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Indo-European Interfaces

Integrating Linguistics, Mythology and Archaeology

Jenny Larsson, Thomas Olander & Anders Richardt Jørgensen (eds.)

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1. The many interfaces of Indo-European

Jenny Larsson
Stockholm University

Abstract

This inaugural chapter introduces *Indo-European Interfaces*. By emphasizing an interdisciplinary approach that combines historical linguistics, archaeology, and comparative religion it intends to set the stage for future research and debate in this evolving field.

1. The Indo-European language family

The Indo-European language family comprises several hundred languages spoken all over the world, including English, Irish, Urdu, Kurdish, French, and Russian. Each of these languages traces its lineage back to a respective proto-language, such as Proto-Germanic, Proto-Celtic, etc. Accordingly, the Indo-European languages can be categorized into different sub-families: Germanic, Italic, Celtic, Greek, Armenian, Albanian, Indo-Iranian, Balto-Slavic, and the extinct Anatolian and Tocharian branches. Above these families on the genealogical tree stands Proto-Indo-European, the reconstructed common progenitor of all the branches, which, though not preserved in writing, has been linguistically deduced from its linguistic descendants. Scholars universally acknowledge the kinship among these languages, yet the historical narrative detailing their dispersion and the proliferation of the Indo-European languages in prehistoric times remains a subject of ongoing debate.

2. A new picture of prehistory is emerging

Current scientific advances are reshaping our understanding of prehistory. Most recently ancient genetics and isotope analysis have granted us new perspectives on prehistoric population migrations and contacts,

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and sparked a reinterpretation of the archaeological record. These advances provide us with unprecedented insights into the movements and kinship patterns of prehistoric populations.

This improved understanding is largely due to the adoption of an interdisciplinary approach, which has proven invaluable in painting a more comprehensive picture of our past. In an era of rapid scientific progress, historical linguists are increasingly embracing cross-disciplinary approaches, recognizing the immense potential they hold for forging new research avenues. At Stockholm University, scholars working in this new multi-disciplinary framework combining methods and materials from a wide range of disciplines, are brought together at the newly established *Centre for Studies in Indo-European Language and Culture*. At a time when scientific development is accelerating, historical linguists cannot afford to shut themselves off from progress in other disciplines; on the contrary, we should promote and welcome all initiatives for cross-disciplinary collaboration. The present volume is an embodiment of such collaboration, brought forth by the interdisciplinary research project LAMP – *Languages and Myths of Prehistory* and supported by Riksbankens Jubileumsfond.

3. Indo-European interfaces

In preparation for this book, we invited scholars with expertise in various fields, such as historical linguistics, comparative religion, and archaeology. Their contributions address topics where these fields intersect, concentrating on the initial diversification of Indo-European languages and cultures.

The present volume also launches the series *Stockholm Studies in Indo-European Language Studies*, establishing a new venue for scholarly research dedicated to the study of the Indo-European language family from a multitude of perspectives, including linguistics, archaeology, ancient DNA, and comparative mythology. We hope that this collected volume will provide a new outlook on the early speakers of Indo-European languages and inspire cross-disciplinary dialogue, expanding the horizon of Indo-European studies.

2. The distribution of goods and lordship in Indo-European
'Givers of goods' and Vedic *vásu sav^{i}-*, Toch. B *saswe* 'lord', and Hittite *aššu šuwe-*

Timothy G. Barnes
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Abstract

In 1872, Theodor Benfey noticed the remarkable three-way parallel of Vedic *dātā́ vásu* / *vásūni* and *dātā́ vásūnām* = Avestan *vohunąm dātārō*, *dāta vaŋhuuąm* = Greek δωτῆρες / δῶτορ ἐάων (Hom., Hes.), all 'giver(s) of good(s)/wealth'. This inherited phrase participates in a larger phraseological system. The main focus of this paper is on the formula 'set in motion/supply the goods', PIE *$*h_1$o/esu-* (~ *$*h_1$u̯o/esu*) *seu̯h$_1$-*, which, I argue, is reflected in: (1) the Hitt. phrase *aššu šuwai* (KUB 45.23 passim), which appears amongst a series of "Bitten für die Genesung und das Wohlbefinden des Labarna", (2) Vedic *vásūni sav^{i}-* 'set in motion, supply the goods', and (3) Toch. B *saswe* 'lord' < *$*su-su̯-on-$ < *$*h_1su-suh_1$-+. Further, the use of the verb *$*seu̯h_1$* in this phrase must in turn be related to its appearance in several terms for 'lord, chief, authority' in Indo-Iranian: Ved. *svāmín-* (TB+) 'lord' << *$*su̯aH-mi-$, *sūrí-* 'Opferherr, Herr, Schirmherr' < *$*suh_1-ri-$; Proto-Iranian *$*hu̯aH-i̯ah-$ (: Bactr. χοιαχο etc.), *$*hu̯aH-išta-$ (: Avestan *huuoišta-* 'best; eldest', Khot. *hvāṣṭa-* 'best, chief, master', Sogd. *xwyštr* 'superior, chief', Ossetic Dig. *xestær*, Ir. *xistær* etc.).

1. Introduction

In 1872, Theodor Benfey (1809–1881) discovered a remarkable three-way phraseological parallel: Vedic *dā́tā vásu* / *vásūni* and *dātā́ vásūnām* = Avestan *vohunąm dātārō*, *dāta vaŋhuuąm* = Greek δωτῆρες/ δῶτορ ἐάων (Homer, Hesiod), all meaning 'giver(s) of good(s)' (Benfey 1872: 57 n. 58). Benfey's equation is well-known in the literature on

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"Indogermanische Dichtersprache" (e.g. Schmitt 1967: 142–148), and is also noteworthy, on the Greek side, as the likely vehicle for the preservation of the lexical archaism seen in ἐάων (Hoffmann 1976: 593–604; Nussbaum 1998: 130–145; Nussbaum 2014; and below, §3). The aim of the present contribution is to show how this 'giver of goods' formula is embedded in a larger phraseological system, both synchronically within Vedic, and diachronically, reaching back into the proto-language. First, the status of the formula within Vedic is assessed. This discussion will then allow us to focus on a second, related formula (represented in Vedic by the phrase *vásūni sav^{i}-* 'impel, set in motion the goods'), and with reflexes, both direct and indirect, in Iranian, Tocharian, and Hittite.[1]

Part I. Givers of goods

2. 'Givers of goods' in Vedic

First, I show that the Vedic phrase (which appears in two variants, the barytone type *dā́tā vásu* / *vásūni* and the oxytone *dātā́ vásūnām*)[2] forms part of a larger synchronic system within the Ṛgveda (RV). This system has two dimensions. First, what are the other things of which a god may be a 'giver' (§2.1)? Second, with what other verbs do *vásu*, *vásūni* (along with those parallel other things) appear as direct object (§2.2)? This second topic will, in turn, form the springboard for Part II, the investigation of the formula *vásūni sav^{i}-* 'impel, set in motion the goods' and its Indo-European background.

2.1. 'Giver of x'

2.1.1. Barytone dā́tar- *c. acc. objecti*

There are three examples in the Ṛgveda of barytone *dā́tar-* with *vásu* 'good(s), wealth' as direct object.[3] The barytone nomen agentis is generally

[1] I plan to treat the same material in greater detail in a chapter of my monograph on Indo-European poetics, currently in preparation. I hereby thank the organizers of the Indo-European Interfaces conference, from which this volume is drawn, for allowing me the opportunity to present these ideas on that occasion.

[2] On these types, see Tichy's monographic treatment of 1995, and the brief indications at the relevant points *infra*, §2.1.1, §2.1.2.

[3] N.b. the surface form *vásu* is ambiguous between the regular neuter singular and the variant form of the inherited plural (i.e., with ending *-u* for *-ū*), when there is no adjective to disambiguate (AiGr III: 161 (§80), with references to earlier discussions). Since the short vowel variant is prevalent at pada end, it is possible that this originated in the phenomenon of laryngeal loss in pausa (see Jeon 2001: 87–89).

held to designate a habitual agent (*tacchīlam*, per Pāṇini 3.2.135)[4] – see for example Tichy's treatment (1995: passim) – but a proper assessment of this view cannot be undertaken within the compass of the present contribution. In all three instances the epithet is applied to Indra. In 6.23.3 the recipient is the *stuvant-* 'praiser', in 7.20.2 it is the *dāśvā́ṁs-* 'offerer, pious man', and in 10.55.6 there is no overt recipient:

pā́tā sutám índro astu sómam praṇenī́r ugró jaritā́ram ūtī́

kártā vīrā́ya súṣvaya ulokáṃ ***dā́tā vásu*** *stuvaté kīráye cit* (RV 6.23.3)

'Let Indra be the drinker of the pressed soma, the mighty one ever leading the singer forward with his help, / the maker of the wide space for the hero (and) the soma-presser, **the giver of goods** to his praiser, even a feeble one'[5]

hántā vṛtrám índraḥ śū́śuvānaḥ prā́vīn nú vīró jaritā́ram ūtī́

kártā sudā́se áha vā́ ulokáṃ ***dā́tā vásu*** *múhur ā́ dāśúṣe bhūt* (7.20.2)

'The smasher of Vṛtra, Indra, swollen with strength-the hero has now aided the singer with help. / The maker of the wide space for Sudās, certainly that too! – in an instant he has become **the giver of goods** to the pious man.'

śā́kmanā śā́kó aruṇáḥ suparṇá ā́ yó maháḥ śū́raḥ sanā́d ánīḷaḥ

yác cikéta satyám ít tán ná móghaṃ ***vásu spārhám utá jétotá dā́tā*** (10.55.6)

'Through his power he is the powerful, ruddy eagle, who, as the nestless champion from of old, (has power) over the great. / What he perceives, that is truly real, not false. **He is both the winner and the giver of the eagerly sought good**.'

These three instances cannot, in turn, be separated from the instances of barytone *dā́tar-* with other direct objects in the same semantic sphere (cf. Tichy 1995: 263). In order not to overburden the discussion of the material, I include the full exemplification in an appendix. (It is noteworthy that in a number of these passages – as indeed in the three passages just quoted – the *tar*-agent nouns, being stylistically marked, tend to cluster together.)[6]

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[4] The whole sūtra, to be sure, distinguishes three different, but related, uses: *tacchīla-taddharma-tatsādhukāriṣu* 'having that (action) as his habit, duty or special skill'.

[5] The RV translations of Jamison-Brereton are given throughout.

[6] This is also the case in Avestan: cf., e.g., the sequence *spašta nąma ahmi, vīta nąma ahmi, dāta nąma ahmi, pāta nąma ahmi, θrāta nąma ahmi, žnāta nąma ahmi, žnōišta nąma ahmi* (Yt. 1.13).

Barytone *dā́tar-* is found with the following accusative objects:

- with *rā́dhas-* 'bounty': *dā́tā rā́dha stuvaté* (2.22.3, said of Indra), *dā́tā rā́dhāṃsi śumbhati* (1.22.8, said of Savitar)
- with *maghá-* 'gift, bounty, offering': *dā́tā yó vánitā maghám* (3.13.3, said of Agni), *dā́tā maghā́ni maghávā surā́dhāḥ* (4.17.8, said of Indra)
- with *ukthíya-* (sc. *vásu*) 'praiseworthy (good)': *dā́tā jaritrá ukthyàm* (8.66.2, said of Indra)

2.1.2. Oxytone dātár- *c. gen. objecti*

The oxytone stem *dātár-* is found with a similar range of genitive objects as its barytone counterpart. Agents of this type have various non-general functions expressing ability, actuality and the like; Tichy speaks of a 'situative Funktion' (Tichy 1995: 378 and elsewhere). As already indicated, these distinctions of meaning are worth further study in their own right but for the purposes of this study such an investigation is not a pressing concern.

A single example of oxytone *dātár-* with genitive object *vásūnām* is found, again said of Indra, and with the recipient of the gift specified by the 1pl. enclitic pronoun:

yó no ***dātā́ vásūnām*** *índraṃ táṃ hūmahe vayám*

vidmā́ hy àsya sumatíṃ návīyasīṃ gaméma gómati vrajé (8.51.5)

'He who is **the giver of goods** to us, that Indra we invoke, / for we know his ever newer favor. Might we go to a pen full of cattle.'

Further, the oxytone form appears frequently with other direct objects in the same semantic sphere (cf. Tichy 1995: 193):

- with *rā́dhas-*: *tváṃ* ***dātā́*** *prathamó* ***rā́dhasām*** *asy* (8.90.2, said of Indra)
- with *bhū́ri-* 'much, plenty': ***bhū́rer dātā́raṃ*** *sátpatiṃ gṛṇīṣe* (2.33.12, said of Rudra)
- with *rāyí-* 'wealth': *índro* ***rāyó*** *viśvávārasya* ***dātā́*** (6.23.10, said of Indra)
- with *rāyí-* and *íṣ-* 'refreshment, invigoration': *tvā́ṃ hí satyám adrivo vidmá* ***dātā́ram iṣā́m*** | *vidmá* ***dātā́raṃ rayīṇā́m*** (8.46.2, said of Indra)

- with *vājá-* 'prize': *índro* ***vā́jasya*** *sthávirasya* ***dātā́*** (6.37.5, said of Indra); *dātā́ vā́jasya gómataḥ* (5.23.2, said of Agni); *sá vā́jasya śravasyàsya dātā́* (8.96.20, said of Indra), *índra ín no mahā́nāṃ dātā́ vā́jānāṃ* (8.92.3, said of Indra)
- with *dātrá-* 'gift': *ási bhágo ási dātrásya dātā́* (9.97.55, said of Soma)

Given the complete parallelism of the expressions involving *vásu* / *vásūni* with those involving the related and, in most cases, more specific material prosperity terms (*rā́dhas-*, *maghá-*, etc.), one might suggest that *vásu* / *vásūni* represents the general term encompassing all such items. In what follows, let us refer to *vásu* / *vásūni* as 'the good(s)' and the set of material prosperity terms encompassed thereby as 'specific goods'.

2.2. VERB 'the good(s)'/ 'specific goods'

The second point to make about the synchronic system within Vedic is that 'give' is interchangeable with a number of other semantically similar verbs.

2.2.1. Semantically similar verbs exchangeable with 'give'

The formulaic template VERB 'the good(s)' is attested with a number of different verbs with similar semantics to 'give' filling the VERB slot. A selection of examples:

ay-[2] 'set in motion' (6.5.3cd *áta* ***inoṣi*** *vidhaté cikitvo vy ā́nuṣág jātavedo* ***vásūni***)

day- 'distribute' (6.30.1c *éko ajuryó* ***dayate vásūni***, etc.)

dhav^{i}*-* 'set in motion' (3.45.4cd ***dhūnuhī́****ndra* ***sampā́raṇaṃ vásu***)

dhā- 'place, establish' (6.7.3cd *vaíśvānara tvám asmā́su* ***dhehi vásūni*** *rājan* ***spṛhayā́yyāṇi***, etc. etc.)

nay^{i}*-*, *ā/abhi nay*^{i}*-* 'bring' (6.53.2 ***abhí*** *no* ***náryaṃ vásu*** *vīrám práyatadakṣiṇam* | *vāmáṃ gṛhápatiṃ* ***naya***, etc.)

vi bhaj- 'distribute' (10.85.29b *brahmábhyo* ***ví bhajā vásu***, etc.)

bhar-, *ā bhar-* 'bring' (7.77.4cd *yāváya dvéṣa* ***ā́ bharā vásūni*** *codáya rā́dho gṛṇaté maghoni*, etc.)

yam-, *pra yam-* 'give' (8.17.10 *dīrghás te astv aṅkuśó yénā* ***vásu prayáchasi*** | *yájamānāya sunvaté*, etc.)

vah- 'convey' (1.51.3c *saséna cid vimadā́yāvaho* ***vásv***, etc.)

sav^{i}- 'id.', *ā sav*^{i}- 'set in motion' (3.56.6, 5.42.3, 7.45.3 – see below, Part II)

Most of these verbs, of course, also appear with 'specific goods'; a detailed exemplification would be tedious: merely note, exempli gratia, to *day-* 'distribute' direct objects *vā́ryāni* (5.49.3), *maghā́ni* (7.21.77), *vā́jān* (8.2.31), and so on.

2.2.2. tar- *agent nouns governing 'the good(s) / specific goods'*

Particularly noteworthy is the frequency of *tar*-agent nouns in the type of phraseology under examination. Thus, in addition to the formulas discussed above, viz.:

dātár- *vā́jasya, dātrásya, bhū́reḥ, vásūnām, iṣā́m, rayīṇā́m, rā́dhasām, vā́jānām*

dā́tar- *vásu, rā́dhaḥ, maghám, maghā́ni*

we also find, to semantically similar verbs (e.g. *vi-bhaj-* 'distribute', *vah-* 'convey'):

vibhaktár- *vásoḥ, rā́dhasaḥ, rāyáḥ, maghā́nām*

víbhaktar- *bhāgám, vā́jam*

voḷhár- *iṣā́m*

vóḷhar- *vásu*

and so on (for further examples see Tichy 1995: 193 and 263). I will argue in Part II that the divine name (*devá-*) *savitár-* has been generated from this system.

2.3. Summary

By way of summary, the basic point to draw from the material presented in this paragraph is that, from the Vedic-internal (and, broadly speaking, synchronic) perspective, we are dealing with a formulaic system, a network of phraseology involving: a set of related material prosperity terms; verbs of giving, offering, conveying, setting in motion, etc.; and the preference for a stylistically marked morphological category, the *tar*-agent noun. The 'givers of goods' formula is *merely one piece of this system*. A question immediately arises: if the phrase under consideration is embedded in a synchronic system in the way described, does this suggest that Benfey's equation is a mirage? But the Avestan and especially the Greek parallel (which is patently archaic) should be enough to satisfy the sceptic that the 'giver of goods' formula was not coined within the recent prehistory of Vedic.[7] Instead, this situation should lead us to ask a different question: if the 'giver of goods' formula is inherited into Vedic, *how many of the other elements of the Vedic system outlined in this paragraph are inherited?* In what follows, I turn the attention to one possible further ingredient of the system in PIE, represented in Vedic by the phrase *vásūni sav^{i}-* 'impel, set in motion the goods'.

Since I will argue below that this 'giver/impeller/etc. of goods' phraseology is also operative "behind the scenes", as it were, in the creation of several words for 'lord', it will be useful to interject two notes expanding on the two halves of the 'giver of goods' formula discussed in this paragraph and their relation to notions of 'lordship'.

3. *Interiectum* 1. Givers and lordship

Much has been written on giving and gift-exchange in early Indo-European societies, in the wake of Mauss's classic *Essai sur le don*, especially as channelled by Benveniste in his influential discussions of the vocabulary of gift-exchange. Benveniste wrote of Mauss:

> Il a montré que le don n'est qu'un élément d'un système de prestations réciproques à la fois libres et contraignantes, la liberté du don obligeant le donataire à un contre-don, ce qui engendre un va-et-vient continu de dons offerts et de dons compensatoires. Là est le principe d'un *échange* qui,

[7] A full discussion of the Avestan and Greek material, however, cannot be undertaken here.

> généralisé non seulement entre les individus, mais entre les groupes et les classes, provoque une circulation de richesses à travers la société entière (Benveniste 1948–1949: 7)

However, when one turns to the phraseology we have been investigating here, what is striking is how inapplicable the Maussian notion of reciprocity is, at the verbal level: in the Ṛgveda, the simplex *dā-* and its nominal derivatives (*dāna-*, *dātra-*) are used almost exclusively[8] of one direction of the exchange: the one which proceeds from the stronger party.[9] The divine givers are of a radically different status from the mortal recipients. Rather than a constant "va-et-vient" of gifts and counter-gifts, we have rather a situation in which the divine gift cannot be reciprocated in a commensurate way: "do ut des" is, in literal Vedic terms, impossible.

The power dynamics implied by this sort of giving is most clearly articulated, perhaps unexpectedly, in a passage of Classical Sanskrit drama, the Mudrārākṣasa, where, significantly, we find an example of the Vedic 'giver of goods' formulaic template (underlined):

mauryo 'sau svāmiputraḥ – paricaraṇaparo mitraputras tavāhaṃ;

dātā so 'rthasya tubhyaṃ svamatam** anugatas – **tvaṃ tu mahyaṃ dadāsi;

*dāsyaṃ satkārapūrvaṃ nanu sacivapadaṃ tatra te – **svāmyam** atra (5.19)*

'That Maurya is the son of (your) lord – I, whose business is to serve (you), am the son of your friend;

he is a giver of wealth to you according to his own will, when attended (by you) **– but you give to me;**

your role as minister there is honorable servitude – here it is **lordship**.'

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[8] The only example of *dā-* used of a human offering to the gods I see in the RV is 10.116.5.

[9] Thus we may take the example of *dātra-* (frequently in a figura etymologica with a form of the verb *dā-*), which without exception, in the RV, designates the gift of a divinity. In the majority of cases it is accompanied by a genitive referring to that divinity: so 1.116.6 (Aśvins), 1.166.12 (Maruts), 1.185.3 (Aditi), 4.38.1 (either Mitra and Varuṇa or Indra and Varuṇa [see Geldner ad loc.]), 6.61.1 (Sarasvatī), 7.56.21 (Maruts), 8.43.33 (Agni), 8.49.2 (Indra). Without genitive: in the fomula *dātraṃ rakṣ-* (3.54.16, 10.69.4), *dātraṃ dā* (6.20.7, 9.97.55 [*dātrásya dātā́*]), and lastly in the phrase *īṣiṣe vā́ryasya...dātrásya* (8.44.18, said of Agni). A parallel distribution applies to *dāna-* which, as is well known, refers to the gifts not of divinities, but of wealthy patrons.

In this passage of the Mudrārākṣasa, the speaker, Malayaketu, endeavours to convince the minister Rākṣasa to join his side against the Maurya king Candragupta. Malayaketu argues that Rākṣasa will be all but a servant at the court of Candragupta: Candragupta will be the one that gives *him* wealth (*dātā so 'rthasya tubhyaṃ*). With Malayaketu, by contrast, Rākṣasa will have the status of lord: *he* will be the one who gives (*tvaṃ tu mahyaṃ dadāsi*). In this differential model, the recipient of such a gift cannot properly reciprocate, but is instead placed in a state of obligation. The 'lord' is the one who gives, *par excellence*.

4. *Interiectum* 2. Goods and lordship: ἐάων and the derivation of Hitt. *išḫa-* 'lord', Lat. *erus* 'id.'

The second component of the Greek reflex of the 'giver of goods' formula – the gen. pl. ἐάων – has been the subject of much discussion, in particular by Alan Nussbaum (1998: 130–145; 2014). Nussbaum's discussion in the 1998 monograph has now been superseded in the details relevant here by his 2014 paper. A brief summary of the argument as it relates to ἐάων:

(a) Attempts to derive ἐάων from (1) the exact counterpart of Avestan *vaŋhuuąm* – viz. **h₁u̯ésu̯ōm* > **ἐέων*, or (2) the more expectable **h₁ésu̯ōm* > **ἔ̄ων* or **h₁eséu̯ōm* > **ehewōn* (and so on) are beset with various difficulties.
(b) It is possible instead to leverage evidence for both **h₁es-o-* 'good' and its abstract **h₁(e)s-e-h₂* 'good(s)' to suggest that ἐάων is simply what it looks like: the gen. pl of a stem **ehā-* < **h₁(e)seh₂* 'good, thing of value'. Further evidence for **h₁(e)seh₂* is seen in the Lat. adj. *sānus*, which is convincingly and brilliantly derived from **h₁seh₂-no-*.
(c) Thus in the 'giver of goods' phraseology we have semantically identical variants in the basic meaning 'goods': gen.pl. **h₁u̯ésu̯ōm* inherited in Indo-Iranian, **h₁(e)seh₂sōm* in Greek.

Of special relevance in the present context is the convincing derivation from this same **h₁(e)s-e-h₂* of two synchronically isolated words for 'lord' in Hittite and Latin: **h₁(e)seh₂* 'good(s), thing of value, property' → **h₁esh₂-ó-* (with possessive *-ó-*) 'propertied, proprietor' > Hitt. *išḫā-*, Lat. *erus*, both 'lord'. The 'lord' was thus, in Indo-European terms, both the one who has the goods (**h̯ₓi̯ósmōi h₁eseh₂ h₁ésti*, **h₁esh₂-ó-*)

and who gives (**h₁i̯ós dédoh₃ti*, **déh₃tor-*). As I will argue in what follows, he was also the one who 'sets in motion' – in the sense of distributing – the goods.

Part II. The formula *vásūni savⁱ-* and words for 'lord'

5. *vásūni savⁱ-*, *savitár-* and Tocharian B *saswe* 'lord'

In Barnes 2013, I argued that Tocharian B *saswe* 'lord' was the reflex of a compound made up of the same ingredients (*mutatis mutandis*) as those seen in the Vedic formula *vásūni savⁱ-*. In this section I will summarize the argument of 2013, which I will go on to update with the new material of paragraphs 6 and 7.

5.1. Vedic examples

Three passages in the Ṛgveda contain the phrase *vásūni savⁱ-* (3.56.6, 5.42.3, 7.45.3, cf. above §2.2.1):

trír á diváḥ savitar vā́ryāṇi divé-diva á suva trír no áhnaḥ

*tridhā́tu rāyá **á suvā vásūni** bhága trātar dhiṣaṇe sātáye dhāḥ* (3.56.6)

'Three times a day, every day, o Savitar, impel valuables to us, three times daily. / Threefold riches and **goods impel** here. O Bhaga, o Protector, o Holy Place, position (them) for winning'

úd īraya kavítamaṃ kavīnā́m unáttainam abhí mádhvā ghṛténa

*sá no **vásūni** práyatā hitā́ni candrā́ṇi deváḥ savitā́ **suvāti*** (5.42.3)

'Rouse the best poet of poets. Wet him with honey, with ghee. / He – god Savitar – **will propel** to us the golden **goods** that have been held forth and set out.'

*sá ghā no deváḥ savitā́ sahā́vā́ **sāviṣad** vásupatir **vásūni***

viśráyamāṇo amátim urūcī́m martabhójanam ádha rāsate naḥ (7.45.3)

'The overpowering god Savitar **will impel good things** here as the lord of goods. / Spreading wise his broad emblem, he will then grant to us the sustenance for mortals.'

5.2. Interpretation of the Vedic material

In principle, one might suppose that these three instances simply play upon the divine name *savitár-*. But there are compelling reasons for

supposing the reverse, namely that the divine name itself has been generated from this and other phraseology characteristic of the divinity, involving the verb *sav*^{i}-. Tichy writes:

> Die Benennung *savitár-* 'Antreiber' ist durch die charakteristische Wirkung motiviert, die der betreffende Gott bei Sonnenaufgang auf alles bewegte und unbewegte Leben ausübt. (1995: 198)

This – which is indeed the traditional understanding – is correct in general outline, but it is rarely noted that the 'Antreibung' which is in fact characteristic of *savitár-* in the hymns themselves is, in the vast majority of cases, not the quickening effect of the sun on the natural world, but rather precisely the setting-in-motion by a divine authority of 'the goods' bzw. 'specific goods' of various kinds. In other words, the answer to the question: "what does *savitár- sav*^{i}-?" is, somewhat unexpectedly:

Object	**Recipient**	**Passages**
amṛtatvám 'immortality', *bhāgám uttamám* 'finest apportionment'	*devébhyaḥ* 'the gods'	4.54.2
amṛtatvám 'immortality'	*vaḥ* (sc. *ṛbhúbhyam*) 'you (the Rbhus)'	1.110.3
bhū́ri vāmám 'desirable abundance'	*dāśúṣe* 'the sacrificer'	6.71.4
saúbhagam 'good portion'	–	4.54.6
kṣayāṁ̆ … pastyā́vataḥ 'die flußreichen Wohnsitze' (Geldner)	*bṛhádbhyaḥ párvatebhyaḥ* 'the lofty mountains'	4.54.5
rátnāni 'treasures'	*dāśúṣe* 'the sacrificer'	5.82.3
sarvátātim 'wholeness'	*asmábhyam* 'us'	3.54.11, 10.36.14
śreṣṭham váreṇyam bhāgám 'most beautiful, choice apportionment'	*naḥ* 'us'	10.35.7
bhadráṃ 'the good'	*dvipáde cátuṣpade* 'biped (and) quadruped'	5.81.2
váyaḥ 'strength'	*yájamānāya sunvaté* 'the sacrificer, the (soma-) presser'	10.100.3

Only with the upasarga *prá* do we find the meaning 'set in motion, enliven': at 1.157.1 (*jágat*), 1.124.1 (*prā́sāvīd dvipā́t prá cátuṣpad*

ityaí), 4.53.3 (*prasuvánn aktúbhir jágat*), 7.45.1 (*bhűma*). Indeed, the form *prasavitár-* or *prasavītár-* (4.53.6, etc.) is attested in precisely this meaning.

5.3. Tocharian B *saswe* 'lord'

The phrase *vásūni sav^{i}-* suggests in turn the analysis of Toch. B *saswe* 'lord' as < pre-PT **su-sṷ-o(n)-*, ultimately deriving from a verbal governing compound **$h_1$su-suh$_1$-* 'setting in motion the good', i.e. distributing, giving out wealth. On the "zeroed-out" first compositional member **$h_1$su-*^{o} (to acrostatic **$h_1$ósu-* / *$h_1$ésu-*), see now Nussbaum 2014: 231.

6. Further Indo-Iranian examples

To this dossier we may now add an important further group of Indo-Iranian words studied – unbeknownst to me in the 2013 article – by Sims-Williams and Tucker 2005.

6.1. Iranian **hu̯aH-*

Iranian attests a set of primary comparatives and superlatives built descriptively to a Proto-Iranian **hu̯aH-*:

(a) comparative **hu̯aH-i̯ah-* (via **hu̯āi̯ah-aka-*) in Bactrian χοιιαχο (χοιαχο, χαιιαχο) 'elder' as well as in the morphologically renewed χοιιαδαρο 'id.'.
(b) superlative **hu̯aH-išta-* (with vocalism remodelled as **hu̯āi̯išta-* after the comparative **hu̯āi̯ah-*) in Avestan *huuoišta-* 'best; eldest', Khotanese *hvāṣṭa-* 'best, chief, master', Sogd. *xwyštr* 'superior, chief', Ossetic Dig. *xestær*, Ir. *xistær* 'elder, eldest, biggest (finger, i.e. the thumb)'.

What is **hu̯aH-*? Sims-Williams writes:

> A connection with the root *hū-*, OIA *sav^{i}-* (*sū-*) 'to impel' was proposed by Bartholomae (1901: 127 n. 3; 1904: 1856): "Superl[ativ] zum V[erbum] ^{2}*hav-*; eig[entlich] 'der am meisten Anregung gibt, der autoritativste'".

Bartholomae's interpretation, somewhat implausible on its own, derives strong support from Tucker's interpretation of Vedic *svāmín-* 'lord'.

6.2. Vedic *svāmín-* 'lord'.

Vedic *svāmín-* 'lord' is argued by Tucker (Sims-Williams & Tucker 2005: 595–602) to derive from the same root, again in "state II" **sṷaH-* < **sṷeh₁-*.[10] Originally this was a *-mi-* stem **sṷaH-mi-* < **sṷeh₁-mi-* according to Tucker (cf. OAv. *dāmi-*, etc.).

6.3. Vedic *sūrí-* 'Opferherr'

One can go further. I think we can add Vedic *sūrí-* 'Opferherr, Herr, Schirmherr' < **suh₁-ri-*, as (with different details) already in PW s.v.:

> (1) (von 1 *su*) a) (eig. Antreiber) Veranstalter, Auftraggeber, derjenige, welcher Priester u. s. w. zu einer ihm zugute kommenden heiligen Handlung veranlasst und dieselben belohnt.

As in the material given in §6.1–2, the meaning is in the basic sphere of 'person endowed with authority'. Formally, this is preferable to setting up a unique compound with second member **-Hri-*. The formation is that seen in e.g. *bhū́ri-*, Gk ἴδρις < **u̯id-ri-* and elsewhere (AiGr II/2: 859 (§688)).

6.4. Phraseologisches?

The Iranian nasal infix present **hu-na-H-* is attested twice in Old Avestan (Y.31.15, Y.35.5), both times with *xšaϑrəm* 'power, command' as the direct object:

> *yā drəguuāitē xšaϑrəm hunāitī* (Y.31.15) 'who delegates power to the deceitful one'
>
> *xšaϑrəm … aibī dadəmahicā cīšmahicā* ⁺*huuąnmahicā* (Y.35.5) 'we … assign, commit and delegate the power'[11]

J. Narten writes (Narten 1986 ad Y.35.5):

> Daß die beiden altavestischen Belege das Präsensstammes *hunā-* / *hun-* das gleiche Objekt haben, kann Zufall sein. Doch ist nicht auszuschliessen, dass *xšaϑrəm hū* ebenfalls ein alter Terminus der Herrschaftsübertragung sein könnte, vergleichbar dem Ausdruck *kṣatrám dhā* / *xšaϑrəm dā*.

[10] The ablaut patterns shown by the root are an interesting topic in their own right, but one which cannot be pursued here.

[11] The translations are those of Humbach 1991.

As Narten remarks (earlier in the same note), this recalls the Vedic constructions of *sav*^{i}- with the recipient in the dative and as object various 'specific goods', abstract as well as material: precisely the material surveyed above. As a possible 'alter Terminus der Herrschaftsübertragung' it also recalls the later, Vedic-internal development of the verb *sav*^{i}- in the sense 'consecrate': indeed, it might be noted, the very same combination appears – independently! – in the Aitareya Brāhmaṇa ***sūyate*** *ha vā asya* ***kṣatraṃ*** *yo díkṣate kṣatriyaḥ san* (8.5.1) 'his royal power is consecrated, who being a *kṣatriya* consecrates himself'.

Much more could be said about this and related uses of Vedic *sav*^{i}- / Avestan *hū*-,[12] but the key point to note is the obvious relationship between, on the one hand, the designations for persons endowed with authority built to this root in Iranian and Vedic discussed in this paragraph, and, on the other, the Vedic and Tocharian phraseology discussed above in §5.

7. Hittite *aššu šuwai*

We can add one further reflex of the 'impel, set in motion the goods' formula, this one from Hittite, a source which guarantees a fascinating antiquity for the phraseology under investigation. Hittite attests a phrase which appears to combine (*mutatis mutandis*) the very same elements discussed in §5, found in the 2sg. imperative as *aššu šuwai*, corresponding to 2pl. *šuwatten*. Let us first canvass the attestations.

7.1. Attestations

The phrase is attested in the assembly of prayers for the health of the king collected under the heading of CTH 458.10.1. These are generally agreed to represent new script (NS) copies of an Old Hittite (OH) original. The verb appears in the imperative, both 2sg. and 2pl.:

^{LÚ}AZU ma-al-ti a-aš-šu-u ša-[ku]-wa-at^{i}[-te-et la-a-ak]

nu la-ba-ar-na-an a-aš-šu šu-ú-wa-i [e][-eš-ri-iš-še-et ne-wa-a-aḫ]

[12] For example, it seems possible to analyse the OP royal name *Uvaxš(a)tra-* (: Κυαξάρης) as a φερέοικος type **huua-xštra-*. For the zeroing-out of second member, see perhaps Av. *bixəδra-* < **dui-gHtra-* besides Ved. *gātrá-* < **gaHtra-*, Av. *ərəduuafšna-* < **-fštna-* besides *fštāna-*, Ved. *stána-*, (: Gk παρ-θένο-); the origin of this phenomenon is presumably to be sought in some analogy with the pattern seen e.g. in Ved. *jā́nu*: °*-jñu-* et sim.

na-an EGIR-pa ma-ia-an-ta-aḫ (KUB 41.23 ii 9–11, ed. Fuscagni, hethiter.net/: CTH 458.10.1 (INTR 2013-02-05), plus CHD S s.v. **šuwaye-, šuwaya-, šuwai-** 2. (p. 541))

CHD translate "the exorcist priest recites: 'incline your kind eyes and **watch the Labarna favorably**; renew his frame and make him young again'." Fuscagni has a different rendering: "Der AZU-Priester rezitiert (folgendermaßen): [Neige] wohlwollend d[eine] Augen! **Fülle Labarna mit Wohl!** [Erneuere seine] G[estalt!] Mache ihn wieder kräftig!" (see below §7.2 for further discussion).

Parallel passages exist in several related texts:

[… nu la-b]a-ar-na-an a-aš-šu šu-wa-at-t[e-en (KBo 59.183 iii 3, part of the same text CTH 458.10.1)

nu la-b]a-ar-na-an a-aš-šu šu-wa[-i(a) e-eš-ri-še-et]

[ne-wa-a-a]ḫ n-an EGIR-pa GURUŠ-aḫ (Bo 3995 ii 14–15, CTH 458.10.3 ed. Fuscagni).

The phrase *a-aš-šu šu-wa-at-te-en* also appears twice at KBo 12.18 i 5–7 (plus duplicates).

A related sequence is found in the MH prayer to the Sun Goddess of the Earth (CTH 371), uttered by an officiant on behalf of the king:

a-aš-šu-u IGI^{ḪLA}-*KA* la-a-ak *LI-IM* ⌈la⌉-ap-li-ip-pu-uš kar-ap na-[…]

[L]UGAL-un an-da a-aš-šu ša-ku-wa-ya nu a-aš-šu ut-⌈tar⌉

[i]š-⌈ta⌉-ma-aš

"Neige deine gütigen Augen! Hebe (deine) tausend Wimpern und […] blicke den [K]önig gütig an!

<Neige deine Ohren> und [h]öre (sein) gutes Wort!" (trans. Rieken)[13]

7.2. Interpretation

As indicated in the survey of passages just given, there is disagreement as to the interpretation of the verb *šuwai*, 2pl. *šuwatten*. One may compare the formulation of CHD s.v. **šuwe-**: "due to similar spellings in later Hittite, attribution of forms to *šuwaye-* 'to see', *šu(wa)-* 'to fill'

[13] Further literature in Lebrun 1980: 83–91; Rieken et al. (ed.), hethiter.net/: CTH 371.1 (accessed 18 January 2016).

or *šuwe-* 'to push' is sometimes problematic". Let us consider each of these three possibilities in turn:

(a) *Pace* Fuscagni, 'fill' can be eliminated – there is no evidence for a stem *šuwai-* to the verb *šū-*, *šūwa-* 'fill'; at KUB 24.10 iii 12 the sg. imp. šu-wa-a-i[d-du (OH/NS) is to *šuwe-* 'push'; see Kloekhorst s.v. *šuu̯e/a-*[zi], followed by CTH s.v. **šū -**, **šūwa-**.
(b) In context a form of *šuwaye-/šuwaya-/šuwai-* 'look' clearly makes excellent sense. Indeed, this seems to be how the phrase was understood by Hittite speakers, to judge by its apparent replacement in Middle Hittite with the phrase attested in the passage of CTH 371 given above (*ḫaššun anda aššu šakuwaya* 'blicke den [K]önig gütig an!'). However, it is suspicious that this is the **only** context in which the verb *šuwaye-/šuwaya-/šuwai-* 'look' takes an accusative direct object.
(c) Formally, a form of the verb *šuwe-* 'to push' is equally possible, since the confusion with the *hatrae-* class which the form *šuwai* displays is also found in OH/NS mss. in forms of the 3sg. written *šu-wa-a-iz-zi*.[14] *šuwe-*, of course, is uncontroversially the Hittite reflex of PIE **seu̯h₁-*.

Taking (b) and (c) together, it might be suggested that the phrase **h₁o/esu-* (~ **h₁u̯o/esu*) *seu̯h₁-* did indeed give Hittite *aššu šuwe-* 'impel a good, a favor', and that this phrase was in turn misunderstood or reanalysed by speakers, within the history of Hittite, as containing the verb *šuwaye-/šuwaya-/šuwai-* 'look'. This would have been facilitated by the semantic development of the verb *šuwe-* from 'set in motion, impel' > 'push (away), banish'.[15]

8. Summing up

To sum up the results of Part II of this study, I have argued for:

(a) A three-way set: Vedic *vásūni savʲ-*, Toch. B *saswe* < **su-su̯-o(n)-* < **h₁su-suh₁-*+, OHittite *aššu šuwe-* < PIE **h₁o/esu-* (~ **h₁u̯o/esu*) *seu̯h₁-*.

