and/or Bactrian), Ossetic, Pashto, and Wakhi, when available, with occasional references to other Modern Iranian languages. In section 3.5, mainly Old Iranian cognates are listed. In the case of Baltic, Lithuanian and Latvian cognates are listed, followed by Old Prussian, when available. Lastly, Slavic cognates from Old Church Slavic, followed by a representative of each branch (East = Russian, West = Polish, South = Serbo-Croatian, or other languages from that branch when necessary) are listed.

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes/ Uncertain/ No	Compelling/ Doubtful/ Rejected	Plausible/ Possible/ Rejected	Borrowing/^{N}Derivation/ ^{V}Derivation/Root/Semantics

Table 1. Criteria for classification of Indo-Slavic lexical isoglosses.

3.2. Isoglosses: plausible shared innovations

3.2.1. **ǵʰos-to-* ‘hand’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Plausible	[N]Derivation

Indo-Aryan: Skt. *hásta-* m. ‘hand’

Iranian: OAv., YAv. *zasta-* m. ‘hand’; OP *dasta-* m. ‘hand’; MiP Pahl. *dast*, Man. *dst* ‘hand’; MoP *dast* ‘hand’; Sogd. BMS *δst* ‘hand, arm’; Khot. *dasta-* ‘hand’; Psht. *lās* m. ‘hand’; Wakh. *dast*, *δast* ‘hand’

Baltic: Lith. *žãstas* m. ‘upper arm; palm of the hand (Žem.)’, *pažastìs* f. ‘arm-pit’

Slavic: –

As noted by Arntz (1933: 37) and Porzig (1954: 169),[39] Lithuanian and Indo-Iranian share a stem **ǵʰos-to-* ‘hand’ (rather than **ǵʰes-to-* in view of Baltic *a* < **o*, cf. Neri 2013). This stands in opposition to **ǵʰes-r-*, reflected by Hitt. *keššar* c. ‘hand’ (Kloekhorst 2008: 471), Gr. χείρ f. ‘hand, fist’ (Beekes 2010: 1620–21), Arm. *jeṙn* ‘hand’ (Martirosyan 2010: 431–32), Alb. *dorë* f. ‘hand, handful, grip’ (Demiraj 1997: 140), ToA *tsar*, ToB *ṣar* m. ‘hand’ (Adams 2013: 711–12), and perhaps Lat. *hīr*, *īr* n. ‘palm of the hand’ (Walde 1910: 366). The athematic stem of **ǵʰes-r-*, and its attestation in Anatolian, suggests that it is a more archaic formation than **ǵʰos-to-*.

The Indo-Iranian reflexes of **ǵʰos-to-* clearly mean ‘hand’.[40] Lith. *žãstas* m. is attested both with the meaning ‘palm of the hand’ and ‘upper arm’, the latter being presupposed by the derivative *pažastìs* f. ‘arm-pit’. It is possible that a semantic shift in most Lithuanian dialects occurred when *rankà* replaced *žãstas* as the basic word for ‘hand’.

Lat. *praestō* ‘available, ready’ has been reconstructed as **preh₂i-ǵʰestōd* (e.g., LEW: 560) but has a more convincing alternative analysis as **preh₂i-sth₂-o-* (de Vaan 2008: 486). Lat. *hostus* m. ‘the yield of olive oil from a single pressing’, which Eichner (2002) has derived from **ǵʰos-to-* (**gʰ-* is also possible), a deverbal nomen actionis from a supposed root **ǵʰes-* ‘to take, give in exchange’, must be separated from **ǵʰos-to-* ‘hand’ based on the semantics. Even if the words are ultimately from the same root, the Latin stem is better analysed as an independent derivative, cf. Gr. χόρτος m. ‘enclosure, court’ < **ǵʰor-to-* << **ǵʰer-* ‘to seize’.

Neri (2013) derives both **ǵʰes-r-* and **ǵʰos-to-* from old locatives of an unattested root noun **ǵʰes-* ‘hand’ << ‘the one who gives or takes’. The latter stem would then have arisen through the derivational chain **ǵʰos-to-* ‘upper arm’ << **ǵʰes-tó-* ‘belonging to the hand; situated in the hand’ << **ǵʰés-* loc.sg. ‘in the hand’. This scenario is difficult to verify, since it hinges on the idea that **ǵʰos-to-* meant ‘upper arm’ originally, which as

[39] However, only Lith. *pažastìs* is mentioned. Lith. *žãstas* ‘upper arm; palm of the hand (Žem.)’ has been left out of most sources, but see Hock et al. (2019: s.v. *pažastìs*).

[40] Skt. *hásta-* sometimes refers to the wrist, e.g., *háste ná khādínam* ‘like a bangle on the hand’ (RV VI.16.40), *pári eti bāhúm … hastaghná-* ‘it encircles the arm … the handguard’ (RV VI.75.14), and later to the forearm as a measurement (‘ell’), but not to the ‘upper arm’ (*pace* EWAia II: 812).

discussed above is not necessarily the case, and since an endingless locative **ǵʰés-* cannot be distinguished from the bare root. In any case, Neri's proposal is not incompatible with taking **ǵʰos-to-* as an Indo-Slavic innovation, provided that Lat. *hostus* m. 'yield' is explained as an independent derivative.[41]

Superficially, **ǵʰos-to-* looks like a root **ǵʰos-* + suffix **-to-*, but the meaning 'hand' (<< 'taker'?) does not fit very well with the expected semantics of a *to*-stem from a root **ǵʰes-* 'to take, exchange', as suggested by, e.g., Lat. *hostus* m. 'yield' and Gr. χόρτος m. 'enclosure, court'. However, the sequence **-st-* is reminiscent of several other Indo-European words for 'hand' or related concepts, e.g., Gr. παλαστή f. 'flat hand, breadth of four fingers', ἀγοστός m. 'hand, arm', OHG *fūst* f. 'fist', OCS *grъstь* f. 'handful', Skt. *gábhasti-* m. 'hand', *muṣṭí-* m./f. 'fist'. Although the origin of this **-st-* is unknown, it is possible that **ǵʰos-to-* should be analysed as **ǵʰos-st-o-*, which could be an old compound. In either scenario, since the presumed verbal base for a *to*-stem or a compound, i.e., **ǵʰes-* 'to take, exchange', is unattested, the derivation of **ǵʰos-to-* within a hypothetical Indo-Slavic subgroup rests on the assumption that **ǵʰes-* existed in Indo-Slavic and was lost as a productive root at a later date, which is impossible to verify.

While the exact derivation of **ǵʰos-to-* remains elusive, the absence of any reflex of PIE **ǵʰes-r-* in Indo-Iranian and Balto-Slavic suggests that it was replaced by **ǵʰos-to-* in Indo-Slavic, which was subsequently replaced by **ronkaH-* in Balto-Slavic. Accordingly, it is not necessarily the derivation of **ǵʰos-to-* itself that is a plausible shared innovation (although this remains possible), but the replacement of **ǵʰes-r-* as the basic word for 'hand' (in the sense of Tadmor, Haspelmath & Taylor 2010) by **ǵʰos-to-*.

3.2.2. **h₂eǵ-* 'goat'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Plausible	Borrowing Root

Indo-Aryan: Skt. *ajá-* m. 'billy goat', *ajā́-* f. 'she-goat'

Iranian: YAv. *aza-* m. 'billy goat'; MiP Pahl. *azag* 'goat';[42] Khot. *aysdāṃ* 'a commodity; goat's corn (?)'[43]

Baltic: Lith. *ožỹs* m. 'billy goat'; Latv. *âzis* m. 'billy goat'; OPr. *wosux* m. 'billy goat', *wosee* f. 'goat, she-goat' (EV)

Slavic: –

[41] Besides Lat. *praestō* 'available, ready', which does not necessarily contain **ǵʰos-to-* (cf. above), Neri (2013) proposes that Lat. *hostis* m. 'enemy; stranger' ~ ON *gestr* m. 'guest' < **ǵʰos-ti-* 'the one who is in the hand (i.e., under protection)' provide independent evidence for an adjective **ǵʰes-tó-* 'belonging to the hand'. However, Slavic **gôstь* m. 'guest', which is otherwise a perfect cognate to the Latin and Germanic words, must then be explained as a borrowing from Germanic, since it cannot reflect **ǵʰ-*.

[42] The attestation in Frahang-i Pahlavīk is uncertain; it may stand for Aramaic *'ez* 'goat' (Nyberg & Utas 1988: 70–71).

[43] If from **Haja-dʰaHnaH-* (Bailey 1979: 6).

Based on the Indo-Iranian (EWAia I: 51; Hoffmann 1967) and Baltic (LEW: 519) forms, **h₂eǵ-* 'goat' may be reconstructed, which was listed as an isogloss by Arntz (1933: 37).

The root **h₂eǵ-* closely resembles the synonymous **h₂eiǵ-* 'goat', which is reflected in Gr. αἴξ f. 'goat' (Beekes 2010: 40–41), Arm. *ayc* 'she-goat, goat' (Martirosyan 2010: 58) and Alb. *edh* m. 'kid, young goat' (Orel 1998: 85; de Vaan 2018: 1739). LEW: 519 also cites Irish *ag* 'buck' as a cognate of Lith. *ožỹs*, but in eDIL (s.v. *ag*) it is translated as 'cow, ox' or 'deer, stag'. According to Pokorny (IEW: 7), it is rather related to Skt. *ahī́-* f. 'cow'.

Albanian *dhi* 'goat' has variously been connected to **h₂eiǵ-*, **h₂eǵ-* or Ger. *Ziege* < **dig^{h}-eh₂-* (IEW: 6–7; Demiraj 1997: 160; Orel 1998: 83; Kroonen 2013: 516). Even if **dig^{h}-eh₂-* is excluded, it seems uneconomical to derive *dhi* from **h₂eǵ-ih₂-*, separating it from Alb. *edh*, instead of **h₂eiǵ-ih₂-* (both being possible since initial unstressed vowels are lost, cf. de Vaan 2018: 1737), thereby reconstructing two words for 'goat' for Proto-Albanian.[44] We should therefore treat **h₂eǵ-* as an Indo-Slavic isogloss.

A zero-grade of **h₂eiǵ-* is reflected in YAv. *izaēna-* 'of leather', which presupposes a base PIr. **iǰa-* 'leather'.[45] It has been argued that Skt. *eḍa-* m. 'a type of sheep' also reflects **h₂eiǵ-* and developed through levelling of the stem of the dat.pl. **aiǰ-b^{h}ias* > **eḍbhyas*. However, not only is the meaning different, but it is unlikely that this sandhi development would not have been reverted upon thematicization.

While a thematic **Haǰ-a-* next to a feminine **Haǰ-aH-* can safely be reconstructed for Proto-Indo-Iranian, East Baltic shows a masculine *io*-stem (Lith. *ožỹs*) next to a secondary feminine reflected by Lith. *ožkà*. In Old Prussian, it is rather the masculine (*wosux* 'billy goat') that is secondary, being reflected by a diminutive. It seems attractive to assume that Baltic replaced an original *o*-stem by **āž-io-* based on the feminine **āž-iā-* (reflected by OPr. *wosee*), which would have been the unmarked form, cf. Gr. αἴξ f. 'goat'.[46] However, strictly speaking **h₂eǵ-* is merely a root isogloss.

Kroonen (2012: 245–46) argues that **h₂eǵ-* and **h₂eiǵ-* should be seen as loanwords originating in non-IE languages. This challenges the view that **h₂eǵ-* 'goat' is derived from **h₂eǵ-* 'to drive'. The substrate scenario is attractive, as it offers an explanation to the close formal and semantic similarity of these words, whereas the etymological connection to **h₂eǵ-* 'to drive' is unclear from a derivational point of view[47] and attributes the closeness to **h₂eiǵ-* to chance.

However, the existence of YAv. *izaēna-* 'of leather' etc. has important implications for the substrate scenario. It presupposes the existence of **h₂eiǵ-* in a prestage of (Indo-)Iranian from which **iǰa-* < **h₂iǵ-o-* could be derived through a native derivational

[44] The vocalism of Alb. *edh* cannot be explained by umlaut, since **h₂eǵ-io-* should have yielded Alb. ***ez*, cf. *vis* m. 'place, land, country' < **uiḱ-io-* (Demiraj 1997: 65). A preform **h₂eǵ-i-* may be possible but is *ad hoc*.

[45] PIr. **iǰa-* seems to be directly attested in Khot. *häysä-* 'skin, hide'. Cf. also Yi. *ize*, Mu. *yijya* 'goatskin used for carrying sour milk', Psht. *žay* m. 'leather bag, mussuck' (Morgenstierne 1938: 195; 2003; Bailey 1979: 484).

[46] A masculine *io*-stem may be reflected in Old Prussian place names, e.g., *Wosi-birgo* 'Ciginburg', i.e., 'Goat's Town' (Smoczyński 2018: 886).

[47] Why would **h₂eǵ-o-* be 'the one being driven (by a goatherd)' rather than 'the driving one', cf. Skt. *ajá-* m. 'driver'?

process.[48] This prestage may be Core Proto-Indo-European, based on the attestation of **h₂eiǵ-* in Greek, Armenian, and Albanian. The fact that the Indo-Iranian word for goat contains **h₂eǵ-* suggests that this root replaced **h₂eiǵ-* in Indo-Iranian after the break-up of Core Proto-Indo-European. This replacement may be taken as a shared innovation with Balto-Slavic. The opposite scenario, i.e., that **h₂eiǵ-* replaced an older root **h₂eǵ-* 'goat', whether borrowed or derived from **h₂eǵ-* 'to drive', is precluded by PIr. **ija-* 'leather', as we would then expect the word for goat in Indo-Iranian (and Balto-Slavic) to be derived from **h₂eiǵ-*.

The root **h₂eǵ-* 'goat' may thus be regarded as a root isogloss of Balto-Slavic and Indo-Iranian as well as a possible shared borrowing from an unknown source. Due to the shared derivative from this root, **h₂eǵ-ino-* 'animal skin, leather' (see 3.2.3 below), **h₂eǵ-* can hardly have been borrowed independently by the branches.

3.2.3. **h₂eǵ-ino-* 'animal skin, leather'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Plausible	[N]Derivation Semantics

Indo-Aryan: Skt. *ajína-* n. '(animal) skin'

Iranian: YAv. *azina-uuaṇt-* 'who wears a hide'; Wakh. *yazn* 'inflated skin, mussuck'

Baltic: (Lith. *ožìnis* 'goat-')

Slavic: RuCS *jazьno* n. 'skin, leather'; SerbCS *jazьno*, *azьno* n. 'skin, leather'

A derivative in **-ino-* from **h₂eǵ-* may be reconstructed based on the Indo-Iranian (EWAia I: 51–52; Hoffmann 1967) and Slavic (Derksen 2008: 31–32; Vasmer III: 485) forms. This was listed as an isogloss by Arntz (1933: 37). The Lith. adjective *ožìnis* 'goat-' is better analysed as an independent innovation given its semantics and the productivity of *-ìnis*.

Alb. *dhirë*, *-në* 'pertaining to goat' is compared by Demiraj (1997: 160), but given the productive semantics it is likely an independent formation based on Alb. *dhi* 'goat', which more likely belongs with Gr. αἴξ 'goat' < **h₂eiǵ-* rather than **h₂eǵ-* (see p. 42).

The Proto-Indo-Iranian reconstruction of **Haj-ina-* is assured by Wakh. *yazn* 'inflated skin, mussuck' (not < **iz(a)na-*, *pace* Steblin-Kamenskij 1999: 424).[49] PIIr. **Haj-ina-* 'animal skin' existed next to **ija-* 'leather', which was retained in Iranian (see p. 42). According to Brugmann (1892: 146), **-ino-* was not productive in Indo-Iranian. AiGr. II, 2: 350–51 lists some innovative Skt. stems in *-ina-* but these mean 'having X' like *śākiná-* 'mit Kraut bewachsen' not 'pertaining to X' like *ajína-* presupposes. Some seem to

[48] The derivational process behind **h₂iǵ-o-*, if from **h₂eiǵ-*, is unclear to me. A possessive thematic derivative seems unlikely, as this should mean 'having goat'.

[49] Wakhi underwent a stress shift from a short penultimate to the antepenultimate (Morgenstierne 1938: 483–84), thus *yazn* < **Hájina-* < **Hajína-*. A preform closer to YAv. *izaēna-* 'of leather' would not have produced the attested form. Similarly, Wakh. *yijín* 'carpet', which has been connected to YAv. *izaēna-* etc. (Bailey 1979: 484), is better explained as a derivative of *yazn* < **Haj-ina-* with weakening of unstressed initial **a-* (cf. Morgenstierne 1938: 478).

be derivatives in *-a-* from *in*-stems, while others are *no*-derivatives from *i*-stems. It is therefore unlikely that **Haǰ-ina-* was derived within Indo-Iranian.

In Balto-Slavic, **-ino-* is commonly used for adjectives of material, origin, and type (Brugmann 1892: 147), which is similar to its usage in Greek. However, within Slavic **azьno* is not comparable to productive formations like OCS *želězьnъ* 'of iron' ~ *železo* 'iron'.[50] Rather, it is a substantivized neuter adjective which was lexicalized with the meaning 'skin, leather', exactly parallel to PIIr. **Haǰ-ina-* 'animal skin'. Notably, **h₂eǵ-ino-* has lost its connotation to 'goat' in both branches, which constitutes a semantic innovation.

The fact that Slavic **azьno* is a neuter suggests that it was originally oxytone, since Indo-European barytone neuters became masculine due to the merger of unaccented nom.-acc.sg.n. **-om* > *-ъ* with nom.-acc.sg.m. *-ъ* (Illich-Svitych 1979: 115). As this does not match Skt. *ajína-*, we may assume that Slavic underwent an accent shift by analogy to other stems in **-ьno*, e.g., OCS *brьvьno* n., Ru. *brevnó* n., SCr. *bŕvno* 'beam, log' < PSl. **brьvьnò* (cf. ESSJ III: 72), or that Indo-Iranian underwent an accent shift by analogy to the denominal suffix *-ín-*, cf. *mahín-*, *mahína-* 'great, mighty'.

Despite the difference in accentuation, the fact that Slavic and Indo-Iranian otherwise share both the derivational morphology and the semantics of **h₂eǵ-ino-* makes it a compelling isogloss. Neither branch is likely to have innovated **h₂eǵ-ino-* independently, but, on the other hand, an archaism is also unlikely, as the base **h₂eǵ-* 'goat' seems to have replaced an older **h₂eiǵ-* in Indo-Iranian and Balto-Slavic (see p. 42). This makes **h₂eǵ-ino-* a plausible shared innovation.

3.2.4. **neih₁-* 'to churn'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Plausible	Root Semantics

Indo-Aryan: Skt. *nīta-* 'churned; butter' (ĀpŚS), *návanīta-* 'fresh butter' (KS+), *netra-* 'cord with which the churning stick is set in motion' (Br.+)

Iranian: Bal. *nēmaġ* 'butter'; Kajali *niru* 'to churn'; Khot. *nīyaka-* 'fresh butter', *ñ(y)e* 'buttermilk'; Shu. *nay-*, *nid-* 'to churn'; Wakh. *pərnəc* 'to churn'; Yi. *nǐya*, Mu. *nǐyo* 'sour milk'

Baltic: Latv. *nît*, *niju* 'to churn, thread (a needle)', *pa-nijas*, *pa-nĩnas* f.pl. 'buttermilk', *sviêstnĩņas* f.pl. 'the brine which gathers under butter'

Slavic: –

Although formally identical to Skt. *nay^{i}-* 'to lead', a separate root **neiH-* 'to churn' has traditionally been reconstructed for semantic reasons (EWAia II: 25–26; Cheung 2007: 279). For the Baltic forms, see LEW: 505 and Derksen (2015: 545). However, Kloekhorst & Lubotsky (2014) have convincingly argued that Skt. *nay^{i}-* 'to lead' ~ Hitt. *nai-^{i}*, *nē-$^{a(ri)}$*

[50] A seemingly parallel formation is OCS *platьno* n. 'linen', but in this case the derivational base is unclear.

'to turn, send' (< *neiH-, cf. LIV: 450), on the one hand, and Lat. *neō* 'to spin' ~ Gr. νέω 'to spin' ~ OHG *nāen* 'to sew' (< *(*s*)*neh₁*-, cf. LIV: 571–72), on the other, belong under a single PIE root *(*s*)*neh₁*(*i*)- 'to turn, twist', from which **neih₁*- 'to churn' may also be derived (cf. the turning of the churning stick). The meaning 'to churn' is restricted to Latvian and Indo-Iranian. Baltic and Slavic also reflect a noun **nih₁-ti*- 'thread' (e.g., Lith. *nýtis* f. '(warp) thread', SCr. *nȉt* f. 'thread', cf. Derksen 2008: 353–54). Skt. *nīví*- f. 'piece of cloth wrapped around the waist, worn by women' (AV+) could show a similar connotation to textile production, but could also simply refer to a 'twisted' piece of cloth.

According to Kloekhorst & Lubotsky (2014), the **i* of *(*s*)*neh₁*(*i*)- is originally a verbal suffix. This situation is clearly discerned in Hittite, where the present active *nai-*^{i} 'to turn, send' and the reduplicated *nanna-*^{i} 'to drive' are best reconstructed as **nh₁-oi*- and **ne-nh₁-oi*-, respectively, whereas the middle *nē-*$^{a(ri)}$ may reflect a root stem **neh₁*-.[51] The *i*-suffix is ubiquitous in Indo-Iranian and Balto-Slavic verbal descendants of the root.[52] Latin *neō* 'to spin' and OIr. *sníid* 'to twist' could derive from a thematicized *i*-present *(*s*)*neh₁-ie*/*o*-, but the *ie*/*o*-stem may also be secondary (cf. de Vaan 2008: 405). Similarly, Gr. νέω 'to spin', with the 3sg.imf. ἔννη, points to *(*s*)*neh₁*-, but 3sg.pres. νῆ 'spins' < *(*s*)*neh₁-ie*/*o*- could reflect a thematicized *i*-present or a secondary *ie*/*o*-present.

As for nominal derivatives, Germanic (e.g., PGm. **nēþlō*- 'needle', Kroonen 2013: 388), Celtic (OIr. *snáth* 'thread' < **sn*(*o*)*h₁-to*-, Matasović 2009: 348–49), Italic (Lat. *nēmen* n. 'yarn') all lack **i*. This also holds for the Core Proto-Indo-European stem **sneh₁-ur*/*n*- 'sinew' (ToB *ṣñor** n. 'sinew'; Skt. *snā́van*- n. 'sinew' (AV+); Gr. νευρά f. 'bowstring, sinew'; Lat. *nervus* m. 'sinew, muscle, nerve'; Arm. *neard* 'sinew, tendon').[53]

Conversely, Balto-Slavic and Indo-Iranian both have nominal derivatives containing *-i*-, showing that their creation must postdate the reanalysis of the suffix as part of the root. There are many parallels for this process in other Indo-European languages, e.g., **peh₃*- / **peh₃i*- / **peih₃*- 'to drink' (LIV: 462–63), and the lexicalization of the secondary root can in many cases be projected to the protolanguage, but in this case Balto-Slavic and Indo-Iranian also share the semantic development to 'to churn'. This can hardly be an independent innovation in the separate branches: in Indo-Iranian, **naiH*- 'to churn' cannot be derived from **naiH*- 'to lead'; in Baltic, 'to churn' cannot be derived from '(to) thread'.

As such, **neih₁*- 'to churn' is a plausible formal (albeit rather trivial) and semantic (quite specific) innovation of Indo-Slavic.

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[51] This cannot be proven independently, however, since intervocalic *-i*- would be lost. Yet, the analysis is plausible from a morphological perspective (cf. Kloekhorst & Lubotsky 2014: 133).

[52] Latv. *snāt* 'to wind loosely, braid, throw around one's shoulders' is a potential exception, but the *o*-vocalism is unexplained (cf. Derksen 2015: 551). If it is related to *(*s*)*neh₁*(*i*)-, the vocalism might indicate a denominal origin.

[53] Additionally, a secondary root *(*s*)*neh₁u*- 'to twist, wind' may be reconstructed, reflected in Goth. *sniwan* 'to rush', RuCS *snuti* 'to warp', Latv. *snaujis* 'noose', and possibly Alb. *nus* 'thread, string'. Potentially, *(*s*)*neh₁u*- and **sneh₁-ur*/*n*- both derive from a *u*-present of *(*s*)*neh₁*(*i*)-. Given that **sneh₁-ur*/*n*- must be reconstructed for Core Proto-Indo-European, this *u*-present is likely archaic and should not be regarded as a shared innovation of Germanic, Balto-Slavic and Albanian.

3.2.5. **som* ‘together, with’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Plausible	[N]Derivation

Indo-Aryan: Skt. *sám* prev. ‘together, with, at the same time’ (RV+)

Iranian: OAv. *hə̄m*, YAv. *hąm* prev. ‘together’; OP *ha^{m}-gmata-* adj. ‘gathered’; MiP Pahl. *han-ǰaman*, Man. *han-zaman* ‘gathering, community’; MoP *an-ǰuman* ‘gathering, community’; Sogd. M *’njmn* ‘assembly’; Khot. *ham-* ‘together’; Oss. I *æm-byrd* / D *æm-burd* ‘gathering’

Baltic: Lith. *sù*, (dial.) *sà* prep. ‘(together) with’, *sam-*, *san-*, *są-* pref. ‘together’; Latv. *sa* prep. ‘with’, *suô-* pref. ‘with’; OPr. *sen* prep. ‘with’, *sen-*, *san-* pref. ‘together’

Slavic: OCS *sъ* prep. ‘with’, *sǫ-* pref. ‘together’; Ru. *s*(*o*) prep. ‘with, from’, *su-* pref. ‘together’; Pol. *z*(*e*) prep. ‘with, from’, *są-* pref. ‘together’; Sln. *s*(*ə̀*) prep. ‘with, from’, *so-* pref. ‘together’

Indo-Iranian and Balto-Slavic both attest preverbs/prepositions and prefixes that may be united under the reconstruction **som*(-) ‘together, with’ (EWAia II: 702; LEW: 753; Vasmer II: 564; Derksen 2008: 462, 478; 2015: 388, 434). Already Schmidt (1872: 49) argued that the use of **som* (**sam* in his reconstruction) as a preverb constitutes an Indo-Slavic isogloss.

The Balto-Slavic reflexes require some additional discussion.[54] While the prefixal forms (e.g., Lith. *sam-*, OCS *sǫ-*) all reflect **som-* regularly, it has been argued that the prepositional forms derive from a secondary zero-grade **sum* << **sm̥* (Trautmann 1923b: 250). This assumption is not necessary, however, since final **-om* would regularly yield PBSl. **-un* (Kortlandt 1978a; Hill 2013), so that an orthotone **sóm* would yield **sun* < **sum*. This directly accounts for Slavic **sъ*. The use of *sъ*(*n*)- as a verbal prefix in Slavic is clearly secondary. Lith. *sù*, on the other hand, does not regularly reflect **sun* < **som* (the regular outcome would be **sų*). Possibly, *sù* reflects **sǘn* (shortened by Leskien’s Law), although the origin of the acute is unknown (Hock et al. 2019: s.v. *sù*).[55] Alternatively, *sù* could reflect **sun* with irregular loss of the final nasal. The vocalism of Old Prussian *sen* ‘with’ also looks irregular but can easily be analogical (cf. Kortlandt 2000; 2007). Finally, the origin of Latv. *sa* prep. ‘with’ is unclear, but given the irregular outcomes in Lithuanian and Old Prussian, it seems unlikely that Latv. *sa* reflects PIE **so* (*pace* LEW: 753). In sum, there is no need to reconstruct Pre-PBSl. **sm̥*; **som*(-) accounts for both the preposition and the prefix. This reconstruction is more economical and fits with the fact that the prepositional and prefixal forms have the same meaning (‘together, with’) but different distribution (free vs. bound morpheme).

[54] For a fundamentally different view on the Balto-Slavic material, see Dunkel (2014: 717ff).

[55] A similar scenario has been proposed for Lith. (dial.) *sà* ‘with’, if secondarily extracted from prefixal *są́-*. For the vacillating vocalism, cf. also Lith. *ùž* ~ Lith. (dial.) *až*(*ú*) ‘behind, beyond’.

The Indo-Iranian preverb **sam* may theoretically reflect either **sem* or **som*. Given the semantic and functional correspondence with Balto-Slavic **som* 'together, with' rather than PIE **sem-* 'one' (see below), however, it likely reflects the *o*-grade form.

The preverb **som* is clearly related to PIE **sem-* 'one', reflected in Gr. εἷς 'one', Arm. *mi* 'one', ToA *ṣa-*, ToB *ṣe* 'one'. Next to orthotonic **sem-* there is a compound form **sm-* reflected in Lat. *sem-*, *sim-* 'once, one' (e.g., *semel* 'once', *simplex* 'having one layer'), Skt. *sa-* 'one, together', Av. *ha-* 'one', Gr. ἀ- 'one, same', Arm. *ham-* 'one, same' (e.g., *ham-hōreay* 'having the same father', Olsen 1999: 379), cf. the near identical compounds Skt. *sá-garbhya-* ~ Gr. ἀδελφεός lit. 'of (one and) the same womb'. From **sem-* 'one', the pronoun **smHo-* 'some, same' was derived, reflected in Skt. *sama-* 'anyone, someone', YAv. *hama-* 'anybody', Goth. *suma-* 'someone', Gr. ἅμα 'at the same time, together',[56] as well as **somHo-*, reflected in Skt. *samá-* 'like, same', Av. *hama-* 'the same', Gr. ὁμός 'common, similar', OIr. emphatic 3sg.pron. *-som*, ON *samr* 'same', Arm. *omn* 'someone'. The thematic stems **smHo-* and **somHo-* may both tentatively be derived from an athematic **s(o)m-H-*.[57] All the above formations may be reconstructed to (Core) Proto-Indo-European.

From this Core Proto-Indo-European state of affairs, where **sem-* and the derivatives based on it are exclusively nominal, **som* 'together, with' as a preverb is an innovation reflected in Indo-Iranian and Balto-Slavic. In these branches, **som* seems to have replaced a more archaic **kom* 'with', reconstructable based on Lat. *com-* pref., *cum* prep. 'with; completely', OIr. *co*, *cu* prep. 'with', Goth. *ga-* pref., *gan-iman-* 'to take along', and further Gr. κοινός 'common, public' < **kom-io-*, Hitt. *=kkan* part. '?', Skt. *kám* final part., OCS *kъ* 'to'. In addition to being more widely attested than **som*, a further indication that **kom* is an archaism is that it has no known derivational base, unlike **som*. Evidently, **kom* was retained in peripheral functions in Indo-Iranian and Balto-Slavic.

As for potential extra-Indo-Slavic comparanda of **som*, a possible candidate is Hitt. *=(š)šan* 'over, on; close to; for the benefit of, about' (Eichner 1992: 46). While formally unproblematic, the function and semantics are not comparable to **som* 'together' or **sem-* 'one'. Even if Hitt. *=(š)šan* would be a formal cognate, the shared function of **som* in Indo-Iranian and Balto-Slavic could still be seen as a shared innovation.

Further, there is North Germanic *sam-* 'together' (de Vries 1977: 461), which must be a secondary development from PGm. **sama-* 'same', cf. ON *samfæðra* 'having the same father', since final **-m* would have been lost in Proto-Germanic (e.g., **ga-* < **kom*).

Gr. ξύν-, σύν- 'with, together' has been assumed as an irregular cognate of Skt. *sám* etc. (Dunkel 1982, with lit.). While Dunkel acknowledges that ξύν- is attested already in Mycenaean *ku-su* and "patterns like an archaism in Homer" (1982: 57), he argues that σύν- is the original form, from which ξύν- arose though contamination with **kom-* 'with'. Dunkel compares the initial **s-* in σύν- with Gr. σῦς 'swine' and δασύς 'hairy', hypothesizing a regular preservation of **s* before **u*. Besides the fact that both proposed

[56] Taken at face value, Gr. ἅμα suggests **smh₂e*, which would specify **smHo-* to **smh₂o-*, but -α could alternatively be a secondary adverbial element (Beekes 2010: 79). In view of the accent, Sihler (1973) argues that ἅμα is not derived from **smH-*.

[57] Perhaps specifically **s(o)m-h₂-*, with the same adjectival suffix as in **meǵ-h₂-* 'much, large'.

parallels may be explained differently,[58] the problem is that the **u* in σύν-, if derived from **som*, must also be secondary, which Dunkel explains by extending the regular raising of **o* > **u* / *C*[+labial]_*N* to also include **s*. This hardly makes sense phonetically. Moreover, the irregular preservation of **s*- and the raising of **o* in σύν- are interdependent in this scenario, making the argument circular. Finally, the final **-n* of ξύν-, σύν- is not necessarily original, given the compound preposition μεταξύ. Greek also has a prefix ὁμ- 'one, same, together', which at face value looks like **som*-. However, unlike Indo-Slavic **som*, Gr. ὁμ- is strictly a nominal prefix that functions as a pre-vocalic allomorph of ἀ-, ἀμ- 'one, same'. Accordingly, rather than reflecting **som*-, ὁμ- is more likely an analogical replacement of ἀμ- on the model of Gr. ὁμός, ὁμοῦ.[59]

As no compelling cognates are found, Indo-Slavic **som* 'together, with' can be maintained as an isogloss and an innovation *vis-à-vis *kom*.

3.3. Isoglosses: possible shared innovations

3.3.1. **b(ʰ)e, *b(ʰ)eǵʰ* 'outside, without'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	Root

Indo-Aryan: Skt. *bahíṣ* adv. 'outside, from outside, out'

Iranian: MiP Pahl. *bē* conj. 'but', Man. *byc* /bēz/ conj. 'but', Parth. *byc*, *byž* /bēž/ conj. 'but; except for', *byẖ* /beh/ adv. out, forth, away, outside'

Baltic: Lith. *bè* 'without'; Latv. *bez*, (dial.) *be* 'without'; OPr. *bhe* 'without'

Slavic: OCS *bez*(ъ) prep. 'without'; Ru. *bez* prep. 'without'; Pol. *bez* prep. 'without'; SCr. *bez* prep. 'without'

Meillet (1926: 173) mentions these words as an Indo-Slavic isogloss. The adverbial element **-is* (cf. Skt. *āvíṣ*, p. 147), which characterizes Skt. *bahíṣ* (EWAia II: 220), is not paralleled in Balto-Slavic, however (LEW: 38; Derksen 2008: 38). Yet, **-is* may have spread to *bahíṣ* by analogy to *āvíṣ* 'evidently, manifestly', *níṣ* 'out, forth, away, without'.

The prepositions MiP *byc*, Parth. *byc*, *byž* and adverb Parth. *byẖ* (Durkin-Meisterernst 2004), probably reflecting **bʰa-id* + **-čid* (cf. Jügel 2013), cannot be directly compared with Skt. *bahíṣ*, but derive ultimately from **b(ʰ)e*. In this sense, they look closer to the Baltic forms.

Lith. *bè*, Latv. (dial.) *be* and OPr. *bhe* have no final consonant, unlike Slavic and Sanskrit. Latv. *bez* has it, but may be explained as a borrowing from Slavic. Latvian also

[58] Gr. σῦς 'swine' is a variant of ὗς 'id.', which looks like the regular outcome of PIE **suH-s*. The former could be borrowed from another Indo-European language or result from contamination (cf. Beekes 2010: 1425). Gr. δασύς 'hairy' has been connected to Hitt. *dašš̆u-* 'heavy, strong', Lat. *dēnsus* 'dense', the semantic gap allegedly bridged by δαυλός 'thick, shaggy' < **dn̥su-lo-*, but the *-s-* in δασύς is likely analogical (van Beek 2013: 250). Of course, δαυλός is at the same time a counterexample to the supposed preservation of **s* before **u*.

[59] Gr. ἁμαρτή 'at the same time' seems to show the regular development of **sm-h₂r-to-* (Beekes 2010: 83), but the denominal verb is either ἁμαρτέω 'to meet, come together' or ὁμαρτέω. Beekes (2010: 1075) argues that the vocalism of the latter is secondary after ὁμός and ὁμοῦ.

has the variants *bes* and *beš*. According to Endzelin (1923: 497), the former may be due to devoicing of *bez* before voiceless consonants, whereas the latter is argued to derive from the adverb *bešā* 'without' < **be-tieh₂-*.

Baltic and Iranian thus seems to reflect **b$^{(h)}$e* as opposed to Slavic and Sanskrit **b$^{(h)}$eǵ^{h}*. It is possible that the addition of **-ǵ^{h}* was a dialectal innovation of Indo-Slavic, but an archaism cannot be excluded.

3.3.2. **b^{h}rod^{h}-no-* 'a (pale) horse colour'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation Root

Indo-Aryan: Skt. *bradhná-* adj. 'pale ruddy, yellowish, bay' (often of horses)

Iranian: –

Baltic: –

Slavic: CroatCS *bronъ* adj. 'white (of horses)'; ORu. *bronii* adj. 'white (of horses)'; Cz. *broný* adj. 'white (of horses)

Indo-Aryan and Slavic share a colour adjective **b^{h}rod^{h}-no-* used specifically to describe horses (EWAia II: 235; Derksen 2008: 64), which was listed as an isogloss by Schmidt (1872: 46). The exact meaning is not identical, however. An alternative etymology connects Skt. *bradhná-* to Lith. *blañdas* 'cloudiness' (cf. Derksen 2008: 47) but this root connection is semantically vague and contradicted by the Slavic **r*. The Slavic word has alternatively been connected to Gr. φαρύνει and φάρη (Hesychius) (see Vasmer I: 125), which is formally difficult.

Although **b^{h}rod^{h}-no-* is an isogloss, the root of the derivation is unknown, which could point toward an archaism. The Slavic word has alternatively been taken as an Iranian loan. The fact that the word is not attested in Iranian makes this explanation less plausible.

3.3.3. **b^{h}ud^{h}-ro-* 'attentive, awake'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation

Indo-Aryan: –

Iranian: YAv. *zaēni-buδra-* adj. 'eagerly attentive, waking'

Baltic: Lith. *budrùs* adj. 'vigilant', OLith. *bùdras* adj. 'vigilant'

Slavic: OCS *bъdrъ* adj. 'alert, cheerful'; Ru. *bódryj* adj. 'cheerful'; SCr. *bȁdar* adj. 'cheerful, alert'

Avestan *-buδra-*, attested in a compound (AirWb.: 968), corresponds to OLith. *bùdras* (Petit 2004: 266) and OCS *bъdrъ* (Derksen 2008: 69). In Lithuanian this was eventually remodelled to a *u*-stem. The stem looks like a normal *ro*-adjective from the root **b^{h}eud^{h}-*

'to become awake'. This stem type is archaic, but it is nevertheless a possible shared innovation.

3.3.4. *d^heh_1i-nu- 'female mammal'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation Semantics

Indo-Aryan: Skt. *dhenú-* f. '(dairy) cow, female mammal'

Iranian: YAv. *daēnu-* f. 'female mammal'; MiP Pahl. *dēnōdag* 'female, milch cow'; Khot. *dīnū* 'cow'; Khwar. *δy*(*n*) 'woman'

Baltic: Lith. *dienì* f. 'pregnant, with child (of cow, mare, sheep)'; Latv. *atdiẽne, a*[*t*]*daîne* f. 'a cow that calves already in its second year'

Slavic: –

Arntz (1933: 47) takes this stem as an Indo-Slavic isogloss.[60] The root is *d^heh_1i- 'to suck(le)'. Indo-Iranian has a feminine *u*-stem (EWAia I: 797). One could wonder whether it is derived within Indo-Iranian from the weak stem of *dhinoti* 'to nurture' (see LIV: 138), but this is unlikely since the feminines of *u*-stems generally end in *-ī*, cf. *pr̥thvī́* (AiGr. II, 2: 467). Since neither Skt. *dhinoti* 'to nurture' < *d^hi-neu- nor OIr. *denait* 'they suck' < *d^hen- directly continue *d^hi-n-h_1-, they may be secondary. To be noted is a category of deverbal nomina agentis (mostly from desideratives) in *-u-* that often correspond to abstracts nouns in *-ā-* (cf. *dhénā-* f. 'stream of milk, nourishing stream, stream of speech'), but the feminines of these *u*-stems generally have long *-ū-* (AiGr. II, 2: 468). Thus, the Indo-Iranian word rather looks like a substantivized *nu*-adjective (cf. AiGr. II, 2: 741).

In Baltic, feminine *u*-stems were generally remodelled to a *i*-stems (Ambrazas & Schmalstieg 2018: 1658). As shown by Vanags (1989: 114), archaic feminine *u*-stems are attested in Old Lithuanian, so it is possible that this remodelling was quite recent. Lith. *dienì* reflects a circumflex root but Latv. *atdiẽne* points to a laryngeal in the root (Derksen 2015: 127–28). The fact that neither Baltic nor Slavic has any other *n*-stem derivative from *d^heh_1i- suggests that Lith. *dienì* ~ Latv. *atdiẽne* is archaic within Balto-Slavic.

Thus, *d^heh_1i-nu- is a compelling Indo-Slavic isogloss, derived from *d^heh_1i- 'to suck(le)'. Since not only the derivation but also the semantic specification of 'suckling (one)' >> 'female mammal' is shared, it may be an Indo-Slavic innovation.[61]

[60] Cf. already Schmidt (1872: 46), who compares Skt. *dhenā-* (*sic*) 'cow giving milk' to Lith. *dienà* 'pregnant', an uncertain variant of Lith. *dienì* (Derksen 2015: 127).
[61] The human reference of Khwar. *dy*(*n*) 'woman' is surely secondary.

3.3.5. *d^hemH- / *d^hmeH- ‘to blow’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	Root

Indo-Aryan: Skt. *dhámati* ‘to blow’

Iranian: YAv. ptc.int.med. *dāδmainiia-* ‘blowing up’; MiP Pahl. *dam-* ‘to blow’; MoP *damīdan* ‘to blow; to breathe’; Sogd. B *δm’k* ‘breath’; Khot. *dam-* ‘to blow’

Baltic: Lith. *dùmti, -ia* ‘to blow’; Latv. *dum̂t, -stu* ‘to become overcast, cloud over’

Slavic: OCS *dъmy* nom.sg.pres.ptc. ‘blowing’; ORu. *duti, dъmu* ‘to blow’, Ru. *dut’, dúju* ‘to blow’; Pol. *dąć, dmę* ‘to blow’; SCr. *dȕti, dmēm, dȕjēm* ‘to blow, inflate’

The root *d^hemH- or *d^hmeH- ‘to blow’ (cf. Skt. aor. *adhmās-*) is exclusive to Indo-Iranian (EWAia I: 775) and Balto-Slavic (Derksen 2008: 114–15; Derksen 2015: 145), as noted by Meillet (1926: 171–72) and Arntz (1933: 51).

The vacillating root structure in Sanskrit (*dham^i-* / *dhmā-*) may originate from the vocalization of *d^hmH- > *d^hamH-. Based on this, Skt. *dhámati* has been derived from a root present or *tudáti*-present (Gotō 1996: 46, fn. 11). However, as it is not found in Iranian, it cannot be excluded that Skt. *dhmā-* is a secondary root variant, in which case Skt. *dhámati* may be taken at face value as a class I thematic present. In Balto-Slavic, the paradigm is generally built on a zero-grade **dumH-* (Smoczyński 2018: 264), but the infinitive PSl. **dǫti* may point to an old full grade **domH-* (Pronk 2013: 130). The origin of the Balto-Slavic vocalization **um* < **ṃ*, although not unparalleled (see Stang 1966: 77), is unclear. Perhaps it is analogical from Lith. *dū́mai* ‘smoke’, OCS *dymъ* ‘smoke’, like Oss. I *dymyn* / D *dumun* ‘to blow (up), smoke’ (cf. Cheung 2002: 24).

Because of these uncertainties, it is not possible to determine whether the Indo-Iranian and Balto-Slavic verbal stems go back to same formation, e.g., *d^hmH-*é*/*ó*- (*tudáti*-present), *d^h(*e*)*mH*- (root present), or *$d^hémH$-*e*/*o*- (thematic present). Thus *d^hemH- or *d^hmeH- ‘to blow’ cannot be proven to be more than a root isogloss.

3.3.6. *d^hoH-*neh*$_2$- ‘grains’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	^{N}Derivation Root

Indo-Aryan: Skt. *dhānā́-* f. ‘roasted grains’

Iranian: YAv. *dānō.karš*(*a*)- ‘a kind of ant’; MiP Pahl. *dān*(*ag*), Man. *d’ng* ‘seed, grain’; Bal. *dān* ‘grain’; Sogd. M *δ’n* ‘seed’; Khwar. *δ’n* ‘seed’; Khot. *dānā-* ‘grain, seed’; Shu. *δůn* ‘roasted grains’; Wakh. *δьn* ‘(ritual meal of) roasted wheat’

Baltic: Lith. *dúona* f. ‘bread, bread grains, rye’; Latv. *duõna* f. ‘slice of bread, especially at the end of a loaf’

Slavic: –

Schmidt (1872: 46) and Arntz (1933: 47) list this stem as an Indo-Slavic isogloss. Hitt. $^{\text{NINDA}}$*dannaš-* 'a bread-like food' should be considered as unrelated (*pace* Huld 2002; see further Tischler 1983–1994). Although it could be mechanically reconstructed as **d^{h}oh$_{1}$-n-os-*, it would require the highly implausible assumption of a secondary *s*-stem that was derived from a (thematic) *n*-stem. ToB *tāno* f. 'seed, grain' is a formally possible inherited cognate to the Indo-Iranian word, but the final *-o* and the close semantic match with Iranian rather suggest a borrowing from an Iranian source (Peyrot 2018: 259; Dragoni 2023: 122).

The Indo-Iranian and Baltic words (EWAia I: 787; Bailey 1979: 156; LEW: 111; Derksen 2015: 146) are thus the only attested reflexes of a stem **d^{h}oH-neh$_{2}$-*. Peyrot (2018: 258) doubts the etymology, however, because of the homophonous Latv. *duona* 'frame of a door, door jamb; bottom of a barrel; edge of a plate; a channel in the beater (of a loom)', which in his opinion shows that Lith. *dúona* 'bread' and Latv. *duõna* 'edge of a loaf' derive from a word meaning 'edge', which subsequently acquired several specified meanings. Yet, a secondary meaning of Lith. *dúona*, cited in the LKŽ (s.v. *dúona*), is 'bread grains, rye', which supports the connection to Indo-Iranian.

The underlying root of **d^{h}oH-neh$_{2}$-* is unclear. A common suggestion is **d^{h}eh$_{1}$-* 'to set, put', with a meaning 'what is put in the ground' (Wodtko, Irslinger & Schneider 2008: 125), but the meaning of this root is too general to be compelling. Semantically, **h$_{2}$ed-* 'to parch, dry' would fit, but it is formally difficult. Thus, there is no convincing root from which **d^{h}oH-neh$_{2}$-* could have been derived, which suggests a shared archaism of Indo-Iranian and Balto-Slavic. However, the possibility remains that it was derived from an unknown base in Indo-Slavic, or that it was borrowed.

3.3.7. **d^{h}or-eie/o-* 'to hold, support'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	$^{\text{V}}$Derivation

Indo-Aryan: Skt. *dhāráyati* 'to hold, keep, support'

Iranian: OAv. 3sg.pres.inj. *dāraiiaṯ* 'to hold', YAv. 2sg.pres. *dāraiiehi* 'to hold'; OP *dārayātiy* 'to hold, have'; MiP Pahl. *dār-*, Man. *d'r-* 'to hold, keep'; Sogd. BMS *δ'r-* 'to have, hold'; Khwar. *δ'ry-* 'to hold, have'; Oss. I *daryn* / D *darun* 'to hold, put'

Baltic: Lith. *darýti, dãro* 'to produce, work on, do'; Latv. *darît, daru* 'to do'

Slavic: –

Verbal forms of the root **d^{h}er-* 'to hold' are exclusively attested in Indo-Iranian and Balto-Slavic (cf. LIV: 145).[62] As for the verbal stem formation, both branches attest an *eie*/*o*-present, although with divergent semantics.

Skt. *dhāráya-* 'to hold', most frequently attested in the imperfect, various modal forms, as well as participles, is essentially synonymous with the perfect *dadhā́ra* 'to hold' (Jamison 1983: 95–96). The stem does not seem to have a causative meaning and is

[62] Gr. (Hesychius) ἐνθρεῖν 'to guard' hardly belongs here (cf. Beekes 2010: 558). Hitt. *ter-^{zi}* / *tar-* 'to speak, say' is rather from a root **ter-* (Kloekhorst 2008: 870–71).

unlikely to be a recent derivative. The Sanskrit situation is mirrored in Iranian, where the stem develops the secondary meaning ‘to have’ in Old Persian and younger Iranian languages.

According to Fraenkel (LEW: 83), Lith. *darýti* (and Latv. *darît* ‘to do’) are causatives to Lith. *deréti* ‘to be suitable, useful, handy’. However, since the productive causative to *deréti* is *dẽrinti* ‘to adjust, fit (etc.)’ (Smoczyński 2018: 213), *darýti* may rather be taken as an inherited formation from Proto-Balto-Slavic. The semantic difference *vis-à-vis* Indo-Iranian does not necessarily preclude a shared innovation, since the rather general meaning of the Baltic verbs could have developed from ‘to hold, support’, which presumably is the older meaning. It is noteworthy that the Baltic and Indo-Iranian verbs share the feature of transitivity.

3.3.8. *ǵelp- ‘to murmur, babble’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	Root

Indo-Aryan: Skt. *jalp-* ‘to speak unintelligibly, murmur, babble’

Iranian: –

Baltic: Lith. *želpúoti*, *želpúoja* ‘to babble, chat’

Slavic: –

This etymology (see LEW: 1296) is not considered in EWAia (I: 580), where Skt. *jalp-* ‘to murmur (etc.)’ together with Skt. *jap-* (with the same meaning) is explained as an onomatopoeic root. However, given the formal and semantic correspondence to Lith. *želpúoti*, the etymology is difficult to reject, even if the root is onomatopoeic. The preservation of **l* in Sanskrit need not imply a recent formation, but may be conditioned by the following **p* (Schoubben 2019).

3.3.9. *ǵuelH-e/o- ‘to burn, shine’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	^{V}Derivation

Indo-Aryan: Skt. *jválati* ‘to burn’

Iranian: –

Baltic: OLith. *žvelantį* acc.sg.pres.ptc. ‘burning, glowing’, Lith. *žvìlti*, *žvỹla* ‘to shine, gleam’

Slavic: –

Arntz (1933: 40) followed the old comparison of Skt. *jválati* ‘to burn’ to Lith. *žiūréti* ‘to look at’ (IEW: 479), which is semantically uncompelling. A more plausible root cognate is Lith. *žvìlti* ‘to shine, gleam’ (EWAia II: 607; Derksen 2015: 524). The root may also be reflected in ON *kol* n. ‘coal’, OIr. *gúal* m./f. ‘coal’ (Kroonen 2013: 309), although the latter requires a (secondary?) full grade **ǵoulH-* that diverges from Skt. *jval^{i}-*.

Although the root is probably not uniquely Indo-Slavic, only Sanskrit and Baltic attest verbal stems from *ǵuelH-. Lith. *žvìlti* is generally taken as secondary (LIV: 170–71). According to Būga (RR II: 468), the OLith. participle *žvelant-* presupposes a thematic present that Smoczyński compares to Skt. *jválati* (2018: 1766). This stem is a possible shared innovation, although it is difficult to rule out that the branches innovated independently.

3.3.10. *ǵʰeuH-e/o- 'to call, curse'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[V]Derivation

Indo-Aryan: Skt. *hávate* 'to call'

Iranian: YAv. *zauuaiti* 'to curse'; Sogd. S *'zw-* 'to call'

Baltic: (Lith. *žavéti, žãvi* 'to attract, charm, conjure, curse'; Latv. *zavêt, zavẽju* 'to cast a spell')

Slavic: OCS *zъvati, zovǫ* 'to call'; Ru. *zovát', zovú* 'to call'; Pol. *zwać, zwę* 'to call'; SCr. *zvȁti, zòvēm* 'to call'

The possible isogloss involves the stem formation and semantics of this verb (cf. Schmidt 1872: 50; Arntz 1933: 45). The root *ǵʰeuH-[63] is also attested in ToB *kwā-tär* 'to call out to, invite', which probably reflects the zero-grade *ǵʰuH- of a root present (*pace* Adams 2013: 254), and in ON *geyja* 'to bark; to mock' < *ǵʰouH-ie-. It may also be found in OIr. *guth* m. 'voice' < PCelt. **gutu-*, with pretonic shortening (Matasović 2009: 170). PGm. **guda-* 'god' has been connected (IEW: 313–14), but the short vowel cannot be explained by pretonic shortening, since this only occurred before resonants in Germanic. Arm. *jaunem* 'to consecrate' is hardly related given the *a* in the root.

Within Indo-Iranian, the thematic present stem appears to be archaic, given the correspondence between Skt. *hávate* and Sogd. *'zw-* 'to call'. Formally, YAv. *zauuaiti* 'to curse' looks like a compelling cognate, having undergone a semantic shift from 'to call' (cf. Narten 1969). However, Humbach (1973: 95) argues that YAv. *zauua-* reflects a different root *ǰ⁽ʱ⁾ab⁽ʱ⁾a-, on the basis of Khwar. *zβ-* 'to curse', whose *-β-* cannot reflect *-u-*. For the Avestan form, a connection to Skt. *hávate* remains attractive, but the Khwarezmian stem must then be explained from a zero-grade stem *ǵʰuH- of unknown origin. In any case, the thematic stem of Sanskrit and Sogdian may be compared with OCS *zъvati* 'to call' etc., as Schmidt (1872: 50) noted. This verbal stem is a potential Indo-Slavic shared innovation.

In LEW: 1293, Lith. *žavéti* 'to attract, charm, conjure, curse' is separated from *ǵʰeuH-, but the etymology is quite compelling, if we assume a semantic shift from 'to call'. Although Baltic has innovated a new stem, a semantic shift from 'to call' >> 'to curse' could be a shared innovation of Indo-Slavic, if YAv. *zauuaiti* 'to curse' indeed

[63] The root structure of *ǵʰeuH- has been supposed to be secondary *vis-à-vis* *ǵʰueH- (LIV: 181; Kümmel 2000: 608), as attested in Skt. (JB) *hvātar-* ~ YAv. *zbātar-* 'caller'. However, this is more likely secondary, extrapolated from the present stem Skt. *hváya-* ~ Av. *zbaiia-* 'to call' < *ǵʰuH-éie/o- (similarly EWAia II: 811; Adams 2013: 254).

belongs here. Narten (1969: 52) rejected this idea, arguing that the meaning of YAv. *zauua-* 'to curse' developed within Iranian, since the Indo-Iranian ritual contexts where the stem was used were considered "Daēvic"; the original meaning 'to invoke ritually' shifted to 'to invoke with unholy words' >> 'to curse'. This is possible, but not enough to reject a shared semantic innovation. However, in the phrase ON *goð geyja* 'to mock the gods', the Germanic cognate shows similar semantics to Baltic and Iranian, which leads to the conclusion that only the thematic stem of Indo-Iranian and Slavic is a possible shared innovation.

3.3.11. **ǵʰouH-o-* 'call, invocation'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *háva-* m. 'call, invocation'

Iranian: OAv. *zauua-* m. 'invocation'

Baltic: –

Slavic: Ru. *zov* m. 'call'; Bulg. *zov* m. 'call'; Sln. *zòv* m. 'call'

Arntz (1933: 45), building on Trautmann (1923b: 367), lists this verbal noun from **ǵʰeuH-* 'to call' as an Indo-Slavic isogloss, which is formally and semantically compelling. ON *goðgá* 'improper behaviour, blasphemy' reflects an independent formation **ǵʰouH-eh₂-*.

3.3.12. **ǵʰuel-* 'to be bent, walk crookedly'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	Root Semantics

Indo-Aryan: Skt. *hvárate* 'to walk crookedly', *hváras-* n. 'trap, deceit', *huraś-cít-* adj. 'thinking in wrongful ways'

Iranian: YAv. *zbarəṇt-*, *zbarəmna-* ptc. 'walking crookedly', *zŭ̯rō.jata-* adj. 'wrongfully killed'; OP *zura* adv. 'wrongfully'; Oss. I *ævzær* 'bad, evil'

Baltic: Lith. *žvìlti, žvỹla* 'to bow, bend, lean over', (Žem.) *atžū́lus* adj. 'rude'; Latv. *zvìlt, zvilstu* 'to lean over (slowly), lie down, be idle', *zveĺt, zveļu* 'to roll, knock over'

Slavic: OCS *zъlъ* adj. 'bad, evil, wicked'; Ru. *zloj* adj. 'bad, evil, wicked'; Pol. *zły* adj. 'bad, evil, wicked'; SCr. *zȁo* adj. 'bad, evil, wicked'

Arntz (1933: 53) listed this root as an Indo-Slavic isogloss. However, the relationship between the Indo-Iranian and Balto-Slavic forms, as well as possible external comparanda, is complicated.

The Indo-Iranian root **ǰʰuar-* has been derived from **ǵʰuer-* and connected to Gr. θήρ m. 'wild animal' (Schindler 1972: 37), Lith. *žvėrìs* m. 'wild animal' etc. However, this etymology is problematic, since the acute root in Baltic points to **ǵʰueh₁r-* (Derksen 2015: 524). Instead, **ǰʰuar-* may be connected to Lith. *žvìlti* 'to bow, bend, lean over', OCS *zъlъ*

'bad, evil, wicked' etc., which seem to cover approximately the same semantic range as the Indo-Iranian forms.[64] However, while Indo-Iranian **jʰuar-* is aniṭ (cf. Skt. *parihvṛ́t-*[65]), certain Balto-Slavic forms point to a root-final laryngeal. Lith. *žvìlti* points to **ǵʰuḷH-*, whereas the corresponding Latv. *zvìlt* suggests **ǵʰuḷ-*. According to Derksen (2008: 551), the adjectival form reflected in Lith. (Žem.) *atžűlus* 'rude' points to a lengthened zero-grade of an acute root **ǵʰulH-*. Yet, this form and OCS *zъlъ* 'bad, evil, wicked' etc. are difficult to account for if **ǵʰulH-* is the original form, as the expected vocalization would be **ǵʰuḷH-* > PBSl. **źvilH-*. I am therefore inclined to follow Smoczyński (2018: 1765) in treating the Baltic zero-grade **źvil-* as secondary to the full grade **źvel-* (attested in Lith. *nuožvelnùs* 'diagonal'), to which the original zero-grade was **źul-*. The acute intonation of certain Lithuanian forms must then be considered as secondary.

In both branches, verbal forms continue the (presumably) original meaning 'to be bent, walk crookedly', whereas nominal forms reflect a metaphorical meaning 'wrongful, evil, bad', which may be a shared semantic development. In conclusion, **ǵʰuel-* 'to be crooked, walk crookedly' constitutes an Indo-Slavic root isogloss with a potential semantic innovation.

3.3.13. **g(ʷ)eHi-* 'to sing'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	Root

Indo-Aryan: Skt. *gā-* 'to sing', *gā́yati* 'to sing'

Iranian: YAv. *gā-* 'to sing'; Sogd. C *ž'y*, M *j'y* 'to speak, talk; Khot. *gāha-* 'verse'; Yagh. *žoy-* 'to read, sing; to study'; Yazg. *ɣ̌ay-* 'to call'

Baltic: Lith. *giedóti*, *gíeda* 'to sing'; Latv. *dziêdât*, *dziêdu* 'to sing'

Slavic: –

Arntz (1933: 35) presents the Indo-Iranian and Baltic forms as an isogloss along with ORu. *gajati* 'to caw, croak' (cf. also Derksen 2008: 161; LIV: 183). However, I believe the latter to be an unrelated onomatopoeic formation that cannot be used in the discussion of the remaining material.

In Indo-Iranian, the root is either *gā-* or *gāy-* (cf. Kümmel 2020: 183). The former appears in inherited nominal forms such as YAv. *gāθra-* n. 'sung prayer' ~ Skt. *gāyatrá-* m./n. 'singing, song' (where the present stem has replaced the root), as well as in aorist stems. The latter, Skt. *gāy-*, is found in the present stem *gā́ya-* and related forms, as well as in clearly recent nominal forms such as *gīti-* f. 'song'.[66]

The root variant *gāy-* clearly originates in the present stem (EWAia I: 483 with lit.). As argued by Kulikov (2012: 83), *gā́yati* 'to sing' is best analysed as a class I present (in line with Indian tradition), rather than a class IV *ie*/*o*-present (*pace* LIV: 183). The original

[64] A reconstruction with **l* is furthermore consistent with later Vedic (ŚB+) *hválati* 'to stumble'.
[65] The zero-grade is often metathesized, e.g., *-hruta-* 'crooked' (Lubotsky 1994: 100).
[66] Seemingly from **gʷiH-ti-*, but the lack of palatalization shows that *gīti-* was derived within Sanskrit (or that the anlaut was restored).

stem may have been *$g^{w}H$-*oi*-. If the Middle and Modern East Iranian forms (with palatalization) belong to this etymon, they would be consistent with a reconstruction *$g^{w}H$-*oi*-; in an athematic stem *$g^{w}H$-*oi*- / *$g^{w}Hi$-(*V*) / *$g^{w}iH$-(*C*), palatalization would have taken place in some forms, after which it could be levelled (in Iranian) or eliminated from the paradigm (in Sanskrit). A thematic stem *$g^{w}eH$-*ie*/*o*- cannot account for this distribution.[67] However, see Steblin-Kamensky (1999: 200) for alternative proposals regarding the Iranian material.

Lith. *giedóti* 'to sing' is commonly believed to be derived from *$g^{w}eHi$-, but the origin of the extension *-$d^{(h)}$- (which appears in all nominal and verbal derivatives), while frequent in Baltic, is unknown. In any case, it does not give reason enough to doubt the etymology, given the semantic and near formal correspondence. Like in Indo-Iranian, the *i*-suffix has become part of the root. While it is difficult to exclude a shared archaism, it is possible that the *i*-stem as well as the lexicalization of a secondary root *$g^{w}eHi$- is a shared innovation of Indo-Iranian and Balto-Slavic.

3.3.14. *$g^{w}oih_3$-*o*- 'life'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	^{N}Derivation

Indo-Aryan: Skt. *gáya*- m. 'house, household, family, property'

Iranian: OAv., YAv. *gaiia*- m. 'life, lifetime, lifestyle'

Baltic: –

Slavic: ORu. *goi* m. 'piece, friendship'; OCz. *hoj* m. 'abundance'; Sln. *gòj* m. 'care, cultivation'

Indo-Iranian and Slavic share an *o*-stem (EWAia I: 467; AirWb.: 503; Derksen 2008: 173), ultimately derived from the root *$g^{w}eh_3i$- 'to live', which Arntz (1933: 45) lists as an isogloss. Lith. *gajùs* 'vigorous' may be derived from the *o*-stem (Derksen 2015: 162). Within the individual branches, this *o*-stem looks archaic, since the semantics are clearly lexicalized and since the *g^{w} is unpalatalized unlike most attested verbal forms. The exact reconstruction largely depends on the reconstruction of the root *$g^{w}eh_3i$-, which has several different forms in the Indo-European languages.

Two distinct full grades are attested: *$g^{w}ieh_3$-, reflected in OAv. *jiiātu*- m. 'life' and Gr. ζώω 'to live', and *$g^{w}eih_3$-, reflected in Gr. βέομαι 'will live'. Arm. *keam* 'to live' is unclear and may reflect either *$g^{w}ieh_3$- / *$g^{w}i(i)h_3$-, a full grade *$g^{w}eih_3$- (LIV: 215), or *$g^{w}h_3ei$- (Martirosyan 2010: 356). With Lubotsky (2011: 111ff), I assume that the root originates from an *i*-present to *$g^{w}eh_3$- (cf. Gr. βόσκω 'to feed, tend'). Laryngeal metathesis would have created a paradigmatic alternation between the strong stem *$g^{w}h_3ei$- and weak stem *$g^{w}h_3i$-*V* / *$g^{w}ih_3$-*C*. The *i*-suffix was subsequently reanalysed as part of the root (seen

[67] The quality of the laryngeal cannot be determined by Balto-Slavic evidence, since the alleged Slavic cognate has been removed. A reconstruction *$g^{w}eh_{2/3}$- has been argued to explain the non-palatalization in Sanskrit (cf. Ollett 2014), but the palatalization in Iranian shows that any reconstruction with full grade in the root is incorrect (since *$g^{w}eh_1$- would explain the Iranian but not Sanskrit forms).

in, e.g., **gʷhɜi-uo-* > **gʷih₃-uo-* ‘alive’ with laryngeal metathesis, cf. Skt. *jīvá-* ‘alive’, Lat. *vīvus* ‘alive’ etc.). Because of the varying order of root consonants in the full grade and zero-grade(s) in the verb, deverbal derivatives repaired the root structure in various ways, including **gʷieh₃-* and **gʷeih₃-*.[68] In Balto-Slavic, the pre-metathesized root structure was instead restored (at least in some derivatives), which is evidenced by the broken tone of Latv. *dzîvs* ‘alive’ (Kortlandt 1992: 237, fn. 4), the mobile paradigm of Lith. *gývas* ‘alive’, the final stress of Ru. *žilá* f. ‘lived’ (Kortlandt 1975b: 3).

Turning to Skt. *gáya-* etc., the non-palatalized anlaut and short root vowel point to PIIr. **gaiHa-* < **gʷoih₃-o-*. This reconstruction also fits ORu. *goi* < PSl. **gôjъ*.[69] For Slavic, the preforms **gʷhɜeio-* or **gʷhɜoio-* are also possible, but the latter is incompatible with Indo-Iranian short **ă* in the root. In the former case we might expect laryngeal aspiration in Indo-Iranian (cf. Skt. *máh-* ‘great, strong, powerful’ < **meǵh₂-*), but as there are no clear examples of **h₃* causing aspiration (Kümmel 2018: 163), **gʷhɜeio-* remains possible. However, an *e*-grade in the root would be unexpected in a masculine verbal noun, which is why **gʷoih₃-o-* remains the most likely reconstruction. Since the root structure was elsewhere restored to **gʷhɜei-* in Balto-Slavic, **gʷoih₃-o-* is likely old and may be compared directly with Indo-Iranian.

3.3.15. **g(ʷʰ)eh₂ǵʰ-* ‘to wade’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	Root

Indo-Aryan: Skt. *gā́hate* ‘to penetrate, step into the water, wade’

Iranian: Sogd. BMS *’’γ’z*, C *’γ’z* ‘to begin’; Khwar. *γ’z* ‘to run’; Oss I *qazyn* / D *ğazun* ‘to play, joke, enjoy (a game)’; Shu. *žōz-* ‘to run’

Baltic: Lith. *góžti*, *-ia* ‘to overthrow, overturn, pour out’; Latv. *gâzt*, *-žu* ‘to overthrow, overturn, pour (out)’

Slavic: RuCS *izgaziti* ‘to ruin’; SCr. *gàziti* ‘to trample, wade’

The root **g(ʷʰ)eh₂ǵʰ-* is not attested outside Balto-Slavic and Indo-Iranian (LIV: 183). Skt. *gādhá-* n. ‘shallows, ford’ must be kept separate (EWAia I: 486) since the *ta*-participle Skt. *gāḍha-* < **gāž-dʰa-* shows that *gāh-* ended in a palatal. The Iranian forms further confirm this reconstruction (Cheung 2007: 96). The Baltic vocalism points to **-h₂-*.

Gr. βῆσσα f. ‘wooded combe, glen’ has been connected (Beekes 2010: 213), but it is semantically distant. Moreover, it may be derived from βαθύς ‘deep, high’ and connected to OIr. *báidim* ‘to sink into the water’, Lat. *vadum* n. ‘ford’, Skt. *gādhá-* n. ‘shallows, ford’ < **gʷeh₂dʰ-*.

[68] See Lubotsky (2011) for more evidence for a similar derivational chain in other roots, which seems to have been quite common in Proto-Indo-European.

[69] A similar full grade is reflected in OCS *žito* n. ‘corn, fruits’, OPr. *geytye*, *geits* ‘bread’, probably cognate with Welsh *bwyd* m. ‘food, meat’.

The roots *$g^{w}eh_2d^{h}$- and *$g^{(wh)}eh_2ǵ^{h}$- ‘to wade’ appear to be semantically identical and may be analysed as extensions of *$g^{w}eh_2$- ‘to step’.[70] Since *$g^{w}eh_2d^{h}$- > Skt. *gādhá-* n. ‘shallows, ford’ is isolated in Indo-Iranian, the root seems to have been replaced by *$g^{(wh)}eh_2ǵ^{h}$-. In this context, the root extension *-$ǵ^{h}$-[71] in *$g^{(wh)}eh_2ǵ^{h}$- could be seen as an innovation of Indo-Slavic.

3.3.16. *$g^{(wh)}eld^{h}$- ‘to be greedy, desire’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	Root

Indo-Aryan: Skt. *gardh-* ‘to be greedy, long for something’, *gárdha-* m. ‘desire’ (Pāṇ.)

Iranian: YAv. *gərəδa-* ‘greedy’; Sogd. B *γyšc’n’k* ‘mean, stingy’

Baltic: –

Slavic: OCS *gladъ* m. ‘hunger’, RuCS *žlъděti* ‘to desire’; Ru. *golód* m. ‘hunger’; Pol. *głód* m. ‘hunger’; SCr. *glâd* f. ‘hunger, craving’, *žúdjeti* ‘to desire’

Arntz (1933: 35) lists the root as an Indo-Slavic isogloss. Skt. *gárdha-* ‘desire’ would provide a formal correspondence to OCS *gladъ* etc., but in view of its relatively late attestation, it may be secondary. No other cognate derivatives seem to be attested (EWAia I: 474; Derksen 2008: 173, 565). Lith. *gardùs* ‘tasty’ has alternatively been connected to the Indo-Iranian root (LEW: 136), but remains semantically remote. Goth. *gredus* m., ON *gráðr* m. ‘hunger’ have also been connected, but are rather from *$ǵ^{h}reh_1$- (cf. Kroonen 2013: 187).

The initial velar is either plain or labiovelar. As for the aspiration, the only indication comes from Skt. *gṛ́tsa-* ‘clever, dexterous, wise’, which would unambiguously point to *$g_{\acute{e}}^{(w)}$- (PIIr. *$g_{\acute{e}}d^{h}$-*sa*-). However, semantically, *gṛ́tsa-* is not very close to *gardh-* ‘to be greedy’ and may be from a different root. Even if it is related, it is possible that *gṛ́tsa-* was derived after Grassmann’s Law had stopped operating, in which case *gardh-* might still reflect PIIr. *$g^{h}ard^{h}$-.

Szemerényi (1967: 8) proposed that *$g^{(wh)}eld^{h}$- ‘to be greedy, desire’ derives from *$g^{w}el(h_3)$-[72] ‘to wish, want’ (Gr. βούλομαι, OCS *želěti*, both ‘to wish, want’) with an extension *-d^{h}-. The Slavic verb may alternatively be connected to Gr. ἐθέλω ‘to wish, want’ < *$h_1g^{wh}el$- (Beekes 2010: 377). Both alternatives would be semantically plausible as sources for *$g^{(wh)}eld^{h}$-, even though the existence of a root extension is difficult to prove. If Szemerényi is right, *$g^{(wh)}eld^{h}$- is a potential shared innovation of Indo-Iranian and Balto-Slavic. In any case, the root is an Indo-Slavic isogloss.

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[70] This could potentially explain the relationship between Gr. βῆσσα ‘wooded combe, glen’, βαθύς ‘deep, high’, and βένθος ‘depth’, if from *$g^{w}eh_2d^{h}$- and *$g^{w}emd^{h}$- respectively, mirroring the suppletive roots *$g^{w}eh_2$- and *$g^{w}em$- ‘to go’.

[71] Cf. Gr. νήω ‘to swim’ with the variants νήχω, νάχω.

[72] The reconstruction of a final laryngeal in *$g^{w}el(h_3)$- ‘to wish, want’ is uncertain (cf. Beekes 2010: 377; LIV: 208). Perhaps Gr. βούλομαι is ultimately derived from *$g^{w}elh_1$- ‘to throw’. Obviously, *$g^{w}elh_{1/3}$- (with a final laryngeal) could not have been the base of *$g^{(wh)}eld^{h}$-.

3.3.17. **HoustHo-* ‘lip’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation Root

Indo-Aryan: Skt. *óṣṭha-* m. ‘(upper) lip’

Iranian: YAv. *aošta-* m. ‘upper lip’, du. ‘both lips’; Khot. *auṣṭä* ‘lip’

Baltic: Lith. *úostas* m. ‘port, harbour, (dial., arch.) mouth of a river’; Latv. *uõsta* f. ‘port, harbour, mouth of a river’; OPr. *austo* ‘mouth’

Slavic: OCS *usta* n.pl. ‘mouth’; SCr. *ústa* n.pl. ‘mouth’; Bulg. *ustá* n.pl., *ustá* f. ‘mouth, opening’

Meillet (1926: 173) lists the Indo-Iranian, Slavic, and Prussian words as an isogloss. Since OCS *usta* ‘mouth’ and OPr. *austo* ‘mouth’ are morphologically plurals, it can be surmised that **HoustHo-* likely meant ‘lip’.

The East Baltic forms (LEW: 1167) were not included by Meillet, probably due to the irregular vocalism. However, Derksen (2001; 2015: 482) explains Lith. *-úo-*, Latv. *-uõ-* as analogical from **h₁eh₃-s-* ‘mouth’, cf. Lith. *úoksas* m. ‘opening, cavity, hollow’. The regular vocalism is argued to be preserved in the denominal verb Lith. *áusčioti* ‘to gossip, talk nonsense’, but this is convincingly rejected by Smoczyński (2018: 73–74).

Mallory & Adams (1997: 387) assume a similar development for Lat. *ōstium* n. ‘door, entrance; aperture, mouth’ (i.e., as replacing regular **ūstium* by analogy to *ōs* ‘mouth’), which, if correct, implies that the isogloss is non-exclusive. It may be argued that Romance evidence supports this scenario, since Spanish *uzo* ‘door’, French *huis* ‘door (to a house)’ etc. presuppose **ūstium*.[73] However, this form probably reflects a regular raising of **ō* > **ū* before *-stḭ-*, cf. Romance **bīstius* ~ Lat. *bēstia* f. ‘beast’ (Rohlfs 1921). Since *ōstium* has a plausible inner-Italic etymology, by assuming an adjective **ōs-to-* ‘having a mouth’ (de Vaan 2008: 436), it may be concluded that there is no reflex of **HoustHo-* in Italic, which remains exclusively Indo-Slavic.

Traditionally, all the above material has been derived from **ōus-* (IEW: 784–85). While a connection between PIE **h₁eh₃-s-* ‘mouth’ and **HoustHo-* ‘lip’ is semantically attractive, it is formally impossible (see futher Wodtko, Irslinger & Schneider 2008: 390). Alternatively, deriving the latter from **h₂eus-*, the root of YAv. *uši* n.du. ‘ear (ahuric), intelligence’, Gr. οὖς n. ‘ear’, Lat. *auris* f. ‘ear’, Goth. *auso* n. ‘ear’, Lith. *ausìs* f. ‘ear’ etc., is semantically uncompelling. Since **h₂eus-* may ultimately derive from **h₂eu-* ‘to perceive’, the meaning ‘ear’ seems to derive from the notion of a perceiving organ, which could hardly develop into ‘lip’. Thus, there is at present no compelling root etymology for

[73] See FEW 7: 439, DCECH, RI–X: 726. A spelling *ustium* is attested from Hieronymus’ Epist. 16 onwards (late 4th century CE). An earlier variant *austium* (attested already in Plautus) is best explained as a “hyper-urban” variant of *ōstium*.

**HoustHo-* ‘lip’. If the aspirated Skt. *-th-* reflects a laryngeal,[74] the word is morphologically obscure, and it seems possible that it derives from a compound.

3.3.18. **h₁ong⁽ʷ⁾-l-* ‘coal’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *áṅgāra-* m. ‘coal’

Iranian: Sogd. B *’nk’yr* ‘hearth’

Baltic: Lith. *anglìs* f. ‘coal’; Latv. *úogle* f. ‘coal’

Slavic: OCS *ǫglь* m. ‘coal’; Ru. *úgol’* m. ‘coal’; Cz. *uhel* m. ‘coal’; SCr. *ùgalj* m. ‘coal’

Schmidt (1872: 45) and Arntz (1933: 35) list the word for ‘coal’ as an Indo-Slavic isogloss, including MoP *angišt* ‘coal’, in which the suffix is unexplained, however (see EWAia I: 48). Gharib (1995: 41) tentatively reconstructs Sogd. B *’nk’yr* ‘hearth’ as PIr. **ham-garia-*, but the connection to Skt. *áṅgāra-* is attractive.

Arm. *acuł* ‘coal’ has been connected to the above (cf. Martirosyan 2010: 18–21, with lit.), through the reconstruction *acuł* < **awcúł-o-* < **anʷkʷ-ul-* < **h₁ngʷ-ōl-*. However, this is formally problematic, since the loss of **w* before **c* does not seem to be regular, cf. Arm. *awj* ‘snake’ < **h₂ngʷʰ-i-* and *awcanem* ‘to anoint’ < **h₃ngʷ-nH-*.[75] Moreover, Arm. *acuł* may alternatively be connected to ON *kol* n. ‘coal’, OIr. *gúal* m./f. ‘charcoal’, if derived from **Hǵoul-* (Witczak 2003).

In Balto-Slavic the word is inflected as an *i-* or *io-*stem (LEW: 10; Derksen 2008: 385; 2015: 55). Together with the long vowel in the *l*-suffix of Indo-Iranian, we may reconstruct a hysterodynamic stem **h₁ong⁽ʷ⁾-l-*, which is a possible Indo-Slavic innovation. The root **h₁engʷ-* is likely the same as in Skt. *agní-* m. ‘fire, god Agni’, Lat. *ignis* m. ‘fire’ etc. (cf. de Vaan 2008: 297). The fact that there are no attested verbal stems connected to this root may indicate an archaism, but an innovation remains possible.

3.3.19. **h₁su-dru-* ‘made of good wood’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *sudrú-* adj. ‘made of good wood’

Iranian: –

Baltic: Lith. *sū́drus* adj. ‘thick, dense, solid, tight, (dial.) lush, fertile’

Slavic: –

Arntz (1933: 47) listed this compound as an Indo-Slavic isogloss. For the Lithuanian word and its etymology, see LEW: 937 and Derksen (2015: 434). Lith. *sū́drus* is isolated and has

[74] From the dual ending **-h₁*?

[75] Martirosyan’s (2010: 20) explanation, that Arm. *acuł* ‘coal’ lost its **w* because it was pretonic, is unconvincing, since the same should have applied to *awcanem* ‘to anoint’ < **h₃ngʷ-nH-* (cf. Klingenschmitt 1982: 181).

undergone Winter's Law, which implies an archaism within Balto-Slavic (Petit 2004). It is clearly a lexicalized compound, whose meaning has drifted considerably, assuming that the original meaning was 'made of strong wood'. Traditionally, OCS *sъdravъ* 'healthy' has been connected, but it is better kept apart (see p. 96).

Skt. *sudrú-* (cf. EWAia I: 721) is attested twice in the Rigveda.[76] In RV VII.32, it is used as an adjective (acc.sg.f. *sudrvàm*):

RV VII.32.20cd
ā́ va índram puruhūtáṃ name girā́ nemíṃ tā́ṣṭeva sudrvàm
'I bend Indra, invoked by many, here to you with a song, as a carpenter bends a felly made of good wood' (Jamison & Brereton 2014: 922).

In my opinion, the metaphor is best understood if *sudrú-* is translated to 'solid', i.e., a solid felly made from a single piece of wood, rather than made of 'good wood'. In RV X.28.8, it is used as a noun (acc.sg. *sudrvàm*):

RV X.28.8
devā́sa āyan paraśū́ṁr abibhran vánā vṛścánto abhí viḍbhír āyan
ní sudrvàm dádhato vakṣáṇāsu yátrā kr̥pīṭam ánu tád dahanti
'The gods came; they carried axes; hewing the trees, they advanced with their clans toward (the ritual ground), depositing the good wood in the belly [=the hearth(s) of the ritual fires]. Where there is brushwood [?], they [flames?] burn it up' (Jamison & Brereton 2014: 1420).

Here, there seems to be an opposition between *sudrú-* 'good wood' and *kr̥pīṭa-* 'brushwood', in which case *sudrú-* could also be translated as 'solid wood'. While the word clearly refers to wooden objects and is analysable as a compound within Vedic, both attestations may reflect the initial stages of the same type of lexicalization and semantic shift that evidently affected Lith. *sū́drus*. Although a shared archaism is difficult to reject, a shared innovation does not seem implausible, especially given the semantic similarity.

3.3.20. **h₁uk-ie/o-* 'to be(come) accustomed to'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[V]Derivation

Indo-Aryan: Skt. *ucyasi* 2sg.pres. 'you are accustomed to'

Iranian: –

Baltic: –

Slavic: ORu. *vyče-* 'to learn'

Sanskrit and Russian seem to share a *ie/o*-present from **h₁euk-* 'to be(come) accustomed to'. The root form is attested in various stem formations in other branches, cf. Arm. *owsanim* 'to learn', OIr. *to-ucci* 'to understand', Lith. *jùnkti*, *-sta* 'to become accustomed',

[76] There only other Rigvedic compound with *drú-* as the second member is *harídravaḥ* 'golden trees' (RV IV.43.1). This scarcity is consistent with taking *sudrú-* as an inherited compound.

also Goth. *biuhts* ‘accustomed’. Elsewhere in Slavic, the *ie*/*o*-stem has been replaced by a nasal stem, e.g., OCS *vyknǫti* ‘to get used to, accustom oneself’. Due to the long **ū-* of ORu. *vyče-* ‘to learn’, the form has been taken as secondary (LIV: 244), but this may rather be explained as regular laryngeal metathesis **h₁uk-* > **uh₁k-* (cf. Pronk 2011).

It has been argued that *ucya-* is secondary in Sanskrit, as it replaces the perfect in post-Rigvedic texts (Kümmel 2000: 129; LIV: 244). However, given the Slavic parallel, it is difficult to exclude that the formation is old and simply adopted the function of the perfect in later Vedic. Still, an archaism cannot be excluded.

3.3.21. **h₂eu-r-eh₁* adv. ‘(over) there, downwards’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *arvā́ñc-* adj. ‘turned towards’ (RV+), *arvāvát-* f. ‘proximity’

Iranian: OAv. *aorā-cā* adv. ‘downwards’; YAv. *aora* adv. ‘downwards’; OP *aurā* adv. ‘downwards’

Baltic: Lith. *aurè* ‘there, over there’, *aure* adv. ‘there, then, approximately’

Slavic: –

Fraenkel (LEW: 26) mentions that Lith. *aurè* ‘there, over there’ may be remotely related to Skt. *avár* ‘below’ and YAv. *auuarə* ‘downwards’, but this does not explain the final *-è* of Lithuanian. Derksen (2015: 71) does not compare Lith. *aurè* to any Indo-Iranian forms, but mentions Gr. δεῦρο ‘(to) here’, which seems to reflect the adverb **δε* + an unknown element **-uro*.

We may rather compare Lith. *aurè* to PIIr. **HauraH*, reconstructable based on secondary derivatives in Sanskrit and the Iranian adverbs YAv. *aora* and OP *aurā*.[77] In Sanskrit, **aurá́* underwent metathesis to **aruá́*, cf. Hoffmann (1956: 9). The adverb **HauraH* must be Proto-Indo-Iranian since final **-r̥* gave *-ar* in both Indo-Aryan and Iranian, implying that a younger derivative would have given ***Hauarā*. Adverbial **-aH* likely reflects **-eh₁* as evidenced by the palatalization in Skt. *áchā* ‘to towards’, *uccá́* ‘high, up’, *paścá́* ‘after, later’ (cf. Lubotsky 2001a: 41). This makes a comparison to Lith. *aurè* even more likely, as it would regularly develop from **aurḗ* with shortening of the acute final vowel due to Leskien’s Law.[78]

PIIr. **HauraH* and its Baltic correspondent may ultimately derive from an *r*-locative[79] **h₂eu-*(*e*)*r* of the deictic particle **h₂eu-*, which formed the basis of several pronominal forms in various Indo-European languages (see p. 144). This **h₂eu-*(*e*)*r*, in turn, is directly attested in Skt. *avár* ‘below’ and YAv. *auuarə* ‘downwards’. It should be noted

[77] Dunkel (2009) also connected Umbr. gen.sg. *orer* ‘of this one’, but can reflect either **oso-*, **ouso-*, **oiso-*, or **oro-* and is unlikely to be related (Untermann 2000: 804).
[78] A somewhat similar form is Lith. *rè* ‘ecce’, Latv. *re* ‘id.’ which is analysed as a shortened imperative from *regéti* ‘to see’. In principle, *aurè* could then be seen as *au-rè*, but the chronology is problematic since it would have to be a very early derivative for *au-* to retain the meaning ‘there’ (the preverb *au-* means ‘away’ in Balto-Slavic), whereas *regéti* looks more recent (cf. LIV: 498).
[79] For a discussion of *r*-locatives, see Bauhaus (2019).

that Gr. δεῦρο '(to) here' can hardly be connected to Lith. *aurè* and YAv. *auuarə* (*pace* Beekes 2010: 319), since **de-h₂ur-o* would give Gr. **δαῦρο.[80] On the other hand, Arm. *ur* 'where, where to' may continue **h₂u-r*, which could be seen as a variant of **h₂eu-r* (see Martirosyan 2010: 644–45 for alternative etymologies). In any case, we may reconstruct an adverbial **h₂eu-r-eh₁* uniquely attested in Indo-Iranian and Baltic, which constitutes an Indo-Slavic isogloss and a possible shared innovation.

3.3.22. **h₃ieb^{h}-e/o-* 'to copulate'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	^{V}Derivation

Indo-Aryan: Skt. *yábhati* 'to copulate'

Iranian: Bal. *šāf-* 'to cover (a ewe), mate' (+ **fra-*); Khwar. *by'βy-* 'to make pregnant' (+ **upa-*)

Baltic: –

Slavic: Ru. *etí*, *ebát'*, *ebú* 'to copulate'; Pol. *jebać*, *jebię* 'to copulate, scold, beat'; SCr. *jèbati* 'to copulate'

Indo-Iranian and Slavic share a thematic present from **h₃ieb^{h}-* 'to copulate; to enter' (Derksen 2008: 147; Vasmer I: 388; Vaillant III: 158). The original meaning of **h₃ieb^{h}-* seems to have been 'to enter', which is preserved in ToB *yäp-* 'to enter', pres. *yänmā́^{ske}/$_{ṣṣä}$-* (Malzahn 2010: 796; Peyrot 2013: 797). In Indo-Iranian, Slavic, and Greek (cf. οἴφω 'to copulate'), this has developed into 'to copulate'.[81] Gr. οἴφω most likely reflects a reduplicated stem **h₃e-h₃ib^{h}-e/o-* (Cheung 2007: 175). Based on this, it is possible to regard the stem **h₃ieb^{h}-e/o-* as an Indo-Slavic isogloss, but it cannot be excluded that this is either an archaism from Core Proto-Indo-European or a result of independent innovations.

[80] One could argue that Gr. δεῦρο was formed after laryngeal colouring was no longer productive, but this is merely a possibility.

[81] Iranian may preserve a separate reflex of the original root, e.g., Sogd. BM *y'β*, C *y'b*, 'to wander, travel, rove', often with a nasal infix (see further Cheung 2007: 212–13) reminiscent of the Tocharian present stem.

3.3.23. *ḱeuH- ‘to throw, shove, shoot’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	Root

Indo-Aryan: –

Iranian: YAv. *spaiieiti* ‘throws’, *spāta-* ‘thrown’, *spå̊ŋhaiti* ‘will throw away’; OP *niy-asaya* ‘threw down’; Parth. *nyspy-* ‘to bend, bow’; MoP *bisūdan* ‘to handle, feel, touch, rub’; Sogd. S *spy-* ‘to throw away, reject’; OKhot. *paśś-* ‘to let go, release’, *niśś-* ‘to throw away’; Psht. *āsp-* ‘to collect, amass’

Baltic: Lith. *šáuti*, *-na* ‘to shoot, (dial.) strike, hurl, push, shove’; Latv. *šaũt, -ju, -nu, saũt, -nu* ‘to shove, strike, shoot’

Slavic: OCS *sunǫti* ‘to pour out’, *sovaatъ* (3sg.) ‘overflows’; Ru. *súnut’, súnu* ‘to shove, thrust’, *sovát’, sujú* ‘to shove, thrust’; Pol. *sunąć, sunę* ‘to shove, slide’, *suwać, suwam* ‘to shove, slide’; SCr. *súnuti, sûnēm* ‘pour, strew’

In Balto-Slavic, various verbal stems reflect a root **ḱeuH-*, which in LIV: 330 is assigned the meaning ‘to throw, shove’. The vacillating anlaut of Latv. *šaũt, saũt* and the consistent absence of palatalization of initial *s-* in Slavic likely reflect analogical levelling of PBSl. **śjou-* < **ḱeuH-* from *o*-grade or zero-grade forms (cf. Derksen 2015: 441).[82] The Balto-Slavic forms have been compared with ON *skjóta* ‘to shoot’ < PGm. **skeutan-*, with *s*-mobile in Germanic. However, as shown by Kroonen (2013: 445), the Germanic verb rather derives from PGm. **sket-*.

I would like to propose an Iranian cognate of the Balto-Slavic root. Among forms in several other Iranian languages, YAv. *spaiieiti* ‘throws’ has been argued to reflect PIIr. **ćuaH-* ‘to throw’, without further Indo-European cognates (Cheung 2007: 369; LIV: 339). This is problematic, as it requires the *ad hoc* assumption of shortening of **ā* before **i̯* in Avestan, Khotanese, and Old Persian (thus Emmerick 1968: 56). Rather, YAv. *spaiieiti* ‘throws’ reflects PIIr. **ćuH-áia-*, comparable to, e.g., Skt. *hváya-*, Av. *zbaiia-* < **ǰʰuH-áia-* < *ǵʰeuH-* ‘to call’. The only attested full grade forms of the supposed PIIr. **ćuaH-* ‘to throw’ are YAv. verbal adjective *spāta-* ‘thrown’ and aor.subj. *spå̊ŋhaiti* ‘will throw away’. The former is clearly secondary, as a zero-grade is expected. The *s*-aorist may also be secondary according to LIV: 399, since, in view of its semantics, a root aorist would be expected. The attested *sa*-subjunctive may thus be an Iranian innovation. It follows that the root structure of PIIr. **ćuaH-* ‘to throw’ as such may be secondary, based on the present **ćuH-áia-*. This is paralleled by Skt. *hváya-*, OAv. *zbaiia-*, which yielded a secondary full grade attested in Skt. *hvātar-*, YAv. *zbātar-* ‘caller, invoker’. Thus, PIIr. **ćuaH-* ‘to throw’ likely derives from **ḱeuH-*, and may be directly compared with the Balto-Slavic root discussed above. This constitutes an Indo-Slavic root isogloss.

[82] The Slavic verb may alternatively be connected to Hitt. *šuu̯e/a-ᶻⁱ* ‘to fill’ < **suH-*, which is closer semantically. Interestingly, Hittite has a homonymous *šuu̯e/a-ᶻⁱ* ‘to push (away), shove, cast off’, which could be taken as a semantic parallel to the comparison of Lith. *šáuti* ‘to shoot, (dial.) strike, hurl, push, shove’ and OCS *sunǫti* ‘to pour out’.

3.3.24. **ḱieh₁-mo-* ‘black, dark, grey’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *śyāmá-* adj. ‘black, dark-coloured’

Iranian: YAv. *sāma-* adj. ‘black’, *siiāmaka-* m. ‘name of a mountain’

Baltic: Lith. *šémas* adj. ‘light grey, dark grey, bluish grey’; Latv. *sę̀ms* adj. ‘variegated’

Slavic: –

An adjective **ḱieh₁-mo-* may be reconstructed based on Indo-Iranian (EWAia II: 661; AirWb.: 1571, 1631) and Baltic (LEW: 972; Derksen 2015: 443), which Arntz (1933: 43) listed as an isogloss.

Possibly, the root of **ḱieh₁-mo-* is ultimately an *i*-extended variant of **ḱeh₁-*, reflected in Skt. *śaśá-* m. ‘hare’, OHG *haso* m. ‘hare’ **ḱh₁-es-* ‘hare’, traditionally reconstructed as **ḱas-*. A similar scenario would explain ON *hárr* ‘hoary, grey-haired’, RuCS *sěrъ* ‘grey’, OIr. *cíar* ‘dark-brown’ < **ḱh₁e/oi-ro-*. This would imply that **ḱieh₁-* was originally a verbal root, although no verbal forms are attested. Technically, it cannot be excluded that Lith. *šémas* and Latv. *sę̀ms* reflect an independent derivation from **ḱeh₁-*, without the *i*-extension, since **i* is lost before **e* in Baltic, but this is rather uneconomical as it leaves the Baltic forms isolated *vis-à-vis* related forms in Balto-Slavic (e.g., Lith. *šývas* ‘light grey’) and Indo-European.

LEW: 972 further connects Lat. *cīmex* m. ‘bed-bug’ (< **ḱih₁-m-ek-*?) but this etymology is semantically uncompelling (de Vaan 2008: 114).

The Armenian toponym *Sim* ‘name of a mountain’ is connected to **ḱieh₁-mo-* by Martirosyan (2010: 683), who compares it to YAv. *siiāmaka-* ‘name of a mountain’ and Skt. *śyāmā-* ‘name of a river’. Although it is methodologically perilous to rely on onomastic evidence, the etymology finds some additional support by an alternative name of mount *Sim*: *Sewsar*, literally ‘black-mountain’. However, **ḱi̯-* does not seem to yield Armenian *s-*, cf. *lowcᶜanem* ‘to lighten’ < **louḱ-i̯e-* (**ḱ* < **k* / *u_*, *loys* < **leuk-o-*). A solution would be to reconstruct **ḱih₁-mo-*, which would be close but not identical to the Indo-Iranian and Baltic forms, given the zero-grade in the root.

Additional evidence for a zero-grade variant **ḱih₁-mo-* is Alb. *thimë* ‘grey’, which also has the advantage of being an impeccable semantic match of the Indo-Iranian and Baltic words. Besides Alb. *thimë*, the closest root cognate of **ḱieh₁-mo-* is **ḱi*(*e*)*h₁-uo-* (see p. 149), which is reflected in Indo-Iranian, Baltic and Germanic. Since the latter stem preserves traces of root ablaut, it was likely athematic originally. An original athematic *m*-stem could be assumed for **ḱieh₁-mo-* and **ḱih₁-mo-* too,[83] based on Alb. *thimë* (and the Armenian and Latin forms, if included). Baltic and Indo-Iranian would then have thematicized the full grade form **ḱieh₁-m-*. It is also possible that **ḱieh₁-mo-* and **ḱih₁-mo-* are independent derivatives. Crucially, both scenarios constitute a possible shared innovation of Balto-Slavic and Indo-Iranian.

[83] However, an athematic *m*-stem adjective may be unparalleled and therefore not a very plausible reconstruction.

3.3.25. **ḱleu-os-* ‘word’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	Semantics

Indo-Aryan: –

Iranian: OAv., YAv. *srauuah-* n. ‘word, saying, teaching; reputation’; MiP Pahl. *sraw* ‘word, spell’

Baltic: –

Slavic: OCS *slovo* n. ‘word’; Ru. *slóvo* n. ‘word’; Pol. *słowo* n. ‘word’; SCr. *slȍvo* n. ‘letter (of the alphabet)’

Meillet (1926: 168) and Arntz (1933: 57) noted that only in Iranian and Slavic does **ḱleu-os-* mean ‘word’ (cf. AirWb.: 1643–44; Derksen 2008: 454) beside ‘fame’, cf. Skt. *śrávas-* n. ‘fame, praise, honour, reputation’, Gr. κλέος n. ‘rumour, fame, renown, reputation’, OIr. *clú* n. ‘fame, rumour’. Given the root meaning of **ḱleu-* ‘to hear’, **ḱleu-os-* likely originally meant ‘what is heard’, which became ‘fame’ already in (Core) Proto-Indo-European.

It seems possible that the meaning ‘word’ either developed from ‘fame’,[84] or that it represents a parallel development from an original **ḱleu-os-* ‘what is heard’. Both scenarios imply a possible shared Indo-Slavic innovation, although an archaism cannot be excluded. Since the semantic correspondence is quite specific, independent innovations seem unlikely. Alternatively, it has been argued that the semantics of Slavic **slȍvo* were influenced by Iranian (Benveniste 1967), which is impossible to verify but difficult to entirely rule out. In Balto-Slavic, **ḱleu-os-* ‘fame’ was replaced by OCS *slava* ‘glory, fame, magnificence’, Lith. *šlãvė* f. ‘honour, respect, fame’,[85] whereas in Indo-Aryan, **ḱleu-os-* ‘word’ is unattested.

3.3.26. **ḱop-o-* ‘straw (carried by water)’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation Root

Indo-Aryan: Skt. *śā́pa-* m. ‘drift-wood, flotsam’

Iranian: MiP Pahl. *sabz* adj. ‘green, fresh’; MoP *sabz* adj. ‘green, fresh’; Bactr. σαβαγο ‘crop’; Psht. *sābə́* m.pl. ‘greens, vegetables; a fodder grass’; Shu. *sēpc* ‘cultivated field’

Baltic: Lith. *šãpas* m. ‘straw, blade of grass, dry twig, chip, speck’, pl. *šãpai* ‘branches and grass that floodwater has carried onto a field; litter for animals in a barn; fish bones’

Slavic: –

[84] Cf. Italian *parola*, Spanish *palabra* ‘word’ < Lat. *parabola* ‘speech’ << Gr. παραβολή ‘comparison’.
[85] The variant Lith. *šlovẽ* ‘glory, fame’ has been regarded as a Slavic borrowing (Smoczyński 2018: 1409).

Arntz (1933: 36) listed Skt. *śā́pa-* and Lith. *šãpas* as an Indo-Slavic isogloss. The etymology is accepted by Mayrhofer (EWAia II: 629) but doubted by Derksen (2015: 440). Būga (1922: 289) takes Lith. *šãpas* as a derivative of *šèpti* 'to grow unevenly (of hair, beard)', without cognates outside Lithuanian (cf. Smoczyński 2018: 1352). The connection is not entirely obvious, but could perhaps be understood if we assume that the original meaning of *šèpti* was 'to strew' vel sim. Thus, it cannot be excluded that *šãpas* is an inner-Lithuanian derivative, but, on the other hand, there is nothing against comparing it to Skt. *śā́pa-* directly, reconstructing Indo-Slavic **ḱop-o-* 'straw (carried by water)'.

Skt. *śā́pa-* 'drift-wood, flotsam' refers to small pieces of wood that a river carries downstream.[86] The meaning is remarkably close to Lith. *šãpai* 'branches and grass that floodwater has carried onto a field', the only difference being that the latter only has this meaning in the plural. Further potential cognates are Psht. *sābə́* m.pl. 'greens, vegetables; a fodder grass' and Bactr. σαβαγο 'crop', which presuppose PIr. **ćāpa*(*ka*)- (Morgenstierne et al. 2003: s.v. *sāb'ə*). The comparison is somewhat lacking, however, since the Iranian words refer to some type of edible plant, whereas the Sanskrit and Lithuanian words rather denote the opposite.

As for the etymology of **ḱop-o-* 'straw (carried by water)', it is possible that it was derived from the root continued in *šèpti* 'to grow unevenly (of hair, beard)'. Alternatively, it could be connected to **(s)kep-* 'to chop, cut' (cf. LIV: 555), if the *s*-less form was **ḱep-*, in which case Lith. *kàpti* 'to cut, chop' etc. must be secondary (**(s)ḱep-* > **(s)kep-* > **kep-*).

3.3.27. **ḱuen-to-* 'holy, sacred'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation

Indo-Aryan: –

Iranian: OAv., YAv. *spənta-* adj. 'holy'; MiP Pahl. *spandān* 'mustard seed', *spandarmad* 'Holy Thought; the 12th month of the calendar'; MoP *isfand* 'wild rue, *Peganum harmala*'

Baltic: Lith. *šveñtas* adj. 'holy, sacred'; Latv. *svẽts* adj. 'holy, sacred'; OPr. *swints*[87] adj. 'holy, sacred'

Slavic: OCS *svętъ* adj. 'holy, sacred'; Ru. *svjatój* adj. 'holy, sacred'; Pol. *święty* adj. 'holy, sacred'; SCr. *svêt* adj. 'holy, sacred'

Iranian (AirWb.: 1619–21) and Balto-Slavic (LEW: 1041–42; Vasmer II: 597–98) share an adjective **ḱuen-to-*, with practically identical semantics in the branches, noted as an isogloss by Schmidt (1872: 49), Meillet (1926: 169), Arntz (1933: 44), and Porzig (1954:

[86] Cf. RV VII.18.5d *śárdhantaṃ śimyúm ucáthasya návyaḥ śā́paṃ síndhūnām akṛṇod áśastīḥ* 'Śimyu, who was vaunting himself above our newer speech—he [=Indra] made him into the flotsam of the rivers and his taunts (too)' (Jamison & Brereton 2014: 904) and RV X.28.4b *idáṃ sú me jaritar ā́ cikiddhi pratīpáṃ śā́paṃ nadyò vahanti* 'Mark well this (speech) of mine, singer: The rivers carry the flotsam against their current' (Jamison & Brereton 2014: 1419).

[87] The vocalism of OPr. *swints* has traditionally been seen as evidence that the word was borrowed from Polish (Trautmann 1910: 444), but according to Smoczyński (1989) it may reflect a regular change *e* > *i* / *_NC*.

167). In Indo-Aryan, the root is probably found in Skt. *śuná-* n. ‘prosperity, luck, welfare’ < **ḱun-o-* (EWAia II: 646), which together with YAv. *spanah-* n. ‘holiness’ shows that **t* is not part of the root. The fact that the corresponding verbal stems in Lithuanian, e.g., *šv̨ẽsti* (*švenčiù*) ‘to sanctify’, are denominal indicates that Lith. *šveñtas* is not a productive deverbal adjective but an archaic formation. Although Latv. *svẹ̀ts* is borrowed from Slavic (Derksen 2015: 456), Latvian preserves the root in the verbal stem *svinêt* ‘to celebrate’.

PGm. **hunsla-* ‘sacrifice’ is probably from the same root with the deverbal instrumental suffix **-sla-* (cf. Kroonen 2013: 256–57). Hitt. *kunna-* ‘right, favourable, successful’ < **ḱun-no-* (Kloekhorst 2008: 493) is potentially also connected. According to Adams (2013: 252), ToB *kwants** ‘firm, steadfast, solid, constant’ may also be related, reflecting **ḱun-s-o-* ‘having swollenness’, although he acknowledges that the semantics are far from compelling. Mallory & Adams’ (1997: 493) reconstruction **ḱuntio-* must be rejected, since **ti* would yield Tocharian *c*.

The evidence suggests that **ḱuen-to-* is an exclusively Indo-Slavic derivative from an Indo-European root. If the Hittite root cognate is correct, the meaning ‘holy, sacred’ may be a post-Anatolian innovation shared with Germanic.

3.3.28. **ḱuoit-ó-* ‘white, bright’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *śvetá-* adj. ‘white, bright’

Iranian: YAv. *spaēta-* adj. ‘white’; MiP Pahl. *spēd*, Man. *ʻspyd* adj. ‘white’; Bal. *spēt* adj. ‘white’; Sogd. C *spty* adj. ‘white’; Khot. *śśīta-* / *śśīya-* adj. ‘white’; Shu. *sipēd* adj. ‘white’ (<< MoP?)

Baltic: (Lith. *šviẽsti*, *šviẽčia* ‘to shine’; Latv. *kvitêt*, *kvitu* ‘to shimmer, glimmer’)

Slavic: OCS *světъ* m. ‘light, world’, *cvětъ* m. ‘flower’; Ru. *svet* m. ‘light, world’, *cvet* m. ‘flower’; Pol. *świat* m. ‘world’, *kwiat* m. ‘flower’; SCr. *svȉjet* m. ‘world, people’, *cvȉjet* m. ‘flower, bloom’

Arntz (1933: 44) listed **ḱuoit-ó-* as an Indo-Slavic isogloss. PGm. **hwīta-* / **hwitta-* ‘white’ has sometimes been adduced as a further cognate, despite its **t* instead of expected **þ/ð* (EWAia II: 679), but the voiceless dental stop in the Germanic forms is rather a consequence of Kluge’s Law in a stem **ḱuit-nó-*, cf. Skt. *śvítna-* ‘white, light’ (Kroonen 2013: 267).