[14] See the material in Oettinger 2002: 293–298, esp. 296.
[15] The syntax of the phrase is still difficult under this supposition, but it is difficult under any interpretation.

(b) **seu̯h₁-* as an element in terms for 'lord, chief, authority': again Toch. B *saswe* 'lord'; Ved. *svāmín-* 'lord' << **su̯aH-mi-*, *sūrí-* 'Opferherr, Herr, Schirmherr' < **suh₁-ri-*; Proto-Iranian **hu̯aH-i̯ah-* (: Bactr. χοιαχο etc.), **hu̯aH-išta-* (: Avestan *huuoišta-* 'best; eldest', Khot. *hvāṣṭa-* 'best, chief, master', Sogd. *xwyštr* 'superior, chief', Ossetic Dig. *xestær*, Ir. *xistær* etc.).

Returning, by way of conclusion, to the 'giver of goods' formula with which we started, it may be said that the Indo-European 'lord' was the one who both possessed and distributed good things. The act of distributing could be referred to by using various verbs, of which **deh₃-* and **seu̯h₁-* are the most prominent, but others listed in §2.2.1 above are also likely to have been used. Many further connections may be made; one thinks, to take one example, of Old English poetic formulas such as the standing epithets of lords *synces brytta* 'distributor of treasure' (*Beo.* 607, 1170, 1922, 2071 and elsewhere) and *beaga brytta* 'distributer of rings' (*Beo.* 1487, etc.), and in general the near obsession with treasures, rings and the like, and their distribution, which is characteristic of Old English poetry[16] – but this would be a topic for another paper.

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[16] Friendly reminder of Riccardo Ginevra in the discussion after the paper.

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Appendix: Complete list examples of the "givers" template in the Ṛgveda

6.23.3 *pā́tā sutám índro astu sómam praṇeníṛ ugró jaritā́ram ūtí́*
kártā vīrā́ya súṣvaya ulokáṃ ***dā́tā vásu*** *stuvaté kīráye cit*

7.20.2 *hántā vṛtrám índraḥ śū́śuvānaḥ prā́vīn nú vīró jaritā́ram ūtí́*
kártā sudā́se áha vā́ ulokáṃ ***dā́tā vásu*** *múhur ā́ dāśúṣe bhūt*

10.55.6 *śā́kmanā śā́kó aruṇáḥ suparṇá ā́ yó mahā́ḥ śū́raḥ sanā́d ánīḷaḥ*
yác cikéta satyám ít tán ná móghaṃ ***vásu spārhám utá jétotá dā́tā***

2.22.3 *sā́kāṃ jātáḥ krátunā sā́kam ójasā vavakṣitha*
sā́kāṃ vṛddhó vīryaìḥ sāsahír mṛ́dho vícarṣaṇiḥ
dā́tā rā́dha stuvaté kā́myaṃ vásu
saínaṃ saścad devó devā́ṃ satyám índraṃ satyá índuḥ

1.22.8 *sákhāya ā́ ní ṣīdata savitā́ stómyo nú naḥ*
dā́tā rā́dhāṃsi *śumbhati*

8.66.2 *ná yáṃ dudhrā́ várante ná sthirā́ múro máde suśiprám ándhasaḥ*
yá ādṛ́tyā śaśamānā́ya sunvaté dā́tā jaritrá ukthyàm

3.13.3 *sá yantā́ vípra eṣā́ṃ sá yajñā́nām áthā hí ṣáḥ*
agníṃ táṃ vo duvasyata ***dā́tā yó vánitā maghám***

4.17.8 *satrāháṇaṃ dā́dhṛṣiṃ túmram índram mahā́m apā́ráṃ vṛṣabhā́ṃ suvájram*
hántā yó vṛtráṃ sánitotá vā́jaṃ ***dā́tā maghā́ni*** *maghávā surā́dhāḥ*

ad 2.1.2. oxytone type *dātár-* c. gen. objecti:

8.51.5 *yó no* ***dātā́ vásūnām*** *índraṃ táṃ hūmahe vayám*
vidmā́ hy àsya sumatíṃ návīyasīṃ gaméma gómati vrajé

and with other direct objects in the same semantic sphere:

8.90.2 *tváṃ* ***dātā́*** *prathamó* ***rā́dhasām asy*** *ási satyá īśānakṛ́t*
tuvidyumnásya yújyā́ vṛṇīmahe putrásya śávaso maháḥ

2.33.12 *kumā́rā́ś cit pitáraṃ vándamānam práti nānāma rudropayántam*
bhū́rer dātā́ram *sátpatiṃ gṛṇīṣe stutás tvám bheṣajā́ rāsy asmé*

6.23.10 *evéd índraḥ suté astāvi sóme bharádvājeṣu kṣáyad ín maghónaḥ*
ásad yáthā jaritrá utá sūrír índro ***rāyó viśvávārasya dātā́***

6.37.5 ***índro vā́jasya sthávirasya dāté****ndro gīrbhír vardhatāṃ vṛddhámahāḥ*
índro vṛtráṃ hániṣṭho astu sátvā́ tā́ sūríḥ pṛṇati tū́tujānaḥ

5.23.2 *tám agne pṛtanāṣáhaṃ rayíṃ sahasva ā́ bhara*
*tváṃ hí satyó ádbhuto **dātā́ vā́jasya gómataḥ***

8.96.20 *sá vṛtrahéndraś carṣaṇīdhṛ́t táṃ suṣṭutyā́ hávyaṃ huvema*
*sá prāvitā́ maghávā no ʻdhivaktā́ **sá vā́jasya śravasyàsya dātā́***

8.92.3 *índra ín no **mahā́nāṃ dātā́ vā́jānāṃ** nṛtúḥ*
mahā́ṁ abhijñv ā́ yamat

8.46.2 *tvā́ṃ hí satyám adrivo vidmá **dātā́ram iṣā́m***
*vidmá **dātā́raṃ rayīṇā́m***

9.97.55 *sáṃ trī́ pavítrā vítatāny eṣy ánv ékaṃ dhāvasi pūyámānaḥ*
*ási bhágo **ási dātrásya dātā́**si maghávā maghávadbhya indo*

3. Hermes and Prometheus in Scandinavia – or Thor and Thjalfi in Greece
Reconstructing an Indo-European aetiological myth about a prehistoric steppe ritual

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Abstract

The aim of this paper is twofold. Firstly, a case will be made for the Old Norse myth of Thjalfi's laming of Thor's goat (chiefly attested in *Gylfaginning* 44) as a Scandinavian counterpart to two Ancient Greek myths, the myth of Hermes's theft of Apollo's cows (and slaughter of two of them), most extensively attested in the *Homeric Hymn to Hermes*, and the myth of Prometheus's (attempted) deception of Zeus during the slaughter of a cow at Mekone, attested in Hesiod's *Theogony*, whose several correspondences allow for the reconstruction of an ancient Indo-European tradition in which the aetiology of a ritual was connected with a mythological incident involving livestock. Secondly, an attempt will be made to reconstruct the corresponding ritual with the aid of insights from prehistoric archaeology.

1. Introduction

In recent years, the increased integration between researchers working in the fields of historical linguistics and archaeology – an approach that has been referred to as "archaeolinguistics" – has led to important discoveries that have deeply transformed our understanding of Eurasian prehistory.[1] By combining a comparative analysis of the

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poetics of three Indo-European mythological traditions with the findings of prehistoric archaeology, the present study argues that the integration of textual and archaeological evidence in the reconstruction of Indo-European symbolic culture – an approach that we may correspondingly call "archaeopoetics" – may help us achieve a more advanced (even if partial) understanding of the poetic culture and religious beliefs and practices of the speakers of prehistoric varieties of Indo-European.

The first tradition taken into consideration here is the Ancient Greek myth of Hermes's theft of Apollo's cows and slaughter of two of them; its main source is the *Homeric Hymn to Hermes*, but several variants are attested elsewhere in Classical literature (cf. Vergados 2013: 76ff), see, e.g., the account in Apollodorus's *Library* 3.10 (which is different in many respects). The plot of the *Hymn* may be summarized as follows:

> The narrative starts with the birth of Hermes in a cave on Earth, where the god lives with his mother, apart from the other deities who live on Olympus close to the sky, such as his brother Apollo. Jealous of Apollo's wealth and prestige, Hermes decides to steal his cattle at night and hide them in a cave. He does so and, after having discovered how to make fire from firesticks, Hermes kills two of Apollo's cows and cooks them, following a peculiar procedure, but refrains from eating them. After dawn, Apollo discovers that his cows are missing and searches for them, eventually discovering that Hermes has stolen them and forcing him to give them back. Towards

Northern Europe", which has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement no. 890522. It is my great pleasure to thank the members of the Roots of Europe research group at the University of Copenhagen, where my project was based, for their support, and especially my project's academic supervisor, Birgit Olsen. The analysis laid out in Sections 2 and 3 is a revision and reworking of research that I originally discussed in my 2014 Master's thesis "Sacrificio e trasgressione. Riflessi greci e italici di narrazioni indoeuropee" ("Sacrifice and misdeed. Greek and Italic reflexes of Indo-European narratives"), written at the Università Cattolica del Sacro Cuore di Milano under the supervision of José Luis García Ramón, for whose guidance I would like to express my deepest gratitude. I am also grateful to Jenny Larsson and the other members of the LAMP project for welcoming me among them and allowing me to engage in fruitful discussions on the integration of Indo-European linguistics, comparative mythology, and prehistoric archaeology.

The translations are adapted from Faulkes 1987 (*Gylfaginning*), Finlay and Faulkes 2011 (*Saga Hákonar góða*), Most 2018 (*Theogony*), Peel 1999 (*Gutasaga*), and West 2003 (*Homeric Hymn to Hermes*). Standard abbreviations are employed for Snorri's *Gylfaginning* (*Gylf.*), Hesiod's *Theogony* (Hes. *Th.*), and the *Homeric Hymn to Hermes* (*HHerm.*).

> the end of the *Hymn*, however, Apollo finds out that Hermes has killed two of his cows, gets very mad at him and threatens to make him pay. Hermes, however, softens Apollo's wrath by giving him the lyre (which he had previously built himself) as a present, and the two become friends for eternity.

The second narrative analysed here is the myth of Prometheus's deception of Zeus during the slaughter of a cow at Mekone, as told in Hesiod's *Theogony* (535–557). The many parallels of this passage with Hermes's myth have long been noted: for instance, Henri Jeanmaire (1945: 81) already observed a close correspondence between Hermes's peculiar slaughter of Apollo's cows in the *Hymn* and the *Theogony*'s aetiological scene of Prometheus's division of portions between gods and humans, while the two texts' common use of oral-traditional material connected to the "trickery" theme was first discussed at length by Cora Angiers Sowa (1984: 198ff). The basic plot of the episode may be summarized as follows:

> Gods and human beings are reaching a settlement regarding the division of the portions of an ox during a shared meal. The Titan Prometheus (who, for some reason, acts as representative of the humans) attempts to deceive Zeus, king of the gods, by tricking him into thinking that the best portion is the one covered by a layer of fat (under which are actually only bones), and hiding the animal's meat inside its stomach. After Zeus lifts the fat and sees that there are only bones under it, he gets very mad and hides fire from men; but Prometheus manages to steal fire from the gods and give it to the mortals, who ever since have been burning bones on the altars for the gods during ritual meals.

These two Greek narratives have several parallels in mythological narratives attested in other Indo-European (IE) languages, e.g., Latin (cf., e.g., Vergados 2013: 284) and Vedic Sanskrit and Avestan (Jackson 2014). As argued in this contribution, a further counterpart may be identified in the Old Norse myth of Thjalfi's laming of one of Thor's goats, a narrative that is chiefly attested in Snorri Sturluson's *Gylfaginning* (44); its plot may be summarized as follows:

> While travelling on his chariot pulled by two goats, Thor arrives at a farm, where he is hosted for the night. When dinner time comes, Thor kills both his goats, cooks them, and invites the farmer and his family for dinner. Thor encourages his human hosts to eat the meat, but asks them to throw the bones on top of the animals' skins; the farmer's son, Thjalfi, however, breaks one of the bones in an effort to get at the marrow. When morning

comes, Thor resurrects the goats, realizes that a bone has been broken, and gets extremely angry. The farmer begs Thor to spare him and his family at whatever cost, and Thor accepts, taking Thjalfi and his sister Roskva as servants.

Snorri records this tale as the initial part of his larger account of Thor's journey to a foreign land called *Útgarðr*, for which several narrative parallels have long been noted (cf. already von Sydow 1910), both in other IE traditions and in non-IE ones (see the extensive overview and discussion in Tolley 2012). Most of the observed correspondences, however, may not be traced back to a single tradition – probably reflecting widespread motifs of international storytelling (some details even occur within accounts of witch trials in 15th-century northern Italy; Bertolotti 1991) – and the tale of Thjalfi's meal with Thor does not seem to have received much attention within IE studies, except for an article by Joshua Katz (2016) focusing on the specific detail of Thjalfi's consumption of the goat's marrow (which shall not be discussed here).

Given that generic similarities between mythological traditions do not necessarily reflect a common inheritance, we shall here focus on the specific poetic devices by which these traditional texts were constructed, namely their phraseology and thematic structures (for an excellent demonstration of the methodology see, e.g., Watkins 1995: 468 and passim); a well-known example of the latter are the so-called "traditional type-scenes" of oral literature, i.e. fixed narrative structures traditionally employed to describe specific events (such as a departure or a meal), which were first observed in Homeric poetry by Walter Arend (1933) and may possibly be reconstructed for IE poetics as well (Ginevra 2020: 122–125). The aim of the present contribution is thus to argue that a comparative analysis of the poetics of the myths of Hermes, Prometheus, and Thjalfi leads to the identification of a series of parallels with enough "arbitrary linkage" (cf. Watkins 1995: 468) to allow for the reconstruction of an inherited IE tradition underlying them. Within this tradition, a mythological incident involving a misdeed, some livestock, and a meal (Section 2) was employed as the narrative frame for the aetiology of a specific ritual practice, namely sacrificial offerings of bones to the gods after ritual feasts involving the consumption of meat by humans (Section 3); with the aid of insights from the history of religions and archaeology, this practice will be traced back to customs such as the so-called "head-and-hoof sacrifices", which are archaeologically attested among prehistoric Steppe communities (Section 4).

2. Reconstructing Indo-European myth

Let us first focus on the comparative analysis of these three texts composed in IE languages, to verify whether they share enough traits to justify the reconstruction of an inherited IE mythological tradition.

2.1. Hermes's theft of Apollo's cows and his slaughter of two of them

The following elements of the myth of Hermes and Apollo are most relevant to our analysis:

(1) The narrative is built around two main characters: (a) the WRONGDOER *Hermes and (b) the* VICTIM *Apollo.*

The WRONGDOER Hermes is a newborn god of LOWER STATUS (ex. [1]), who lives in a cave on earth and – at least within this narrative – is closely associated with FIRE (van Berg 2001) and especially with ITS DISCOVERY (ex. [2]). The VICTIM Apollo is an adult god of HIGHER STATUS who lives among the gods on Olympus, closer to the SKY (ex. [3]).

[1] […] οὐδὲ θεοῖσιν / νῶϊ μετ᾽ ἀθανάτοισιν **ἀδώρητοι** καὶ **ἄλιστοι** / αὐτοῦ τῆιδε μένοντες ἀνεξόμεθ᾽ […]

'We (i.e. Hermes and his mother) won't put up with staying here (i.e. in a cave) and being **without offerings or prayers** alone of all the immortals […]' (*HHerm.* 167–169)

[2] Ἑρμῆς τοι **πρώτιστα πυρήϊα πῦρ τ᾽ ἀνέδωκεν.**

'Hermes it was who **first delivered up the firesticks and fire**' (*HHerm.* 111)

[3] βέλτερον ἠματα πάντα **μετ᾽ ἀθανάτοις** ὀαρίζειν / **πλούσιον ἀφνειὸν πολυλήϊον** ἢ κατὰ δῶμα […] / κἀγὼ τῆς ὁσίης ἐπιβήσομαι, **ἥς περ Ἀπόλλων.**

'It's better to spend every day in pleasant chat **among the gods, with wealth and riches and substance** […]. I (i.e. Hermes) am going to enter on my rights, **the same as Apollo**.' (*HHerm.* 170–173)

(2) The WRONGDOER *Hermes commits a* MISDEED *against the* VICTIM *Apollo. The* MISDEED *involves (a)* COWS *used for a* MEAL*, whose (b)* LEGS *are altered, and (c) it happens at* NIGHT*.*

Hermes steals (a) Apollo's COWS (ex. [4]) and butchers two of them in order to prepare a MEAL (ex. [5]), hiding the rest of the herd in a cave;

in stealing the cows, Hermes magically (b) reverses their HOOFS in order to obscure the tracks (ex. [4]); the whole misdeed takes place (c) during the NIGHT (examples [6] and [7]).

[4] πεντήκοντ᾽ ἀγέλης ἀπετάμνετο βοῦς ἐριμύκους. / […] / **ἴχνι᾽ ἀποστρέψας,** […] **ἀντία ποιήσας ὁπλάς, τὰς πρόσθεν ὄπισθεν, / τὰς δ᾽ ὄπιθεν πρόσθεν,** κατὰ δ᾽ ἔμπαλιν αὐτὸς ἔβαινεν.

'(Hermes) cut fifty lowing cows off from their herd, […] **turning their footprints round** […]; **he turned their hoofs opposite ways, fore to back and hinder to front,** while he himself walked backwards.' (*HHerm.* 74–78)

[5] τόφρα δ᾽ ὑπωροφίας ἕλικας **βοῦς** εἵλκε θύραζε / **δοιὰς** ἄγχι πυρός· […] ἔργωι δ᾽ ἔργον ὄπαζε **ταμὼν κρέα πίονα δημῶι· / ὤπτα** […]

'he dragged **two** of the curly-horned **cows** that were under shelter out towards the fire […]. Following one job with another, **he cut up the meat, rich with fat, and roasted it**' (*HHerm.* 116–121)

[6] **ἑσπέριος** βοῦς κλέψεν ἑκηβόλου Ἀπόλλωνος

'**in the evening** he stole the cattle of far-shooting Apollo' (*HHerm.* 18)

[7] Κυλλήνης δ᾽ αἶψ᾽ αὖτις ἀφίκετο δῖα κάρηνα / **ὄρθριος**
'**Right before dawn,** he swiftly returned to Cyllene's noble peaks (after the misdeed)' (*HHerm.* 142–143)

(3) Hermes prepares a MEAL which involves a specific differentiated treatment for the two COWS' MEAT, ENTRAILS, SKINS and BONES.

This detail is discussed extensively below (Section 3.1).

(4) Apollo's DISCOVERY of Hermes's MISDEED involves (a) PERCEPTION of the COWS' SKINS, (b) the COWS' UPWARD MOVEMENT, and it happens (c) around DAWN.

The VICTIM Apollo DISCOVERS that the WRONGDOER Hermes has butchered two of his cows (a) when he SEES their SKINS (ex. [8]), which had been left on the ground by Hermes; this happens while Hermes is actually returning the rest of the COWS to Apollo, by (b) "driving" them "into the light" out of a cave (ex. [9]), a phraseological collocation that is associated with rescue from death or danger in Ancient Greek and Indo-European (Ginevra 2019); the scene takes place (c) after DAWN (ex. [10]).

[8] Λητοίδης δ᾽ **ἀπάτερθεν ἰδὼν ἐνόησε βοείας** / πέτρηι ἔπ᾽ ἠλιβάτωι, τάχα δ᾽ ἤρετο κύδιμον Ἑρμῆν· / “πῶς ἐδύνω, δολομῆτα, **δύω βόε δειροτομῆσαι**, / ὧδε νεογνὸς ἐὼν καὶ νήπιος […]”

‘But Apollo, **looking away, saw the hides** on the rock face, and straightway asked glorious Hermes: “How were you able **to slaughter two cows**, trickster, newborn infant that you are?”’ (HHerm. 403–406)

[9] ἔνθ᾽ **‘Ερμῆς** μὲν ἔπειτα κιὼν παρὰ λάϊνον ἄντρον / **ἐς φάος ἐξήλαυνε βοῶν** ἴφθιμα **κάρηνα·**

‘There **Hermes** went the length of the rocky cavern and **drove the** sturdy **cattle out into the light**’ (*HHerm*. 401–402)

[10] ἦλθεν ἐς ἡμετέρου διζήμενος εἰλίποδας βοῦς / **σήμερον ἠελίοιο νέον ἐπιτελλομένοιο**

‘(Apollo) came to our place (i.e. Hermes and his mother’s) in search of his shambling cattle **today as the sun was just rising**.’ (*HHerm*. 370–371)

(5) Apollo is ENRAGED.

Apollo becomes extremely mad once he finds out about Hermes’s MISDEED, going as far as to threaten the latter’s safety (ex. 11).

[11] […] **οὐδὲ τί σε χρή / μακρὸν ἀέξεσθαι,** Κυλλήνιε Μαιάδος υἱέ.

‘(Apollo to Hermes:) **You better not go on growing much longer**, Cyllenian son of Maia.’ (*HHerm*. 407–408)

(6) The narrative ends with a SETTLEMENT *(a) between the* WRONGDOER *Hermes and the* VICTIM *Apollo.*

The resolution of the quarrel (ex. [12]) explicitly involves a SETTLEMENT – the Ancient Greek verb διακρινέεσθαι ‘to achieve a settlement’ is used – between (a) the WRONGDOER Hermes and the VICTIM Apollo: the latter shall receive Hermes’s lyre in reparation for the loss of his cattle (closely resembling a patron-client relationship, cf. Jackson 2014: 112).

[12] **ἡσυχίως** καὶ ἔπειτα **διακρινέεσθαι** ὀΐω

‘(Apollo says to Hermes:) I think **we shall** yet **achieve a peaceful settlement**’ (*HHerm*. 438)

Table 1. Relevant elements of the myth of Hermes and Apollo.

	Hermes-Apollo
(1)	Two main characters: (a) WRONGDOER (LOWER STATUS, FIRE'S DISCOVERER); (b) VICTIM (HIGHER STATUS, CLOSER TO SKY).
(2)	WRONGDOER'S MISDEED against VICTIM (a) LIVESTOCK (COWS or GOATS) used for MEAL; (b) LIVESTOCK'S LEGS involved; (c) happens at NIGHT.
(3)	MEAL'S PREPARATION: differentiated treatment for LIVESTOCK'S MEAT (and ENTRAILS), SKINS and BONES.
(4)	VICTIM'S DISCOVERY of WRONGDOER'S MISDEED (a) PERCEPTION of BONES or SKINS; (b) movement UPWARDS of LIVESTOCK; (c) takes place around DAWN.
(5)	VICTIM ENRAGED because of WRONGDOER'S MISDEED.
(6)	Narrative ends with SETTLEMENT (a) involving WRONGDOER and VICTIM.

The elements of the myth of Hermes and Apollo that are most relevant to us are summarized in Table 1.

Let us now move on to the other Ancient Greek tradition which is relevant to our analysis: the myth of Prometheus and Zeus.

2.2. Prometheus's (attempted) deception of Zeus during the slaughter of a cow

The following elements of the myth of Prometheus and Zeus are relevant to our investigation:

(1) The narrative is built around two main characters: (a) the WRONGDOER Prometheus and (b) the VICTIM Zeus.

The WRONGDOER Prometheus is a Titan (i.e. a divine being of LOWER STATUS, at least compared to the ruling class of gods in Greek mythology, the Olympians) who is most famously associated with the THEFT of

FIRE and its DELIVERY to humans (ex. [13]).[2] The VICTIM Zeus (ex. [14]) is the Greek deity of HIGHEST STATUS (he is the king of the gods) and a SKY-god, whose name is a reflex of the Proto-Indo-European term **di̯ḗu̯-* 'sky(-god)'.

[13] **κλέψας** ἀκαμάτοιο **πυρὸς** τηλέσκοπον **αὐγὴν** / ἐν κοίλῳ νάρθηκι·

'(**Prometheus,**) **stealing the** far-seen **gleam of** tireless **fire** in a hollow fennel stalk.' (Hes. *Th.* 566–567)

[14] καὶ γὰρ ὅτ' ἐκρίνοντο θεοὶ θνητοί τ' ἄνθρωποι / […] **Διὸς νόον ἐξαπαφίσκων**

'For when the gods and mortal men were reaching a settlement […], (**Prometheus,**) **trying to deceive Zeus' mind**' (Hes. *Th.* 535–537)

(2) The WRONGDOER Prometheus commits a MISDEED against the VICTIM Zeus. The MISDEED involves (a) CATTLE used for a MEAL.

Prometheus commits a MISDEED against Zeus: he attempts to deceive the king of the gods during (a) a MEAL whose main component is a big OX, by tricking him into choosing a bunch of bones hidden in fat as his and the gods' portion of the animal (ex. [15]).

[15] […] τότ' ἔπειτα μέγαν **βοῦν** πρόφρονι θυμῷ / **δασσάμενος προύθηκε, Διὸς νόον ἐξαπαφίσκων.** / τῷ μὲν γὰρ σάρκάς τε καὶ ἔγκατα πίονα δημῷ / ἐν ῥινῷ κατέθηκε, καλύψας γαστρὶ βοείῃ / **τῷ δ' αὖτ' ὀστέα λευκὰ βοὸς δολίῃ ἐπὶ τέχνῃ / εὐθετίσας κατέθηκε, καλύψας ἀργέτι δημῷ.** […] 'Ζεῦ κύδιστε μέγιστε θεῶν αἰειγενετάων, / τῶν δ' ἕλευ ὁπποτέρην σε ἐνὶ φρεσὶ θυμὸς ἀνώγει.' / **φῆ ῥα δολοφρονέων·** […]

'(Prometheus) with eager spirit **divided up a** great **ox and, trying to deceive Zeus' mind, set it before him.** For he set down on the skin before him the meat and the innards, rich with fat, hiding them in the ox's stomach; **and then he set down before him in turn the ox's white bones, arranging**

[2] Cf. Jackson 2014: 115 "I leave to others the exposition of […] the significance of Prometheus' *theft* of fire versus Hermes' *invention* of the art of fire in the light of the sacrificial etiologies considered above".

> **them with deceptive craft, hiding them with gleaming fat**. […] "Zeus, most renowned, greatest of the eternally living gods, choose from these whichever your spirit in your breast bids you." **So he spoke, plotting deception**.' (Hes. *Th*. 536–550)

(3) Prometheus's preparation of the MEAL *with Zeus involves a very specific differentiated treatment for the* CATTLE'S MEAT, ENTRAILS, SKINS *and* BONES.

This detail of the narrative is discussed extensively below (Section 3.2).

(4) Zeus's DISCOVERY OF *Prometheus's* MISDEED *involves (a) the* PERCEPTION *of the* CATTLE'S BONES.

The VICTIM Zeus DISCOVERS that the WRONGDOER Prometheus has deceptively divided the CATTLE when he lifts the fat up and (a) SEES the OX's BONES beneath it (ex. [16]), which shall from now on be his and the gods' portion.

[16] χερσὶ δ' ὅ γ' ἀμφοτέρῃσιν ἀνείλετο λευκὸν ἄλειφαρ, […] /
ὡς **ἴδεν ὀστέα** λευκὰ **βοὸς δολίῃ** ἐπὶ τέχνῃ.

> 'With both hands he grasped the white fat, and […] when **he saw the ox's white bones**, the result of the **deceptive** craft' (Hes. *Th*. 553–555).

Hesiod actually tells us that Zeus already knew what was going to happen, but this detail obviously contradicts the logic of the narrative: as noted, e.g., by Martin L. West (1966: 321) it is a clearly secondary modification, probably by Hesiod himself, of the traditional narrative, which most likely originally featured a character Zeus who had no idea of the MISDEED that had been prepared for him.

(5) Zeus is enraged.

Zeus gets extremely angry once he recognizes Prometheus's MISDEED (ex. [17]).

[17] **χώσατο** δὲ φρένας ἀμφί, **χόλος δέ μιν ἵκετο θυμόν**

> 'and **he (Zeus) became enraged** in his breast and **wrath came upon his spirit**' (Hes. *Th*. 554)

(6) The narrative ends with a SETTLEMENT *between (b)* HUMANS *and* GODS.

The whole episode of the division of the ox's parts at Mekone is described as a SETTLEMENT by Hesiod: as the narrative begins, we are told that GODS and HUMANS ἐκρίνοντο 'were reaching a settlement' (ex. [18]) – a form of the same verb κρίνω employed (in prefixed form) in the corresponding element (6) of the Hermes narrative (see above, Section 2.1; cf. Jackson 2014: 115); at the end of the passage, we learn that this settlement has resulted in the custom by which HUMANS offer BONES to the GODS (ex. [19]).

[18] καὶ γὰρ ὅτ' **ἐκρίνοντο θεοὶ θνητοί τ' ἄνθρωποι** / Μηκώνῃ […]

'For when **the gods and mortal men were reaching a settlement** in Mecone' (Hes. *Th.* 535–536)

[19] **ἐκ τοῦ δ' ἀθανάτοισιν** ἐπὶ χθονὶ **φῦλ' ἀνθρώπων / καίουσ' ὀστέα** λευκὰ θυηέντων ἐπὶ βωμῶν.

'**And ever since then the tribes of human beings** upon the earth **burn** white **bones** upon smoking altars **for the immortals**.' (Hes. *Th.* 556–557)

The elements of the myth of Prometheus and Zeus that are most relevant to us are summarized in Table 2.

Table 2. Relevant elements of the myth of Prometheus and Zeus.

	Prometheus-Zeus
(1)	Two main characters: (a) WRONGDOER (TITAN = LOWER STATUS, FIRE'S THIEF); (b) VICTIM (HIGHEST GOD, ONOMASTIC LINK TO SKY).
(2)	WRONGDOER'S MISDEED against VICTIM (a) OX used for MEAL.
(3)	MEAL'S PREPARATION: differentiated treatment for LIVESTOCK'S MEAT (and ENTRAILS), SKINS and BONES.
(4)	VICTIM'S DISCOVERY of WRONGDOER'S MISDEED: (a) PERCEPTION of BONES.
(5)	VICTIM ENRAGED because of WRONGDOER'S MISDEED.
(6)	Narrative ends with SETTLEMENT (b) involving HUMANS and GODS.

Let us now move on to our third mythological text, composed in a different Indo-European language: the Old Norse myth of Thjalfi and Thor.

2.3. Thjalfi's laming of Thor's goat

The following elements of the myth of Thjalfi and Thor are most relevant to this study:

(1) The narrative is built around two main characters: (a) the WRONGDOER *Thjalfi and (b) the* VICTIM *Thor.*

The WRONGDOER Thialfi (Old Norse *Þjalfi*, the expected reflex of **þelb-an-*) is the son of a PEASANT (ex. [20]); in another Scandinavian traditional narrative, the *Gutasaga* 'Saga of the Gotlanders' (ex. [21]), a clearly connected character with a very similar name (Old Gutnish *Þieluar*, reflex of **þelb-ara-*) is said to be the person who FIRST BROUGHT FIRE to the land of Gotland (on this connection see, e.g., Tolley 2012: 113–114 n. 50). The VICTIM Thor is a god of HIGH STATUS (as the son of Odin, the supreme Norse deity) and the STRONGEST of all sentient beings (ex. [22]); at some point in history, he must have been closely associated with the SKY, given that his name is a reflex of Proto-Germanic **þunara-*, the source of English *thunder* (Old English *þunor*) and German *Donner* (Old High German *donar*).

[20] *Ǫkuþórr fór með hafra sína ok reið ok með honum sá Áss er Loki er kallaðr. Koma þeir at kveldi til eins búanda ok fá þar náttstað.* […] ***Sonr búa hét Þjálfi*** *en Rǫskva dóttir.*

'Oku-Thor set off with his goats and chariot and with him the god called Loki. In the evening they arrived at a peasant's house and were given a night's lodging there. […] The **farmer's son was called Thialfi**, his daughter Roskva.' (*Gylf.* 44)

[21] *Gutland hitti fyrsti maþr þann, sum* ***Þieluar*** *hit. Þa war gutland so eluist et þet dagum sanc ok natum var uppi. En* ***þann maþr quam fyrsti eldi a land****, ok siþan sank þet aldri.*

'Gotland was first discovered by a man named **Þieluar**. At that time the island was so bewitched that it sank by day and rose up at night. **That man**, however, **was the first that brought fire to the island**, and afterwards it never sank again.' (*Gutasaga* 1)

[22] *Hann er* ***sterkastr allra guðanna ok manna***

'He (i.e. Thor) is **strongest of all the gods and men**' (*Gylf.* 21)

(2) The WRONGDOER *Thjalfi commits a* MISDEED *against the* VICTIM *Thor. The* MISDEED *involves (a)* GOATS *used for a* MEAL*, whose (b)* LEGS *are altered, and it happens (c) at* NIGHT*.*

Thjalfi commits a MISDEED against Thor (ex. [23]): he damages (a) one of Thor's GOATS during a MEAL in which they are the main course (the god himself had previously butchered and cooked the goats for dinner); more precisely, Thjalfi defies Thor's explicit instructions by breaking (b) a LEG bone of one of the goats; the whole scene takes place (c) at NIGHT.

[23] […] *En* ***um kveldit*** *tók Þórr hafra sína ok skar báða. Eptir þat váru þeir flegnir ok bornir til ketils. En er soðit var þá settisk Þórr til náttverðar ok þeir lagsmenn.* ***Þórr bauð til matar með sér búandanum ok konu hans ok bǫrnum þeira.*** *[…] Þá lagði Þórr hafrstǫkurnar útar frá eldinum ok mælti at búandi ok heimamenn hans skyldu kasta á hafrstǫkurnar beinunum.* ***Þjálfi, son búanda, helt á lærlegg hafrsins ok spretti á knífi sínum ok braut til mergjar.***

'[…] **During the evening** Thor took his goats and slaughtered them both. After this they were skinned and put in the pot. When it was cooked Thor sat down to his evening meal, he and his companion. **Thor invited the peasant and his wife and their children to share the meal with him.** […] Then Thor placed the goatskins on the other side of the fire and instructed the peasant and his household to throw the bones on to the goatskins. **Thialfi, the peasant's son, took hold of the goat's leg-bone and split it open with his knife and broke it to get at the marrow.**' (*Gylf.* 44)

(3) Thor prepares a MEAL *for Thjalfi's family which involves a specific differentiated treatment for the two* GOATS' MEAT*,* SKINS *and* BONES*.*

This detail is discussed extensively below (Section 3.3).

(4) Thor's DISCOVERY *of Thjalfi's* MISDEED *involves (a)* PERCEPTION *of the* GOAT'S *broken* BONE*, (b) the* GOAT'S UPWARD MOVEMENT*, and it happens (c) around* DAWN*.*

The VICTIM Thor DISCOVERS that the WRONGDOER Thjalfi has violated his instructions (ex. [24]) when (a) he SEES that one goat is limping and

realizes that its leg BONE is broken; this happens after Thor has magically resurrected both goats with his hammer, making them (b) "stand up", right (c) before DAWN.

[24] *Þórr dvalðisk þar of nóttina, en* ***í óttu fyrir dag*** *stóð hann upp ok klæddi sik, tók hamarinn Mjǫllni ok brá upp ok vígði hafrstǫkurnar.* ***Stóðu þá upp hafrarnir*** *ok var þá annarr haltr eptra fœti.* ***Þat fann Þórr*** *ok talði at búandinn eða hans hjón* ***mundi eigi skynsamliga hafa farit með beinum hafrsins. Kennir hann at brotinn var lærleggrinn.***

'Thor stayed the night there, and **in the small hours before dawn** he got up and dressed, took the hammer Miollnir and raised it and blessed the goatskins. **Then the goats stood up** and one of them was lame in the hind leg. **Thor noticed this** and declared that the peasant or one of his people **must have not treated the goat's bones with proper care. He realized that the leg-bone was broken.**' (*Gylf.* 44)

(5) Thor is ENRAGED.

Thor gets extremely angry because of Thjalfi's MISDEED, terrifying the peasant and his family (ex. [25]).

[25] *Eigi þarf langt frá því at segja, vita megu þat allir hversu hræddr búandinn mundi vera er hann sá at* ***Þórr lét síga brýnnar ofan fyrir augun***

'There is no need to make a long tale about it, everyone can imagine how terrified the peasant must have been when he saw **Thor making his brows sink down over his eyes**' (*Gylf.* 44)

(6) The narrative ends with a SETTLEMENT (a) involving the WRONGDOER Thjalfi and the VICTIM Thor, i.e (b) a HUMAN and a GOD.

Thankfully, the raging god does not end up killing his poor hosts: the episode ends with a SETTLEMENT (ex. [26]) – the Old Norse expression *tók í sætt* "accepted in settlement" is explicitly used – involving (a) the WRONGDOER Thjalfi (or, more precisely, his family) and the VICTIM Thor, who are also (b) a HUMAN (at least within this narrative)[3] and a GOD: the

[3] Even though the myth's ending – Thjalfi becoming Thor's servant for eternity – obviously requires Thjalfi to become immortal, his original status as mortal human may be inferred from the fact that the whole narrative clearly reflects the two motifs

latter shall receive Thjalfi and his (actually innocent) sister Roskva as servants in reparation for the laming of his goat.

> [26] *En er hann sá hrælzlu þeira þá gekk af honum móðrinn ok sefaðisk hann ok* ***tók af þeim í sætt bǫrn þeira Þjálfa ok Rǫsku ok gerðusk þau þá skyldir þjónustumenn Þórs ok fylgja þau honum jafnan síðan.***
>
> 'And when he saw their terror then his wrath left him and he calmed down and **accepted from them in settlement their children Thialfi and Roskva, and they then became Thor's bondservants and they have attended him ever since.**' (*Gylf.* 44)

The elements of the Norse myth of Thjalfi and Thor that are most relevant to this contribution are summarized in Table 3.

Table 3. Relevant elements of the myth of Thjalfi and Thor.

	Thjalfi-Thor
(1)	Two main characters: (a) WRONGDOER (LOWER STATUS, FIRE'S DISCOVERER); (b) VICTIM (HIGHER STATUS, CLOSER TO SKY).
(2)	WRONGDOER'S MISDEED against VICTIM (a) LIVESTOCK (COWS or GOATS) used for MEAL; (b) LIVESTOCK'S LEGS involved; (c) happens at NIGHT.
(3)	MEAL'S PREPARATION: differentiated treatment for LIVESTOCK'S MEAT (and ENTRAILS), SKINS and BONES.
(4)	VICTIM'S DISCOVERY of WRONGDOER'S MISDEED (a) PERCEPTION of BONES or SKINS; (b) movement UPWARDS of LIVESTOCK; (c) takes place around DAWN.
(5)	VICTIM ENRAGED because of WRONGDOER'S MISDEED.
(6)	Narrative ends with SETTLEMENT (a) involving WRONGDOER and VICTIM; (b) involving HUMANS and GODS.

of "wandering gods bestowing divine gifts on mankind" and "humans offending a divinity that visits them" (Tolley 2012: 104–105).

After having analysed each of the three IE traditions separately, the next section is dedicated to the identification of a series of parallels between all of them.

2.4. Comparison and reconstruction: IE myths of the MISDEED (involving LIVESTOCK and a MEAL) of a FIRE-DISCOVERER against a HEAVENLY VICTIM

The following elements are shared by the three IE traditions discussed above:

(1) All narratives are built around two main characters, a WRONGDOER and a VICTIM: (a) the WRONGDOER (Hermes, Prometheus, Thjalfi) is always a character of LOWER STATUS who (in at least some traditions) is associated with FIRE and its DISCOVERY/DELIVERY; (b) the VICTIM (Apollo, Zeus, Thor) is always a character of HIGHER STATUS who is more closely associated with the SKY.

(2) The WRONGDOER commits a MISDEED against the VICTIM. The MISDEED (a) always involves LIVESTOCK (COWS or GOATS) used for the preparation of a MEAL. The MISDEED may also (b) involve the LIVESTOCK's LEGS (Hermes's trick with the HOOFS of the cows; Thjalfi breaks one goat's LEG bone) and (c) take place at NIGHT (as in the case of Hermes's and Thjalfi's MISDEEDS).

(3) The preparation of the MEAL always involves a specific differentiated treatment for the LIVESTOCK's MEAT (and ENTRAILS, when they are mentioned), SKINS and BONES; this detail will be extensively discussed in the next section.

(4) The VICTIM's DISCOVERY of the WRONGDOER's MISDEED (a) always involves the PERCEPTION of BONES or SKINS; (b) it may also involve movement UPWARDS of the LIVESTOCK, a detail which may be linked to the orientational metaphor HEALTH AND LIFE ARE UP, SICKNESS AND DEATH ARE DOWN (cf. Ginevra 2021: 197–198); it (c) may also take place around DAWN (Apollo: after dawn; Thor: right before dawn).

(5) The VICTIM becomes ENRAGED because of the WRONGDOER's MISDEED.

(6) The narrative ends with a SETTLEMENT (Greek διακρινέεσθαι, ἐκρίνοντο, Old Norse *tók í sætt*), involving (a) the WRONGDOER (Hermes, Thjalfi) and the VICTIM (Apollo, Thor) and/or (b) HUMANS (Prometheus, Thjalfi) and GODS (Zeus, Thor).

Table 4. Correspondences between the narratives.

	Shared elements	Hermes-Apollo	Prometheus-Zeus	Thjalfi-Thor
(1)	Two main characters: (a) WRONGDOER (LOWER STATUS, FIRE'S DISCOVERY); (b) VICTIM (HIGHER STATUS, CLOSER TO SKY).	+	+	+
(2)	WRONGDOER'S MISDEED against VICTIM	+	+	+
	(a) LIVESTOCK (COWS or GOATS) used for MEAL;	+	+	+
	(b) LIVESTOCK'S LEGS involved;	+	–	+
	(c) happens at NIGHT.	+	–	+
(3)	MEAL'S PREPARATION: differentiated treatment for LIVESTOCK'S MEAT (and ENTRAILS), SKINS and BONES.	+ (see Section 3.1)	+ (see Section 3.2)	+ (see Section 3.3)
(4)	VICTIM'S DISCOVERY of WRONGDOER'S MISDEED	+	+	+
	(a) PERCEPTION of BONES or SKINS;	+	+	+
	(b) movement UPWARDS of LIVESTOCK;	+	–	+
	(c) takes place around DAWN.	+	–	+
(5)	VICTIM ENRAGED because of WRONGDOER'S MISDEED.	+	+	+
(6)	Narrative ends with SETTLEMENT	+	+	+
	(a) involving WRONGDOER and VICTIM;	+	–	+
	(b) involving HUMANS and GODS.	–	+	+

The various parallels between these three IE narratives are summarized in Table 4.

3. Reconstructing Indo-European ritual

As anticipated above – element 3 in the previous sections – each of these narratives involves the preparation of a meal in which some sort of

livestock (either cows or goats) is butchered and its meat (and entrails, when mentioned), bones and skins are given a specific and differentiated treatment, most likely reflecting actual ritual practice. In what follows, a comparative analysis of the three scenes of meal preparation shall be carried out (Sections 3.1–3), leading to a possible reconstruction of their common background (Section 3.4).

3.1. Hermes's preparation of a meal and division of the two cows' portions

Within the *Homeric Hymn to Hermes*, after stealing Apollo's herd of cows, Hermes singles out two of the animals and prepares a meal following a specific procedure:

- Hermes BUTCHERS a PAIR of COWS (see ex. [27]).
- The animals' (a) MEAT and (b) ENTRAILS are cooked (see ex. [28]), but NOT EATEN by Hermes – for the specific reason that he is a GOD (see ex. [29]).
- Some portions with WHOLE HOOFS and WHOLE HEADS – i.e. (c) BONES – are BURNT by Hermes (see ex. [30]).
- The animals' (d) SKINS are PLACED ASIDE by the god (see ex. [31]).

[27] ἔργοι δ᾽ ἔργον ὄπαζε **ταμὼν κρέα** πίονα δημῶι

'Following one job with another, **he cut up the meat**, rich with fat' (*HHerm.* 120)

[28] **ὤπτα** δ᾽ ἀμφ᾽ ὀβελοῖσι πεπαρμένα δουρατέοισιν, / **σάρκας** ὁμοῦ καὶ **νῶτα** γεράσμια καὶ μέλαν **αἷμα / ἐργμένον ἐν χολάδεσσι·** […]

'He **roasted**, fixed on wooden spits, the **flesh pieces** together with the honorific **chines** and the dark **blood in sausages of tripe** […]' (*HHerm.* 121–123)

[29] ἔνθ᾽ **ὁσίης κρεάων ἠράσσατο** κύδιμος **Ἑρμῆς·** / ὀδμὴ γάρ μιν ἔτειρε **καὶ ἀθάνατόν περ ἐόντα** / ἡδεῖ᾽· **ἀλλ᾽ οὐδ᾽ ὣς οἱ ἐπείθετο θυμὸς ἀγήνωρ / καί τε μάλ᾽ ἱμείροντι περᾶν ἱερῆς κατὰ δειρῆς**

'Whereupon glorious **Hermes craved his own due of meat**, for the sweet smell tormented him, **immortal though he was. Nevertheless his stout heart did not give way to his longing to let it pass down his holy throat**' (*HHerm.* 130–133)

[30] […] ἐπὶ δὲ ξύλα κάγκαν᾽ ἀγείρας / **οὐλόποδ᾽ οὐλοκάρηνα πυρὸς κατεδάμνατ᾽ ἀϋτμῆι.**

'Gathering dry logs, **he consumed (the bones) with whole hoofs and with whole heads in the heat of the fire.**' (*HHerm.* 136–137)

[31] **ῥινοὺς** δ᾽ **ἐξετάνυσσε** καταστυφέλωι ἐνὶ πέτρηι
'The **hides he spread out** on a rugged rock' (*HHerm.* 124)

Since Hermes does not end up eating the meal or even offering it to anyone else, this complex procedure makes no logical sense within the narrative of the *Hymn*: it is best understood as the reflex of an actual ritual practice that must have been well known to the audience of the poem (see Section 4). As we shall see, the structural elements of this meal preparation, summarized in Table 5, find a number of parallels in the other two texts taken into consideration here.

Table 5. Hermes's preparation of a meal.

Hermes-Apollo		
Context	LIVESTOCK	BUTCHERED
		PAIR
		COWS
Edible parts	(a) MEAT	NOT EATEN BY GOD
	(b) ENTRAILS	NOT EATEN BY GOD
Non-edible parts	(c) BONES	BURNT KEPT WHOLE (HEADS & HOOFS)
	(d) SKINS	PLACED ASIDE

3.2. Prometheus's preparation of a meal and division of an ox's parts

Within the Hesiodic narrative, Zeus is tricked by Prometheus, who prepares a meal according to the following procedure:

- Prometheus DIVIDES up a SINGLE OX (see ex. [32]).
- The ox's (a) MEAT and (b) ENTRAILS are hidden in a stomach and GIVEN TO HUMANS (see ex. [33]).

- The animal's (c) BONES are GIVEN TO the GOD Zeus, hidden in fat (see ex. [34]); ever since humans have been BURNING them FOR the GODS during sacrifices (see ex. [35]).
- The ox's SKIN is USED AS SUPPORT for portions (see ex. [33]).

[32] […] τότ' ἔπειτα μέγαν **βοῦν** πρόφρονι θυμῷ / **δασσάμενος** προύθηκε, Διὸς νόον ἐξαπαφίσκων

'(Prometheus) with eager spirit **divided up a** great **ox** and, trying to deceive Zeus' mind, set it before him.' (Hes. *Theog.* 536–537)

[33] τῷ μὲν γὰρ **σάρκάς** τε καὶ **ἔγκατα** πίονα δημῷ / **ἐν ῥινῷ** κατέθηκε, **καλύψας γαστρὶ βοείῃ**

'For he set down **on the skin** before him the **meat** and the **innards**, rich with fat, **hiding them in the ox's stomach**' (Hes. *Theog.* 538–539)

[34] **τῷ δ' αὖτ' ὀστέα λευκὰ βοὸς** δολίῃ ἐπὶ τέχνῃ / εὐθετίσας **κατέθηκε**, καλύψας ἀργέτι δημῷ. […]

'**and then he (Prometheus) set down before him (Zeus) in turn the ox's white bones**, arranging them with deceptive craft, hiding them with gleaming fat' (Hes. *Theog.* 540–541)

[35] ἐκ τοῦ δ' **ἀθανάτοισιν ἐπὶ χθονὶ φῦλ' ἀνθρώπων / καίουσ' ὀστέα λευκὰ** θυηέντων ἐπὶ βωμῶν

'And ever since then **the tribes of human beings upon the earth burn white bones** upon smoking altars **for the immortals**.' (Hes. *Theog.* 556–557)

Within this text (in contrast to the previous one), this complex procedure for the division of portions is explicitly linked both to a mischievous trick and to the origin of a well-known ritual practice (see Section 4). The structural elements of Prometheus's meal, summarized in Table 6, have correspondences both in the strange meal described in the *Homeric Hymn to Hermes*, discussed in the previous section, and in the peculiar meal shared by Thor and Thjalfi, as we shall see in the following section.

Table 6. Prometheus's preparation of a meal.

Prometheus-Zeus		
Context	LIVESTOCK	BUTCHERED SINGLE OX
Edible parts	**(a)** MEAT	NOT EATEN BY GOD(S) EATEN BY MEN
	(b) ENTRAILS	NOT EATEN BY GOD(S) EATEN BY MEN
Non-edible parts	**(c)** BONES	BURNT (EVER SINCE) GIVEN TO GOD(S)
	(d) SKINS	USED AS SUPPORT

3.3. Thor's preparation of a meal and division of his goats' parts

The Norse sequence of Thor's dinner with Thjalfi's family attests the following procedure:

- Thor prepares a meal by BUTCHERING a PAIR of GOATS (see ex. [36]).
- The goats' (a) MEAT is COOKED and EATEN by everyone, GOD(S) and HUMANS (see ex. [37]); there is no mention of (b) ENTRAILS, but one may suppose that they had been COOKED and EATEN together with the MEAT.
- The animals' (c) BONES must be GIVEN BACK TO the GOD Thor (see ex. [38]); they must be WHOLE, not BROKEN (see ex. [39]).
- The goats' (d) SKINS are PLACED ASIDE and USED AS SUPPORT for the BONES (see ex.[38]).

[36] *tók Þórr hafra sína ok* ***skar báða****. Eptir þat váru þeir flegnir ok bornir til ketils.*

'Thor took his goats and **slaughtered them both**. After this they were skinned and put in the pot.' (*Gylf.* 44)

[37] ***En er soðit var þá settisk Þórr til náttverðar*** *ok þeir lagsmenn.* ***Þórr bauð til matar með sér búandanum ok konu hans ok bǫrnum þeira.***

‘**When it was cooked Thor sat down to his evening meal,** he and his companion. **Thor invited the peasant and his wife and their children to share the meal with him.**’ (*Gylf.* 44)

[38] *Pá **lagði** Þórr **hafrstǫkurnar útar frá eldinum** ok **mælti at** búandi ok heimamenn hans **skyldu kasta á hafrstǫkurnar beinunum.***

‘Then Thor **placed the goatskins on the other side of the fire** and **instructed** the peasant and his household **to throw the bones on to the goatskins.**’ (*Gylf.* 44)

[39] *Þat […] talði at búandinn eða hans hjón mundi **eigi skynsamliga hafa farit með beinum hafrsins.** Kennir hann at **brotinn var lærleggrinn.***

‘Thor […] declared that the peasant or one of his people **must have not treated the goat’s bones with proper care.** He realized that **the leg-bone was broken.**’ (*Gylf.* 44)

Thor’s instructions for the preservation of bones have been linked to attested ritual practices as well (see Section 4); as we shall see in the next section, a number of parallels may be observed between the structural elements of this Scandinavian mythological meal, summarized in Table 7, and the corresponding scenes discussed in the previous sections.

Table 7. Thor’s preparation of a meal.

Thjalfi-Thor		
Context	LIVESTOCK	BUTCHERED PAIR GOATS
Edible parts	**(a)** MEAT	EATEN BY ALL (GODS, MEN)
	(b) ENTRAILS	Not mentioned (probably same as MEAT)
Non-edible parts	**(c)** BONES	KEPT WHOLE GIVEN BACK TO GOD
	(d) SKINS	PLACED ASIDE USED AS SUPPORT

3.4. Comparison and reconstruction: a fixed procedure for the division of portions of a butchered animal

The series of correspondences between Hermes's, Prometheus's, and Thjalfi's myths (hereinafter: H, P, and T, respectively) allows us to identify a fixed, most likely ritual (see next section) procedure for the division of portions at a common meal, a procedure that seems to underlie all of these scenes. The elements that are attested in more than one tradition and may thus reflect shared heritage are the following:

- Some LIVESTOCK is BUTCHERED (H+P+T), possibly a PAIR (H+T) of CATTLE (H+P).
- The LIVESTOCK's (a) MEAT and (b) ENTRAILS are NOT EATEN BY GODS (H+P), they are EATEN BY HUMANS (P+T).
- The LIVESTOCK's (c) BONES are BURNT (H+P) and GIVEN TO GODS (P+T); they are kept WHOLE (H+T), perhaps including their HEADS AND HOOFS (only H – but see next section).
- The LIVESTOCK's (d) SKINS are PLACED ASIDE (H+T) and USED AS SUPPORT (P+T).

Table 8. Shared elements in Hermes's, Prometheus's and Thjalfi's meals.

Possible reconstruction based on shared elements			Hermes-Apollo	Prometheus-Zeus	Thjalfi-Thor
Context	LIVESTOCK	BUTCHERED	+	+	+
		PAIR	+	–	+
		CATTLE	+	+	–
Edible parts	(a) MEAT	NOT EATEN BY GOD(S)	+	+	–
		EATEN BY MEN	–	+	+
	(b) ENTRAILS	NOT EATEN BY GOD(S)	+	+	(–)
		EATEN BY MEN	–	+	(+)
Non-edible parts	(c) BONES	BURNT	+	+	–
		KEPT WHOLE (HEADS & HOOFS)	+ (HEADS & HOOFS)	–	+
		GIVEN (BACK) TO GOD(S)	–	+	+
	(d) SKINS	PLACED ASIDE	+	–	+
		USED AS SUPPORT	–	+	+

The features shared by Hermes's, Prometheus's, and Thjalfi's meals allow for the reconstruction of a traditional structure embedded within the mythical narrative reconstructed above (in Section 2.4). This structure clearly resembles the description of a sacrificial ritual, involving the butchering of a pair of cattle, whose meat and entrails are eaten by humans, while the bones are kept whole (especially heads and hoofs), burnt and/or dedicated to the gods. As we shall see in the next section, this hypothesis finds support not only in the history of the corresponding religious traditions, but also in archaeological reconstructions based on prehistoric findings.

4. Ritual feasts and bone offerings: parallels from history of religions and archaeology

From the perspective of the history of religions, all three mythological traditions taken in consideration here have been linked, at some point in the history of their reception (either in antiquity or modern times), to sacrificial rituals involving animal victims and shared meals.

4.1. The connections with ritual practice of the Greek and Norse traditions

On the one hand, the Greek narratives have long been considered to reflect some sort of cultic practice. As is well known, Hesiod in his *Theogony* (see ex. [40]) already explicitly presents Prometheus's deception of Zeus as the aetiology (i.e. the origin myth) of the so-called *thysia* ritual, within which the gods' portion exclusively consisted of bones wrapped in fat and burnt on the altar. Correspondingly, in the *Homeric Hymn* (see ex. [41]), Hermes is said to be acting κατὰ χρέος, which literally means 'according to necessity', but may also be understood as 'according to set [i.e. ritual] procedure', as argued by Thomas (2017: 187). If Hermes's actions in the *Hymn* do indeed reflect Ancient Greek ritual practice, they may be interpreted as resembling either the same *thysia* ritual as the Prometheus myth (as per Ekroth 2008: 96)[4] or a combination of *thysia* and of the so-called *theoxenia* ritual

[4] More precisely: "[…] the *Homeric hymn to Hermes* […] describes some kind of proto-thysia sacrifice. Here, the infant god slaughters two cows, threads the meat onto spits and grills it. The fumes from the grilled meat are very tempting and Hermes longs to eat, even though he is a god, but he can finally contain himself from tasting and thereby proves his divinity […]" (Ekroth 2008: 96).

(as per Ekroth 2017: 32),[5] in which some of the meat was displayed and symbolically "offered" to the gods, before being eaten by humans anyways. Both Prometheus's and Hermes's myths seem thus to have been employed as narrative frames for the aetiology of *thysia* sacrifice (or of a variant of it), a Greek ritual which already Walter Burkert (1983: 1ff) traced back to customs typical of archaic hunter societies, in which the consumption of the animal's meat was followed by the "restitution" of its bones to the gods who had provided them in the first place.

[40] **ἐκ τοῦ δ' ἀθανάτοισιν** ἐπὶ χθονὶ **φῦλ' ἀνθρώπων / καίουσ' ὀστέα** λευκὰ θυηέντων ἐπὶ βωμῶν.

'**And ever since then the tribes of human beings** upon the earth **burn** white **bones** upon smoking altars **for the immortals**.' (Hes. *Theog.* 556–557)

[41] αὐτὰρ ἐπεὶ δὴ **πάντα κατὰ χρέος ἧνυσε** δαίμων

'When the god **had accomplished all according to necessity/set procedure**' (*HHerm.* 138)

On the other hand, the Old Norse narrative of Thor and Thjalfi was already interpreted as reminiscent of ritual practice by Jan de Vries (1956: 1. 419),[6] who claimed that Thor's careful handling of the goats' bones seems to preserve memory ("scheint eine Erinnerung daran zu bewahren") of a typical sacrificial ritual ("ein typisches Opferritual"), in which the butchering of the sacrificial animal was regulated by fixed rules ("Das Aufschneiden des Opfertieres war von festen Regeln bestimmt"). Indeed, on the basis of texts composed in both Old West

[5] More precisely: "[…] To perform a *theoxenia* ceremony, and to invite the deity and offer him a table with food […] have been interpreted as means for intensifying a *thysia* […]. The display and burning of the bones from the meat at some instances of *theoxenia* can be seen as an additional way of modification. In the end, almost the entire skeleton would join the thighbones and the *osphys* on the altar. [Fn. 68:] A similar ritual may actually be referred to in the *Homeric Hymn to Hermes* (136–137) when the god burns the hoofs and heads of the slaughtered cattle, after having cooked and divided the meat […]" (Ekroth 2017: 32).

[6] The full remark goes as follows: "Das Aufschneiden des Opfertieres war von festen Regeln bestimmt. […] Die bekannte Geschichte, wie Thor seine Böcke tötet und verspeist (SnE 49), scheint eine Erinnerung daran zu bewahren […]. Das gilt namentlich von dem Zug, daß die Knochen nicht aufgeschlitzt werden dürfen, um das Mark herauszuholen. Am nächsten Morgen legt der Gott die Knochen der Böcke auf die Häute und macht die Tiere mit seinem Hammer wieder lebendig. Das ist ein typisches Opferritual" (de Vries 1956: 1. 419).

Norse (see ex. [42]) and Old East Norse (see ex. [43]) varieties, meals like Thor and Thjalfi's seem to have been the most important part of the Old Norse *blót* 'sacrifice' (Hultgård 1993: 238): within this ritual, the animals' meat was cooked in cauldrons and eaten by humans, while blood was sprinkled on the altar, as in Greece. Even though bones are not mentioned in any of the literary accounts, their ritual deposition is clearly attested by archaeological findings (Hultgård 1997: 32ff; Magnell & Iregren 2010; Sundqvist 2016: 340; Magnell 2019; cf. Kaliff & Oestigaard 2020: passim), and a whole bone layer in the archaeological site of Uppåkra has been interpreted "as the result of repeated feasting with accompanying partial offerings of mainly cattle" (Thilderkvist 2013: 140). In the same way as claimed by Burkert with respect to the Greek myth, the restitution of bones to the god Thor after the consumption of meat has been traced back to hunting rituals (attested, e.g., among the neighbouring Sámi people) by Clive Tolley (2012: 86ff).

[42] *Þar var ok* ***drepinn*** *alls konar* ***smali*** *ok svá hross, […] skyldi* ***rjóða stallana*** *öllu saman […], en* ***slátr*** *skyldi* ***sjóða til mannfagnaðar****. Eldar skyldu vera í miðju gólfi í hofinu ok þar* ***katlar*** *yfir.*

'All kinds of **domestic animals were slaughtered** there, including horses; […] the **altars** were to be **reddened** all over [**with blood**], […] while the **meat** was to be **cooked for a feast**. There would be fires down the middle of the floor in the temple with **cauldrons** over them.' (*Saga Hákonar góða* 14)

[43] *En smeri þing hafþu mindri* ***blotan miþ fileþi, mati ok mungati****, sum haita* ***suþnautar****, þy et þair* ***suþu*** *allir* ***saman****.*

'But smaller assemblies held a lesser **sacrifice with cattle, food, and drink**. Those involved were called **'boiling-companions'** because they all **cooked their sacrificial meals together**.' (*Gutasaga* 1)

4.2. Ritual feasts with bone offerings in the prehistoric Pontic Steppe and parallels in modern Caucasian and Central Asian folklore

Given that both the Greek and the Norse mythological traditions analysed here have been connected with ritual feasts involving meat consumption and bone offerings, this shared association may reflect an ancient feature of IE heritage: the inherited mythological structures and elements reconstructed above (in Sections 2.4 and 3.4) may have

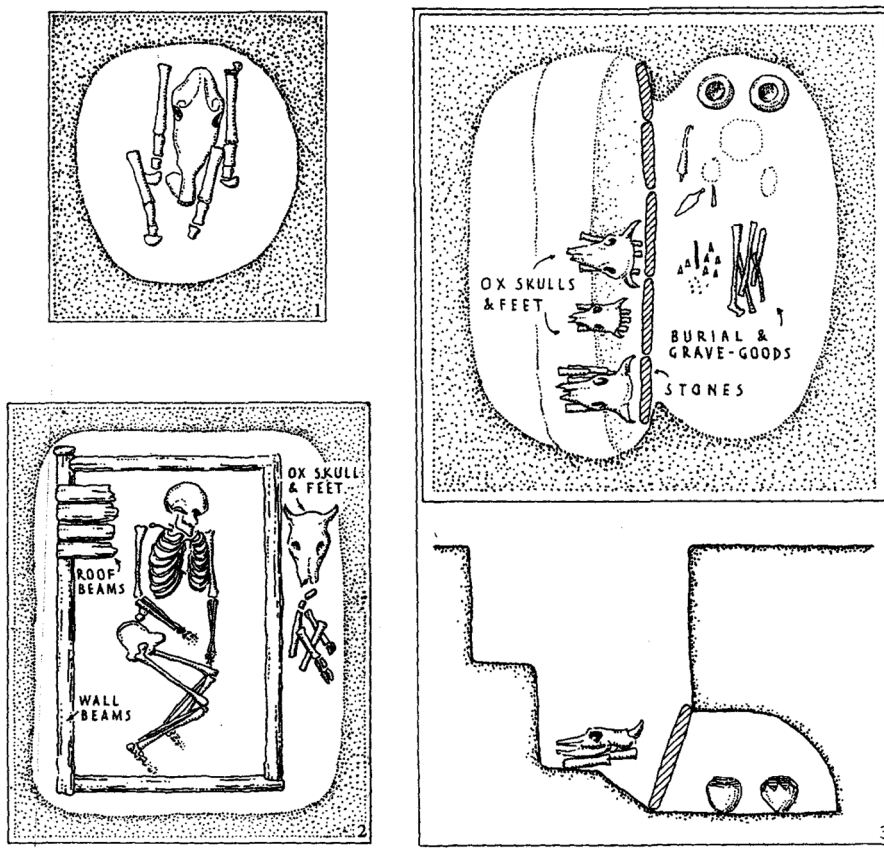

Figure 1. Examples of "head-and-hoof deposits". From: Piggott 1962: 113

already been associated with rituals involving the shared consumption of livestock meat and the offering of bones to the gods in prehistoric times. This reconstruction is indeed supported by the findings of prehistoric archaeology: even though it is very difficult to distinguish between ritual and non-ritual bone deposits in archaeological sites, an unambiguous type of prehistoric bone offerings has long been noted by archaeologists, namely the so-called "head-and-hoof deposits" (Piggott 1962; see Figure 1), which are first attested among prehistoric Steppe cultures and which have usually been connected by specialists with ritual feasts. This practice is very clearly described by Steppe archaeologist David Anthony with respect to the Khvalynsk archaeological culture (which is attested between 4700 and 3800 BCE in the Pontic Steppe):

> The head-and-hoof form of sacrifice appeared for the first time: at least 17 sheep/goat and 9 cattle were slaughtered and only the skull and lower

> leg bones were buried, probably still attached to the animal's hide. In later Steppe funerals the custom of hanging a hide containing the head and hoofs over the grave or burying it in the grave was very common. The head and hide symbolized a gift to the gods, and the flesh was doled out to guests at the funeral feast. (Anthony 2007: 184)

The prehistoric attestation of head-and-hoof sacrifices thus provides us with evidence that the ritual context proposed above for the reconstructed IE myth, namely feasts involving consumption of meat and offering of bones to the gods, is indeed archaeologically attested among prehistoric Steppe communities (which were likely IE-speaking). Furthermore, it may also provide us with an explanation of why, in the *Homeric Hymn*, Hermes carefully burns the cows' bones οὐλόποδ' οὐλοκάρηνα "with whole hoofs and whole heads" (see ex. [30] above), a detail that may possibly attest that the head-and-hoof form of sacrifice was still alive in Ancient Greek ritual practice during the 1st millennium BCE.

It may be further noted that the reconstruction proposed here finds support in anthropological research on traditional cultures of the Pontic area. As mentioned above, both the Greek ritual of the burning of the cattle's bones on the altar and the Norse detail of the restitution of the bones to the god Thor have been traced back to hunting rituals which required that after the consumption of animal meat the bones had to be given back to the gods who had provided the food: it is conceivable that such beliefs were already widespread among prehistoric Pontic Steppe communities, because they are still recorded (although much later, in modern times, as is usual for folklore) among indigenous cultures of the nearby Caucasus area (as well as of other parts of Eurasia and North America), as extensively discussed by Kevin Tuite (1997: 23–24):

> [the game animals shepherded by the mountain deities] are believed to be a renewable resource, and as long as the hunters who kill them for their meat treat the remains with proper respect, and do not exceed a reasonable quota, they will be assured of a continual renewal of the stocks […]. The belief is widespread throughout Eurasia and native North America that game animals are reborn from their bones, which the hunter must take care to preserve intact and return to their proper place. This can be done by throwing them into the water, a practice observed among the Svans (Mak'alatia 1985), and the Tsimshians of British Columbia (Boas

> 1916/1970: 773–774), or by burying or burning them, as in many indigenous cultures of northern Eurasia and Siberia. (Paulson 1959; 1965)

In his study, Tuite compares the structures of the Greek myth of Pelops and of the "Hazel-witch tales" from the Alpine area with Caucasian and Central Asian traditional narratives in which supernatural beings kill and eat an ibex, gather its bones in its skin, and later resuscitate it by striking it with a stick or pronouncing an invocation; the resuscitated animal, however, is usually missing one bone that has either been lost or stolen by a hunter. The similarity of these tales to the Norse myth of Thor and Thjalfi has also been noted by Tolley (2012: 95ff), who, however, excludes the possibility that the Norse myth has an "origin on the Steppe from very ancient, Proto-Indo-European times", which in his opinion "seems unlikely unless we accept a high level of motif integrity over huge timespans", and rather favours an interpretation of this similarity as the result of contact during the Middle Ages between Norse travellers and Caucasian communities.

This is, of course, possible; the Norse myth, however, also attests several features that are not recorded in the folktales, some of which, as shown in Sections 2 and 3, are instead shared by the Greek myths of Hermes and Prometheus and the Norse myth of Thjalfi: for instance, Thor "is not the most obvious candidate in the Norse pantheon to take on a role assumed [in the folktales] by fairy-type spirits or women" (Tolley 2012: 106), but he closely matches the Greek myths' victims Apollo and Zeus (they are all high status gods associated with the sky). As argued in this contribution, the many parallels between the Greek and Norse narratives actually do allow for the reconstruction of an inherited Indo-European mythological structure, which was probably associated with the consumption of meat and with sacrificial offerings of bones in the context of feasts, practices that are archaeologically attested among the – likely IE-speaking – prehistoric cultures of the Pontic Steppe, very close to both Caucasus and Central Asia. The Greek and Norse myths may thus broadly be regarded as reflexes of – specifically IE – variants of the same widespread story-type attested by the Caucasian and Central Asian folktales; after all, if a late (medieval) cultural borrowing such as the one posited by Tolley did indeed take place, it is conceivable that it would have been facilitated by the previous existence of an already similar Old Norse narrative, reflecting ancient IE religious practice and poetic heritage.

5. Conclusion: an IE aetiological myth for a prehistoric Steppe custom (ritual feasts involving meat consumption and offerings of bones to the gods)

In this contribution I have argued for a number of correspondences between the Greek myths of Hermes's theft of Apollo's cows (*Homeric Hymn to Hermes*) and of Prometheus's deception of Zeus (Hesiod's *Theogony*) and the Norse myth of Thjalfi's laming of Thor's goat (Snorri's *Gylfaginning* 44), correspondences that allow for the reconstruction of an inherited Indo-European myth in which the aetiology of a specific ritual – a ritual that is actually attested among prehistoric Steppe communities – was connected with a mythological incident involving livestock and misdeed. The results of this study may be summarized as follows.

- A common narrative structure underlies the Greek and Norse myths, namely:

  (1) A WRONGDOER of LOWER STATUS associated with FIRE'S DISCOVERY commits a MISDEED against a VICTIM of HIGHER STATUS more closely associated with the SKY. (2) The MISDEED involves (the LEGS of) LIVESTOCK (COWS or GOATS) and the preparation of a (NIGHTLY) MEAL, in which (3) MEAT (and ENTRAILS), SKINS, and BONES receive a differentiated treatment. (4) The VICTIM DISCOVERS the WRONGDOER'S MISDEED by PERCEIVING either BONES or SKINS (around DAWN) and (5) becomes ENRAGED. (6) In the end, WRONGDOER and VICTIM and/or HUMANS and GODS reach a SETTLEMENT.

- All narratives include scenes describing a differentiated treatment of MEAT, ENTRAILS (only in Greek), SKINS, AND BONES, scenes that seem to reflect a common pattern (of likely ritual character) as well, namely:

  LIVESTOCK (possibly a PAIR of CATTLE) is BUTCHERED. (a) MEAT and (b) ENTRAILS (the latter only in the Greek myths) are consumed by HUMAN BEINGS. (c) BONES (whose integrity is stressed; also mention of HEADS and HOOFS in Hermes's myth) are burnt and/or given (back) to the GODS. (d) SKINS are just placed aside and/or used as support.

- The three mythological traditions taken into consideration are either explicitly aetiological of ritual feasts involving meat consumption and bone offerings (as in the case of Prometheus's myth) or have been (in my opinion, correctly) interpreted as such (as in the case of Hermes's and Thjalfi's narratives): it is thus conceivable that this association was already a feature of

the inherited Indo-European narrative, an aetiological myth connected to an actual ritual practice that must have been common among the earliest speakers of Indo-European.

- Such a reconstruction does find (at least some) support in the data made available by prehistoric archaeology: the reconstructed ritual procedure matches the so-called "head-and-hoof deposits", offerings of livestock bones – more precisely of their heads and hoofs (closely paralleling the *Hymn*'s detail of Hermes burning the cattle's bones with "whole heads and whole hoofs"). This practice is indeed archaeologically well attested among prehistoric Steppe cultures (the most likely speakers of the earliest Indo-European varieties) and have been interpreted by archaeologists as evidence for ritual feasts involving meat consumption and offerings of bones to the gods, a practice that may in turn be rooted in the ancient belief of hunting societies that animal bones must be given back to the gods in order to ensure the renewal of wildlife (still attested in Caucasian and Central Asian folklore in modern times).

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

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Abstract

Taking inspiration from the biological taxonomy of mammals, this paper explores the diversification of the Indo-European language family through a zoographical lens. It investigates shared innovations of phonology, morphology, and semantics in zoonyms across language branches. The aim is to uncover evidence for early splits within the family tree. The study primarily centers on Anatolian versus Core Indo-European and features an extensive discussion of **h₂ŕ̥tk̂o-* 'bear' (Hittite *ḫartakka-*) vs. **h₂ŕ̥k̂ḫo-* (Vedic *ṛ́kṣa-*, Greek ἄρκτος, Latin *ursus*, etc.), **h₁éḱu-* 'horse' (Hittite */ekkus/, Luwian /azzu-/) vs. **h₁éḱu̯o-* (Vedic *áśva-*, Latin *equus*, Tocharian B *yakwe*, etc.), and **u̯l̥̂kʷo-* 'lion' (Luwian *walwa/i-*) vs. **u̯ĺ̥kʷo-* 'wolf' (Vedic *vṛ́ka-*, Lithuanian *vil̃kas*, Tocharian B *walkwe*, etc.). Thorough analysis of these examples will determine their relevance within the proposed scenarios.

1. Introduction

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

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

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

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

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

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

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

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

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

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

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

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

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

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

[9] See Weiss 2020: 493–495 for an overview.

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

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

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

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

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

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

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

The goal of this contribution is quite modest. Outlining a fine-grained diversification of the family tree would not be possible based on zoonyms alone. I will therefore limit myself to trying to establish whether animal names furnish evidence to corroborate an early split-off hypothesis of the Anatolian branch, as this bifurcation is the most widely accepted amongst scholars of Indo-European linguistics.[12] In order to refer to the individual proto-languages at the consecutive stages I will employ the terminology proposed by Olander (2019), in particular the terms "Proto-Indo-European" or "PIE" (proto-language of all the Indo-European languages), "Proto-Indo-Tocharian" or "PIT" (proto-language of the remaining 11 branches[13] after the split-off of Anatolian), and "Proto-Indo-Celtic" or "PIC" (proto-language of the remaining 10 branches after the split-off of Tocharian that is generally[14] – though not universally[15] – assumed to be the second one to branch off). I will examine one significant and much-discussed example for each mentioned scenario. The example for A will be **h₂ŕ̥tk̂o-* 'bear' (Hitt. *ḫartakka-*) vs. **h₂ŕ̥k̂po-* (Ved. *ṛ́kṣa-*, Gk. ἄρκτος, Lat. *ursus*, OIr. *art*, etc.), for B the *u*-stem **h₁ék̂u-* 'horse' (Hitt. ANŠE.KUR.RA-*uš* /ekkus/) vs. thematic **h₁ék̂u̯o-* (Ved. *áśva-*, Lat. *equus*, etc.), for C the alleged case of **u̯l̥̂kʷo-* > Luw. *walwa/i-* 'lion' vs. Ved. *vṛ́ka-*, Lith. *vil̃kas*, etc., all 'wolf', and for D the potential replacement of Proto-Indo-European **u̯l̥p-* 'wolf' by Proto-Indo-Tocharian **u̯l̥̂kʷo-* 'dangerous one' > 'wolf'. All examples will be examined carefully to assess their validity for the proposed scenarios.

2. Phonology – the word for 'bear'

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

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

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

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

[15] See, for instance, Malzahn 2017.

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

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

Prior to the discovery and the subsequent decipherment of Hittite, the sound correspondence Ved. *-kṣ-* ~ Av. *-š-* ~ Gk. *-κτ-* ~ Lat. **-ks-* (*ursus* < **orksos*) in this and a handful of other words (e.g., Ved. *tákṣaṇ-* ~ Av. *tašan-* ~ Gk. τέκτων 'carpenter' ~ Lat. *texere* 'fit together, weave') used to be explained by assuming a '*thorn* cluster', i.e., a cluster of a (palato-, labio-, or plain) velar stop followed by a dental fricative **ƀ*.[18] Accordingly, the 'bear' word was set up as **ḱ̊k̂ƀo-* (thus, for instance, in IEW: 875; in laryngealistic terms **h₂ḱ̊k̂ƀo-*) and the root of the 'carpenter' as **tek̂ƀ-*. The correspondence set Ved. *kṣám-* ~ Gk. χθών ~ Lat. *humus* furnished evidence for the voiced-aspirated counterpart **ĝʰƀ* (or **ĝʰð̂ʰ*) qua **ĝʰƀóm-* 'earth'.

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

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

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

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

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

daughter languages.[21] This dichotomy between Anatolian and Tocharian on the one hand, and the remaining branches on the other, lends itself to a chronological interpretation of the phenomenon. Instead of assuming that the ten remaining branches each developed a metathesis in **-TK-* clusters independently, the more economical hypothesis would be to interpret the thorn metathesis as a common innovation of Proto-Indo-Celtic after Anatolian and Tocharian had left the family.[22] The PIE word for 'bear' can therefore be reconstructed as **h₂ŕtk̂o-* (reflected by Hitt. *ḫartakka- /ḫartka-/*), which after the secession of Anatolian and Tocharian underwent metathesis to **h₂ŕk̂ƀo-* (reflected by Ved. *ṛkṣa-*, Gk. ἄρκτος, Lat. *ursus*, etc.).[23] Note that the syllabification of this word needs to have been **h₂ŕ.tk̂o-* (and **h₂ŕ.k̂ƀo-*, respectively) for the thorn cluster to be in tautosyllabic position.[24] This might look counterintuitive at first glance, but since **tk̂-* (**k̂ƀ-*) was a possible word onset in PIE (and PIC) as shown, for instance, by the root **√tk̂eiH* > **√k̂ƀeiH* 'settle' (Ved. *kṣéti*, Gk. κτίζω, Lat. *situs*, etc.), it follows that it must have also been a possible syllable onset.[25]

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

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

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

[23] If the word were attested in Tocharian, we would expect the pre-metathesis continuant of **h₂ŕtk̂o-* to have given TB **artke*. Blažek (2017: 174) proposes that this form is attested through a derivative, namely TB *artkye* 'abundant (?)'. As a semantic parallel, Blažek draws the attention to late Sanskrit lexicographers who attest a meaning 'best, most excellent' for *ṛkṣa-*. However, see Adams (2013: 25 *s.v. artkiye* n. '±abundance') and Peyrot (2020) for alternative suggestions regarding *artkye*.

[24] Schindler (1977: 33–34), a proponent of 'thorn' as a PIE phenomenon, set up two underlying stem allomorphs of the word for 'bear' with different syllabifications to explain the difference between non-metathesized (°*t.k̂*°) and metathesized (°*.tk̂*° > °*.k̂ƀ*°) outcomes: (1) **h₂ŕt.k̂o-* (Hitt. *ḫartakka-*), (2) **h₂ar.tk̂o-* > **h₂ar.k̂ƀo-* (since according to Schindler, OIr. *art*, Welsh *arth* presuppose a full grade; but on the development of **#HṛC* in Celtic see now Zair 2012: 34–38), and a third quasi-compromise between (1) and (2), viz. (3) **h₂ŕk̂ƀo-* (Ved. *ṛkṣa-*, etc.). This elaborate scenario becomes unnecessary if one accepts the viable alternative of a chronological difference between **h₂ŕtk̂o-*and **h₂ŕk̂ƀo-*.

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

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

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

Apart from being an adequate example for a shared non-trivial innovation of Proto-Indo-Celtic, the 'bear' is also an apt illustration of the warning issued in the previous section that retained archaisms cannot be used for subgrouping. As Kümmel (2018) argues, the anlauting *x-* /x/ in Persian *xirs* 'bear' is the reflex of **h₂-*, preserved in some varieties of Western Iranian as *x-* or *h-*. Compare Middle Persian (MP) *xāyag* 'egg' (**h₂ōu̯i̯o-*°), MP *xām* 'raw' (**h₂oh$_x$mó-*; cf. Av. *āma-*), MP *hesm* 'firewood' (**h₂eid^{h}smo-*; cf. Av. *aēsma-*), etc. In view of the almost ubiquitous loss of any word-initial and word-internal laryngeal in almost all other languages, this archaism is indeed stunning. The only language branch that systematically preserves a consonantal reflex of word-initial **h₂* in general and in **h₂ŕtk̂o-* in particular is Anatolian (Hitt. *ḫartakka-*). However, it would be fallacious to embrace the idea of a closer connection of Western Iranian to the Anatolian branch based on this shared trait. The retention of such an archaism might be an intriguing feature, but it is not diagnostic of phylogenetic closeness.