Slavic **svě̂tъ* ‘light, world’ does not show the regular Balto-Slavic depalatalization of palatovelars before **u* + $V_{[+back]}$ (Kortlandt 1978b, although the theory is not universally accepted; cf. Collins 2018: 1430). In all likelihood, the anlaut was taken over from the verb, e.g., OCS *svьtěti sę* ‘to shine’ (cf. Derksen 2008: 476). The regular depalatalized outcome is reflected in OCS *cvětъ* ‘flower’ < PSl. **kvě̂tъ*. The anlaut **kv-* is also found in OCS *cvisti* ‘to bloom, blossom’ < PSl. **kvisti*. Since **kv-* is not regular here, the verb is probably denominal from **kvě̂tъ*, which is further indicated by the semantics. In Baltic, no cognate of Slavic **svě̂tъ* / **kvě̂tъ* is attested, but Latv. *kvitêt* ‘to shimmer, glimmer’ (vs. Lith. *šviẽsti*

'to shine', cf. Derksen 2015: 456, 541) suggests that a similar analogical interaction of noun and verb may have taken place here. The meaning of **kvə̂tъ* 'flower' likely goes back to 'bright, light one' and was lexicalized after the analogical form **svə̂tъ* 'light, world' took over the general meaning.[88]

The Indo-Iranian forms, reconstructable as PIIr. **ćuaitá-* 'bright, white', are adjectives. However, given the oxytone accentuation, PIIr. **ćuaitá-* was probably originally a nomen agentis, i.e., 'one who is bright, white'. Slavic **svə̂tъ* / **kvə̂tъ*, whose accent paradigm (c) reflects an original oxytone, could similarly be derived from 'that which is bright, white'. Therefore, the fact that **ḱuoit-ó-* yields an adjective in Indo-Iranian, as opposed to a noun in Slavic, does not preclude a direct comparison of the attested stems.[89]

It is probably not a coincidence that **ḱuoit-ó-*, a verbal noun, is exclusively attested in Indo-Iranian and Balto-Slavic, since these are also the only branches that attest verbal stems to the root **ḱueit-* (cf. LIV: 340).[90] The root is otherwise only attested as an adjective in Germanic (Wodtko, Irslinger & Schneider 2008: 435).[91] Possibly, **-it-* is analysable as a suffix appearing in colour terms, cf. Skt. *hárita-* 'yellowish, green', *palitá-* 'grey', *róhita-* 'red'. This would allow **ḱueit-* to be analysed as deriving from a root **ḱeu-* 'to shine', comparable to Gr. κοέω 'to notice' and, with *s*-mobile, OHG *scouwōn* 'to look at'.[92]

In conclusion, the deverbal *o*-stem **ḱuoit-ó-* is a compelling Indo-Slavic isogloss. While it is difficult to exclude independent derivations, the fact that verbal stems from this root are exclusively attested in Indo-Iranian and Balto-Slavic, as well as the possibility that **ḱueit-* is a secondary root, suggest that the verbal usage of **ḱueit-* as well as **ḱuoit-ó-* are Indo-Slavic innovations. However, since a nominal stem formed from **ḱueit-* is found in Germanic, it is difficult to exclude that the verbal stem and deverbal noun were lost here, as well as in other branches.

[88] This process is understandable as an example of Kuryłowicz's fourth Law of Analogy (1945); the non-analogical form (**kvə̂tъ*) preserves a peripheral meaning ('flower') whereas the analogical form (**svə̂tъ*) takes the general meaning of the original lexeme ('light, bright'), in this case synchronically derivable from the verb.
[89] A reconstruction **ḱueito-* cannot be entirely ruled out for Indo-Iranian, however.
[90] However, there are no direct correspondences among the attested verbal stems. The closest correspondence is a nasal present Skt. *śvíndate* 'shines' (Dhātup.) ~ Lith. *švisti*, *šviñta* 'to become bright', ORu. *svьnuti* 'to become bright, dawn', which Arntz (1933: 44) took as an additional isogloss. However, the Sanskrit form is poorly attested and with an unexplained *d* for **t*, whereas inchoative nasal presents are productive in Balto-Slavic.
[91] ToB gen.sg. *kuśiṅ* 'of Kuča' etc. has been adduced, but such onomastic evidence is semantically uncompelling. Additionally, there are alternative etymologies for the Tocharian material (cf. Adams 2013: 198).
[92] A semantic development 'to shine' >> 'to appear, be noticed' is common crosslinguistically, cf. Eng. *shine* ~ Ger. *scheinen* 'to appear'.

3.3.29. **k(o)rt-* ‘(one) time(s)’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	Semantics

Indo-Aryan: Skt. *sá-kr̥t* adv. ‘once’, *kŕ̥tvas* adv. ‘– time(s)’

Iranian: YAv. *ha-kərəṯ* adv. ‘once’; MiP Pahl. *hagriz* ‘ever’

Baltic: Lith. *karčtas* m. ‘once’

Slavic: OCS *kratъ* m./adv. ‘once, time’; Cz. *krát* m./adv. ‘once, time’; SCr. *krât* m./adv. ‘once, time’

Arntz (1933: 49) listed these formations as an Indo-Slavic isogloss. Indo-Aryan and Iranian share a compound form **-kr̥t* ‘time’ and Sanskrit also has an adverb *kŕ̥tvas* that seems to be a fossilized acc.pl. of a *u*-stem (EWAia I: 391–92; AirWb.: 1742–43). Balto-Slavic reflects a noun **korto-*, which is used adverbially in Slavic (Derksen 2008: 236; Derksen 2015: 229). These derivatives have been connected to various roots, such as **(s)kert-* ‘to cut’ and **kʷer-* ‘to cut; to make’ (LEW: 258; Smoczyński 2018: 496; Vasmer I: 657). In the latter case, the postpositions Osc. *-pert,* Umbr. *-per* ‘– time(s)’ have also been adduced, but they are more likely related to Lat. *-per* in, e.g., *semper* ‘always’ (de Vaan 2008: 459). Perhaps a more compelling etymology may be found in Skt. *kart-* ‘to spin, pull a thread’ < PIE **kert-* (LIV: 356),[93] with a semantic parallel in Lat. *duplex* ‘twofold’ < **pleḱ-* ‘to plait, twine’ (and Lat. *duplus*, Gr. διπλόος, PGm. **fald-* < **pol-t-* ‘to fold, ply’).

While the Indo-Iranian and Balto-Slavic words are similar semantically and likely derive from the same root (possibly **kert-* ‘to spin’), no shared derivative can be reconstructed. It is possible that several stems were innovated in Indo-Slavic (e.g., a compound form **-kr̥t* and simplex **kort-o-*), some of which were lost in the individual branches, leaving only the root connection and the semantics as a trace of the isogloss.

[93] ORu. *krjatati* ‘to move’, SCr. *krétati* ‘to move’ have been connected to Skt. *kart-* ‘to spin, pull a thread’, but the semantic connection is unclear. A semantically attractive cognate to the Sanskrit root is Hitt. *karza* n. ‘spool, bobbin’, although it is derivationally obscure (Kloekhorst 2008: 459–60). Gr. κάρταλλος m. ‘(type of) basket’, Lat. *crātis* f. ‘construction of wickerwork, hurdle’, Goth. *haurds* f. ‘(lattice) door’ and OPr. *corto* ‘fence’ have also been derived from **kert-* ‘to spin’. However, while the Greek word may be non-Indo-European, the Latin word reflects **krh₂-ti-*. Given the formal similarity, the Gothic word and its Germanic cognates likely reflect the same formation.

3.3.30. **krs-no-* ‘black’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation Root

Indo-Aryan: Skt. *kṛṣṇá-* adj. ‘black’

Iranian: (YAv. *karšnaz-* ‘name of an Iranian family’; Elam. *kur-iš-na* ‘PN’; Yi. *kʸuṇγo* ‘magpie’)

Baltic: Lith. *kiř̃snas* adj. ‘black (of a horse)’, *Kirkšnó-upis* ‘name of a river’, (*kéršas* ‘spotted white and black’); OPr. *kirsnan* adj. ‘black’

Slavic: OCS *črьnъ* adj. ‘black’; Ru. *čërnyj* adj. ‘black’; Pol. *czarny* adj. ‘black’; SCr. *crȋn* adj. ‘black’

Based on Indo-Iranian (EWAia I: 397–98; AirWb.: 459) and Balto-Slavic (LEW: 245; Derksen 2008: 92; Derksen 2015: 247), a colour adjective **krs-no-* ‘black’ may be reconstructed, which was taken as an Indo-Slavic isogloss by Schmidt (1872: 47), Arntz (1933: 43) and Porzig (1954: 167). The etymology of YAv. *karšnaz-* and Elam. *kur-iš-na* (which possibly continues an Old Persian reflex of **krs-no-*, cf. Tavernier 2007: 233) must be considered uncertain, since they are names. Yidgha *kʸuṇγo* ‘magpie’ and corresponding Modern Iranian forms (cf. Morgenstierne 1938: 221) may continue **krs-no-*. Lith. *kiř̃snas* lacks the RUKI development of **s* and may be a borrowing from another Baltic language (often labelled “Yotvingian”, cf. LEW: 245).[94] Given the Prussian and Slavic cognates, however, **krs-no-* is securely reconstructable for Proto-Balto-Slavic.

A form that is often adduced is Alb. *sórrë* f. ‘crow’ (Demiraj 1997: 355; Orel 1998: 399, with literature), which would demand a reconstruction **kʷērs-neh₂-* (since **k* allegedly palatalizes to Alb. *q*, but see 1.3 above). There are several problems with this etymology. First, the Balto-Slavic vocalization of **r* points to a plain velar anlaut **k-* (perhaps < **ḱ-* with depalatalization?), although this is controversial. Second, there are many possible alternative reconstructions of Alb. *sórrë*, e.g., without **s* in the root or with anlaut **ḱu-*. Third, the semantics of Alb. *sórrë*, although not incompatible with ‘black’, rather suggest that it should be compared with SCr. *svràka* ‘magpie’, or even Lat. *cornix* ‘crow’, which are likely onomatopoeic.

A possible root cognate of **krs-no-* is Du. *harder* ‘grey mullet’, Sw. *harr* ‘grayling’ < PGm. **harzu-* < **kors-u-* (IEW: 583).

As noted by Debrunner (AiGr. II, 2: 735), the root of **krs-no-* ‘black’ is isolated and not attested in verbal stems. The root has previously been taken as the base of Lith. *kéršas* ‘spotted white and black’ (LEW: 245), but given the acute intonation this is unlikely to be correct. Consequently, it could be argued that **krs-no-* is a shared archaism, as there is no reconstructable base for deriving it at a hypothetical Indo-Slavic stage. Yet, since it cannot

[94] This might also explain the specific meaning ‘black (of a horse)’, assuming that the word was borrowed in a trade context or other culturally significant setting.

be excluded that a productive root **kers-* may have been lost within Indo-Slavic or independently in the branches, **krs-no-* is a possible shared innovation.

3.3.31. **kseud-* 'to make small; to spray'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	Root

Indo-Aryan: Skt. *kṣod-* 'to spray, pulverize', *kṣudrá-* adj. 'minute, tiny', *kṣódas-* n. 'swell of the sea'

Iranian: YAv. *xšudra-* adj. 'liquid, fluent', *xšaodah-* n. 'swell of the water'; MiP Pahl. *šōy-*, Man. *šwy-* 'to wash'; MoP *šustan* 'to wash'

Baltic: –

Slavic: OCS *xudъ* adj. 'poor, insignificant, small'; Ru. *xudój* adj. 'thin, lean, bad'; Pol. *chudy* adj. 'thin, lean, insignificant, poor'; SCr. (dial.) *hûd* adj. 'bad, evil'

Arntz (1933: 37) listed this root as an Indo-Slavic isogloss. The Indo-Aryan and Iranian *ro*-stems are not to be separated (EWAia I: 439); rather, Iranian reflects a semantic change from 'to spray (of water)' to 'to flow', which is also evident in Skt. *kṣódas-* n. 'swell of the sea'. Semantically, Skt. *kṣudrá-* 'minute, tiny' is closest to Slavic **xûdъ* 'small, thin', where the circumflex root (despite Winter's Law) is due to Meillet's Law (Derksen 2008: 206).

Lith. *skaudrùs* 'streaming (of water)', Latv. *skaudrs* 'harsh, unpleasant' have been connected (EWAia I: 439), but cannot be compared directly to the *ro*-adjective of Indo-Iranian. These words rather belong with Lith. *skaudéti* 'to hurt, experience pain' (see further Smoczyński 2018: 1188).

In conclusion, there seems to be nothing against taking **kseud-* as an Indo-Slavic isogloss,[95] yet there is no indication that this root would be a shared innovation.

3.3.32. **kʷer-* 'to perform magic'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	Semantics

Indo-Aryan: *kártra-* n. 'spell, charm', *kr̥tyā́-* f. 'curse, spell, magic', *abhicārá-* m. 'exorcism, incantation, employment of spells for a malevolent purpose' (AV+)

Iranian: YAv. *cārā-* f. 'remedy'; MiP Pahl. *čārag* 'means, remedy'

Baltic: Lith. *keraĩ* m.pl. 'sorcery', *kerė́ti* 'to cast a spell, bewitch; to predict'

Slavic: OCS *čary* acc.pl.m. 'magic, sorcery', RuCS *čara* f. 'sorcery'; ORu. *čara* f. 'sorcery', Ru. *čáry* m.pl. 'magic, enchantment'; Pol. *czar* m. 'charm, enchantment' SCr. *čara* f. 'magic, sorcery'

[95] Albanian *hedh-* 'to throw, shoot; to dart off; to winnow' is probably unrelated, if it is true that **ks* > Alb. *sh*, (Demiraj 1997: 57). In any case, the semantic connection is not very strong.

Arntz (1933: 45) compared specifically the *ā*-stems YAv. *cārā-* 'remedy' to RuCS *čara* 'sorcery'. However, the co-existence of an *ā*-stem and an *o*-stem within Slavic, both with lengthened *ē*-grade, as well as the full grade in Lith. *keraĩ*, suggests that a root noun should be reconstructed for Proto-Balto-Slavic (Kortlandt 1985: 118).

While there are no direct cognates, the shared semantics of these Sanskrit and Balto-Slavic derivatives, which all seem to be derived from a root **k^{w}er-* 'to perform magic', is striking. The root is generally thought to be identical to *k^{w}er-* 'to do, make', reflected in, e.g., Skt. *kṛṇóti* 'to do, make' (EWAia I: 308–9; Smoczyński 2018: 527),[96] in which case **k^{w}er-* 'to perform magic' must be regarded as a semantic innovation. It is difficult to exclude that this innovation is independent, however, given the semantic parallel in Gr. πρᾶξις f. 'doing, business; (magical) operation, spell' from πράσσω 'to pass through; to finish, accomplish, do'.

Gr. τέρας n. 'sign, emblem; wonder, monster', if from **k^{w}er-*, has been argued to show a similar semantic development relating to 'magic' (Beekes 2010: 1467–68). However, the basic meaning seems to be 'sign', which is not necessarily derived from 'to perform magic'. It is perhaps closer to OIr. *cruth* m. 'shape, form' < **k^{w}er-* 'to cut'. Alternatively, Gr. τέρας may be derived from **k^{w}erh$_2$-s-* and connected to the Celtic name *Prasutagus*, containing PCelt. **k^{w}rh$_2$-stu-* (David Stifter, p.c.; for the attestations, cf. Delamarre 2006).

3.3.33. **mentH-eh$_1$-* '(wooden) tool for stirring'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *mánthā-* m. 'churning stick, whisk'

Iranian: (Bal. *mant-* 'to churn'; Sogd. B *mnδ-* 'to agitate, stir'; OKhot. *maṃth-* 'to churn, stir')

Baltic: Lith. *mentẽ, meñtė* f. 'shoulder blade, paddle, trowel, shovel', *menčià* f. 'churning stick', *mentìs* f. 'twirling stick for kneading bread dough'; Latv. *meñte* f. 'ladle, stirring spoon, flat wooden shovel'

Slavic: (OCS *męsti, mętǫ* 'to trouble, disturb'; Sln. *mę́sti, mę́tem* 'to disturb, churn')

Skt. *mánthā-* m. 'churning stick, whisk' is inflected like *pánthā-* m. 'road, path' < PIIr. **pant-aH-* and is compatible with a reconstruction **mentH-eh$_1$-*,[97] which may be compared

[96] In turn, *k^{w}er-* 'to do, make' is likely a semantic innovation based on Indo-Anatolian **(s)k^{w}er-* 'to cut', cf. Hitt. *kuer-^{zi}* 'to cut', OHG *sceran* 'to cut' etc., shared by Indo-Iranian (Skt. *kṛṇóti* 'to do, make' etc.), Celtic (cf. MWelsh *peri* 'to cause, create, make', Welsh 1sg.pres. *paraf*, MBret. 3sg.pret. *paras*, as well as OIr. *cruth* m. 'shape, form', *creth* 'poetry', MWelsh *pryd* m. 'form, shape, time', MBret. *pred* m. 'moment' < PCelt. **k^{w}ritu-*), and Balto-Slavic, if Lith. *kùrti* 'to light a fire; to build, furnish (a house, boat); to create, found' is connected (cf. Smoczyński 2018: 641–42; see Derksen 2015: 267 for a different view). Matasović's (2009: 182) gloss of PCelt. **k^{w}ritu-* 'magical transformation, shape', indicating a connection to magic, similar to the Indo-Iranian and Balto-Slavic situation, does not seem to be supported by the attested forms.

[97] An alternative reconstruction is **ment-eh$_1$-*, in which case the aspiration in Skt. *mánthā-* can be from the weak stem. However, the verbal forms point to **mentH-*. To explain the final laryngeal, it may be argued that the verbal

with Lith. *mentẽ*. The root is also attested in Balto-Slavic verbal stems, e.g., Lith. *mę̃sti* ‘to mix’, OCS *męsti* ‘to trouble, disturb’ (EWAia II: 312; LEW: 437). As for the root structure, Skt. *mánthati* ‘to whirl, stir, shake’ suggests a root-final laryngeal (cf. LIV: 438–39). This is confirmed by Skt. *mathnā́ti* ‘to rob, take away’ ~ ToB *mäntänā-* ‘to stir, touch’ < **mnt-ne-H-* and Skt. *mathāyáti* ‘to rob, take away’ ~ ToB *mäntäññ-* ‘to destroy’ < **mnt-n-H-ie/o-* (for the meaning, cf. Malzahn 2010: 479, 753). Synchronically, Sanskrit distinguishes *manth^{i}-* ‘to whirl, stir, shake’ from *math^{i}-* ‘to rob, take away’, but the Tocharian cognates suggest that they go back to one and the same root (*pace* EWAia II: 298; cf. Pronk 2019: 143).

The main argument against taking **mentH-eh$_1$-* as an Indo-Slavic isogloss is that Lith. *mentẽ* could be a productive formation from *mę̃sti* ‘to mix’, like Lith. *mentùris* ‘mashing stick, churning stick’ and Latv. *mìeturis* ‘id.’.[98] However, *ē*-stems are not normally instrument nouns in Baltic,[99] and *mentẽ* with its variants *menčià* and *mentìs* rather behaves like an old root noun. This suggests that Lith. *mentė̃* may rather be an archaic stem, cognate to Skt. *mánthā-*, which was transferred to the *ē*-stem inflection (and thus feminine gender) within Baltic.

3.3.34. **miḱ-ro-* ‘mixed’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	^{N}Derivation

Indo-Aryan: Skt. *miśrá-* adj. ‘mingled, blended’

Iranian: –

Baltic: Lith. *mišras* adj. ‘mixed’

Slavic: –

The *ro*-adjective reflected by Skt. *miśrá-* and Lith. *mišras* was taken as an Indo-Slavic isogloss by Arntz (1933: 51; see further EWAia II: 357; LEW: 450).

A root **meiḱ-* / **meiǵ-* ‘to mix’ is well attested, cf. Lith. *miẽšti* ‘to mix’, OCS *měsiti* ‘to mix’, Lat. *misceō* ‘to mix, blend’, OE *miscian* ‘to mix’, OIr. *mesc* adj. ‘confused’, and Gr. μίσγω ‘to mix, bring together’ (with unclear voiced **ǵ*, cf. Beekes 2010: 920).[100] In Sanskrit, the root has largely been replaced by *mekṣ-*, an *s*-extended variant of **meiḱ-*.[101] However, the bare root is continued in Khow. *amiṣṭ* ‘mixed’. In Iranian, **meiḱ-* is continued in YAv. *mīšti* ‘together’ and reflexes of **meiǵ-* are widespread (cf. Cheung 2007:

forms are ultimately derived from a nominal stem **ment-eh$_1$-*, rather than the other way round, but such a scenario is difficult to substantiate.

[98] Latv. *meñte* ‘ladle, stirring spoon, flat wooden shovel’ is irregular and was likely borrowed from another Baltic dialect.

[99] Lith. *dal̃gis*, *dal̃gė* ‘scythe’ could be analysed as an instrument noun from an unattested **dalgýti* ‘to mow’ (cf. Smoczyński 2018: 193), but see LEW: 81 for a different etymology.

[100] Perhaps **meiǵ-* was the original root shape, with **meiḱ-* emerging as a secondary variant based on the present stem **miǵ-ske/o-*, where the **ǵ* may have been devoiced.

[101] Skt. *sámmiśla-* ‘close-linked’ etc. may contain an *l*-variant of *miśrá-* or continue a separate formation from the same root. The form Skt. ptc.med. *michamāna-* ‘vivid’ could possibly reflect **mi(ḱ)-ske/o-*, but the translation is unclear. In any case, *micha-* could not have provided a model for the restoration of **ḱ* in *miśrá-*, since here it would have been lost, cf. *pr̥chā́ti* < **pr(ḱ)-ske/o-*.

261),[102] implying that the extension to *mekṣ-* in Sanskrit is a post-Proto-Indo-Iranian development.

In both Indo-Iranian and Balto-Slavic, Indo-European palatovelars seem to have been depalatalized to plain velars before **r* (Kortlandt 1978b), implying that the palatal in **miḱ-ro-* must have been restored based on other formations. The restoration of **ḱ* may have been a shared Indo-Slavic development, but independent restorations in Indo-Iranian and Balto-Slavic cannot be excluded. In any case, the stem **miḱ-ro-* is an Indo-Slavic isogloss.

3.3.35. **mosg^{h}-en-* 'brain, marrow'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	^{N}Derivation

Indo-Aryan: Skt. *majján-* m. 'marrow'

Iranian: –[103]

Baltic: Lith. (dial.) *smãgenys* m.pl. 'brain, marrow, gum'; Latv. *smadzenes* f.pl. 'brain, marrow, gum'; OPr. *mulgeno* [*musgeno*] 'marrow'

Slavic: RuCS *možden*i m.pl. 'brains'; Plb. *müzdin* m., *müzdenü* n. 'brain'; SCr. (dial.) *možden*a n.pl. 'brain'

An *n*-stem **mosg^{h}-en-* may be reconstructed based on Indo-Aryan (EWAia II: 291–92) and Balto-Slavic (LEW: 837; Derksen 2008: 328; Derksen 2015: 413), which was taken as an isogloss by Schmidt (1872: 47) and Arntz (1933: 49). The East Baltic forms, if related, must have undergone metathesis. It has been argued that the words instead originate as lexicalized participles of Lith. *smõgti* 'to hit, strike' (cf. LEW). OPr. *musgeno*, which is more similar in its consonantism to the Slavic and Indo-Iranian material, is also irregular, as *u* does not reflect **o*. However, RuCS *možden*i 'brain' and the other Slavic forms probably reflect an old *n*-stem.

Besides the *n*-stem, YAv. *mazga-* m., OCS *mozgъ* m., ON *mergr* m. 'marrow', and possibly MIr. *medg*, *medc* m. 'whey' continue a parallel stem **mosg^{h}-o-* 'brain, marrow'.[104] There is no indication that this *o*-stem is derived from **mosg^{h}-en-*, however, as we might then have expected ***mosg^{h}-no-*. Pronk (2015) has argued that there was a productive pattern in Indo-European of deriving singulative *n*-stems from body-parts, e.g., *h$_{3}$ek^{w}-n-* 'one eye' << **h$_{3}$ek^{w}-ih$_{1}$* du. 'eyes'. Following a suggestion by Lubotsky, Pronk (2015: 341, fn. 52) notes that Skt. *majján-* is often used "in the plural with the meaning 'marrow of one bone'", indicating that the *n*-stem is indeed a derivative from the *o*-stem, which may be regarded as a possible shared Indo-Slavic innovation.

[102] Some Iranian forms seem to reflect **meik/g-*, e.g., MiP Man. *'myxs* 'to be mixed' and Parth. *'myj-* 'to mix'. The apparent depalatalization could possibly originate in a lost Iranian reflex of **miḱ-ro-*, but as such a form is not continued, this is difficult to substantiate. See Korn (2010) for an alternative explanation of the Parthian forms.
[103] Khot. *mijsaã-* 'marrow' has been interpreted as an Indo-Aryan loanword (Dragoni 2023: 158, fn. 322).
[104] Lith. *mãzgas* 'knot' has been connected, but it is probably unrelated and may instead be compared to PGm. **maska-* 'mesh' (IEW: 746; Derksen 2015: 308).

Next to PIE **mosgʰ-o-* ‘brain, marrow’, we may reconstruct **mre/ogʰ-mn-* ‘brain, skull’, reflected in PGm. **bragna-* ‘brain’ and Gr. βρεχμός m. ‘front part of the head’. Lubotsky (2021) has suggested that the latter stem has been preserved in the compound Skt. *mastr̥han-* m. ‘brain’ (KauśS) ~ YAv. *mastərəγan-* m. ‘brain’ < **mast-(m)rgʰan-*. The first part of the compound may be identified with Skt. *mastíṣka-* m./n. ‘brain’ (RV+), *mastaka-* m./n. ‘skull, head’ (Gr̥Sū.+) ~ Khot. *māstai* ‘brains, head’, which has a plausible cognate in ToA *mäśśunt* ‘marrow’ < **mesti-uent-*. Based on its attestation in only Indo-Iranian and Tocharian, it is unclear whether **mesti-* should also be reconstructed for Proto-Indo-European. In any case, the compound **mast-(m)rgʰan-* is likely an Indo-Iranian innovation, whereas **mosgʰ-en-* is shared by Indo-Iranian and Balto-Slavic.

3.3.36. **ne* ‘as, like’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	Semantics

Indo-Aryan: Skt. *ná* ‘as, like’

Iranian: YAv. *yaθ-na* ‘namely’ (lit. ‘like which’)

Baltic: Lith. *nè* ‘than; like’, *negù* ‘than’, *néi* ‘than, as if’; Latv. *ne* ‘than’

Slavic: OCS *neže* ‘than’; Ru. *ne* ‘as, like’; Ukr. *niž* ‘than’; Pol. *niż* ‘than’; Cz. *než* ‘than’; SCr. *neže* ‘than’

Indo-Iranian and Balto-Slavic share a particle/conjunction **ne* ‘as, like’, which is generally explained as being etymologically identical to the Indo-European negation **ne* (EWAia II: 2; LEW: 489; Derksen 2008: 352; 2015: 331; Smoczyński 2018: 850–51; *pace* Vasmer II: 204).

Within Indo-Iranian, **na* ‘as, like’ is mostly attested in Sanskrit, although YAv. *yaθna* ‘namely’ may reflect a fossilized remnant of the particle in Iranian.[105] Sanskrit *ná* ‘as, like’ is often, but not always, enclitic. Based on a metrical analysis of the Rigvedic material, Vine (1978: 183) showed that the enclitic position is secondary. This implies that the original syntax is the same as in Balto-Slavic (see below). Furthermore, Vine (1978) argues that *ná* ‘as, like’ originates in negated constructions of the type *ná yám járanti śarádo ná mā́sā* ‘whom neither years nor months make old’ (RV VI.24.7a). Since *ná* ‘not’ is a verbal negation and not a conjunction, a literal translation would be ‘whom years do not make old, (just like) months do not’. In this way, it is understandable how *ná* ‘not’ could be reanalysed as ‘as, like’. Vine’s explanation provides a plausible alternative to the traditional view (e.g., Whitney 1879: 366) that *ná* ‘as, like’ developed from constructions like *gauró ná tr̥ṣitáḥ piba* ‘drink like a thirsty buffalo’ << ‘drink [although, to be sure] not [precisely like] a thirsty buffalo’ vel sim. (RV I.16.5c).

In Balto-Slavic, the relevant particles can be grouped into several categories, since some have been extended with suffixes or are otherwise divergent. Lith. *nè*, *negù* ‘than’ and Latv. *ne* ‘than’ are used after comparatives. This function could be a secondary extension of

[105] For a different view on the Iranian material, in which the particle **na* is connected to a pronominal stem **ana-*, see ESIJ V: 405–8.

Lith. *nè* ‘like’,[106] but may rather have developed independently from the negation **ne* ‘not’.[107] The Baltic comparative particles are comparable to Church Slavic, Czech and Serbo-Croatian particles reflecting PSl. **neže* ‘than’ (*ne* + emph.ptcl. *že*). Similarly, Ukr. *niž* ‘than’ and Pol. *niż* ‘than’ derive from PSl. **ni že*, which probably originally meant ‘nor’, cf. OCS *ni že* ‘nor’ and fn. 107. Closest to Lith. *nè* ‘like’ is Ru. *ne* ‘as, like’, which is attested in Russian *byliny* (archaic epic poetry). This **ne* ‘as, like’ looks archaic within Balto-Slavic and may thus be compared directly to Indo-Iranian **na* ‘as, like’. Finally, Lith. *néi* ‘than; as if’ has both functions and derives (with unclear acute) from Lith. *neĩ* ‘not even’ < PBSl. **nei*. This extended variant of **ne* ‘not’ is old (cf. Lat. *nī*, Goth. *nei*, Av. *nōiṯ*).

In sum, it seems possible that the development of **ne* ‘as, like’ from **ne* ‘not’ was a shared Indo-Slavic innovation, whereas the various particles meaning ‘than’ in Balto-Slavic are independent innovations.

3.3.37. **ni-h₃(e)kʷ-* adj. ‘facing downwards’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *nyàñc-* adj. ‘facing downwards’, *nīcā́* adv. ‘downwards’, *nyàk* adv. ‘down, downwards’

Iranian: YAv. *niiā̊ṇc-* adj. ‘going away, facing away’

Baltic: Latv. *nīca* f. ‘place downstream’, *nīcām* adv. ‘downstream’

Slavic: OCS *nicь* adj. ‘facing downwards’; Cz. *nicí* adj. ‘facing downwards’; Bulg. *nícom* adv. ‘face down’

Meillet (1926: 172) took the corresponding Slavic and Sanskrit adjectives as an isogloss, to which we may add additional comparanda from Baltic and Iranian. The adjectives Skt. *nyàñc-* and YAv. *niiā̊ṇc-* have secondary *-n-*, which is common in compounds with **h₃ekʷ-* ‘eye’ (see below). In Sanskrit, case forms of an originally athematic paradigm are preserved as adverbs, e.g., instr.sg. *nīcā́* (cf. EWAia II: 60; AirWb.: 1095). Based on the palatalization in Slavic, an *o*-stem may be reconstructed (Derksen 2008: 352–53), which could have replaced an earlier athematic inflection.

OE *nihol*, *nīowol* ‘lying face down’ has traditionally been connected to the Indo-Iranian and Balto-Slavic material (LEW: 503; KEWA II: 182). This etymology is doubtful, however, since the Old English forms reflect a short **i* (Schaffner 1996: 132). To maintain the connection, one would have to assume that an original long **ī* was shortened by analogy to **ni-þera-*. Schaffner (1996: 159) proposes a different analysis, deriving *nihol* from **ni-ḱuo-lo-* from **ni-ḱuo-* ‘below, facing down’, cf. Skt. *víśva-* ‘all’. The stem **ni-ḱuo-* would also be reflected in the first part of the compound OE *niweseoða* ‘lower part of the belly’.

[106] For the semantics, see LKŽ s.v. *ne*[3].
[107] Cf. English dialectal *nor* ‘than’, e.g., *There wusnae less nor twenty horses* ‘there were no fewer than twenty horses’ (Wright & Wright 1898: s.v. *nor*)

Arm. *nkᶜtᶜem* ‘to starve, faint from hunger’ has been derived from **ni-h₃kʷ-* ‘downwards’, but Martirosyan’s etymology (2010: 512), deriving it from **ni-* + **kt‘-* ‘to faint’ is semantically much more straightforward. Thus, it appears that **ni-h₃(e)kʷ-* is indeed exclusively Indo-Slavic.

Compounds of adverb + **h₃kʷ-* ‘eye’ seem to have been productive in early Indo-European, cf. Skt. *pratīka-* n. ‘surface, face, image’, *pratyàñc-* ‘facing’,[108] Gr. πρόσωπον n. ‘face, countenance, mask, role, person’, ToB *pratsāko* f. ‘breast’ < **proti-h₃kʷ-*; Lat. *antīquus* ‘lying in front’ < **h₂enti-h₃kʷ-*; Skt. *abhīka-* n. ‘nearness’ < **h₂nbʰi-h₃kʷ-*; Skt. *ápāñc-* ‘located behind’, PGm. **abuha-* ‘turned the wrong way’, OCS *opaky* ‘the other way round’ < **h₂epo-h₃kʷ-*; Skt. *ánīka-* n. ‘face, appearance; front, row, array’, Gr. ἐνῶπα ‘in the face’, OIr. *enech* n. ‘face’ < **h₁eni-h₃kʷ-*; Lat. *ferōx* ‘fierce, arrogant’ < **fēro-h₃kʷ-* ‘having a fierce aspect’. Given the many parallel formations, some in several branches, but others clearly formed within branches, **ni-h₃(e)kʷ-* ‘facing downwards’ is a possible shared innovation, but it is difficult to exclude an archaism or independent innovation.

3.3.38. **nogʷ-o-* ‘naked’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *nāgá-* m. ‘elephant (AB+); snake (ŚB+)’

Iranian: –

Baltic: Lith. *núogas* adj. ‘naked’; Latv. *nuôgs* adj. ‘naked, poor’

Slavic: OCS *nagъ* adj. ‘naked’; Ru. *nagój, nag* adj. ‘naked’; Pol. *nagi* adj. ‘naked’; SCr. *nâg* adj. ‘naked’

Arntz (1933: 51) listed this *o*-stem as an Indo-Slavic isogloss. Two questions regarding this etymology must be addressed: the semantics of Skt. *nāgá-* ‘snake; elephant’ and the relationship between **nogʷ-o-* and the more widely attested **nogʷ-no-* ‘naked’.

Mayrhofer (EWAia II: 33) dismisses the old idea that *nāgá-* ‘elephant’ is extracted from an unattested compound **nāga-hasta-* lit. ‘having a snake-hand’. Instead, both ‘snake’ and ‘elephant’ seem old, which suggests an original meaning ‘bare, naked (animal)’. This makes the connection to Balto-Slavic semantically plausible.

A root **negʷ-* is well attested in Indo-European words for ‘naked’, but several different formations exist (cf. Beekes 1994). Skt. *nagná-* ‘naked’ and YAv. *maγna-* ‘naked’ (with dissimilation) reflect **ne/ogʷ-no-*, as well as probably Gr. γυμνός ‘naked, unarmed’, OPr. *nognan* ‘leather’ (EV), and possibly Hitt. *nekumant-* ‘naked’ (if dissimilated from **negʷno-nt-* Kloekhorst 2008: 603).[109] Arm. *merk* ‘naked’ reflects an *e*-grade and *r*-suffix, which together with **ne/ogʷ-no-* could point to an original heteroclitic. Latin and Germanic show forms with an unclear dental suffix **-o/e/udʰ-*, cf. Lat. *nūdus* ‘naked’, Goth. *naqaþs*

[108] The Iranian counterpart YAv. *paitiiaṇc-* ‘turned against’ contains **pati-*, which replaced **prati* ‘against’ in Iranian, showing that compounds with **h₃ekʷ-* remained productive into post-Proto-Indo-Iranian times.
[109] ON *nakinn* ‘naked’ is secondary and cannot reflect old **nogʷ-no-*.

'naked', ON *nøkkviðr* 'naked', OSw. *nakuþer* 'naked'.[110] OIr. *nocht* 'naked' reflects **nog^{w}-to-*, likely a Celtic innovation. Based on this material, it is unclear whether a single Proto-Indo-Anatolian form can be reconstructed, although **ne/og^{w}-no-* seems like the best candidate.

Since both **ne/og^{w}-no-* and **nog^{w}-o-* are attested in Indo-Iranian, the latter did not simply replace an older formation, as appears to be the case in Balto-Slavic. Therefore, if **nog^{w}-o-* is an Indo-Slavic innovation, it may have originated as a dissimilated variant of **ne/og^{w}-no-*, possibly motivated by taboo reasons or in order to denote some other semantic nuance of 'naked', e.g., 'lacking clothes' vs. 'lacking hair'.[111]

3.3.39. **peh$_2$gs-ó-* '(body part) having a side'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	^{N}Derivation

Indo-Aryan: Skt. *pakṣá-* m. 'wing (RV); wing of a building (AV)', *upa-pakṣá-* m. 'armpit'

Iranian: Oss. *faxs* 'side, slope of a mountain'[112]

Baltic: –

Slavic: Ru. *pax* m. 'groin', *paxá* f. 'armpit'; Cz. m. *pach* 'groin', Pol. *pacha* f. 'armpit'

Arntz (1933: 38, 41) listed Skt. *pakṣá-* next to Ru. *pax*, reconstructable as **peh$_2$gs-ó-*, as an Indo-Slavic isogloss.[113] As will be argued below, **peh$_2$gs-ó-* derives from an *s*-stem **peh$_2$ǵ-os-* reflected by Skt. *pā́jas-* '(front) side; firmament; face'.

The *s*-stem **peh$_2$ǵ-os-* can be connected to **peh$_2$ǵ-* 'to become firm', continued in Skt. 3sg.int.med. *pāpaje* 'stays behind', Gr. πήγνυμι 'to fix, stick' etc., which suggests an original meaning 'support', 'that which is (or makes) firm'. This is reflected in Skt. *pā́jas-* n. 'firmament', i.e., 'the surface to which the sky is attached'. Skt. *pā́jas-* also means 'front side', e.g., the front side of a chariot, as well as 'face', as in the front side of a person (or deity). Furthermore, it means 'side, flank', often of the body. The Iranian cognates show a comparable semantic range, with Khot. *pāysa-* 'breast' and Sogd. C *p'z* 'face' etc. reflecting the 'front side' meaning, while Oss. I *faz* / D *fazæ* also means 'side, half, anus'.[114] Slavic does not preserve an *s*-stem, but has an *o*-stem in ORu. *pazъ* m. 'joint, groove', Sln. *pâz* m. 'joint' from the same root.

Skt. *pakṣá-* 'wing' may be explained as a possessive thematic derivative from *pā́jas-* '(front) side; firmament; face'. The derivation is likely old, for several reasons: first, it presupposes loss of the laryngeal in preconsonantal position, which is a Proto-Indo-Iranian development (Lubotsky 1981). This fits with the meaning of *pakṣá-* 'wing', which does not point to a synchronic derivation from *pā́jas-*. Additionally, Oss. *faxs* 'side, slope of a

[110] *Pace* Schrijver (1991: 274–75), not all Germanic forms can be explained from a suffix form **-od^{h}-*.
[111] Cf. Sw. *naken* 'naked (in general, of parts of the body, metaphorically)' vs. *näck* 'lacking any clothes on the body'.
[112] For further possible cognates in Iranian, reflecting PIr. **paxša-* 'mosquito', see ESIJ VI: 109–10.
[113] Arntz also adduced Latv. *paksis* 'corner of a house', which is formally impossible.
[114] The meaning of the hapax YAv. *pāzaŋʸhaŋt-* '(broad-)breasted (?)' is uncertain, but it shows that the *s*-stem is old in Indo-Iranian. Further cognates include Khwar. *p'z* 'breast', Shu. *puz* 'breast' and Wakh. *рыг* 'breast'.

mountain', which can hardly be separated from Skt. *pakṣá-*,[115] is incompatible with a palatal **ǵ*, and rather points to PIIr. **-kš-* (e.g., Oss. I *æxsæv* / D *æxsævæ* 'night' < **kšapā-*). This suggests that **ǵ* underwent depalatalization in the heavy cluster that arose when **peh₂gs-ó-* was derived from **peh₂ǵ-os-*.

Although requiring an extra assumption, this scenario is attractive, because it also explains Ru. *pax* 'groin', *paxá* 'armpit' etc., which cannot have been derived within Slavic from, e.g., ORu. *pazъ* m. 'joint, groove' (nor from an unattested *s*-stem **pazo*), but nevertheless clearly belong here semantically. In this way, Sanskrit 'wing' and Slavic 'groin, armpit' developed from **peh₂gs-ó-* '(body part) having a side' << **peh₂ǵ-os-* 'side (that supports)'. The semantic closeness is further highlighted by Skt. *upa-pakṣá-* m. 'armpit'. This derivative is a possible Indo-Slavic shared innovation, although it cannot be excluded that the stem was lost in other branches.

3.3.40. **peh₃i-men-* 'milk'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation

Indo-Aryan: –

Iranian: YAv. *paēman-* n. 'mother's milk'; MiP Pahl. *pēm* 'milk'; MoP *pīnu* 'sour milk, cream cheese, buttermilk'; Sogd. C *rxpyn* 'whey, new cheese (?)' < **huxra-paina-*

Baltic: Lith. *píenas* m. 'milk'; Latv. *piẽns* m. 'milk'

Slavic: –

Arntz (1933: 56) considered the Persian and Lithuanian words for 'milk', both having lost the **-m-* of the related form YAv. *paēman-* 'mother's milk', to be an Indo-Slavic isogloss. An Iranian stem **paina-* is further reflected in Sogd. C *rxpyn* 'whey, new cheese (?)' < **huxra-paina-* (see p. 85). In (Core) Proto-Indo-European, the suffix **-mn-* was reduced to **-m-* in the oblique stem of roots containing a labial consonant (cf. AiGr. II, 2: 766; Kroonen 2006). This process explains the *no*-stems of Baltic and Iranian as thematicized variants of **peh₃i-men-*. The fact that this cluster reduction was a Proto-Indo-European phenomenon does not necessarily imply that **peh₃i-men-* is a shared archaism, since the process may well have been productive in Indo-Slavic.

As for potential extra-Indo-Slavic cognates, ON *feima* f. 'shy girl' and OE *fæmne*, *fémne* f. 'virgin, damsel, maid, woman' have been derived from **peh₃i-m(e)n-ieh₂-* lit. 'nursing woman' (cf. de Vries 1977: 115). Semantically, this etymology is not obvious, since a 'virgin' is specifically *not* a 'nursing woman'. A more plausible preform is **poh₂i-m(e)n-ieh₂-* 'shepherdess'.

The stem **peh₃i-men-* 'milk' is generally derived from **peh₃(i)-* 'to drink'. The *i*-extension appears in certain verbal derivatives of the root, e.g., Gr. imp. πῖθι 'drink!', Skt. *pāyáyati* 'to let drink', OCS *piti*, *pijǫ* 'to drink', and perhaps Alb. *pi* 'to drink'. From such

[115] Based on its semantics, Oss. *faxs* 'side, slope of a mountain' is perhaps better compared with Skt. *pákṣas-* n. 'side' (Cheung 2002: 182), which is a secondary *s*-stem derived from *pakṣá-* 'wing'. In any case, the Ossetic form shows that the cluster must have been PIIr. **-kš-* rather than **-ćš-*.

verbal forms (an *i*-perfect with a dative subject is preserved in Skt. *pīpáya* ‘swells up (with milk)’ according to Lubotsky 2011: 121), a secondary root **peh₃i-* ‘to swell (with milk), nurse’ was lexicalized, which was the basis for **peh₃i-men-* ‘milk’. This stem is a possible Indo-Slavic innovation.[116]

3.3.41. **pelH-ou-* ‘chaff’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	Semantics

Indo-Aryan: Skt. *palā́va-* m. ‘chaff, husks’

Iranian: –

Baltic: Lith. *pẽlūs* m.pl. ‘chaff’; Latv. *pęlus* f.pl. ‘chaff’; OPr. *pelwo* ‘chaff’ (EV)

Slavic: OCS *plěvy* f.pl. ‘chaff’; Ru. *polóva* f. ‘chaff’; SCr. *pljëva* f. ‘chaff’

Based on the Sanskrit and Balto-Slavic words for ‘chaff’, together with Lat. *pulvis* n. ‘dust’, an amphidynamic *u*-stem **pelH-ou-* may be reconstructed (IEW: 802; de Vaan 2008: 440; Smoczyński 2018: 940). Gr. παλύνω ‘to strew, sprinkle’ is possibly denominative from an unattested reflex of **plH-u-* ‘sprinkle (?)’, a stem variant of **pelH-ou-*.[117] While the stem itself is not an isogloss, the meaning ‘chaff’ is restricted to Indo-Iranian and Balto-Slavic and reflects a possible shared semantic innovation.

Other formations from the same root also show a distribution between agricultural and non-agricultural meanings (see IEW: 802). ON *fǫl* n. ‘thin layer of snow’, Far. *følva* ‘to cover in a thin layer (of snow, butter, flour)’ and Alb. *pall* m. ‘finely milled flour, chaff and dust from harvested grain’ reflect **polH-uo-*. Here, the connotation to agricultural products may be an Albanian innovation. It is of course difficult to exclude that the agricultural meaning is original in both **pelH-ou-* and **polH-uo-*.

3.3.42. **seng-* ‘to attach, fasten’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	Root

Indo-Aryan: Skt. 1sg.pres.act. *á́ sajāmi* ‘I fasten, attach’, 3sg.aor.med. *ní asakta* ‘he has hanged (smth.) down at himself’ (RV+), 3sg.pf. *sasañja* (Br.)

Iranian: OP 1sg.imf.act. *frāha$^{(n)}$jam* ‘I hung out’; MiP Man. *’šynz-* ‘to draw up’; MoP *āvang*(*ān*) ‘hanging’; Yi. *awáž-* ‘to hang up’

Baltic: Lith. *sègti, sẽga* ‘to fasten, pin, tack, attach’; Latv. *segt, sędzu* ‘to cover, fasten’

Slavic: CS *prisęgnǫti* ‘to touch’; Ru. *sjagnút’* ‘to reach for, attain’; Pol. *sięgać, sięgam, sięgnąć, sięgnę* ‘to reach for, reach’; SCr. *sȅzati, sȅžem* ‘to reach, attain’, *ségnuti* ‘to reach’

[116] Lith. *pajaĩ* ‘beeswax’ has been connected to **peh₃i-* ‘to swell up’ (LEW: 527) and compared to YAv. *paēnaēna-* ‘made of honey’, Orm. *pīn* ‘honey’, Sogd. B *’nkwpyn* ‘honey’, Psht. *gabína* ‘honey’ < **hangu-paina-* ‘honey’ (cf. Morgenstierne et al. 2003). While the semantic connection is interesting, there is no formal correspondence and the semantic shift in Iranian is explained by the compound **hangu-paina-* lit. ‘bee’s milk’.

[117] Alternatively, Gr. παλύνω may be derived from πάλη f. ‘flour’.

A root **se(n)g-* ‘to attach, fasten’ has been reconstructed based on the above verbal forms as well as nominal forms in other branches, viz. MIr. *sén* ‘(bird) trap’ < PCelt. **segno-*, MWelsh *hoenyn*, *hwynyn* m. ‘net, trap’ < PCelt. **sogno-*, and MHG *senkel* m. ‘shoelace, string; anchor, fishing net weighed down with lead balls’ (IEW: 887–88).

There is a discussion in the literature whether the root was **seg-* or **seng-*. The abovementioned Celtic forms point to **seg-*, but it should be noted that these etymologies are rather uncertain, both in terms of semantics and form.[118] The meaning ‘shoelace, string’ of MHG *senkel* is secondary in view of OHG *sinkel* m., which only means ‘anchor, fishing net weighed down with lead balls’ and is no doubt deverbal from *senken* ‘to sink’ (EWD s.v. *Senkel*).

As for the Indo-Iranian verbal forms, LIV: 516 follows Klingenschmitt (1982: 185 fn. 26) in taking the forms with *-n-* in the root as secondary. It is argued that they may be analogical, since they are not attested in RV. However, this claim does not take into account the Iranian forms pointing to **seng-*, viz. MiP Man. *ʾšynz-* ‘to draw up’ and MoP *āvang*(*ān*) ‘hanging’.[119] In view of the Iranian evidence, **sanǰ-* should be reconstructed for Proto-Indo-Iranian, while the forms without nasal in Sanskrit reflect the zero-grade **saǰ-* < **sng-*.

Baltic does not reflect a nasal in the root, but neither can the attested forms be derived regularly from **seg-*, since the root does not show the effect of Winter’s Law. According to Kortlandt (1988: 389), the Baltic root was back-formed from a nasal stem **seng-n-*, cf. CS *-sęgnǫti* ‘to touch’, where Winter’s Law was blocked. The regular acute is reflected by, e.g., SCr. *sȅzati* ‘to reach, attain’.

Thus, the likeliest reconstruction for both Indo-Iranian and Balto-Slavic is **seng-*, which constitutes an Indo-Slavic root isogloss. This may most plausibly be analysed as an archaism, although an innovation cannot in principle be excluded.

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[118] Lat. *sagum* n. ‘woollen cloak’ is unrelated (cf. de Vaan 2008: 534). As for the Celtic forms, the semantic connection is possible but not compelling. The difference in root ablaut in Irish and Welsh is unexplained.

[119] Khwar. *mƒšnc-* ‘to sit on (horse), ride’ may also belong here. The meaning ‘to sit on (horse), ride’ may have developed from ‘to hang (reins) around, fasten (reins) around (a horse), especially in view of RV I.33.3a *ní sárvasenaḥ iṣudhī́n asakta* ‘fully armed, he has laden himself down with quivers’ (translation by Jamison & Brereton 2014: 137), referring to Indra hanging quivers around his neck.

3.3.43. **seuk-* ‘to turn, twist; to churn’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	Root Semantics

Indo-Aryan: –

Iranian: MoP *ruxbīn / rixbīn* ‘sour milk, new cheese’;[120] Sogd. C *rxpyn* ‘whey, new cheese (?)’; Oss. I *x$_o$yrx* / D *xurxæ* ‘whey’

Baltic: Lith. *sùkti* ‘to turn, twist; to spin (yarn), twist (strands of rope); to churn (butter)’, *pãsukos* f.pl. ‘buttermilk’, *išsukos* f.pl. ‘buttermilk’, *sùkras* adj. ‘agile, diligent, swift’, *sukrùs* adj. ‘tightly twisted, winding, vigorous; quick, agile’; Latv. *sukrs* adj. ‘strong, energetic, swift’

Slavic: (CS *sukati* ‘to turn’; Ru. *sukátь* ‘to turn, twist’; OPol. *sukać* ‘to twist threads together’)

The comparison of the Ossetic and Baltic words goes back to Lidén (1933: 7). He argued that a root **seuk-* ‘to turn’ is uniquely attested in Balto-Slavic and Iranian (Ossetic), which in both branches denotes curdling of milk. Moreover, Lidén noted the formal correspondence between Oss. I *x$_o$yrx* / D *xurxæ* ‘whey’ < **sukrā-*[121] and Lith. *sùkras* ‘agile, diligent, swift’.

We may now add Sogdian and Persian comparanda, reflecting a compound **sukra-paina-* ‘whey, sour milk, new cheese’ as additional evidence for Iranian **sukra-*. A possible interpretation is that **sukra-paina-* contains an adjective **sukra-* ‘turned, twisted’ rather than the nominalized **sukrā-* ‘whey’ reflected in Ossetic. If correct, Iranian **sukrā-* may be compared to Lith. *sùkras*, *sukrùs* and Latv. *sukrs*. Within Indo-Iranian, **sukrā-* and its semantic connection to dairy products must be an archaism, as the root is not attested elsewhere.

The Baltic *ro*-adjective is connected to Lith. *sùkti* ‘to turn, twist; to spin (yarn), twist (strands of rope); to churn (butter)’, which itself has retained the original meaning of the root, cf. CS *sukati* ‘to turn’ etc., as well as several specialized meanings including ‘to churn’. Among its many nominal derivatives, those that relate to milk are *pãsukos* ‘buttermilk’ and *išsukos* ‘grease from the axle of a wheel; dust off a grinding wheel; buttermilk’ (cf. LEW: 548; Smoczyński 2018: 1324).[122]

As for the semantics of **seuk-*, it must be noted that it refers to ‘buttermilk’ in Baltic, whereas Iranian **sukrā-* mainly refers to ‘whey’ or ‘cheese’. However, we also find

[120] Psht. *raxpín/ṇ* m. ‘dried solids of buttermilk’, *xarpín* m. ‘whey’ may be borrowings from Persian (Morgenstierne et al. 2003 s.vv.).

[121] Cheung (2002: 251) alternatively reconstructs **surakā-* and connects the Ossetic word to YAv. *hurā-* f. ‘an alcoholic drink, kumis’, which requires the assumption that final *-x* is the result of assimilation.

[122] Lith. *sunkà* ‘juice; soup liquid; decoction; bodily fluids; whey’ and Latv. *sūkalas* f.pl. ‘whey’ (cf. *sùkala* f. ‘drop’) are rather from Lith. *suñktis* ‘to trickle out slowly (of resin, whey, sweat, blood, tears)’, *suñkti* ‘to sip, strain through a strainer, press out juice’, Latv. *sùkt* ‘to suck (of a leech); to strain through a strainer’, related to Lat. *sūcus* m. ‘juice’, ON *súga* ‘to suck’ etc.

a connection to ‘buttermilk’ in Psht. *raxpín/ŋ* m. ‘dried solids of buttermilk’, which indicates that the semantic difference from Baltic is trivial.

Thus, it is possible that the development ‘to turn’ >> ‘to churn’ was a shared Indo-Slavic change. The possibly shared formation **suk-ro-* ‘turned, twisted’ favours this conclusion.

3.3.44. **som-dʰeh₁-* ‘agreement’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	Semantics

Indo-Aryan: Skt. *saṃdhā́-* f. ‘agreement, promise’ (AV+)

Iranian: –

Baltic: Lith. *samdà* f., *samdas* m. ‘rent, hire, hired workers, servants, family’

Slavic: OCS *sǫdъ* m. ‘court of law, trial, verdict, judgement’

Meillet (1926: 169) takes the formal and semantic correspondence between Skt. *saṃdhā́-* (EWAia I: 784) and Lith. *samdà* as an Indo-Slavic isogloss. YAv. *haṇ-dāiti-* f. ‘collection’ has a different suffix, **-ti-*, and in view of its productive semantics, it is derived within Iranian (cf. Gr. σύνθεσις f. ‘putting together; agreement). Lithuanian also has a variant *samdas*, which is attested earlier than *samdà* and is inflected as an *o*-stem, corresponding to OCS *sǫdъ* (LEW: 761; Derksen 2008: 463; 2015: 389). Consequently, **som-dʰh₁-o-* is the most likely Proto-Balto-Slavic reconstruction.

If PBSl. **som-dʰh₁-o-* is to be compared with Skt. *saṃdhā́-*, the latter being a compounded root noun (AiGr. II, 2: 15), one would have to assume that the *o*-stem is secondary. Such an assumption is complicated by Lithuanian compounds like *avìdė* ‘sheepfold’, *alùdė* ‘beer keg’, which have been argued to reflect an old root noun **dʰeh₁-* (LEW: 92). However, these compounds can just as well be analysed as derivatives in *-ė*, in view of the non-acute intonation.[123] Moreover, the retained nasal in compounds with *-das* in Lithuanian, e.g., *samdas, iñdas, indà* ‘container, pot’, implies that they are archaic (contra *są́-* ‘together, with’, *į̃-* ‘in’). In addition, the lexicalized semantics of both Lith. *samdas* and OCS *sǫdъ* indicate an archaic derivation, as they do not look deverbal. It therefore seems not at all impossible that PBSl. **som-dʰh₁-o-* is a thematicized root noun. The original meaning may have been ‘agreement, conclusion (of business)’ vel sim., which was further specified to an economic context in Baltic and a judicial context in Slavic.

Skt. *saṃdhā́-* ‘agreement, promise’ is also further lexicalized, i.e., further removed from the literal meaning of the root, when compared to other derivatives like *saṃdhí-* m. ‘joint, juncture’ (RV) (<< ‘putting together’) or *durdhā́-* f. ‘disarrangement’ (RV) (<<

[123] According to Kortlandt (1985: 120), the circumflex *-ẽ̂* in Lith. *avìdė* ‘sheepfold’ etc. is due to regular loss of laryngeals after **ē* in root nouns. However, even if the circumflex nominative in Lithuanian *ė*-stems is explained in this way, it does not prove that *avìdė* ‘sheepfold’ etc. reflect old root nouns, since *ė*-stems became productive in Baltic. The transparent semantics of *avìdė* ‘sheepfold’ and *alùdė* ‘beer keg’, i.e., ‘where sheep/beer is put’, derivable from the verb *dė́ti* ‘to put, place’, are also compatible with a later derivative. In the case of *alùdė*, the first member *alù-* is probably a Germanic borrowing, and so this particular case cannot be of Proto-Balto-Slavic age.

'what is badly put'). In RV, *sám-* + *dhā-* generally means literally 'to put together'.[124] This suggests that *saṃdhā́-* 'agreement, promise' is not a recent deverbal stem, but rather an inherited formation.

In conclusion, **som-dʰeh₁-* 'agreement' may be analysed as an Indo-Slavic semantic isogloss, since the stem formation of the attested forms is not fully comparable. Naturally, it is difficult to rule out the possibility of independent innovation, but the fact that the preverb **som-* 'together' is only used in Indo-Iranian and Balto-Slavic lends support to a shared innovation.

3.3.45. **suleh₂-* 'juice; milk'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *súrā-* f. 'an alcoholic drink'

Iranian: YAv. *hurā-* f. 'an alcoholic drink, kumis'; MiP Pahl. *hur* 'an alcoholic drink'; Khot. *hurā-* f. 'fermented mare's milk'

Baltic: Lith. *sulà* f. 'birch or maple juice'; Latv. *sula* f. 'tree sap; gastric juice'; OPr. *sulo* 'curdled milk' (EV)

Slavic: –

Arntz (1933: 53) listed this as an Indo-Slavic isogloss. Goth. **bi-sauljan* 'to make spotted, unclean', Nw. (dial.) *saula* f. 'dirt', OHG *sol* m. 'mud-puddle' have been connected (cf. Lehmann 1986: 72), but the semantics are not very close to the Indo-Iranian and Baltic words. Gr. ὕλη f. 'mud' has been seen as a reflex of **suleh₂-* (LEW: 940). However, according to Beekes (2010: 1530), this is merely a chance resemblance and the meaning 'mud' is secondary from ὕλη f. 'stuff, matter'.

While the Indo-Iranian (EWAia II: 737; AirWb.: 1837) and Baltic (LEW: 940) forms match formally, the semantics are divergent. In Iranian, the reflexes of **suleh₂-* denote a specific type of fermented mare's milk (kumis), which is common on the Eurasian steppe. Evidence for the consumption of mare's milk goes back to the Early Bronze Age in the Pontic-Caspian steppe (Wilkin et al. 2021). The exact meaning of Sanskrit *súrā-* is debated. It is possible that it originally meant 'kumis' but came to signify another type of alcoholic drink when the speakers of Indo-Aryan migrated away from the steppe. OPr. *sulo* 'curdled milk' is semantically quite close to Iranian. On the other hand, the East Baltic

[124] Grassmann (1996: 663ff) glosses two attestations of *sáṃ-* + *dhā-* as '(einen Bund) schliessen', i.e., 'to form (an alliance)':

RV VIII.67.21ab: *ví sú dvéṣo vy àṃhatím ā́dityāso ví sáṃhitam*
'O Ādityas, rip apart hostility, apart constraint, apart what is packed together' (Jamison & Brereton 2014: 1157).
RV X.100.4bc: *rā́jā sómaḥ suvitásyā́dhy etu naḥ yáthā-yathā mitrádhitāni saṃdadhúr*
'Let King Soma stay mindful of our welfare, in the same way that (pacts) concluded by allies bind (them [=allies]) together' (Jamison & Brereton 2014: 1559).

As the translations show, *sáṃ-* + *dhā-* can in both cases be read as 'to put together', rather than 'to form an alliance'.

forms generally do not refer to milk.[125] However, the Prussian-Iranian correspondence suggests that Indo-Slavic **suleh₂-* could denote a dairy product, although this may not have been the only meaning of the stem (a possible root cognate with similar semantics is MIr. *suth* m. 'milk' < **su-to-*).[126]

The stem **suleh₂-* has been seen as a derivative from **seu-* 'to press' (IEW: 912–13), whence also Skt. *savá-* m. 'juice' and PGm. **sawwa-* n. 'juice' (Kroonen 2013: 428). Alternatively, one may assume a derivation from **suel-* 'to consume', reflected only in Iranian, e.g., YAv. *xᵛaraiti* 'to consume, eat', Khwar. *x(w)r-* 'to consume, eat, drink'.[127] The root etymology of **suleh₂-* cannot be considered certain, but the stem is an Indo-Slavic isogloss and a possible shared innovation.

3.3.46. **tsprh₂/₃-e/o-* 'to kick away with the foot'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	^{V}Derivation

Indo-Aryan: Skt. *sphuráti* 'to push away with the foot'

Iranian: YAv. *fra-spara-* 'to kick away'; MiP Pahl. *spar-* 'to trample, tread'; MoP *sipardan* 'to trample; to be trampled'; Sogd. C *pšpr-* 'to trample on'; Khot. *vaspuḍai* 'he trod'; Oss. I *æfsæryn* 'to press on; to push' / D *æfsærun* 'to kick with the feet'; Wakh. *nəsp(ə)r-* 'to kick (with the feet)'

Baltic: (Lith. *spìrti, -ia* 'to kick with a leg or hoof'; Latv. *speŕt, speļu* 'to kick, strike (of lightning)')

Slavic: Ru. *perét', pru* 'to brace one's feet against, push'; Pol. *przeć, prę* 'to stem'; SCr. *zàprijeti, zàprêm* 'to confine, close'

According to LIV: 585, only Indo-Iranian and Slavic attest a thematic present with zero-grade in the root from the root **spʰerH-* 'to kick away with the foot'. The root is further attested in the Indo-European word for 'heel', cf. Skt. *pā́rṣṇi-* f. 'heel', Gr. πτέρνη f. 'heel', Lat. *perna* f. 'leg, haunch', Goth. *fairzna* f. 'heel', Hitt. *paršna* 'heel (?)'. I follow Lubotsky's (2006) reconstruction, with the specification of the final laryngeal according to Kloekhorst (2008: 410), i.e., **tsperh₂/₃-*, which accounts for the initial clusters of the attested forms.

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[125] Latv. *suliņas* 'whey' (= 'milk juice'?) is probably a secondary derivative from *sula*, and does not prove that the latter originally denoted a dairy product in East Baltic.

[126] If 'juice, sap' was part of the original semantic scope of **suleh₂-*, the meaning 'fermented/curdled milk' may have developed in a metaphorical sense as the 'juice from a mare/cow'. A parallel for this is OHG *quiti, kuti* m. 'resin', Skt. *játu-* n. 'varnish, gum', Welsh *bedw-en* sgl. 'birch' < **gʷet-u-*, from which are derived ON *kváða* f. 'resin', Nw. *kvåde, kode* f. 'resin; watery fluid from a pregnant cow's udder; raw milk', Far. *kváð* n., *kváð(a)* f. 'viscous fluid from a cow's teat' (Hellquist 1922: 382; Kroonen 2013: 315). Arm. *kečᶜi* 'birch' and *kitᶜ* 'dairy produce' may be near identical to the formations attested in Germanic (Rasmussen 1999: 622–23; Martirosyan 2010: 359).

[127] Cf. LIV: 609. Cheung (2007: 147) considers Iranian **huar-* 'to consume' to have developed from *huar-* 'to take'. Alternatively, **huar-* 'to consume' derives from **suel-* 'to swell', with a semantic change from 'to swell (with milk)' >> 'to (give to) drink'. This would indicate that **suleh₂-* originally referred to milk.

The Indo-Iranian evidence is straightforward (cf. EWAia II: 776). While YAv. *-spara-* could in theory reflect either PIIr. **sp^{h}arH-a-* or **sp^{h}rH-a-*, Skt. *sphuráti* unambiguously points to the latter.

The Slavic material is more complex, since the reflexes of **tsprh$_{2/3}$-e/o-* 'to kick away with the foot' partially overlap with verbal stems from other roots (Vaillant III: 188–89). Derksen (2008: 396) groups Ru. *perét'* 'to brace one's feet against, push' together with the homonymous *perét'* 'to go', connecting them to Lith. *peřti* 'to beat' < **per-* 'to beat'. It seems more likely (with Vasmer II: 341) that *perét'* 'to go' belongs with **per-* 'to go across', cf. Skt. *pipárti* 'to bring across', Goth. *faran* 'to go', and that the Slavic correspondence of Lith. *peřti* 'to beat' is OCS *pьrati, perǫ* 'to beat, trample, wash' (due to the practice of washing by lashing with a bath besom). Ru. *perét', pru* 'to brace one's feet against, push' < **tsprh$_{2/3}$-e/o-* then corresponds to Lith. *spìrti, -ia* 'to kick with a leg or hoof', although the present stem in Lithuanian is secondary (Smoczyński 2018: 1261).[128]

Since other branches reflect a potentially archaic nasal present, cf. Arm. *spaṙnam* 'to threaten', Lat. *spernō* 'to kick away; to despise', ON *sperna, sporna* 'to kick, spurn' < **tspr-n-h$_{2/3}$-*, Indo-Slavic **tsprh$_{2/3}$-e/o-* is a potential innovation. It is difficult to exclude that the Slavic form is a late innovation, however, since the stem type may have been productive, cf. OCS *požrěti, požьrǫ* 'to swallow, devour' < **g^{w}rh$_{3}$-e/o-*, (see p. 100). Yet, the fact that the present formations **g^{w}rh$_{3}$-e/o-* 'to devour, swallow' and **tsprh$_{2/3}$-e/o-* 'to kick away with the foot' are both exclusively shared by Indo-Iranian and Slavic increases the likelihood that this productivity goes back to a shared Indo-Slavic stage.

3.3.47. **tusk-io-* 'empty'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation Root

Indo-Aryan: Skt. *tucchyá-* adj. 'empty'

Iranian: MiP Pahl. *tuhīg,* Man. *twhyg* adj. 'empty, vain'; Khot. *ttuśśaa-* adj. 'empty'; Oss. I *tyssæg* adj. 'empty'; Psht. *təš* adj. 'empty'; Wakh. *təš* adj. 'empty'

Baltic: Lith. *tùščias* adj. 'empty, hollow, idle, vain'; Latv. *tukšs* adj. 'empty, poor'

Slavic: OCS *tъštъ* adj. 'empty'; Ru. *tóščij* adj. 'gaunt, empty, poor'; Pol. adj. *czczy* 'empty'; SCr. *tȁšt* adj. 'empty, vain, conceited'

Schmidt (1872: 49), Arntz (1933: 36) and Porzig (1954: 167) present this word as an Indo-Slavic isogloss, but do not comment on the reconstruction. The Indo-Iranian words, which go back to PIIr. **tusćia-*, have been analysed as a *io*-derivative from a present stem **tus-sk-*, cf. YAv. 3pl. *tusən* 'they lose (temper)', *taošaiieiti* 'to leave hold of, drop' (EWAia I: 652). Lubotsky (2001a: 42–43) argues against this etymology, since nominal derivatives are not normally based on present stems, and since YAv. *tusən* need not be old, as *sk*-presents became productive in Iranian. Instead, he analyses PIIr. **tusćia-* as deriving from **tusk-o-*

[128] There is also OCS 3pl. *perǫtь* 'they fly', which Vasmer connects to Ru. *perét'* 'to go' (Vasmer II: 341). Perhaps Derksen (2008: 427) is right that it rather belongs with OCS *pero* n. 'feather'.

‘emptyness’, reflected in ORu. *tъska* f. ‘grief, longing’. This reconstruction precludes a root connection to YAv. *taošaiieiti*, since a primary *ko*-stem would be as implausible as a deverbal stem **tus-sk-io-*. We are instead forced to assume a new root, **tu(e)sk-*, with final **-k*.

Derksen (2015: 475–76) rejects Lubotsky’s reconstruction, arguing for a preform **tus-sk-tio-*, since the Baltic forms are incompatible with **tusk-io-*. However, Derksen’s reconstruction is problematic on the Indo-Iranian side, since Skt. *tucchyá-* is accented on the suffix, whereas the deadverbial suffix *-tya-* < **-tio-* is unaccented (AiGr. II, 2: 697). A suffix *-čias* becomes productive in Lithuanian, but there is no attested verbal stem from which *tùščias* could have been derived (Lith. *tuštė́ti* ‘to become empty’ is denominal, cf. LEW: 1146).

More probably, the Baltic words may in fact be derived regularly from **tusk-io-*, assuming a special development of the cluster **-skʲ-* (cf. Gorbachov 2014). Conversely, Kortlandt (1979) argued that **skʲ* yielded Slavic **s*, Lith. *š*, Latv. *s* (i.e., PBSl. **ś*), but all three alleged examples are problematic. First, Lith. *šáuti* ‘to shoot’ and OCS *sovati* ‘to throw’ have been derived from a root **skeu-* > **skiau-*, but more likely reflect **ḱeuH-* (see p. 66), as **eu* > **iau* must postdate the palatalization of **sk-*.[129] Moreover, the only external evidence for **sk-* was the connection to PGm. **skeutan-* ‘to shoot’, but the etymology has been rejected by Kroonen (2013: 445), who derives the Germanic verb from **sket-*. Second, OCS *sěnь* f. ‘shadow’ and Latv. *seja* f. ‘face, shadow’ are usually connected to Skt. *chāyā́-* f., Gr. σκιά f. ‘shadow’ < **sk(o/e)Hi-eh₂-*. However, as both Kortlandt (1979) and Derksen (2015: 549) acknowledge, the anlaut *s-* < **sk-* must be secondary, since the vocalism of the Balto-Slavic forms points to **-e/oi-* rather than **i/ʲi-*. They argue that the *s-* was taken over from the verb (which constitutes the third example of **skʲ* > **ś*), e.g., PSl. **sijàti* ‘to shine’ < **skHi-*, where the palatalization would have been regular. However, it must be noted that in **tusk-io-*, **sk* is in a RUKI position, which is not the case for PSl. **sijàti*. It is not *a priori* certain that **šk* would have the same development as **sk*.

Thus, only one example of the alleged palatalization of **sk* > **ś* / *_i* can be maintained, but the phonology of PSl. **sijàti* is not similar enough to Lith. *tùščias* to falsify the derivation of the latter from PBSl. **tušk-io-* < **tusk-io-*. I conclude that **tusk-io-* is an Indo-Slavic isogloss. If **tusk-io-* is a *io*-adjective derived from **tusk-o-*, reflected in ORu. *tъska* ‘grief, longing’, it is a possible shared innovation.

[129] This chronology is required to explain why **ʳ, *ˡ* > PBSl. **ir, *il* etc. do not cause palatalization of a preceding **sk* (cf. Kortlandt 1979).

3.3.48. **uert-men-* ‘course’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *vártman-* n. ‘track, course’

Iranian: –

Baltic: –

Slavic: OCS *vrěmę* n. ‘time’; SCr. *vrijème* n. ‘time’

This *men*-stem was listed as an isogloss by Arntz (1933: 53). Although Skt. *vártman-* (EWAia II: 520) differs slightly from OCS *vrěmę* (Vasmer I: 235; Derksen 2008: 516) semantically, the step from ‘course’ >> ‘time’ is a rather trivial semantic development, implying that the Indo-Aryan and Slavic words may derive from the same *men*-stem.

Verbal forms of **uert-* ‘to turn’ retain the basic meaning in Slavic, e.g., OCS *vrьtiti sę* ‘to turn’ (cf. LIV: 691), which contrasts with the lexicalized meaning of PSl. **vermę* ‘time’, indicating that the latter is not a recent deverbal formation. This is consistent with the fact that the suffix **-men-* was only marginally productive in Slavic (Matasović 2014: 25). The semantics may not be too informative, however, since similar developments are attested in other nominal derivatives from **uert-* ‘to turn’ in Balto-Slavic, e.g., OCS *vrьsta* f. ‘age, generation’ vs. Ru. *verstá* f. ‘verst (a distance of 1.1 km)’, Lith. *vãrstas* m. ‘turn of the plough, verst’. While a shared innovation remains possible, it is difficult to rule out that the reflexes of **uert-men-* were derived independently.

3.3.49. **uolḱ-o-* ‘hair’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *válśa-* m. ‘sprout, twig’

Iranian: YAv. *varəsa-* m. ‘hair (on the head)’; MiP Pahl. *wars* ‘hair’; MoP *gurs* ‘hair’; Sogd. BCS *wrs* ‘hair’; Psht. *weẍtə́*, Wan. *wušt* m. ‘hair’

Baltic: –

Slavic: OCS *vlasъ* m. ‘hair’; Ru. *vólos* m. ‘hair’; Pol. *włos* m. ‘hair’; SCr. *vlâs* m. ‘hair’

Indo-Iranian and Slavic share an *o*-stem from a root *uelḱ-* (EWAia II: 526–27; AirWb.: 1374; Vasmer I: 221; Derksen 2008: 526–27), taken as an isogloss by Meillet (1926: 173). The meaning of Skt. *válśa-* m. ‘sprout, twig’ is likely secondary from ‘hair’, cf. Lat. *comātus* ‘rich with foliage’ << *coma arboris* ‘hair of a tree’ (KEWA III: 168).

Several Iranian languages have been argued to show a parallel *o*-stem with zero-grade in the root, viz. YAv. *frā.vərəsa-* adj. ‘lacking hair’, MoP *gurs* ‘hair’, Psht. *weẍtə́*, Wan. *wušt* m. ‘hair’ < PIr. **u̯ŕća-*. However, Gershevitch (1959: 265) has provided an alternative explanation for YAv. *frā.vərəsa-* < **-u̯r̥t-sa-*, and the Persian and Pashto forms are in fact compatible with a full grade form PIr. **uarća-*, with secondary labialization of the root vowel.

Although the *o*-stem **uolḱ-o-* is exclusively Indo-Slavic and a possible shared innovation, Gr. λάχνη f. 'woolly hair, down' < **ulḱ-sneh₂-* is probably from the same root (Beekes 2010: 839–40). The *sneh₂*-stem could be old or innovated within Greek, as the suffix was productive. Either way, λάχνη cannot be derived from a lost Greek reflex of **uolḱ-o-*, given the zero-grade in the root.[130]

3.3.50. **uolo-* 'tail hair (of horse)'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Possible	[N]Derivation Root

Indo-Aryan: Skt. *vā́ra-* m. 'tail hair, horse tail, sieve', *vā́la-* m. (TS) 'id.'

Iranian: –

Baltic: Lith. *vãlas* m. 'fishing line; horse hair'

Slavic: –

Skt. *vā́ra-* (EWAia II: 545) with the variant *vā́la-* (EWAia II: 547) is formally identical to Lith. *vãlas*, which generally means 'fishing line', but also 'horse hair' in East Lithuanian (Derksen 2015: 485). LEW: 1188 adduces Lat. *adūlor* 'to fawn (upon), court', but de Vaan (2008: 25) rightly rejects this.

The stem could potentially contain the root **uel-* 'to enclose' or **uel-* 'to turn', but neither is semantically compelling. As we cannot reconstruct a plausible base from which **uolo-* could be derived in Indo-Slavic, there are no decisive arguments in favour of classifying it as an innovation. Alternatively, **uolo-* could be a substrate word, but there are no formal arguments for this.

3.4. Uncertain isoglosses

3.4.1. **bʰerH-men-* 'support; burden'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	[N]Derivation Root

Indo-Aryan: Skt. *bhárīman-* n. 'support, maintenance, care'

Iranian: YAv. *barəmāiiaona-* adj. 'going with a burden (?)'

Baltic: –

Slavic: OCS *brěmę* n. 'load, burden'; Ru. (dial.) *berémja* n. 'armful, bundle, burden'; Pol. *brzemię* n. 'load, burden'; SCr. *brȅme* n. 'weight, load; pregnant woman'

[130] However, in view of Skt. *vṛkṣá-* m., YAv. *varəša-* m. 'tree', one could reconstruct an *s*-stem **uelḱ-es-* 'twig' from which a possessive adjective **ulḱ-s-ó-* 'having twigs' >> 'tree' was derived. The same *s*-stem could have been the basis for Gr. λάχνη 'woolly hair; (metaphor of) leafage'.

The Sanskrit and Slavic words are sometimes compared (e.g., Derksen 2008: 37), supposedly derived from a *seṭ*-variant of **b^{h}er-* 'to bear'. Mayrhofer (EWAia II: 249) instead takes Skt. *bhárīman-* as a secondary variant of *bhárman-* n. 'support, preservation, care', which seems possible, since the laryngeal required for *bhárīman-* is unexplained. As for *bhárman-*, it is rather an infinitive and occupies a different functional domain than *bhárīman-*.

OE *beorma* m. 'leaven, yeast, froth' has been derived from **b^{h}er-me/on-* and would also be compatible with a root-final laryngeal (Wodtko, Irslinger & Schneider 2008: 16). De Vaan (2008: 213) connects *beorma* to Lat. *fermentum* n. 'ferment; yeast' and reconstructs **b^{h}er(H)-mn-*. Although formally similar to Skt. *bhárīman-*, these words are rather related to Skt. *bhuráti* 'to move rapidly' < **b^{h}r̥h$_{1}$-e-* and (more distantly) Lat. *ferveō* 'to boil' (Schrijver 1991: 253–56). Alternatively, OE *beorma* and Lat. *fermentum* may derive from **g^{wh}er-mn-*(Kroonen 2013: 306).

Semantically, the Sanskrit and Slavic words denote slightly different concepts: 'support' << 'bearing' vs. 'load, burden' << 'borne'. This could indicate parallel innovations, although the meanings may reflect two sides of the same coin. Furthermore, YAv. *barəmāiiaona-* (with uncertain meaning) might contain *barəman-* 'burden', which is equivalent to the Slavic meaning, although formally it may reflect either **b^{h}er-men-* or **b^{h}erH-men-*.

3.4.2. **b^{h}reh$_{1}$ǵ-* 'to shine, dawn'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Uncertain (Germanic)	Compelling	Possible	Root

Indo-Aryan: Skt. *bhrāj-* 'to shine, beam'

Iranian: YAv. *brāzaiti* 'to shine'; Parth. *br'z-* 'to shine'; MoP *barāzīdan* 'to shine, beam'; Sogd. B *βr''z''nt* 'shining'

Baltic: Lith. *brė́kšti*, *-ta* 'to dawn'

Slavic: OCS *probrězgъ* m. 'dawn', Ru. (dial.) *brezg* m. 'dawn'; Pol. *brzask* m. 'dawn'; Sln. *brȇsk* m. 'dawn'

The root **b^{h}reh$_{1}$ǵ-* is listed as an isogloss by Arntz (1933: 51). It is thought to be the base of Skt. *bhūrjá-* m. 'Himalayan birch', ON *bjǫrk* f. 'birch', Lith. *béržas* m. 'birch', SCr. *brëza* f. 'birch'. However, the root structure of the Germanic and Balto-Slavic words for 'birch' (and further PGm. **barku-* 'bark', **berhta-* 'bright'; Alb. *bardhë* 'white', cf. Kroonen 2013: 53, 60–61) shows a full grade **b^{h}e/orh$_{1}$ǵ-*, which differs from the verbal stem of Indo-Iranian and Balto-Slavic (see LIV: 92; EWAia II: 279–80; Derksen 2015: 99).[131] In Germanic and Balto-Slavic, the full grade of this seemingly Schwebeablauting root could be explained as analogical from the zero-grade **ur/ir* < **rH*, but the same does not hold for Alb. *bardhë* 'white', where a zero-grade **rH* would have given **ra*, as in Alb. *bredh* m. 'fir' (< **bradh*, cf. Demiraj 1997: 108). If **b^{h}erh$_{1}$ǵ-* was the original root

[131] Welsh *berth* 'beautiful', MBret. *brez* m. 'prosperity' < PCelt. **berxto-* have often been included here, but the missing laryngeal points to a different root (cf. Matasović 2009: 63).

structure, the change to *$b^{h}reh_{1}ǵ$- could have been a common Indo-Slavic development, as a way to avoid heavy consonant clusters in certain forms. However, the isolated Nw. *brok* m. ‘young (speckled) salmon’ and Sw. *brokig* ‘variegated’ offer possible extra-Indo-Slavic evidence of *$b^{h}reh_{1}ǵ$-, although the connection is not certain.

3.4.3. *$b^{h}uHs$- ‘to be active, strengthen’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Uncertain (Greek)	Doubtful	Possible	^{V}Derivation

Indo-Aryan: Skt. *bhū́ṣati* ‘to support, be active, strengthen’

Iranian: OAv. *būždiiāi* inf. ‘to render oneself active, to make an effort’

Baltic: –

Slavic: OCS *bystrъ* adj. ‘quick’; Ru. *býstryj* adj. ‘quick’; Pol. *bystry* adj. ‘quick, sharp-witted’; SCr. *bȉstar* adj. ‘clear, transparent, quick’

Derksen (2008: 71) compares the root of the Slavic adjective **bỳstrъ* to Indo-Iranian *$b^{h}uHs$-, since the laryngeal could explain the Slavic acute. The limited verbal paradigm of *$b^{h}uHs$- (only a thematic present in Sanskrit) suggests that it originates from *$b^{h}eh_{2}u$- ‘to become’ (EWAia II: 270–71, with lit.), with an *s*-extension, cf. YAv. *būšiiaṇt*- ptc. ‘wishing to become’, Lith. *bùs* 3sg.fut. ‘will be’. However, a connection could also be sought to the Greek *s*-aorist ἔφυσα ‘made grow’ (in which case Skt. *bhū́ṣati* could be an old aorist subjunctive), and it therefore remains uncertain whether the *s*-extension to *$b^{h}eh_{2}u$- is a shared Indo-Slavic formation.

3.4.4. *$b^{h}uh_{2}$-*r*(*i*)- ‘much, plenty’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	^{N}Derivation

Indo-Aryan: Skt. *bhū́ri*- adj. ‘much, abundant, numerous, great, mighty’

Iranian: OAv. *būiri*- adj. ‘abundant’; Khot. *buro* ‘to the limit, completion’

Baltic: Lith. *būrỹs* m. ‘crowd, flock, pack, platoon’, *bùrti*, *-ia* ‘to gather’; Latv. *bũra* f., *bũris* m. ‘lot, mass, heap’

Slavic: –

Derksen (2015: 106) tentatively accepts this etymology (see also LEW: 66). Lith. *būrỹs* and Latv. *bũra*, *bũris* point to derivatives in *-*iio*- and *-*eh₂*- from a base *$b^{h}uHr$-, in which the Latvian sustained tone proves the position of the laryngeal. Since *$b^{h}uHr$- can hardly be a Proto-Indo-European root, it seems likely that the verb Lith. *bùrti* ‘to gather’ is of denominal origin. Skt. *bhū́ri*- and OAv. *būiri*- < PIIr. *$b^{h}uH$-*ri*- belong together with the comparative YAv. *baoiiō* ‘longer’ and plausibly derive from *$b^{h}auH$- ‘to become’. The derivational history of adjectives in *-ri*- is unclear,[132] but it seems reasonable to assume that

[132] One of the few attested cases apart from Skt. *bhū́ri*- is *sthū́ri*- ‘one-horse; pulled by one horse’ (AiGr. II, 2: 859).

it is not a primary Indo-European suffix but rather an *i*-stem to an earlier *r*-stem **b^{h}uh$_{2}$-r-*. However, as this *r*-stem is not directly attested in either Indo-Iranian or Balto-Slavic, the etymology remains doubtful.

3.4.5. **-di-* 3rd person encl. pron.

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	[N]Derivation

Indo-Aryan: –

Iranian: YAv. *-di-* encl. pron. ‘him, her, it, them’; OP *-di-* encl. pron. ‘him, her, it, them’

Baltic: OPr. *-di-* encl. pron. ‘him, her, them, one’

Slavic: –

Trautmann (1910: 266) connected the OPr. 3rd person enclitic pronoun *-di-* to YAv. *-di-* and OP *-di-* with similar function.

The exact paradigm of Old Prussian *-di-* is unclear. Bezzenberger (1907: 109) takes OPr. *-ts* ‘he’ as a continuation of an old nom.sg. **-dis*, with regular syncope (see also Euler 1992: 130). However, *-ts* may also continue nom.sg.m. **tas* (Stang 1966: 410), which seems more likely, since *-ts* is syntactically different from *-di-* in that it only attaches to verbs, never to prepositions or conjunctions. Nevertheless, OPr. *-di* and *-dei* indisputably have nominative function, being attested as translations of German impersonal *man* ‘one’. Endzelin (1944: 122) takes *-di* as a nom.sg.n., which seems reasonable, if it derives from **-dit* (cf. YAv. *-diṭ*). He further takes *-dei* as a nom.pl.m. form. However, since *-dei* (which is a hapax) is functionally equivalent to *-di*, and the Old Prussian nom.pl.m. ending is generally *-ai*, it seems more likely that it reflects a spelling variant of the latter (cf. *geiwan* ‘life’ for *giwan*). In principle, *-di* may continue both the n.sg. **-dit* and n.pl. **dī*. Alternatively, both variants have been explained as reflexes of a nom.pl.m. **-djai* (Trautmann 1910: 266), but for *-di* this is formally impossible.

The accusative forms acc.sg.m./f. *-din* and acc.pl.m./f. *-dins* are more straightforward. In principle, they can be directly compared with YAv. *-dim* and *-dīš* < **-dins*. It is unclear if the variants *-dien* and *-diens* are spelling variants or reflect formal variants. According to Mažiulis (1994: 95), they arose as a result of the conflation of stem classes in the Catechisms. Alternatively, it is possible that *-dien* was modelled after acc.sg.m./f. *schien* ‘him, her’.[133]

In Iranian, only accusative forms are attested (Bartholomae 1904: 684ff), which follow the same inflection as the enclitic YAv. 3rd person pron. *i-*, viz. YAv. acc.sg.m./f. *-dim*, acc.sg.n. *-diṭ*, acc.pl.m./f. *-dīš*, acc.pl.n. *-dī*. Caland (1909) derives Iranian **-di-* from a rebracketing of, e.g., YAv. *ād-im* ‘then … him’ to *ā-dim*, *pasāvad-im* ‘after that… him’ to *pasāva-dim*. Caland’s scenario is difficult to reject, for several reasons: 1) *-di-* seems to be functionally equivalent to the enclitic pronouns *-i-* and **-si-* (Av. *-hi-*, OP *-ši-*, Skt. *-sīm*), 2)

[133] OPr. *schien* is only one of many spellings of the accusative of 3sg. pron. *schis*.

Old Avestan has only *-i-* and *-hi-*, not *-di-*, and 3) unlike *-i-* and **-si-*, *-di-* does not correspond to a known Indo-European pronominal stem (cf. Beekes 1983).

An alternative etymology connects pronominal **-di-* to a PIE deictic particle **de/o* (Pokorny 1959: 181), reflected in, e.g., Gr. ὅδε 'this here', OE *to* 'to', OCS *do* 'towards'. This is difficult to substantiate, however, and does not help us determine whether Old Prussian *-di-* and Iranian **-di-* reflect a shared innovation. Even if Iranian **-di-* resulted from rebracketing, as in Caland's scenario, it technically does not preclude the possibility that this development occurred as a shared innovation with Balto-Slavic. The loss of final **-t/d* in Old Prussian and Old Persian cannot be assumed to have triggered the creation of **-di-*, as this loss does not affect Avestan. This implies that **-di-* could be old (Indo-Slavic) *and* created through rebracketing. One final point is unexplained in this scenario, however: in Old Prussian, *-di-* also has nominative function, unlike in Iranian. This divergent syntax could indicate independent innovations. Given the above considerations, the status of **-di-* as an Indo-Slavic isogloss is doubtful.

3.4.6. **dʰ(o)r-uo-* 'firm, healthy'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	[N]Derivation

Indo-Aryan: Skt. *dhruvá-* adj. 'firm, solid, secure'

Iranian: YAv. *druua-* adj. 'healthy'; OP *duruva-* adj. 'firm, secure, invulnerable'; MiP Pahl. *drōd* 'health, well-being, prosperity, peace', *drust* adj. 'right; well, healthy'; Bactr. λρουο 'healthy'

Baltic: –

Slavic: OCS *sъdravъ* adj. 'healthy'; Ru. *zdoróvyj* adj. 'healthy'; Pol. *zdrowy* adj. 'healthy'; SCr. *zdrȁv* adj. 'healthy'

The Indo-Iranian forms (EWAia I: 798–99; AirWb.: 782) can be considered to show the regular development of **-r̥uV́-* (parallel to **-r̥iV́- > -riya-*, cf. Lubotsky 1997) and thus go back to **dʰr-uá-*. OCS *sъdravъ* and its many cognates in Slavic (cf. Derksen 2008: 478) have been connected by Meillet (1902–1905: 364), who considered this to be an Indo-Slavic isogloss (1926: 172). The Slavic words have alternatively been connected (e.g., by Vasmer I: 450) to Lith. *sū́drus* 'thick, dense' < **hₗsu-dru-* (see p. 62), but this requires the assumption that *sъ-* was analogically restored, as we would otherwise expect lengthening via Winter's Law due to the following **d* (Derksen 2008: 478–79). The acute tone of, e.g., SCr. *zdrȁv* does not presuppose a laryngeal in the root since an original **sъ̀-dorvъ-* would have shifted to **sъ-dòrvъ-* with Dybo's Law (Derksen 2008: 479).

OIr. *derb* 'certain' is rather derived from **deru-* 'wood, tree', which is supported by OBret. *daeru* 'oaks' (Matasović 2009: 96). Germanic **trewwu-* 'loyal, trustworthy' probably reflects a similar derivation and semantic shift (Kroonen 2013: 523) and cannot in any case be related to Skt. *dhruvá-* (but cf. Harðarson 2018, who assumes secondary aspiration in Indo-Iranian).

Although the Indo-Iranian and Slavic forms seem to lack cognates in other branches, they vary in terms of root ablaut. One might try to account for this in two ways. Either the Slavic *o*-grade was inserted as a result of the compounding process, or the *o*/*Ø*-ablaut reflects an unattested *u*-stem that was independently thematicized in the separate branches. However, there are to my knowledge no good parallels for secondary *o*-grades in (Balto-)Slavic compounds. Reconstructing an ablauting *u*-stem is rather *ad hoc* as these are normally not thematicized in Slavic (but were generally extended by *-kъ*) and since **-uo-* is also a primary suffix. In view of these difficulties, it seems more likely that the Indo-Iranian and Slavic stems are independent derivatives. Even if the forms ultimately go back to the same *u*-stem, it cannot be excluded that this is an inherited archaism.

3.4.7. **ǵembʰ-* 'to suffer from cold'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	Semantics

Indo-Aryan: Skt. *hemantá-jabdha-* 'made stiff by winter', *jámbhate* 'snaps at'

Iranian: (YAv. 2pl.imp. *ham-zəṇbaiiaδβəm* 'crush!')

Baltic: (Lith. *žemb̃ti*, *-ia* 'to cut slantwise, sharpen')

Slavic: Ru. *zjábnut'*, *zjábnu* 'to suffer from cold'; Cz. *zábsti*, *zebu* 'to suffer from cold, freeze'; SCr. *zépsti*, *zébēm* 'to freeze'

The root **ǵembʰ-* 'to snap, bite' is widespread in Indo-European languages and a stem **ǵombʰ-o-* 'row of teeth, tooth' may also be reconstructed (cf. Mumm 1999; LIV: 162; IEW: 369). Mumm (1999) has argued that Slavic and Sanskrit share a specific semantic development from 'to bite' >> 'to become stiff from cold'. In Slavic, 'to suffer from cold, freeze' has become a basic meaning of the verb (Derksen 2008: 543). According to Mumm (1999), the general meaning 'to suffer from cold' would be secondary from 'to freeze' (i.e., 'freeze solid'), but this chronology is difficult to substantiate from the Slavic evidence.[134] An equally likely scenario is that 'to suffer from cold' developed directly from 'to bite', as a metaphor of the feeling of cold. Once this became the general meaning of the verb, it could also mean 'to freeze' in reference to inanimate objects.

In Sanskrit, the meaning is only attested in the compound *hemantá-jabdha-* 'made stiff by winter'. While *jabdha-* could be understood as 'made stiff from cold', it is difficult to rule out that it simply meant 'clenched', in the sense 'made stiff by being bit', with the connotation to 'cold' deriving from *hemantá-* 'winter'.

[134] Mumm (1999) argues that Gr. γόμφος m. 'peg, bolt, nail' and Ger. *Kamm* m. 'tenon joint' < **ǵombʰo-* also imply a root meaning 'to bite' (i.e., 'to make stiff by biting'). However, the carpentry-related meanings of Greek and Germanic can, in my opinion, simply be derived from 'tooth', in a metaphorical sense, which is likely the original meaning of **ǵombʰo-*.

3.4.8. *ǵʰelh₃-en- ‘green, yellow, gold’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	[N]Derivation

Indo-Aryan: Skt. *híraṇya-* n. ‘gold, precious metal’, *hiraṇín-* adj. ‘rich in gold, adorned with gold’, *hiraṇmáya-* adj. ‘golden’

Iranian: YAv. *zarańiia-* n. ‘gold’, *zaranaēna-* adj. ‘golden’, *zarənu°*, *zaranu°* ‘gold’; MiP Pahl. *zarr* ‘gold’, Man. *zr* ‘gold’; MoP *zar* ‘gold’; Sogd. *zyrn* ‘gold’; Khot. *ysīrra-* n. ‘gold’, *ysarūna-* adj. ‘yellow, red’, *ysarra-gūnä* ‘gold-coloured’, *ysaraṃjsa-* ‘safflower’

Baltic: –

Slavic: OCS *zelenъ* adj. ‘green’; Ru. *zelënyj* adj. ‘green’; Pol. *zielony* adj. ‘green’; SCr. *zèlen* adj. ‘green’

Although the root *ǵʰelh₃- is widespread in Indo-European, traces of an *n*-stem adjective *ǵʰelh₃-en- are restricted to Indo-Iranian and Slavic. For Core Proto-Indo-European (excluding Anatolian and Tocharian, where *ǵʰelh₃- is not attested), an *i*-stem *ǵʰelh₃-i- may be reconstructed based on Skt. *hári-* ‘fallow, yellowish, greenish’ and Lat. *helvus* (< *ǵʰelh₃-i-uo-, cf. de Vaan 2008: 282), and probably a *ro*-stem *ǵʰlh₃-ro- based on Gr. χλωρός ‘pale green, greenish yellow’, since these form a ‘Caland’-pair. The reflexes in other branches may rather be analysed as innovations, e.g., PGm. *gelwa- / *gulu- ‘yellow’ < *ǵʰelh₃-u- and Lith. *žeĨvas* ‘greenish, yellowish’.

Skt. *híraṇya-* ‘gold, precious metal’ and its Iranian cognates reflect *ǵʰlh₃-(e)n-io-, which seems to be a deadjectival *io*-stem.[135] Similarly, YAv. *zarənu°*, *zaranu°* ‘gold’ may be analysed as a deadjectival *u*-stem. Khot. *ysarra-gūnä* ‘gold-coloured’ < *ǰʰarana-gauna- (cf. YAv. *zairi.gaona-* ‘yellow-coloured, gold-coloured’) seems to reflect a thematicized *n*-stem adjective. Based on this, a Proto-Indo-Iranian adjective *ǰʰ(a)rH-an- ‘gold-coloured’ may be reconstructed (cf. EWAia II: 816).

The semantic difference between the Indo-Iranian *ǰʰ(a)rH-an- and Slavic *zelènъ ‘green’ is trivial, as ‘yellow’ and ‘green’ do not seem to have been consistently distinguished in early Indo-European languages. It seems highly unlikely that *ǰʰ(a)rH-an- was innovated within Indo-Iranian, since the suffix is not productive and since the verb *ǰʰarH- ‘to be angry’ had undergone a semantic shift (<< ‘to grow green’). The verb is also preserved in Lith. *žélti* ‘to grow green’. It is noteworthy that Indo-Iranian and Balto-Slavic are the only branches that attest a primary verb to this root.[136]

While an inner-Indo-Iranian innovation is unlikely, Slavic *zelènъ ‘green’ has been taken as a petrified participle from a lost Slavic cognate of Lith. *žélti* ‘to grow green’, with the parallels OCS *studenъ* ‘cold’ ~ Ru. *studít’* ‘to cool’, SCr. *cr̀ven* ‘red’ ~ RuCS *črьviti* ‘to dye, redden’ (Vaillant IV: 620). However, in both cases, the verb is denominal and

[135] Skt. *hiraṇín-* ‘rich in gold, adorned with gold’ is from *hiraṇyín- and does not prove the existence of an *n*-stem in Indo-Aryan (AiGr. II, 2: 328). Skt. (TS) *hiraṇmáya-* ‘golden’ is a late replacement of *hiraṇyáya-* ‘golden’ (AiGr. II, 2: 769).

[136] According to LIV: 178, Indo-Iranian *ǰʰarH- ‘to be angry’ is unrelated, but in my opinion the semantics are compelling.

transitive. As such, although it remains uncertain, it seems difficult to entirely reject the possibility that **zelènъ* 'green' is inherited and cognate with PIIr. **ǰʰ(a)rH-an-* 'gold-coloured'.

3.4.9. **ǵ(ʰ)(u)rstuo/eh₂-* 'stone, gravel, sand'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	[N]Derivation

Indo-Aryan: –

Iranian: YAv. *zarštuua-* n. 'stone'

Baltic: Lith. *žviřgždas* m. 'gravel, pebble'; Latv. *zvìrgzds* m. 'pebble'

Slavic: Ru. (dial.) *žerstvá*, *gverzdá*, *gverstvá* (Novg.), *gverstá* (Novg., Pskov) f. 'coarse sand'; Pol. (dial.) *żarstwa*, *żerstwa* f. 'coarse sand'

There are several problems regarding the proposed connection between the Indo-Iranian and Balto-Slavic words, both within and between the branches.

YAv. *zarštuua-* 'stone' has been compared to Skt. *dr̥ṣád-* f. 'stone, mill stone' (Insler 1999), under the assumption that the Sanskrit anlaut *d-* reflects a dissimilated **ǰ-*. Such a dissimilation is not unparalleled, cf. *dásyati* 'to waste, become extinguished' ~ *jásyati* 'to be starved, disappear', but here the development seems to be conditioned by a following *-y-* (Kulikov 2012: 536ff, 551ff). Moreover, *dr̥ṣád-* seems to show a suffix *-ád-* which would be rather unlikely from an Indo-European perspective; suffixes generally do not contain *media*. Insler (1999) reconstructs an ablauting *d*-stem based on the idea that YAv. *zarštuua-* goes back to a nom.sg. **ǰérs-d-s*, whereas Skt. *dr̥ṣád-* reflects the oblique stem **ǰrs-éd-*. According to him, this would also explain the voiceless *t* in Avestan as the result of levelling from the strong stem, but this is mere speculation.[137] Moreover, YAv. *zarštuua-* may equally well reflect a zero-grade in the root with the regular sound change **r̥s* > YAv. *arš* (see de Vaan 2003: 522).

Balto-Slavic displays a host of variants which nevertheless are semantically very close and probably reflect the same Proto-Balto-Slavic form (for a more detailed analysis of the material, see Young 2005; also Derksen 2015: 252). The attested forms vary in terms of initial **ǵ(ʰ)* (Baltic) vs. **g(ʰ)* (Slavic) followed by **-u̯-* (Baltic and Slavic) or not (Slavic), and in terms of **-st(u)-* (Slavic) vs. **-zd-* (Baltic and Slavic). The vacillating initial consonant is probably connected to the Balto-Slavic depalatalization before resonants, although the details are unclear.[138] As for the **-u̯-* in the root, Young assumes that it originated in the suffix **-tuo/eh₂-*. In forms like Lith. *žviřgždas* and Ru. *gverstá*, then, the

[137] Interestingly, the parallel Insler offers for **ǰérs-d-s* / **ǰrs-éd-* and the levelling in Avestan is OAv. *-biš-* 'medicine' ~ YAv. *bišaziia-* 'to cure' ~ Skt. *bhiṣáj-* 'physician', which is likely a non-Indo-European substrate word (Lubotsky 2001b: 310). Even if it were old, it would not be compelling, however, since there is no evidence that OAv. *-biš-* contains the suffix **-(a)ǰ-*.

[138] As no root ablaut is attested, the alternation between **ǵ(ʰ)* and **g(ʰ)* is difficult to explain within Kortlandt's (1978b) framework, which assumes that palatals were depalatalized before resonants and a following back vowel. Assuming that depalatalization happened irrespective of the vocalism, it would be difficult to explain the restoration of palatal **ǵ(ʰ)*, as there is no model.

position of *-u̯- is the result of "anticipatory displacement". The Novgorod form *gverstvá* would then reflect an intermediate form, with *-u̯- in both root and suffix. Alternatively, both the root and the suffix may originally have had *-u̯-, after which the various languages and dialects dissimilated either the first or the second *-u̯- (Anthony Jakob, p.c.). In this scenario, one would have to assume that Iranian dissimilated the *-u̯- of the root.[139]

Finally, according to Young (2005), *-zd-* reflects the original form, whereas devoiced *-st(u)-* reflects *-zd- + -tuo/eh₂-. This would allow for a connection between Balto-Slavic *ǵrzd-tuo/eh₂- and a group of words denoting various types of cereals, represented by Lat. *hordeum* n. 'barley' < *gʰ(o)rsd-, OHG *gersta* f. 'barley' < *gʰersd-, Alb. *drithë* f. 'cereal, grain', and Hitt. *karaš* n. 'wheat, emmer wheat'. However, given that *ǵ(ʰ)(u)rstuo/eh₂- 'stone, gravel, sand' has no agricultural connotation, it is likely unrelated to the cereal words.[140] Furthermore, Ru. (dial.) *gverzdá* is difficult to explain if *-zd-* is original, since in that case the *-u̯- in the root cannot be explained as displaced from the suffix. Rather, we may assume that the variants with voiced *-zd-* are secondary. In the case of Lith. *žviřgždas* etc., the voicing could have been taken over from Lith. (dial.) *žiegždrà* f. 'coarse sand' ~ OPr. *sixdo* f. 'sand', which seems to reflect a different root.

In sum, the Balto-Slavic material is difficult to account for and any explanation must invoke irregular and/or analogical developments. While the Balto-Slavic and Iranian words are difficult to separate, the etymology is classified as doubtful, due to the many formal problems.

3.4.10. *gʷrh₃-e/o- 'to devour, swallow'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	^{V}Derivation

Indo-Aryan: Skt. *giráti* 'to devour, swallow'

Iranian: Psht. *nγar-* 'to swallow'; Wakh. *nəž(γ)ər-* 'to swallow'

Baltic: –

Slavic: OCS *požrěti, požьrǫ* 'to swallow, devour'; ORu. *žьrati, žьru* 'to eat (of animals), gobble'; Pol. *żreć, żrę* 'to eat greedily'; Sln. *žrẹ́ti, žrèm* 'to eat (of animals), gobble'

Arntz (1933: 45) lists the present stem now reconstructed as *gʷrh₃-e/o- as an Indo-Slavic isogloss. The root is widely attested in other stem types, e.g., Arm. aor. *eker* 'ate', Gr. βιβρώσκω 'to eat, digest', Lat. *vorō* 'to devour', but a present stem *gʷrh₃-e/o- does not seem to be found outside of Indo-Iranian and Slavic.

However, the expected outcome of *gʷrh₃-e/o- in Slavic is **gьre/o-, since the labiovelar would have coloured the vocalized *r̥ to *ur* in Proto-Balto-Slavic.[141] Thus, the palatalization in the attested form OCS *po-žьrǫ* etc. implies that it is a secondary formation

[139] If true, this would be a further indication that Skt. *dr̥ṣád-* is unrelated, as there was no motivation for dissimilation of the initial cluster here.

[140] A semantic change from 'cereal' > 'sand' in Balto-Slavic and Iranian is unlikely. Although the opposite change from 'sand' > 'grain' is not inconceivable, it is extremely unlikely that Latin, Germanic, Albanian, and Hittite independently underwent this innovation.

[141] The origin and conditioning factors of the reflexes PBSl. *ir/ur < PIE *r̥ are debated, cf. p. 27, fn. 13.

within Slavic rather than a direct cognate to Skt. *giráti*. The palatalization may have originated in the aorist OCS *po-žrětъ* 'devoured'.

Nevertheless, the parallelism in the paradigm of *$g^{w}erh_3$- in Indo-Iranian and Slavic is noteworthy. A thematic present with zero-grade in the root is only attested for seven roots in Old Church Slavic (Vaillant III: 189–90). These all have corresponding root aorists (e.g., OCS *po-žrětъ* 'devoured'), which is also the case for Skt. *giráti* (aor. *gar-*/*gr̥-*). It is not impossible that a phonologically regular form **gъre/o-* would have existed in Pre-Proto-Slavic, only to be replaced by **žьre/o-* by analogy to the aorist. However, as this is impossible to verify, the isogloss is classified as uncertain.