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[27] Jasanoff 2018: 138: "The input to the metathesis was either *T^{j}K^{j}* or some other point on the phonetic continuum delimited by *T^{j}K* (with more salient palatalization at the beginning of the cluster) and *TK^{j}* (with more salient palatalization at the end)." On Luwian *inzagān* see Melchert 2003; but also Jasanoff 2018: 139 and Simon 2020 (translating it as 'rake (?)' and refuting an etymological connection with the 'earth' word) with an in-depth discussion of the previous scholarship.

[28] At least from looking at Hitt. *ḫartakka-* alone one cannot rule out, however, that an already PIE thorn metathesis in ***h₂ŕtk̂o- > *h₂ŕk̂ḫo-* was again undone in Anatolian by speakers who recognized a suffix **-k̂o-* associated with zoonyms (as in Lat. *iuuen-cu-s* 'young bull', etc.), as proposed by Eichner 2015: 16 note 17.

3. Morphology – the word for 'horse'

There is arguably no animal more closely associated with the Proto-Indo-Europeans than the horse. As residents of the Eurasian steppe, the speakers of PIE were probably one of the first people to tame and domesticate the wild horse sometime in the 5th or 4th millennium BCE.[29] The word is attested – directly or indirectly – in every branch of Indo-European except for Slavic. The continuants include Hitt. **ekku-*, CLuw. **azzu-*, HLuw. *á-zú-*, Lycian *esb(e/i)-*, Ved. *áśva-*, YAv. *aspa-*, OPers. *asa-*, Greek ἵππος, Mycen. *i-qo*,[30] Lat. *equus*, Venet. acc. sg. *ekvon*, OIr. *ech*, MW **eb* (in *cyf-eb* 'in foal', *eb-awl* 'foal'), Gaul. PN *Epo-redorix*, Goth. **aihs* (in *aihva-tundi* f. 'bramble'), OE *eoh*, ON *jór*, Toch. B *yakwe*, A *yuk*, Arm. *ēš* 'donkey', Lith. *ašvà* f. 'mare', OPruss. *aswinan* 'mare's milk', Alb. *sasë* 'horsetail rush, Equisetum'.[31] All these forms can be traced back to **h₁ék̂u-* or **h₁ék̂u̯o-*. The *u*-stem **h₁ék̂u-* seems to be limited to Anatolian, whereas all other languages require or are in line with a thematic masculine **h₁ék̂u̯o-*.

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

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

[30] The form ἵππος (instead of **ἔπ(π)ος*), Myc. *i-qo* is still somewhat of a mystery. Explanations range from setting up a different preform for Greek alone (Bozzone 2013: **h₁ék̂u̯o-* > **h₁ₒék̂u̯o-* > **hᵢⁱikku̯o-* > /híppos/, implying two sound changes: (1) **ₒ* > Gk. *i* [as in πίτνημι 'spread out' < **pₒtnéh₂mi*], (2) **h₁i-* > **hᵢⁱi-* > Gk. *hi-* [as in ἵημι 'I send' < **h₁i-h₁i̯eh₁-mi*, for which, however, see Peters 1976]; similarly de Vaan 2009) to changing the etymon completely (e.g., **sík-u̯o-* 'pacer' as per Klingenschmitt 2008: 407 note 5). This, however, would mean to separate the source of Gk. ἵππος formally from the etymon **h₁ék̂u̯o-*, which all other languages point to. Incidentally, the builder of the Trojan horse in Homer is named Ἐπειός, which might preserve the expected Gk. outcome **ἔπ(π)ος*. The anlauting *h-* of ἵππος would then be secondary, as suggested independently by names such as Ἄλκιππος (cf. Bechtel 1917: 221–225). I therefore assume that Gk. ἵππος, Myc. *i-qo* shows a dialectal raising of a sequence **-eTu̯V-* to **-iTu̯V-*. This sound change could also be extant in Homeric (traditionally labelled Aeolic) πίσυρες 'four' from **kʷetu̯ores* (vs. Att. τέτταρες, Ion. τέσσερες, Dor. τέτορες, Lesb. πέσ(σ)υρες, Boeot. πέτταρες). Note that the explanation of πίσυρες as reflecting a variant with *schwa secundum* (**kʷₒtu̯ores*) would separate this form from the continuants in all other dialects which go back to **kʷetu̯ores*. The discussion of further evidence for this sound change will have to await a separate occasion.

[31] For all these forms cf. NIL 230–233. Alb. *sasë* is sometimes interpreted as a compound with **h₁ék̂u̯o-°* as its first member (see NIL 231 note 1 with references).

KUR.RA$^{HI.A}$-*un* (OH/NS).[32] The situation is similar in Cuneiform Luwian, where we have one attestation of a nom. sg. ANŠE.KUR.RA-*uš*.[33] In Hieroglyphic Luwian, however, we find not only a similarly written nom. sg. (ANIMAL)EQUUS-sa_4, and an acc. sg. (EQUUS)*zú-na*, but also a fully spelled-out dat.-loc. sg. (EQUUS.ANIMAL)*á-zú-wa/i* /azzuwi/, and a dat.-loc. pl. (EQUUS)*á-zú-wa/i-za* /azzuwanz/,[34] indicating that the Luwian word indeed was *azzu-*, the regular outcome of PIE *$*h_1\acute{e}\hat{k}u$-*.

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

> There is no known phonological development through which PIE *$*h_1e\acute{k}\underset{\sim}{u}o$- could yield PAnat. *$*h_1e\acute{k}u$- and in view of the productivity of the *o*-stem inflection in Anatolian it is unlikely that PIE *$*h_1e\acute{k}\underset{\sim}{u}o$- would have yielded PAnat. *$*h_1e\acute{k}u$- through secondary developments. We therefore must conclude that the PAnat. *u*-stem *$*h_1e\acute{k}u$- reflects the original state of affairs and that the thematicization as visible in the non-Anatolian IE languages (which is a trivial development) must be regarded as a common innovation of them.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

[40] Cf. EWAia II: 77f.

[41] Cf. Larsson 2001: 53–54.

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

[43] Cf. Thöny 2013.

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

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

The fundamental drawback of this finding for the interpretation of **h$_1$ék̂u̯o-* as a thematized **h$_1$ék̂u-* is that there is no change in meaning between the Anatolian 'horse' and the Indo-Tocharian 'horse'. If the *u*-stem **h$_1$ék̂u-* meant 'horse', the thematic **h$_1$ék̂u̯o-* would have to mean 'having a horse', but it doesn't. On the other hand, if **h$_1$ék̂u̯o-* meant horse, the *u*-stem **h$_1$ék̂u-* reflected by Hitt. **ekku-*, Luw. *azzu-* would have to mean something other than 'horse', yet it doesn't. Both **h$_1$ék̂u-* (Hitt. **ekku-*, Luw. *azzu-*) and **h$_1$ék̂u̯o-* (Ved. *áśva-*, YAv. *aspa-*, Lat. *equus*, etc.) simply mean 'horse'. Of course, this does not exclude the possibility of analyzing **h$_1$ék̂u̯o-* as a possessive derivative based on a *u*-stem **h$_1$ék̂u-* denoting some property characteristic of a horse, it only excludes (in any plausible way, at least) that the latter is what is reflected by Hitt. **ekku-*, Luw. *azzu-* 'horse'.

Indeed, according to Schindler,[49] **h$_1$ék̂u̯o-* goes back to precisely such a possessive formation, viz. **h$_1$(e)k̂-u̯-ó-* 'having swiftness', derived from an acrostatic *u*-stem **h$_1$ók̂-u*, **h$_1$ék̂-u-* 'swiftness' (preserved as the first member **h$_1$k̂-u-*° in the compound Lat. *acu-pedius* 'swift-footed';

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

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

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

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

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

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

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

from the *u*-stem **h₁ók̂-u*, **h₁ék̂-u-* 'swiftness'), and that they decided (for whatever reason) to re-derive a new word from the underlying *u*-stem abstract that had the same meaning, 'swifty', but was created by a different morphological process (overt suffixation and subsequent accent retraction).[53] This is a rather complicated, albeit not entirely implausible scenario. To be sure, there must have been a time when these two ways of forming denominal possessives (i.e., the internal and the external mechanism) existed side by side, with the external option slowly gaining ground, so that there were a certain number of isofunctional doublets (as, for example, Av. *raocah-* adj. 'light' < **leu̯k-és-* vs. Ved. *rukṣá-* 'bright' < **luk-s-ó-*; both derived from an *s*-stem **léu̯k-es-* n. 'light'; cf. also Gk. γλυκύς and γλυκκός from above) that potentially encouraged a re-derivation of internally derived adjectives from their underlying bases by use of overt suffixes (such as **-ó-*). What complicates the matter slightly is that despite having arguably been the fully lexicalized PIE and PIT standard word for 'horse' for some time, we must assume that the formation **h₁ék̂u-* was still transparent enough for the speakers of Proto-Indo-Tocharian to perform such a re-derivation. Another drawback to this analysis is that while the above-mentioned example of an internally derived *s*-stem simplex adjective (Av. *raocah-* adj. 'light' < **leu̯k-és-*) belongs to a residual class that nowhere shows any signs of productivity, the *u*-stems (both substantival and adjectival) are a well-established class in most ancient IE languages. It is therefore quite difficult to justify the motivation for replacing a perfectly fine **h₁ék̂u-* 'swift' (and/or 'horse') by its isofunctional counterpart **h₁(e)k̂u̯ó-* 'swift' (and/or **h₁ék̂u̯o-* 'horse').[54]

One last complication that has only been skated over so far concerns the probability of the reconstruction of an adjective **h₁ék̂u-* 'swift' (the purported source of PAnat. **ek̂u-* 'horse') in the first place. Strictly speaking, there is only evidence for a **hₓō(hₓ)k̂ú-* (vel sim.) 'swift' (as in Ved. *āśú-*, Gk. ὠκύς, Lat. comp. *ōcior*, OW *di-auc* 'lazy'). This form,

[53] A similar situation is probably behind the group of words for 'hedgehog' that seem to be derived from a word for 'snake' by means of different suffixes (**h₁eĝʰi-h₁no-* > Gk. ἐχῖνος; **h₁eĝʰi-lo-* > PGmc. **igilaz*, **h₁eĝʰi-i̯o-* > Lith. *ežỹs*, OCS *ježь*), suggesting similar isofunctional re-derivations of a formation that was still interpretable as 'snake-y' (i.e., a homage to the fact that hedgehogs are gifted snake killers).

[54] Kloekhorst 2008: 239; de Vaan 2009: 201; Kloekhorst 2014b: 56 depart from an idiosyncratic "hysterodynamic" *u*-stem of the Leiden model with a nom. sg. **h₁ék̂-u(-s)*, acc. sg. **h₁k̂-éu̯-m̥*, gen. sg. **h₁k̂-u̯-ós*. I fail to understand, however, the benefit of this reconstruction for the explanation of the attested forms.

however, is hardly reconcilable with a purported **h_1éḵu-* 'swift', unless one invokes a series of additional hypotheses, all of which would be hard to argue for based on the attested facts alone. One would have to explain the unique substitution of a well-formed **h_1éḵu-* 'swift' (the evidence for which is limited to the etymological interpretation of the alleged PIE **h_1éḵu-* and PIT **h_1éḵ̲uo-* 'horse') by an *ō*-grade **h_1ōḵú-* or a reduplicated **h_1o-h_1ḵ-u-*[55], neither of which is easy to account for morphologically.[56]

Note that the explanation of the 'horse' as derived from the *abstract* 'swiftness' does not encounter these problems: starting from a root **√h_1eḵ* and an abstract **h_1óḵu-* 'swiftness', the adjective can be interpreted as a compound **(h₂)o-h_1ḵu-* 'having swiftness to it' (see note 50). Departing from a different root altogether, namely **√h_1eh_3ḵ* or **√h_3eh_1ḵ* (again see note 50) with an adjective **$h_{1/3}$e$h_{3/1}$ḵ-ú-* and an abstract **$h_{1/3}$óh$_{3/1}$ḵu-*, it seems natural to assume that in the expected possessive derivative **$h_{1/3}h_{3/1}$ḵ̲u-ó-* 'swift', **h_3* (in whichever position) was lost through expected cluster reduction to give **h_1ḵ̲u-ó-*, which was then substantivized to **h_1éḵ̲uo-*.

All attempts to justify the existence of a PIE **h_1éḵu-* 'horse' next to a PIT **h_1éḵ̲uo-* 'horse' therefore require costly assumptions and a concatenation of uneconomical hypotheses, and should be considered in earnest only if there is no other explanation available. But in fact, there is a more convincing alternative at hand to account for the *u*-stem in Hitt. **ekku-*, Luw. *azzu-* 'horse'. One could assume (as indeed has been done, among others, by Starke 1995: 120; Sasseville 2017) that an already PIE **h_1éḵ̲uo-* 'horse' was inherited into Anatolian and only on the way to Hittite and Luwian was remade into a *u*-stem. The reason for this could be phonological, as a sporadic syncope of *-(u)wa-* sequences to *-u-* is a common phenomenon in both Hittite (cf. *šanḫuwanzi* ~ *šanḫunzi* 'they roast', *kuwaliu-* ~ *kuliu-* 'blue (?)', etc.[57]) and Luwian (cf. *wanattiš* ~ *unattiš* 'woman', *walipna/i-* ~ *ulipna/i-* 'wolf'[58]). For this to work for Hitt. **ekku-*, Luw. *azzu-* 'horse', we need to assume that the syncope of *-(u)wa-* to *-u-* happened in the nom. sg. **eḵwaš* > **eḵuš* already in Proto-Anatolian and led to a reclassification as a *u*-stem, which is, however, not a very attractive hypothesis given that this

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

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

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

[58] See Melchert 1994: 276.

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

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

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

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

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

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

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

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

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

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

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

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

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

**h₁ékʷo-* of PIE age. The consequence of this is that the word cannot be used to demonstrate an early split-off of Anatolian.[69]

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

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

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

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[69] The other two alleged examples of a Proto-Indo-Tocharian thematization of athematic stems cited by Kloekhorst & Pronk (2019: 4) are not conclusive either. The first one is PIE **i̯éu̯g-* 'yoke' (Hitt. *yūk-* n.) vs. PIT **i̯ug-ó-* 'yoke' (Ved. *yugá-*, Gk. ζυγόν, etc.). Since Hittite preserves the latter as well (Hitt. *yuka-* n.), it is perhaps preferable to assume two independent formations in PIE, a neuter root noun **i̯éu̯g-* or **i̯úg-* (this cannot be reflected, *pace* Kloekhorst 2014a: 503, by the masculine Ved. *yúj-* 'yoke fellow'; see Rieken 1999: 62) and an oxytone thematic neuter **i̯ug-ó-* with similar semantics. See also Nussbaum 2017: 251. Nothing is won by alleging that Hitt. *yūk-* was thematized to *yuka-* within Hittite itself. The second example is PIE **h₂uh₁-ent-* 'wind' (Hitt. *ḫuwant-* c.) vs. PIT **h₂ueh₁n̥t-o-* 'wind' (Ved. *vā́ta-*, Lat. *uentus*, etc.). Again, the alleged thematization is only a chimera: the formation **h₂uh₁-ent-* is attested in Gk. ἀείς, ἀέντος 'blowing (of winds)' and nothing suggests that **h₂ueh₁n̥t-o-* is a thematized substitution of this **h₂uh₁-ent-* rather than just an independent formation or (more likely) a derivative (on which cf. Lipp 2009 II: 142–143; Neri 2016: 16). See also the cautious remarks in Eichner 2015: 17–18.

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

[71] PGmc. **wulfaz* for expected **wulhwaz* is explained as the product of a sporadic assimilation process similar to **fimfe* for **finhwe* < **pénkʷe* 'five' (so Kroonen 2013: 140 and 598), but see note 88. The labiovelar is preserved in the feminine ON *ylgr* < **u̯l̥kʷíh₂s*.

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

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

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

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

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

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

[75] See Lehrman 1978: 229.

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

In addition, the historical phonology of Anatolian renders this account almost impossible. Judging from examples like Hitt. *ūrki-* c. 'track, trace' (**ů̯rg-i-*), Hitt. *ḫulana-* c. 'wool' (**h₂ů̯lh₁n-*°) Hitt. *ḫurkil-* n. 'perversity', CLuw. gen. adj. acc. pl. c. *ḫurkilaššinza* 'id.' (**h₂ů̯rg/ĝ(h)-*°), the expected Proto-Anatolian outcome of a PIE **ů̯lḱʷo-* should have been **ulkʷa-* (or **ulgʷa-*, see above) and not **walkʷa-* (**walgʷa-*).[76] Melchert's (1994: 127) scenario of complementary sandhi variants (*-C# #uRC- vs. -V# #wR̥C-*) that would have been generalized in different ways (i.e., the post-consonantal variant for all above-mentioned words and the post-vocalic variant only in the word for 'lion') is hardly convincing. Keeping in mind the problems that an identification of **walkʷa-* (**walgʷa-*) 'lion' and **ů̯lḱʷo-* 'wolf' poses on the semantic side, we might prefer to take up a suggestion made by Oettinger (2014: 313) that the Anatolian forms in reality reflect a different ablaut grade in the root.[77] Indeed, a thematic stem with an *o*-grade **u̯olkʷo-* would explain the Anatolian facts effortlessly and it can be accounted for on a formal level, too.

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

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

[77] Oettinger himself (2014: 313) argues for an internal derivative (**ů̯lḱʷ-o-* → **u̯olkʷ-o-*) with "Zugehörigkeitsbedeutung" for Luwian, but for a collective **u̯olkʷ-ḗ(i)* 'pack of wolves' for Lyd. *walwe-*.

of expected **u̯lik^{w}o-*), which is reminiscent of OIr. *olann* f. 'wool' < **ulanā* instead of **u̯lanā* (cf. MW *gwlan* 'id.') from **h$_2$u̯l̥h$_1$néh$_2$-*.[78]

If the underlying root **√u̯elk^{w}* 'harmful, dangerous' had an adjectival profile similar to **√(h$_1$)reu̯d^{h}* 'red' and **√leu̯k* 'bright', we would not be too surprised to find a zero-grade thematic adjective **u̯l̥k^{w}-ó-* of the likes we see in **h$_1$rud^{h}-ó-* (Lith. *rùdas*) and **luk-ó-* (Ved. *rucá-*) next to a synonymous *o*-grade adjective **u̯olk^{w}-o-* parallel to **h$_1$rou̯d^{h}-o-* (PGmc. **raudaz*) and **lou̯k-o-* (Lith. *laũkas*). In fact, this **u̯olk^{w}-o-* 'dangerous, harmful' might not only be the source of the ostensible taboo term PAnat. **walk^{w}a-*, **walg^{w}a-* 'lion' (qua 'dangerous one'), it might also underlie the Hittite word *walkuwa-* c. that is found in two separate texts, of which only one – the Old Hittite tale of the city Zalpa (KBo 22.2) – furnishes enough context to allow a determination of its meaning. After giving birth to 30 sons, the Queen of Zalpa asks [*k*]*ī=wa kuit walkuwan ḫāšḫun* 'What is this *walkuwa-* that I have born?' Since Otten's (1972) edition of the text, *walkuwa-* has been interpreted as 'bad omen, portentous thing' and it is easy to see how this meaning could have developed from a substantivization of an adjective 'dangerous, harmful'.[79] To distinguish the 'lion' word from this formation, one could even surmise that the former represents an inner-Anatolian substantivization of the adjective **u̯olk^{w}-ó-* 'monstrous' (the type **ĥok-ó-* > Ved. *śāká-* 'mighty'), while the latter continues an inherited corresponding abstract **u̯ólk^{w}-o-* m. 'monstrosity' (: **ĥók-o-* > Ved. *śā́ka-* m. 'might').[80]

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

[78] For the phonology, see McCone 1985.

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

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

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

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

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

The word for 'wolf' in Hittite is usually written in sumerograms as UR.BAR.RA. As with the 'horse' discussed earlier, we sometimes find phonetic complements attached to it as in dat. sg. UR.BAR.RA-*ni*. These forms indicate that the stem of the word ended either in *-n-* or *-na-*, which has led to the identification of UR.BAR.RA-*n(a)-* with *ulip(a)n(a)-*, a word referring to some kind of predator in other texts. The attested forms of this word present a couple of difficulties on their own:[83] the acc. sg. *ulipanan* (NH) is ambiguous in terms of stem class of the underlying word, as is the nom. pl. (or sg.?) *ú-li-ip-ni-eš*. The nom. sg. *ú-li-ip-za-aš(-ša-an)* (NH), on the other hand, looks like an error for **ú-li-ip-pa^{i}-aš* and could, then, represent an *n*-stem nom. sg. (cf. *ḫārāš* 'eagle' quasi **h$_3$érōn*+s; acc. sg. *ḫāranan*). In this case,

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

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

however, it would be remarkable that the form is spelled with a geminate *p* while the two other instances point to a lenis consonant. Rieken (2021) therefore prefers to read **ú-li-ip-na¹-aš*, i.e., a stem in *-na-* (*ulipna-*). The latter is also presupposed by the Cuneiform-Luwian cognate *ulipn(i)-/walipn(i)-* 'wolf'.[84] If the identification is correct, it follows that Anatolian either replaced the inherited PIE word **u̯l̥ḱʷo-* 'wolf' by a new term, or that it did not inherit such a word at all. While the former scenario would constitute an obvious but inconspicuous case of lexical replacement, the latter would potentially entail the conjecture that PIE did not possess a **u̯l̥ḱʷo-* in the meaning 'wolf' at the time the Anatolian branch split off. Hittite *ulip(a)n(a)-* might, then, reflect the original PIE word for 'wolf', which was replaced in Proto-Indo-Tocharian by the taboo term **u̯l̥ḱʷo-* 'dangerous one'. Under this scenario, the lexical replacement of the word for 'wolf' would reflect the phylogenetic position of Anatolian on the language tree.[85]

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

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

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

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

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

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

5. Conclusion

Zoonyms constitute a very stable and certainly quite important part of the core lexicon and can therefore play a significant role in ascertaining archaisms and innovations on several levels. The word for 'bear' **h₂ŕt-k̂o-*, for instance, is one of the most widely attested words containing a tautosyllabic **-tk̂-* sequence, which is preserved in Anatolian (Hitt. *ḫartakka-*) and Tocharian (where the word for 'bear' is not preserved) but was metathesized to a so-called thorn cluster in the remaining branches (**h₂ŕtk̂o-* > **h₂ŕk̂ḫo-*). As such, it can be regarded as an important piece in the discussion of phonological changes that purportedly divide Anatolian (and Tocharian) from the rest of the family.

The word for 'horse' has sometimes been claimed to represent an example of morphological change. Hitt. **ekku-* and Luw. *azzu-* are thought by some to continue a PIE *u*-stem **h₁ék̂u-*, which was subsequently thematized in Proto-Indo-Tocharian to give **h₁ék̂u̯o-* (Ved. *áśva-*, Lat. *equus*, etc.). This postulation, however, runs into a plethora

[88] It is tempting to assume that PIE had a word **u̯l̥̂po-* 'wolf' (enlarged by a **-n(o)-* suffix in Anatolian) that in PIT underwent a taboo deformation of the root-final consonant to **u̯l̥̂kʷo-*, which incidentally also had a lexical meaning (viz. 'dangerous, rapacious one'). There are innumerable instances of taboo deformations that only affect one phoneme of the base, compare the expletives *Gosh!* for *God!, Shoot!* for *Shit!*, Germ. *Scheibe!* for *Scheiße!*, or, from PIE times, the different continuants of the word for 'tongue': **dn̥ĝʰu̯eh₂-* (OLat. *dingua*, PGmc. **tungō-*), **dʰn̥ĝʰu̯eh₂-* (Osc. acc. sg. **fangvam**), **tn̥ĝʰu̯eh₂-(t-)* (OIr. *tengae*), **ln̥ĝʰu̯eh₂-* (Lat. *lingua*, Arm. *lezow*, Lith. *liežùvis*; independently remodelled after *lingere, lizem, liežti* 'lick'), **n̥ĝʰu(e)h₂-* (OPruss. *insuwis*, PSlav. **ęzỳ-kъ*), **siĝʰu̯eh₂-* (Av. *hizuuā-*), **Giĝʰu̯eh₂-* (Ved. *jihvā́-*). Note, that **u̯l̥̂po-* would directly give PGmc. **wulfaz* 'wolf' (see also note 71). It is still not clear, however, how the 'fox' and '(wild)cat' words would have to be interpreted formally and semantically under this account. Lastly, for all we know, Hitt. *ulip(a)n(a)-*, CLuw. *walipna/i-/ulipna/i-* might just as well have denoted the 'fox' and the Hittite word behind UR.BAR.RA-*n(a)-* could be an entirely different etymon ending in *-n(a)-*.

of difficulties as I have tried to show in Section 3. The converse development seems therefore preferable: Proto-Anatolian inherited a thematic *$h_1$ék̂u̯o- (perhaps preserved in Lyc. *esb(e/i)-*), which was reanalysed as a *u*-stem in Hittite and Luwian, possibly through a combination of inflectional overlap of stems in *-*u*- and *-*wa*- in all cases except for the nom. and acc. sg., and a general tendency towards syncope of *-*(u)wa*- sequences to *-*u*- in these two languages. Even though changes in morphology are generally the best indicator for phylogenetic subgrouping, the word for 'horse' does not lend itself to such a purpose.

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

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

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5. Travelling myths or Indo-European tradition?
The Irano-Scandinavian correspondences

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Abstract

The presence of striking similarities between Scandinavian and Iranian myths has long attracted the curiosity of scholars. The attempts of explaining them follow mainly two lines of reasoning. The first one holds that traditions from Iran spread to northern Europe through different ways in the first millennium CE. The other way round was not proposed – unless we mention Olof Rudbeck and his *Atlantica* of the 17th century. The second one emphasizes the idea of common Indo-European roots. In this chapter the arguments of both explanation models are discussed and evaluated. Some of the correspondences that have been previously known and discussed by scholars, such as the great winter and the mythic wisdom contest, will be reconsidered. Attention will also be paid to some similarities so far not elaborated, e.g. the anthropogonic myth and the eschatological battle. In the discussion I will point out the problems of the comparative approach but also its advantages. The conclusion to be drawn is that the similarities between Scandinavian and Iranian mythology essentially go back to a shared heritage of myths belonging to the Indo-European period.

1. Introduction

Scholars working with Scandinavian mythology have long noticed some striking similarities with Iranian myths. The question of how these similarities can be explained has been answered in different ways. Two main models of explanation have been proposed, diffusion from one centre and a common Indo-European tradition. A third one, less often referred to, however, must be mentioned: that of an independent polytopic origin. We begin with some remarks on the research history.

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2. Research history

The first to be mentioned is the Swedish author and poet Viktor Rydberg and his *Undersökningar i germanisk mythologi* (1886–1889). The work is divided in two parts of which only the first one was translated into English with the title *Teutonic mythology: Gods and goddesses of the Northland* (1889). In the second part, Rydberg comes across as a skilful comparativist and brings a variety of Iranian and Vedic traditions into his comparisons. He is surprisingly fluent in Iranian mythology and very familiar with the texts that had been made available in scholarly translations towards the end of the 19th century. In his interpretations of Norse mythology, Rydberg nevertheless allows his imagination to shine through too much for his arguments to be convincing. When treating the Ragnarök myth, however, Rydberg is not at all speculative. He summarizes the Scandinavian myth and sets it up against the Iranian eschatology in order to show the similarities. He also points out that Indic mythology is less relevant in this context. Rydberg words his conclusion thus:

> That this world is doomed to perish and that the destruction does not mean annihilation but a purification from evil through fire and a rebirth of life to blessedness, is an idea common to the Germanic peoples and their Iranian relatives (*Undersökningar II*, 165; my translation from the Swedish original).

The Danish ethnologist Axel Olrik frequently referred to Iranian traditions in his studies of the Ragnarök myth: *Om Ragnarok* from 1902 and *Om Ragnarok: Anden afdeling* from 1914. They superseded previous studies due to the author's familiarity with the Old Norse source material and with folkloristic traditions in general and, last but not least, due to his comparative approach. The work attracted a great deal of attention, especially after it was translated into German by Wilhelm Ranisch in 1922, five years after Olrik's death. To Olrik, the Ragnarök myth appeared as a mosaic wherein the differently coloured stones represented different mythical motifs. It was the poet of *Vǫluspá* who first created the coherent eschatological myth which we know as Ragnarök. These motifs had different origins; on the one hand common, popular conceptions, especially eastern ones, which he labelled "pagan" and on the other hand motifs linked to specific religious traditions: Christianity, Celtic mythology, and Persian religion. According to Olrik, the Great Winter and the motif of the human couple who survived the cosmic destruction originated in Iran and spread all the way to Scandinavia.

The idea of travelling myths was also embraced by the German philologist Richard Reitzenstein in the 1920s. Iranian myths were adopted

by the Manichaeans who carried them farther north into central Europe and the Baltic area. Manichean myths are behind the Scandinavian narratives about how the gods created the world from the different parts of the giant Ymir's body (*Vafþrúðnismál* 21, *Grímnismál* 40–41 and *Gylfaginning* ch. 8). The second part of the *Vǫluspá* (stanzas 40–66) recalls in terms of its structure the Christian universal eschatology, but even more so the Iranian tradition on the end of the world.

Another German historian of religions, Will-Erich Peuckert, took up the theme of the Manichaeans as mediators of Iranian traditions to the North (Peuckert 1935). The French linguist Émile Benveniste published an Iranian apocalyptic text with translation in 1932 (Benveniste 1932). Peuckert was struck by the similarity between an expression in the Iranian text: 'The time of the wolf shall end and the time of the lamb shall begin' and the wording in *Vǫluspá* about 'storm age, wolf age, before the world collapses' (stanza 45). He found further correspondences and concluded that at least three important motifs in the *Vǫluspá*'s depiction of the Ragnarök myth ultimately stem from Iranian-Manichean eschatology. These are the evil 'wolf age' with its moral disintegration, the final battle and, surprisingly, the mighty figure who will arrive from above and rule over everything mentioned in the Hauksbók version of *Vǫluspá* (stanza 65) and in *Hyndluljóð* 43–44.

With Stig Wikander and Georges Dumézil the emphasis of the comparative material shifted from Iran to India. Although they noticed some Iranian correspondences (the *Bundahišn* and the *Shāhnāmeh*), both scholars highlighted Indic traditions, in particular those found in the great epos *Mahābhārata*, which they thought provided the best parallels for Scandinavian mythology, especially the Ragnarök story (Wikander 1960; Dumézil 1959 and 1965). The following years saw a tendency to return to Iranian traditions for comparisons with Scandinavian mythology; in this case it concerned mostly motifs embedded in the Ragnarök myth. Present-day research on Scandinavian mythology is less preoccupied with ideas of diffusion or common origins. Instead discussion revolves around the impact of medieval Christianity.

3. Mythical correspondences

The mythical correspondences indicated by previous scholars include:

- The Great winter (Old Norse *fimbulvetr*) and the surviving couple
- The first humans – sprung from trees
- The cosmic tree

I have treated these correspondences elsewhere (Hultgård 2003; 2007; 2017) but some remarks here may here be appropriate. As for the Great winter, Olrik categorized it among the nature motifs and these he considered to be folk beliefs. In this capacity they could spread across great distances. The motif originated in the steppes of northeastern Iran with its cold winters and spread to Scandinavia through the intermediary of the Goths in southern Russia. In my opinion, the explanation of a common origin is far more probable since the great winter is a rare motif and intimately bound up with the survival of a human couple; in Scandinavia Líf and Lífþrasir hide in a small wood, while in Iran the man and the woman survive in a subterranean enclosure, the *vara* of Yima. Both myths emphasize the role of the surviving human couple in bringing forth new generations. The precise correspondences make an independent polytopic origin less probable.

The cosmic tree is a motif which is most elaborated in Iranian and Scandinavian mythology. To me this points to a common Indo-European origin. Martin West, who takes up the idea of the cosmic tree in his book on *Indo-European poetry and myth* (2007: 345–347), suggests that the Greek motif of a world tree could be borrowed from the Near East. The Indic and Germanic ideas of a world pillar would derive from shamanistic cosmologies of Finno-Ugric and Siberian peoples. The reference to the Iranian world tree which he does not mention would perhaps have changed his mind.

4. Further correspondences

There are several other correspondences that have not been recognized so far, as it seems. Most of them are treated in my book on Ragnarök (see Hultgård 2022) and will only be presented briefly. One further correspondence will be discussed in more detail, however.

The similarities between the wisdom contest in *Vafþrúðnismál* and the Iranian story of the rivalry between the truthful Yōišta and demonic Axtya were set out in a previous publication (Hultgård 2009). It was emphasized that the Iranian story was alluded to in one of the Avestan sacrificial hymns which was composed no later than the 5th century BCE.

Further support for the early date of the Iranian wisdom contest comes from the Indian *brahmódya* genre. It is met with already in the *Rigveda* and takes the form of a contest in eloquence and poetry making.[1] For the Vedic tribes competence in eloquence was just as important

[1] *Rigveda* I,152,7; VI,24,6; VIII,100,3; X,166.

as skilfulness in combat. The *brahmódya* was usually performed between two or more groups represented by their leader or poet; sometimes also within the group when the position of its leader was questioned.[2] Indra was invoked as the deity who could lend victory in such a contest. In later Vedic tradition the *brahmódya* included a contest in sacred knowledge and became a fixed part of the sacrificial ritual. The two officiating priests, the *adhvaryú* and the *hótṛ* (or the *brahmán*), seen as adversaries, exchanged questions and answers usually in the form of riddles.[3] The *Taittirīya-Brā́hmaṇa* gives an example of a *brahmódya* acted out at the horse sacrifice, the *aśvamedha*.[4] The *brahmán* priest identified with Bṛhaspáti, the sacrificial divinity, is seated on the right whereas the *adhvaryú* priest representing Agni is on the lefthand side. The *adhvaryú* priest poses the questions and the *brahmán* priest answers. For example: 'which was the First Thought?' and the answer goes: 'the First Thought was truly the Sky, the rain'. Another example is the following: 'Who, then, was the great bird?' to which the *brahmán* answers: 'the great bird was truly the Horse'. Although some of the questions and answers to them are no longer clear to us, they must be understood from the mythical world-view of Vedic India.[5] The purpose of the rite was according to the *Taittirīya-Brā́hmaṇa* to impart good sacrificial mood (*bráhman*), glory and splendour on the person who sacrifices. Some features that appear in the Scandinavian and Iranian counterparts are less evident in the Vedic *brahmódya*. This is the case with the fate of the loser and with the more or less evil character of the adversary. On the other hand, the Vedic material shows a clear ritual setting of the wisdom contest which might suggest that the Scandinavian and Iranian traditions originally had a cultic context.

In one passage (stanza 6) the *Vǫluspá* says that the sun, the moon and the stars did not know their course and had to be set in motion by the gods. Iranian mythology includes a similar tradition. The heavenly bodies could not move until the *fravaši*, the protective divinities, showed them their course. According to both Iranian and Scandinavian tradition, sun, moon and stars were and will be exposed to the hostility of evil forces.

The closest analogy of the Scandinavian heavenly warriors, the Einheriar, is found in the semi-divine host of warriors that appears in

[2] Oberlies 2012: 24–25.

[3] As stated by the *Taittirīya Samhitā* III,1,7 the *adhvaryú* and the *hótṛ* 'contend as to the deities' and a number of other things, see further Keith 1914: 128.

[4] III,9,5.

[5] Cf. Varenne 1967: 192.

various forms in the Iranian tradition. The connection between heavenly warriors and outstanding fighting men is clearly expressed in the sources. The hope of being welcomed in a heavenly body of chosen warriors must have inspired both Scandinavians and Iranians to fight with more bravery.

Cosmic eschatology includes both destruction and renewal. Compared with other religions Scandinavian and Iranian eschatology share a remarkable interest in the reshaping of the earth and nature.

Most strikingly is the dominance of the number 'nine' in the Scandinavian and Iranian traditions, in particular cosmology and ritual. The world tree, Yggdrasill, has nine branches and the prophetess of *Vǫluspá* sees nine worlds (stanza 2). Odin is hanging nine nights in the world tree (*Hávamál* 138 and 140). Thor takes nine steps before falling to the ground deadly injured by the poison of the Serpent (*Vǫluspá* 56). The Stentoften rune stone tells us that a chieftain gave good crops by sacrificing nine he-goats and nine stallions.

In Iran 'nine' and its derivative 'ninety-nine' are the preponderant numbers. The cosmic tree contains in its trunk nine mountains and nine thousand ninety-nine millions of rivulets (*Bundahišn* 24,8–9). As pointed out by different sources the creation of the world was a process of nine thousand years (e.g *Menōg ī Xrad* 8,9–10; *Bundahišn* 1,26–28). The primordial man, Yima, made the world larger during a period of nine hundred years and the *vara-* ('protective building') he constructed contains nine passage-ways (*Vidēvdād* 2,16 and 30). In the great purification ritual (Avestan *barəšnūm*) 'nine' figures frequently (*Vidēvdād* 9). Further examples can be adduced from both Scandinavian and Iranian traditions but the ones I have adduced suffice to show the importance of number 'nine'.

5. Early runic inscriptions and Iranian theophany formulas

A group of early runic inscriptions refer to a person called *erilaR* or *irilaR*. He introduces himself with an emphatic *ek*, 'I, the eril'. Usually an attribute or a name follows, sometimes a verbal form is added indicating his activity. Actually twelve such inscriptions are known mainly from southwestern Scandinavia. Five of them form a particular category within the *ek erilaR/irilaR* group since they are characterized by the presence of the words *haitē* or *haiteka* 'I am called' together with one or two epithets. Some other runic inscriptions also begin with an emphatic *ek* followed by a verbal form in the first person and an attribute but without mentioning *erilaR* / *irilaR*. As with

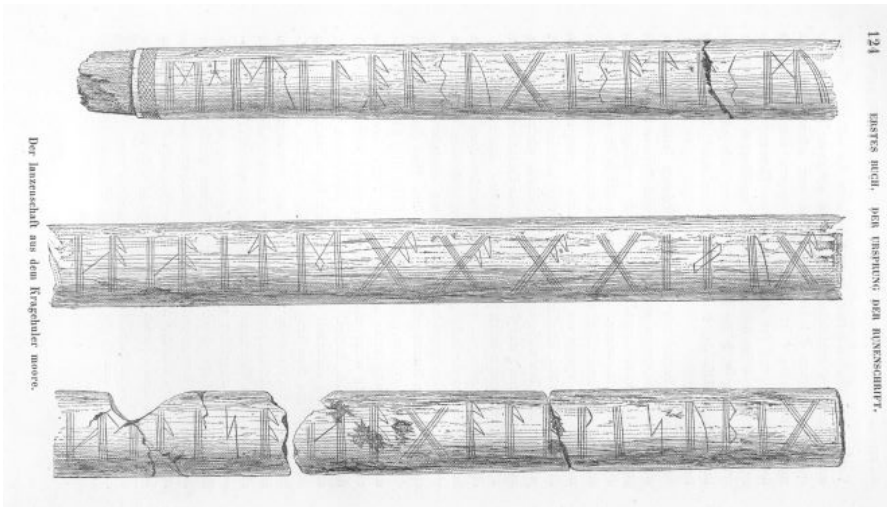

Figure 1. The Kragehul spear shaft. From: Wimmer 1887: 124. License: CC-PD.

the *ek erilaʀ* inscriptions they may be included in the category of runic self-presentations.

As an example I take the Kragehul spear shaft (Figure 1). It was discovered in 1877 in a moor on the island of Funen, Denmark. The site had been used as a cult place for more than three centuries and a wide variety of objects were discovered.[6] The shaft had been stuck into the moor but was broken into five pieces. The runes are carefully carved with many ligatures. The inscription is dated to the 5th century CE. There is consensus among runologists to transliterate it as follows:

ekerilarasugisalasmuhahaitegagagaginugahe

…lija…hagalawijubig…

In transcription and translation:

ek erilaʀ a(n)sugisalas muha haitē gagaga ginugahe

…lija…hagala wīju big…

'I, the eril of Ansugisalar, I am called *muha*, *ga ga ga ginnugahe*…*lija*…hail, I consecrate *big*…'

These runic inscriptions have usually been interpreted as the rune master's self-presentation for magical purposes. However, I suggest a

[6] For the archaeology, see Ilkjær 2001.

different interpretation guided mainly by the Iranian correspondences. The Avestan yašts dedicated to Ahura Mazdā and Vayu include repeated name revelations in which the deity presents himself to the worshippers. A passage from the yašt to Ahura Mazdā may serve as example (Yt.1,13):

spašta nąma ahmi 'I am called the watcher'

vīta nąma ahmi 'I am called the persecutor'

dā́ta nąma ahmi 'I am called the creator/giver'

pā́ta nąma ahmi 'I am called the protector'

θrāta nąma ahmi 'I am called the guardian'

žnāta nąma ahmi 'I am called the knowing one'

Besides this type of formulas, the Ahura Mazda yašt shows another variant of name revelation. The deity discloses to Zarathuštra his twenty names in a numbered list. It starts thus (Yt.1,7):

'First I am called (*nąma ahmi*) abundant giver, truthful Zarathuštra, secondly, guardian of herds, thirdly…' etc.