3.4.11. **Huep-* 'to call'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	Root

Indo-Aryan: –

Iranian: OAv., YAv. *ufiia-* 'to sing'; Sogd. BMS *w'β* 'to say, speak'

Baltic: –

Slavic: OCS *vъpiti*, *vъpijǫ* 'to call, cry out'; Ru. *vopít'*, *vopljú* 'to cry out, wail'; Cz. *úpěti*, *úpím* 'to wail, howl'; SCr. *vàpiti*, *vàpijēm* 'to cry out, summon'

Iranian and Slavic share a possible verbal root **Huep-* 'to call'. Av. *ufiia-* 'to sing' has traditionally been connected to Skt. *vabh-* 'to weave' with secondary *f* < **b^{h}* (AirWb.: 1346; LIV: 658). However, as Cheung (2007: 401) points out, the other Iranian languages show that we are dealing with two separate roots. In East Iranian, *β* has been levelled throughout the paradigm based on the verbal adjective **uβda-* < **ufta-*, cf. Sogd. *w'β*. The *-f* in, e.g., Sogd. CM *w'f* 'to weave' may be due to laryngeal devoicing in Iranian (Kümmel 2012a).

As for the Slavic verb, it is usually compared to Latv. *ūpêt* 'to howl' (LEW: 1169). However, the Latvian verb is likely denominal from Latv. *ũpis* 'owl', cf. also Lith. *ũ̃pas* 'echo' etc. The Baltic words are probably related to CS *vypl'ь* 'seagull' (Derksen 2008: 535), reflecting PBSl. **uHp-*, possibly from **Hup-* with metathesis. OCS *vъpiti* 'to call, cry out' would then have to contain a secondary zero-grade.

While it is possible to compare the Iranian and Slavic forms, the connection is uncertain, and the words (especially in Slavic) could also reflect later onomatopoeic formations.

3.4.12. **h₁ēd* / **h₁ōd* adv. ‘then, and, so’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Uncertain (Albanian)	Doubtful	Possible	[N]Derivation

Indo-Aryan: *á́t* adv. ‘afterwards, then, and, further, so’

Iranian: OAv. *āṯ*, YAv. *āaṯ* adv. ‘afterwards, then, and’

Baltic: Lith. *õ* conj. ‘and, but’, *ẽ́* conj. ‘and, but, however’

Slavic: OCS *a* conj. ‘and, but’; Ru. *a* conj. ‘and, but’; Pol. *a* conj. ‘and, but’; SCr. *a* conj. ‘and, but’

Indo-Iranian adverbs reflecting PIIr. **Hāt* ‘afterwards, and, then’ and Balto-Slavic conjunctions meaning ‘and, but’ have been compared and constitute a potential Indo-Slavic isogloss. Derksen (2015: 339) reconstructs **h₁ōd* for Lith. *õ* and the Indo-Iranian and Slavic forms. Fraenkel (LEW: 117–18) also supports this, dismissing the idea that Lith. *õ* would be borrowed from Slavic, but remarks that Lith. *ẽ́* may just as well be the true cognate of PIIr. **Hāt*. Mayrhofer (EWAia I: 163) tentatively connects PIIr. **Hāt* to Lith. *ẽ́* and OCS *i* ‘and’, the latter being unlikely, since it should rather reflect, e.g., **h₁ei* (Derksen 2008: 207). Additionally, Albanian *e* ‘and’ has been connected (Orel 1998: 85), although it has alternatively been explained as a borrowing from Latin *et* ‘and’ or Slavic **a* ‘and, but’.

As for the relationship between the Balto-Slavic and Indo-Iranian forms, I see four possible scenarios: 1) Lith. *õ* and Slav. *a* go back to **h₁ōd* and are related to Indo-Iranian **Hāt*. 2) Lith. *õ* is borrowed from Slavic *a*, which reflects **h₁ōd* and is related to Indo-Iranian **Hāt*. 3) Lith. *õ* and Slavic *a* are related and reflect **h₁ōd* (or **h₁ād*), whereas Lith. *ẽ́* is related to Indo-Iranian **Hāt*, going back to **h₁ēd*. 4) Lith. *õ* is borrowed from Slav. *a*, which together with Lith. *ẽ́* reflects **h₁ēd* and is related to Indo-Iranian **Hāt*. In this scenario, the Slavic development is paralleled by *azъ* ‘I’ < *jazъ* < **ězъ* < **h₁eǵ-om*, where **j-* was apparently lost, but it is unexpected that there is no attested variant of Slav. *a* with initial *j-*, unlike in the case of *azъ*, *jazъ* ‘I’.

Scenarios 1 and 2 have the disadvantage of leaving Lith. *ẽ́* without an etymology. Scenario 3 leaves Lith. *õ* and Slav. *a* without an Indo-European etymology (since it is unlikely that **h₁ēd* was remade to **h₁ād* after the productive Balto-Slavic ablative ending **-ād*). Scenario 4 explains the variants *õ* and *ẽ́* in Lithuanian, as well as the origin of both the Baltic and Slavic forms. The reconstruction **h₁ēd* is supported by the Hittite pronominal forms abl.sg. *kēt* ‘from this’ < **ḱéd*, instr.sg. *apet* < **Hobʰéd* (see further Kloekhorst 2008: 191, 426). In Core Proto-Indo-European, an abl.sg. **h₁é-d* may have undergone monosyllabic lengthening, yielding **h₁ēd*.

However, scenario 4 does not take into account Alb. *e* ‘and’, which, if inherited, can reflect **h₁ōd* (but not **h₁ēd)*. As **ē* and **ō* merge in Indo-Iranian, it cannot be determined if PIIr. **Hāt* is closer to Albanian or Balto-Slavic, or if all three branches share **h₁ōd*, in which case Lith. *ẽ́* is left unexplained. Ultimately, this means that the isogloss is uncertain.

3.4.13. **h₁iti* adv. ‘so, in this manner’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Uncertain (Italic)	Doubtful	Possible	[N]Derivation

Indo-Aryan: Skt. *íti* adv. ‘so, in this manner’

Iranian: OAv. *ūitī*, YAv. *uiti* adv. ‘so, in the following manner’

Baltic: Lith. *ìt* adv. ‘as if, like’

Slavic: –

Lith. *ìt* ‘as if, like’ has often been connected to Skt. *íti* ‘so, in this manner’ (LEW: 189).[142] The quality of the lost final vowel in the Baltic form is uncertain, but according to Skardžius (1938: 87) the pre-vocalic variant Lith. *ič* (< **itį*) shows that *ìt* derives from **iti*. This adverb possibly contains the pronominal stem **h₁i*- (Smoczyński 2018: 438) with the Indo-Anatolian abl.sg. ending **-ti*, cf. **h₁eti*, **proti*. In this case, **h₁iti* may be understood as an archaic form that underwent a shared lexicalization in Indo-Slavic.

However, Skt. *íti* has alternatively been compared to Lat. *ita* ‘in the same way as, thus’, which may be connected under a reconstruction **ith₂* with vocalization of the final laryngeal (thus Dunkel 2014: 368). Possibly, Lith. *ìt* could also be included in this cognate set. This etymology has the disadvantage that **(H)itH* is morphologically opaque, but it cannot be rejected on phonological or semantic grounds, which leaves the potential Indo-Slavic isogloss uncertain.

3.4.14. **h₂eidʰ-smo-* ‘firewood’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Uncertain (Germanic)	Doubtful	Possible	[N]Derivation

Indo-Aryan: (Skt. *idhmá-* m. ‘fuel, firewood’)

Iranian: YAv. *aēsma-* m. ‘firewood’; MiP Pahl. *ēzm*, Man. *ʻymg* ‘firewood’; MoP *hēzum* ‘firewood’; Sogd. B *zmy* ‘firewood’

Baltic: Lith. (dial.) *iesmẽ* f. ‘amount of firewood that is thrown into the oven or stove at the same time’

Slavic: –

Arntz (1933: 56) listed the Lithuanian and Avestan words, which have traditionally been compared (IEW: 11–12), as an Indo-Slavic isogloss. The stem is generally derived from **h₂eidʰ*- ‘to kindle’ (cf. Skt. *edh*- ‘to kindle’, Gr. αἴθω ‘to kindle’), which is not attested as a verbal stem in Baltic. However, the etymology must be considered doubtful, since the acute root of Lith. *iesmẽ* remains unexplained under this reconstruction (Derksen 2015: 197). Yet, the words are difficult to separate given their semantic and (almost) formal similarity. A potential explanation is that the Lithuanian acute was introduced by analogy from the zero-grade **h₂idʰ*-, which had undergone laryngeal metathesis to **ih₂dʰ*- (Pronk 2011: 315).

[142] OAv. *ūitī*, YAv. *uiti* may continue **h₁iti* with analogical anlaut taken from *uta* ‘and’.

Even if the etymology is accepted, however, a problem is ON *eimr* m. ‘fire, smoke, steam’, which could reflect **h₂eidʰ-smo-*. Although **h₂oi-mo-* would be a more straightforward reconstruction, OHG *eit* m. ‘fireplace, pyre’ < **h₂oidʰ-o-* (cf. Skt. *édha-* m. ‘firewood’) ensures the continuation of **h₂eidʰ-* in Germanic, which is widely attested in Indo-European, including in verbal stems in Indo-Iranian and Greek (LIV: 259).[143] Semantically, ON *eimr* m. ‘fire, smoke, steam’ is distinct from the Iranian-Baltic correspondence, so it could be argued that it reflects an independent formation, or that Indo-Slavic underwent a shared semantic shift, but this remains uncertain.

3.4.15. **h₂sus-ko-* ‘dry’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	[N]Derivation

Indo-Aryan: Skt. *śúṣka-* adj. ‘dry’

Iranian: YAv. *huška-* adj. ‘dry’; OP *ʰuška-* adj. ‘dry’; MiP Pahl. *hušk* adj. ‘dry’; MoP *xošk* adj. ‘dry’; Khot. *huṣka-* adj. ‘dry’; Oss. I *xₒysk’* / D *xusk’*(*æ*) adj. ‘dry’; Psht. *wuč* adj. ‘dry’; Wakh. *wəsk* adj. ‘dry’

Baltic: Lith. *sùskis* m./adj. ‘mange; mangy’; Latv. *sušķis* m./adj. ‘mange; mangy, unclean’

Slavic: –

Arntz (1933: 52) listed the above Indo-Iranian and Baltic velar-suffixed forms as an isogloss. A direct comparison is also advocated by Wodtko, Irslinger & Schneider (2008: 346).

According to Lubotsky (1985), Indo-Iranian **Hsuška-* is a denominal formation from the PIE adjective **h₂(e)s-us-*, since **-ka-* is not a deverbal suffix. This innovative *ka*-stem would eventually have replaced the original adjective. The Baltic words can in principle be derived from a similar *ko*-stem, with the difference that here the Proto-Indo-European adjective was continued as a thematic stem, viz. Lith. *saũsas* ‘dry’. In Baltic, **h₂sus-ko-* would then have acquired more specific semantics than in Indo-Iranian. However, it is also possible to view Lith. *sùskis* etc. as an inner-Baltic formation based on the deverbal noun *sùsas* m. ‘mange, ringworm, scabies’ (Smoczyński 2018: 1331). This derivational pattern is paralleled by, e.g., *strùtos* f.pl. ‘manure, urine’ ~ *srùtkis* m. ‘any old thing, junk’, and has the advantage of explaining the semantic closeness between Lith. *sùsas* m. ‘mange, ringworm, scabies’ and *sùskis* m./adj. ‘mange; mangy’.

[143] Conversely, a root **h₂ei-* ‘to kindle’ is only inferred based on the idea that **h₂eidʰ-* is an extended variant of the root of **h₂ei-es-* ‘copper’, which is semantically uncompelling. Furthermore, **h₂ei-* is not found in any other nominal or verbal derivations.

3.4.16. **h₂ueh₁-iu-* ‘wind’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	[N]Derivation

Indo-Aryan: Skt. *vāyú-* m. ‘wind, air, god of wind’

Iranian: YAv. *vaiiu-* m. ‘air, atmosphere, a god’

Baltic: Lith. *vė́jas*, *vė́jus* m. ‘wind’; Latv. *vẽjš* m. ‘wind’

Slavic: –

Schmidt (1872: 50), Arntz (1933: 50), and Porzig (1954: 169) take the Indo-Iranian *u*-stems (EWAia II: 544) and Lith. *vė́jas* (LEW: 1216) as an Indo-Slavic isogloss. While the suffixes of these words do not match, some Lithuanian varieties show a *u*-stem (Derksen 2015: 496). However, this may be a dialectal innovation, given that Latv. *vẽjš* also presupposes an *o*-stem. An *o*-stem has been argued to be reflected in YAv. voc.sg. *vaiiō*, acc.sg. *vaēm* (AirWb.: 1357–58). Although the vocative probably reflects a regular sound change **-iau* > *-iiō* (de Vaan 2003: 366), the accusative *vaēm* is more difficult to explain away (de Vaan 2003: 326). Remmer (2011) argues that *vaēm* is secondary to a more archaic acc.sg. *vaiiąm* (Ny 1.1), which may continue an amphikinetic acc.sg. **h₂ueh₁-iou-m* with Stang’s Law. Indeed, it seems more economical to assume that *vaēm* is secondary than to reconstruct an *o*-stem next to a *u*-stem for Proto-Indo-Iranian based on a single form in an otherwise uniform paradigm.

3.4.17. **ieh₂-* ‘to drive’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	[V]Derivation

Indo-Aryan: Skt. *yā́ti* ‘to drive (fast), speed’

Iranian: –

Baltic: Lith. *jóti*, *jója* ‘to ride’; Latv. *jât*, *jâju* ‘to ride’

Slavic: OCS *jaxati*, *jadǫ* ‘to go, ride’; Cz. *jeti*, *jedu* ‘to ride, drive’

The root **ieh₂-* (possibly **h₁ieh₂-*) is attested in several branches, e.g., Lat. *iānus* m. ‘arched passage, doorway’, OIr. *áth* m. ‘ford’ < **iātu-*, perhaps OIr. *á* ‘chariot’ (Matasović 2009: 434–35), ToA *yā-* ‘to go, ride’, ToB *iyā-* ‘to go, travel; lead’, reflecting a reduplicated present (Adams 2013: 71). However, the secondarily suffixed verbal stems of Lith. *jóti*, *jója* and Cz. *jeti*, *jedu* (see Derksen 2008: 154; 2015: 212–13) probably reflect an old root present corresponding to Skt. *yā́ti* (LIV: 309–10). Meillet (1926: 171) and Arntz (1933: 51) took the verbal stem of **ieh₂-* as an Indo-Slavic isogloss, although they did not know about the Tocharian evidence. In either case, the root present is a potential isogloss, provided that the analysis of the Balto-Slavic forms is correct, as Tocharian has a different stem. However, as the root present is an archaic category, it is not unlikely that **ieh₂-* is a shared archaism.

3.4.18. *ḱeh₁k(ʷ)-o/eh₂- ‘green edible plant’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Uncertain (Germanic)	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *śāka-* n. ‘potherb, vegetable’ (Sū.+)

Iranian: –

Baltic: Lith. *šẽkas* m., *šẽka* f. ‘freshly mown green crops for feeding animals’; Latv. *sệks* m., *sệka* f. ‘freshly mown grass (also clover, vetch) for feeding animals’; OPr. *schokis* m. ‘grass’ (EV)

Slavic: –

Arntz (1933: 43) listed the Sanskrit and Baltic words as an isogloss. However, ON *há* f. ‘aftermath, hay of the second crop’, which can reflect **ḱeh₁kʷ-eh₂-* (de Vries 1977: 199), cannot be excluded as an additional cognate.[144] On the other hand, it seems quite attractive to reconstruct ON *há* as PGm. **hawō-* and connect it to ON *hey* n. ‘hay’ < PGm. **hauja-*, which is derived from **hawwan-* ‘to hew, chop’ < **koh₂u-*.

The relationship between East Baltic **śēkas* and OPr. *schokis* is unclear. Since *sch-* is not regular before **ā*, Mažiulis (2012) assumes an original ablauting stem **śēka-* / **śāka-*, where **s-* < **ś* was palatalized before **ē*. The origin of this supposed ablaut is unclear, however.

3.4.19. *ḱei- ‘to be orphaned’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	Semantics

Indo-Aryan: Skt. *śayú-* m. ‘orphan, fatherless one’

Iranian: YAv. *saē* ‘orphan’; MiP Man. *s'ywg* ‘orphan’; Khot. *syūta-* ‘orphan’; Oss. I *siʒær* / D *seʒær* ‘orphan’

Baltic: Lith. *šeirỹs* m. ‘widower’, *šeirẽ* f. ‘widow’

Slavic: OCS *sirъ* adj. ‘orphaned’; Ru. *síryj* adj. ‘orphaned’; Cz. *sirý* adj. ‘abandoned, lonely, childless’

Arntz (1933: 53) listed the above words as an Indo-Slavic semantic isogloss (see also Vasmer II: 628; Derksen 2015: 442).

The Lithuanian words derive from an unattested adjective **šeira-* (Smoczyński 2018: 1361), cognate with the Slavic adjective, which likely did not only mean ‘orphaned’, but also ‘abandoned’ vel sim., cf. Cz. *sirý* ‘abandoned, lonely, childless’.

Formally, **ḱei-u-* and **ḱei-ro-* can be derived from **ḱei-* ‘to lie’, although the semantic connection is unclear. Other forms with similar semantics, presumably from the same root **ḱei-* ‘to lie’, include **ḱoi-m-* (Latv. *sàime* f. ‘members of a household’, ON

[144] According to Eichner (1975: 81 fn. 5), Hitt. *kikla-* ‘kind of herb (?)’ reflects **ḱēko-lo-*, but the assumed syncope is not regular in Hittite.

heimr m. ‘home’) and **ḱei-uo-* (Goth. *heiwa-frauja-* m. ‘master of the house’, Lat. *cīvis* m./f. ‘citizen’, Latv. *siẽva* f. ‘wife’, Skt. *śéva-* adj. ‘dear, precious, friendly’). This shows that **ḱei-* is often the basis for nominal derivatives denoting various familial relationships, which could explain the meaning ‘orphan’ of the Indo-Iranian and Balto-Slavic forms in question. Since they are not formally identical, it is difficult to assess the likelihood of a shared semantic development, but independent innovations can hardly be excluded.

Arm. *sēr* ‘fondness, love’ and the denominal *sirem* ‘to love’ reflect **ḱei-ro-*. Although semantically distant, it is difficult to exclude that this reflects the same formation as the Balto-Slavic forms, which would allow the proposed isogloss to be definitively rejected.

3.4.20. **ḱolH-to-* ‘cold’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	[N]Derivation

Indo-Aryan: –

Iranian: YAv. *sarəta-* adj. ‘cold’; MiP Pahl. *sard* adj. ‘cold’; MoP *sard* adj. ‘cold’; Sogd. B *srt* adj. ‘cold’; Khot. *sāḍa-* adj. ‘cold’; Oss. *sald* ‘cold’ (noun), I *sælyn* / D *sælun* ‘to freeze’

Baltic: Lith. *šáltas* adj. ‘cold’; Latv. *salt̂s* adj. ‘cold’; OPr. *salta* adj. ‘cold’

Slavic: –

The Iranian and Baltic forms have been derived from a shared adjective stem (AirWb.: 1566; LEW: 960–61; Derksen 2015: 439). The root **ḱelH-* is further reflected in, e.g., Skt. *śiśira-* m./n. ‘early spring, cold, frost’, PGm. **hihelōn-* f. ‘hoarfrost’ (Kroonen 2013: 226), Lith. *šálti* ‘to freeze’, Lith. *šalnà* f., Latv. *salm̂a* f. ‘light frost’, OCS *slana* f. ‘hoarfrost’. Arm. *saṙn* ‘ice, cold’ is unrelated (Martirosyan 2010: 569).

The etymology and reconstruction of **ḱolH-to-* are problematic for two reasons. First, the vocalism of YAv. *sarəta-* etc. is ambiguous, reflecting **ḱelH-to-*, **ḱolH-to-*, or **ḱlH-to-*. Although not in Avestan, verbal stems from this root are attested in, e.g., MiP Pahl. *afsar-* ‘to cool down’, caus. *afsār-* ‘to cool’, Parth. *wys’r* ‘to cool off’, Khwar. *sry-* ‘to become cold, freeze’, caus. *s’ry-* (Cheung 2007: 336–37). While verbal adjectives in **-to-* occasionally show full grade in the root in Indo-Iranian (cf. AiGr. II, 2: 551), it is more straightforward to take YAv. *sarəta-* etc. as a regular verbal adjective **ḱlH-to-*. Second, the Baltic forms look like regular deverbal adjectives from the infinitive stem, e.g., Lith. *šálti* ‘to be freezing, cold’. The Baltic *o*-grade has been suggested to originate in the perfect stem (LIV: 323); alternatively, it could be denominal.

In sum, there is no compelling reason to equate the Iranian and Baltic forms directly under a morphologically peculiar **ḱolH-to-*, and the isogloss is at best uncertain.

3.4.21. **keh₂-mo-* ‘desire’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	[N]Derivation

Indo-Aryan: Skt. *kā́ma-* m. ‘wish, desire’

Iranian: OAv., YAv. *kāma-* m. ‘wish, desire’; OP *kāma-* m. ‘wish, desire’; MiP Pahl. *kām*, Man. *k’m*, *q’m* ‘will, desire, purpose’; MoP *kām* ‘will, desire, purpose’; Sogd. B *k’m*, C *q’m* ‘wish’; Oss. *kom* ‘consent’

Baltic: Latv. *kãmêt*, *kamẽju* ‘to hunger’

Slavic: –

Arntz (1933: 42) listed this *mo*-stem as an isogloss. The etymology, according to which Latv. *kãmêt* ‘to hunger’ is denominal from an unattested Baltic **kāma-*, is further supported by Fraenkel (LEW: 221) and Smoczyński (2018: 497).

The comparison is formally and semantically possible, but the precise origin of PIIr. **kaH-ma-* is unclear. Within Indo-Iranian, the root **kaH-* ‘to desire’ (< **keh₂-*, cf. Lat. *cārus* adj. ‘dear’, OIr. *caraid* ‘to love’) can hardly be separated from **kanH-* / *čanH-* ‘to be pleased with’, cf. Skt. aor. *ákānīṣ-*, *cánas-* n. ‘delight, satisfaction, tendency’, YAv. *cinman*(*a*)- n. ‘desire’. Although the roots are semantically slightly different synchronically (Narten 1964: 94), **kanH-* / *čanH-* may have been extracted from a nasal present stem underlying Skt. pres.ptc. *kā́yamāna-*, OAv. 1sg.pres.subj. *kaiiā* < **k-n-H-ie/o-*, cf. Skt. *mathāyáti* ‘to rob, take away’ with the corresponding nasal present *mathnā́ti* ‘id.’. Thus, PIIr. **kaH-ma-* may reflect either **keh₂-mo-* or **knH-ma-*, of which only the former can be compared with Latv. *kãmêt*.

Against a reconstruction **keh₂-mo-*, it may be argued that nouns in *-mo-* generally take *o*-grade in the root (Brugmann 1892: 160). An *e*-grade rather points to an adjective, cf. **ḱieh₁-mo-* (p. 67), but there is no indication that PIIr. **kaH-ma-* was originally an adjective. The connection to Latv. *kãmêt* should therefore be considered doubtful.

3.4.22. **kenH-* ‘to dig’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	Root

Indo-Aryan: Skt. *khan*^{i}- ‘to dig’, *khaní-* adj. ‘burrowing’, (Ragh.) f. ‘mine’, (Lex.) *khanī-* f. ‘mine’

Iranian: YAv. *kan-*, *kəṇti* ‘to dig’; OP *kan-* ‘to dig’; MiP Pahl. *kan-*, Man. *qn-* ‘to dig; to raze, destroy’; MoP *kandan* ‘to dig (out)’; OKhot. *kaṃggan-* ‘to dig’; Sogd. BM *kn-*, CM *qn-* ‘to dig (out)’; Psht. *kan-* ‘to dig’; Wakh. *кын-* ‘to dig’

Baltic: Lith. *kìnis* m. ‘den, lair (of a pig, boar, bear); bird’s nest; bedding, litter for animals’

Slavic: –

Arntz (1933: 36) compares Lith. *kìnis* m. to Skt. *khaní-* f. directly, but the difference in gender suggests that these are independent formations. The adjective *khaní-* ‘burrowing’

can hardly be a direct cognate of the Lithuanian noun. However, it is possible that Lith. *kìnis* derives from the root **kenH-*, which is well attested in Indo-Iranian, but not otherwise found in Balto-Slavic or other branches of Indo-European.[145]

Indo-Aryan and Iranian do not agree as to the aspiration in the anlaut (see EWAia I: 446 with lit.). Skt. *kh-* has traditionally been explained as analogical from *khā́-* f. 'spring, source', but this is semantically uncompelling. It remains unclear exactly from where the Sanskrit aspiration originates,[146] but it does not preclude a reconstruction **kanH-* for Proto-Indo-Iranian.

Admittedly, the derivation of Lith. *kìnis* from **kenH-* 'to dig' is very uncertain (thus Smoczyński 2018: 545), since the semantics of the former allow for alternative interpretations. However, the etymology cannot be rejected on formal or semantic grounds and will therefore be classified as an uncertain root isogloss.

3.4.23. **k(ʷ)erḱ-* 'to become lean, emaciate'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	^{V}Derivation

Indo-Aryan: Skt. *kṛ́śyati* 'to become lean', *cakárśa* 'to become lean'

Iranian: –

Baltic: Lith. *karšti*, *-ta*, *-ia* 'to reach the end of one's life, become frail with age, die; to ripen'; Latv. *kàrst*, *-tu* 'to grow old, ripen'

Slavic: Cz. *krsati*, *krsnouti* 'to decrease, decline'

Arntz (1933: 56) took the fact that verbal stems from the root **k(ʷ)erḱ-*'to become lean, emaciate' are only attested in Balto-Slavic and Indo-Iranian as an Indo-Slavic isogloss. The root is further attested in the adjective **k(ʷ)rḱ-o-* 'lean, skinny', cf. ON *horr* 'lean', Skt. *kṛśá-* 'lean, thin, emaciated', Sogd. B *'ks-* 'small, thin'.

While it is true that no other branches continue verbal forms from **k(ʷ)erḱ-* (LIV: 355), there are no directly cognate formations in Indo-Iranian and Balto-Slavic. Sanskrit has a *ie*/*o*-present and a perfect that may be old (Kümmel 2000: 140). The acute intonation of Lith. *karšti*, which is inflected either as a *ie*/*o*-present or as a *sta*-present, has been attributed to the inchoative suffix **-sta-* (Smoczyński 2018: 495). Derksen (2015: 228) doubts this, since analogical *métatonie rude* is uncommon for verbs with *o*-grade. I find it difficult to reject, however, since the different inflections are synonymous. In this case, Lith. *karšti* may go back to a perfect form (explaining the *o*-grade) cognate with Skt. *cakárśa* (Kümmel 2000: 140), which is a potential isogloss.

[145] OPhryg. *keneman* '(part of) a monument' is formally possible (see further Lubotsky 1988a: 15), but semantically much too uncertain to be plausibly connected here. Lat. *caenum* n. 'mud, filth, slime' has traditionally been adduced (LEW: 254; cf. also Walde 1910: 108), but the connection to Lith. *kìnis* is formally impossible.

[146] Kümmel (2000: 151–52) derives **kanH-* from a nasal present of **kaH-* (which would be preserved in *khā́-* 'spring, source'), which is possible, but still does not explain the origin of the initial aspirate.

3.4.24. *$k^{(w)}leiḱ$- ‘to torment’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	Root

Indo-Aryan: Skt. *kleś-* ‘to trouble, torment’

Iranian: –

Baltic: Lith. *klišas* adj. ‘club-footed, bow-legged, lame, crooked’, *klišės* f.pl. ‘crab’s claws, pincers’, *klišti* ‘to become deformed (about the foot), start limping’

Slavic: Ru. *kléšči* f.pl. ‘claws, pincers’; Pol. *kleszcze* f.pl. ‘pincers’, (dial.) *kleścić* ‘to castrate’; SCr. *klijèšte* f.pl. ‘pincers’, *klijèštiti* ‘to squeeze’

Arntz (1933: 35) listed this root as an Indo-Slavic isogloss.

The Balto-Slavic root is compatible with *$k^{(w)}leiḱ$-, but no shared Proto-Balto-Slavic derivatives can be reconstructed. The Lithuanian forms all seem to derive from the adjective *klišas* (Smoczyński 2018: 568), which suggests a basic meaning ‘crooked’ vel sim. In Slavic, all forms show a final *-*t* that has been argued to originate in a nominal form *$k^{(w)}loiḱ$-*t*-*ieh*$_2$- (Derksen 2008: 224). In that case, the verbal forms reflecting PSl. **kləstiti* must have been back-formed after, e.g., **pustiti*, **puščǫ* (ESSJ X: 23). In view of the semantics of the verb, i.e., ‘to castrate; to squeeze’, a denominal origin from a noun **kləšča* ‘pincer’ seems quite plausible.

Although formally comparable, the semantics of the Balto-Slavic and Sanskrit roots are not close enough to make this etymology compelling. It should be noted that the Balto-Slavic forms would also be compatible with **kleis-* or **ḱleis-* (with depalatalization). The forms could alternatively be compared to Skt. *śreṣ-* / *śleṣ-* ‘to cling, stick to’, YAv. *srišāiti* ‘to stitch together’ (LEW: 273; see Cheung 2007: 355 for additional Iranian cognates), which perhaps provide a better fit semantically than Skt. *kleś-* ‘to trouble, torment’. The root **ḱleis-* is likely derived from **ḱlei-* ‘to lean’ (EWAia II: 671; LIV: 333) with an *s*-extension (desiderative?) constituting a possible shared innovation of Indo-Slavic.

3.4.25. *$k^{(w)}o(n)Hd$- ‘to bite’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Uncertain (Armenian)	Doubtful	Rejected	Root

Indo-Aryan: Skt. *khā́dati* ‘to chew, bite, eat, digest’

Iranian: Parth. *x’z* ‘to devour’; MoP *xāyīdan* ‘to chew, gnaw, eat’; Bal. *khāδ-* ‘to chew’; Khot. *khāś-* ‘to eat, drink’

Baltic: Lith. *kąsti, kánda* ‘to bite’; Latv. *kuôst, kuôžu* ‘to bite’

Slavic: OCS *kǫsati, kǫsajǫ* ‘to bite’; Ru. *kusát’, kusáju* ‘to bite’; Pol. *kąsać, kąsam* ‘to bite’; SCr. *kúsati, kusáju* ‘to eat with a spoon’

Schmidt (1872: 47) listed this root as an Indo-Slavic isogloss. However, the etymology has been rejected in some more recent works (e.g., EWAia I: 451–52) and there are formal problems and possible additional cognates that must be addressed.

For Proto-Indo-Iranian, a root **kHaHd-* must be reconstructed, based on the consistent aspiration and length of the root vowel. It is often assumed that the aspiration is secondary from zero-grade forms of an original root **k(ʷ)eh₂d-* (cf. LIV: 344), but the details remain unclear.[147] Parth. *x'z* 'to devour' appears to show a root extension **-s-*, likely originally a suffix (Cheung 2007: 445). Arm. *xacanem* 'to bite, sting', which is incompatible with final **-d-*, can be explained similarly, and reflects an *s*-aorist according to Martirosyan (2010: 324 with lit.).[148] However, the closeness to the Parthian form could also point to an Iranian borrowing, especially given the productivity of *-s-* < **-ske/o-* in Iranian.

The Balto-Slavic situation is complicated. Baltic points to **kon(H)d-*, a form that could reflect a generalized nasal present stem (Derksen 2015: 232). Smoczyński (2018: 502) dates this development to post-Proto-Baltic times, but since the nasal is also found in Slavic it is likely Proto-Balto-Slavic. Slavic **kǫsati* thus corresponds in vocalism and nasal quality to Baltic, but the root ends in **-s-*. This is reminiscent of the Parthian and Armenian forms, but due to the nasal **kǫsati* cannot be an Iranian borrowing. Perhaps these forms are all better derived from an old sigmatic aorist.

Even if the potential Armenian cognate is left out of consideration, the Indo-Iranian and Balto-Slavic forms cannot easily be united under one reconstruction. The aspirated anlaut in Indo-Iranian normally corresponds to Slavic **x-*, but it is difficult to exclude that the aspiration (i.e., **kH-*) is secondary in Indo-Iranian. The *o*-grade vocalism of Balto-Slavic cannot be excluded for Indo-Iranian, but would be unexpected from a morphological point of view. One could assume that the Indo-Iranian forms derive from **knHd-*, which would explain the consistent lengthened grade vocalism, but this makes the origin of the aspiration all the more obscure.

[147] LIV refers to the zero-grade *khid-*, which is attested for the homonymous, but likely etymologically unrelated Skt. *khād-* 'to strike, press'. However, based on the short root vowel in the Iranian cognates, e.g., YAv. *vīxaδ-* 'to beat (the earth) apart' (Cheung 2007: 439), this root most likely reflects PIIr. *kHad-*. The vr̥ddhi vocalism in Skt. (JB) *s*-aorist 3pl. *akhātsur* and 3sg.perf. *cakhāda* is then entirely regular from **ē* and **o*, respectively, and need not be attributed to a laryngeal. The aspirated *kh-* in the zero-grade *khid-* < **kHd-* may thus be analogical from the full grade **kHad-*. The regular outcome of **kHd-* would likely have been **čid-* or **kid-*, since laryngeal vocalization in initial syllables (PIIr.) predates laryngeal aspiration (Indo-Aryan). Consequently, a zero-grade **k(ʷ)h₂d-* is an unlikely model of analogy for the aspirate in Skt. *khād-* 'to chew, bite, eat, digest'.

[148] However, Skt. (JB) 3pl.aor. *akhātsur* cannot be used as evidence for an *s*-aorist to this root, as it belongs to the root *khād-*/*khid-* 'to strike, press' (EWAia II: 452), and might in any case be a secondary formation within Sanskrit (Narten 1964: 105–6).

3.4.26. *k^w(*o*)*r-no-* ‘deaf, with mutilated ears’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	Semantics

Indo-Aryan: Skt. *kárṇa-* m. ‘ear’, *karṇá-* adj. ‘long-eared, with a defect on the ears’

Iranian: YAv. *karəna-* m./adj. ‘ear; deaf’; MiP Pahl. *karr*, Man. *kr*, *qr* adj. ’deaf’; MoP *kar* adj. ‘deaf’; Sogd. BM *krn*, C *qrn* adj. ‘deaf’; Khot. *kārra-* adj. ‘deaf’; Psht. *kuṇ* adj. ‘deaf’; Wakh. *kʰın* ‘with mutilated ears (of sheep)’

Baltic: Lith. *kuř̃čias*, *kuř̃las* adj. ‘deaf’; Latv. *kuř̃ns*, *kùrls*, *kuř̃ls* adj. ‘deaf’

Slavic: CS *krъnъ* adj. ‘mutilated (with ears slit or cropped)’; Ru. (dial.) *kornój* adj. ‘stocky, thickset’; SCr. *kȓn* adj. ‘broken off, dented, knocked out (teeth), maimed’, *kŕnja* adj. ‘crop-eared, snub-nosed, toothless’; RuCS *črěnъ* m. ‘handle’

Arntz (1933: 49) lists the above words as an Indo-Slavic isogloss.[149] However, the attested formations are not identical.

Within Indo-Iranian (EWAia I: 314–15; AirWb.: 455), **kárna-* ‘ear’ seems to be primary, from which a possessive adjective **karná-* ‘having defective ears’ is derived (cf. Skt. *śroṇá-* ‘lame’ << ‘with bad hips’ ~ *śróṇi-* f. ‘hip’). Given the cognates in Indo-Aryan and Iranian, both the base and the derivative can be reconstructed for Proto-Indo-Iranian. Synchronically, the etymology of **kárna-* ‘ear’ is obscure.

In Baltic, there is a host of forms (LEW: 314–15).[150] Lith. *kuř̃čias* is derived from the synonymous Lith. *kuř̃tas* ‘deaf’, which synchronically looks like a derivative from Lith. *kùrti* ‘to light a fire; to build’. However, it can hardly have been derived within Baltic, given the semantics.[151] The *l*-adjective is likely a Baltic innovation. Latv. *kuř̃ns* corresponds to CS *krъnъ* which may be reconstructed as PBSl. **kurno-* (Derksen 2015: 540–41). In the various Slavic languages, the meaning is not restricted to ‘ears’, but refers to various kinds of mutilation or defects (Vasmer I: 628–29). Nevertheless, since the oldest meaning refers to ‘ears’, this may be due to semantic widening.

On the one hand, PIIr. **kárna-* ‘ear’, **karná-* ‘deaf, having defective ears’ vs. PBSl. **kurno-* ‘deaf, with mutilated ears’ share the suffix **-no-* and similar semantics, but on the other hand, the root ablaut is divergent, which precludes a direct comparison. A possible bridge between the branches may be found in RuCS *črěnъ* m. ‘handle’ (Arntz 1933: 36; see further Vasmer III: 321–22). If RuCS *črěnъ* goes back to an Indo-Slavic formation **k^we/or-n-*, this may have meant ‘handle’ and referred to ‘ear’ metaphorically (whence Skt. *kárṇa-*).[152] From **k^we/or-n-* ‘handle, ear’, possessive adjectives may then have arisen through thematicization of this athematic *n*-stem.

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[149] Lat. *curtus* ‘mutilated, circumcised; imperfect’ is according to de Vaan (2008: 158) derived from **(s)ker-* ‘to shave, scratch off’ rather than **k^wer-* ‘to cut’. In any case, it does not bear any specific similarity in morphology or semantics to the Indo-Iranian and Balto-Slavic forms, and is better kept apart.

[150] The accentuation of the various Balto-Slavic forms is a complicated issue that I will not go into here. The original accentuation of the Baltic forms cannot be determined (see Derksen 1996: 226).

[151] Lith. *kuř̃sti* ‘to become deaf’ is doubtless denominative (Smoczyński 2018: 641).

[152] Not here Welsh *carn* ‘sword pommel’, which requires a palatal or a plain velar (*pace* Vasmer III: 322; Pedersen 1909: 61).

An alternative scenario is proposed by Fraenkel (1962: 315), in which the adjective **k^{w}(*o*)*r-no-* ‘with mutilated ears’, shared by Indo-Iranian and Balto-Slavic, is primary. PIIr. **kárna-* ‘ear’ would then be a back-formation from **karná-* ‘deaf, having defective ears’. This seems more plausible than assuming an Indo-Slavic noun **k^{w}e/or-n-* ‘handle, ear’, but still does not offer an explanation for the divergent root ablaut in **k^{w}(*o*)*r-no-* ‘with mutilated ears’. Ultimately, the isogloss is uncertain.

3.4.27. **med^{h}u-h$_{1}$ed-* ‘honey-eater’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	^{N}Derivation

Indo-Aryan: Skt. *madh*(*u*)*vád-* adj. ‘honey-eating’

Iranian: –

Baltic: –

Slavic: OCS *medvědь* m. ‘bear’; Ru. *medvéd’* m. ‘bear’; Pol. (dial.) *miedźwiedź* m. ‘bear’; SCr. *mèdvjed* m. ‘bear’

The Slavic word for ‘bear’ (Vasmer II: 110; Derksen 2008: 306) corresponds formally to Skt. *madh*(*u*)*vád-* ‘honey-eating’. This is listed as an isogloss by Arntz (1933: 51).

The Slavic compound must be archaic since it preserves consonantal **u̯* (Dickenmann 1934: 144). Furthermore, it was no longer transparent for Slavic speakers, since new compounds like SCr. *mèdojēd* ‘honey-eater’ were formed (see further ESSJ XVIII: 55).

Skt. *madh*(*u*)*vád-* ‘honey-eating’ (in German translation usually “Süsses essend”, cf. KEWA II: 571) is attested in the tetrasyllabic nom.pl. *madhᵤvádaḥ* (RV I.164.22a), which describes a (metaphorical) group of birds. According to Dickenmann (1934: 144; accepted by LEW: 207 and AiGr. I: Nachträge 207,8), the compound cannot be old, because *-uv-* is irregular after a light syllable (according to Sievers’ Law). However, while **-uHá-* should regularly have yielded Skt. *-vá-* (cf. Kuiper 1987; Lubotsky 1997), this contraction could easily have been restored at the morpheme boundary between *madhu-* and *ád-*. Another Vedic compound *mádhvarṇas-* ‘having sweet waves’ (RV I.62.6d) is also tetrasyllabic.

While the form of Skt. *madh*(*u*)*vád-* ‘honey-eating’ does not preclude an archaic formation, it is difficult to exclude that it was created within Sanskrit, given the many parallels of *-ád-* ‘eating’ as a second member in compounds, including cases containing non-Indo-European words, e.g., *karambhā́d-* ‘porridge-eating’.

3.4.28. *m(e)itH-u- ‘opposed’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Uncertain (Italic)	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *míthū* adv. ‘wrongly, opposed, falsely’, *mithuyā́* adv. ‘falsely’

Iranian: –

Baltic: –

Slavic: ORu. *mitusъ* adv. ‘opposite one another, criss-cross’; Pol. (dial.) *mituś* adv. ‘across, criss-cross, the other way round’; Cz. (dial.) *mitvy* adv. ‘in turn, alternately’

A connection between the above adverbs is advocated in Slavic etymological sources (Vasmer II: 139; Derksen 2008: 319), but the precise relationship is not elaborated upon. Based on Skt. *míthū* and Cz. *mitvy* (which shows that a *u*-stem is attested in Slavic), a *u*-stem *m(e)itH-u- may be reconstructed. Here, I leave Skt. *mithuṇá-* adj. ‘opposed, paired’, YAv. *miθβana-*, *miθβara-* adj. ‘paired’ out of consideration, since they seem to reflect a heteroclitic *uer-*/*uen*-stem rather than an original *u*-stem (for a different view cf. EWAia II: 355). The same applies to Skt. *mithás* adv. ‘contrary, variably, mutually’, YAv. *miθō* adv. ‘wrongly, falsely’, and OCS *mitě* adv. ‘in turn, alternately’.

Lat. *mūtuus* adj. ‘on loan, reciprocal’ has been compared to the *u*-stem of Indo-Iranian and Slavic (Vasmer II: 139; Derksen 2008: 319), but the connection is uncertain. In Latin, old *u*-stem adjectives were normally not thematicized but turned into *i*-stems, cf. Lat. *gravis* ‘heavy’ < *graus < *$g^{w}reh_2$-u- and *lēvis* smooth’ < *leh_1i-u- (Fischer 1982; Schrijver 1991: 283–84). This rather suggests that *mūtuus* derives from an unattested *o*-stem *mūto- ‘object of change’, which also was the basis for the denominal *mūtāre* ‘to exchange, replace’. The stem *mūto- may be derived from *mei- ‘to change’ or *meitH-* (de Vaan 2008: 399).

Only if the Latin adjective is explained in this way (which is not necessarily justifiable) can *m(e)itH-u- be considered as a compelling Indo-Slavic isogloss. The lexicalization of adverbs from various case forms of this stem was likely an independent development in the branches, given that the root ablaut does not match.

3.4.29. **nis-tio-* adj. '(being) outside'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Plausible	[N]Derivation

Indo-Aryan: Skt. *níṣṭya-* adj. 'external, foreign, strange'

Iranian: Orm. *pa-néx̌ta* 'outside, on the outside'[153]

Baltic: –

Slavic: OCS *ništъ* adj. 'poor, destitute'; Ru. *níščij* adj. 'destitute, poverty-stricken'; SCr. *nȉšt* adj. 'poor, destitute'

An etymological connection between these Sanskrit and Slavic words has long been assumed (Vasmer II: 222; EWAia II: 48), the problem being that the Slavic long vowel in **nīs-* does not match Skt. *niṣ-* (Derksen 2008: 353). It is possible that the long vowel was introduced by analogy to OCS *nizъ* 'down, below', but the Slavic form could also be an independent derivative *vis-à-vis* Skt. *níṣṭya-*.

The suffix **-tio-* forms adjectives from adverbs, cf. Skt. *nítya-* 'own, native, lasting' ~ Goth. *niþjis* 'relative', and **nis-tio-* is thus transparently built on **nis-*, reflected by Skt. *niṣ* 'out, forth, away, over, without, not-', OAv. *nīš* 'out'. While the derivational pattern is likely old, it is important to note that **nis-* is not attested outside Indo-Iranian. If the Slavic word is related, we may either assume it has undergone a shift from 'being outside' >> 'being outside the community and therefore destitute' >> 'poor, destitute', or that **nis-tio-* originally had a broader scope of meaning, derived from the range of meanings of **nis-*, i.e., 'out; without' etc., after which Indo-Aryan and Slavic specified the semantics in different directions.

3.4.30. **pr(H)ḱ-* 'rib, side, flank, chest'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	Root

Indo-Aryan: Skt. *párśu-* f. 'rib; curved knife, sickle', *pārśvá-* n. 'flank, side', *pṛṣṭí-* f. 'rib'

Iranian: YAv. *pərəsu.masah-* 'having the size of a rib'; MiP Pahl. *pahlūg* 'side, rib'; MoP *pahlū* 'side, rib'; Sogd. M *prs'* 'hour, side', BM *prs'kh* 'side, rib' Khot. *pālsu-* 'rib, side; spoke of a wheel'; Oss. *fars* 'side', I *færsk* / D *færskæ* 'rib'; Psht. *pux̌táy* f. 'rib'; Wakh. *pьırs* 'rib'

Baltic: Lith. *pìršys* f.pl. 'chest (of a horse)'

Slavic: OCS *prьsi* f.pl. 'chest, bosom'; Ru. (arch.) *pérsi* f.pl. 'breast, bosom'; Pol. *pierś* f. 'breast, chest'; SCr. *pȑsi* f.pl. 'breast, chest'

Meillet (1926: 173) and Arntz (1933: 39) list the Indo-Iranian and Balto-Slavic forms as an isogloss. In Indo-Iranian, a *u*-stem is widely attested, alongside a thematicized *u*-stem (Skt.

[153] Orm. *pa-néx̌ta* 'outside, on the outside' has also been derived from **niš-tara-*, cf. YAv. *ništara-* 'external', but Efimov's (2011: 294) reconstruction **ništiā-* is more plausible, since Ormuri seems to preserve final *-r* after apocope, cf. *cār* 'four' < PIr. **čaθ̯āra-*.

pārśvá- ~ Oss. *fars*, see Cheung 2002: 182). Skt. *pṛṣṭí-* seems to be a *ti*-derivative from the same root (EWAia II: 165). As Balto-Slavic has an *i*-stem, **pr*(*H*)*ḱ-* is classified as a potential root isogloss.

As noted by Derksen (2015: 358), the Balto-Slavic forms point to a laryngeal in the root, which is incompatible with Indo-Iranian. Unless the acute intonation is secondary, the etymology cannot be maintained. In that case, one may instead compare the Indo-Iranian words to OE *fealg* f. 'felly' < PGm. **felgō-*, although this may rather belong with Ru. *póloz* m. 'runner, skid', Sln. *plâz* m. 'plough sole; strip' (cf. Kroonen 2013: 134).

3.4.31. *(s)*ker-men-* 'hide, skin'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Uncertain (Germanic)	Compelling	Possible	[N]Derivation Semantics

Indo-Aryan: Skt. *cárman-* n. 'hide, (flayed) skin'

Iranian: YAv. *carəman-* n. 'hide, leather'; OP *carman* 'leather'; MiP Pahl. *čarm*, Man. *crm* 'skin, hide, leather'; MoP *čarm* 'leather'; Sogd. BS *crm* 'skin, leather'; Khot. *tcārman-* 'hide'; Oss. *carm* 'hide, skin'; Psht. *carmáṅ* f. 'skin, hide'

Baltic: OPr. *kērmens* m. 'body'

Slavic: –

Arntz (1933: 48–49) listed the Indo-Iranian-Prussian correspondence as an isogloss. OPr. *kērmens* has been remade into an *i*-stem, which is not unparalleled, cf. *emmens* 'name' (Mažiulis 2012).

However, OHG *scirm* 'screen' < PGm. **skermi-* has often been connected, which would render the isogloss non-exclusive. The word has been taken as a *men*-derivative from *(*s*)*ker-* 'to cut'. Boutkan & Siebinga (2005: s.v. *skerma*) reject this etymology on semantic grounds, but a development from 'what has been cut' >> 'hide, skin' >> 'protective shield' does not seem implausible. Although the derivational path from *(*s*)*ker-men-* to PGm. **skermi-* is not entirely clear, the *e*-grade in the root points to a *men*-stem rather than a *mo*-stem, in which case *o*-grade would be expected (cf. PGm. **sauma-* 'seam' << **siujan-* 'to sew').

Alternatively, *(*s*)*ker-men-* has been connected to Hitt. *kariḫe/a-*[zi] 'to cover' (Puhvel 1997: 82). In this case, the semantics of Indo-Slavic *(*s*)*ker-men-* 'hide, skin' would constitute an innovation *vis-à-vis* PGm. **skermi-* 'protective shield'. However, as the traditional etymological connection to *(*s*)*ker-* 'to cut' seems equally plausible, the isogloss is uncertain.

3.4.32. **sm-bʰeh₂-* ‘assembly, social gathering, meeting, company’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	[N]Derivation

Indo-Aryan: Skt. *sabhā́-* f. ‘assembly, social gathering, meeting, company’

Iranian: (YAv. *habāspa-* m. ‘PN; having horses in the *habā-* (?)’)

Baltic: –

Slavic: SerbCS *sebrъ* m. ‘associate, partner, (type of) farmer’ ORu. *sjabrъ* m. ‘neighbour, companion’

Skt. *sabhā́-* ‘assembly, social gathering, meeting, company’ has often been compared to Goth. *sibja*[154] ‘kinship’ (IEW: 882–84), but already Edgerton (1914) suggested that it must derive from **sm-* ‘together’ + **bʰeh₂-* ‘to speak’, lit. ‘colloquium’. According to Rau (1957: 75–81), the *sabhā́-* was a hall where the societal elite engaged in games of dice, banquets etc. However, Mayrhofer’s assertion (EWAia II: 701) that the original meaning of *sabhā́-* was ‘hall, big room’ rather than ‘assembly’ leaves the word without an Indo-European etymology. It seems more plausible that the meaning ‘hall’ is secondary after the function of this building, i.e., as a place of social gatherings (cf. Falk 1986: 85). In Sanskrit, the root *bhā-* means ‘to shine’, but an additional meaning ‘to speak’ must be reconstructed for Proto-Indo-European based on Gr. φημί ‘to say’ etc. (LIV: 69), which is continued in Skt. *bhánati* ‘to speak’ < **bʰ-n-h₂-e/o-*. This indicates that *sabhā́-* cannot have been derived within Sanskrit but must at least be Proto-Indo-Iranian, even if the name YAv. *habāspa-* does not belong here.

SerbCS *sebrъ*, ORu. *sjabrъ* reflect Proto-Slavic **sębrъ* (cf. Vasmer III: 62).[155] The form has been explained as a nasalized variant of ***sebrъ* and connected to Goth. *sibja* f. ‘kinship’ (IEW: 882–84), or as related to Proto-Slavic **sěmьja* ‘household, family, servants’ (Vaillant IV: 638) < **ḱoi-m-*, cf. Goth. *haims* f. ‘village’. The former scenario should be given up, as the assumed nasalization is *ad hoc*. The latter scenario requires the assumption of a stem **ḱi-m-ro-* (thus Rozwadowski 1928), since **ḱoi-m-* cannot give Proto-Slavic **ę* < PBSl. **im* (or **em*). A weakness of this scenario is that all attested forms of **ḱoi-m-* have full grade in the root. However, since the stem variation within Balto-Slavic (cf. Lith. *šeimà, šeimẽ* f. ‘family, household’, Latv. *sàime* f. ‘members of a household, (extended) family’) points to an athematic stem, it cannot be excluded that zero-grade forms existed in the original paradigm. As for the required epenthesis **mr* > **mbr*, the only example Vaillant (I: 95) mentions is **sębrъ* itself.

An alternative etymology would be to derive PSl. **sębrъ* from the same compound as Skt. *sabhā́-*, i.e., **sm-bʰeh₂-* ‘assembly, social gathering, meeting, company’. From this, **sm-bʰh₂-ro-* ‘one of the assembly, community etc.’ would have been created, which

[154] Proto-Germanic **sebjō-* ‘kinship’ is derived from a form of the reflexive pronoun (see Kroonen 2013: 429).