The Vayu yašt presents a long list of the god's names (Yt.15,43–47) which is introduced by the words *vaiiuš bā́ nąma ahmi* 'Vayu I am called indeed'. Then follow name revelations of the same type as in the yašt to Ahura Mazdā. A passage runs:

saocahi nąma ahmi 'I am called the scorching one'

bucahi nąma ahmi 'I am called the yelling one'

buxtiš nąma ahmi 'I am called saviour'

saiδiš nąma ahmi 'I am called the one who is seen (?)'

The Vedic material brings further evidence for the importance of name revelations. Already in the Yajurveda we encounter the tradition of Rudra's hundred names, the *śatarudrīya* but here it is man who turns to the god and recites his names. Such ritual name catalogues are continued in the Mahābhārata and is in Hindu tradition denoted as *nāmastotra*. The type of name revelations presented by the deity itself is uncommon in the Vedas. However, self-presentations occur sometimes, as in the following passage from the Rigveda (X, 48):

ahám bhuvaṃ vásunaḥ pūrviyás pátir…	'I became the first lord over wealth',
máṃ havante pitáraṃ ná jantavo …	'humans invoke me like a father …'
ahám indro ródho vákṣo átharvaṇas.	'I am Indra, the fire priest's protection and defence'.

As shown the Indo-Iranian tradition is characterized by the importance attached to the names of the deity. The Ahura Mazdā yašt repeatedly proclaims the power inherent in his personal name and in his many other names, in particular when they are recited in the sacrificial cult. The Vayu yašt has several times the god announce: 'with these names you shall invoke me …'. Epithets and formulas reveal the importance of the name as in yašt one (Ahura Mazdā speaking): 'I am called the one whose power is in the name (*nąmō.xšaϑrō*).'

The epithet *aoxtō. nāmana yasna* 'sacrifice with name invocation' attributed to some deities in the Avesta indicates that the ritual also should include name recitation. Similar epithets and statements are found in ancient Indic tradition. Indra is said to be *śatakratu*; he has a hundred qualities (*dhā́māni*) and his names are invoked with praise (Rigveda III,37,3–4).

6. Types of theophanies

Theophany texts are well known from the religions of the Greco-Roman world and the ancient Near East. From a phenomenological view point we may distinguish three types, the Indo-Iranian tradition included:

(1) Self-presentations. The deity presents its name with a short explanation.
(2) Name revelations. These usually develop into name-lists of varying length. Emphasis is put on the deity's names and their significance.
(3) Self-proclamations. Here the character and accomplishments of the deity are in focus. The repeated proclamations form what is called an aretalogy (from the Greek *areté* 'virtue, act of power').

An example of the first category comes from Mesoptamia. The goddess Ishtar says to king Assarhaddon:

> 'I am Ishtar of Arbela. I will walk in front of you and behind you. Have no fear' (cf. Ringgren 1979: 123).

The cult of Isis in the Hellenistic-Roman world is accompanied by inscriptions where the goddess herself speaks using the ἐγώ εἰμι, 'I am', formula. Here we find self-proclamations that have developed into aretalogies. The one from Kyme in western Asia illustrates the character as these lines show (Greek text from Bergman 1968):

3a: Εἶσις ἐγώ εἰμι ἡ τύραννος πάσης χώρας	'I am Isis, ruler of every country'
7: ἐγώ εἰμι ἡ καρπὸν ἀνθρώποις εὑροῦσα	'I am she who found fruits and crops for humankind'
10: ἐγώ εἰμι ἡ παρὰ γυναιξὶ θεὸς καλουμένη	'I am she who is called goddess among women'
12: ἐγὼ ἐχώρισα γῆν ἀπ᾽οὐρανοῦ	'I separated the earth from the sky'
55: ἐγὼ τὸ ἱμαρμένον νικῶ	'I overcome fate'
56: ἐμοῦ τὸ εἱμαρμένον ἀκούει	'Fate obeys me'

7. Conclusion

The theophany texts from the Hellenistic-Roman world texts present many similarities with the *ek erilaʀ* inscriptions and a diffusion of such theophany formulas to Scandinavia may well be argued. However, the Iranian and Scandinavian texts stand out by their emphasis on the names of the deity and their use of the *nąma ahmi* and the *haitē/haiteka* formulas. In my opinion, the runic formulas are fragments borrowed from ritual texts, similar to the Iranian ones, and recited by the eril as the deity's representative.

As with the other cases of Irano-Scandinavian correspondences that I have presented they suggest a common Indo-European background. The explanation in terms of diffusion or travelling myths seems to me less probable.

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6. Issues with the steppe hypothesis: An archaeological perspective
Iconography, mythology and language in Neolithic and Early Bronze Age southern Scandinavia

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Abstract

In southern Scandinavia, Neolithic iconography was focused on non-figurative (*aniconic*) geometric motifs resembling those found as engravings on large stones across western Europe in areas where megalithic tombs were built. Such engravings are generally referred to as megalithic art. However, a certain group of elaborate anthropomorphic standing stones, *statue menhirs*, dating to the late 4th and early 3rd millennium BC, is known from western Europe and has clear parallels further east in the North Pontic area, in the Caucasus and as far away as the Altai Mountains. Are the personifications represented in these Chalcolithic statue menhirs expressing new social conducts, manifestations of elite groups and Indo-European mythologies? If so, why was this new mode of expression not adopted in southern Scandinavia with the introduction of Yamnaya/Corded Ware influences and early Indo-European around 2800 BC? It was not until the 2nd millennium BC (the Early Bronze Age in southern Scandinavia) that this region saw human representations and indications of Indo-European mythology. Taking the iconological changes of the Early Nordic Bronze Age as a point of departure, this paper argues against a single wave of steppe migration as the sole explanation for the *Indo-Europeanization* of southern Scandinavia. Instead, at least two major rounds of steppe innovation and influences are identified.

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1. Introduction

Iconography plays an important and immediate role in our understanding of the past. The decoding of prehistoric art and images holds a great potential and can tell us a lot about the societies that created them including insights into ritual and social practices, religious beliefs and world views. In this paper, I will approach the profound iconographic changes that appeared in southern Scandinavia with the beginning of the Bronze Age during the early 2nd millennium BC and relate these to changes in social organization and a supposed second round of Indo-European influences, which is not immediately explained by the prevalent version of the steppe hypothesis.

In order to understand a second round of Indo-European influences, we need to look at the preceding Neolithic period, not least the developments that took place during the early 3rd millennium BC. In the early 3rd millennium BC we see significant changes in the material culture associated with the archaeologically defined Single Grave culture (c. 2850–2250 BC), which is part of the overall Corded Ware complex. In a Danish chronological context, the Single Grave culture belongs to the later Middle Neolithic (c. 2850–2350 BC) whereupon the Late Neolithic begins (c. 2350–1700 BC), which again is followed by the Bronze Age starting out in the early 2nd millennium BC (c. 1700–500 BC). Both the emergence of Single Grave communities and the beginning of the Bronze Age about a thousand years later are associated with significant material culture changes, which to a varying degree seem to coincide with social, demographic, language and mythological shifts. In the following, I will associate the marked changes in material culture with a supposed first and second round of "Indo-Europeanization". However, it is not until the second round of Indo-European influences, during the Early Bronze Age, that significant iconographic and resulting evidence of mythological changes can be observed.

Before I start this long journey, I find it necessary to define what is meant by *Indo-Europeanization*. This is relevant not least because Indo-European is a linguistic term and I do not begin from a linguistic starting point but from an archaeological one. Indo-European refers to a widely spoken language family that includes most of the languages spoken in present-day Europe (and settled oversea areas such as The Americas and Australia) and southwest and south Asia. This group of related languages have a common ancestor referred to as Proto-Indo-European. Where and when this language was spoken has caused a

heated debate – the so-called *Indo-European homeland debate*. These discussions, and their research historical backgrounds, have been summarized several times (some very informative examples are Anthony 2007, in particular Ch. 1 and Ch. 5; Olander 2019) so there is no need to recapitulate them here. The issue is not finally settled but it is suitable to stress that most evidence (and scholars) point at the steppe hypothesis, which places the origins of Proto-Indo-European on the steppes of southern Russia and Ukraine somewhere between 4500–2500 BC (but see Heggarty et al. 2023 for a hybrid model).

From a purely linguistic perspective, Indo-Europeanization refers to the introduction of Indo-European languages in Europe (Joseph 2018: 15). However, the term has also been used to describe a range of cultural changes that appeared throughout Europe during the 5th, 4th and 3rd millennia BC affecting economy, social organization, material culture, demography, genetic ancestry, ideology, mythology etc. (Gimbutas 1993). Now, this opens for a possible confusion of archaeological cultures (defined on the basis of material culture), language communities and biologically defined genetic groupings. It is important to stress that there is no direct *a priori* relationship between archaeological culture, language community and genetic profile. Sometimes these can coincide to a certain degree but we cannot take any such relationships for granted.

Hence, Indo-Europeanization implies a process by which something (e.g. material culture, organizations, societal structures, practices etc.) or someone is influenced by Indo-European speakers, which surely enables a very broad range of things and processes through time and space. In this particular context, I will use the term to describe influences coming from the Pontic-Caspian steppe region, or influences mediated via this region, of supposed proto and early Indo-European speakers. Such influences include the language itself, certain elements of material culture and aspects of ritual behaviour and belief systems/mythology. As mentioned in the beginning of this introduction, I will focus on the obvious iconographical changes that occurred during the Early Bronze Age in southern Scandinavia (mid-2nd millennium BC). These changes constitute a significant break with the previous non-figurative Neolithic imagery and indicates the introduction of mythological elements known from early Indo-European recordings as handed down in e.g. contemporary Vedic texts written in Old Indic/Indo-Aryan (Mallory 1989: 35–48; Erdosy 1995: 6–8; Anthony 2007: 49 n. 14).

2. Prelude: Neolithization and *aniconism* in northwestern Europe

Agriculture and Neolithic life developed in the Fertile Crescent, covering the Levant, southern Anatolia and Mesopotamia, during the 10th millennium BC. From its early appearance in the Near East, Neolithic life spread through western Anatolia and southeastern Europe from the 8th to the 6th millennium BC. In addition to domesticated crops and animals, pottery making, use of polished stone and flint tools and conglomerated settlements, clay figurines seem to be an integrated part of the so-called "Neolithic package" from early on. However, as farming reached central Europe in the 6th millennium BC, the number of figurines was strongly reduced even though they remained in use in southeastern Europe (Becker 2011; Bánffy 2017).

Thus, at the beginning of the northern and western European Neolithic, in the 6th, 5th, and 4th millennium BC, we see a significant lack of figurative representations (*aniconism*), which in some areas, such as northwestern Europe, lasted until the beginning of the Bronze Age at the onset of the 2nd millennium BC (Iversen, Becker & Bristow 2024).

It is significant that the number of figurines almost ceases completely as agriculture reaches western and northern Europe characterized by scattered and dispersed settlement patterns. The transition from conglomerated tells/settlement mounds to open dispersed settlements seems to have happened in the Carpathian Basin (Bánffy 2013; Jakucs et al. 2018; Bánffy 2019) meaning that central Europe and the earliest agricultural communities of this region, the Linear Pottery culture (LBK), played an import role in this transition. The LBK stretched from Ukraine, Moldova and Rumania to the Paris Basin between c. 5550–4900 BC. Figurines are part of the LBK and are primarily found in settlement contexts probably due to Balkan influences. The LBK figurines have been thoroughly recorded showing that the number decreases significantly in the westernmost parts of the LBK and they generally seem to be lacking among the succeeding Neolithic groups inhabiting the former northern and western LBK areas (Becker 2011; Becker & Dębiec 2014; Hofmann 2014; Bánffy 2017). Comparing the situation of southeastern Europe and Anatolia with that of northern and western Europe, we are certainly facing two very uneven processes of Neolithization resulting in markedly different approaches to settlement organization, development of social complexity and material culture, including use of figurines.

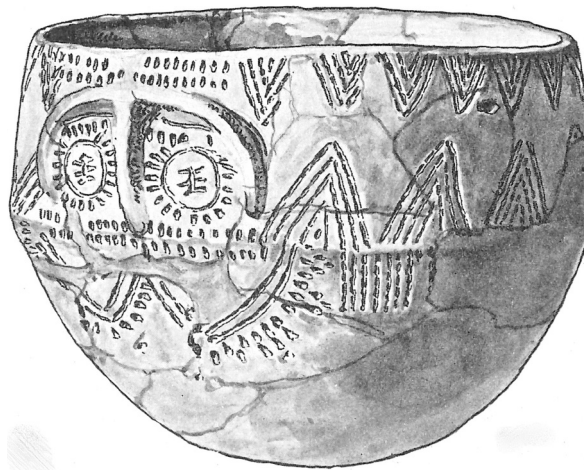

Figure 1. Face pot from a passage grave at Svinø, southern Zealand, Denmark. From: Sophus Müller 1918, no. 164. License: CC-PD.

Despite the apparent absence of figurines in the northern and western European Neolithic, this region did not lack decoration. In fact, Neolithic pottery is among the finest and most elaborately decorated found within western European prehistory. From the onset of the South Scandinavian Middle Neolithic (around 3300 BC) we see highly complex geometric compositions executed with great accuracy and artistic skills. Not until c. 3000 BC do figurative features in the form of stylized "rayed sun-eyes" accompanied with eyebrows occur as seen on a certain group of Middle Neolithic face pots from Zealand, Denmark (Figure 1). Similar facial motifs are found on e.g. the eyed-vases (*occulados*) of the Chalcolithic Los Millares culture, Spain, and on the contemporary Iberian eyed-idols (*ídolos oculados*) and biomorph engraved stone plaques. Eyes, though not "sun-eyes", and eyebrows are also known from Britain appearing on two of the three chalk cylinders, known as the *Folkton drums*, recovered from a burial mound in Folkton, North Yorkshire, dated to the early 3rd millennium BC (Ebbesen 1979; Thomas 2005; Scarre 2007; Lillios 2008; Recchia-Quiniou 2017).

Megalithic art is another significant form of decoration. This phenomenon is concentrated in e.g. eastern Ireland, in particularly the Boyne Valley area where the passage graves Knowth and Newgrange stand out. The megalithic art of Ireland and Britain (primarily Orkney) resemble to some extent the non-representative and geometric decoration found on contemporary pottery and includes spirals, arcs, chevrons, triangles, lozenges, circles, meander lines etc. Several scholars have

emphasized the obvious lack of clear figurative representations in the megalithic art found on the British Isles (Twohig 1981; 1998; Thomas 2005; Scarre 2007; 2017). Other areas with certain concentrations of megalithic art are Brittany, central western France and, northern and western Iberia. In Iberia, Brittany and Orkney both carved and painted decoration has been documented within the megalithic tombs. The decorated stones were in more cases standing stones, which were reused as building material for the megalithic tombs, perhaps as the result of ideological changes or even part of *iconoclastic* ideas (Cassen 2000; Bradley 2009: 79–83, 216–217). The Iberian megalithic art was also mainly non-representational but recognizable figurative features such as animals (including whales), stylized anthropomorphic figures, and sun-symbols have been defined. Some of these figurative elements are also found in Brittany's megalithic art which shows whales, quadrupeds and hafted axes (Twohig 1981; Briard & Duval 1993; Bradley 1997; 2002; L'Helgouach, Le Roux & Lecornec 1997; Whittle 2000; Alves 2012; Cassen et al. 2015; Fairén-Jiménez 2015; Jones, Cochrane & Diaz-Guardamino 2017). Thus, some recognizable figurative features may occur here and there in the otherwise highly stylized and geometrical megalithic art and in the form of partly human-shaped, but undecorated, standing stones dating back to the 5th millennium BC.

3. Iconography and social stratification across Chalcolithic Europe: the *anthropomorphic stelae*

When discussing megalithic art and its figurative elements, the so-called *anthropomorphic stelae* or *statue menhirs* (Breton meaning 'long stone') become relevant. The anthropomorphic stelae are highly stylized standing stones, which have been modified to represent human shapes including marked heads and shoulders. The more elaborate specimens are carved showing details such as facial features, cloths, weapons (e.g. daggers, axes, halberds, and bows), belts, sandals and ornaments and can on the basis of these details be dated to the late 4th and 3rd millennium BC. The anthropomorphic stelae have a wide distribution and are known from Brittany, western Iberia, southern France, northern Italy, the western Alps and the eastern Mediterranean with clear parallels further east in the Pontic-Caspian steppe region, in the Caucasus and as far away as the Altai Mountains (Figure 2). Even though there are differences across this vast area, the anthropomorphic stelae also display striking similarities in their display of the human

Figure 2. Distribution of anthropomorphic stelae/statue menhirs across Eurasia. From: Sabine Reinhold, 2018, fig. 2 © License: CC BY-NC.

body, gender and social marking (Telegin & Mallory 1994; Anthony 2007: 336–339; Robb 2009; Heyd 2017; Reinhold 2018).

The occurrence of similar detailed anthropomorphic stelae over vast areas of Eurasia during the late 4th and 3rd millennium BC seems to express new social conducts. When it comes to the elaborate West European stelae, they have been interpreted as representing the manifestations of elite groups:

> They [the statue menhirs] may have celebrated a restricted elite, and so the carvings were modified as the social order changed. It may be no coincidence that these public images assumed greater importance during the Bell Beaker phase, when long distance networks became increasingly important in ancient Europe. Individual burials also appear at this time. (Bradley 2009: 93)

Thus it might well be that figuration and social hierarchization were interlinked in 3rd millennium BC western Europe. Due to great stylistic similarities and identical dating, occurring from around 3300 BC, the origins of the anthropomorphic stelae phenomenon is immediately hard to pinpoint. Thus, based on stylistic analogy and chronology it is not possible to identify one single wave of diffusion from East to West or the other way round (Jeunesse 2015; Reinhold 2018: 69). The anthropomorphic stelae are frequently associated with funerary contexts. More than 300 stelae have been found in Yamnaya and Catacomb graves where they have been re-used as grave covers (Telegin

& Mallory 1994; Anthony 2007: 336–339). However, as accounted for by Sabine Reinhold (2018), it is striking that Yamnaya graves generally do not contain objects depicted on the stelae. Prototypes of the weapons depicted on the stelae are on the contrary found in the North Caucasian Maikop elite graves (c. 3700–3000 BC). Thus, it is very probable that certain social conducts focusing on the *warrior figure*, hierarchization and a distinct display of power developed in early 4th millennium BC Maikop societies and were transferred to e.g. the North Pontic area where the anthropomorphic stelae came to express the new social order and martial focus (Reinhold 2012; 2018; Jeunesse 2015).

The wide distribution of the anthropomorphic stelae with their iconographic presentation of the warrior ideal (circa one third of the anthropomorphic stelae are armed cf. Reinhold 2018) can be seen as a prelude to a series of population and cultural changes that characterize the early 3rd millennium BC, which are usually ascribed to the Corded Ware and Bell Beaker archaeological phenomena (Allentoft et al. 2015; Haak et al. 2015; Heyd 2016; 2017; Kristiansen et al. 2017; Olalde et al. 2018; Olalde et al. 2019; Sjögren et al. 2020; Linderholm et al. 2020; Allentoft et al. 2022).

4. The 1st round of Indo-Europeanization: Language and the Corded Ware

In the early 3rd millennium BC we see significant changes in the material culture throughout northern and eastern Europe including single graves under low burial mounds, cord-decorated beakers, stone battle-axes and various dress ornaments made of amber, teeth, copper etc. This archaeological complex is usually referred to as the Corded Ware culture (in Denmark the Single Grave culture, in Sweden the Battle Axe culture) and in particular the burial practice shows strong affinities to the Yamnaya burials known from the Pontic-Caspian steppe (Kristiansen et al. 2017: 336). From early on the migration perspective dominated theories about the emergence of the Single Grave culture on the Jutland Peninsula (Iversen 2019). Sophus Müller was the first to present a thorough description of the Danish single graves and he saw the appearance of the "single grave people" as the result of immigrations from Central Europe (Müller 1898: 274–281). About 50 years after Müller's initial study, Peter Vilhelm Glob published a thorough study of the Jutland Single Grave culture and presented a dramatic increase in the number of known graves (Glob 1945). Developing the ideas of Sophus Müller, Glob presents a colourful and vivid interpretation of the introduction

of the Corded Ware adding two more components to the material culture: the domesticated horse and the Indo-European language.

> The home of the Jutland Battle-axe peoples lay far to the east, on the other side of the Volga, in mountainous steppe-lands that continue uninterrupted into central Asia – where in the third millennium a nomadic cattle-breeding culture developed in a marginal zone outside the urban cultures of the Middle East but showing little influence from them. [...] Tribe after tribe dispersed in long caravans of waggons, led by men on horseback, to seek new pastures in other parts of the world. These were the Indo-Europeans, who broke out of their homeland and scattered in every direction. Wherever they came they caused amazement and fear, for in most places no one had ever before seen men on horseback. [...] Wherever the Battle-axe people came they made themselves masters over the peasants and any others who were settled in the area. Prepared and well armed as they were, it was in most cases an easy matter to subdue peaceful farmers. (Glob 1971: 106–107)

Despite this critique and attempts to explain the emergence of the Single Grave culture as the resident Neolithic Funnel Beaker farmers adopting a new culture and ideology (Malmros 1980; Damm 1993; Hübner 2005: 694–719), the migration perspective was not abandoned by all scholars (Kristiansen 1991; 2009; 2012a).

The idea that the Corded Ware was created as a result of migrating Indo-European speaking populations from the Pontic-Caspian steppe region was further fuelled by genetic studies showing the spread of "steppe ancestry" into Central Europe in the course of the early 3rd millennium BC (Haak et al. 2015; Allentoft et al. 2015; Kristiansen et al. 2017; Goldberg et al. 2017; Linderholm et al. 2020; Allentoft, Sikora, Refoyo-Martínez et al. 2024). That such movements eventually also influenced southern Scandinavia has been supported by recent aDNA studies of the Swedish Battle Axe culture and the Danish Single Grave culture (Malmström et al. 2019; Egfjord et al. 2021; Allentoft, Sikora, Fischer et al. 2024). The migration of people from the steppe in the early 3rd millennium BC could explain the spread of Indo-European to Europe as advocated for in the linguistic steppe hypothesis.

By comparing lexical similarities in different Indo-European branches, historical linguistics have been able to reconstruct parts of the original Proto-Indo-European vocabulary including words for dairy production (cow, 'to milk', cheese etc.), wool production (sheep, lamb, wool), horse breeding (horse, foal, 'to tame') and wagon technology (e.g. wheel, nave, axel, yoke-pin) (Mallory & Adams 2006; Iversen & Kroonen 2017: 515–516, table 1). So, should we for example add

woollen clothes to Glob's vivid scenario of the battle-axe-brandishing, Indo-European-speaking mounted nomads? Probably not!

One of the premises of the paleolinguistic method is that when a specific word can be reconstructed its speaker must be familiar with the concept referred to by that word. Thus, Proto-Indo-European relates to a region and a time holding the elements listed above and can therefore not be earlier than the Chalcolithic. Generally, it fits with the pastoral-nomadic Yamnaya culture of the Pontic-Caspian steppe, c. 3300–2500 BC (the steppe hypothesis) (Iversen & Kroonen 2017: 515). In addition to the naïve and simplistic view on cultural change, Glob's hypothesis also transfers a stereotypical steppe scenario on the Corded Ware. One of the big issues is the chronology. It was not until the Early Bronze Age (c. 1200 years after the emergence of the Single Grave culture in Denmark) that we see evidence of domesticated horses and woollen clothes in southern Scandinavia (cf. below). Furthermore, widespread lactose tolerance now seems to occur quite late, probably not until, and especially after, the Bronze Age (Burger et al. 2020). Thus, none of these features seems to be caused by 3rd millennium BC steppe expansions as earlier believed.

As the evidence is at present, we may safely assume that migrations from the steppe had profound impact on the Neolithic societies of early 3rd millennium BC Europe and that these migrations ultimately also influenced southern Scandinavia. Such large-scale movements, probably preceded and guided by already existing networks and well-established contact routes (e.g. Heyd 2017; Iversen 2019), are obvious events to facilitate language changes. If early Indo-European was introduced together with Corded Ware/Yamnaya influences during the early 3rd millennium BC – why do we not see evidence of the material culture known from the early Indo-European vocabulary c. 2800 BC? Features such as domesticated horses, wool, metal, Indo-European mythological representations like the divine twins (the *Aśvins*) are missing, as are elite manifestations and figurative representations/statue menhirs. Even though the *Aśvins* are known from the somewhat later recorded Rigvedic hymns, dated to c. 1500–1300 BC, they are supposed to originate in the early Proto-Indo-European period (Ward 1968; Anthony 2007: 454 with references).

However, it has been argued that Proto-Indo-European mythological aspects were already present in the Single Grave culture as double burials are seen as a reference to twin male rituals illustrating foster brothers or twin leaders representing a prototype of the divine twins

(Kristiansen & Larsson 2005: 265). Double burials do occur within the Single Grave and Battle Axe cultures but these are rare exceptions. In more cases, they certainly do not hold male twins (or even illustrations of this theme) as male and female are buried together (Glob 1945: 163, 179–180; Lindahl & Gejvall 1954; Malmer 1962: 201–202; Madsen 1971; Hübner 2005: 593–594; Poulsen & Grundvad 2018: 77–80). On this basis, I do not think that the few double burials of the Single Grave culture make a convincing argument for a reference to the divine twins.

5. The 2nd round of Indo-Europeanization: horses, chariots, wool and figurative iconography

From an iconographic perspective, the emergence of the Single Grave culture did not change much. Figurative representations were still absent and pottery decoration consisted of geometric compositions: horizontal cord-line impressions, engraved lines, herringbone pattern, tooth stamps, incised triangles and chevrons (Hübner 2005: 165–310). This absence continued throughout the Late Neolithic (c. 2350–1700 BC) and the first phase of the Bronze Age, period IA (1700–1600 BC), but changes were on their way.

The figurative Bronze Age and twin symbolism

In period IB (1600–1500 BC) a few recognizable depictions start to occur on bronzes such as the ship motif on one of the Rørby scimitars and the eight fish on the huge Valsømagle spearhead, both from Zealand (Vandkilde 2014, figs. 10–11). With the succeeding period II (c. 1500–1300 BC), the number of figurative depictions increases and we see realistic representations, some of which are cast in advanced *cire perdue* techniques such as the famous sun-horse from Trundholm Mose, northwestern Zealand (the so-called Sun Chariot). Two additional bronze horses from the same period were recovered as part of a hoard at Tågaborg in Scania (Randsborg 1993: 90, Figure 49). It is also during period II that we see a range of characteristic bronze razors with handles terminating in sculptured horse heads (Kaul 2013: 462, Figure 4).

It is not just the horse motif that characterizes the blooming figurative art of the mid-2nd millennium BC, since human figures are also known from this period. One well-known example is a razor with a handle formed as a human head with pageboy haircut found in a burial mound at Gjerdrup, north of Roskilde, Zealand. An interesting find for

the discussion of Indo-European mythological aspects is two identical male bronze figures deposited together with bronze axes, belt plates, tutuli, neck collars and arm rings at Stockhult, Scania. The two figures wear pointed hats and miss the arms as these originally were separately attached to the figures (Arne 1909: 183–184; Kristiansen & Larsson 2005: 311–313).

A series of small bronze figurines dating to the Late Bronze Age, Montelius' period IV/V (c. 1100–700 BC), have been recorded in two Danish hoards from Fårdal, central Jutland and Grevensvænge, southern Zealand (Kjær 1927: 242–262; Djupedal & Broholm 1953). In addition to a range of other objects, the Fårdal hoard holds five figurines: a kneeling female with a corded skirt, a snake, two horse heads with horns and a lyre-shaped bronze piece composed of two laterally reversed horned horse heads with an attached waterfowl placed in between them. The Grevensvænge find originally included three identical backwards-bending females in what seems to be an acrobatic posture with widespread parallels (Iversen 2014), two inverted squatting men wearing horned helmets holding large cultic axes and a single standing woman with a fibula on her chest. The two squatting men and the standing woman are fixed to their own plate and a "free" space on the woman's plate indicates that another figure, probably one mirroring the depicted woman, was originally placed beside her. Unfortunately, only one of the horned helmet men and one of the female acrobats have survived; the complete find is only known from late eighteenth-century antiquarian recordings (Figure 3). Each of the figures from the two finds have a peg that indicates that they were originally fastened to some kind of, not preserved, organic base – perhaps a ship model, as indicated by contemporary rock art (Djupedal & Broholm 1953: 53–54; Glob 1962).

The strange constellation of actors that make up the Grevensvænge find can be found on West Swedish rock carvings. At Backa and Sottorp in Bohuslän, backwards-bended female (?) acrobats are depicted leaping over ships containing crews of "matchstick figures" including larger standing persons wearing horned helmets and carrying cultic axes (see Iversen 2014: 242–246, with references). A somewhat similar constellation, but without the leaping ladies, is depicted on a razor from Vestrup, northern Jutland. Here, two two-horned helmet men with cultic axes are sitting in a ship next to a standing woman (Djupedal & Broholm 1953: 51–52). In this context, a very interesting hoard was excavated in 2019 at Kallerup in Thy, northwestern Jutland. The find is

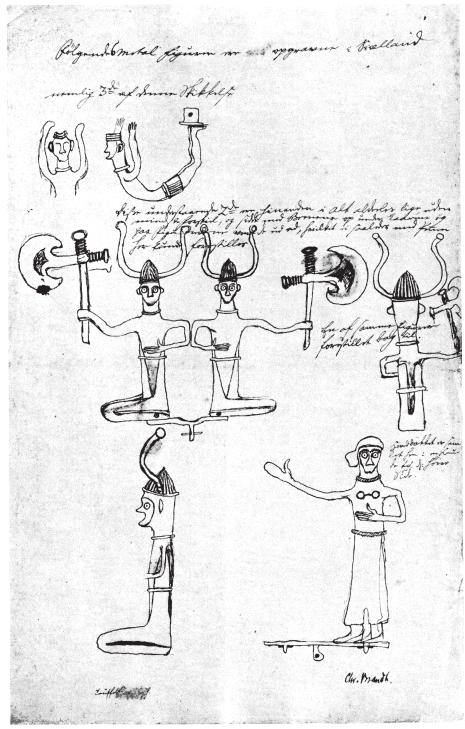

Figure 3. The bronze figurines from Grevensvænge, Southern Zealand, Denmark. Drawn by Christian Brandt c. 1779/80. From: Djupedal and Broholm 1953. License: CC-PD.

dated to the Late Bronze Age and constisted of a large ceremonial/cult axe, two mountings with double horse's heads, and finally a peculiar two-faced figure wearing a "double two-horned helmet" (MuseumThy 2019; Møller & Posselt forthcoming; see also Vandkilde et al. 2022). It appears as if the Grevensvænge twins are fused together in one single representation (Figure 4).

Duality or twin symbolism reoccur in the double deposition of objects such as massive cult axes, the aforementioned Rørby scimitars and in the deposition of a pair of horned helmets comparable to those worn by the Grevensvænge figures, in a bog near Viksø, northern Zealand. Furthermore, the Late Bronze Age lures are also often found in pairs. Thus, despite the variety of applied media, materials and scale (rock art, bronze miniatures, "life size" bronzes etc.), the twin symbolism recurs over vast distances and its basic (mythological) meaning must have been well-known and recognizable throughout Bronze Age Scandinavia. The twin symbolism in the Nordic Bronze Age and its relation to the Indo-European mythological divine twins (the *Aśvins* known from

Figure 4. The two-faced figure from Kallerup, Thy, Denmark. Photo: Søren Greve, The National Museum of Denmark © License: CC BY-SA 4.0.

the Rigveda) has been thoroughly dealt with and summarized by Kristian Kristiansen & Thomas B. Larsson (2005: 258–282). However, it is not only the representations of the divine twins that might refer to Indo-European mythology, the posture of several of the Bronze Age figurines also hint at bodily practices described in the Rigveda as pointed out by Kristin Armstrong Oma and Lene Melheim (2019: 127–133). The idea that the sun is being pulled by a horse/horses, as depicted on several rock carvings and the Trundholm sun-horse, is also found in e.g. the Rigveda, where seven horses are pulling the Sun God's chariot (Fergus 2017: 1:50, 1:164). Further parallels between contemporary Vedic texts, Scandinavian rock art and Bronze Age iconography and rituals have been suggested by several scholars (Østmo 1997; Kaliff 2005; Kristiansen 2012b; Melheim 2013; Oma & Melheim 2019).

The figurative iconography that comes through from period IB/II of the Nordic Bronze Age onwards is in particular prominent in the many figurative rock art depictions showing ships, chariots, weapons, animals including sun-horses, humans, hands, footprints and the like.

When discussing influences from the steppe, two particular motifs are of interest: the horse and the chariot. That these motifs held a prominent position in the Nordic Bronze Age is e.g. seen from the elaborate Kivik cist in eastern Scania and the engraved stone slabs dominated by horse motifs from the Sagaholm burial mound near Jönköping, Sweden (Randsborg 1993; Goldhahn 1999; Kristiansen & Larsson 2005: 186–193, 267–270; Goldhahn 2013). Among the Kivik cist's rich imagery is a realistic depiction of a charioteer driving a two-wheeled chariot pulled by a team of horses. Chariots are a reoccurring motif in the general Scandinavian rock art and seems to date back to period II and perhaps even period I (J. W. Johannsen 2010; 2011).

6. Implications of Indo-European influences in the Nordic Bronze Age

Both the tamed horse and the chariot seem to be inventions of the steppe (Anthony 2007: 196–206; Ludwig et al. 2009; de Barros Damgaard et al. 2018; Gaunitz et al. 2018). While the main source for the domestic horses that have been used for the last c. 4000 years has been a disputed topic until recently (Librado et al. 2021), the earliest chariots have been recovered from c. 2100–1800 BC Sintashta culture burials found at the eponymous Sintashta site in the northern steppes, just east of the Ural Mountains. The funeral sacrifices, which included whole horses, chariots with spoked wheels, copper and arsenical bronze axes, daggers and socketed spearheads together with pottery and small silver and gold ornaments have been compared with those described in the Rigveda (Anthony 2007: 371–375). However, the wheel itself, in the form of solid disc wheels, as well as wagons/carts are far older than the chariot and dates back to the middle of the 4th millennium BC. Especially after 3400 BC, evidence become abundant from various places including northern, central and eastern Europe, the steppes of Russia and Ukraine and Mesopotamia (Anthony 2007: 65–72; Burmeister 2017; Reinhold et al. 2017).

Wool is another characteristic feature of the Early Bronze Age with an associated Proto-Indo European vocabulary (Iversen & Kroonen 2017). The Danish Bronze Age is in particular known for its well-preserved oak-log coffins holding Bronze Age males and females buried in woollen clothes. The preservation of the woollen textiles in the Bronze Age oak coffins from period II/III (c. 1500–1100 BC) is caused by geochemical processes within the burial mounds. The core of the

mounds are built of wet grass sods, which create an anaerobic atmosphere within the mounds (Holst, Breuning-Madsen, and Rasmussen 2001; Breuning-Madsen et al. 2003). Thus, it is obvious to state that the reason we have preserved woollen garments from the Early Bronze Age and not before, is due to preservation and simply caused by the application of this specific burial practice. However, the simple cutting to size of the woollen garments found in the oak coffins shows that they were modelled after skin costumes, which implies that the wool-technology was still rather new in the Early Bronze Age (Broholm & Hald 1935: 328–329; Mannering 2017: 19).

Thus, we face a situation in which Indo-European was probably introduced to central Europe with migrating populations from the steppes (the steppe hypothesis) forming what we know as the Corded Ware and Bell Beaker complexes (Kristiansen et al. 2017; Allentoft, Sikora, Refoyo-Martínez et al. 2024). The wide distribution of these two major archaeological complexes and the genetic changes that can be observed throughout Europe in the course of the early 3rd millennium BC would definitely make an obvious scenario for the spread of Indo-European from a supposed origin on the Pontic-Caspian steppe to most of Europe. However, this does not seem to be the end of the story.

What I have tried to show in this section is that we see significant gaps of c. 500–600 years and c. 1200–1300 years, respectively, between the supposed introduction of Indo-European language in southern Scandinavia and the material things referred to in the common Proto-Indo-European steppe vocabulary. According to the prevalent scenario, the Indo-European language (incl. its wagon, wool and horse terminology) came with the Single Grave culture c. 2850 BC. However, the wheel and wagon technology was already present in southern Scandinavia from the mid/late 4th millennium BC (i.e. c. 500–600 years *before* the Single Grave culture) as can be deduced from preserved cart tracks and supposed wagon burials (Piggott 1969: 308; N. N. Johannsen & Laursen 2010; Mischka 2011). This does not in itself constitute a problem as the "old Neolithic" words associated with wagons could be replaced by the new Indo-European vocabulary.

In contrast, it is more problematic to imagine the introduction of a terminology for materials and processes that were not introduced. Wild horses were of course known, but not tamed ones, so why adopt horse breeding vocabulary? Wool garments were, as far as can be determined, not produced or worn, so why adopt the vocabulary? To adopt new words into a language that describes concepts and features unknown

to its speakers seems to go against the paleolinguistic method. These concepts, together with signs of Indo-European mythology, first appeared in the Early Bronze Age, period IB/II, c.1600/1500 BC (i.e. c. 1200–1300 years *after* the Single Grave culture and the supposed introduction of Indo-European). Hence, we must expect at least a "second round" of influences from the steppes introducing new words (originating in Proto-Indo-European vocabulary) together with new features such as woollen clothes, domesticated horses, spoke-wheeled chariots and figurative mythologically loaded iconography. A driver for this development could be the Sintashta chieftains. How precisely and through which routes these new innovations were transmitted to southern Scandinavia can be debated. But if we assume that early Indo-European words associated with wool production and horse breeding followed these technologies, it is most likely that they were introduced more or less directly from the steppe together with domesticated horses, which expanded rapidly across Eurasia from c. 2000 BC (Librado et al. 2021) instead of being transmitted indirectly via a long way around e.g. through the Mediterranean. However, further and more thorough archaeological, archaeogenetic and linguistic analyses are needed to justify such direct connections.

7. Conclusion

In this paper, I have considered the significant material, cultural and social changes of the 3rd and early 2nd millennium BC from an iconographic perspective and applied this to mythological interpretations and prevailing linguistic models focusing on the steppe hypothesis. Obtaining a long-term perspective makes it clear that the Indo-Europeanization of northern Europe was not a one-off event of Yamnaya migrations into Europe resulting in the occurrence of the Corded Ware archaeological complex. Genetic studies show a significant amount of *steppe ancestry* in individuals buried in Corded Ware and Bell Beaker associated graves. With a supposed origin of Proto-Indo-European on the Pontic-Caspian steppe, the emergence and distribution of the major early 3rd millennium BC Corded Ware and Bell Beaker complexes certainly provide an overall explanatory model for the spread of Indo-European languages across the continent. However, looking at just one area (in this case southern Scandinavia) we see quite a large time gap between the introductions of different Indo-European/steppe elements. Whereas the material, subsistence economic and mortuary changes that are

associated with the Jutland Single Grave culture and the Swedish Battle Axe culture ultimately relate to steppe influences (probably including Indo-European), wool-technology, the tamed horse and iconographic features resembling early Indo-European practices and mythologies first occur c. 1200 years later. This discrepancy makes it obvious that we are not dealing with a simple one-directional event or "package" that introduces a new language, innovations/technologies, practices, mythology and associated iconography at the same time. As is the case with the emergence of the Corded Ware and Bell Beaker phenomena, there are no simple explanations that can be boiled down to one explanatory model. We are certainly dealing with complex interhuman and intercultural relations spanning large geographical distances and a significant time depth. These processes had regional and local preconditions and consequently they unfolded and manifested themselves differently across Europe.

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7. The inverse of praise
Epigraphic practices of Indo-European cursing[1]

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Abstract

Ritual practices of cursing and heroic commemoration among speakers of ancient Indo-European languages exhibit numerous features of inherited juridico-religious vocabulary. Through its grounding in the ethos of a pre-ancient, semi-nomadic tribal society, this vocabulary can be linked to a set of contiguous notions, such as the poetic realization of glory, afterlife recompense, the wolfish persona of warrior chieftains, and the humiliating treatment of cowards and criminals through strangulation and phallic aggression. In what follows, an attempt is made to demonstrate the tenacity of this conceptual system by paying brief initial attention to a Greek funerary epigram from 6th BCE century Rhodes, and then by analysing two runic inscriptions from 6th to 7th century CE southern Sweden (Björketorp and Stentoften).

1. Introduction

The Runic inscriptions examined below represent a category of epigraphic texts that I have provisionally chosen to label "lithic proxies". A lithic proxy is a durable scriptural statement designed to replace and perpetuate a speech act.[2] The skills and resources invested in an epigraphic monument give us reason to assume that the pre-literary models of such illocutionary statements – e.g. oaths, verdicts, praise

[1] A modified and slightly extended version of this article is forthcoming in the anthology *Crafting Memories* (Brepols) under the title "Lithic Proxies: Epigraphic Practices of Indo-European Praise and Cursing".

[2] A similar sense of *proxy* has been proposed with reference to the so-called Bacchic gold leaves (cf. Graf and Johnston 2007: 95).

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poetry, laments, and curses – were of a likewise costly nature, involving ritual elaboration, public participation, and the work of hired professionals. In addition to exemplifying such ritual peculiarities, the examples discussed below will also shed light on crucial aspects of Indo-European religion and society that seem to have survived independently among the ancient speakers of Greek and Germanic long after their routes parted some five to four millennia ago.

2. The Indo-European legacy of fame, hospitality, and cursing: Preliminary remarks

The concept of undying fame (PIE **k̂lé̯u̯os*) is admittedly one of the most culturally informed items of Indo-European vocabulary. Its lingering impact on the ideology of a group of widely dispersed communities – ranging from the Celtic tribes of Iberia to the Indo-Aryans of northern India – need not be rehearsed here. As suggested by the repository of inherited poetic and onomastic coinages, this ideology is likely to have prevailed among these groups prior their geographical dispersal.

Indo-European poetry was a predominantly oral concern – it was supposed to be sung and heard. This is a fact to which the ancient Greeks continued to bear witness long after the spread of alphabetic writing. Yet, while maintaining its strong bearing on oral culture in what still typically functioned as transcripts of sung performances by the Late Archaic period, the evocation of lasting fame also found an early equivalent in the extended context of epigraphic commemoration.

An example is the following funerary epigram from Rhodes (IG XII,1 737; c. 600–575 BCE):

Recto: σᾶμα τόζ᾽ Ἰδα-
μενεὺς ποίη-
σα hίνα κλέος
εἴη· |
Verso: Ζεὺ‹δ› δέ νιν ὅστις
πημαίνοι λειό-
λη θείη.

'I, Idameneus, have made this monument that there be glory, / but may Zeus bring complete destruction on whosoever may do harm.'

One immediately perceives the stark contrast between Idameneus' κλέος and the λειώλης (= πανώλης ['complete destruction']) brought down on the hypothetical violator. What the *making* (cf. ποιέω) of the monument is supposed to accomplish beyond its mere physical realization, the *destruction* (cf. πημαίνω) of the monument inevitably has to reverse beyond its mere fact of physical damage: it completely destroys the violator through an act of divine intervention.

2.1. The Germanic legacy of fame and hospitality

Although the two runic monuments from Blekinge do not contain any explicit reflexes of PIE **k̂lḗu̯os* (> PGmc. **hlewaz*), the costly practices of cursing and commemoration to which the two inscriptions testify cannot be fully appreciated without recourse to the notion of enduring glory. As suggested by the Rhodes epitaph, the interest in safeguarding one's posthumous reputation was always counterbalanced by the fear (or threat) of disrepute, destruction, and forgetfulness. Furthermore, the singular attestation of the noun *hlewa-* on the 5th-century lesser horn from Gallehus – the first element of a dithematic personal name *Hlewa*gastiz – is strongly indicative of surviving practices of Indo-European poetics and onomastics among Germanic peoples in the Migration Period.

The personal name recalls the Greek name *Kleoxenos* (were the second element appears to contain the zero-grade of the same verbal root as in *-gastiz*, i.e. PIE **g^{h}es*) and the etymologically identical Slavic variants *Slavogost, Slavogast*, latinized *Slavogostus* etc. The two onomastic components also add on to a broader repertoire of personal names in Celtic (cf. Lepontic *uvamo-kozis*), Venetic (*ho.s.ti-hauo.s*), and Indo-Iranian (cf. Ved. *Mitrāthiti* and *Upamaśravas*) seen to variously combine the elements Glory/Fame (**k̂lḗu̯os*) and Guest (**g^{h}óstis*/**g^{h}sénu̯os*, IIr. **[H]átHti-* [cf. Pinault 1998 and Garnier 2013]) with notions of excellence and divine fellowship. These are not just fancy words, but ideal representations of functions expected to sustain an ancient tribal economy. In so far as these names still spoke to their bearers in more than just genealogical terms, they must have conveyed a message roughly concordant with the poetry in which those 'of famous name' (Toch. A *ñom-klyu*, Gr. ὀνομάκλυτος) lived on in the minds of their descendants. Names were not just conveying notions analogous to those expressed in poetry; they were the necessary vehicles of poetic praise, identifying and resuscitating the recipient of praise.

2.2. A note on Germanic anthroponomastics

The controversial inscription on the bronze helmet B from Negau has been taken by some scholars to contain an early North Italic scriptural rendering of the Germanic name Harigastiz (*hariχasti*; cf. Nedoma 1995). If the name can be assumed to be Germanic in origin, and to contain the initial element PGmc **harjaz* (voc. **hari*) in spite of the morphological difficulties, it may also be taken to represent a missing link between the two otherwise disconnected onomastic elements **gastiz* (a) and **wulfaz* (b) (as seen in the lycophoric names *Hariwulf* and *Haþuwulf* attested in three of the Blekinge inscriptions) according to the following logic of contiguity:

DA: Run. *Hlewagastiz* = Slav. *Slavogast* ≈ Gr. Κλεόξενος 'Guest of honour/Having famous guests'
CA: PGmc. **Harjagastiz* 'Guest of the army'
CB: PGmc. **Harjawulfaz* 'Wolf of the army'
CB: PGmc. **Haþuwulfaz* = Eburonic *Catuvolcus* 'Battle wolf' (?)[3]
DB/BD: PGmc. **Hlūþawulfaz* ≈ Slav. *Vlьkoslavъ* 'Famous wolf'
DC: PGmc. **Hlūþaharjaz* ≈ Gr. Κλεόμαχος 'Fame in battle'

Or, according to the principles of variation shown in Figure 1:

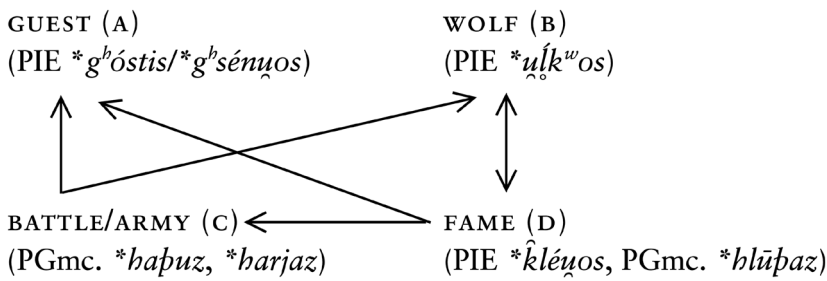

Figure 1. Principles of variation in a set of dithematic names. Graphics: Peter Jackson Rova © License: CC BY-NC.

[3] Though superficially suggestive, an etymological match between Run. *-wulfaz* and Ebur. *-volcus* can only be posited at the cost of numerous aberrations from the rules of expected sound change (Anders Jørgensen, personal communication), but see Hughes 2012.

3. The anatomy of a runic curse

Now let us turn to the inscriptions on the stones of Björketorp (= Bj.) and Stentoften (= St.). They are found on epigraphic monuments usually treated together as a group of four (including Gummarp [= Gum.] and Istaby [= Ist.]). Dated to the 6th to 7th century CE, the stones are all assumed to have been erected on the south-east coast of Sweden by local chieftains in what was at this period probably Danish territory. While only one of the monuments still stands *in situ* (Bj.), all four inscriptions show such striking runological and semantic similarities – not least owing to the variant curse on Bj. and St., and the recurrent lycophoric names Haþuwulf (Gum., Ist., and St.), Haeruwulf (Ist.), and Hariwulf (Ist. and St.) – that they seem to have had a common source.

Bj. is a menhir measuring 4.2m in height. It belongs to a larger structure, including two high uninscribed menhirs with which it forms a triangular pattern.

They stand on an Iron Age burial field in the vicinity of a number of still visible ancient remains, among which are found two stone circles (so-called *domarringar*), two pavings, and several lower raised stones. According to a document from the late 15th century (1493), the three menhirs were still granted geopolitical recognition in that they marked out the borders between the parishes Edestad, Listerby, and Hjortsberga.

3.1. Case 1: Björketorp

The inscription on what has conveniently been considered the recto of Bj. (facing the two other menhirs) follows a left-to-right pattern running from the bottom line up:

sAzþAtbArutz

utiAzwelAdAude

hAerAmAlAusz

inArunAzArAgeu

fAlAhAkhA[i]derAg

hAidzrunoronu

The inscription on the verso appears to function – pace Looijenga's (2013) attempt to insert the sequence between the uppermost and sec-

ond uppermost row of the recto – as a deterrent qualifier of the curse on the verso. It reads:

uþArAbAsbA

The privative noun *ūþaraba* corresponds to Old Englsh *unþearf* 'disadvantage' (from the strong verb OE *þurfan* 'to require, to need'; cf. Arista 2019: 170). The second element *spā* can be taken either as the 1sg. pres. ind. of a verb corresponding to the ON infinitive *spá* (< PGmc **spahōjanan*) 'I prophesy, I foresee', or as a derived noun signifying 'prophecy, foresight' (cf. ON *spá* < PGmc **spahō*).[4] With regard to the specific semantic sense of the noun *ūþaraba*, however, runologists have not paid sufficient attention to the cultic and eschatological associations of the inherited verb (PIE **terp-* > PGmc **þarfa-*) and its deverbatives in other Indo-European languages. This is a regrettable neglect in consideration of the overt religious significance of the inscription.

In order to work out these cultic and eschatological associations, it is illuminating to compare how the Vedic causative *tarpáyati* ('satiates, satisfies') and Gr. τέρπω ('give delight') can be used to signify the satiating influence of words, songs, and offerings on their divine or human recipients (Callimachus, fr. 186; cf. Massetti 2019). By extension, the adjective τερπνός can be used to characterize the abodes of the blessed in the afterlife as being 'delightful' (Pindar, fr. 129) or, vice versa, its privative counterpart ἀτερπής as a qualifier of the correspondingly 'joyless' place of the unsung dead in the netherworld (Od. 11.94; Empedocles, EGP, V [Emp. D24]). It is helpful to interpret such adjectives not just in their trivial descriptive sense, but as the qualification of a state of affairs brought about through the ritual enforcement of songs and offerings as well as of curses and other harmful ritual actions.

Priests, poets, and soothsayers have played a crucial role in laying claims to such proficiencies. Plato refers disapprovingly in the second book of *Republic* (363c–d) to Musaeus and Eumolpus, two legendary figures associated with Orpheus, who are said to 'extol' (ἐγκωμιάζω) justice, bringing their righteous benefactors down to Hades so as to let them enjoy eternal drunkenness at a symposium, whereas the unjust are buried in mud and forced to carry water in a sieve. Poetic 'praise' (ἔπαινος) and 'blame' (ψόγος) can be claimed here to falsely determine virtues and vices in terms of mere appearances (363e). In

[4] Besides its general sense 'to see', IE **spek̂* could also be used in the technical sense of divinatory vision, as evidenced by Lat. *haruspex, haruspicium, inspicio*, etc.

a similar (yet less deprecatory) statement, Pindar (*Nem.* 7.61–63) refers to the gloom of ψόγος as the conceptual inverse of the genuine (or truthful) 'glory' (κλέος) that the encomiast proffers to his patron in anticipation of a fee:

> ξεῖνός εἰμι: σκοτεινὸν ἀπέχων ψόγον,
>
> ὕδατος ὥτε ῥοὰς φίλον ἐς ἄνδρ᾽ ἄγων
>
> κλέος ἐτήτυμον αἰνέσω: ποτίφορος δ᾽ ἀγαθοῖσι μισθὸς οὗτος.
>
> I am (your [i.e. Thearion's]) guest-friend. Keeping away dark blame,
>
> like streams of water with praises to the man who is my friend
>
> I shall bring true fame: for that is the proper reward for good men.
>
> (*Nem.* 7.61–63, Race [mod. trans.] 1997)

Notice, also, that the passage presents a veritable gloss on two of the focal themes (Guest + Fame) featuring in the onomastic tradition touched upon above.

In coming back to the caption *ūþaraba spā*, comparative evidence suggests that the verb **terp* (+ deverbatives and privatives) could be used in cultic settings to signify the ritual means by which words or offerings were thought to act upon their addressee, causing pleasure or joylessness even beyond the confines of mortal life. The anticipated state of discomfort announced by the verb (or deverbative) *spā* can thus be securely linked to the assumed illocutionary force of the inscription as a whole. It is not just a prediction in a strict prognostic sense, but an expression designed to realize a future state of affairs by the very force of its pronouncement. A more detailed account of the actual means, conditions, and ends of the predicted infliction is conveyed by the curse proper.

The inscription on the recto (A) is usually segmented and rearranged from the top line down, and then completed by the isolated inscription on the verso (B), in the following fashion:

> A: *haidz rūnōrōnū* (asf.)
>
> *falah* (1 sg. pret. ind.) *ak haidera*
>
> (*ra*)*ginarūnāz* (apf.) *arageu* (dsf.)
>
> *haeramalausz*
>
> *ūtiaz wēladaude* (dsm.)

saz þat barutz (3sg. pres. ind.)

B: *uþArAbAsbA*

I propose the following translation, relying in part on Tineke Looijenga's (2013) interpretation:

Recto (A): A clear rune row

I concealed here,

incantations from the ruling gods; through (shameful) emasculation

restless,

farther away through death by treachery,

(is) he who breaks this (monument).

Verso (B): I foresee misfortune

The initial part of the inscription seems to recall circumstances relevant to the codification and authorization of the curse to follow. Unlike Looijenga (and others), however, I see no reason to interpret *rūnō* (pl. *rūnāz*) in scriptural terms (= 'letter of the runic alphabet'). This likewise applies to the verb *falh*, which does not unambiguously suggest an act of concealment by means of carving perfectly visible letters into stone. As indicated already by the Gothic rendering of the Greek collocation μυστήριον τὸ ἀποκεκρυμμένον (Col 1:26) = *runa sei gafulgina* (as. *ga-fulgins* from *ga-filhan* [with Verner's Law alternation!]), the PGmc verb **felhan* could apparently take **rūnō* as its habitual object in a pre-literary setting to denote the act of consigning (or concealing) confidential knowledge. A similar idiomatic sense is retained in the Old Norse expression *fela í rúnum* (with *rún* as the indirect object), which refers to the act of codifying a message in an arcane, enigmatic, or poetic form (cf. Kries 2004). Germanic **rūnō* thus brings to mind – alongside its Celtic congeners OIr. *rún* 'secret, mystery, charm', OBret. *rin* 'secret, mystery' – a piece of sung, spoken, or whispered discourse with a characteristic propensity to be entrusted, concealed, investigated, and revealed.

In addition to the general sense of **rūnō*, OHG *helliruna* (a gloss on Lat. *necromantia*) and OE *helrūna* ('necromancer') also show that the term could be brought to bear on oracular speech with a particular emphasis on its otherworldly origin. Such connotations seem perfectly cogent in view of the etymological treatment of **rūnō* as the reflex of a

noun formed from PIE √*h_1reh_1 ('ask' [cf. Gr. ἐρέω]) on the same morphological basis as Gr. ἔρευνα ('inquiry, search') and ἐρευνάω ('search for, search after').[5] An especially illuminating parallel with regard to the divinatory connotations of **rūnō* is Pindar's (fr. 7B.20) use of the verb ἐρευνάω in the technical sense of searching for oracular 'counsels' ([τὰ θεῶν] βουλεύματα). Besides the cognate denominative verb, the choice of βουλεύματα as the designated (divine) object of inquiry is also helpful in working out the semantics of the Germanic noun, because the Gothic rendering of βουλή (not least in reference to a counsel *of God*) was precisely *runa* (e.g. τὴν βουλήν τοῦ θεοῦ = *runa gudis* [L.7:30]).

On account of its earliest associations, it seems plausible that PGmc. **rūnō* signified some kind of divine (or divinely inspired) diction that could function both as prediction and malediction, that is, as a prophetic foretelling of an event whose future occurrence it was also thought to bring about. Hence, it referred to a piece of mantic/divinatory diction in the sense of conveying confidential *information* about hidden or unforeseen circumstances, but it was also a piece of diction in the magical/incantatory sense of actively *informing* such circumstances (that is, in the literal sense of Latin *informo* meaning 'to shape, mould, fashion'). A similar logic is implicit in the necromantic sayings (the 'words of a corpse' [*nás orð*]) uttered by the summoned vǫlva in the Eddic poem *Baldrs draumar*. These utterings can be understood in the immediate context of the poem as both predicting and inflicting the death of the god Balder, which the god Óðinn repeatedly seeks to undo by asking the vǫlva to keep quiet.

The sequence *haidz rūnō-* recurs in the mythological name of the goat Heiðrún (cf. also the Frankish woman's name *Chaiderūna* ['die ein herrliches Geheimnis besitzt' {de Vries 1977, s.v. *Heiðrún*}]), who is said to feed on the leaves of the tree Laeraðr while producing clear mead from her teats (Grm. 25). The rationale behind this topos and the mythological characterization of runes in Old Norse poetry is the notion that the runes were somehow thought to reside in the mead (e.g. Sd. 15–18, Háv. 138–143) as a divine source of insight and potency.

Looijenga (2013) cleverly suggests a doubling of the final syllable in *haidera* to obtain the alliterative form *(ra)ginarunaz* 'runes from the ruling (gods)' (by analogy with the formulaic sequence *runo* […]

[5] PGmc **raunō* ('trial, experiment') is usually treated as an archaic ablaut grade related to **rūnō*.

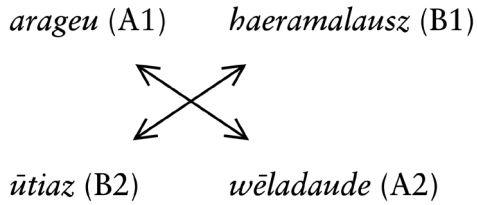

Figure 2. Chiastic structure of the climactic segment in the Björketorp curse. Graphics: Peter Jackson Rova © License: CC BY-NC.

raginaku[*n*]*do* on the Noleby stone [and elsewhere]).[6] This interpretation strengthens the impression that (1) the message was intentionally composed in accordance with a set of poetic devices, such as assonance and alliteration, and (2) that it self-referentially characterizes this genre of speech as having a divine origin.[7]

In direct conjunction to its statement of divine licence (ending in the middle of the third line from the bottom line up), the curse continues to pronounce its actual nature of infliction: *arageu* (dsf.) *haeramalausz, ūtiaz wēladaude* (dsm.). Unlike the variant curse on St., however, the focal segment of the Bj. curse is devised according to a chiastic structure with two nouns in the (instrumental?) dative singular at its beginning and end (Figure 2).

'Through (shameful) emasculation (A1) restless (B1),

farther away (B2) through death by treachery (A2)'

We may take this rhetorical device to indicate the performative climax of the curse. The compound adjective *heramalausz* may hint at the familiar legal category of outlawry (cf. Antonsen's [1975: 86] suggested translation 'protectionless'), whereas the sequence *ūtiaz wēladaude* apparently proclaims a deceitful, inglorious death – with the adv. comp. *utiaz* (cf. ON *útar*) possibly adding a sense of physical or social remoteness – as the final outcome of an already pernicious situation.

[6] Such a doubling effect may be purposely foregrounded in the design of the inscription. Whereas the other lines all begin with a new word, this one breaks up in a fashion that would otherwise have seemed unmotivated ([---] *hA[i]derAg / inArunAz* [---]).

[7] One is particularly struck by the complex sound pattern evoked through the repetition of the syllables *ha* and *ra*.

3.2. Excursus

A brief excursus is in order here if we are to fully appreciate the socio-legal aspects of corporeal infamy and outlawry evoked by the curse formula. The initial dative *arageu* (with an epenthetic second *a* < PGmc **argīn* ← adj. **argaz* [cf. ON *argr*]) represents a familiar feature of Old Norse defamatory discourse, and as such it can also be linked to a specifically runic genre of curse formulas still in use by the end of the pagan period (e.g. the 10th-century Saleby runestone [Vg 67]). Yet, it is only when we start paying closer attention to the semantic prehistory of the noun that we begin to perceive its full spectrum of associations.

The basics are laid out in two groundbreaking papers by Calvert Watkins (1975) and Jaan Puhvel (1986) touching respectively on the family of the Greek word for 'testicle' (ὄρχις) and a quasi-legal narrative in the archaic Hittite ritual of Zuwi (KUB XII 63 Vs. 21) involving a group of protagonists referring to themselves as *hurkilas pesnes* ('men of strangulation').[8] Without going into too much detail, a synthesis of the two papers could be outlined as follows: (1) comparative textual evidence supports the existence of two unisonant verbal roots PIE **h₁erĝʰ*/**h₂u̯erĝʰ* (cf. LIV **h₁erĝʰ*/**u̯erĝʰ* [IEW 1154]) referring to the culturally associated acts of bestial copulation (cf. Hitt. *ark-* 'to mount, copulate', Gr. *ὀρχέομαι* 'to dance [lascivously]' < 'performing coital motions') and punitive strangulation (cf. Hitt. *hurkel* 'hanging matter', Anglo-Latin *wargus* 'outlaw, criminal' [> wolf] [cf. OE *wyrgan* 'to strangle']) – (2) the male passive subject of such acts (the **h₁órĝʰos* or **h₂u̯órĝʰos*) typically denotes someone deserving or experiencing

[8] Puhvel's paraphrase of the passage runs as follows: "*hurkilas* LÚ.MEŠ *wēs* 'men of hurkil we (are)'. In the next two lines the house (= temple) of the storm-god speaks to those men: 'what I say [you shall do], and this I give, and you shall bring it to pass.' The men answer (24–27): 'Say it to us, we shall do it,' 'The long (*talugaus*) roads [and the short ones] lengthen (*taluganuttin*), the high (*pargawus*) mountains shorten (*manikuandahtin*) and the short ones (*manikuandus*) [heighten], catch a wolf by the hand (*kissarta*), catch a lion with the knee (*ganut;* cf. Greek *gnúks*), the river (ÍD-*an* = *hapan*) […], use the *zuwāluwal* (a ritual tool) on a snake and take him to the King's Gate (LUGAL-*was āska*, the royal tribunal), and [his judgement shall be rendered].' After the refrain (28) the story resumes (29–34): 'The men came back, and they spoke thus: 'We aren't up to it. (*ŪL-as daluganula*), the high mountains, [we cannot shorten them,] the small [*kappaus*] mountains, we cannot heighten them (*ŪL-us parganula*). A wolf by the hand they had not [caught], the river and the boulder (*kawankunurr-a*; cf. *kunkunuzzi* 'rock'?) they had given up on (*pessir*), and it had not been crushed (*harratta ŪL*), a snake [they had not used the *zuwāluwal* on, and him to the King's Gate] they had not brought, and his judgement had not been rendered (*hannessa.set hamnat ŪL*). The case was aggravated (*utar na[kkest*)a."

punishment, whereas the active (virile or strangulating) aggressor (the **h₁orĝʰós* or **h₂u̯orĝʰós*) rather stands free of charge.[9]

Puhvel saw a possible reflex of such notions and practices in a 4th-century CE account of pederastic initiation rites among the Germanic (or possibly Iranian) Taifali (Ammianus Marcellinus, *Rerum Gestarum*, 31.9.5).[10] He also called attention to Tacitus' account of the Germanic custom to punish "cowardly, unwarlike, and bodily heinous persons" (*ignavos et imbelles et corpore infames corpores* [*Germ.* 12]) by having them sunk into the mud of marches and covered with hurdles (Puhvel 1986: 154). Another noteworthy example (overlooked by Puhvel) is a paragraph concerning the punishment of temple-robbers in a draft version of the Frisian Law Code (*Lex Frisionum* [Add. XI 1]). The text was recorded in Latin sometime after Charlemagne's defeat of the Saxon leader Widukind in the year 785. Since the paragraph has an overtly pagan content, it was supposedly destined to be edited out in the official version of the code:

> *Qui fanum effregerit, et ibi aliquid de sacris tulerit, ducitur ad mare, et in sabulo, quod accessus maris operire solte, finduntur aures eius, et castratur, et immolatur Diis quorum templa violavit.*
>
> He who breaks open a shrine, and carries away sacred items from there, shall be led to the sea, and on the sand, which will be covered by the flood of the sea, his ears shall be cleft, and he will be castrated, and sacrificed to the gods whose temples he has profaned.

Emasculation was apparently not uniquely associated with the violation of sacred sites among Germanic peoples. It is also found among the injunctions in a long list of archaic religious taboos preserved in Hesiod's *Works and Days* (706–764 [750–753]):

> μηδ᾽ ἐπ᾽ ἀκινήτοισι καθιζέμεν, οὐ γὰρ ἄμεινον,
>
> παῖδα δυωδεκαταῖον, ὅτ᾽ ἀνέρ᾽ ἀνήνορα ποιεῖ,

[9] Compare the combination of the two deverbatives (*goðvarg* […] *argan* [**argr goðvargr*]) in a defamatory verse ascribed to the 10th-century skald Þorvaldr veili (Puhvel 1986: 155). The shift in meaning depends on the accent according to the familiar pattern of barytone action/result nouns (e.g. *ápas* 'work', *phóros* 'tribute') vs. oxytone agent nouns (e.g. *apás* 'working', *phorós* 'bringing'; cf. Kiparsky 2010: 13).

[10] Puhvel's translation of the full passage runs as follows: "We have learned that the Taifali are a shameful lot, so mired in deprived practices that among them young boys are coupled with the men in a bond of unspeakable cohabitation, to waste the flower of their youth, perversely used by those men. Yet if someone, upon growing up, alone catches a boar or kills a huge bear, he is freed from the stain of unchastity." (Puhvel 1986: 155).

μηδὲ δυωδεκάμηνον: ἴσον καὶ τοῦτο τέτυκται.

And do not seat a twelve-day-old boy upon things that cannot be moved [= sacred things],

for that is not better – it makes a man unmanly –

nor a twelve-month-old one: this too is established in the same way

(WD 706–764 [750–753], Most [tr.] 2006)

The final sequence of the recto of Bj. makes a clarifying statement as to the kind of action expected to effectuate the curse: *saz þat barutz*. It conforms with the statement on the Rhodes epitaph (ὅστις πημαίνοι [3sg. pres. opt.] "whosoever may do harm") in that it open-endedly pertains to acts both of physical harm as well as to the intangible transgression of an oath (cf. Il. 3.299).

3.3. Case 2: Stentoften

The Stentoften (St.) inscription contains the same curse as the one found on Bj., yet with a few variants in its orthography, wording, and syntax to suggest a common source in the form of an oral medium:

Bj: *haidzrunoronu fAlAh Ak hAderA*

St: *hidezrunono felAh ekA hederA*

Bj: *ginArunAz ArAgeu hAerAmAlAusz*

St: *ginoronoz herAmAlAsAz ArAgeu*

Bj: *utiAz welAdAude sAz þAt bArutz*

St: *welAdud sA þAt bAriutiþ*

The most striking difference between the two inscriptions is the highlighted commemorative formula on the Stentoften stone. It consists of three vertical lines in the left bottom part of the inscribed surface so as to form the graphical core of the message:

I: *niu hAborumz* (dpm.)

II: *niu hagestumz* (dpm.)

III: *hAþuwolAfz gaf* (3sg. pret. ind.) j

I: With nine steeds

II: With nine rams

II: Haþuwolafz gave y(ear [= 'harvest', 'prosperity'])

According to Lillemor Santeson's (1989) persuasive interpretation of the introductory (core) segment of the inscription, it records a sacrificial feast (with 9x2 male animals) organized by the chieftain Haþuwulf for the stated purpose of obtaining bountiful crops. References to the ritual slaughter of male animals in groups of nine as well as the seasonal organization of sacrificial feasts *til árs* (*ok friðar*) 'for a good year (and peace)' feature prominently in more recent sources to Old Norse religion. Yet, we also have reason to believe that Haþuwulf's seasonal sacrifice had a substantial precedent. As suggested by the cumulative evidence of ancient Greek, Indo-Iranian, and Anatolian texts, the canonical grouping of nine sacrificial animals was perhaps already an established custom among the prehistoric speakers of PIE. This custom conformed to a non-trivial logic of idealistically grouping sacrificial animals in hundreds (e.g. the familiar Greek offering of a 'hundred oxen' [ἑκατόμβη]) as opposed to the more realistic grouping of nines (e.g. the possessive compound noun PIE **neu̯n̥-gʷ*[*o*]*u̯*-[*y*]*o*- 'having nine cows' (> Ved. *návagva*- and Gr. ἐννεάβοιος [Il. 6.236]; cf. Oettinger 2008).

The commemorative formula is distinctly framed by the remaining part of the message in the form of three curved lines apparently intended to resemble a multilayered fence: first a lacunary sequence beginning with another lycophoric name *HAriwolAfz mA??usnuh?e*, and then the variant curse formula (from the beginning of the second curved line) as given above. It is striking to note how the carefully devised graphic design of the St. inscription is counterbalanced by the verbal design of the chiastic curse formula in the less intricate visual display of the Bj. inscription. This would seem to suggest that the epigraphic practice of cursing was still largely informed by a flexible and continuously changing oral tradition. Since the language of the Bj. inscription reveals certain palpable features of renewal (such as the syncopated form *barutz* [Bj.] versus *bariutiþ* [St.]), we are led to assume that the verbal design of the Bj. curse formula was grafted onto an older variant of that same formula in an attempt to render it more efficacious.

It seems likely that the St. monument was commissioned by a local chieftain on the same pretext as similar votive monuments commissioned throughout the ancient Mediterranean world, that is, with the

"purpose of indicating to gods and men a sacred action that should be remembered" (Spickermann 2015: 412). A probable member of the famous clan of the Wulfings ('wolf clan'), the 6th-century BCE chieftain Haþuwulf was apparently eager to perpetuate the memory of his role as the generous host of a grandiose communal sacrifice. In considering that a single butchered horse would yield more than 100 kilograms of meat, we need to assume that the collected meat from a sum total of 18 steeds and rams could easily have fed hundreds of guests for weeks.

4. Bestiality and sovereignty

In order to add yet another component to the conceptual system in question, we must take into account that the recurrent lycophoric element (*-wulfaz* < PIE **u̯ĺ̥kʷos*) in the names of the Blekinge chieftains probably carried some sort of ideological significance beyond its function as an arbitrary genealogical qualifier. This it would have done by highlighting the salience of the wolf as a token of war-like sodalities (so-called *Männer-* or *Jugendbünde*) among Germanic tribal groups (cf. the discussion in Sundqvist and Hultgård 2004). In spite of the scholarly controversies as to the definition and function of such institutions, there can be little doubt that they existed among various historical speakers of Indo-European languages in some form or another. More importantly, however, they seem to have done so – as suggested by the overwhelming evidence of onomastics, myths, rituals, historiography, and folklore – on the premise of a shared legacy.[11] Furthermore, it seems reasonable to assume that it was initially in prehistoric societies of competing pastoralists, and not chiefly among sedentary farmers or in small-scale bands of hunters and gatherers, that practices of systematic looting and the accumulation of prestige afforded their most immediate ideological pay-back.

My best guess in this connection is that the lycophoric names of the Blekinge chieftains were still "speaking names" in the sense that they

[11] I am not primarily referring here to the overly speculative and politically biased theories of Otto Höfler, but to more recent and moderate accounts of scholars such as Kim McCone and Harry Falk. A representative sample of recent scholarship (including contributions both from McCone and Falk) is found in the edited volume *Geregeltes Ungestüm: Bruderschaften und Jungerbünde bei indogermanischen Völkern* (Das 2003). Conspicuous examples of how lycophoric names were still featuring as tokens of aristocratic sodalities long after the official Christianization of the Germanic speaking world are found in Wernher der Gartnaere's 13th-century poem Meier Helmbrect (cf. Oettinger 1992).

recalled an aristocratic ideology characterized by the valorization of glory *won* in battle, and *perpetuated* in times of peace through costly rites of commensality. Nevertheless, the glory of an aristocratic lycanthrope was of a decidedly different nature than the wolfish traits imposed on a potential violator of that glory. Hence, we may assume that the latter's shame and wolfish perversity corresponded inversely to the former's glory and wolfish bellicosity. A comparable logic of non-duality can be linked to the ancient Roman legal category of *homo sacer* ("the sacred [or accursed] man"):

> The ban is the force of simultaneous attraction and repulsion that ties together the two poles of the sovereign: bare life and power, *homo sacer* and the sovereign. Because of this alone can the ban signify both the insignia of sovereignty (---) and expulsion from the community. (Agamben 1998: 110–111)

5. Conclusion

So where does all this bring us? What conclusions can be drawn from these discrete cases? And how can they be used to elucidate the underlying structure of a shared Indo-European legacy?

- Both the Rhodes epitaph and the messages on the two Blekinge stones show a strong dependency on oral genres of ritual performance, which they variously seek to mimic and perpetuate. They are "lithic proxies" in the sense that they represent a culture still dominated (1) by the spoken word, and (2) a trust in the capacity of hired ritual professionals to impose fame or blame beyond the confines of mortal existence.
- Against their proper PIE background, these discrete cases explicitly or implicitly evoke the concept of enduring fame (PIE **ĥléu̯os*) as a prime motivator behind the good host's (= the chieftain's) eagerness to appease his gods, treat his guests, and award hired professionals.
- As evidenced by the lycophoric names on the Blekinge stones, furthermore, the role of the good host in times of peace and prosperity could positively transform into the "wolfish" traits of a fierce warrior in times of conflict.
- In stark contrast to the predatory persona of the chieftain, however, the cursed transgressor of the chieftain's law rather assumes wolfish traits as a token of outlawry and shameful

perversion (PGmc **wargaz/*argaz*). I.e. they (the chieftain and the outlaw) both inhabit an extralegal sphere in accordance with the familiar pattern of the beast and the sovereign.

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8. The night sky of the Indo-Europeans

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Abstract

It is not easy to talk about the stars, which are strewn across the night sky in immense abundance and seemingly at random. But this communication was of the utmost importance to farmers and sailors of ancient times. To be able to name the stars, they used metaphors – similarities to earthly phenomena – and perceived relations among the stars, and justified their existence through *aitia*. This study presents the names of stars and constellations that can be reconstructed for the Neolithic culture of the Indo-Europeans – known ones and some newly discovered ones – and tries to determine their respective naming motives. As in ancient and modern cultures, there existed among the Indo-Europeans a plurality of competing names for stars, constellations and their variously defined subdivisions, which led to conceptual overlaps and to the formation of those stories that constitute the core stock of ancient myths and conceptions of gods.

1. Onomastic reconstruction

The only two important deities of the Indo-Europeans that can be directly reconstructed by name for the proto-language are numina of the bright day and well known: the father sky **Di̯ḗu̯s ph₂tḗr* and the goddess of the dawn **H₂áu̯sōs*.[1] On the other hand, the sun god presents a colourful variety of attested name forms, even though these may ultimately be based on a single stem **sáh₂u̯l̥*. In addition, there are smaller figures such as the goat-god **Páh₂usōn*, who lives on in Πάν and Ved. *Puṣán-*,[2]

[1] I would like to warmly thank Jenny Larsson for the kind invitation to contribute to this volume, to Thomas Olander and Sarah E. Thomas for valuable remarks, and to Hannah Olivia Rausch for correcting the English version of my paper.

[2] Cf. Schermutzki in preparation.

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and probably also the divine twins, although here the individual names in historical times already diverge. Referring to the night, the 'moon' (**méh₁n̥s-*) and the 'stars' (**h₂stéres*) are generally well known. Less attention has been paid to individual stars and constellations, although there is no lack of researchers who have made substantial contributions to the star lore of individual ancient Indo-European cultures or of the Indo-Europeans themselves, such as Franz Boll and Wilhelm Gundel (1937), Joseph Fontenrose (1981), Bernhard Forssman (1968; 1985), Wolfgang Hübner,[3] André Le Bœuffle (1977), Antonio Panaino (e.g. 1990–1995; 2015), Jean-Michel Renaud (2004), Anton Scherer (1953), Bernard Sergent (1997; 2012) and Michael Witzel (1984; 1996), to name but a few. It is advisable first to compile the names of stars and constellations that are attested for more than one language and that point back to a common Indo-European predecessor; then to consider principles of constellation-naming within the context of a significant and detailed myth; and finally to trace the characteristic overlapping of motifs in astral mythology. There is a basic motif, a metaphor, which describes in great variety the eternal movement of the stars: it is a hunt they engage in across the firmament, with pursuers and fugitives (cf. e.g. Hübner 1998: 144), and occasionally the idea emerges that the end of the world has come, if some catch up with others.

1.1 Proto-Indo-European **T[r]istriu̯o-* 'Sirius' (Forssman 1968: 54–61). It could be that the Indo-European name of the brightest fixed star, Sirius, had already lost its first *-r-* through regressive dissimilation. In any case, it has been eliminated from all names in the individual languages: in Avestan *Tištriia-*, in Vedic *Tiṣyà-* (which additionally lost the second dental stop through dissimilation and then the second component of the sound sequence *-ṣr-*), and, according to Helmut Fischer (1969), also in Greek *Σῖριος. *Σῖριος was transformed into Σείριος under the influence of the Σειρῆνες. **T[r]istriu̯o-* 'Sirius' is the star "which belongs to the complex of the three stars" of Orion's belt. The three stars of Orion's belt point directly towards the bright star Sirius.

1.1.1 The fact that Sirius was also called **ḱu̯ōn* 'dog' is indicated by the partial correspondence of Κύων and the Latin *Canīcula*. *Canīcula* is repeatedly considered a loan name (Scherer 1953: 109). On the other

[3] From the wealth of Hübner's writings (cf. https://www.uni-muenster.de/KlassischePhilologie/Institut/Ehemalige/huebner.html), only the edition, translation and commentary of Manilius' fifth book (2010) is to be mentioned here.

hand, it follows a specific Latin word formation type, which is characteristic for the names of celestial bodies.[4] The designation 'dog' for a single star and later for the constellation *Canis maior* can only result from the fact that Sirius trots after the most human-like constellation of the night sky: the mighty hunter Orion.

1.2 It follows from PIE **T[r]istriio̯-* 'Sirius', that Orion's belt, with its three shining stars, was called **T[r]istro-* 'complex of three stars'.

1.3 Proto-Indo-European **h₂ŕ̥tk̂o-* 'bear' (m/f) is continued in Hom. ἡ ἄρκτος (Σ 487+) and Ved. *ŕ̥kṣa-*, whereby the plural form, only attested in the Rigveda (1, 24, 10), is probably simply due to the plurality of stars belonging to this constellation.