[155] Similar forms in neighbouring languages, e.g., Lith. *sẽbras,* (dial.) *sẽbras* ‘companion’; Latv. *sę̃brs* ‘neighbour’, Alb. *sembër* ‘peasants using the same pair of oxen’, Modern Greek σέμπρος, σεμπρός ‘type of farmer’, Hungarian *cimbora* ‘associate, partner’, Romanian *sîmbră* ‘community’, are all Slavic borrowings. Differently on Lith. *sẽbras,* cf. Kalima (1940).

ultimately gave the attested Slavic forms. This would directly account for the *ę*-vowel. Although the suffix **-ro-* primarily forms primary adjectives, it could also be used in denominal derivation, cf. Skt. *támisrā-* f. 'dark night' ~ Lat. *tenebrae* f.pl. 'darkness' < **temH-s-ro-*. A possible parallel to **sm-bʰh₂-ro-* is **men*(*s*)*-dʰh₁-ro-* 'wise',[156] if derived from the corresponding compounded root noun **men*(*s*)*-dʰeh₁-* 'wisdom'. The underlying stem **sm-bʰeh₂-* would then be an Indo-Slavic isogloss. Even if the formation would be an archaism, the shared semantic development from an original 'colloquium' >> 'assembly, social gathering, meeting, company' could be a shared innovation. However, since the competing etymology **ḱi-m-ro-* cannot be rejected, this remains uncertain.

3.4.33. **sor*(*H*)*-to-* 'red(-faced)'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	[N]Derivation

Indo-Aryan: –

Iranian: YAv. *harəta-* adj. 'sick with a certain illness (?)'

Baltic: Lith. *saĩtas* adj. 'bright-red, ginger'; Latv. *saĩts* adj. 'red-faced'

Slavic: –

This etymology is supported in various etymological dictionaries (e.g., LEW: 764; EWAia II: 726).[157] According to Derksen (1996: 90), the intonation of Latv. *saĩts* adj. 'red-faced' and the presumably related Lith. *sárkanas* adj. 'pink, ruddy; transparent' represents the original Baltic situation. In any case, YAv. *harəta-* would be compatible with both **sor-to-* and **sorH-to-*. However, the etymology must be considered doubtful, because the meaning of the Avestan word is unclear. It is not at all certain that *harəta-* describes an illness causing redness in the face, as the etymology presupposes. Besides *harəta-* 'sick with a certain illness', there is a homophonous *harəta-* 'well-fed, fat', which may or may not be related.

3.4.34. **srom-o-* 'lame'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	[N]Derivation

Indo-Aryan: Skt. *srāmá-* adj. 'lame', *srā́ma-* m. 'paralysis, illness'

Iranian: –[158]

Baltic: –

Slavic: OCS *xromъ* adj. 'lame'; Ru. *xromój* adj. 'lame'; Pol. *chromy* adj. 'lame, mutilated'; SCr. *hrȍm* adj. 'lame'

[156] Cf. Skt. *médhira-* 'wise', YAv. *mązdra-* 'wise', OHG *muntar* 'perky, vivid', Lith. *mandrùs* 'cheerful, lively', OCS *mǫdrъ* 'wise'.
[157] Skt. *sārāṅga-* 'variegated, spotted' is also included, but the connection is uncertain.
[158] OAv. *rəma-*, *rāma-* adj. 'spraining' is unclear.

Arntz (1933: 38) listed this adjective as an Indo-Slavic isogloss. Indeed, the etymology is attractive from a semantic perspective, but it is formally problematic since the Slavic anlaut **xr-* does not regularly reflect **sr-* (cf. OCS *struja* 'stream' < **srou-ieh₂-*). ESSJ (VIII: 102) suggests that *xr-* derives from **skr-* and connects Slavic **xròmъ* 'lame' to Ger. *Schramme* f. 'scratch' (as well as ON *skráma* f. 'wound, scratch'). However, this is semantically less attractive. Although *ad hoc*, it it possible to assume that the Slavic **x-* is from **s-* due to a sporadic sound change after the phonologization of the RUKI rule, cf. Old Polish *smura* 'cloud' ~ *chmura* 'id.' (Collins 2018: 1433), which would allow the connection to Skt. *srāmá-* to be maintained as an Indo-Slavic isogloss. However, this is uncertain. In any case, it cannot be excluded that the stem is an archaism, as the root **srem-* is not attested in other (verbal) formations.

3.4.35. **telp-* 'to make room'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	Root

Indo-Aryan: Skt. *tálpa-* m. 'bed, retreat, divan, martial bed'

Iranian: –

Baltic: Lith. *tilp̃ti, telp̃a* 'to take place', *talpà* f. 'sufficient space, volume'; Latv. *tìlpt, tęlpu* 'to enter, take place'

Slavic: OCS *tlъpa* f. 'heap, drove'

Arntz (1933: 46) listed Skt. *tálpa-* 'bed, retreat, divan, martial bed' next to Lith. *talpà* 'sufficient space, volume' as a root isogloss (cf. EWAia I: 638). OIr. *-tella* 'to take place' has been adduced (cf. LIV: 623), but is rather to be analysed as *to-* 'to' + *ell-* 'to go, set in motion' (Pedersen 1913: 511). ToB *tsälp-* 'to be free of, pass away, escape; be delivered' and *tälp-* 'to purge' have also been connected (Adams 2013: 315, 807), but this is semantically uncompelling. However, the same may be said for Skt. *tálpa-*. While a connection to the Balto-Slavic root is possible, it is not obvious, and its isolation within Indo-Iranian makes it even more uncertain.

3.4.36. **t(H)ongʰ-eie/o-* 'to pull'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	^{V}Derivation

Indo-Aryan: –

Iranian: YAv. *θaŋjaiieiti* 'to pull, steer (a wagon); MiP Man. *'hynz-* 'to draw (up)'; Sogd. B *δync-* 'to pull out'; Khot. *thaṃj-* 'to pull'

Baltic: (Lith. *tìngti*, *-sta* 'to become slow', *tingùs* 'lazy')

Slavic: CS *rastęšti, rastęgǫ* 'to tear apart'; Ru. *tjagát', tjagáju* 'to pull', *túžit', túžu* 'to strain'; Pol. *tężyć, tężę* 'to strain, tense';

Meillet (1926: 172) and Arntz (1933: 39) list the root of YAv. *θaŋjaiieiti* (AirWb.: 784–85) and Ru. *tjagát'* etc. (Derksen 2008: 493) as an Indo-Slavic isogloss. However, these cannot be separated from ToB *täṅk-* 'to check, stop, hinder' (Adams 2013: 306). The root is further attested in, e.g., ON *þungr* 'heavy' < **þungu-*, which is directly comparable to Lith. *tingùs* 'lazy' and OCS *tęžъkъ* 'heavy'.

The reconstruction of the root is disputed. LIV: 657 gives **tʰengʰ-*, arguing that the aspirated tenuis arose from **sdʰengʰ-* via Siebs' Law and subsequent loss of *s*-mobile. The alternative reconstruction **th₂engʰ-* is dismissed because of the lack of laryngeal colouring in Germanic **þinhslō-* 'drawbar, cartpole'. However, irrespective of the fact that **þinhslō-* rather reflects **tenk-*, there is no need to reconstruct **h₂* specifically, since **h₁* would also have triggered Iranian fricativization of **t*. Hoffmann (1974) explained the Iranian anlaut as resulting from metathesis of **tengʰ-* > **tʰeng-*, which is followed by Kümmel (2011–2024 s.v. **tengʰ-*). Similarly, Cheung (2007: 391–92) reconstructs **tengʰ-*, arguing that the root must be a variant of **ten-* 'to stretch'.

Exclusive to Iranian and Slavic is the *eie*/*o*-stem reflected in Ru. *túžit'* 'to strain', Pol. *tężyć* 'to strain, tense' (Vasmer III: 148) and YAv. *θaŋjaiieiti*, Khot. *thaṃj-* 'to pull' (*j* < **ǰaja-*), which is a possible shared innovation, although the stems may have been formed independently.

3.4.37. **(t)plh₁-* 'fort'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Uncertain (Greek)	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *pū́r* f., gen.sg. *púras* 'fort, palisade'

Iranian: –

Baltic: Lith. *pilìs* f. 'fort, castle'; Latv. *pils* f. 'fort, castle'

Slavic: –

The Sanskrit and Baltic words are related to Gr. π(τ)όλις f. 'citadel, fort' (EWAia II: 145; LEW: 590–91). However, the Greek stem differs from Skt. *pū́r* in ablaut (*o*- vs. zero-grade) and stem class (*i*-stem vs. root noun). Lith. *pilìs* shares the zero-grade root with Sanskrit but the *i*-stem with Greek. The Baltic *i*-stem could be secondary, since most old *i*-stems show full grade in the root in Baltic, e.g., Lith. *avìs* f. ~ Skt. *ávi-* m./f. 'sheep', whereas *i*-stems with zero-grade are generally derived from root nouns, e.g., Lith. *upìs* f. 'river' ~ Skt. *áp-* f. 'water', Lith. *pušìs* f. 'pine' ~ East Lith. nom.pl. *pùšes* (NIL: 553; Derksen 2015: 374). However, it is difficult to exclude that all three branches reflect the same original paradigm.

3.4.38. **uelk*$^{(w)}$- ‘to pull, drag’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	Root Semantics

Indo-Aryan: –

Iranian: YAv. *vərəca-* ‘to pull, draw, tow’, *aipi-varəc-* ‘to pull on (clothing)’; OKhot. *valj-* ‘to move’

Baltic: Lith. *viĨkti, veĨka* ‘to drag’, *vilkéti, viĨki* ‘to be dressed, wear’; Latv. *vìlkt, vę̀lku* ‘to drag; put on (clothes)’

Slavic: OCS *vlěšti, vlěkǫ* ‘to drag’; Ru. *volóč’, volokú* ‘to drag’; Pol. *wlec, wlokę* ‘to drag’; SCr. *vúći, vúćēm* ‘to drag’

A root **h₂uelk*$^{(w)}$- has traditionally been identified as the base of Gr. ἄλοξ, αὖλαξ ‘furrow’ and the verb reflected in Iranian and Balto-Slavic (AirWb.: 1366–67; LEW: 1253; Derksen 2015: 504), but the irregular variation in Greek suggests non-Indo-European origin (Beekes 2010: 73–74). Lat. *sulcus* m.‘furrow’, Alb. *helq* ‘to draw’, and Gr. ἕλκω ‘to draw’ < **selk-* are unrelated (*pace* LEW; cf. de Vaan 2008: 598). The root **uelk*$^{(w)}$- is thus a potential Indo-Slavic isogloss.

However, the analysis of the Iranian material is uncertain. The two Avestan attestations (*vərəca-* vs. *aipi-varəc-*) look formally divergent, but it cannot be excluded that *-varəc-* stands for older *-vərəc-*. As for the semantics, Yt 17.19 *nōiṯ mąm … fraorciṇta* (< **pra-určanta*) may plausibly be translated as ‘they [the gods] cannot (forcibly) drag me [Angra Mainyu] off’, especially given the following paragraph Yt 17.20 *raēkō mē haca aŋhå zəmaṯ vaŋhō kərənaoiti* ‘he [Zaraθuštra] makes the leaving of this earth better for me’. However, this cannot be considered certain. The other attestation N 77.2 *yezi tarasca aiβiiåŋhana aipi.varəcaṇti ratufriiō* is part of an instruction on how to put on the sacred girdle, which is difficult to interpret. Waag (1941: 94–95) translates ‘wenn sie [den Nackenschutz] unter der [angelegten] Gürtelschnur hindurch herausziehen, so stellen sie die Ratu’s zufrieden’[159], which makes several unverifiable assumptions. Kotwal & Kreyenbroek (2009: 48–49) emend the text to *yezi tarasca aiβiiåŋhana aiβi.varzəṇti ratufriiō* and translate ‘if they handle the girdle to the side (of this place), they satisfy the Ratus’. The emendation is unjustified, however, since *varz-* ‘to do, work’ otherwise has a *ia*-present *vərəziia-*. Ultimately, *aipi-varc-* can be translated to ‘to put on (clothes)’ (cf. Latv. *vìlkt*, to drag; put on (clothes)’), but since the context is obscure this cannot be considered certain. The possible Khotanese cognate *valj-* ‘to move’ (Bailey 1979: 378) or ‘to go astray, be deceived’ (Emmerick 1968: 120) does not help, as the semantics in any case cannot be demonstrated to be closer to the Balto-Slavic verbs.[160]

Given the problems surrounding the Iranian material, the isogloss is classified as uncertain.

[159] ‘If they pull [the neck guard] out through under the [donned] girdle, then they satisfy the Ratus’.
[160] If related, its meaning may have developed secondarily from ‘to pull, drag’, cf. Nw. *dra* ‘to pull; go, travel’.

3.4.39. *u(e)nH- ‘forest’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	[N]Derivation Root

Indo-Aryan: Skt. *ván-* n. (?) ‘tree, wood’, *vána-* n. ‘tree, wood, forest’

Iranian: YAv. *vanā-* f. ‘tree’; MiP Pahl. *wan* ‘tree, stock, stem’; MoP *bun* ‘log, root’; Sogd. *wn-* ‘tree’; Psht. *wə́na, wúna* f. ‘tree’

Baltic: –

Slavic: OCS *vъnъ* adv./prep. ‘outside, away, out of’; Ru. *von* adv. ‘away, off’, *vne* prep. ‘outside, out of’; Cz. *ven* adv. ‘away, out’; SCr. *vȁn* adv./prep. ‘out, out of, except, besides’

Arntz (1933: 56) listed the words as an Indo-Slavic isogloss. The etymology (supported by Vasmer I: 225; and Derksen 2008: 531) is based on the idea that the Slavic adverb/preposition is derived from a fossilized case form of a noun corresponding to Skt. *ván-* ‘tree, wood’. While possible, the scenario is difficult to substantiate,[161] as there is no trace of the original lexeme in Balto-Slavic. On the formal side, one would have to assume a secondary zero-grade **un-* instead of expected **vin-*.[162] Even if the etymology is correct, the deeper origin of **u(e)nH-* ‘forest’ is unclear.

3.4.40. *uiḱ-poti- ‘lord of the settlement’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	[N]Derivation

Indo-Aryan: Skt. *víśpáti-* m. ‘lord of the tribe, chief of the settlement, ruler’, *viśpátnī-* f. ‘ruler’

Iranian: YAv. *vīspaiti-* m. ‘chieftain’

Baltic: Lith. *viẽšpatis, viẽšpats* m. ‘lord’, OLith. *viẽšpatni* ‘hostess, lady of the house’; OPr. acc.sg.f. *waispattin* ‘mistress’

Slavic: –

Schmidt (1872: 50) and Arntz (1933: 50) listed the compound **uiḱ-poti-* as an Indo-Slavic isogloss. The attested forms are not entirely formally equivalent, however. As evidenced by OPr. *waispattin* ‘mistress’, the first member of the Baltic compound has *o*-grade in the root, as opposed to Indo-Iranian **uiḱ-*. According to Knobloch (1980: 190), the Baltic full grade was secondarily introduced to prevent **viś-pati* to be parsed as ‘lord of all’. This scenario is not very attractive, since Lith. *vìsas* and Latv. *viss* ‘all’ both contain *s*, not **ś*.[163] Schindler (1972: 32) argued that Baltic **uaiš-* reflects an archaic genitive **uoiḱ-s* << **ueiḱ-s* with

[161] Lith. *laũkan, laukañ* adv. ‘outside, into the field, away’, derived from *laũkas* m. ‘area of open land, field’, is a possible parallel (Vasmer I: 225).
[162] A zero-grade **vun* could be attributed to the existence of an *o*-grade form **uonH-* elsewhere in the paradigm.
[163] The etymology of Lith. *vìsas* and Latv. *viss* ‘all’ is disputed (cf. 3.4.41), and it is not certain that it reflects a root **uiḱ-*, as presupposed in Knobloch’s scenario.

analogical *o*-grade from the strong stem of a static root noun. However, it cannot be proven that the first member of the Baltic compound is a genitive as opposed to the bare stem. Larsson (2007) instead suggests that the first member should be identified with Lith. *viẽšis* m. 'guest', Latv. *vìesis, viess* m. 'guest', since stem vowels of immobile nouns are regularly lost in compounds, e.g., Lith. *viẽšnamis* 'guest house'. Based on these considerations, a direct comparison of the Baltic and Indo-Iranian compounds is doubtful.

3.4.41. **uisu*(-) 'in every direction'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	[N]Derivation

Indo-Aryan: Skt. *víṣu-* 'in every direction'

Iranian: YAv. *vīžuuaŋc-* 'facing in different directions'

Baltic: Lith. *vìsas* adj. 'all'; Latv. *viss* adj. 'all'; OPr. *wissa-* adj. 'all'

Slavic: OCS *vьsь* adj. 'all'; Ru. *ves'* adj. 'all', ORu. (Novg.) *vxu* adj. 'all'; OPol. *wszy* adj. 'all'; SCr. *sȁv* adj. 'all'

Schmidt (1872: 50) and Arntz (1933: 50) listed Skt. *víśva-* 'all', Av. *vīspa-* 'all' and the Balto-Slavic words for 'all' as an isogloss, although the latter also included Skt. *víṣu-* as a cognate. However, given ORu. *vxu* (without progressive palatalization) (cf. Vasmer I: 192; Derksen 2008: 540), the comparison with Indo-Iranian **uićuo-* must be abandoned. Even if the suffix **-uo-* is analogical from **sarua-* (Skt. *sárva-* 'whole, all'), **ć* cannot be reconciled with Balto-Slavic **s*.

Regardless of whether **uiḱ*(*u*)*o-* or **uiso-* is reconstructed, the *-s-* of Lith. *vìsas* 'all' is irregular. Derksen (2008: 540; 2015: 507), following a suggestion by Kortlandt, argued that this irregularity can be explained under the assumption that Balto-Slavic **uiso-* derives from **uisu*, a form he compares with Skt. *víṣu-*, argued to reflect a locative plural of **hɪui-* 'apart'. The regular Balto-Slavic outcome **uiṣu* would then have been replaced by **uisu* in Baltic when the allomorph loc.pl. *-su* was generalized. Subsequently, an *o*-stem adjective would have been derived from this locative plural form. A similar scenario may be envisioned for Slavic **vьśь* << **vьxъ* (*-xъ* being the regular loc.pl. ending). While Kortlandt's scenario is ingenious, it requires two potentially problematic assumptions: 1) **uiṣu* was still analysable as a loc.pl. in Proto-Baltic, and 2) Baltic and Slavic independently derived adjective stems from loc.pl. **uisu*.

Assuming that Kortlandt's scenario is correct, we may proceed to evaluate **uisu*(-) as a potential Indo-Slavic isogloss. In Indo-Iranian, **uišu-* has been lexicalized, i.e., is no longer analysable as a locative plural of **(H)ui-*. The same cannot be said for Proto-Balto-Slavic **uiṣu*, however, since Kortlandt's scenario requires the form to have been analysable as a locative plural at the time when the allomorphs of this case ending were levelled, which happened independently in Baltic and Slavic. The potential isogloss is thus reduced to the preservation of a locative plural form of **hɪui-* 'apart', rather than the innovation of an adjective stem.

3.4.42. **ulp-i-* ‘(wild)cat’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Possible	Semantics

Indo-Aryan: –

Iranian: MiP Pahl. *gurbag* ‘cat’; MoP *gorbe* ‘cat’

Baltic: Lith. *vilpišys* m. ‘wildcat’

Slavic: –

Arntz (1933: 57) takes MiP *gurbag* ‘cat’ < **u̯rpaka-* and Lith. *vilpišys* m. ‘wildcat’ for ‘(wild)cat’ as a semantic isogloss *vis-à-vis* Lat. *volpēs* f. ‘fox’. However, given that the words have different suffixes, the origin of which are not fully clear, especially in the case of Lith. *vilpišys* (cf. de Vaan 2000; Palmér et al. 2021), the etymology is uncertain. Even if it is correct, it is difficult to exclude that ‘(wild)cat’ is the more archaic meaning.

3.5. Rejected isoglosses

3.5.1. **bʰag-o-* ‘god’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	[N]Derivation Semantics

Indo-Aryan: Skt. *bhága-* m. ‘wealth, share’

Iranian: OAv. *baga-* m., YAv. *baγa-* m. ‘god’; OP *baga-* m. ‘god’

Baltic: –

Slavic: OCS *bogъ* m. ‘god’, *u-bogъ* adj. ‘poor’; Ru. *bog* m. ’god’; Pol. *bóg* m. ‘god’; SCr. *bôg* m. ‘god’

Schmidt (1872: 46) lists the Iranian and Slavic words for ‘god’, on the one hand, and the Sanskrit and Slavic words for ‘wealth’, on the other, as isoglosses. Meillet (1926: 168) argues against a Slavic borrowing from Iranian because he does not believe that a word of such cultural significance would be borrowed (cf. also Arntz 1933: 48). However, this claim is contradicted by Erzya (Mordvin) *paz*, *pas* ‘god’ < **pakas*, which is a loanword from Indo-Iranian (Holopainen 2019: 171). Meillet furthermore argues that OCS *u-bogъ* ‘poor’ and *bogatъ* ‘rich’ prove that OCS *bogъ* ‘god’ is inherited and underwent a shared semantic shift with Iranian from ‘wealth’ >> ‘god’. However, the absence of Winter’s Law renders the equation of OCS *bogъ* and OAv. *baga-* formally irregular, and the Slavic material is better explained as borrowings from Iranian.

3.5.2. *b^heb^hr-*u*- ‘beaver’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Uncertain (Germanic)	Doubtful	Rejected	[N]Derivation

Indo-Aryan: Skt. *babhrú-* adj. ‘brown’, Mitanni Indo-Aryan *babru-nnu* ‘epithet of horses’

Iranian: YAv. *baβra-* m. ‘beaver’; MiP Pahl. *babrag* ‘beaver’

Baltic: Lith. *bẽbras*, *bebrùs* m. ‘beaver’; Latv. *bębrs* m. ‘beaver’; OPr. *bebrus* ‘beaver’

Slavic: CS *bebrъ* ‘beaver’; Ru. *bobr* m. ‘beaver’; Pol. *bóbr* m. ‘beaver’; SCr. *dàbar* m. ‘beaver’

Traditionally, a *u*-stem *b^heb^hr-*u*- has been reconstructed for Skt. *babhrú-* ‘brown’, Lith. *bebrùs* ‘beaver’, OIr. *Bibar* ‘PN’, and ON *bjórr* m. ‘beaver’ (IEW: 136–37). Matasović (2009: 59) reconstructs *b^heb^hru- for Celtic, but the only non-onomastic evidence is OBret. *beuer* ‘beaver’ and Old Cornish *befer* ‘beaver’, which may be loans from Vulgar Latin and Old English, respectively (cf. Delamarre 2003: 69), and in any case do not prove a *u*-stem. The only evidence for a *u*-stem in Celtic consists of OIr. *Bibar*, but as a name it is etymologically ambiguous, since its meaning cannot be determined. ON *bjórr* shows *u*-breaking, but is synchronically an *o*-stem. It can hardly derive from a *u*-stem, as these were generally retained in North Germanic, but rather reflects PGm. **bebura-* (de Vries 1977: 40; Kroonen 2013: 56), which looks like a thematicization of *b^he-$b^hr̥$-. Kümmel (2004) argues that Germanic must have inherited a *u*-stem on account of OE *beber*, *bebor* ‘beaver’, whose epenthetic vowel in the second syllable points to a disyllabic preform (i.e., *b^heb^hr-*u*-). However, it is difficult to exclude that Old English reflects PGm. **bebra-*, originating as an alternative thematicization of Pre-Proto-Germanic *b^he-$b^hr̥$-. Thus, only Indo-Aryan and Baltic securely attest *u*-stems.

However, the equation of Skt. *babhrú-* and Lith. *bebrùs* is problematic. The Sanskrit word does not mean ‘beaver’ but ‘brown’ (EWAia II: 210). Since colour adjectives are frequently *u*-stems, *babhrú-* may be analysed as a derivative of PIIr. *b^hab^hra- ‘beaver’, which is attested in Iranian. Since there were beavers in Iran and Afghanistan in ancient times, but not in India (Nowak & Paradiso 1983: 560), it is not unexpected that Sanskrit would have lost the ‘beaver’ word. The Baltic words (cf. LEW: 38) all mean ‘beaver’ and it is difficult to imagine what would have motivated a shift from ‘brown’ >> ‘beaver’. Given the great variation within Balto-Slavic, where not only *o*- and *u*-stems are attested, but also forms with different root vowels, e.g., Lith. *bãbras*, CS *bobrъ*, ORu. *bьbrъ*, the *u*-stems Lith. *bebrùs* and OPr. *bebrus* appear to have been cherry-picked to fit the idea of a PIE *u*-stem, which, upon closer examination, cannot be supported. It is possible that the Baltic *u*-stem arose through reanalysis of case forms of *b^heb^hro- with *u*-vocalism in the ending.

As stated above, PGm. **bebura-* implies an original athematic stem *b^he-$b^hr̥$-, which was thematicized after the Germanic development *$r̥$ > **ur*. Therefore, a case could be made for viewing YAv. *baβra-* and the Balto-Slavic *o*-stems as a shared innovation *vis-à-vis* the athematic stem. Lat. *fiber* m. ‘beaver’ is synchronically an *o*-stem, too, but requires the assumption of irregular raising of **e* > *i*. Since a variant *feber* is also attested, de Vaan

(2008: 217) maintains that raising cannot be excluded. An alternative explanation, however, is that the variation between *fiber* and *feber* goes back to an alternation in the reduplicating syllable in Indo-European, i.e., **bʰi-bʰer-* / **bʰe-bʰr-*. In this scenario, the thematicization would have occurred within Italic. Nevertheless, the *o*-stem in Iranian and Balto-Slavic is not necessarily significant, since it could have developed independently, just like it eventually did in Germanic and Italic.

3.5.3. **bʰeHǵʰ-* ‘to press, stick’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	Root

Indo-Aryan: Skt. *bā́hate* ‘to press’

Iranian: –

Baltic: Latv. *bâzt*, *-žu* ‘to stick, stuff’

Slavic: –

In older literature, this etymology, which is a potential Indo-Slavic isogloss, is sometimes supported (e.g., LEW: 38). However, Skt. *bā́hate* ‘to press’ is attested in late texts where *b*/*v* are not consistently differentiated (KEWA II: 427–28). It is best understood as a variant of *vāhate* or *bādhate* ‘to press’, and the etymology should be rejected.

3.5.4. **bʰeh₂dʰ-* ‘to push, press’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Germanic)	Compelling	Possible	Root

Indo-Aryan: Skt. *bādhá-* m. ‘distress’, *bā́dhate* ‘to push, press, trouble, oppose, repel’

Iranian: (YAv. *auui.bāδa-* ‘due to pressure’)[164]

Baltic: Lith. *bósti*, *-ta* ‘to bother, bore, be repugnant’, *bóstis*, *bódžiasi* ‘to be bored with, be disgusted by’, (*bèsti*, *bẽda* ‘to stick, drive (into), dig’, *bėdà* f. ‘misfortune, trouble, guilt’, *bãdas* m. ‘hunger’; Latv. *best*, *bẹdu* ‘to dig, bury’, *bẹ̀da* f. ‘care, sorrow, grief’, *bads* m. ‘hunger’)

Slavic: (OCS *bosti*, *bodǫ* ‘to stab’, *běda* f. ‘distress, need, necessity’; Ru. *bedá* f. ‘misfortune, trouble’; Pol. *bieda* f. ‘poverty, misery’; SCr. *bijèda* f. ‘grief, misfortune’)

Arntz (1933: 35) listed Skt. *bībhatsate* ‘to be disgusted’ and Lith. *bóstis* ‘to be bored with, be disgusted by’ as an Indo-Slavic isogloss (cf. also LEW: 29). However, although the roots of these stems may be compared, there are other potential cognates within as well as outside of Balto-Slavic and Indo-Iranian that must be taken into account.

The compound Skt. *jñu-bā́dh-* adj. ‘bending the knees’ has been compared with ON *kné-beðr* ‘hassock’, OS *kneo-beda* ‘prayer’. ON *beðr* m. ‘bed’ is cognate to Eng. *bed* etc. (de Vries 1977: 29) and the Germanic compound may thus be analysed as ‘knee-bed’. This

[164] The analysis of this word is unclear; it might be unrelated to Skt. *bādh-* ‘to push, press, trouble, oppose, repel’ (contra Hoffmann & Narten 1989: 82).

is rather different from Skt. *jñu-bā́dh-*, which seems to mean 'knee-bending'. Although the etymology of ON *beðr* m. 'bed' is uncertain, it is difficult to imagine that it would be derived from a root meaning 'to push, bend'.

Skt. *bādh-* 'to press (etc.)' has long *ā* in most forms; whenever this is not the case, it is likely due to secondary shortening (Gotō 1996: 216). It has been compared to the root of OCS *bědа* 'distress, need, necessity', Lith. *bėdà* 'misfortune, trouble, guilt', and Latv. *bẹ̀da* 'care, sorrow, grief', where the non-acute accentuation points to **b^{h}ēd^{h}-* rather than **b^{h}eh$_{1}$d^{h}-* (*pace* LIV: 68), cf. also Lith. *bãdas* 'hunger' and Latv. *bads* 'hunger'. However, within Slavic, OCS *bědа* is close to OCS *bĕditi* 'to force, persuade', which in turn cannot be separated from Goth. *baidjan* 'to force', ON *beiða* 'to ask, request' (Derksen 2008: 39). Although it has been suggested, ON *beiða* (causative to *bíða* 'to wait for; suffer') cannot be related to ON *biðja* 'to ask, beg, pray' < **b^{h}ed^{h}-* (?), but must go back to **b^{h}eid^{h}-* 'to force' (Kroonen 2013: 57). Since **b^{h}eid^{h}-* can produce OCS *bĕditi* 'to force, persuade' and *bědа*, but not Lith. *bėdà*, Latv. *bẹ̀da*, the Baltic words have been taken as loanwords from Slavic. This is rejected by Būga (RR I: 345–46), however, as Slavic **ě* is normally borrowed as Lith. *ie*. Based on this, Derksen (2008: 39) suggests that OCS *bĕditi* and *bědа* reflect a merger of two roots **b^{h}eid^{h}-* and **b^{h}ēd^{h}-*.

Irrespective of whether Lith. *bėdà*, Latv. *bẹ̀da* are borrowed from Slavic or not, there is secure evidence for a root **b^{h}ed^{h}h$_{2}$-*[165] 'to stab, dig' in Balto-Slavic, e.g., Lith. *bèsti* 'to stick, drive (into), dig', Latv. *best* 'to dig, bury', OCS *bosti* 'to stab', which is related to Lat. *fodiō* 'to dig', Hitt. *padda-*^{i} 'to dig', ToA *pātar* 'they ploughed'. It would be semantically possible to derive nominal forms such as OCS *bědа* 'distress, need, necessity' and Lith. *bãdas* 'hunger' from **b^{h}ed^{h}h$_{2}$-* 'to stab, dig' (as in 'something that stabs at you'). Furthermore, it would be tempting to include Skt. *bādh-* in this etymon. However, the long *-ā-* cannot be explained from **b^{h}od^{h}h$_{2}$-*, since the laryngeal would have blocked Brugmann's Law.

Thus, Skt. *bādh-* seems impossible to reconcile with **b^{h}ed^{h}h$_{2}$-*, from which all above-mentioned Slavic forms and most Baltic forms can be derived (marked with brackets in the section header). We may instead return to Arntz' original suggestion, namely a direct comparison with Lith. *bóstis* 'to be bored with, be disgusted by', *bósti* 'to bother, bore, be repugnant'. Like Skt. *bādh-*, Lith. *bósti* also seems incompatible with **b^{h}ed^{h}h$_{2}$-* and rather points to **b^{h}eh$_{2}$d^{h}-*. Also, semantically, there is *a priori* no reason to connect Lith. *bósti* with *bèsti*, *bãdas* 'hunger' etc. Although it is not a direct semantic match to Skt. *bā́dhate* 'to push, press, trouble, oppose, repel', Lith. *bósti* 'to bother, bore, be repugnant' may well have developed from 'to push away, trouble, repel', cf. also Lith. *bodùs* 'boring, annoying, unpleasant, disgusting'. A hint at the same development is found in Skt. *bādhá-* m. 'distress' and Skt. *bībhatsate* 'to be disgusted' (< 'to wish to push away').

Besides Indo-Iranian and Baltic, however, a root **b^{h}eh$_{2}$d^{h}-* 'to push, press' seems to be attested in OS *under-badon* 'to oppress' and Nw. *bada* 'to press' < PGm. **badōn-*, if from zero-grade **b^{h}h$_{2}$d^{h}-*. As such, the isogloss is non-exclusive.

[165] With final **-h$_{2}$* due to Hittite (Kloekhorst 2008: 655).

3.5.5. *$b^{h}oh_{2}u$-eie/o- ‘to cause to be, linger (?)’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Rejected	^{V}Derivation

Indo-Aryan: Skt. *párā bhāvayati* ‘to make perish’ (AV+)

Iranian: –

Baltic: –

Slavic: Ru. (dial.) *bávit’* ‘to linger’; Pol. *bawić*, *bawię* ‘to amuse, be, abide’; SCr. *bȁviti se* ‘to engage in’

Arntz (1933: 50) argues that the causatives to *$b^{h}eh_{2}u$- ‘to become’, attested in Sanskrit and Slavic, constitute an Indo-Slavic isogloss. However, the distant semantics suggests independent innovations. The fact that Skt. *párā bhāvayati* ‘to make perish’ seems to be a productive causative to *párā bhavati* ‘to perish’ (Jamison 1983: 116) is consistent with this conclusion.

3.5.6. *b^{h}(o)$lg^{(w)h}$- ‘good; a deity (?)’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	Root

Indo-Aryan: Skt. *bṛ́has-páti-* m. ‘name of a God’

Iranian: YAv. *bərəj-* f. ‘rite, ritual praise’, *bərəjiia-* m. ‘a god who augments the crop-droves’

Baltic: –

Slavic: OCS *blago* n. ‘(the) good’; ORu. *bologo* n. ‘(the) good’; Pol. *błogo* n. ‘good, happiness’ SCr. *blâgo* n. ‘wealth, money, cattle’

Arntz (1933: 39) listed this as an Indo-Slavic isogloss (see further EWAia II: 232–33; Derksen 2008: 51). Although formally possible, the etymology is not semantically compelling and should be rejected. YAv. *bərəj-* f. ‘rite, ritual praise’ may be connected to a root *$b^{h}erg^{h}$- ‘to consider, observe’ (LIV: 79–80).

3.5.7. *$b^{h}ong$-o/eh_{2}- ‘wave’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Rejected	^{N}Derivation

Indo-Aryan: Skt. *bhaṅgá-* m./adj. ‘breach; breaking, splitting; wave (Ragh.)’

Iranian: –

Baltic: Lith. *bangà* f. ‘wave, (dial.) multitude’; Latv. *bañga* f. ‘wave, downpour, multitude, cloud’

Slavic: –

Schmidt (1872: 45) and Arntz (1933: 48) listed this as an Indo-Slavic isogloss. However, the Indo-Aryan and Baltic formations are not identical (*o*-stem vs. *eh₂*-stem). Furthermore, the etymology is semantically uncompelling, since the meaning 'wave' is late and clearly secondary within Sanskrit. I therefore follow Derksen (2015: 81), who treats the words as independent innovations.

3.5.8. **bʰoudʰ-eie/o-* 'to make awaken'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Rejected	^{V}Derivation

Indo-Aryan: Skt. *bodháyati* 'to make awaken'

Iranian: YAv. *baoδaiieiti* 'to reveal, make perceive'

Baltic: Lith. *báudyti, báudo* 'to incite, instigate'; Latv. *bàudît, bàudu* 'to incite, instigate'; OPr. *etbaudinnons* pf.ptc.act 'awakened'

Slavic: OCS *ubuditi, ubuždǫ* 'to awaken'; Ru. *budít', bužú* 'to awaken, arouse'; Pol. *budzić, budzę* 'to awaken, arouse'; SCr. *búditi, bûdīm* 'to awaken, arouse'

Arntz (1933: 50) listed this as an isogloss. For the Indo-Iranian forms, see EWAia II: 234. The Baltic verb is metatonical and could be secondary, although Derksen does not consider causatives in *-yti* to be productive (Derksen 1996: 346; 2015: 83). LIV: 83 considers only the Slavic and Indo-Iranian forms to be old. However, the Sanskrit and Avestan causatives have different meanings and are probably independent post-Proto-Indo-Iranian formations from Skt. *búdhyate* 'to wake' and YAv. *būiδiia-* 'to perceive', respectively. The Sanskrit and Slavic forms are semantically comparable, but as the suffix is productive in both branches, this is not necessarily significant.

A case could be made that the meaning 'to become awake' of **bʰeudʰ-*, which only appears in Indo-Iranian and Balto-Slavic, is a semantic isogloss. However, the root may have meant both 'to become attentive' and 'to become awake' in Proto-Indo-European, since the difference is rather trivial.

3.5.9. **bʰruH-no- / *bʰrouH-neh₂-* 'embryo; scale'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Rejected	^{N}Derivation

Indo-Aryan: Skt. *bhrūṇá-* n. 'brood, embryo'

Iranian: –

Baltic: Lith. *briaunà* f. 'edge, cornice, crust of bread, haft'; Latv. *braũna* f. 'flake, scale, abandoned skin or shell, caul, entrails'

Slavic: –

EWAia (II: 283) tentatively supports a connection between the Sanskrit and Latvian words. Derksen (2015: 528) connects Latv. *braũna* to Skt. *bhrūṇá-* and OIr. *brú* f. 'abdomen, belly, bowels, interior', but the latter is rather from **brus-on-* (Matasović 2009: 81);

comparable to Ru. *brjúxo* n. ‘belly’ (Derksen 2008: 63). Without the Celtic cognate, the Sanskrit and Latvian words constitute a possible Indo-Slavic isogloss.

Yet, the etymology is formally and semantically problematic. Both Derksen (2015: 528) and Fraenkel (LEW: 57) separate Latv. *braũna* from Lith. *briaunà*, which has possible cognates in Celtic and Germanic (cf. Derksen 2015: 100). In my opinion, the connection within Baltic is not so easily dismissible. Within Lithuanian, *briaunà* has several secondary meanings that seem to derive from ‘edge’, such as ‘crust’, which is quite close to the Latvian semantics. On the other hand, the semantic connection between the Baltic and Sanskrit forms is quite weak. Moreover, Skt. *bhrūṇá-* and Latv. *braũna* do not reflect the same ablaut grade in the root, nor the same stem suffix, implying that they can only be indirectly compared through the (rather speculative) assumption of an athematic stem **b^{h}rouH-n-*. Ultimately, the etymology is best rejected.

3.5.10. **deḱm-t-* ‘decade’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Greek)	Compelling	Possible	^{N}Derivation

Indo-Aryan: Skt. *daśát-* f. ‘decade’

Iranian: –

Baltic: Lith. *dešimtìs*, *dẽšim*(*t*)*s* ‘ten’; Latv. *desmit* ‘ten’; OPr. *dessempts*, *dessimpts*, *dessimton* ‘ten’

Slavic: OCS *desętь* ‘ten’; Ru. *désjat’* ‘ten’; Pol. *dziesięć* ‘ten’; SCr. *dȅsēt* ‘ten’

Indo-Aryan (EWAia I: 709) and Balto-Slavic (LEW: 91; Derksen 2008: 100) share a *t*-stem derived from the PIE cardinal **deḱm* ‘ten’. Dialectal evidence shows that the Baltic word is declined as a consonant stem (Zinkevičius 1966: 325), and clearly distinct from the ordinal *dešim̃tas* ‘tenth’, cf. PGm. **tehunþ*/*dan-* ‘tenth’.

However, there are possible cognates in other branches. According to Demiraj (1997: 162–63), Alb. *dhjétë* ‘ten’ is either from **deḱm-* or **deḱm-t-*. However, since the numerals 6–10 in Albanian are identical to the ordinals (e.g., (*i*) *dhjetë* ‘tenth’, *gjashtë* ‘six’ ~ (i) *gjashtë* ‘sixth’), *dhjétë* ‘ten’ may be secondary. The irregular anlaut *dh-*, which likely originates in, e.g., *tridhjetë* ‘thirty’, favours this conclusion. A more promising potential cognate is Gr. δεκάς, -άδος f. ‘decade’ (Beekes 2010: 311–312). Olsen (1989) suggested that **t* was regularly voiced after an accented nasal in Greek (see already Brugmann 1892: 368; also van Beek 2017). This proposal is attractive, as δεκάς is identical to Skt. *daśát-* in gender and meaning, and because it offers an explanation of the suffix -άδ- which is otherwise obscure.

3.5.11. **deḱs(i)-no-* ‘right’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Celtic)	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *dákṣiṇa-* adj. ‘right, southern’

Iranian: YAv. *dašina-* adj. ‘right, southern’; MiP Pahl. *dašn*, Man. *dšn* ‘right hand’

Baltic: Lith. *dẽšinas* adj. ‘right’

Slavic: OCS *desnъ* adj. ‘right’; ORu. *desnъ* adj. ‘right’; SCr. *dèsnī* adj. ‘right’

It has long been recognized that the Indo-European languages display a variety of derivatives from **deḱs(i)-* ‘right’ and that Indo-Iranian (EWAia I: 690; AirWb.: 703–04) and Balto-Slavic (LEW: 91; Derksen 2008: 100–01; Derksen 2015: 124) share a *no*-stem (Schmidt 1872: 46; Arntz 1933: 46; Porzig 1954: 166). However, *pace* Brugmann (1892: 130), there is no evidence that OCS *desnъ* contained an **i* (Beekes 1994: 87), which rather reflects **deḱs-no-*, unlike Baltic and Indo-Iranian, which reflect **deḱs-i-no-*.

Greek (Gr. δεξιός ‘right’), Celtic (OIr. *dess* ‘right, south’, Gaul. *Dex*(*s*)*iua* ‘a theonym’), and Germanic (OHG *zeso* ‘right’, Goth. *taihswa* f. ‘right hand’) reflect **deḱs(i)-uo-*, whereas Lat. *dexter* ‘right’ shows the suffix **-tero-*. The origin of Alb. *djathtë* ‘right’ is open to several interpretations. Since **ḱs* regularly becomes Alb. *sh*, e.g., *gjashtë* < **sueḱs-*, *djathtë* cannot regularly reflect **deḱs(i)-uo-* or **deḱs(i)-no-*. Taken at face value, it looks like **deḱ-to-*. According to Kortlandt (1987: 221), *djathtë* ultimately derives from **deḱs-no-*, but replaced the *n*-suffix by *-të* after **s* had regularly been lost before **n*, thus explaining the outcome *th*. However, Albanian also has *djathë* ‘right (side)’ and the adverb *ndjath* ‘right’ (Orel 1998: 67–68; Demiraj 1997: 137), which according to Demiraj can be taken as reflexes of an adverbial **deḱs*. After the regular loss of word final **-s*, the productive suffix *-të* was added at some point in the history of Albanian. Although the exact scenario is difficult to determine, there is no secure evidence for a *no*-suffix in Albanian.

Clear extra-Indo-Slavic evidence for **deḱsi-no-* comes from Celtic, however. As noted by Stifter (2015: 98), OIr. *deisen* ‘right hand’ looks like a cognate of Skt. *dákṣiṇa-* etc., but has been left out of most etymological works. Based on this, **deḱs(i)-no-* is rejected as an Indo-Slavic isogloss.

Even if the Old Irish form could be explained away, OCS *desnъ* does not entirely correspond to Baltic and Indo-Iranian, as noted above. This could be interpreted as evidence that the addition of a suffix **-no-* occurred independently in the separate branches. However, a similar variation is present in the reflexes of the *uo*-stem, where Celtic has forms both with and without **i*, and Greek and Germanic have forms with and without **i*, respectively. Since there seems to be a fundamental variation, reconstructable for Proto-Indo-European, between **deḱs* and **deḱsi* (perhaps originally different case forms of a stem **deḱ-s-*), it is possible that this variation was carried over into the secondary derivatives. Therefore, **deḱs(i)-no-* constitutes a possible innovation in Celtic, Balto-Slavic, and Indo-Iranian, which may or may not have been created independently.

3.5.12. **dlh₁gʰ-ó-* ‘long’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Albanian)	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *dīrghá-* adj. ‘long’

Iranian: OAv. *darəga-* adj. ‘long’

Baltic: Lith. *ìlgas* adj. ‘long’; Latv. *ilg̃s* adj. ‘long (of time)’

Slavic: OCS *dlьgъ* adj. ‘long’; Ru. *dólgij* adj. ‘long’; Pol. *długi* adj. ‘long’; SCr. *dȕg* adj. ‘long’

The Indo-Iranian and Slavic forms are regular from **dlh₁gʰ-ó-* (EWAia I: 728–29; AirWb.: 693; Derksen 2008: 133). Arntz (1933: 47) listed this stem as an Indo-Slavic isogloss. A reasonable explanation of the Baltic situation, although *ad hoc*, is that **dilgas* was first assimilated to **gilgas*, after which the initial **g-* was dissimilated against the following **-g-*.[166] According to Meillet (1926: 172), **dlh₁gʰ-ó-* is uniquely Indo-Slavic. Other branches seem to reflect slightly different forms, albeit probably ultimately related: Gr. δολιχός ‘long’,[167] εν-δελεχής ‘continuous’ < **delh₁gʰ-*; Goth. *tulgus* ‘firm’ < **dlh₁gʰ-u-* (Kroonen 2013: 525); Hitt. *talugai-* ‘long’ < **dolugʰ-i-* (Kloekhorst 2008: 820); ON *langr* ‘long’, Lat. *longus* ‘long’ < **dlongʰ-o-*. Goth. *tulgus* is the only form where the root corresponds exactly to **dlh₁gʰ-ó-*. These adjectives are possibly independent derivations from a Proto-Indo-European nominal stem.

However, it is not possible to reject Alb. *gjatë*, (older) *glatë* ‘long’ as an extra-Indo-Slavic reflex of **dlh₁gʰ-ó-*. The Albanian form has been compared to Lat. *longus* and ON *langr* < **dlongʰ-o-*, but would then require a zero-grade **dlngʰ-o-*, which is otherwise unattested. As such, the most economic reconstruction is **dlh₁gʰ-ó-*, with secondary suffixation by *-të* (Demiraj 1997: 185). Thus, **dlh₁gʰ-ó-* cannot be maintained as an Indo-Slavic isogloss, but is a possible innovation shared with Albanian.

3.5.13. **drǵʰ-* ‘fetter; belt, strap, girdle’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	Root

Indo-Aryan: (Skt. *prāṇa-dṛ́h-* adj. ‘making the breath firm’ (KS+))[168]

Iranian: OAv. *dərəz-* f. ‘fetter’

Baltic: Lith. *diržas* m. ‘belt, strap’; Latv. *dirža* f. ‘leather girdle’

Slavic: –

[166] It might appear easier to postulate a change **dl-* > **gl-*, parallel to **tl* > Baltic *kl*, but the relative chronology is impossible: since Slavic preserves initial **d-*, the change to **gl-* would have to postdate Proto-Balto-Slavic, at which time the **l* would already have been vocalized to **il*.

[167] Gr. δολιχός must reflect an *o*-grade in the root since **dl̥h₁gʰ-* would regularly give PGr. **dlēkʰ-*. The **i* of the root is then perhaps best understood as a raised **e* < **h₁*, although it could also be compared to the unexplained **u* of Hitt. *talugai-* < **dolugʰ-i-*.

[168] The apparent Sanskrit root noun can hardly be directly compared to OAv. *dərəz-* given the divergent semantics.

Arntz (1933: 48) listed the Avestan and Baltic words as an isogloss. The etymology is complicated, as OAv. *dərəz-* has been connected to several different Indo-European roots (EWAia I: 707, with lit.). Starting instead with the Baltic evidence, it is possible that the broken tone of Latv. *dirẑa* necessitates a reconstruction **d$^{(h)}$rǵ-* or **d$^{(h)}$rHg^{h}-* (Derksen 2015: 133). As for OAv. *dərəz-*, it is most closely related within Iranian to YAv. *darəzaiieiti* 'to attach, fetter', Khot. *dalś-* 'to make firm, fasten, load' etc. (cf. Cheung 2007: 62–64). These verbal forms in turn correspond to Skt. *dṛ́h-* 'to fix, make firm', which excludes a reconstruction with **-ǵ* or **-Hg^{h}*, making a connection to Baltic doubtful. Even if the Baltic and Indo-Iranian roots could be connected, Goth. *tulgus* 'firm', *tulgjan* 'to make firm, fortify' presents a closer semantic match to Indo-Iranian (Szemerényi 1979: 109–10); Lat. *indulgeō* 'to be indulgent' may also belong here (de Vaan 2008: 302; LIV: 113). This makes a reconstruction **delǵ^{h}-*, from which Lith. *dir̃žas* etc. could never be derived, more probable for Indo-Iranian **darj^{h}-*.

3.5.14. **dr(H)-ueh$_2$-* 'wild grass (?)'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Germanic, Celtic)	Doubtful	Possible	^{N}Derivation

Indo-Aryan: Skt. *dū́rvā-* f. '*Cynodon dactylon*, a grass'

Iranian: –

Baltic: Lith. *dirvà* f. '(arable) land, field'; Latv. *dìrva* f. '(arable) land, field'

Slavic: Ru. *derévnja* f. 'village, (dial.) field, wasteland, ploughed field'

Skt. *dū́rvā-* '*Cynodon dactylon*, a grass' is usually compared to Du. *tarwe* 'wheat' < PGm. **terwō-* and Welsh *drewg* 'darnel', Bret. *draok*, *dreok* 'id.' < PCelt. **drāu̯ā-*, which demand a laryngeal in the root. Conversely, the non-acute intonation of Lith. *dirvà* '(arable) land, field' and the other Balto-Slavic forms point to a reconstruction without a laryngeal. However, Lubotsky (1997: 148) remarks that **-ṛ́u-* might regularly have yielded Skt. *-ū́r-*, as there are no other examples of this sequence. Even if this is the case, there is no compelling reason to reject the connection between Sanskrit, Germanic, and Celtic.

3.5.15. **d^{h}e-d^{h}h$_1$-* '(sour) milk'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Albanian)	Compelling	Possible	^{N}Derivation

Indo-Aryan: Skt. *dádhi*, gen.sg. *dadhnás* n. 'sour milk'; Khow. *don* 'ghee'

Iranian: –

Baltic: OPr. *dadan* n. 'milk', *ructandadan* n. 'sour milk'

Slavic: –

This reduplicated stem is presented as an isogloss by Arntz (1933: 47). See further EWAia I: 693–94. However, Alb. *djathë* m. 'cheese' cannot be separated from the Indo-Aryan and Prussian words, although the irregular voiceless *-th-* is unclear (see Demiraj 1997: 135–36);

it may possibly be explained by generalization of a variant where the consonant is word-final.

The word is generally etymologized as a reduplicated stem from *d^heh_1(*i*)- ‘to suck, suckle’. The reconstruction of the reduplication syllable is problematic, since Alb. *-ja-* points to **e*, whereas OPr. *-a- a priori* suggests an *o*. However, as Beekes (1987: 54) remarks, OPr. *dadan* could reflect earlier **dedan*, since OPr. *a* occasionally seems to correspond to East Baltic *e* (cf. Trautmann 1910: 104–105). A possible parallel of a change **e* > OPr. *a* is *nadele* ‘Sunday’ << Slavic **neděl’a*. Skt. *dádhi* is not informative, since Brugmann’s Law would have been blocked in the oblique stem *dadhn-*, but the vocalism is easiest explained from an **e*. Thus, there are no compelling arguments against reconstructing *d^he- for all three forms.

The *i*/*n*-suffix of Sanskrit is not paralleled in either Old Prussian or Albanian. While the *n*-suffix in the weak stem may be an Indo-Iranian innovation (as argued by Beekes 1987) or an archaism lost in the other branches, the *i*-suffix of the strong stem probably reflects a vocalized laryngeal in nom.-acc.sg. *d^he-d^hh_1. This reconstruction would also be consistent with the devoicing of final *d^h in Albanian. In Old Prussian, the stem was thematicized.

3.5.16. *d^heg^{wh}-*e*/*o*- ‘to burn’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Albanian, Tocharian)	Compelling	Possible	^{V}Derivation

Indo-Aryan: Skt. *dáhati* ‘to burn (tr.)’