1.3.1 Another PIE designation for *Ursa maior* is **septḿ* [X] 'Seven Sages', although the designation of the 'Sages' cannot be reconstructed for the time being. Ved. *saptá ṛ̥ṣayas* are 'Seven Scholars', Astronomers, Poets and Legislators, who were transferred to heaven for their merits. The constellation explains the uniform number of seven within the Greek collegium of the ἑπτὰ σοφοί, with such prominent members as Solon, Thales, Bias and others (Janda 2005: 299–312). Vedic and Greek sages are held together by a common motif: the eternal chase around a tripod, which is golden in the competition of the Greek sages (τρίπους), and which was uncovered for India by Harry Falk (1994). Falk detected in *tri-pád-* a naming of the stars Kochab (β ursae minoris), α and κ *draconis*, which are located around the pole.

Why *Ursa maior* appeared as the 'Bear' in prehistoric times is unclear. Perhaps only the bear was a worthy prey for the heavenly hunter, just as Homer allows the she-bear to 'scout' for Orion (Iliad Σ 488).

1.4 This competition of Greek and Vedic sages for a tripod (1.3.1) guarantees the Indo-European reconstruction **Tripod-* for the aforementioned stars Kochab (β ursae minoris), α and κ *draconis*.

1.5 Proto-Indo-European **G$^{\text{h}}$and$^{\text{h}}$r̥u̯o-* (Janda 2022b). *Alpha Centauri* is the name of the fixed star nearest to the earth, which has been associated with the partly disastrous, partly wise Κένταυροι at least since Hellenism. The long-known similarity of the names Κένταυροι, Vedic

[4] Hübner 2010: II 77. E.g. Gundel 1925: 316f. considers *Canīcula* as inherited.

Gandharvá- and Avestan *Gaṇdərəβa-* could be summarized under the formula *KVnTarṷo-*, which has not, however, permitted any reconstruction so far. PIE *$G^h and^h r̥ṷo$- originally had the meaning 'provided with the fragrance [of wine]', which not only does justice to the historically attested (key) role of these mythical beings, but is also the form that led, via paretymological transformations, to their historical name forms. The direct successor of *$G^h and^h r̥ṷo$- in Greek led to κάνθαρος, a wine goblet – often held by centaurs. The Gandharva 'rises above the firmament' in the same way that *Alpha Centauri* does (RV 9,85,12).

2. Names and the comparison of larger mythical structures

For Joachim Deppert, the myth of Rudra and his 'three-knotted arrow', Prajāpati and Uṣas, who wander in the sky as Orion's 'Head', Aldebaran, Sirius and the three stars of Orion's belt, belongs "zu den ganz wenigen vedischen Mythen, die einen astronomischen Code direkt [...] aussprechen" (1977: 187). In this story, it is not the 'father sky' but the 'lord of creatures' Prajāpati, who is the father of Uṣas 'Dawn', whom he pursues with incestuous intent. Father and daughter appear in the form of cloven-hoofed animals: Prajāpati as a buck and Uṣas as an antelope (or gazelle/deer[5]). The gods instruct Uṣas' brother Rudra to stop Prajāpati:[6]

> *prajā́patir vaí svā́ṃ duhitáram abhyàkāmayatoṣásaṁ sā́ rohíd abhavat tā́m ŕśyo bhūtvā́dhyait tásmā ápavratam achadayat tám ā́yatayābhiparyā́vartata tásmād vā́ ábibhet sò 'bravīt paṣūnā́ṃ tvā pátiṃ karomy átha me mā́ sthā íti... tám abhyāyátyāvidhyat sò 'rodīt tád vā́ asyaitán nā́ma rudrá íti.*
>
> Prajāpati desired his own daughter, Dawn (Uṣas). She became a red doe. He, having become a buck, "approached" her. It seemed "against commandment" to him (Rudra). He (Rudra) turned toward him (Prajāpati) with an outstretched (arrow). He (Prajāpati) feared him (Rudra) and said, "I will make you lord of beasts, but don't stand against me." … (Rudra), on taking aim, pierced him. He cried out (*arodīt*). And that is his name: *Rudra*.

We learn from the Aitareya-Brāhmaṇa what happens next (3,33,1–4):[7]

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[5] There is no full agreement in rendering Vedic *rohit*. For 'Antilopenweibchen' cf. Deppert 1977: 265, for 'red doe' Jamison 1991: 290, for 'Gazellenweibchen' EWA II 471.

[6] Maitrāyaṇī-Saṃhitā 4, 2, 12; text and translation: Jamison 1991: 290f.

[7] Text: Aufrecht 1879: 81; translation: Deppert 1977: 265; cf. also Jamison 1991: 291f.

prajāpatir vai svāṃ duhitaram abhyadhyāyad, divam ity anya āhur Uṣasam ity anye. tām ṛśyo bhūtvā rohitam bhūtām abhyait. taṃ devā apaśyann: akṛtaṃ vai Prajāpatiḥ karotīti. te tam aichan ya enam āriṣyaty, etam anyonyasmin nāvindaṃs. teṣāṃ yā eva ghoratamās tanva āsaṃs. tā ekadhā samabharaṃs. tāḥ sambhṛtā eṣa devo 'bhavat. […] taṃ devā abruvann: ayaṃ vai Prajāpatir akṛtam akar, imaṃ vidhyeti. […] tam abhyāyatyāvidhyat, sa viddha ūrdhva udaprapatat, tam etam Mṛga ity ācakṣate ya u eva mṛgavyādhaḥ sa u eva sa. yā rohit sā Rohiṇī, yo eveṣus trikāṇḍā so eveṣus trikāṇḍā.

Prajāpati begehrte seine eigene Tochter, den Himmel, sagen einige, die Uṣas andere. Er verwandelte sich in einen Antilopenbock (*ṛśya-* […]) und machte sich an sie, die zu einem Antilopenweibchen geworden war, heran. Diesen sahen die Götter: "eine noch nie getane Tat begeht Prajāpati!" Sie suchten den, der ihn bestrafen sollte, doch fanden sie ihn nicht unter sich. Auf der Stelle warfen sie ihre schrecklichen Formen zusammen. Zusammengeworfen entstand dieser Gott da [...] Zu ihm sprachen die Götter: "dieser Prajāpati hier hat eine noch nie getane Tat getan, durchbohre ihn!" [...] Nachdem er auf ihn gezielt hatte, durchbohrte er ihn. Durchbohrt flog er nach oben (*udaprapatat*). Ihn nennen sie die "Antilope". Der Durchbohrer der Antilope (*mṛgavyādhaḥ*) ist genau der (Rudra). Die weibliche Antilope ist Rohiṇī, der Pfeil mit den drei Spitzen (*iṣus trikāṇḍā*) ist der Pfeil mit den drei Spitzen.

Rudra thus hits Prajāpati with the arrow, whereupon all the figures of the myth – including the arrow – ascend to heaven: Prajāpati becomes *mṛgaśiras-*, the 'head of Orion'; his victim Uṣas, *Róhiṇī-*/Aldebaran; the archer Rudra, *mṛgavyadha-*, the '"beast"-piercer' Sirius; and the 'arrow with three knots' (*iṣu- trikāndā-*) becomes the constellation of the same name, Orion's three girdle stars. Our attention is drawn by this etiological narrative to the winter hexagon with its bright constellations, namely the sequence Sirius with Procyon – Gemini – Orion – Auriga with Capella and Taurus with the Hyades on its head. The famous star cluster of the Pleiades, on the back of Taurus, adjoins outside the hexagon.

Uṣas, in this myth, is thus the object of desire of a 'lord of creatures', who transforms himself into Orion – conversely, in Greece, the initiative comes from Uṣas' sister Eos, who 'takes' the Boeotian hunter Orion, as Calypso tells us (Odyssey ε 118–124):[8]

σχέτλιοί ἐστε, θεοί, ζηλήμονες ἔξοχον ἄλλων,

[8] Text: van Thiel 1991: 87; translation: Lattimore 2007: 91.

οἵ τε θεαῖς ἀγάασθε παρ᾽ ἀνδράσιν εὐνάζεσθαι
ἀμφαδίην, ἢν τίς τε φίλον ποιήσετ᾽ ἀκοίτην.
ὣς μὲν ὅτ᾽ Ὠρίων᾽ ἕλετο ῥοδοδάκτυλος Ἠώς,
τόφρα οἱ ἠγάασθε θεοὶ ῥεῖα ζώοντες,
ἔως μιν ἐν Ὀρτυγίῃ χρυσόθρονος Ἄρτεμις ἁγνὴ
οἷς ἀγανοῖς βελέεσσιν ἐποιχομένη κατέπεφνεν.
You are hard-hearted, you gods, and jealous beyond all creatures
beside, when you are resentful toward the goddesses for sleeping
openly with such men as each has made her true husband.
So when Dawn of the rosy fingers chose out Orion,
all you gods who live at your ease were full of resentment,
until chaste Artemis of the golden throne in Ortygia
came with a visitation of painless arrows and killed him.

The correspondence between the two cultures is so specific that the disastrous relationship between the Dawn and Orion must have belonged to Indo-European myth, even if we cannot reconstruct the PIE name of the great hunter at the time being. Only the Vedic myth reveals why in Hellas Eos and Orion are lovers (Janda 2022c): Aldebaran, the nocturnal apparition of Uṣas/Róhiṇī, is the left 'eye' of Taurus and immediately precedes the constellation Orion in the firmament. Seemingly, it was the colour of the red giant Aldebaran that made it the appearance of just the Dawn.

Uṣas and Rudra are brother and sister. Rudra has always been seen as a counterpart of Apollon (cf. West 2007: 148; Oberlies 1998: 214) – the bow, the special hairstyle, the dominion over young warriors, sickness and healing – however, it is not Apollon who shoots Orion, but rather his twin sister Artemis. Eos loves Orion, Artemis kills him. Artemis kills the hunter Orion in myth, but her epithet ἐλαφηβόλος is a fundamental fact of her cult, giving names to the festival ἐλαφηβόλια and even the month Ἐλαφηβολιών. Artemis often 'kills a stag', which corresponds precisely to the cloven-hoofed Prajāpati in India. Fontenrose (1981) has compiled numerous myths in which the goddess of the hunt is about to hunt down a hunter who, in the process, transforms into a

stag. The most famous of these is the story of Aktaion, who, intentionally or unintentionally, observes Artemis bathing. Aktaion turns into a stag, which is torn apart by his own hounds. Some conclusions can be drawn from these observations:

2.1 The Indo-Europeans also saw a stag in the constellation Orion. This can only be motivated by the following 'dog' – a concept which is conditioned by the preceding 'hunter'. 'Hunter' and 'stag' overlap. The Gaulish month name *Elembiu* clearly refers to a 'stag', which can hardly relate to any other constellation except to our celestial 'stag' (Janda 2017: 69–78). In this regard, a PIE name for Orion can be reconstructed as **h*$_1$*el̥b*^{b}*o*-, which serves as a common basis for ἔλαφος (: ἐλαφηβόλος) and Gaul. **elembo*-.

2.2 If Rudra transforms himself into the 'animal piercer' Sirius, one could also apply this to Rudra's Greek brother Apollon (Janda 2022a). In fact, the superimposition of 'dog' and 'archer' – the latter motivated by the 'arrow' stuck in Orion's waist – is also encountered in Apollon, who as Λύκειος and Λύκιος is a 'wolfhound'; and at the same time neither wages war nor hunts with his arrows, but dispatches diseases – originally precisely in the heat of the dog days.[9]

2.3 The divine Dawn Uṣas transforms into Róhiṇī-Aldebaran at night. In addition to Eos we encounter Artemis in the Orion myth. Artemis shares a wealth of similarities with Eos (Janda 2016: 76–100) and apparently assumes the latter's nocturnal role.[10] It is not possible to reconstruct the PIE name of Aldebaran from *Róhiṇī*- and Ἄρτιμις, but the myth testifies to the attention that the Indo-Europeans paid to this red giant.

2.4 Strictly speaking, Prajāpati is not deified as Orion, but as his 'Head' (*mṛgaśiras*-). This gives us information about the origin of another lover of Eos, Κέφαλος, 'who has a "Head"', which Fontenrose (1981: 86–111) had also included in his mythical scheme of the hunted hunter (cf. Janda in preparation b).

[9] More about Apollon below in the text.
[10] This will be discussed in detail soon by the author (in preparation a).

3. The overlay of motifs

Soma in India and Haoma in the Avesta are simultaneously plant and sap, sacrifice and divine sacrificer. In the role of the sacrificer both gods are also located in the sky: 'In the lap of these heavenly bodies Soma is set', as we read in the Rigveda (10,85,2). In the Hōm-Yašt, Haoma appears with 'a star-adorned girdle on mountain tops' and receives a strange offering (Y 11,4 (cf. also Y 11,5)):[11]

> *us mē pita haomāi draonō frārənaoṯ ahurō mazdå aṣ̌auua*
>
> *haŋᵛharəne maṯ̰ hizuuō hōiiūmca dōiθrəm.*
>
> Righteous Ahura Mazda, {my} father, bestowed upon me, Haoma, a share, both jaws with the tongue and the left eye.

Gernot Windfuhr found a striking explanation for this (Windfuhr 2002–2003: 471):

> This seemingly disjunct specification, two jaws and left eye, loses its enigmatic nature when sought in the sky: It is the head of Taurus. Specifically, there is a well-known celestial Jaw, which is the V-shaped outline of the Hyades. Inside it is a well-known left eye, which is the *lucida* of the celestial Bull, α Tauri, Aldebaran.

This allowed for the identification of Haoma as the recipient of the cosmic sacrifice:[12]

> The specifications "star-adorned" and "mountain tops" support the correlation of the sacrificial animal with a celestial constellation. In fact, Taurus stands right in front of the best-known girdle-wearer in the sky, the mighty Orion. To note, Orion does not only wear his own girdle, but also touches the supreme cosmic girdle, which is the Milky Way.
>
> The brilliant, and girdled […] constellation Orion, then, would appear to be here identified with the radiant apparition of the divine *Hauma*, facing the head of his sacrificial Bull. The fact that the Avesta seems not to name that most majestic constellation in the sky at all has always been puzzling.

How does the god of the intoxicating drink get into this heavenly position? The answer this time comes from Hellas (Janda 2022a),

[11] Text and translation: Josephson 1997: 113.

[12] Windfuhr 2002–2003: 472; cf. also already, as mentioned by Windfuhr, Haug 1878: 182.

where Βότρυς 'grape' is an alternative name for the Pleiades, aptly chosen because of the cluster shape of this constellation. Dionysus, the god of wine and intoxication in Greece, follows this celestial 'grape' night after night. It seems that the Indo-Europeans drank wine made from grapes, which was replaced secondarily among the Indo-Iranians by the intoxicating **Sáṷma*. In Greek literature, the Πλειάδες also appear as 'doves' (πέλειαι), at first in a paretymological play on words and then solidified into a repeated image. We now understand why doves in particular 'bring ambrosia to the father Zeus' (Odyssey, μ 62).

Dionysus is mentioned, like Orion, as a great 'hunter' several times in Euripides' 'Bacchae' (*κυναγέτας*, 1189+). He is not followed by a 'dog' but rather by a whole pack of 'dogs', the Bacchae and Maenads (κύνες, 731). In yet another myth, a 'dog', the 'wolfhound' Λυκοῦργος ('Wolf-Deed') pursues Dionysus with hostile intent and drives him into the sea (Iliad, Z 128–143). We have already encountered the reinterpretation of the accompanying dog into a pursuing one, in the naming of the constellation Orion as 'stag'. The majestic sequence of the constellations Pleiades – Taurus – Orion – Sirius is clothed in the mythical images of Dionysus, who pursues the 'grape', possesses a 'bull's foot' in the song of the Elian women (Schlesier 2002) and is himself accompanied by 'dogs' or pursued by a 'wolfhound'.

3.1 The gilded archaic monumental statue of Apollon on Delos carried a bow and arrow and on its outstretched hand the still life-size figures of the three goddesses of grace, the Charites. The relationship between the constellations Orion and Sirius led to the concept of hunter and dog, Indo-Iranian **T[r]istro-* 'Orion's belt' → **T[r]istriu̯o-* 'Sirius', and 'arrow' → 'archer'. Here the mythical tie is expressed in multiple overlay: Apollon, like Rudra, is an archer because the straight line of the stars of Orion's belt was interpreted as an arrow. He is a 'wolfhound' – not only as Λύκειος, but in fact presumably also as Λυκοῦργος, who received divine veneration as the lawgiver of Sparta – and the Τρεῖς Χάριτες he carries on his hand is an alternative naming of the three shining belt stars.[13]

3.2 One of the few figures that can be derived directly from the arrangement of the stars in the firmament is that of Orion as a mighty (double)

[13] Janda 2022a; on the Τρεῖς Χάριτες cf. Boll 1903: 272f.

axe, attested under the Greek name Σκεπαρνία in a lexicon entry,[14] to which Franz Boll and Wilhelm Gundel, two outstanding experts on ancient celestial science, state (1937: 983):

> Die Form des Wortes, das ohne Frage zu dem schon homerischen σκέπαρνον, Schlichtbeil, gehört, ist fraglich, aber immerhin zu beachten. Man müsste freilich, wie die Sterne am Himmel stehen, an eine Doppelaxt denken, die diesen Sternbildnamen mit der vorgriechischen Kultur verbinden würde: <es> {...} würde hier das glänzendste Sternbild des Himmels mit dem wichtigsten Gottessymbol der kretischen Zeit verbunden sein. Der Name kann also, so spät und vereinzelt er auch bezeugt ist, recht gut alt sein.

One could add that only in the case of the constellation Orion do we encounter the combination of a (double) axe and arrow – a motif that appears in the bow contest of the Odyssey. In this case, the motif returns the hero his wife and brings death to the suitors (Janda in preparation a). The Odyssey is generally rich in symbolism that originates in the heavens and is otherwise usually solar in nature.

3.3 Michael P. Speidel (1980) had concluded from the specific astral iconography of the Roman mysteries of Mithras that the originally Iranian god represented Orion. In my opinion, this assumption is correct, apart from the fact that he was not referring to an Iranian constellation but rather to the Greek mythical figure. The Indo-Iranian **Mitrá-* shares outstanding similarities with the king of Crete Μίνως (Janda in print): Mithras sacrifices the bull unwillingly and turns his head away. In the story of Minos the motif turns up thrice: (1) The bull brings Minos' mother Europa to Gortyn. (2) A beautiful bull appears and testifies to Minos' right to the kingship, whereupon Minos, contrary to his vow, does *not* sacrifice him to Poseidon but rather adds him to his herd. (3) Finally, Minos does not kill the monster, the bull-man Mino-Tauros, but imprisons him in the labyrinth – a Cretan-Greek, not a "Minoan" myth. Likewise the Middle Persian Mihr Minos is also a judge in the underworld in a very characteristic way. Minos is married to a figure of the night sky, since Πασιφάᾱ is the name of a moon goddess in the Peloponnese.

Just as Pasiphae has an artificial cow made by the divine artist Daidalos in order to mate in its form with the bull, so too does the

[14] Ὠρίων· καὶ ἄστρον οὕτω λεγόμενον, ἡ λεγομένη Σκεπαρνία; Etymologicum Gudianum 581, Sturz 1818: 581.

Rigveda tell of the artist-god Tvaṣṭṛ who has a cow on the moon – in an unfortunately all too fragmented allusion (1,84,15):

átrā́ha gór amanvata nā́ma tvaṣṭur apīcyàm

itthā́ candrámaso gṛhé

Da erinnerten sie sich an den geheimen Namen der Kuh des Tvaṣṭṛ daselbst im Hause des Mondes. (Geldner)

Diesseits überlegten sie sich den geheimen Namen der Kuh des Tvaṣṭar so im Hause des schimmernden Monds. (Witzel/Gotō)

Right there they thought of the secret name of the cow of Tvaṣṭar – likewise in the house of the moon. (Jamison/Brereton)

Minos does not carry a club like Orion (Odyssey, λ 575), but, in the same book of the Odyssey, a 'golden sceptre' (λ 569). In other respects too, the same inventory of these myths is encountered in ever new combinations like in a kaleidoscope: the Boeotian hunter Orion emerges from the seed-filled hide of a cow – the cow of Middle Persian cosmogony provides the seeds for all good herbs – the tail of the cow in the Mithraic cult images turns into an ear of corn. The myths of Minos and the Indo-Iranian **Mitrá-* show that the Indo-Europeans saw, among other things, a judge of the dead and a lord of the bull in the constellation Orion. As it seems, they granted this figure a name formed from the root **meḭ-* 'to fasten' (*LIV* 426).

4. Perspectives

Presumably, not all myths can, in this way, be derived from the heavens; however, some can. The story of Heracles may belong to these celestial adventures – he hunts and kills huge animals with his powerful club which could correspond to Orion's weapon.[15] The cumulative evidence certainly also contributes to the heuristic power of this kind of cultural reconstruction, which could naturally only be dealt with in a rather preliminary manner in the present article.[16] The heuristic tools are familiar to Indo-European studies, and in some cases exclusive to

[15] On the interpretation of the name as 'Glory of the Milky Way', cf. Janda 2005: 317. On Μελέαγρος, 'who cares for the club', cf. Hanitzsch in preparation.

[16] The complex around Bellerophontes+Pegasos – Chimaira – Amazons – Solymer *versus* Tištriia – Apaoša – Pairikas – Yātus has been left aside for the time being; cf. Janda 2017.

it: the consideration of direct sources, the cross-cultural perspective and the operation with sound laws that exclude coincidental parallels or borrowings. The rise of epithets to autonomy and also, as we have seen, the superimposition of ideas, must be taken into account as an important *movens* in the development of the history of religion. One of the major tasks to be tackled is the comparison with the highly developed celestial sciences of Mesopotamia and Egypt, cultures that also had deities reigning from the night sky.

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9. Fighting the winter
Indo-European rituals and cosmogony in cold climates

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Abstract

In Indo-European mythology, there is a strong focus on the horse and the sun in a water and fertility perspective. However, if there is one particular characteristic of the northern and Scandinavian ecology, it is the long, cold and dark winters. The seasonality of the Scandinavian ecology structured all life and wealth in prehistoric Scandinavia. The winter limited and defined the agricultural growth season and when it was possible to travel on boats further south and partake in exchange networks. Cosmologically, it was not the sun that melted away the snow during the spring, but particular water powers like springs, rivers and waterfalls were "eating away" the snow from beneath and the underworld. The Scandinavian skeid tradition with horse-fights, rituals and sacrifices is one of the longest living traditions in the world with 4000 years of continuity. The last remains of this great tradition was found in late 19th-century rural Norway and Sweden. Using archaeological and ethnographic examples, the aim of this chapter is to analyse the specific type of Indo-European ritual tradition and cosmogony when the powers of the winter were fought and overcome in Scandinavia.

1. Introduction

In Scandinavia, the long and cold winters were the greatest challenges to wealth and health. Not only did they define the agricultural seasons and movements on land and water, but in the old days age was not counted in years, but in how many winters one had survived. Thus, the winter represented the greatest challenge in prehistoric Scandinavia

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where innumerable forces and powers were at work; both benevolent and malevolent where the former were life-giving sources and a resource for protection, and the latter hostile and lethal threats capable of terminating all life at all times. This extreme ecology was also ritualized. Following Max Weber, the world of religion is *differentiated*, which is essential for understanding religion as a social process (Weber 1964). "Ritual would be utterly pointless if everything were charged with power. It is based on the belief that some things have power and others have not" (Hocart 1954: 31). Hence, there was no simple or single 'winter god' or 'summer god' because there were many different weather phenomena, and even the sun had distinct and different qualities during cold days in January or warm days in June. During the winter, the sun may represent minus 30 degrees, but plus 30 degrees during the summer. The extreme ecological variation and seasonal changes in the cold north simply refuted any cosmological schemes presenting prehistoric cosmologies as a cyclic sun journey: it was a fight against malevolent forces where the aim was to activate and engage the benevolent ones. The powers in nature were changing throughout the seasons, and our main aim is therefore to approach the prehistoric ecology of seasonality by analysing how divine powers embodied natural phenomena and how people understood and ritualized the fight against hostile forces during the winter.

The Scandinavian ethnography and folklore is a rich cultural-historical source, which gives glimpses of parts of this prehistoric conceptual world. We will frame this in an Indo-European perspective and analyse how the winter was ritually fought and overcome in cultures and cosmology in Scandinavia from the Bronze Age (c. 1700–500 BC) onwards (Figure 1). This will enable us to develop new approaches that unite ecology and cosmology and ways to understanding ritualization of health and wealth. In Scandinavian climates, the structuring cosmogony and cosmological principle in rituals and religion was to *incite and activate the life-giving forces in nature*. From the Bronze Age to the early 20th century, this principle structured most religious practices and beliefs associated with fertility, farming and the seasonality of the agricultural year (Lid 1933: 39–40; Kaliff & Oestigaard 2020: 294–295; Oestigaard 2021a; 2021b). There were immanent forces in nature – in fields and underground – and these were intimately connected to water and the seasonal growth power. Therefore, the main aim of the rites associated with the ritual calendar was to clear the fields of snow and enable a bountiful and fruitful harvest season.

Figure 1. The Bronze Age (c. 1000 BC) Håga mound in Uppsala, Sweden, 6 February 2021. Photo: Terje Oestigaard © License: CC BY-NC.

We will re-introduce an agricultural cosmology in Scandinavian archaeology and develop a coherent perspective to enable an understanding of how terrestrial and celestial gods and spirits were believed to work together in culture and cosmos. This will be done by (1) presenting a theoretical framework to combine ecology and cosmology and thereafter to integrate this with ritual and religious theory, (2) discussing how one may overcome methodological challenges by using the Nordic ethnography as a source for understanding Indo-European traditions, (3) analysing specific archaeological cases and contexts in Scandinavian prehistory, and (4) synthesizing and concluding by pointing out new potential and fruitful avenues of research.

2. Interdisciplinary Indo-European studies

From William Jones's pioneering linguistic observations in the late 18th century to Max Müller's comparative mythological studies in the 19th century and the highly problematic archaeological interpretations in the first half of the 20th century (for an overview, see Kaliff

& Oestigaard 2020: 39–65), the spread of languages, cultures, mythologies and religious beliefs have puzzled researchers and caused much academic controversy. Until the groundbreaking aDNA results from 2015 onwards (Allentoft et al. 2015; Haak et al. 2015), there was no agreement regarding how the spread of language, culture and religion took place. With analyses of ancient DNA (aDNA), it is now clear that the main spread was caused by migration of people and not cultural evolution and diffusion, but the overall picture is still highly complicated where processes of migration and cultural diffusion still interact and intersect.

Analyses of the complexity of Bronze Age societies and interactions have a long history (see Kristiansen 1998; Kristiansen & Larsson 2005), and recent advances in aDNA studies (e.g. Allentoft et al. 2015; Haak et al. 2015; Olalde et al. 2018) as well as strontium analyses of human remains (e.g. Frei et al. 2015) and analyses of isotopes in metals (e.g. Ling et al. 2014; 2019; Melheim et al. 2018) have contributed to a significant new understanding of mobility patterns, exchange networks and patterns of warfare (Ling, Earle & Kristiansen 2018; Horn & Kristiansen 2018). In Scandinavia, the total amount of metal objects amounts to about 20,000 and it is estimated that between 1–2 tons of bronze were consumed each year (Kristiansen & Stig Sørensen 2020). Bronze represented extreme value, but in this trade network locally produced wool was a precious resource: it is estimated that 2 kg wool was worth 1 kg copper (Bergerbrant 2020). People and goods moved constantly across the European continent, and this was part of various Indo-European processes in time and space.

Thus, today we have very different opportunities to conduct not only multi-disciplinary research in a comparative perspective, but also to advance new insight into century-long Indo-European questions. With the scientific developments in a number of fields, one may also propose a broad interdisciplinary definition of Indo-European studies (Kaliff & Oestigaard 2023: 3–4):

> Interdisciplinary Indo-European studies cannot be restricted by disciplinary boundaries, but have to use whatever relevant theoretical, methodological and empirical resources from any discipline. The great strength of interdisciplinary Indo-European studies is precisely that, because of a shared core Indo-European origin, it focuses on common structures and cultural features that are possible to identify across other differing cultural, religious, geographical and temporal variables and variabilities. Thus, in many cases, the core and origin will not be the most interesting, but the distribution,

> continuity and consequences of the very different and multifaceted Indo-European processes up to today, which have made world history and constituted large parts of Eurasia for millennia.

With this open definition, one may use various empirical sources in a more dynamic and flexible way while addressing specific research questions, like understanding the role of seasonal rites in relation to the ritual calendar.

3. Ecology, technology and cosmology

Studying technology (boats) and cosmology (the sun) has a long research tradition in Scandinavia. However, J. P. Allen commented in 1892: "When an archaeologist is in doubt he always falls back on the sun-god," adding that "By far the most interesting fact disclosed by the Swedish rock sculptures is that even in the Bronze Age the Scandinavians were already a maritime people" (Allen 1892: 71). Thus, many of the main themes in Bronze Age research were developed more than a century ago. Importantly, the early pioneers of archaeology developed ecological perspectives combining ethnography and cosmology. In 1882, J. J. A. Worsaae wrote: "As far back as written accounts extend, the struggle between Light and Darkness, Summer and Winter, Good and Evil, has formed the principal foundation of the religious belief of the people of the North" (Worsaae 1882: 177–178). Oscar Montelius emphasized the duality of rain and thunder, on the one hand, and the sun, on the other, and that throughout known history these qualities have been incorporated into one god or as a cosmological pair (Montelius 1910). The god(s) could also be twins, which perhaps are reflected in divine Twin rulers as a religious and political institution (Kristiansen 2004; 2006).

Still, in the history of archaeological thought, most studies have not analysed and combined ecology, technology and cosmology. A Water-System approach, on the other hand, is especially developed to overcome both nature reductionism and nature determinism by analysing particular water-society relationships in time and space. Analytically, a water-system can be seen as consisting of three different, closely interconnected but not hierarchical analytical "layers" (Tvedt 2006–2016; 2016):

- The first layer addresses *water's physical form and behaviour*, which includes precipitations patters, rivers and, from our

perspective, the winter and snow. This part of nature and the landscape is always in a state of flux, and the physical presence or absence of water changes throughout the seasons.

- The second layer addresses *human modifications and adaptations to actual water-worlds*. While prehistoric people had few possibilities of modifying the weather itself (rain/snow), agricultural adaptation not only altered the landscape, but also changed the actual ways water flowed in fields and among farms, and with advanced boat technology, rivers and seascapes were not only obstacles, but also great opportunities enabling wealth.
- The third layer addresses *cultural and religious concepts of water*. While the sun has been emphasized in Bronze Age cosmology, we will include and highlight water, winter and the weather, since these forces in culture and cosmos define all life and well-being. This will involve focusing on the relation between the sun and water, which is often expressed and ritualized with horses – and boats.

This perspective enables one to combine ecology, technology and cosmology. From an ecological perspective, the Scandinavian seasonality was a decisive factor in the production and accumulation of wealth combining agricultural produce and products with long-distance trade on boats and horses. Although frozen waterways have enabled transport and mobility in the cold north, in general the winter has not only been a barrier isolating maritime communities in Europe, but also defining the agricultural season representing a time of suffering and hardship (Fagan 2000). The length and the intensity of the winter were decisive factors in pre-modern agriculture, because it determined the growth season; too long and cold springs or too early autumns with night frosts could jeopardize the whole harvest (Charpentier Ljungqvist 2015; 2017). Moreover, throughout the growing season, a successful harvest was dependent upon the right combination of water (rain) and sun in the right amount; too little water or rain could be as devastating as too much (Tvedt & Oestigaard 2016). Thus, not only the agricultural production of wealth, but also the transport systems and modes of exchange, depended upon the Scandinavian seasonality of summer and winter.

Although studies highlighting natural factors and variables have often been criticized as nature reductionism and determinism, interpretations favouring the sun have been dominant in analyses of

Bronze Age iconography and rock art (e.g. Goldhahn 2005; 2006; 2013). Flemming Kaul says: "the minds of people of Scandinavia were almost obsessed with the religious ideas involving the voyage of the sun […] Everything suggests that the sun was the most significant power which was worshipped" (Kaul 1998: 251; see also 2004).

However, the cultural and cosmological role of the sun has been seen apart from ecology and agriculture, despite the role it has in the relation between the winter and summer and weather and water in defining the year. Thus, if water and the winter are centrally placed in ecology and cosmology, another picture emerges as evident in the ethnology and folklore in Scandinavia, and a central theme on rock art panels are precisely water from beneath or underground overflowing depictions of the sun, boats and horses – and people fighting (Figure 2). These

Figure 2. Water from the underground overflowing rock-art. Tanum, Aspeberget. Photo: Bertil Almgren © shfa.dh.gu.se (SHFA). License: CC BY 4.0.

life-giving water sources from beneath have historically been vital powers overpowering the winter, and the ritual challenge has been: how is it possible to activate and incite these forces? This probes into the core of a 150-year-old debate of religious practice and what defines religion.

4. Religion and ritualization – terrestrial and celestial gods

In studies of religion, religion has been seen from functional and substantive approaches (Schilbrack 2013a; 2013b). In 1871, the British anthropologist Edward Tylor said: "Religious rites fall theoretically into two divisions, though they blend in practice. In part, they are expressive and symbolic performances, the dramatic utterance of religious thought, the gesture-language of theology […] In part, they are means of intercourse with and influence on spiritual beings, and as such, their intention is as directly practical as any chemical or mechanical process, for doctrine and worship correlate as theory and practice" (Tylor 1871: 362). Durkheim, for instance, can be seen as advocating functional approaches. He writes: "In reality, then, there are no religions which are false. All are true in their own fashion; all answer, though in different ways, to the given conditions of human existence…They respond to the same needs, they play the same role, they depend upon the same causes; they can also well serve to show the nature of the religious life, and consequently to resolve the problem which we wish to study" (Durkheim 1915: 3). The Church father Augustine, on the other hand, is clearly in the other category when he said that religion means 'worship of God' (in *The city of God against the pagans*). In practice, there is not necessarily a contradiction between the two approaches, because a god needs to exist as an ontological substance if the divinity is to work and function (Oestigaard 2013). Importantly, not only in Christianity but in all religions, 'god works in mysterious ways': humans are always inferior in the reciprocal relations and engagements with divinities. Human intentions are often quite different from divine interventions. In a religious world-view, cosmic causes and consequences determine human life and well-being, and gods are not necessarily good; they may also be malevolent and dangerous. Therefore, rituals and sacrifices are necessary (Figure 3).

A century ago, there was a huge and intensive debate in Scandinavia whether there was ancestral worship or fertility (corn) spirits, which in practice also related to whether the prehistoric Christmas or midwinter sacrifice was primarily an ancestral cult or fertility ritual. This was also a debate about where the life-giving forces came from: above

Figure 3. Celestial and terrestrial powers in practice and working together. The sun shines from above and underground forces keep the water alive during cold winters. Historic source at Håga, Uppsala, Sweden, 6 February 2021. Photo: Terje Oestigaard © License: CC BY-NC.

(the celestial approach) or beneath (the terrestrial approach) and at that time it was difficult to combine the various positions (e.g. Feilberg 1904; Celander 1920; 1928; 1936; 1955; Nilsson 1936). Olrik & Ellekilde, for instance, argued that other people may have been worshippers of death, but in the Scandinavian north they were not (Olrik & Ellekilde 1926–1951: 324). In practice, a terrestrial perspective was seen as in opposition to a celestial perspective, and scholars worked mainly in two competing paradigms: one focusing on ancestors/celestial divinities and another on fertility- and corn-spirits (Oestigaard 2021a). Moreover, in ethnology or folklore there was a theoretical school opposing all religious interpretations, but in particular interpretations of agrarian spirits were criticized (e.g. von Sydow 1930; 1934; 1941).

These debates regarding the nature of rural farming communities have had long historical trajectories in the research history and the relation between ethnology and archaeology. In practice, rural communities in Scandinavia were seen as representing a break with tradition, cult and continuity, and hence ethnology became hardly relevant for

archaeological studies. With the functional perspectives dominating processual archaeology, prehistoric religion was further neglected (Hawkes 1954). When religious interpretations became dominant in post-processual archaeology, the interpreter became the dominant actor and this linguistic turn fitted well with a celestial perspective: the focus was on cosmology and celestial interpretations; not ecology, agriculture and terrestrial corn-spirits. This dominant research trend is particularly evident in many studies of Scandinavian rock art and Bronze Age religion: iconography is interpreted apart from ecology and cosmology, and it is not integrated with the evidence of Bronze Age cultures explaining why these perceptions were rationally believed in and ritualized.

Thus, in Bronze Age research the celestial paradigm has dominated the last decades, although there have been some early studies aiming to combine terrestrial and celestial approaches by focusing on fertility spirits (Kaliff 1992; 1997). This approach has been further developed in an Indo-European perspective (Kaliff & Oestigaard 2004; 2013; 2017; 2020). Still, based on an analysis of birds and the sun, there have been arguments in favour of a celestial perceptive, because apparently "most ritual practices and engagements aim to enact and recreate human belief and cosmological understandings" (Goldhahn 2019: 158). Although Edmund Leach once said that "myth implies ritual, ritual implies myth, they are one and the same" (Leach 1954: 13ff), most researchers today will argue that the relationship is much more complex, and that myths and rituals possess qualitatively different aspects. Rituals are not only about recreating human belief; they also relate to functions and outcomes of rituals in relation to the agricultural season.

Thus, we will argue that one cannot understand rituals such as funerals and sacrifice unless one includes terrestrial and celestial perspectives, like the famous Sagaholm burial (c. 1500–1100) in Jönköping Län, central, southern Sweden (Goldhahn 1999; 2016). The horse rituals depicted on the stone slabs cannot be properly explained and understood without an Indo-European perspective contextualizing the rituals in an ecological and fertility perspective (Figure 4). This core motive is a cosmological ritual inciting cosmic forces and uniting celestial and terrestrial perspectives (Kaliff & Oestigaard 2020: 250–253). Hence, without having an Indo-European perspective on Scandinavian cosmology in the Bronze Age onwards (Kaliff 2007; 2018), one cannot satisfactorily grasp the cultural frameworks in which the rituals are embedded.

Of key interest for our discussion here are the cosmological beliefs evident in various Indo-European traditions. The world was seen as

Figure 4. Sagaholm. Slab 30 *in situ* with depiction of an Indo-European horse ritual. Photo: Bertil Almgren © shfa.dh.gu.se (SHFA). License: CC BY 4.0.

having been created by gods who dismembered the body of a primordial being and this myth is evident in Old Norse (e.g. *Grímnismál* 40–41; *Gylfaginning* 6–8) as well as Vedic (e.g. *Rigveda* 10.90; *Aitreya Upanishad* 1.4), and also several other ancient Indo-European traditions (e.g. Lincoln 1986: 11–20). All parts of existence arise from the body parts of the dismembered primordial being. Everything once broken up will return to its origin and hence be put together again and new life will arise. This cosmology is the basis for both sacrifices and funeral rituals. From this perspective, seemingly contradictory features in the archaeological record, for instance votive deposits in water or earth in relation to burnt offerings, may constitute a meaningful and coherent picture (Kaliff 2007: 65–84). This Indo-European approach also enables one to fully use the rich ethnographic past as an interpretative framework.

5. Ethnology and folklore: Analogies and retrospective/retrogressive methods

All archaeology uses analogies in various ways and forms, following Ian Hodder's definition of relational analogies, which "demonstrate that similarities between past and present situations are relevant to the

"unknowns" that are being interpreted, whereas the differences that can be observed do not really matter; they are not relevant because there is little link between what is different and what is suggested as being the same" (Hodder 1982: 19). From this perspective, one may use whatever ethnography as an inspiration, because "all archaeology is based on analogy and the process of analogical reasoning can be explicit or rigorous. But we cannot strictly test the analogies and hypotheses, which result from their use. Archaeologists cannot prove or falsify their hypotheses on independent data. *All they can achieve is a demonstration that one hypothesis or analogy is better or worse than another, both theoretically and in relation to data*" (Hodder 1982: 9, our emphasis).

Still, there are long historical trajectories, or what Braudel called "longue durée", slower rhythms in history with long continuities despite of, or because of, continuous changes through time (Braudel 1980). In particular, ethnology or folklore from rural communities in the 18th and 19th century may be an invaluable source for understanding historical processes and structures. In archaeology, starting with the present (ethnography and folklore) and tracing traditions backwards is commonly seen as a "retrospective" method (e.g. Heide & Bek-Pedersen 2014) whereas following history chronologically from the past to the present is seen a cultural-historical approach (see Trigger 1994). However, the archaeological ways of using "retrospective methods" may cause some confusion, since it contradicts in particular the tradition developed by French historical geography.