Iranian: YAv. *dažaiti*[169] ‘to burn (tr.)’; Khot. *dajs-* ‘to burn; to ripen’

Baltic: Lith. *dègti*, *dẽga* ‘to burn, light’; Latv. *degt*, *dẹgu* ‘to burn, light’

Slavic: OCS *žešti*, *žegǫ* ‘to burn’; Ru. *žeč’*, *žgú* ‘to burn’; Pol. *żec*, *żgę* ‘to burn’; SCr. *žèći*, *žèžēm* ‘to burn’

Schmidt (1872: 46) and Arntz (1933: 48) took this shared thematic present stem as an Indo-Slavic isogloss. However, Alb. *djeg* ‘to burn (tr.)’ belongs here as well (Demiraj 1997: 138–39), which makes the isogloss non-exclusive.

A further possible cognate is ToAB *tsäk-* ‘to burn’ (Adams 2013: 802). The anlaut *ts-* is complicated, however, as it seems to reflect **d-* rather than *d^h-. This has been explained by assuming a Tocharian “Grassmann’s Law” (Winter 1962: 24). Yet, ToA *tpär*, ToB *tapre* ‘high’, if from *d^hub^hro- ‘deep’, presents a strong counterexample. The connection must thus be considered uncertain.

[169] According to Martínez (1999: 130), YAv. *dažaiti* rather reflects a *ie*/*o*-present.

3.5.17. *$d^{h}eh_{1}i$- ‘to contemplate, behold, see’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Albanian)	Compelling	Possible	Root

Indo-Aryan: Skt. *dhī́*- f. ‘observation, vision, thought’, *dhay*^{i}- ‘to contemplate, behold, see’

Iranian: OAv., YAv. *daēnā*- f. ‘conception, view, religion’

Baltic: –

Slavic: OCS *divъ* m. ‘astonishment, amazement’; Ru. (dial.) *div* m. ‘miracle, astonishment’; Pol. *dziw* m. ‘miracle’

While Meillet (1926: 168) acknowledges that the circumflex of the related adjective SCr. *dîvan* ‘wonderful, splendid’ excludes direct comparison of OCS *divъ* and Skt. *dhī́*-, he argues that the words are ultimately related (cf. also Arntz 1933: 46). Indeed, it seems likely that these stems, including Av. *daēnā*- f. ‘conception, view, religion’, are derived from the same root *$d^{h}eh_{1}i$- (cf. Kümmel 2020: 183).[170] This is possibly a variant of *$d^{h}eh_{1}$- ‘to put’, originating from a verbal *i*-stem, cf. Hitt. *dai-*^{i} / *ti*- ‘to lay, put, place’ (Lubotsky 2011: 122).

Gr. σῆμα, Dor. σᾶμα ‘sign, symbol, trait’ < *$d^{h}ieh_{2}$-*mn*- and θαῦμα ‘wonder, astonishment’ have been adduced as root cognates (see further Beekes 2010: 535, 1323), but as they require a different root structure, the connection is uncertain.

However, Alb. *di* ‘to know’ may well reflect *$d^{h}eh_{1}i$-, with a trivial semantic shift (Demiraj 1997: 132–33; LIV: 141–42). Thus, *$d^{h}eh_{1}i$- must be rejected as an Indo-Slavic isogloss.

3.5.18. *$d^{h}er$-*men*- ‘support; agreement’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Rejected	^{N}Derivation

Indo-Aryan: Skt. *dhárman*- n. ‘support, law’

Iranian: MiP Pahl. *darmān*, Man. *drm'n* ‘medicine, remedy, cure (?)’

Baltic: Lith. *dermẽ* f. ‘agreement, consensus, harmony, treaty’, *dernà* f. ‘id.’

Slavic: –

The etymology is supported by LEW: 83 but not by EWAia I: 780. Lat. *firmus* ‘firm, stable’ is likely a root cognate, but is an adjective and does not reflect a *men*-stem. Although the Indo-Iranian and Baltic forms are formally comparable, they seem to derive their semantics from their respective corresponding verbal stems: Skt. *dhāráya*- ‘to hold firm, support’ vs. Lith. *derė́ti* ‘to be suited, agree upon’. This indicates that the words are independent innovations.

[170] There is a discussion in the literature about the position of the laryngeal in Av. *daēnā*- and Skt. *dhī́*- (see EWAia I: 777 with lit.). I follow Narten (1986) and Lubotsky (1995: 214; 2011: 122), who reconstruct OAv. *daēnā*- < **daiH-ana*-, based on its trisyllabic scansion. Skt. *dhī́*- has a monosyllabic instr.sg. *dhyā́*, which has been argued to reflect *$d^{h}Hi$-*aH*, but could just as well reflect *$d^{h}iH$-*áH*.

3.5.19. *$d^{h}oiH$-neh_2- ‘conception; song’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	[N]Derivation

Indo-Aryan: –

Iranian: OAv., YAv. *daēnā-* f. ‘conception, view, religion’

Baltic: Lith. *dainà* f. ‘(secular) song’; Latv. *daiņa* f. ‘(folk) song’

Slavic: –

The above words were listed as an isogloss by Schmidt (Schmidt 1872: 46) and Arntz (1933: 48). However, Av. *daēnā-* is trisyllabic and must reflect **daiHana-* or **daHiana-* (Narten 1986: 263; Lubotsky 1995: 214; 2011: 122), which is formally incompatible with Baltic **$d^{h}oiH$-neh_2-*. Semantically, the connection is not compelling.

3.5.20. *$ǵorh_2$-eie/o- ‘to make old, let ripen’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Rejected	[V]Derivation

Indo-Aryan: Skt. *jaráyati* ‘to make age’

Iranian: –

Baltic: –

Slavic: OCS *sъzori* 3sg.aor. ‘ripened (tr.)’; Ru. (dial.) *zorít’* ‘to make (berries) ripen by spreading (them) on a mat’; OCz. *szoříti* ‘to ripen (tr.)’; Sln. *zoríti*, *zorím* ‘to ripen (tr.)’

Although Arntz’s (1933: 48) comparison of Skt. *jī́ryati* ‘to grow old, obsolete’ to OCS *sъžrěti* ‘to ripen’ cannot be maintained on formal grounds (cf. LIV: 165), both branches have potentially cognate causative formations. However, a closer look at the attested forms shows that this can hardly be the case. The short root vowel of Skt. *jaráyati* ‘to make age’ need not be due to the root-final laryngeal, but rather indicates that the stem is a secondary formation (within Indo-Aryan) to *járati* ‘to make age’ with the same meaning (Jamison 1983: 154, cf. *várdhati* vs. *vardháyati*). In Slavic, the causative may have been formed at any point, as a contrastive formation to the intransitive OCS *sъžrěti* ‘to ripen’.

3.5.21. *$g^{h}rem$-e/o- ‘to murmur; to thunder, rage’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	[V]Derivation

Indo-Aryan: –

Iranian: YAv. *gramәṇt-* ptc. ‘raging’; Sogd. S *’γr’n-* ‘to get angry’; Psht. *γar-ég* : *-ed-* ‘to roar, thunder’

Baltic: Lith. (dial.) *gramé́ti*, *grãma*, *grumé́ti*, *grùma* ‘to dash, fall, sink’; Latv. *gremt*, *-ju* ‘to murmur’

Slavic: –

Iranian and Latvian have been argued to share a thematic present from a root *$g^{h}rem$- (LIV: 204). The root is also reflected in ON *gramr* ‘angry’, OE *grimman* ‘to rage, roar; rush’, OCS *gromъ* m. ‘thunder’, *grъměti* ‘to thunder’, Gr. χρόμος m. ‘kind of noise’. Based on the attested semantics, the root may be onomatopoeic in origin, with Iranian and Germanic sharing a semantic development to ‘to rage’. However, the Baltic verbs are so semantically divergent that it is unlikely that they belong to this cluster.

3.5.22. *$g^{w}es$-e/o- ‘to be extinguished’, *$g^{w}ōs$-eie/o- ‘to extinguish’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Rejected	^{V}Derivation

Indo-Aryan: Skt. *jásamāna*- aor.ptc.med. ‘being extinguished’, *jāsáyati* ‘to exhaust’

Iranian: –

Baltic: Lith. *gèsti, gę̃sta* ‘to be extinguished’; Latv. *dzèst, dzešu, dzèšu* ‘to extinguish, put out’

Slavic: OCS *ugasiti, ugašǫ* ‘to extinguish’; Ru. *gasít’, gašú* ‘to extinguish’; Pol. *gasić, gaszę* ‘to extinguish’; SCr. *gásiti, gâšīm* ‘to extinguish’

Arntz (1933: 48) and Schmidt (1872: 46) listed both a thematic present and a causative formation from PIE *$g^{w}es$- as Indo-Slavic isoglosses. However, the stem Skt. *jása*-, only attested as a participle, is rather an aorist (Gotō 1996: 84) and cannot be equated with Lith. *gèsti*. As for the causative, while Skt. *jāsáyati* and Slavic **gasìti* can formally both be derived from *$g^{w}ōs$-eie/o- (with analogical palatalization in Sanskrit), lengthened *ō*-grade is not expected and indicates that these are independent formations.

3.5.23. *$g^{w}i$-n-h_3- ‘to feed’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	^{V}Derivation

Indo-Aryan: Skt. *jinóti* ‘to impel, feed, strengthen’

Iranian: –

Baltic: –

Slavic: OCS *žę́ti, žьnjǫ, žьnǫ* ‘to reap, mow’; Ru. *žat’, žnu* ‘to reap, mow’; Pol. *żać, żnę* ‘to reap, mow’; SCr. *žȅti, žȁnjēm* ‘to reap, mow’

Although they are not formally identical, these Sanskrit and Slavic nasal presents have been argued to go back to the same Indo-European formation (LIV: 215). According to Vaillant (III: 306), Slavic underwent a change from the original meaning to ‘to provide subsistence, collect food’ as the nasal stem was lexicalized in a neo-root *žьn-. However, a more plausible etymology for the Slavic verb is *$g^{wh}en$- ‘to beat, slay’ (Derksen 2008: 561), which was used in cereal processing contexts already at an early date, cf. Skt. *parṣáṅ hanmi* ‘I thresh sheaves’, Gr. Περσεφόνη ‘a Goddess; “the threshing maiden”’ (Wachter 2007). Accordingly, the connected to Indo-Iranian may be rejected.

3.5.24. *$g^{w}rH$- ‘rock’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Albanian, Greek?)	Compelling	Possible	Root

Indo-Aryan: Skt. *girí-* m. ‘mountain, hill’

Iranian: YAv. *gairi-* m. ‘mountain’; Khot. *gara-*, *ggari-* ‘mountain’; Sogd. *γr-* ‘mountain’; Psht. *γar* ‘mountain, pile of stones’; Yi. *γar* ‘hill, mountain’; Yazg. *γār* ‘stone, cliff, crag’

Baltic: Lith. *girià*, (Žem.) *gìrė* f. ‘woods’; Latv. *dziŗa*, *dzire* f. ‘woods’; OPr. *garian* (EV), *garrin* f. (Ench.) ‘tree’

Slavic: OCS *gora* f. ‘mountain’; Ru. *gorá* f. ‘mountain’; Pol. *góra* f. ‘mountain’; SCr. *gòra* f. ‘mountain, (dial.) wood’

Schmidt (1872: 47) and Arntz (1933: 48) listed the above words as an Indo-Slavic isogloss. However, Alb. *gur* m. ‘stone, rock’ cannot be separated from this cluster (Demiraj 1997: 181), which means that the isogloss is non-exclusive.

Gr. δειράς f. ‘height, mountain ridge’ has been connected, but it is not easy to explain formally from *g^{w}(*e*)*rH*-; it is better derived within Greek from δέρη ‘neck, ridge’ (Beekes 2010: 311). Gr. βορέας m. ‘north wind, north’ is a less problematic possible cognate, perhaps derived from an unattested *βόρειος ‘of the mountain’, but this remains speculative.

The exact reconstruction is unclear. The East Iranian thematic stems can be later replacements of the *i*-stem otherwise attested in Khotanese, Avestan, and Sanskrit (Emmerick 1968: 289). For PIIr. we may thus reconstruct **grH-i-*. Balto-Slavic shows alternation between zero-grade and *o*-grade in the root, as well as suffix variation, which points to an original athematic paradigm. The meaning ‘wood’ in Baltic (and marginally in Slavic) is likely secondary from ‘mountain’. Alb. *gur* must go back to a form with zero-grade in the root, but it can hardly reflect an *i*-stem, as this would have caused *i*-mutation of **u* > *y*, cf. Alb. (*sh*)*typ* ‘to crush’ < **tup-ie*/*o*-, *kryq* ‘cross’ << Lat. *crucem*.

It is unclear whether all branches ultimately reflect the same stem, or if we must reckon with independent derivations. As for the root, a possible candidate is *$g^{w}reh_{2}$-, reflected in Skt. *gurú-* ‘heavy’ and *grā́van-* m. ‘pressing stone’, provided that the position of the full grade vowel in Slavic **gorà* ‘mountain’ is secondary.

3.5.25. *$g^{(w)}riH$-*ueh*$_{2}$- ‘neck, nape’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Albanian)	Compelling	Possible	^{N}Derivation

Indo-Aryan: Skt. *grīvā́-* f. ‘neck, nape’

Iranian: YAv. *grīuuā-* f. ‘neck (of Daevic beings)’; MiP Pahl. *grīw* ‘neck, throat’; MoP *girībān* ‘neck-guard, gorget’

Baltic: Latv. *grîva* f. ‘estuary’

Slavic: Ru. *gríva* f. ‘mane’; Pol. *grzywa* f. ‘mane’; SCr. *grȉva* f. ‘mane’

The Indo-Iranian forms (EWAia I: 509; AirWb.: 530) and the Balto-Slavic forms (Derksen 2015: 535; Vasmer I: 309) are formally identical and have similar, but not identical, semantics. Latv. *grīva* 'estuary' may be understood as a metaphor of 'neck' or 'throat', but hardly 'nape' or 'mane', indicating that the Proto-Balto-Slavic meaning was 'neck'. This stem was listed as an Indo-Slavic isogloss by Schmidt (1872: 47), Arntz (1933: 45), and Porzig (1954: 167).

Gr. δέρη f. 'neck' (Ion. δείρη, Lesb. δέρα) is often adduced, but the Greek dialectal evidence precludes a reconstruction **$g^{w}er(H)$-eh_2-. In any case, the Greek word does not have *-*iH*- in the root. It may alternatively be connected to Gr. δειράς f. 'height, mountain ridge' (Beekes 2010: 311).

However, Alb. *grykë* f. 'throat' < *$gr\bar{\imath}w\bar{\imath}k\bar{a}$- (Orel 1998: 126) << *$gr\bar{\imath}w\bar{a}$- is a cognate to the Indo-Iranian and Balto-Slavic words that apparently has escaped the notice of most etymological dictionaries. The stem *$g^{(w)}riH$-ueh_2- 'neck, nape' is thus not exclusively Indo-Slavic, but includes Albanian.

The stem *$g^{(w)}riH$-ueh_2- has been argued to be derived from *$g^{w}erh_3$- 'to swallow' (EWAia I: 509). If correct, one would have to assume an *i*-present *$g^{w}rh_3$-(*o*)*i*- from which a ueh_2-stem noun was derived (or perhaps with an intermediate *u*-stem), reminiscent of a derivational chain described by Lubotsky (2011). Since no *i*-present or related verbal stem is attested for *$g^{w}erh_3$- (see LIV: 211–12; Lith. *geriù* can be recent), this would have to be an archaic derivation. There are other potential Proto-Indo-European words for 'neck', most prominently **mon*(*H*)-*i*-, which is continued in Skt. *mányā*- f.du./pl. 'neck', YAv. *zarənu-maini*- 'with a golden necklace', Lat. *monīle* n. 'necklace, collar', MIr. *muin* f. 'the upper part of the back below the neck', and OHG *mana* f. 'neck, mane'. Furthermore, **kneK-n*-, reflected in Germanic **hnekkan*- ~ **hnakka*(*n*)- 'neck' and ToA *kñuk* 'neck' (Kroonen 2013: 234) must be quite archaic. However, it cannot be excluded that *$g^{(w)}riH$-ueh_2- co-existed with these stems in PIE (*pace* Porzig 1954: 167), forming a triad with slightly different semantics, viz. 'neck', throat', and 'nape'.

3.5.26. *(*H*)roh_1d^{h}-*i* postpos. 'on account of, for the sake of'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	[N]Derivation

Indo-Aryan: (Skt. *rādh*- 'to succeed, be successful')

Iranian: OP *avahya-rādiy* 'for this reason'; Parth. *rād* 'on account of'; MoP *rāy* 'on account of'

Baltic: (Lith. *ródyti, ródo* 'to show, indicate, demonstrate')

Slavic: OCS *radi* 'for the sake of, because of'; SCr. *ràdi, râdi* 'for the sake of'; Sln. *zarâdi* 'because of'

The root is also found in PGm. **rēdan*- 'to decide' (Kroonen 2013: 408), OIr. *-ráidi* 'deliberates, says', and may be reconstructed as *Hre/oh_1d^{h}- (similarly LIV: 499–500). Meillet (1926: 166) presents the postposition found in Iranian and Slavic as a strong isogloss (also Schmidt 1872: 48; Vasmer II: 482). However, unlike the related verbal stem

OCS *raditi* ‘to care about’, SCr. *ráditi* ‘to work, do’, the accentuation of SCr. *râdi*, Sln. *zarâdi* does not seem to be compatible with a laryngeal in the root, which indicates that it is rather a borrowing from Iranian (cf. Derksen 2008: 432). The fact that Baltic and Indo-Aryan cognates are missing is consistent with this conclusion.

3.5.27. **h₁endro-* ‘kernel; egg, testicle’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	[N]Derivation

Indo-Aryan: Skt. *āṇḍá-* n. ‘egg, testicle’

Iranian: –

Baltic: –

Slavic: Ru. *jadró* n. ‘kernel, core’; Pol. *jądro* n. ‘grain, kernel, core’; SCr. *jédro* n. ‘kernel, core’

This old comparison was listed as an isogloss by Schmidt (1872: 46) and Arntz (1933: 50). However, the words can hardly be related, since the alleged development **ndr* > Skt. *ṇḍ* must be rejected. Semantically, the comparison is not particularly compelling.

3.5.28. **h₁(e)r(H)ks-* ‘thorn’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	Root

Indo-Aryan: Skt. *aṇ̊rkṣará-* adj. ‘?’

Iranian: –

Baltic: Lith. *eršk̃etis* m. ‘thorn-bush’; Latv. *ẽršķis* m. ‘thorn-bush, thorn, prickle’

Slavic: Sln. *rẹ̑šək* m. ‘sow thistle’

Arntz (1933: 38) listed the above words as an Indo-Slavic isogloss. Skt. *aṇ̊rkṣará-*, occurring four times in the RV, describing a path, has traditionally been translated as ‘thornless’. Derksen (2015: 156) tentatively accepts the connection, but remarks that the Baltic evidence points to a laryngeal in the root, which is incompatible with Skt. *aṇ̊rkṣará-*.

However, the translation of Skt. *aṇ̊rkṣará-* as ‘thornless’ is incorrect. As Jamison (1993) has convincingly argued, there is no evidence in favour of this translation, since the supposed base ***ṛkṣara-* ‘thorn’ is neither attested, nor can be inferred from etymological considerations. According to her, *aṇ̊rkṣará-* is better analysed as *a-nṛ-kṣar-á-* ‘not sweeping men away’, i.e., ‘harmless for men’. Thus, the proposed isogloss must be rejected.

3.5.29. **h₁mene* ‘of me’ (1sg.gen. pronoun)

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Anatolian, Celtic, Tocharian)	Compelling	Rejected	[N]Derivation

Indo-Aryan: Skt. *máma* ‘of me’

Iranian: OAv. *mā.nā*, YAv. *mana* ‘of me’; OP *manā* ‘of me’

Baltic: Lith. *manęs* ‘of me’; Latv. *manis* ‘of me’

Slavic: OCS *mene* ‘me, of me’; ORu. *mene* ‘id.’; SCr. *méne*, *mȅne* ‘me, of me, to me’

The Iranian and Slavic forms reflect **h₁mene* (AirWb.: 1098–99; Derksen 2008: 308). Skt. *máma* is usually explained by assimilation or by contamination with the acc.sg. *mā́m* (EWAia II: 284–85), whereas the Baltic forms may have been influenced by the 2sg. (Derksen 2015: 304).

Meillet (1926: 167) considered **h₁mene* to be a strong Indo-Slavic isogloss. Porzig (1954: 164) assumes that the genitive of the 1sg. personal pronoun was uninflected in Proto-Indo-European and regards the ending *-ne* as a shared innovation of Indo-Slavic. However, since MWelsh *vy* ‘my’ (with nasalization) also reflects **mene*, the isogloss is non-exclusive. Furthermore, Kloekhorst (2008: 111) argues that Hitt. obl. stem *amm-* goes back to **h₁mne-* and suggests that the pronominal stem **h₁me-* preserved in Core Indo-European branches is a dissimilation of this form (for the dissimilation, cf. Skt. *drāghmán-* ‘length’, instr.sg *drāghmā́*). Additionally, the palatalized anlaut of ToB *ñäś* ‘I’ may originate in **h₁m(e)ne-*. This would imply that the genitive **h₁mene* is an archaism, reconstructable to Proto-Indo-Anatolian.

3.5.30. **h₁(o)r-ti-* ‘attack, fight’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Rejected	[N]Derivation

Indo-Aryan: Skt. *ṛtí-* f. ‘attack’ (VS), *ṛ́ti-* f. ‘attack, hit’ (AV+)

Iranian: YAv. *ərəti-* f. ‘energy (?)’

Baltic: –

Slavic: OCS *ratь* f. ‘war, fight’; ORu. *ratь* f. ‘war, battle, troops’; SCr. *rȁt* m. ‘war’

Schmidt (1872: 48) listed these words as an Indo-Slavic isogloss. YAv. *ərəti-* may belong here, although the translation is uncertain (cf. AirWb.: 350). Formally, Skt. *ṛ́ti-*, *ṛtí-*[171] looks like a *ti*-stem from *ar-* ‘to reach, come towards, meet with’, but given its semantics it is likely old. While the etymology is semantically compelling, the Indo-Iranian zero-grade in the root vs. Slavic *o*-grade is not easily explained, since *ti*-stems otherwise have no root ablaut. It is thus unlikely that the forms go back to a shared proto-form. To connect them,

[171] The accentual variation is secondary. Skt. *ṛtí-*, *ṛ́ti-* ‘attack’ should not be confused with *ṛtí-* ‘manner, way’ < **h₂ŕ-ti-*, cf. Lat. *ars* ‘art’.

one would have to assume a proterodynamic stem *h_1*or-ti-* / *h_1*r-tei-*, which would indicate an archaism.

3.5.31. *h_1*ui-$d^h$$h_1$-eu-eh$_2$-* ‘widow’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Greek)	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *vidhávā-* f. ‘widow’

Iranian: YAv. *viδauua* nom.sg.f. ‘widow’

Baltic: OPr. *widdewū* f. ‘widow’

Slavic: OCS *vъdova* f. ‘widow’; Ru. *vdová* f. ‘widow’

According to Meillet (1926: 171), the Indo-Iranian and Balto-Slavic forms of the Indo-European word for ‘widow’ share a full grade in the suffix versus zero-grade in Goth. *widuwo* f. and OIr. *fedb* f. However, Gr. ἠΐθεος m. ‘unmarried youth’, which is likely derived from the older feminine stem, likely shows the same full grade of the suffix, and the isogloss is thus non-exclusive. Lat. *vidua* f. ‘widow’ could be derived form either zero-grade or full grade in the suffix.

3.5.32. *h_1*ui-$d^h$$h_1$-u-r(i)o-* ‘separated’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	[N]Derivation

Indo-Aryan: Skt. *vidhura-* adj. ‘bereft, bereaved, alone, solitary’ (Kāv.; Rājat.), *vi-dhura-* adj. ‘(a chariot) without shaft’ (MBh.), *vithurá-* adj. ‘shaky’ (RV)

Iranian: YAv. *aiβiθūra-* adj. ‘rings, sehr siegreich’

Baltic: Lith. *vidurỹs* m. ‘middle’

Slavic: –

The Indo-Iranian material is rather obscure. First, Skt. *vi-dhura-* ‘(a chariot) without shaft’ (MBh.) is a transparent compound from *dhúr-* ‘joint, pivot of the chariot pole and the yoke’ and likely unrelated to the rest (cf. Monier-Williams 1899: 951). Conversely, *vidhura-* ‘bereft (etc.)’ has traditionally been regarded as a secondary and corrupt form of Vedic *vithurá-* ‘shaky’ (AiGr. II, 2: 486; EWAia II: 554; KEWA III: 208). Yet, the semantics of *vidhura-* are better explained if we assume an etymological connection to Skt. *vidhú-* ‘solitary’ and *vidhávā-* f. ‘widow’ (ultimately from PIE *h_1*ui-$d^h$$h_1$-u-* ‘set apart’). Thus, the fact that the roots *vidh-* ‘to allot, apportion’ and *vyath-* ‘to shake, stumble’ were eventually conflated in later Sanskrit does not necessarily imply that *vidhura-* is corrupt. YAv. *aiβiθūra-* (AirWb.: 92) has generally been taken as a cognate of Skt. *ávithura-* ‘unshakeable’, but could theoretically be connected to *avidhura-* with Kümmel’s Iranian laryngeal devoicing rule (2018).

Within Baltic, Lith. *vidurỹs* ‘middle’ is clearly related to *vidùs* m. ‘middle’ and *vidur̃* ‘in the middle’ (LEW: 1238). Lith. *vidùs* ‘middle’ is further related to Skt. *vidhú-* ‘solitary’,

ON *viðr* m. ‘tree, wood’ < PGm. *widu-* and OIr. *fid* m. ‘tree, wood, forest’ (IEW: 1177). Of the attested forms, the semantics of Skt. *vidhú-* ‘solitary’ seem to be closest to PIE **h₁ui-dʰh₁-u-* ‘set apart’. The semantics of Lith. *vidurỹs* rather suggests that it was derived within Baltic from *vidùs* ‘middle’, after this had already shifted from the original meaning ‘set apart’. Although the ultimate origin of the suffix *-urỹs* is unclear, it is not uncommon in Lithuanian, cf. *dubùs* ‘hollow, deep’ ~ *duburỹs* ‘hollow, hole, pond’; *angìs* ‘snake’ ~ *ungurỹs* ‘eel’ (see further Skardžius 1941: 309). In this regard the adverbial form *viduř* ‘in the middle’ may provide a crucial link between *vidùs* and *vidurỹs* and explain the latter as a deadverbial *io*-stem. Thus, it seems unlikely that Lith. *vidurỹs* and Skt. *vidhura-* represent the same formation.

3.5.33. **h₂/₃eg⁽ʷ⁾-ro-* ‘top; first, early’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	[N]Derivation Root

Indo-Aryan: Skt. *ágra-* n. ‘top, summit, beginning’

Iranian: YAv. *aγra-* adj. ‘first, topmost’

Baltic: Latv. *agrs* adj. ‘early’

Slavic: –

Arntz (1933: 38) listed this as an Indo-Slavic isogloss (see also EWAia I: 45). However, the etymology must be rejected, as the short vowel of Latv. *agrs* is not compatible with the Indo-Iranian media.

3.5.34. **h₂ep-* ‘water’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Tocharian, Italic, Armenian)	Compelling	Possible	Root

Indo-Aryan: Skt. *áp-* f. ‘water’

Iranian: OAv., YAv. *ap-* f. ‘water’; OP *ap-* f. ‘water’

Baltic: Lith. *ùpė* f. ‘river, stream’; Latv. *upe* f. ‘river, stream’; OPr. *ape* ‘brook, stream’ (EV)

Slavic: –

Arntz (1933: 50) lists the root noun **h₂ep-* ‘water’ as an Indo-Slavic isogloss. The Indo-Iranian and Baltic words (of which the vocalism of the East Baltic words is unclear) have been compared with Hitt. *ḫapa-* c. ‘river’,[172] CLuw. *ḫāpa/i-* c. ‘river’, Pal. *ḫāpna-* c. ‘river’ and OIr. *aub* f. ‘river’, which, however, reflect **h₂eb⁽ʰ⁾-*. Furthermore, Lat. *amnis* f. ‘stream, river’ and ToAB *āp-* ‘river (?)’ may be adduced, although these may in theory reflect either

[172] According to Kloekhorst (2008: 295), the meaning of the alleged Hittite all.sg. *ḫāppa* ‘to the river’, with geminate *-pp-* < **p* rather than **b⁽ʰ⁾*, cannot be determined.

*h_2ep- or *$h_2eb^{(h)}$- (see further Wodtko, Irslinger & Schneider 2008: 311ff).[173] Hamp (1972) attempted to clarify the relationship between these two variants by reconstructing *h_2ep-h_3on-, based on the *n*-stems of Palaic and Celtic, with h_3-voicing as in Skt. *píbati*, OIr. *ibid* 'to drink' < *pi-ph_3-e-. A possible unambiguous non-Indo-Slavic cognate is Arm. *hawaṙi* 'river-bed, river-shore', which could reflect *h_2ep- 'river' + *$sr(o)u$- 'to flow' (Martirosyan 2010: 206).

In sum, although the most transparent reflexes of *h_2ep- are attested in Indo-Iranian and Baltic, evidence from other branches cannot confidently be refuted, and the isogloss cannot be maintained.

3.5.35. *h_2eu- 'to weave'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Albanian)	Compelling	Possible	Root

Indo-Aryan: Skt. *o*- 'to weave', pres. *váyati*

Iranian: –

Baltic: Lith. *áusti, áudžia* 'to weave'; Latv. *aûst, aûžu* 'to weave'

Slavic: –

Arntz (1933: 54) argued that the unenlarged root of Lith. *áusti* 'to weave' < *h_2eud- is preserved only in Lith. *auklẽ* f. 'shoelace' and Skt. *o*- 'to weave' < *h_2eu-. However, Alb. *vej* 'to weave' may in fact reflect the same present stem formation as Skt. *váyati* 'to weave' < *h_2u-eie/o- (Demiraj 1997: 413), which means that the isogloss is non-exclusive.

3.5.36. *h_2eu-o- 3sg.pron. 'that'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Rejected	[N]Derivation

Indo-Aryan: –

Iranian: OAv., YAv. *auua*- 'that'; OP *ava*- 'that'; MiP Pahl. *ōy*, Man. *'wy* 'he, she, that'; Sogd. *w*- 'that, the'

Baltic: –

Slavic: OCS *ovъ* 'someone, someone else, other'; Pol. *ów* 'that'; SCr. *òvāj* 'this'

Both Iranian (AirWb.: 163–67) and Slavic (Vasmer II: 251; Derksen 2008: 384) attest demonstrative pronoun stems that may be unified under a reconstruction *h_2eu-o-. It was proposed as an isogloss by Schmidt (1872: 48). Skt. gen.du. *avóṣ* 'of those two' has traditionally been connected, but is rather an assimilated variant of *ayóṣ* (Klein 1977; EWAia I: 135).

The pronoun has variously been derived from *h_2eu- 'away' (Dunkel 2014, 2: 96, 111) or *h_2eu- 'again' (Beekes 2010: 173), which may ultimately be the same root. The

[173] Since Lat. *amnis* seems to be derived from an *n*-stem, it is likely from the same Proto-Italo-Celtic *$h_2eb^{(h)}$-*on*- that also gave OIr. *aub*.

root is widespread in Indo-European, e.g., Hitt. *u-* 'hither', Skt. *áva* 'away, off', OIr. *ua-* 'neg. prefix', Lith. *au-* 'away', Lat. *aut* 'either … or', Gr. αὖ 'again, on the other hand'. Gr. αὐτός 'self; the same' ~ Phryg. *auto-* 'self' is another pronominal derivative (most likely from **h₂eu-* 'again'). The Albanian deictic particle *a-* reflected in Alb. *aí, ajó, atá* 'ille, -a, -ud' probably also continues **h₂eu-*.

Lyd. *osk* nom.-acc.pl. 'and that' and Car. *u-* 'the one by you' are adduced as further evidence for a PIE pronoun **h₂eu-o-* by Dunkel (2014, 2: 111). However, the Lydian word can hardly be equated to YAv. *auua-* etc. in view of the *-s-*, which goes back to PIE **si* (cf. Melchert 1994: 337). Yet, Melchert (2009: 157) does derive Lyd. *os-* and (hesitatingly) Car. *u-* from **e*/*ouo-*, stating that the Lydian form was secondarily inflected. However, Carian preserves **h₂* as *k* (Adiego Lajara 2007: 260), and the same is likely true for Lydian (Yakubovich 2019). A more plausible etymology is that proposed by Eichner (1988: 55), who explained *os-* from *au-* + *es-* 'this'.

Although **h₂eu-o-* seems to be limited to Iranian and Slavic, there are strong indications that the Iranian form is a relatively recent innovation. The nom.sg.m. OAv. *huuō*, YAv. *hāu* look like the pronoun **sa* + particle **u* or **au*, respectively. This form must be compared with Skt. nom.sg.m. *asáu* 'ille', to which the pronominal stem **a-* was added. Tedesco (1947) reconstructed a PIIr. nominative **sāu* and argued that the Iranian non-nominative stem **aua-* was created by adding the deictic particle **au-* to the pronominal stem **a-*. In Indo-Aryan, the particle was instead post-posed in its zero-grade form,[174] leading to acc.sg.m. **am-u*, which was regularized to Skt. *amúm* and used as the base for a new paradigm with the stem *amú-*. The "irregularity" of the Sanskrit paradigm shows that **aua-* did not exist in Proto-Indo-Iranian, as there would otherwise be no reason to innovate *amú-*. In fact, even the reconstruction of **sāu* is uncertain, since OAv. *huuō* rather reflects **sau*,[175] implying the existence of two different nominative forms in Proto-Iranian. This means that Iranian **aua-* cannot be directly compared to Slavic **ovь*, which may have been independently derived from **h₂eu-* within Slavic.

3.5.37. *(*h₂*)*gr-ŏ̄m-* 'heap'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Rejected	[N]Derivation

Indo-Aryan: Skt. *grā́ma-* m. 'train, troops, village community'

Iranian: MiP Pahl. *grāmag* 'wealth'; Sogd. B *γr'm'k* 'riches'; Khwar. *γr'm* 'weight, burden'; Oss. I *ærγom* / D *ærγon* 'bundle of firewood, burden, load'

Baltic: Lith. *grùmulas* m. 'lump', *gramañtas* m. 'big lumps', *gromulỹs, grõmulas* n. 'cud, rumination, digestion'

Slavic: RuCS *gromada* f. 'heap, pile, bonfire'; OCS *gramada* f. 'heap, pile'; ORu. *gromada* f. 'heap, pile, bonfire', *gramada* f. 'pile'; Pol. *gromada* f. 'pile, multitude, village

[174] However, in the neuter, the full grade was used, i.e., *adó* < **adáu* (cf. Tedesco 1947: 119).
[175] Cf. De Vaan (2003: 365). Narten argued that OAv. *huuō* was replaced in Young Avestan by the feminine *hāu*, but one must agree with Tedesco (1947: 118) that this is rather unlikely, especially since masculine **sa* + *au* is paralleled by Skt. *asáu* and neuter *adó*.

community, gathering'; SCr. *gromáda, grmada* f. 'cliff, crag, heap, pile', *gramáda* f. 'clod, pile of firewood'

The Indo-Iranian and Balto-Slavic words are often compared (EWAia I: 507–8; Derksen 2015: 191) and constitute a potential Indo-Slavic isogloss. However, several problems regarding the Balto-Slavic forms as well as the deeper Indo-European etymology have not been sufficiently addressed.

First, the Balto-Slavic material presents several difficulties. The irregular vocalism of Lith. *grùmulas* has been suggested to reflect a metathesized zero-grade **gur-m-*, possibly through contamination from *gùmulas* 'lump' (Derksen 2008: 190). In terms of root vocalism, Lith. *gramañtas* (LEW: 162) is closer to the Slavic forms, but the suffix *-añtas* remains unexplained. If Lith. *gromulỹs* belongs here, the vacillation of *o*/*a* in the root does not look old. For Slavic, we must reckon with three different variants, viz. **gromada* (East, West, South Slavic), **gramada* (East, South Slavic) and **grmada* (South Slavic). The root vocalism hardly reflects old ablaut, but rather indicates a more recent formation. The unexplained suffix *-ada-* presents a further argument against an old athematic *m*-stem. On the whole, the Balto-Slavic evidence does not point to an inherited etymon.

For Proto-Indo-Iranian, a stem **grāma-* may be straightforwardly reconstructed. However, the deeper Indo-European etymology is uncertain. PIIr. **grāma-* has been derived from **h₂ger-* 'to gather' (cf. Gr. ἀγείρω 'to gather'), in which case one would have to assume an athematic stem **h₂gr-om-* (cf. **dʰǵʰ-om-* 'earth') with subsequent thematicization in Indo-Iranian. As athematic *m*-stems are exceedingly rare, and the root **h₂ger-* is otherwise unattested in Indo-Iranian, this etymology is far from certain. Another possibility is to reconstruct **graHma-* and connect it to Skt. *grā́van-* m. 'pressing stone' and *gurú-* 'heavy, hard, vehement'. This is especially attractive in view of the semantics of Khwar. *γr'm* 'weight, burden' and Oss. I *ærγom* / D *ærγon* 'burden, load', from which the meaning of Skt. *grā́ma-* 'train, troops, village community' may have developed secondarily. The Slavic variants with short **o* in the root, e.g., RuCS *gromada* 'heap, pile, bonfire', are incompatible with PIIr. **graHma-*.

Lat. *gremium* n. 'lap, bosom' has been adduced as a cognate, but it is hardly old, since it has not undergone the sound change **-mi̯-* > Lat. *-ni-* (de Vaan 2008: 272). De Vaan argues that *gremium* may have been derived within Latin from an earlier **gremo-*, in turn derived from a stem variant of **h₂gr-om-*. However, the meaning of *gremium* is not very close to Indo-Iranian **grāma-*. Furthermore, as argued above, the reconstruction of an athematic *m*-stem is problematic. Lat. *gremium* may instead belong with MHG *krimmen* 'to grab, squeeze' < PGm. **krimman-* 'to crumble' (Kroonen 2013: 305).

In conclusion, an etymological connection between Indo-Iranian **grāma-* and the Balto-Slavic material cannot be supported and it should be rejected as an Indo-Slavic isogloss.

3.5.38. **h₂ōu-is* ‘evidently, manifestly’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Germanic, Greek, Italic)	Doubtful	Possible	[N]Derivation

Indo-Aryan: Skt. *āvíṣ* adv. ‘evidently, manifestly’

Iranian: OAv., YAv. *āuuiš* adv. ‘apparently, evidently’

Baltic: Lith. *ovyje* adv. ‘in reality’

Slavic: OCS *javě, avě* adv. ‘manifestly, openly, clearly’; SCr. *javi* adv. ‘just like, as if’

Schmidt (1872: 47), Meillet (1926: 173), and Arntz (1933: 48) list this adverb as an isogloss of Indo-Iranian and Balto-Slavic. However, this conclusion has several problems.

First, an *e*-grade variant **h₂eu-is* likely formed the basis of Lat. *audiō* ‘to hear’ and Gr. αἰσθάνομαι ‘to perceive’ < **h₂eu-is-dʰh₁-*, as well as Gr. ἀΐω ‘to perceive, hear’ (IEW: 78; de Vaan 2008: 61; Beekes 2010: 43, 46). Moreover, Kroonen (2013: 45) has argued convincingly that OE *ēawis* ‘apparent’ and OHG *awi-zoraht* ‘evident’ preserve a Germanic reflex **awiz*, which could continue a long or short root vowel, as a long vowel would have undergone Dybo’s pretonic shortening (cf. the oxytone Skt. *āvíṣ*).

Second, the Indo-Iranian and Balto-Slavic forms are difficult to reconcile formally, since Slavic **a* points to **ō* or **ē*. Lith. *ovyje* ‘in reality’ rather points to **eh₂*, but may be a borrowing from Slavic (cf. Derksen 2015: 341). While a lengthened grade is formally possible for Indo-Iranian (thus EWAia I: 177), it makes little sense from a morphological perspective. A more plausible reconstruction would be **h₂ou-is*, with Brugmann’s Law, which may be independently supported by Gr. οἴομαι ‘to suspect, expect, think, believe, deem’ (Beekes 2010: 1059–60). The *o*-grade may have been taken over from the verbal stem, cf. Hitt. 1sg.pres. *uḫḫi* ‘I see’ < **h₂ou-h₂ei*. Since OCS *javě, avě* is incompatible with a reconstruction **h₂ou-is*, it may rather be explained as a borrowing from Iranian.

3.5.39. **h₂sous-eie/o-* ‘to make dry (up)’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Germanic)	Doubtful	Rejected	[V]Derivation

Indo-Aryan: Skt. *śoṣáyati* ‘to make dry up’ (AV)

Iranian: MiP Pahl. *hōš-* ‘to dry up, wither’; MoP *xōš-* ‘to dry’

Baltic: Lith. *saũsinti, -ina*, (dial.) *saũsyti, saũso* ‘to dry (something) off’; Latv. *sausinât* ‘to dry’

Slavic: OCS *sušiti, sušjǫ* ‘to dry, exhaust’; Ru. *sušít’, sušú* ‘to dry’; Pol. *suszyć, suszę* ‘to dry’; SCr. *súšiti, sûšīm* ‘to dry’

Indo-Iranian and Balto-Slavic both attest *eie/o*-stems from **h₂seus-* ‘to be dry’ (for the denominal origin of this root, cf. Lubotsky 1985). However, Nw. *søyre* ‘to make dry’, although not unlikely secondary from *søyr* adj. ‘dry’, could also reflect **h₂sous-eie/o-*. In any case, Skt. *śoṣáyati* ‘to make dry up’ (with secondary *ś-*) could be a productive

formation after the intransitive Skt. *śúṣyati* ‘to dry up’ (Jamison 1983: 145). Lith. *saũsinti* ‘to dry (something) off’ and Latv. *sausinât* ‘to dry’ are probably better analysed as denominal from the adjective Lith. *saũsas* ‘dry’ etc.

3.5.40. **h₂uodH-eie/o-* ‘to speak’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Rejected	^{V}Derivation

Indo-Aryan: Skt. *vádati* ‘to raise one’s voice, speak, talk’ (RV+), *vādáyati* ‘to make speak’ (Br.+)

Iranian: –

Baltic: –

Slavic: OCS *vaditi, važdǫ* ‘to accuse’; Ru. *vádit’* ‘to slander, lure, spend time, deceive’; Pol. *wadzić, wadzę* ‘to annoy, hamper’; Sln. *váditi, vâdim* ‘to report, charge’

Arntz (1933: 55) compared the causative Skt. *vādáyati* ‘to make speak’ to OCS *vaditi* ‘to accuse’. However, the Sanskrit form is not attested in the oldest language and may well be a productive formation. Moreover, the Slavic verbs have divergent semantics, and one may wonder whether at least some of the attested forms are rather derived from **ued^{h}-* ‘to lead’, cf. Lith. *vadìnti* ‘to call’, Latv. *vadinât* ‘to lead, accompany, urge, lure’.

3.5.41. **h₃nob^{h}-i- / *h₃nob^{h}-H-* ‘nave, navel’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Germanic)	Compelling	Possible	^{N}Derivation

Indo-Aryan: Skt. *nā́bhi-* f. ‘nave, navel; origin, relation, kin’, *nā́bhā-nédiṣṭha-* ‘PN’

Iranian: YAv. *nāfa-* m. ‘navel; relative, family’, *nabā-nazdišta-* ‘next of kin’

Baltic: Latv. *naba* f. ‘navel’; OPr. *nabis* ‘nave, navel’

Slavic: –

Skt. *nā́bhi-* (cf. EWAia II: 13–14) is often reconstructed as an *i*-stem (Wodtko, Irslinger & Schneider 2008: 385). OPr. *nabis* (Derksen 2015: 562) has been argued to derive from the same formation (Klingenschmitt 1978: 100), in which case the *i*-stem could constitute an Indo-Slavic isogloss. However, the Prussian form could just as well reflect an *o*-stem, cf. OPr. *deywis* ~ Lith. *diẽvas* (Stang 1966: 181). Furthermore, the distribution of voiceless *-f-* in YAv. *nāfa-* vs. voiced *-b-* in *nabā-*[176] points to an old athematic *H*-stem **h₃nob^{h}-H-* / **h₃nb^{h}-eH-*, which could also explain the *i*-stem of Sanskrit as a result of laryngeal vocalization (Kümmel 2021). This athematic *H*-stem could also be the basis for the Baltic forms, as well as ON *nǫf* ‘nave’, OHG *naba* ‘nave’ etc. (cf. Kroonen 2013: 380–81).

[176] Possibly, the short root vowel of YAv. *nabā-* is the result of secondary shortening (de Vaan 2003: 137–38).

3.5.42. **ieu-o-* ‘grain, barley’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Anatolian, Greek)	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *yáva-* m. ‘grain, corn, crop, barley’

Iranian: YAv. *yauua-* m. ‘grain’; MiP Pahl. *ǰaw* ‘barley; Oss. *jæw* ‘millet’; Par. *žō* ‘barley’

Baltic: Lith. *javaĩ* m. ‘corn, grain’

Slavic: –

Porzig (1954: 169) takes **ieu-o-* as an isogloss, since Gr. ζειαί f.pl. ‘one-sided wheat, spelt’ reflects a different derivation (**ieu-ieh₂-*). The Greek word may be derived from the *o*-stem, however. Moreover, Hitt. *eu̯an-* n. ‘a kind of grain’ shows that the root is Indo-Anatolian. The Hittite word is sometimes inflected as an *o*-stem, but even if this is old (which Kloekhorst 2008: 263–64 deems unlikely), the neuter gender could point to an independent formation from Skt. *yáva-* etc. (see further Weiss 2021).

Arm. *ǰov* ‘sprout, branch; string’ is formally comparable to **ieu-o-*, but the meaning is too far removed to make it a likely cognate. ToB *yap* ‘barley’ is borrowed from an Indo-Iranian source (Peyrot 2018: 245).

3.5.43. **ḱi(e)h₁-uo-* ‘dark, black, grey’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Germanic)	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *śyāvá-* adj. ‘dark brown, dark’

Iranian: YAv. *siiāuua°* adj. ‘dark’ (in names); MiP Pahl. *syā,* Man. *sy’w* adj. ‘black’; Khot. *śāva-* ‘copper, copper-coloured’; Sogd. *š’w* adj. ‘black’; Khwar. *s’w* adj. ‘black’; Oss. *saw* adj. ‘black’

Baltic: Lith. *šývas* adj. ‘light grey (of horses)’; OPr. *sywan* adj. ‘grey’ (EV)

Slavic: Ru. *sívyj* adj. ‘grey’; Pol. *siwy* adj. ‘grey’; SCr. *sȉv* adj. ‘grey’

The Indo-Iranian (EWAia II: 661; AirWb.: 1631; Abaev III: 42–43) and Balto-Slavic words (LEW: 996; Vasmer II: 621) have been taken as an Indo-Slavic isogloss by Schmidt (1872: 49), Arntz (1933: 43) and Porzig (1954: 166–67). However, OE *hāwi* ‘blue, purple, grey, discoloured’ < PGm. **hēwja-* (Kroonen 2013: 224) cannot be excluded as a cognate and the isogloss is therefore non-exclusive. It is also notable that the Balto-Slavic forms show zero-grade of the root, whereas Indo-Iranian has full grade, indicating that they are separate thematicizations of an earlier *u*-stem.

3.5.44. *ḱlei-e/o- ‘to lean against (intr.)’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Tocharian)	Compelling	Possible	[V]Derivation

Indo-Aryan: Skt. *śráyate* ‘to lean against (intr.)’

Iranian: YAv. 3sg.pres.inj.med. *upa-sraiiata* ‘leaned upon (intr.)’

Baltic: Lith. *šliẽti, -ja* ‘to lean, rest against’; Latv. *slìet, sleju* ‘to support, erect; lean against (tr.)’

Slavic: –

Arntz (1933: 57) listed the Indo-Iranian and Baltic thematic present formations from *ḱlei- ‘to lean against’ as an isogloss. This may be contrasted with the more widely attested nasal present from this root, cf. YAv. *ni-sirinaoiti* ‘to bring, assign’, Gr. κλίνω ‘to lean on, bend’, Lat. *dēclīnō* ‘to deviate, divert’, OHG *hlinēn* ‘to lean against’ (LIV: 332).[177] In Lithuanian, the root vocalism *-ie-* of the infinitive has been levelled throughout the paradigm (Smoczyński 2018: 1404). The acute accent in Baltic must be secondary (RR II: 430) and Latv. 1sg. *sleju* may reflect the original accentuation.

However, ToA *kälytär*, ToB *kaltär* ‘to stand’ may also be derived from *ḱlei-e/o- (LIV: 332; Ringe 1991: 152). Malzahn (2010: 593) and Peyrot (2013: 738) argue, based on ToA 1sg.pres.med. *kälymār*, that a root present should be reconstructed for Proto-Tocharian. Yet, it seems more likely that the thematic forms attested in both Tocharian A and B are old and that the athematic forms arose within Tocharian, since the palatalizing effect of the thematic vowel was neutralized due to the root-final *-*i* (Friis forthc.).

One might envision the following scenario: in Proto-Indo-European, *ḱlei- formed an intransitive root aorist, to which an oppositional transitive nasal present *ḱl-ne-i- was created. The thematic present reflected in Indo-Iranian, Balto-Slavic and Tocharian, in turn, may be seen as an oppositional intransitive to *ḱl-ne-i-. The thematic stem *ḱlei-e/o- may reflect an innovation in these three branches, but could also be an archaism that was lost elsewhere.

3.5.45. *ḱok(H)olo- ‘chip of wood’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	[N]Derivation

Indo-Aryan: Skt. *śákala-* m./n. ‘chip, fragment, splint, log, piece’ (YV, TS+)

Iranian: –

Baltic: Lith. *šakalỹs* m. ‘chip of wood, splinter, pinewood’; Latv. *sakaļi* m.pl. ‘torches’

Slavic: –

Arntz (1933: 49) took the Sanskrit and Baltic words as a shared derivative in *-*l-* from *ḱok$^{(w)}$-h$_2$- ‘branch’, reflected in Skt. *śā́khā-* f. ‘branch’, Goth. *hoha* m. ‘plough’, and Arm.

[177] Latv. *slìenu* ‘I lean’ may belong here but could just as well be an independent innovation.

cᶜax ‘branch’. There are several problems with this etymology, however. First, Lith. *šakalỹs* and Latv. *sakaļi* are probably productive diminutive formations from Lith. *šakà* f. ‘branch’ etc. and need not be old. Skt. *śákala-*, on the other hand, may be unrelated to *śā́khā-* given the unaspirated *-k-*. To connect them, one would have to assume that Skt. *śákala-* reflects **ḱek⁽ʷ⁾-o-* + *-lo-*, i.e., a different formation without the suffix **-h₂-*. A preform **ḱek⁽ʷ⁾-olo-* could not produce Lith. *šakalỹs*. Ultimately, the connection between the Sanskrit and Baltic words must be rejected.

3.5.46. **ḱor-H(-keh₂)-* ‘a kind of bird’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Greek)	Doubtful	Possible	[N]Derivation

Indo-Aryan: Skt. *śā́ri-* f. ‘a kind of bird, *Gracula religiosa* (?)’(YV+), *śārikā-* f. (Ep.+) ‘id.’

Iranian: MoP *sār, sārak* ‘starling’

Baltic: Lith. *šárka* f. ‘magpie’; OPr. *sarke* f. ‘magpie’ (EV)

Slavic: CS *svraka* f. ‘magpie’; Ru. *soróka* f. ‘magpie’; Pol. *sroka* f. ‘magpie’; SCr. *svrāka* ‘magpie’

Arntz (1933: 44) listed these words as an Indo-Slavic isogloss (cf. also EWAia II: 630). However, the words are difficult to separate from similar-looking bird names in other branches. While Arm. *sarik* ‘starling’ is likely an Iranian loanword (Hübschmann 1897: 236), Gr. κόραξ m. ‘raven’ could reflect **ḱorh₂k-* (Beekes 2010: 750), which would make it formally very close to Balto-Slavic. Gr. κορώνη f. ‘crow’ and Lat. *cornix* f. ‘crow’ may be derived from an *n*-stem of the same root. Alb. *sórrë* f. ‘crow’, if inherited, could go back to **ḱuērneh₂-* and has been compared with SCr. *svrāka* etc. (Demiraj 1997: 355), although the Slavic forms that seem to reflect an anlaut **ḱu-* may be secondary (cf. Derksen 2008: 477). At any rate, it seems likely (with de Vaan 2008: 136) that we are dealing with an Indo-European onomatopoeic formation **ḱor-*, and there are no compelling arguments for taking the Indo-Iranian and Balto-Slavic forms as an isogloss.

3.5.47. **ḱun-ko/eh₂-* ‘dog-like; bitch’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Rejected	[N]Derivation

Indo-Aryan: Skt. *śvaka-* m. ‘wolf’

Iranian: YAv. *spaka-* ‘dog-like’; MiP Pahl. *sag*, Man. *sg* ‘dog’; MoP *sag* ‘dog’; Psht. *spay* m. ‘dog’, *spəy* f. ‘bitch’

Baltic: –

Slavic: Ru. *sukáˊ* f. ‘bitch’; Pol. *suka* f. ‘whore’; Plb. *sauko* f. ‘whore’

Schmidt (1872: 49) and Arntz (1933: 49) listed the above words as an Indo-Slavic isogloss. However, it is unlikely that the Indo-Iranian and Slavic words reflect the same formation, for several reasons. First, the semantics are divergent. In Indo-Iranian, the *-ka-* suffix means

‘-like’, or is a diminutive, whereas in Slavic it is simply a female dog. Secondly, a reconstruction **ḱun-keh₂-* only accounts for part of the Slavic evidence, but not Pol. *suka* and Plb. *sauko* ‘whore’. In view of these considerations, I reject a direct comparison of the Indo-Iranian and Slavic words.

3.5.48. **kor-o-* ‘army’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Uncertain	Compelling	Rejected	[N]Derivation

Indo-Aryan: –

Iranian: OP *kāra-* m. ‘army, people’; Bactr. καρο ‘people’

Baltic: Lith. *kãras, kãrias* m. ‘war, army’; Latv. *kaŗš* ‘war, army’; OPr. *kragis* [*kargis*] m. ‘army’ (EV)

Slavic: –

Arntz (1933: 43–44) observed that Baltic and Iranian share an *o*-stem **kor-o-*, while Gr. κοίρανος m. ‘ruler, commander, lord’, OIr. *cuire* m. ‘troop, tribe’ and Goth. *harjis* m. ‘host, troop’ reflect **kor-io-* (LEW: 220; Derksen 2015: 226). However, Baltic also preserves the *io*-stem, as evidenced by Lith. *kãrias*, indicating that both formations are inherited. The relationship between the *o*-stem and *io*-stem is unclear, as they appear to have the same meaning, but it seems difficult to exclude the possibility that the *io*-stem is derived from the *o*-stem, in which case the latter would be a shared archaism.

3.5.49. **krouh₂-io-* ‘corpse; flesh’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Germanic)	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *kravyā́d-* adj. ‘eating flesh, corpses’ (RV+), *kravyá-* adj. ‘bloody’ (PS, TS)

Iranian: –

Baltic: Lith. *kraũjas* m. ‘blood’; OPr. *crauyo* f. ‘blood’ (EV), *krawia* f., *krawian* acc.sg.n. ‘blood’

Slavic: –

Arntz (1933: 44) listed this *io*-stem as an Indo-Slavic isogloss. However, these words cannot be separated from ON *hræ* n. ‘corpse, remains’, OE *hrǣ*(*w*), *hrā*(*w*) n. ‘corpse, remains’ < PGm. **hraiwa-*, which derives from **hrauja-* < **krou-io-* with metathesis (Kroonen 2013: 242). The Germanic cognate has not been taken into account in much of the literature on this etymology (e.g., Pinault 1982; EWAia I: 411; Wodtko, Irslinger & Schneider 2008: 444).

3.5.50. **kseubʰ-* ‘to sway, swing’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Germanic)	Compelling	Rejected	Root

Indo-Aryan: Skt. *kṣobh-* ‘to stagger, begin to swing, tremble’

Iranian: YAv. *xšufsąn* 3pl.pres.subj. ‘they will tremble’

Baltic: Lith. *skubė́ti, skùba* ‘to hurry’, *skubús* adj. ‘hasty’; Latv. *skùbrs* ‘hasty’

Slavic: Cz. *chybati* ‘to hesitate’; Pol. *chybać*, *chybam* ‘to sway, rock, run, rush’

Arntz (1933: 36) listed this root as an Indo-Slavic isogloss (see also LIV: 372). The Baltic forms have alternatively been connected to Goth. *af-skiuban* ‘to push away, reject’ under a reconstruction **skeubʰ-* (LIV: 560). However, since **ks-* metathesizes to *sk-* in Germanic and Baltic, the forms may all reflect **kseubʰ-* (Kroonen 2013: 444–45). The only reason to separate the Germanic root would be Slavic **skub-* in, e.g., SCr. *skúpsti* ‘to pluck out’, which Smoczyński (2018: 1214) connects to Lith. *skubė́ti* ‘to hurry’, but this is semantically remote and likely unrelated.

3.5.51. **kumĕ̄l-* ‘young (of animal)’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	[N]Derivation

Indo-Aryan: Skt. *kumārá-* m. ‘child, son’

Iranian: –

Baltic: Lith. *kumẽlė* f. ‘mare’, *kumelỹs* m. ‘stallion’; Latv. *kumele* f. ‘mare’, *kumeļš* m. ‘stallion’

Slavic: –

Arntz (1933: 42) listed this stem as an isogloss (cf. also LEW: 309; EWAia I: 369). While the Sanskrit and Lithuanian forms are formally comparable, uniting them yields a rather obscure Indo-European reconstruction. To account for the long *-ā-* of *kumārá-* as opposed to the short *-ẽ-* of *kumẽlė*, one would have to assume an ablauting stem **kum-el-*, which is implausible, since a root **kuem-* is otherwise unknown. Furthermore, it must be taken into account that *-elė*/*-elys* is a diminutive suffix in Baltic. Perhaps the Baltic words are rather to be compared with ORu. *komonъ* ‘horse’ (Derksen 2008: 232) or Ger. *Hummel* ‘hornless ox, castrated bull’.

3.5.52. *$k^{w}eit$- ‘to perceive’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Germanic)	Compelling	Possible	Root

Indo-Aryan: Skt. *cet-* ‘to perceive, take notice of’, *cétas-* n. ‘insight’

Iranian: OAv. *cōiθ-* ‘to perceive’

Baltic: Lith. *skaitýti, skaĩto* ‘to read, count’; Latv. *šķist, šķitu* ‘to think, suppose’, *skàitît, skàitu* ‘to count, recite, read’

Slavic: OCS *čisti, čьtǫ* ‘to count, read, honour’; Ru *čitát’, čitáju* ‘to read’; Cz. *čísti, čtu* ‘to read’; SCr. *čísti* (13th–16th century AD) ‘to read’

The root *$k^{w}eit$- ‘to perceive’ has been explained as a *t*-extended variant of the synonymous *$k^{w}ei$- (LIV: 382). The enlarged variant, attested in nominal and verbal derivations in Indo-Iranian (EWAia I: 547–48) and Balto-Slavic (Derksen 2008: 89; Derksen 2015: 552–53), constitutes a possible Indo-Slavic isogloss, as suggested by Schmidt (1872: 49) and Arntz (1933: 40).

However, there are two problems with this etymology. First, the allegedly original root *$k^{w}ei$- is continued in OCS *čajati* ‘to expect, thirst for’ and SCr. *čȁjati* ‘to wait’, which corresponds to Skt. *cā́ya-* ‘to perceive’ and Gr. τίω ‘to esteem’. This verbal stem has been reconstructed as a so-called Narten-present *$k^{w}ḗi$- (LIV: 377), but the Slavic acute points to *$k^{w}eh_{1}i$- (Derksen 2008: 78; cf. also Weiss 2017; Kümmel 2020), implying that the traditional analysis of *$k^{w}eit$- can hardly be maintained.

Second, besides Skt. *cet-* ‘to perceive’, there is the homophonous *cet-* ‘to shine’, reflected in, e.g., *citrá-* ‘shining’, *ketú-* m. ‘appearance’, which cannot be separated from PGm. **haidra-* ‘clear’ (Kroonen 2013: 200) and Goth. *haidu-* m. ‘way, manner’ (Lehmann 1986: 168). Since there is no evidence that *cet-* ‘to perceive’ and its cognates reflect a labiovelar, the two roots may be combined under a reconstruction **keit-*.[178] A semantic shift from ‘to be bright’ >> ‘to appear’ >> ‘to perceive’ is conceivable, cf. Eng. *shine* vs. Ger. *scheinen* ‘to shine; seem, appear’. If correct, this scenario implies that **keit-* not exclusively Indo-Slavic.

3.5.53. *$k^{(w)}it$-*ti*- ‘thinking, consideration’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Rejected	[N]Derivation

Indo-Aryan: Skt. *cítti-* f. ‘thinking, understanding’

Iranian: OAv., YAv. *cisti-* f. ‘consciousness’

Baltic: –

Slavic: OCS *čьstь* f. ‘honour, respect’; Ru. *čest’* f. ‘honour, respect’; Pol. *cześć* f. ‘honour, respect’; SCr. *čâst* f. ‘honour, respect’

[178] There is no need to assume delabialization of *k^{w} in Germanic, which in any case did not occur before **o* (cf. Kroonen 2013: xxxii)

Although this root is not an Indo-Slavic isogloss (see p. 154), a *ti*-abstractum is only found in Indo-Iranian (EWAia I: 547–48; AirWb.: 598) and Slavic (Derksen 2008: 94), which was listed as an isogloss by Arntz (1933: 44). However, in Sanskrit, practically every root has a corresponding *ti*-stem (AiGr. II, 2: 622–28). Given the transparent semantics in relation to the verb *cet-* 'to perceive', it may be a productive formation. Similarly, OCS *čьstь* 'honour, respect' is semantically close to the corresponding verb *čisti* 'to count, read, honour'.

3.5.54. *$k^{w}u$-$d^{h}e$ 'where'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Anatolian, Italic)	Compelling	Rejected	^{N}Derivation

Indo-Aryan: Skt. *kúha* 'where'

Iranian: OAv. *kudā* 'where'

Baltic: –

Slavic: OCS *kъde* 'where'

Porzig (1954: 168) claims that the formation *$k^{w}u$-$d^{h}e$ is exclusive to Indo-Iranian and Slavic. However, it is impossible to exclude Lat. *ubī*, Osc. *puf*, Umbr. *pufe* 'where' as cognates, even though they could alternatively reflect *$k^{w}u$-$b^{h}ei$ (de Vaan 2008: 636). A further possible cognate is Lyd. *kud* 'where' (Kloekhorst 2008: 490), in which case the formation could be Proto-Indo-Anatolian.

3.5.55. *$leh_{1}ǵ^{h}$- 'to crawl; to go'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	Root

Indo-Aryan: –

Iranian: YAv. *vī-rāzaiti* 'to boast, brag'; Khot. *rrāys-* 'to cry out (of birds)'; Bactr. ραζ- 'to call, name'

Baltic: Latv. *lẽzêt*, *lẽzẽju* 'to go slowly, slide'; OPr. *līse* 3sg. 'crawls'

Slavic: OCS *izlěšti*, *izlězǫ* 'to go out of'; Ru. *lezt'*, *lézu* 'to climb, crawl, drag oneself along'; Pol. *leźć*, *lezę* 'to climb, crawl upwards, drag oneself along'; SCr. *ljȅsti*, *ljȅžēm* 'to crawl, climb'

Meillet (1926: 171) argued that OCS *izlešti* and its Balto-Slavic cognates, which reflect *$leh_{1}ǵ^{h}$- (cf. Derksen 2008: 275–76; LIV: 400), are related to YAv. *vī-rāzaiti*, which Bartholomae glosses as 'gehen' (AirWb.: 1526). However, Kellens (1995: 57) glosses the Avestan verb as 'fanfaronner', i.e., 'to boast, brag', which fits better with its cognates in Khotanese and Bactrian (cf. Cheung 2007: 306–7). The Balto-Slavic words have often been connected to ON *lágr* 'low' < PGm. **lēgu-* but this is more likely derived from PGm. **leg(j)an-* < *leg^{h}- (Kroonen 2013: 330).

Although the Iranian and Balto-Slavic verbs are formally comparable and lack convincing cognates in other branches, the etymology is semantically uncompelling.

3.5.56. **loip-eie/o-* ‘to smear, stick’; **li-n-p-e/o-* ‘to smear, stick’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Germanic)	Rejected	Rejected	[V]Derivation

Indo-Aryan: Skt. *lepayati* ‘to cause to smear; to smear, anoint’ (Suśr.), *limpáti* ‘to besmear, adhere to, deceive’

Iranian: –

Baltic: Lith. *lipìnti*, *-ìna* ‘to glue, stick’, *lìpti*, *limpa* ‘to stick’

Slavic: OCS *prilěpiti*, *prilěpljǫ* ‘to stick’; Ru. *lepít’*, *lepljú* ‘to model, mould, stick’; Pol. *lepić*, *lepię* ‘to glue, stick’; SCr. *lijèpiti*, *lȉjepīm* ‘to cover with clay’

Arntz (1933: 54) listed these causative formations as an isogloss, but this conclusion cannot be maintained. First, Goth. *bi-laibjan* ‘to leave behind’ (cf. Kroonen 2013: 323) is formally identical, although it may well be an independent formation given the divergent semantics. For formal reasons, Lith. *lipìnti* must be an independent formation, as it is derived from *lìpti* ‘to be sticky, stick’ (Smoczyński 2018: 711–12). Second, Skt. *lepayati* ‘to besmear’ is attested late (Suśr.) and may be a recent formation. In terms of semantics, it is divergent from the Slavic causative, which indicates independent formations.

In addition to the causative, it has been argued that only Baltic and Sanskrit reflect an inherited nasal present, whereas other nasal formations, viz. Gr. λιπαίνω ‘to make fat, anoint’, OCS *pri-lьnǫti* ‘to stick’, Goth. *af-lifnan* ‘to be left over’ and ToA *lipñat* ‘you will be left over’ are independent innovations (LIV: 408). Thus, the thematicized nasal present of Baltic and Sanskrit could be seen as a shared innovation. However, the semantics of the formations are different (Skt. *limpáti* is transitive whereas Lith. *lìpti* is anticausative) and the Lithuanian formation belongs to a productive class (Villanueva Svensson 2011). This indicates that they are independent innovations.

3.5.57. **l(o)uk-i-* ‘light’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	[N]Derivation

Indo-Aryan: Skt. *rúci-* f. ‘splendour, light’ (AV+)

Iranian: –

Baltic: OPr. *luckis* m./f. ‘firewood, spill’ (EV)

Slavic: RuCS *lučь* m. ‘ray, light, shining’; Ru. *luč* m. ‘ray, beam, (dial.) torch’; Cz. *louč* f. ‘torch’; SCr. *lûč* m./f. ‘torch, light, ray’

Arntz (1933: 48) listed this *i*-stem from **leuk-* ‘to become bright’ as an Indo-Slavic isogloss. However, the root ablaut and stem variation within Balto-Slavic rather points to a root noun, cf. Skt. (RV+) *rúc-* f. ‘light, splendour, lustre, appearance’, Lat. *lūx* f. ‘light’. The etymology is therefore not compelling.

3.5.58. **loup-eie/o-* ‘to tear (off), peel’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Uncertain	Rejected	Rejected	^{V}Derivation

Indo-Aryan: Skt. *lopayati* ‘to cause to break’ (Br.+), *ropayati* ‘to cause to suffer’ (PS)

Iranian: –

Baltic: Lith. *laupýti*, *laũpo* ‘to tear off’, Latv. *làupît*, *làupu* ‘to peel, rob, plunder’

Slavic: Ru. *lupít’*, *lupljú* ‘to peel (off)’; Pol. *łupić*, *łupię* ‘to plunder, loot’; SCr. *lúpiti* ‘to clean, peel’

Arntz (1933: 53) listed this causative stem as an Indo-Slavic isogloss. However, it is far from certain that the Sanskrit forms belong to the Indo-European root **leup-* ‘to peel (off)’, which is the basis of the Balto-Slavic forms. In fact, Skt. *lop-* is generally derived from **Hreup-* ‘to break’ (EWAia II: 482), cf. ON *reyfa* ‘to break, tear; rob’ < **raubjan-* (LIV: 511), which is a better fit semantically. Possibly, Skt. *lop-*/*rop-* is a conflation of **leup-* and **Hreup-*, but the *eie*/*o*-stem in Sanskrit is more likely from **Hreup-*.

3.5.59. **mei(H)-e/o-* ‘to (ex)change, switch’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	^{V}Derivation

Indo-Aryan: Skt. 3pl.pres.med. *ví mayante* ‘they alternate’

Iranian: YAv. *maiiaṯ* ‘?’

Baltic: Latv. *mît*, *miju* ‘to exchange’

Slavic: –

Arntz (1933: 55) listed this thematic present as an isogloss (cf. also LIV: 426; Derksen 2015: 544). However, Latv. *mît*, *miju* has zero-grade in the root, which precludes a direct comparison to Indo-Iranian. Moreover, the origin of the Latvian intonation is unclear. Derksen (2015: 544) argues that the broken tone is an innovation, whereas Smoczyński (2018: 739) reconstructs **meiH-*. The latter is incompatible with Indo-Iranian, as the root is *aniṭ*, cf. Skt. *apa-mítya-* n. ‘loan, debt’.

3.5.60. **mor-o-* ‘plague’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Greek)	Compelling	Rejected	Semantics

Indo-Aryan: Skt. *māra-* m. ‘death, plague’ (VarBṛS, AVPariś), *pramará-* m. ‘death’ (RV), *mara-* m. ‘death’

Iranian: –

Baltic: Lith. *mãras* m. ‘plague, death’

Slavic: OCS *morъ* m. ‘plague, death’; Ru. *mor* m. ‘plague’; Pol. *mór* m. ‘plague’; SCr. *môr* m. ‘death, plague’

Porzig (1954: 166) argues that the specific meaning ‘plague’ justifies separating Indo-Slavic **mor-o-* ‘plague’ from Gr. μόρος ‘doom, death’. See also Arntz (1933: 51) and LEW: 409. However, a closer look at the Sanskrit evidence casts doubt on the translation of *māra-* as ‘plague’, which probably stems from Monier-Williams (1899: 811). In the AVPariś, *māra-* is attested in three compounds: *śiśu-māra*(*ka*)- ‘(South Asian river) dolphin’ (lit. ‘child-killer’), *bubhukṣā-māra-* ‘death of desire, hunger’, and *jana-māra-* ‘plague’ (lit. ‘people-killer’). In VarBṛS, we find *kṣut-māra-* ‘famine’ (lit. ‘death by hunger’). Thus, *māra-* only means ‘plague’ in the compound *jana-māra-*, whereas in earlier attestations, e.g., AV *kṣudhā-mārá-* ‘death by starvation’, it means simply ‘death’. This indicates that the meaning ‘plague’ is not a shared innovation with Balto-Slavic, and that Gr. μόρος cannot be separated from this etymon.

3.5.61. **mud-ro-* ‘cheerful, lively’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	[N]Derivation

Indo-Aryan: Skt. *mudrá-* adj. ‘happy’

Iranian: –

Baltic: Lith. *mudrùs, mùdras* adj. ‘quick, valiant, smart, arrogant’; Latv. *mudrs* ‘quick, lively, cheerful’

Slavic: –

Arntz (1933: 51) listed this *ro*-adjective as an isogloss. The Sanskrit and Baltic words have traditionally been compared (EWAia II: 383; LEW: 467; Smoczyński 2018: 825–26). However, the etymology is formally problematic, since Baltic does not show the effects of Winter’s Law. According to Rasmussen (1999: 537), Winter’s Law did not operate before resonants, but there are several counterexamples, e.g., Lith. *ū́dra* f. ‘otter’ < **udreh₂-* (see further Derksen 2002: 8).

3.5.62. **neiǵʰ-o-* ‘itching, disease’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	[N]Derivation Root

Indo-Aryan: –

Iranian: YAv. *naēza-* m. ‘a sickness; lumps, mushy mass’; Oss. I *nīz* / D *nez* ‘disease’

Baltic: Lith. *niežaĩ* m.pl. ‘scabies’, *niẽžas* m. ‘itch mite, scabies, ulcer’, *niežéti* ‘to itch’; Latv. *naĩza* f., *naizs* m. ‘scabies’, *niêzt* ‘to itch’

Slavic: –

Arntz (1933: 39) listed YAv. *naēza-* ‘a sickness’ and Lith. *niežaĩ* ‘scabies’ as an isogloss, which can be united under a reconstruction **neiǵʰ-o-*. Fraenkel (1962: 502) tentatively

compares Arm. *anic* ‘nit, louse egg’, but this rather belongs with Gr. κονίς f. ‘eggs of lice, fleas, bugs’ (Beekes 2010: 747).

The Baltic words clearly derive from a verbal root reflected in Lith. *niežéti* ‘to itch’. Latvian *niêzt* ‘to itch’ has an acute root that is reflected in some but not all nominal derivatives (Smoczyński 2018: 863). This could be secondary but no explanation has been presented.

Oss. I *nīz* / D *nez* ‘disease’ seems to be a general designation of sickness which can be specified to certain body parts, e.g., *særnīz* ‘headache, migraine’ (Abaev II: 186). YAv. *naēza-* denotes an unknown disease and is as such difficult to assess. Perhaps the meaning is derived from the homonymous *naēza-* m. ‘lumps, mushy mass’. YAv. *naēza-* n. ‘sharp point (of a needle)’ is another possible root cognate, but it is semantically closer to Skt. *nikṣ-* ‘to pierce’. In any case, there is no indication that the Iranian words have anything to do with ‘to itch’, which makes the comparison with Baltic uncompelling.

3.5.63. **oti-loik^{w}-o-* ‘leftover, surplus’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Greek)	Rejected	Rejected	^{N}Derivation

Indo-Aryan: Skt. *atireka-* m. ‘abundance, surplus’

Iranian: Bactr. αδοριγο m. ‘PN’ (?)[179]

Baltic: Lith. *ãtlaikas* m. ‘remnant, leftover’

Slavic: OCS *otъlěkъ* m. ‘remnant, leftover’

These Sanskrit and Balto-Slavic compounds were taken as an isogloss by Arntz (1933: 56) and Porzig (1954: 167). However, since Skt. *áti-* corresponds to Gr. ἔτι, Lat. *et* and Goth. *iþ* (EWAia I: 57), whereas the Balto-Slavic prefix has *o*-grade but no final *-i*, the formations cannot be compared directly, and are most likely independent. Both compounds contain **loik^{w}-o-*, which is also reflected in Gr. λοιπός ‘remaining’.

3.5.64. **ped-ti-* ‘walking on foot’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Rejected	^{N}Derivation

Indo-Aryan: Skt. *pattí-* m. ‘pedestrian, foot soldier’

Iranian: OP *pasti-* m. ‘foot soldier’; Oss. I *fistæg* / D *fest*(*æg*) ‘pedestrian’

Baltic: Lith. *pė́sčias* adj. ‘pedestrian, walking on foot’

Slavic: OCS *pěšь* adj. ‘on foot’; Ru. *péšij* adj. ‘on foot’; Pol. *pieszy* adj. ‘on foot’; SCr. *pjȅše* adv. ‘on foot’

Skt. *pattí-* and Lith. *pė́sčias* have been derived from a stem **ped-ti-*, which is not found in other branches (LEW: 562; EWAia II: 74). In earlier accounts, the Lithuanian acute is explained from a lengthened **ē*, but Derksen (2015: 353) considers it as a result of Winter’s

[179] Cf. Sims-Williams (2007: 188); the interpretation is not certain.

Law. It is possible that Winter's Law would have been blocked in a cluster **dt* (due to early assimilation to **tt*), but in any case, the acute could easily have been restored at a later date (after, e.g., Lith. *pėdà* f. 'foot, footstep').

The etymology cannot be maintained, however, since Lith. *pė́sčias* is clearly derived from *pė́stas* 'on foot', like *stãčias* 'standing' from *statùs* 'standing' (cf. Smoczyński 2018: 951) or *mesčias* 'restrained, moderate' from *mẽstas* m./adj. 'measure; restrained, moderate'. The Slavic forms reflect **pěšь* < **ped-sio-*[180] (Vasmer II: 353; Derksen 2008: 398) and thus cannot be directly compared to Skt. *pattí-*. The Slavic stem **ped-sio-* could perhaps be understood as deriving from an *s*-stem **ped-os-*, although no such form is attested. Possibly, Lith. *pė́stas* could be derived from **ped-s*(*i*)*o-* as well, if we assume metathesis of **ds* > *st*, since **-Ts*-clusters are not tolerated in Baltic (Tijmen Pronk, p.c.).

Since the derivation of Lith. *pė́sčias* from *pė́stas* is a Baltic process, which does not involve a *ti*-stem, a shared innovation with Indo-Iranian must be rejected.

3.5.65. **pĕ́*(*n*)*s-*(*n*)*u-* 'dust, sand'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	[N]Derivation Root

Indo-Aryan: Skt. *pāṃsú-* m. 'dust, sand'

Iranian: YAv. *pąsnu-* m. 'dust'; Khot. *phāna* 'dust, mud'; Oss. I *fænyk* / D *funuk* 'ash'

Baltic: –

Slavic: OCS *pěsъkъ* m. 'sand'; Ru. *pesók* m. 'sand'; Pol. *piasek* m. 'sand'; SCr. *pijèsak* m. 'sand'

Schmidt (1872: 48) and Arntz (1933: 36) listed the above Indo-Iranian and Slavic words as an isogloss. However, the etymology is now considered uncertain (EWAia II: 114–15). In fact, the Indo-Iranian words are difficult to unite under single Proto-Indo-Iranian form. Assuming that Sogd. B *spn'k* 'dirt, filth' does not belong here, the Avestan, Khotanese and Ossetic words can probably all be derived from **pansnu-* (Kümmel 2012b), but the varying suffix *vis-à-vis* Skt. *pāṃsú-* remains unexplained. The variation within Indo-Iranian points to post-Proto-Indo-Iranian loanwords. Even if the inner-Indo-Iranian variation is taken as secondary, the Sanskrit and Avestan forms have an **-n-* in the root, which is not reflected in Slavic. The words may be indirectly connected as independent borrowings, but can hardly go back to a putative Indo-Slavic stage.

[180] Just like in the case of Lith. *pė́sčias*, the effect of Winter's Law may have been analogically restored, if it was regularly blocked in this environment. Forms like Cz. *pěchý* 'on foot' and Ru. *pexóta* 'infantry' are secondary (cf. Vasmer II: 350).

3.5.66. **perg$^{(w)}$enio-* / **perk$^{(w)}$uHno-* ‘a (thunder) god’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Uncertain[181]	Rejected	Possible	Root

Indo-Aryan: Skt. *parjánya-* m. ‘rain cloud, rain, rain god’

Iranian: –

Baltic: Lith. *perkū́nas* m. ‘thunder, thunder god’

Slavic: ORu. *perunъ* m. ‘a god’

Meillet (1926: 171) mentions this word as an isogloss, but does not comment on the formal problems. EWAia (II: 96-97 with lit.) does not completely rule out the possibility that Skt. *parjánya-* reflects older **parc-ánya-*, following a taboo deformation. At best, the words may then contain the same root, but even this is highly speculative.

3.5.67. **post-sk$^{(w)}$(-eH)* ‘behind, after, afterwards’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Rejected	^{N}Derivation

Indo-Aryan: Skt. *paścā́* adv. ‘behind, after, later’, *paścā́t* adv. ‘from behind, backwards’

Iranian: YAv. *pasca* adv. ‘after, behind’, *paskāṯ* adv. ‘from behind’

Baltic: Lith. *paskuĩ, pãskui, pãsakui* adv. ‘behind, backwards, later, afterwards’

Slavic: –

Schmidt (1872: 48) takes this adverb as an isogloss, arguing that Lat. *post* ‘behind, after’ is unrelated. However, while it lacks the suffix **-sk$^{(w)}$-*, it is likely that Lat. *post* contains the same root as Skt. *paścā́* (cf. de Vaan 2008: 483–84). The derivation in **-sk$^{(w)}$-* would then be the potential Indo-Slavic isogloss. However, Lith. *paskuĩ* and the variant *pãsakui* seem to be derived within Baltic from *pasèkti* ‘to follow’, by analogy to *viduĩ* ‘inside, within’ (Smoczyński 2018: 918; Hock et al. 2019: s.v. *paskuĩ*). The formations should therefore be regarded as independent.

[181] The question regarding a possible link between Lith. *perkū́nas* and Lat. *quercus* f. ‘oak’ etc. will not be treated here.

3.5.68. **poti-* ‘self’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Rejected	Semantics

Indo-Aryan: –

Iranian: YAv. *xᵛaē-paiti-* adj. ‘himself, herself’, *xᵛaē-paiθiia-* adj. ‘own’; OP *uvaipašiya-* adj. ‘own’

Baltic: Lith. *pàts*, OLith. *patìs* m. ‘husband; self’, *pàt* adv. ‘self, just’; Latv. *pats* m. ‘husband; self’, *pat* adv. ‘self, just’

Slavic: –

Meillet (1926: 167) argues that Iranian and Baltic share a semantic development in PIE **poti-* ‘husband, master’, which in both branches is also used in the meaning ‘self’. However, in Iranian, *paiti-* only means ‘self’ in a compound with *xᵛaē-* < **suai-* (see AirWb.: 1860–61), which likely means that it developed independently from Baltic.

Fraenkel (LEW: 552), on the other hand, suggests that **poti-* originally meant ‘self’, from which ‘lord, husband’ subsequently developed. Since the latter meaning is widespread in Indo-European, this scenario implies that the Baltic-Iranian correspondence is an archaism. In line with this etymology, it has been proposed that **poti-* is an inflected enclitic particle **-pot* ‘exclusively, specifically’, reflected in Hitt. *=pat* ‘the same, self, exclusively’ (Pinault 2021), but the lenis stop of Hittite is incompatible with PIE **p* (Kloekhorst 2008: 653).

3.5.69. **prh₂-uo-* ‘first, foremost’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Tocharian, Germanic)	Compelling	Possible	^{N}Derivation

Indo-Aryan: Skt. *pū́rva-* adj. ‘first, foremost’

Iranian: YAv. *pauruua-* adj. ‘foremost, first, previous’

Baltic: (Lith. *pìrmas* adj. ‘first’; Latv. *pìrmaĩs* adj. ‘first’; OPr. *pirmas, pirmois* adj. ‘first’)

Slavic: OCS *prъvъ* adj. ‘first’; Ru. *pérvyj* adj. ‘first’; Pol. *pierwszy* adj. ‘first’; SCr. *prȋvī* adj. ‘first’

Schmidt (1872: 48) and Meillet (1926: 172) claim that only Balto-Slavic (Derksen 2008: 430) and Indo-Iranian (EWAia II: 157; AirWb.: 870–72) reflect a stem **prh₂-uo-* ‘first’, which was later replaced by **prh₂-mo-* in Baltic. However, ToA *pärwat* ‘first’, with secondary *-t* after other ordinals, cannot be separated from this cognate set (Adams 2013: 383). OE *forwost, forwest* m. ‘chief, captain’ may also be derived from a Germanic reflex of **prh₂-uo-* (IEW: 810–16; Holthausen 1934: 113). Alb. *párë* ‘first’ has been derived from **prh₂-uo-*, but since *CRHC*-clusters regularly yield Albanian *CRaC* (cf. de Vaan 2018: 1738), this is impossible. Demiraj (1997: 311) mentions that **prh₂-u-* could account for Alb. *párë*, but the easiest solution (thus also Orel 1998: 311) is that it is derived within

Albanian from Alb. *para* / *pár*(*ë*) ‘before, previous, forth’ < **prH-os* ‘former’, also reflected in Gr. πάροϛ ‘before, formerly’, Skt. *purás* ‘forth, before’.

3.5.70. **pusk-o-* ‘flower; tuft’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	[N]Derivation

Indo-Aryan: Skt. *púṣkara-* n. ‘lotus flower’

Iranian: –

Baltic: Latv. *pusks* m. ‘tuft’

Slavic: –

Arntz (1933: 55) listed these words as an Indo-Slavic isogloss, including Lith. *pùškas* ‘pimple, blister’, which is unrelated (cf. Smoczyński 2018: 1046). Skt. *púṣkara-* has been derived from *poṣ-* ‘to bloom, thrive’ < **h₃peus-* (EWAia II: 152; LIV: 303). Based on this, it would be possible to postulate a stem **pus-ko-* that is shared with Latvian. However, the formation is obscure, since *-ka-* is not a primary nominal suffix in Indo-Iranian. Together with Skt. *púṣpa-* ‘flower’, *púṣkara-* could be seen as a non-Indo-European loanword (cf. Lubotsky 2001b: 305).

3.5.71. **seu-io-* ‘left’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Celtic, Tocharian)	Compelling	Possible	[N]Derivation

Indo-Aryan: Skt. *savyá-* adj./m. ‘left; left hand’

Iranian: YAv. *haoiia-* adj. ‘left’

Baltic: –

Slavic: CS *šui* adj. ‘left’; Sln. *šûj* adj. ‘left’

The correspondence between Indo-Iranian (EWAia II: 716; AirWb.: 1736) and Slavic (Derksen 2008: 487–88) is taken as an isogloss by Arntz (1933: 36) and Porzig (1954: 168). However, the words cannot be separated from MWelsh *aswy*, *asw* ‘left, sinister, clumsy’, MBret. *hasou* ‘left’, which go back to a prefixed form **ad-seu-io-* (Matasović 2009: 44). Matasović (2009: 360) suggests that the Celtic words may be derived from PCelt. **suwo-* ‘to turn, wind’, but there is no compelling reason to reject the connection to Skt. *savyá-*. A further possible cognate is ToB *saiwai* (indecl.) ‘left’, if derived with metathesis from **sou-io-* (Adams 2013: 767).

3.5.72. *(s)*poh₁i-men-* ‘foam’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Italic, Germanic)	Compelling	Rejected	[N]Derivation

Indo-Aryan: Skt. *phéna-* m. ‘foam, froth’

Iranian: MoP *fīn* ‘snot’, *fīnak* ‘sea foam’; Sogd. B *pym’kh* ‘foam, froth’; Oss. I *fynk* / D *finkæ* ‘foam’

Baltic: Lith. (dial.) *spáinė* f. ‘foam (on waves)’; OPr. *spoayno* f. ‘foam (of fermenting beer)’

Slavic: OCS *pěny* f.pl. ‘foam’; Ru. *péna* f. ‘foam’; Pol. *piana* f. ‘foam’; SCr. *pjěna* f. ‘foam’

Schmidt (1872: 48) and Arntz (1933: 49) listed this stem as an Indo-Slavic isogloss. For the attested forms, see EWAia II: 204, Abaev I: 498, and Derksen (2008: 397; 2015: 418). These words cannot be separated from Lat. *spūma* f. ‘foam’ and PGm. **faima*(*n*)- m. ‘foam’, however (cf. Kroonen 2013: 123–24). Porzig (1954: 166) argued that Indo-Iranian and Balto-Slavic share a simplification of the cluster **-mn-* > **-n-*, whereas Latin and Germanic show a different dissimilation of **-mn-* > **-m-*. However, the cluster simplification **-mn-* > **-n-* was a Proto-Indo-European development, conditioned by a labial in the root, cf. PIE **bʰudʰ-mēn-*, gen. **bʰudʰ*-(*m*)*n-os* ‘bottom’ > (Pre-)PGm. **budmē*, gen. **buttaz*, Lat. *fundus* m., Skt. *budhná-* m. (cf. AiGr. II, 2: 766; Kroonen 2006). This suggests that Lat. *spūma* and PGm. **faima*(*n*)- levelled the strong stem of **(s)poh₁i-men-* throughout the paradigm.

Thus, rather than the dissimilation itself, it is the generalization of the dissimilated weak stem that is a potential Indo-Slavic isogloss. This cannot be a shared innovation, however. Within Iranian, there is variation between forms with **-m-* (Sogd. B *pym’kh* ‘foam, froth) and **-n-* (e.g., Oss. I *fynk* / D *finkæ* ‘foam’), showing that the athematic paradigm must have been retained into Proto-Iranian. Furthermore, the aspiration in Sanskrit and fricativization in Iranian point to PIIr. **pHai-na-*, whereas the Balto-Slavic acute points to **(s)poh₁i-neh₂-* (cf. Lubotsky 2011: 115).

3.5.73. **tekʷ-* ‘to run (of water), flow’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Tocharian)	Compelling	Possible	Semantics

Indo-Aryan: Skt. *tak-* ‘to run (of animals, rivers)’

Iranian: YAv. *tak-* ‘to run (of animals), flow (of water)’

Baltic: Lith. *tekéti, tẽka* ‘to run, flow’

Slavic: OCS *tešti, tekǫ* ‘to flow, run’; ORu. *teči, teku* ‘to flow, move, run’; Pol. *ciec, ciekę* ‘to flow, run’; SCr. *tèći, tèčēm* ‘to flow, run’

The root **tekʷ-* is well attested and possibly Indo-Anatolian, cf. Hitt. *ḫatku-* ‘to jump, flee’ (Kloekhorst 2008: 990). Other cognates include OIr. *teichid* ‘to flee’ and Alb. *ndjek* ‘to

follow, pursue' (LIV: 620). Although a verbal stem is attested in other branches (*pace* Schmidt 1872: 49), Porzig (1954: 167) argues that Indo-Iranian and Balto-Slavic share a semantic development from 'to run, flee' > 'to flow' (EWAia I: 610; AirWb.: 624–26; LEW: 1074; Derksen 2008: 489; 2015: 462). However, ToB *cake* n. 'river' < **tek^{w}-os-* must now be adduced (Adams 2013: 267), with **k^{w}* > *k* before **o*, which shows that the meaning 'to flow' is not exclusive to Indo-Iranian and Balto-Slavic.

3.5.74. **t(e)nH-u-ko-* 'thin'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Rejected	^{N}Derivation

Indo-Aryan: Skt. *tanuka-* adj. 'thin' (Car.), *tanú-* adj. 'thin'

Iranian: MiP Pahl. *tanuk* adj. 'thin, shallow'; MoP *tanuk* adj. 'thin, shallow'

Baltic: –

Slavic: Ru. *tónkij* adj. 'thin, slender, fine'; Pol. *cienki* adj. 'thin, slender, fine'; SCr. *tȁnak* adj. 'thin, slender, fine'

A *u*-stem adjective **t(e)nH-u-* may be reconstructed for Proto-Indo-European, cf. Skt. *tanú-*, Lith. *tę́vas*, Lat. *tenuis*, Gr. ταναός, OIr. *tanae* 'thin', but the *ko*-suffixed variant is a potential Indo-Slavic isogloss, as recognized by Arntz (1933: 46). In Slavic, *u*-stem adjectives were consistently extended by **-ko-/-keh$_2$-*, however (Langston 2018: 1545). Given that Slavic reflects a zero-grade in the root (Derksen 2008: 505), whereas Lith. *tę́vas* (LEW: 1086) has *e*-grade, we must reckon with an ablauting stem in Proto-Balto-Slavic. With this in mind, it seems unlikely that the thematicization by **-ko-* happened before the separation of Baltic and Slavic. It cannot be determined whether Indo-Iranian had root ablaut, since the zero-grade **tnH-u-* would have merged with the full grade. However, Skt. *tanuka-* is attested late beside the older, unenlarged *tanú-* (EWAia I: 620–21). Thus, the evidence suggests that the *ko*-extensions are independent innovations.

3.5.75. **tetḱ-* 'to cut, hew, carpenter'

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Rejected	^{V}Derivation

Indo-Aryan: Skt. 3sg.pres.ind. *tāṣṭi* (AB), 3pl. *tákṣati* 'to carpenter, hew, fashion' (RV)

Iranian: OAv. 3sg.pres.ind. *°tāšti*, 3sg.pres.inj. *tāšt* 'to fashion, make'; Sogd. *t'š-* 'to cut'; Khot. *ttäṣ-* 'to cut'

Baltic: Lith. *tašýti*, *tãšo* 'to hew'; Latv. *test*, *tešu* 'to hew, smoothen, beat'

Slavic: OCS *tesati*, *tešǫ* 'to hew'; Ru. *tesát'*, *tešú* 'to hew'; Pol. *ciosać*, *ciosam* 'to hew'; SCr. *tèsati*, *tẽšēm* 'to cut, trim, polish'

Meillet (1926: 172) and Arntz (1933: 46) observed that verbal stems from the root **tetḱ-* are only attested in Indo-Iranian (EWAia I: 612; AirWb.: 644–45) and Balto-Slavic

(Derksen 2015: 459).[182] Traditionally, Lat. *texō* ‘to weave’ has also been derived from **tetḱ-* (IEW: 1058–59), but it is nowadays instead reconstructed as **teks-* (LIV: 619) or **teḱs-* (de Vaan 2008: 619) and compared to Hitt. *takš-*^{zi} ‘to devise, unify, undertake, mingle’, originally ‘to put together’ (Kimball 1999: 258).

While verbal stems from **tetḱ-* are restricted to Indo-Iranian and Balto-Slavic, the root is also found in Gr. τέκτων m. ‘carpenter, manufacturer, artist’, cognate with Skt. *tákṣan-* m. ‘carpenter’ and Av. *tašan-* m. ‘creator’.[183] Nominal derivatives in other branches like OHG *dehsala* f. ‘axe’ and OIr. *tál* m. ‘axe’ < PCelt. **tāxslo-*, may be derived from either **teks-* or **tetḱ-*.

The ablaut in the paradigm of Skt. 3sg. *tāṣṭi* (AB),[184] 3pl. *tákṣati* (RV) is rare, and has been argued to continue a Proto-Indo-European static paradigm with an alternation of **é́* and **é* in the root (Narten 1968). However, if we examine the reconstructed paradigm of Skt. *tāṣṭi*, two features stand out: 1) in the 3sg. **té(t)ḱ-ti*, the apparent lengthened grade coincides with loss of **-t-* in the root, and 2) in the 3pl. **tétḱ-nti*, **-t-* is retained, and the zero-grade ending **-nti* is used, which is otherwise only found in reduplicated presents. Rather than root ablaut, this suggests that the stem was originally reduplicated, i.e., 3sg. **té-tḱ-ti*,[185] 3pl. **té-tḱ-nti*. In the singular, **-t-* was lost with compensatory lengthening in the cluster **-tḱt-*. This did not happen in the plural, where the cluster **-tḱn-* was tolerated because the **n̥* was vocalic.[186] This scenario implies that **tetḱ-* is a secondary root from **teḱ-*, extracted from a reduplicated verbal stem. As such, the existence of nominal derivatives from the secondary root **tetḱ-* in Greek (τέκτων), as well as possibly Celtic and Germanic, presupposes the previous existence verbal stems from **tetḱ-* in Proto-Indo-European. Therefore, the shared Indo-Slavic preservation of verbal stems from **tetḱ-* must be an archaism.

3.5.76. **teuh₂-* ‘to become fat’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Compelling	Rejected	^{V}Derivation

Indo-Aryan: Skt. *út tavīti* ‘to become strong’

Iranian: OAv. *tauuā* 1sg.pres.subj.act. ‘I will be able’

Baltic: –

Slavic: RuCS *tyti* ‘to become fat’; Pol. *tyć*, *tyję* ‘to become fat’; SCr. *tȉti* ‘to become fat’

Verbal forms of the root **teuh₂-* are only attested in Indo-Iranian and Slavic (LIV: 639–40), which constitutes a potential isogloss. The root can hardly be separated from **teuk-*,

[182] It should be noted that no direct stem cognates are attested, but the Balto-Slavic forms may ultimately be derived from the same paradigm as Skt. 3sg. *tāṣṭi*, 3pl. *tákṣati*. The Balto-Slavic forms can technically be derived directly from **teḱ-*, cf. Gr. aor. ἔτεκον ‘bore, begat’, but they are semantically closer to **tetḱ-* to cut, hew, carpenter’.

[183] Arm. *hiwsn* ‘carpenter’ is often adduced but does not belong here (cf. Martirosyan 2010: 410).

[184] Despite the relatively late attestation, *tāṣṭi* must be archaic in view of OAv. 3sg.inj. *tāšt*, YAv. 3sg.pres. *tāšti*.

[185] This form is admittedly problematic, as the expected ablaut in 3sg. of a reduplicated present would be **te/i-teḱ-*.

[186] Cf. Kortlandt (2004 apud Lubotsky, p.c.). For a similar account of the origin of **tetḱ-*, see LIV: 638 (with lit.), although here an original reduplicated aorist is assumed, from which a Narten present was derived.

reflected in Lith. *tùkti* ‘to become fat’, nor from **tuem-*, reflected in Lat. *tumēscō* ‘to swell’. Although the origin of these root variants is unclear, they seem to be connected to the verbal system, cf. **gʷem-* vs. **gʷeh₂-* ‘to go’. Accordingly, it is likely that the nominal formations from **teuh₂-*, e.g., Gr. ταῦς ‘great, much’, are ultimately deverbal, and that the corresponding verbal formations were lost in other branches. This implies that the Indo-Slavic verbal stems from **teuh₂-* are archaisms.

3.5.77. **tokʷ-o-* ‘course’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	^{N}Derivation

Indo-Aryan: –

Iranian: YAv. *taka-* m. ‘running, course’

Baltic: Lith. *tãkas* m. ‘(foot-)path’; Latv. *taks* m. ‘(foot-)path’

Slavic: OCS *tokъ* m. ‘current, course’; Ru. *tok* m. ‘current, course’; Pol. *tok* n. ‘current, course’; SCr. *tôk* m. ‘current, course’

The words are listed as an Indo-Slavic isogloss by Arntz (1933: 46). See also LEW: 1051–52 and Derksen (2015: 457). However, the short **ă* in Iranian cannot reflect **o*, as it would have been lengthened by Brugmann’s Law. YAv. *taka-* is rather related to RuCS *tekъ* m. ‘course’ etc. (Derksen 2008: 490), which cannot be separated from OIr. *intech* n. ‘road’.

3.5.78. **top-eie/o-* ‘to make hot’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
No (Germanic)	Compelling	Possible	^{V}Derivation

Indo-Aryan: Skt. *tāpáyati* ‘to heat up, torture’ (AV+)

Iranian: YAv. *tāpaiieiti* ‘to make hot’

Baltic: –

Slavic: Ru. *topít’*, *topljú* ‘to stoke, heat, melt’; Pol. *topić*, *topię* ‘to melt, fuse’; SCr. *tòpiti*, *tòpīm* ‘to melt’

According to Arntz (1933: 56), Indo-Iranian (EWAia I: 623–24; Cheung 2007: 378–80) and Slavic (Derksen 2008: 496) share a causative stem not found in other branches (cf. LIV: 630). However, ON *þefja* ‘to cook thick’, though only attested as a past participle,[187] seems to reflect a similar formation. Therefore, **top-eie/o-* is not exclusively Indo-Slavic.

[187] Cf. *hann hafði þá eigi þafðan sinn graut* ‘he had not cooked his porridge thick’.

3.5.79. **tous-eie/o-* ‘to make calm, silent’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Doubtful	Rejected	^{V}Derivation

Indo-Aryan: Skt. *toṣáyati* ‘to appease, satisfy’ (Sū.+)

Iranian: –

Baltic: Lith. *tausýtis, taũsos* ‘to become calm (of wind)’

Slavic: Ru. *tušít’, tušú* ‘to quench, extinguish’; Pol. *potuszyć, potuszę* ‘to comfort’; Sln. *potúšiti* ‘to quench, extinguish’

Arntz (1933: 46) listed this causative stem as an Indo-Slavic isogloss. While the forms are surely derived from the same Indo-European root **teus-* ‘to be calm’ (EWAia I: 672; Vasmer III: 158; Smoczyński 2018: 1457), it cannot be excluded that they reflect independent derivatives. The late attestation of Skt. *toṣáyati* ‘to appease, satisfy’ suggests that this is indeed the case.

3.5.80. **tr-ne-d-* ‘to pierce, split’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Rejected	^{V}Derivation

Indo-Aryan: Skt. *tṛṇátti* ‘to pierce, split, open’

Iranian: –

Baltic: Lith. *trendė́ti, -ė́ja* ‘to be eaten up by moths or worms’

Slavic: –

According to the etymology supported by Fraenkel (LEW: 1117) and Mayrhofer (EWAia I: 634), Lith. *trendė́ti* ‘to be eaten up by moths or worms’ reflects a neo-root **trend-* that was extracted from a nasal present stem corresponding to Skt. *tṛṇátti* ‘to pierce, split, open’. This was listed as an Indo-Slavic isogloss by Arntz (1933: 46). However, as argued by Smoczyński (2018: 1511), Lith. *trendė́ti* cannot be separated from *trenė́ti* ‘to rot, decay (of wood); to become tattered (of clothes)’, from which it is likely derived. This development may have been shared with Slavic in view of OCS *trǫdъ* m. ‘tree fungus; illness’ etc. (Derksen 2015: 469). Accordingly, the connection to Skt. *tṛṇátti* should be rejected.

3.5.81. **uer-* ‘to choose, put faith in’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	Root

Indo-Aryan: Skt. *var^{i}-* ‘to choose’

Iranian: OAv., YAv. *var-* ‘to choose’, *fraorənta* ‘he professed his faith’

Baltic: –

Slavic: OCS *věra* f. ‘faith, belief’; SCr. *vjȅra* f. ‘id.’

Meillet (1926: 170–71) argued that Skt. *var^{i}-* etc. is related to OCS *věra* ‘faith, belief’, citing the Avestan form *fraorənta* ‘he professed his faith’ as a semantic link between the two. However, I see no reason to prefer this etymology over the traditional view that OCS *věra* is related to OIr. *fír* ‘true’, Lat. *vērus* ‘true’, OHG *wāra* f. ‘treaty, loyalty, protection’, etc. (cf. Derksen 2008: 520).

3.5.82. **ure/o-to/eh₂-* ‘vow’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Possible	^{N}Derivation

Indo-Aryan: Skt. *vratá-* n. ‘vow, religious observance, commandment’

Iranian: OAv. *uruuata-* n. ‘rule, order, indication’; Oss. I *iræd* / D *ærwæd* ‘bride price’

Baltic: Lith. *ratà* f. ‘formula, oath, vow’

Slavic: ORu. *rota* f. ‘oath’; Pol. *rota* f. ‘oath’; SCr. *rota* f. ‘oath’

Arntz (1933: 54) listed the above words as an Indo-Slavic isogloss. In older literature, the etymology has often been accepted (LEW: 702; Vasmer II: 539), but it is not mentioned by Mayrhofer (EWAia II: 595). Indeed, despite the semantic similarity, the Indo-Iranian and Balto-Slavic words can hardly be equated. Indo-Iranian **urata-* presupposes Pre-PIIr. **ureto-*, which excludes the often-assumed relatedness to Gr. ῥήτρα f. ‘verdict, agreement’, ῥητός ‘appointed’ < **uerh₁-* ‘to say’. The deeper etymology of PIIr. **urata-* is unknown. The Balto-Slavic forms, on the other hand, of which Lith. *ratà* ‘formula, oath, vow’ is apparently a Slavic borrowing (LEW: 702), have *o*-grade in the root. It is perhaps more plausible to take ORu. *rota* ‘oath’ etc. as borrowings from Iranian (as suggested by Schlerath 2001: 289).

3.5.83. **urH-uo/eh₂-* ‘enclosure; hole, burrow’

Indo-Slavic exclusivity	Etymology	Shared innovation	Typology
Yes	Rejected	Rejected	^{N}Derivation

Indo-Aryan: Skt. *ūrvá-* m. ‘container, enclosure, dungeon’

Iranian: –

Baltic: Lith. *ùrvas, uřvas* m., *ùrva, urvà* f. ‘hole, burrow, cave’; Latv. *urva* f. ‘hole in the ground, pit’

Slavic: –

Arntz (1933: 52) listed the above words as an Indo-Slavic isogloss. However, the forms can hardly be reconciled formally, as unaccented **-rHu-* would regularly give Skt. *-urv-* in prevocalic position, cf. *urvárā-* f. ‘arable land, field yielding crop’ < **h₂rh₃-uer-eh₂-*. Lubotsky (1997) argues that the long *ū* is secondary from Skt. *ūrṇóti* ‘to cover’, deriving *ūrvá-* from **uel-* ‘to cover’, which would imply that a connection to the Baltic words (with *-r-*) is excluded (similarly EWAia I: 245). The Baltic vocalism also looks irregular, cf. Lith. *vìlna* f. ‘wool’ < **Hulh₁-neh₂-*. Following Smoczyński (2018: 1571), the semantic

difference between Skt. *ūrvá-*, whose basic meaning seems to be ‘enclosure’, and the Baltic word, which seems to derive from an adjective meaning ‘hollowed out’, is a further counterargument against the etymology.