In F. W. Maitland's *Domesday book and beyond* from 1897, he says: "I have followed that retrogressive method 'from the known to the unknown'" (Maitland 1897: v). According to Marc Bloch (1954), the fundamental purpose of the retrogressive method is to understand the past by examining the present. And to quote Alan R. H. Baker: "The retrospective approach is thus focused upon the present (the past being considered in so far as it furthers an understanding of the present), while the retrogressive method is focussed upon the past (the present or recent past being considered in so far as it furthers an understanding of earlier conditions). For both, the point of departure can be the present. But with the retrospective approach the present is not only the beginning but also the end, while with the retrogressive method the present is a means to an end. The retrospective method approaches relict features, for example, as landscape elements to be explained. The retrogressive method approaches them as source materials" (Baker 1968: 245).

From this perspective, parts of the cultural-historical and chronological approach represent a retrospective methodology. Still, we will also use retrogressive methods, and both these methods are fundamentally analogies, as Geertz says with regards to "thick descriptions": "[…] how you can tell a better account from a worse one […] it is not against a body of uninterpreted data […] but against the power of the scientific imagination [and how] to bring us into touch with the lives of strangers" (Geertz 1973: 16). In other words, it is possible to seek a "best explanation" where the various interpretations are not contradicted by the data (Anthony 1995: 86–87). Ethnology and folklore may thus be a source enabling a) relevant analogies, b) the present (recent past) as an understanding of the distant past (retrogressive method) and c) the present (recent past, in practice as an analogy) as a means to construct a cultural history from the past to the present. In the following analysis, we will use these various methods interchangeably. By combining ethnology and archaeology in an Indo-European perspective, one may shed new light on prehistoric people and processes.

6. Well-water, horse-fights and water-tournaments

Spring-wells or holy wells have dominated the Nordic ecology and cosmology since the Mesolithic. The most renowned sites in Sweden include Röekillorna, Gårdlösa, Hindby, Käringsjön, Skedemose and Old Uppsala, and in Denmark Varbrogaard and Rislev (Stjernquist 1997). In fact, in Denmark altogether 3266 spring-wells or holy wells have been documented (Tillhagen 1997: 21). These wells, in particular if they were flowing northwards, were seen as being inhabited by living spirits. Even during the coldest winters some wells never froze over, and underground water bubbling from beneath was believed to be the spirits' breath (Reichborn-Kjennerud 1928: 17). These spiritual beings were literally terrestrial and underground. Many were directly related to agriculture and fertility, but others were also seen as malignant and malevolent. Importantly, it was paramount to please dangerous deities through sacrifice, and many forces had the potential to become benevolent and turn chaos into cosmos – and barren fields into fertility (Oestigaard 2021a). Thus, the aim was to incite and engage the cosmic forces that had the possibility to combat and overcome the hostile and desolate powers blocking the growth-forces in agricultural fields and thereby enabling fertility and farming – and life.

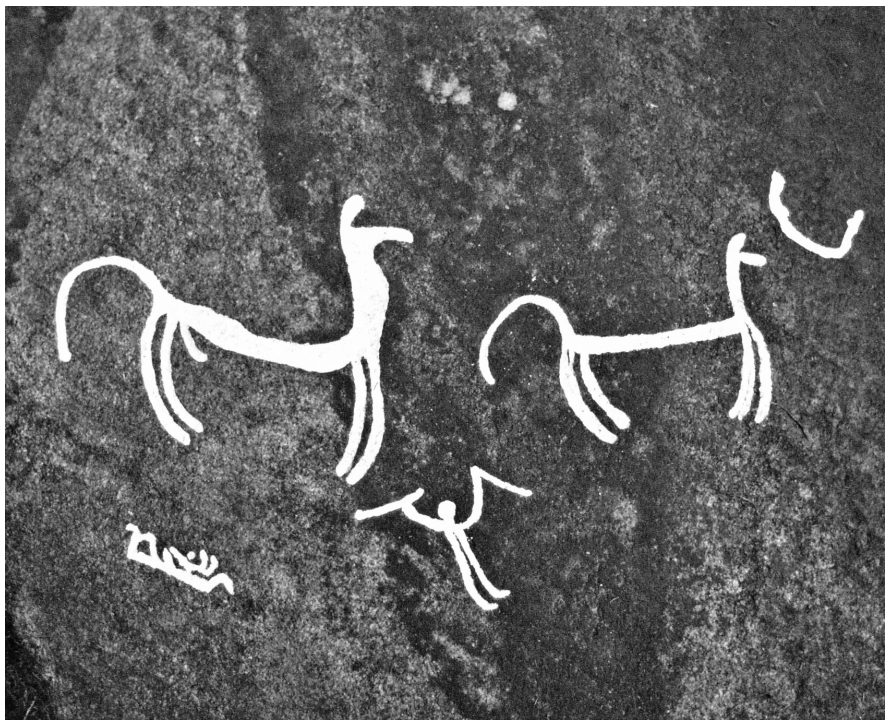

Figure 5. Skeid depicted on rock art. Litsleby 2 Tanum, Bohuslän, Sweden. Date: Younger Bronze Age. Photo: Gerhard Milstreu © shfa.dh.gu.se (SHFA). License: CC BY 4.0.

Equally fundamental to the ritualization of health and wealth were the horse-fights: a prosperous agricultural season with bountiful harvests (Figure 5). The Scandinavian horse-fight and skeid tradition is best documented in Setesdal in Norway, and parts of Småland and Östergötland in Sweden, where there have been continuous traditions from prehistoric times to the early 20th century. Strong men used a *skeidstong* – a long rod – to fend off the horses when they were fighting for a mare. While the historic tradition in Setesdal is famous for the horse-fights and rides in early autumn, it was the second day skeid early in the morning on 26 December that was cosmologically the most important. The aim was to water the horses in specific wells and the farmers who won the races would get the first and best harvest in the following season. "People rode or drove out to water the horses in so-called *fro-brunnar*, special springs or special places at rivers or lakes. These were springs which never froze, or openings in the ice which kept open throughout the winter," Svale Solheim writes, "The

water in these springs was thought to be especially powerful and health giving. When the horses got to drink this water on the morning of the second Christmas Day, they were supposed to thrive and become especially healthy. People competed to come first to the springs, for then the water was thought to be best. The competitions often turned into fight" (Solheim 1956: 153).

In Sweden, St. Stephanus (Staffan), the patron saint of horses, has been the subject of special worship in Flistad parish in Östergötland where horse races and well worship have a long history, as Elias Wessén notes: "One can hardly avoid the idea that in this intense St. Stephan's worship in Flistad, documented as early as the 1100s and continued to our own time, are hidden memories of an ancient Frey cult in this locality. The assumption is strongly supported by place names in the neighbourhood" (Wessén 1921: 119).

In Christian times, these wells have been seen as holy, but originally the name characterized their specific quality: *frobrunn*, literally 'froth well' or a frothing spring. The water "frothed" throughout the winter (Skar 1909: 45). The water was always flowing, and the most powerful springs also flowed towards the north; the cold and hostile regions. The waters in these springs were overpowering the winter, like many waterfalls; when the whole landscape was desolate and without life, the fertile and forthcoming sources were living underground and bubbling from beneath. By drinking and inciting the water and the underground forces, the aim was to activate the mighty powers and processes that had the power to "eat" the snow (Lid 1933: 40). Therefore, it was not the sun during the spring that melted away the snow; this was too late: the process and battle started much earlier by fighting the winter through activating the powers "eating" away the winter and snow from beneath.

Sacrifices to such wells have been a common and dominant ritual feature throughout prehistory, and in the Nordic countries the most spectacular well is perhaps Levänluhta in Finland, located about 50 km east of Wasa. Being located in Finland and outside the core area of Indo-European languages, the ritual practices themselves may give testimonies to ritualization processes and Indo-European influences, which illustrate the complexity and inter-relation between ideology, cosmology and ecology. Originally, there were at least three springs, but only two are active today, and importantly, they never freeze during the winter. Altogether, there are remains of almost 100 humans who were sacrificed or offered to the springs. Intriguingly, the majority

of the deceased were women, and although the cause of death is uncertain, they had not died in childbirth, i.e. not died a bad death. The dating spans major parts of the Iron Age, but there is an intensification of deposits around 550/600 AD. Moreover, sacrifices continued up to the 19th century, and animals replaced humans in historic times. From 1345 to 1850 cattle and horses were sacrificed, and cattle were given to the springs in 18th and 19th century. 43% of the animals were horses (Wessman 2009; 2010; Wessman et al. 2018; Oinonen et al. 2020). The intensification of deposits and sacrifices around the climate crisis in 536/537 AD (Gräslund 2007; Gräslund & Price 2012) strongly suggests a ritual response to changing and worsening weather and winter conditions. Intriguigly, apart from the ritual language that clearly referred to Indo-European conceptions and practices, a Vestland-cauldron was also found in the springs – a bronze cauldron common in cremation burials in SW Norway during the Roman and Migration period (Hauken 1984). While the rituals and finds clearly speak a common language, the springs are nevertheless an enigma since there are no folklore or documented stories of healing powers of the waters, despite the fact that the last sacrifices are less than 200 years old (Wessman 2009).

Turning to the Indo-European core areas in Scandinavia, horse-fights are well documented in the archaeological record. Skedemosse on Öland, Sweden, is one of the most famous places, and Ulf Erik Hagberg says: "Probably Skedemosse can be considered as a cult site, perhaps common to a large district, where the cattle were rounded up, where practical affairs were discussed, competitions and games were arranged, and offerings were made to the gods" (Hagberg 1967: 80). Although the horse-fighting scene on the Häggeby stone in Uppland, Sweden, dated to c. 500 AD (e.g. Østmo 1998), has been seen as one of the earliest pieces of evidence, we have argued that many of the depictions on Bronze Age rock art are best understood from this perspective (Kaliff & Oestigaard 2020).

Depictions of fighting scenes may obviously refer to real battles and warfare, but in agrarian communities there were also specific rationales behind ritualized fights. One of the most important battles was against the winter. In a cosmology where the forces of nature and growth powers could be activated and incited to work for human betterment, ritual intensification, competition and fights were means by which these forces were dramatically played out (Lid 1933: 39–40). These ritualized fights could take numerous forms and expressions. Olaus

Figure 6. Symbolic horse-fight between the Winter and the Summer. From Olaus Magnus 1555 [2001]. License: CC-PD.

Magnus, the last (titular) Catholic archbishop of Uppsala, published his famous *Historia de Gentibus Septentrionalibus* or *A Description of the Northern Peoples* in 1555, when in exile in Rome. In Book 15 (chapters 8–9), he describes a communal festival around 1 May as a symbolic horse-fight between two riders – the Winter and the Summer – the former dressed up in thick cloths and the latter, who always won, was draped in flowers (Figure 6).

In the Iron Age there is even evidence of horse-fights and skeid rituals on board ships like Oseberg, where it seems that the oars have been used as fighting poles (Stylegar 2006; Kaliff & Oestigaard 2020: 238–241). Moreover, Snorri Sturlusson describes the large Viking ship or warship as *skeið* (Snorri, p. 26). Thus, the horse-fighting scenes in the Bronze Age have also to be seen in relation to the sun and boat-fighting scenes. The ethnography and folklore provide yet other clues to broaden our understanding of this cosmology in relation to ecology.

In Denmark, as late as the 20th century there was a living tradition of water-tournaments, or *dystløb*. Historically, the tradition can be documented at least to the 16th century, but the tradition seems to have much longer and deeper roots. Older Danish names were *waterspil* and also *støde i vandet*, the latter meaning 'push into the

Figure 7. Boat fight or water-tournament. From Olaus Magnus 1555 [2001]. License: CC-PD.

water'. The water-tournaments usually took place on Shrove-Monday (late February-early March) and in the old calendar St. Peter's Day 22nd February was seen as the first day of the spring. However, these tournaments were not held annually, but at irregular occasions. The tournament took place among and between sailors and fishermen, and often the ice had to be cut through the night before the event, if the ice had not already melted away. In each boat, there was a team of rowers carrying their oars on their shoulders while the combatants used their poles or lances to push the other competitor into the water (Henningsen 1949) – these poles were similar to the skeidstongs used in the traditional horse-fights in Setesdal, or for instance the oars in Oseberg. In Book 15 (Chapter 21), Olaus Magnus also mentions this type of water-tournament (Figure 7), and following him, the reason for this practice is that it was either as a practical rehearsal with lances or as a penalty for sailors, who will suffer in the cold waters when hit with the lances (Magnus 2001).

The size of the boats could vary, from small to large vessels, and the winner from one competition continued fighting the winner on another boat until there was only one champion left in the tournament, just like the skeid and horse-fights in Setesdal. The boatmen were nicely dressed up and in later traditions the tournament was closely associated with the royal court. Also, it was a collective and popular event, with plenty of alcohol where all the participants and onlookers contributed financially to the festivities. Moreover, there is a long tradition in Denmark of carrying boats on cars or on wheels (or on a sledge when there was snow) in

the villages (Henningsen 1953). Intriguingly, Oscar Almgren pointed also out such a connection in his classic study of rock art in 1927: many boats were pulled by horses on land (Almgren 1927). Nevertheless, any direct connection between horse-fights on land and the water-tournaments as battles between Winter and Summer did not exist in the 19th and 20th centuries (Henningsen 1949: 129). Still, such a connection seems to be a reasonable interpretation with regards to prehistory.

In modern times, sailors and maritime enterprises were professionals and professions independent of agriculture and hence the intimate connections one may expect to have existed in the past were lost. Still, the melting of ice on water has been essential throughout history, and in the Bronze Age it seems that this process was ritualized as fights and processions on boats (Figure 8). In this case, the ethnography may only work as an analogy, but the prehistoric context and the ecology of communities and their attempt to control and fight the hostile forces of nature may suggest that we are here talking about real cultural-historical events and developments.

Figure 8. Symbolic water-tournament with naked fighters (note the skee-name): Massleberg Skee, Bohuslän. Date: Younger Bronze Age. Photo: Torsten Högberg © shfa.dh.gu.se (SHFA). License: CC BY 4.0.

7. Fertility, farming and an agrarian paradigm change

Sexual magic seems to have been omnipotent and potent throughout prehistory. Huge phalluses are particularly evident on rock art, which include direct penetration following a common Indo-European scheme like the depiction in Sagaholm (for a detailed comparative analysis, see Kaliff & Oestigaard 2020: 24–37), but also together with other depictions of horses, boats and water-tournaments, and in agricultural ploughing scenes (Figure 9). In the Nordic ethnography, sexual magic is not uncommon (Kuusela 2014), and there is even evidence that exposing the sexual organs were a prophylactic means expressing and manifesting cosmic force and strength (Klintberg 1978). In the past, it seems that such ritual practices released potent forces. Hence, more powers were activated and incited when it included huge phalluses – human, horses or in combination – and the ultimate reference point in culture and cosmos was agriculture, the fertility of the fields and a successful harvest. In this seasonal world, the greatest challenge was the winter, since it defines the length of the growing season and hence whether it would be a year of plenty or famine, and ultimately of suffering and death (Oestigaard 2021a).

Although the inclusion of natural and ecological variables has been seen as reductionism and determinism in post-processual archaeology, it is in fact a primarily celestial approach that is ultimately reductionist, because it minimalizes prehistoric people and their agricultural practices and beliefs. Moreover, a sole focus on celestial gods cannot explain the rich material culture evident in funerals and sacrifices – and depicted on rock art. Importantly, it is neither capable of explaining processes of ritualization and why there is a huge variation in material culture, and why there are changes throughout time. As we have shown, since Tylor (1871) there has been a debate whether religion should be analysed from functional or substantive approaches, and obviously there are no contradictions between the perspectives, since a god needs to exist to work and without divinities there are no holy works. Similarly, the dichotomy between celestial and terrestrial perspectives is also an academic construct, which does not reflect prehistoric realities, because the ethnographic and archaeological record clearly documents that the spirits and ancestors were everywhere – above, beneath and within various spheres and seemingly incompatible fields (e.g. Hyltén-Cavallius 1863–1868; Hagberg 2016).

Figure 9. Fields and fertility during ploughing ritual. Litsleby 6 Tanum, Bohuslän, Sweden. Photo: Gerhard Milstreu © shfa.dh.gu.se (SHFA). License: CC BY 4.0.

After almost a century, it is time to re-introduce agricultural rites and cosmology in Scandinavian archaeology. There are several reasons why we need this paradigmatic re-invention. First, despite many post-processual interpretations, agriculture was the foundation of culture and cosmology in Bronze Age societies onwards. The very Indo-European processes followed literally in the footsteps of horses from the steppes (Anthony 2007, see Kaliff 2018), and elaborate horse rituals were intimately related to and defined fertile fields and bountiful harvests (see Doniger 1980). Second, farming and fertility are not only central parts of Indo-European cosmologies (e.g. Lincoln 1986; 1991; 1991), but are also world-wide phenomena in all agricultural cultures (e.g. Eliade 1993; Frazer 1996). Hence, it is not only highly unlikely that there were no such defining cosmologies in Scandinavia, but if this was the case, an absence of such prehistoric cosmologies would have been unique in world history. Fortunately, and not surprisingly, this is not the case. Third, water-worlds, ecologies and climate change have in all societies impacted on culture and cosmological constructions (Oestigaard 2018; 2019), because to "accept religion in its own terms is really to deny that it has any ideological function" (Morris 1987: 177). All religious phenomena are historical and religious phenomena cannot be

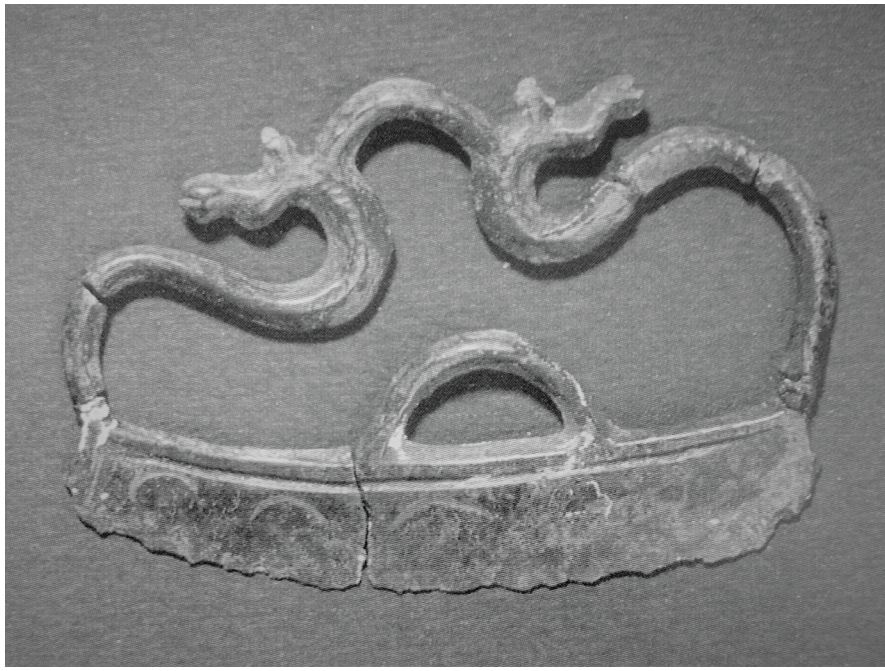

Figure 10. Late Bronze Age (c. 700 BC) razor with horses and ship found in 1958, Rinkeby, Sweden. Photo: Jan Eve Olsson, RAÄ © License: CC BY-NC.

understood outside of its "history" (Allen 1988: 552). Hence, water and agriculture are fundamental parameters. Fourth, an Indo-European perspective combining archaeology and ethnology may solve many of the seemingly theoretical and methodological challenges (see Kaliff & Oestigaard 2020). If one analyses the past in an Indo-European framework, one is inevitably forced to develop perspectives synthesizing terrestrial and celestial approaches firmly rooted in an agricultural life-world of the living and the dead (Figure 10). In Scandinavia, this was very much a cold world of snow and ice.

8. Conclusion

Understanding how prehistoric people fought the winter delves into the heart of Indo-European rituals and cosmogony in cold climates. This was the real life and the challenges people of the past faced, and failure would lead to suffering, starvation and possible death. An ecological approach focusing on the seasonal changes and the ritualized ways the winter was part of culture and cosmology may provide new perspectives for interpreting parts of the prehistoric religion in Scandinavia. The

agricultural season and the year started with the ritual processes fighting the winter and activating the forces immanent in the soil and beneath the snow; the waters from the deep living below and eating away the winter from within. The fighting and actual dramas were inciting the latent forces of nature, and this included horse- and boat-fights. The importance of these rituals is testified by the long continuities up to modern times, and hence the ethnology and folklore documenting these rituals are invaluable sources whether they are used as analogies or methods to write retrospective or retrogressive histories. An Indo-European perspective which focuses on agricultural studies of cosmologies and ritual practices has been a neglected field in archaeological research for many decades. By analysing the interplay between ecology and cosmology one may overcome the interpretative challenges that have defined parts of archaeology for more than a century and enable unifying approaches that focus on the complexity of terrestrial and celestial gods and ancestors – from the cradle to the grave, and from fields to funerals. The prehistoric cultures and cosmologies in Scandinavia are unique in the sense that compared to many other known religions there are no clear and identifiable water gods or goddesses – or sun god. The reason is that the very ecology in the cold north was much more dramatic with a great variety and complexity, and the forces in and beyond nature were everywhere. Thus, hydrology and cosmology seen in relation to the agrarian seasons unite ancestral rites and fertility cults, because they were essentially various embodiments of growing life-forces.

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10. Celto-Germanic and North-West Indo-European vocabulary
Resonances in myth and rock art iconography

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Abstract

The chapter develops historical linguistic work undertaken as part of a four-year cross-disciplinary project funded by the Swedish Research Council. New evidence tracing metals in Bronze Age artefacts has revealed that Scandinavia was in trade contact with metal-rich regions in Wales and the Iberian Peninsula, as well as the Italian Alps. This new knowledge leads to reopening two long-known, but poorly explained phenomena: (1) a large body of inherited vocabulary shared by Celtic and Germanic languages, but not Indo-European generally, and (2) detailed similarities shared by the Bronze Age rock art of Scandinavia and the "warrior" stelae of the Iberian Peninsula. In the past, the Celto-Germanic words have been explained as reflecting contacts in Central Europe from 500 BC down to the Roman period. However, that dating seemed possibly too late as many of the words pre-dated Grimm's Law and lacked earmarks as loanwords, looking instead like inheritances from Proto-Indo-European with limited geographic distributions. Recent archaeogenetic discoveries have also undermined the once prevalent view that only non-Indo-European languages were spoken in Ireland, Britain, Brittany and western Iberia until ~1000 BC or later. Therefore, we now pursue the hypothesis that shared rock art motifs and Celto-Germanic words can be better explained as reflections of the ideology and language of highly mobile Bronze Age warrior/traders who brought copper from Atlantic and Central Europe to metal-poor Scandinavia. The Celto-Germanic word stock highlighted in this paper has to do with myths, beliefs, ideology and their possible resonances in rock art iconography.

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1. A research project

Geochemical and isotopic tests have recently shown that metal-poor Scandinavia was importing copper from Wales from the Late Neolithic to Middle Bronze Age (Nørgaard et al. 2019; Williams & Le Carlier de Veslud 2019), then from the Western Iberian Peninsula in the Late Bronze Age (Ling et al. 2013; 2014; 2019; Melheim et al. 2018; Radivojević et al. 2018). Much remains to be explained about this trade:

- What was its volume?
- When and why it began and ended?
- What areas and communities were directly involved?
- Who were its primary agents?

To investigate these questions we launched, in March 2019, a four-year cross-disciplinary project funded by the Swedish Research Council: "Rock Art, Atlantic Europe, Words & Warriors (RAW)" [Hällristningar, språk och maritim interaktion i Atlantiska Europa]. Johan Ling is project leader.

This discovery also calls for the reopening of two long-known, but poorly explained phenomena:

- numerous close parallels in the motifs recurring in Bronze Age Scandinavian rock art and the so-called "warrior" stelae densely concentrated in the metal-rich southwestern Iberian Peninsula (Almagro Basch 1966; Harrison 2004; Koch 2013; 2019) and
- a large body of inherited words shared by the Celtic and Germanic languages, but not the other branches of Indo-European (De Vries 1960; Schmidt 1986a; 1986b; 1991). Semantic domains heavily represented are warfare and ideology (Hyllested 2010).

In the light of this newly discovered trade, an obvious explanatory hypothesis is that these phenomena might have a unified explanation. To be more specific, they possibly reflect the ideology and shared language of seafaring warriors who brought copper from the Atlantic façade to Scandinavia in the Bronze Age. The possibility of a shared language may be considered as either of two somewhat different scenarios, depending on how far apart we think the dialect(s) ancestral to the Celtic languages and those that became Germanic had evolved by

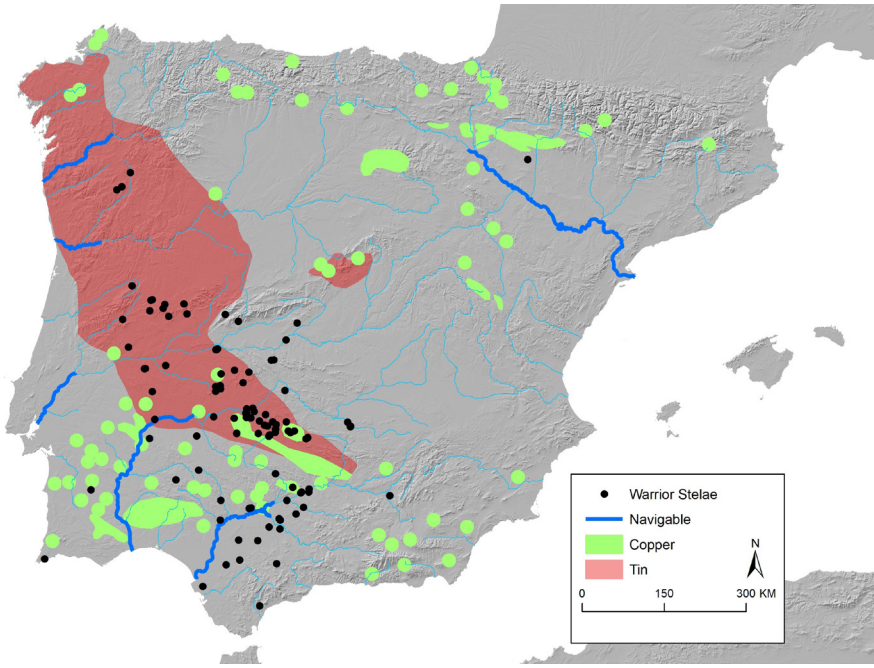

Figure 1. Map showing Iberian Late Bronze Age warrior stelae, rivers navigable in later prehistory, copper and tin deposits. From: M. Díaz-Guardamino 2017 © License: CC BY-NC.

the period of contact. Should we be thinking in terms of dialects at a later stage of Proto-Indo-European – perhaps Proto-Indo-European's very latest or terminal stage before the full separation of the primary branches – still retaining a high degree of mutual intelligibility between them (cf. Mallory 1996; Ringe, Warnow & Taylor 2002)? That would mean that far-flung participants in the Bronze Age system could still efficiently communicate using their first languages. Or alternatively, were Pre-/Proto-Celtic and Pre-Germanic effectively separate languages at the period of contact? Is more of the evidence better explained on the assumption that, in order to participate, Pre-Germanic speakers had to learn a Pre-/Proto-Celtic lingua franca as a second language?

As a matter to be determined using phonological criteria, evidence seen as favouring the first model would be examples that did not show the diagnostic features of loanwords, but differed from forms and developments assignable to Proto-Indo-European only in that their geographic distribution was limited to contiguous branches in the North and West. On the other hand, the lingua franca scenario

would be consistent with a subset of Germanic items showing Proto-Indo-European > Proto-Celtic sound changes (or conversely the fewer Celtic items showing Proto-Indo-European to Proto-Germanic sound changes in Celtic). As this trade continued for centuries and involved many local communities, there is no necessity that the entire corpus of Celto-Germanic words arose in the same way at all times and all places. It may become possible to identify the earmarks of earlier and later chronological strata.

2. Language and the Bronze Age in the North and West

My work in the RAW project includes a monograph, which first appeared as an open-access e-book in 2020 (Koch 2020). An expanded and revised edition is anticipated to be brought out following the end of the project in 2027.

This 2020 e-monograph collects 173 Celto-Germanic ("CG") words or unique developments of words, that is, examples attested in one or more language(s) in those two branches, but not in the other branches of Indo-European. The e-monograph also contains a total of 278 "CG+" words. The latter figure is arrived at by adding to the 173 CG words any found in both Celtic and Germanic and also in one or more of the other North-West Indo-European branches: Italic and/or Baltic and/or Slavic. Thus, within this CG+ category of 278 items, there are subsets of 45 (16.2%) Italo-Celtic and Germanic (ICG) items, 34 (12.2%) Celto-Germanic and Baltic and/or Slavic items (CGBS), 26 items (9.4%) occurring in all the North-West branches (ANW), i.e. Celtic, Germanic, Italic, Baltic and/or Slavic. However, as a negative defining feature, none of the CG or CG+ words occur in any Indo-European branches outside the North and West of the Indo-European world, i.e. not in Indo-Iranian, not in Greek, Anatolian, etc. Note that of the various subsets listed above as making up the CG+ total, Celto-Germanic with its 173 items is by far the largest (62.2%), which is both striking and probably significant, suggesting a stage at which the forerunners of Celtic and Germanic were interacting closely with each other but less so with their other Indo-European sister dialects.

To appreciate these figures as an order of magnitude (i.e. 173 CG words, 278 CG+ words, etc.), note that Mallory and Adams (1997) count 1,364 Proto-Indo-European lexemes. That total does not include words limited to the North-west branches (1997; Mallory

2019). The looser criteria of Pokorny (1959–1969) netted 2,044 Proto-Indo-European roots. Even so, the 173 CG and 276 CG+ totals stack up as a significant phenomenon alongside these statistics.

Breaking the Mallory and Adams figure down as lexemes attested in each branch, the highest proportion of Proto-Indo-European lexemes occurs in Indic: 925 words, 68% of the total. Germanic and Celtic come in with significantly fewer with 761 words (56%) and 539 (40%), respectively. The archaism, copiousness, and early attestation of Sanskrit are major factors favouring this disparity. This detail also underscores the fact that a key negative defining feature of the CG and CG+ sets is that they do not have Indic comparanda. That suggests that on the whole, though not necessarily holding for each individual item, we are dealing with regional phenomena that occurred after the dialects ancestral to Indo-Iranian had separated from those that gave rise to the northwestern Indo-European branches, a stage when innovations were no longer shared across a continuum ancestral to both.

From the CG and CG+ totals I have excluded loanwords that belong to the post-Roman Migration Period or Viking Age. These are in most cases easily identified by either or both of the following criteria.

- They show phonological innovations known to have occurred in Celtic or Germanic during the historical period, often in a specific Celtic or Germanic language or dialect group rather than across the entire family.
- They refer to a feature of post-Roman culture.

In earlier studies, CG items have been explained as arising through contact between Celtic and Germanic speakers in Central Europe during the La Tène Iron Age, ~500 BC to the *Zeitenwende* (De Vries 1960; Schmidt 1986a; 1986b; 1991; Schumacher 2007; Ringe 2017). There are two reasons why contact between Scandinavia and the Atlantic façade in the Bronze Age had not been obvious earlier as an alternative scenario:

- It has only recently been discovered that Welsh and Iberian copper was traded to Bronze Age Scandinavia.
- Only recently has ancient DNA shown that large numbers of people with high levels of steppe ancestry (thus now thought likely to be Indo-European speakers) were established over the Atlantic façade by ~2000 BC (Cassidy et al. 2016; Olalde

et al. 2018; 2019; Szecsenyi-Nagy et al. 2017; Reich 2018; Valdiosera et al. 2018). Previously it was thought possible that Ireland, Britain, Brittany, and the Western Iberian Peninsula were wholly non-Indo-European until ~1000 BC or later (cf. Cunliffe & Koch 2010).

The research embodied in the monograph is more consistent with the Bronze Age scenario for most of the CG words for three reasons:

- *First*, most of the 173 CG words – remember discernible Anglo-Saxon and Viking Period loans have been excluded – show no signs of being loanwords from Celtic to Germanic or *vice versa*. Instead, the words behave phonologically like inheritances from Proto-Indo-European with restricted geographical distributions. I have excluded the words common to Celtic and Germanic which post-date Grimm's Law 1 and 2 from the CG set, as clear loanwords probably later than the period of interest. The consensus date for Grimm's Law is ~500 BC (cf. Mallory 1996; Mallory & Adams 2006: 103; Ringe 2017: 84–85, 241). Grimm's Law is usually recognized as comprising three successive changes, which must occur in the following order, though it is less clear whether much time intervened between them or they were more or less simultaneous with rule ordering.
- Grimm 1 $*p$, $*t$, $*k$, $*k^w$ > $*f$ [φ], $*þ$ [θ], $*h$ [χ], $*h^w$ [χ^w];
- followed by Grimm 2 ($*b$,) $*d$, $*g$, $*g^w$ > ($*p$,) $*t$, $*k$, $*k^w$;
- followed by Grimm 3 $*b^h$, $*d^h$, $*g^h$, $*g^{wh}$ > $*b$ [β], $*d$ [ð], $*g$ [ɣ], $*g^w$ [γ^w]

With words containing the relevant consonants, Grimm 1 and 2 make loanwords between prehistoric Celtic and Germanic detectable. Because the Indo-European voiced aspirate stops developed in Celtic as in Grimm 3 in Germanic, this change does not provide a useful diagnostic. 58.4% of the CG corpus have the relevant consonants and can be seen to predate (i.e. been in the stream ancestral to the attested Germanic languages prior to) the operation of Grimm 1 (49.1%) and/or Grimm 2 (21.4%). (16 of CG words [9.2%] show the operation of Grimm 2, but lack the relevant consonants from Grimm 1; 21 words show both changes]).

- *Second*, in the earliest fully attested Germanic and Celtic languages, 132 (76.3%) of the 173 CG words are attested in

Old Norse, 119 (68.8%) in Old English, and 109 (63.0%) in Old High German; 141 (81.5%) are attested in Old and/or Middle Irish, and 132 (76.3%) in Early Brythonic (mostly Medieval Welsh). In other words, the highest percentages of attestations are not in languages where Germanic moved into Celtic territory in Germany and England, but in Scandinavia and Ireland, which were not in contact at all between the Bronze Age and Viking Age.

- *Third*, correspondences to the iconography of Bronze Age rock art, and more generally linguistic palaeontology (relating reconstructed vocabularies to archaeological cultures), point towards, or are at least consistent with, Bronze Age contexts.

A point raised by Erik Elgh at the Indo-European Interfaces conference is that a method approaching Bronze Age contacts between the Atlantic zone and Scandinavia through the early attested Celtic and Germanic languages involves an assumption that the prehistoric varieties of Indo-European that gave rise to these branches were already situated in the relevant regions. The "archaeogenetic revolution" now shows that high percentages of the steppe cluster had reached both regions in the third millennium BC, supporting the inference that Indo-European speech reached these regions at the same time. However, that inference would not by itself exclude the possibility that these migrations had first brought different or undocumented varieties of Indo-European.

In the case of Germanic, the aDNA evidence can be seen as consistent with what was already a widespread and longstanding view that the ancestor of Germanic was more or less coterminous with the Nordic Bronze Age (e.g. van Coetsem 1994: 136; Nielsen 2000: 29–31, 299–303; Faarlund 2008). For Celtic, on the other hand, the idea the Atlantic façade was wholly non-Indo-European linguistically until ~1000 BC remained credible as part of a model in which Proto-Celtic expanded westward from Central Europe together with material culture of La Tène-type and its Hallstatt predecessor, at any event no earlier than the Urnfield Late Bronze Age. On an archaeological basis, this traditional model was challenged by the "Celtic from the West" idea (Cunliffe 2001; Cunliffe & Koch 2010), seeing the Atlantic Bronze Age of c. 1250–800 BC as Celtic linguistically. With the advent of aDNA evidence (esp. Cassidy et al. 2016), the Celtic from the West model finds archaeogenetic support. Not only had high levels of steppe ancestry reached the Atlantic façade by the

Early Bronze Age, but the sequenced Irish genomes of this period also showed significant continuity with the modern populations of Ireland, Scotland, and Wales. In other words, while this evidence does not decisively rule out the replacement of an undocumented Indo-European language by Celtic in later prehistory, such a secondary migration is no longer required to explain the data. Thus, evolution *in situ* of the language of the first arrivals with steppe ancestry in the West is for now a viable hypothesis.[1]

In the western Iberian Peninsula, there is evidence for a pre-Roman Indo-European language that does not easily fit the established definition of Celtic. This language is usually called "Lusitanian". But the meagre and ambiguous evidence can be seen as a continuum of dialects, possibly ranging without a break to Celtic (Búa 1997). Some researchers have seen Lusitanian as an archaic member of the Celtic branch, having split off before some of the defining sound changes common to the other languages of the branch had occurred, most notably the weakening, followed by loss in most positions, of Proto-Indo-European **p* (Evans 1977; Untermann 1985–1986; Ballester 2004). Others see it as more closely aligned with Italic (Prósper & Villar 2009), while others identify features in Lusitanian that could link it to Celtic and/or Italic with too few secure etymologies to classify it one way or the other (Wodtko 2009; 2010; Vallejo 2013). It has also been proposed that both Celtic and Lusitanian arise from a common milieu deeply rooted in the cultures of the Iberian Peninsula (Almagro-Gorbea 1993; 2016). Forms that have been classified as Lusitanian have in all cases been found geographically nearby others that are unproblematically Celtic, sometimes side by side in a single brief text. In any case, for present purposes, the evidence labelled "Lusitanian" cannot be seen as reflecting an Indo-European language with features and a history outside North-West Indo-European and starkly different from the Celtic widely spoken on the Atlantic façade in the Late Bronze Age.

[1] The important archaeogenetic study Patterson et al. 2022 was published after the Indo-European Interfaces conference was held and after this paper was written. Its proposal that Celtic arrived in southern Britain in the Middle to Late Bronze Age (~1300–800 BC) is not incompatible with the present proposals. Its more conclusive negative finding (that there was little population movement from the Continent into what is now England and Wales ~800 BC–AD 43) is strongly consistent with the present proposals.

3. Some culturally significant fields of meaning

Dividing the CG and CG+ word sets according to domains of meaning renders the material more accessible to archaeologists and researchers interested in cultural history and mythology. Examples from three such semantic groups are presented below: (1) "the horse and wheeled vehicle package", meanings often seen as of special significance in process of Indo-Europeanization (Anthony 2007); (2) "maritime words", potentially significant as evidence for long-distance contact by sea between western and northern Europe; and (3) "mythology and beliefs",

Figure 2. Rubbing of rock art image of a chariot and two-horse team from Frännarp, Skåne, Sweden, showing recurrent conventional representation of the horse, chariot frame, wheels, axles, spokes, yoke, and yoke pole. Photo: Dietrich Evers © shfa.dh.gu.se (SHFA). License: CC BY 4.0.

Figure 3. Fragmentary Late Bronze Age stela depicting chariot with two-horse team: El Tejadillo, Capilla, Badajoz, Spain; Museo Arqueológico Provincial de Badajoz. Photo: J. Koch © License: CC BY-NC.

resonating with a leading theme of the 2020 Uppsala conference and LAMP Project.[2]

3.1. The horse and wheeled vehicle package

All of the following word meanings are also depicted in the iconography of both Scandinavian rock art and the Late Bronze Age "warrior" stelae of the Iberian Peninsula. The carvings of chariots in these distant regions are stylistically closely parallel and also coeval, or nearly so, ~1250–900 BC.

[2] Longer and more detailed entries for these and other Celto-Germanic and North-West Indo-European lexical items are included in Koch (2020). The entries there include lists of the principal attestations that are the basis of the reconstructed forms, as well as detailed statistical analyses according to semantic categories and lexical items shared between branches. Although I have often deviated from earlier published work in the reconstructed forms, the chief resources consulted for that include: Mallory and Adams (2006) for Proto-Indo-European roots and the CG+ subset; Hyllested (2010) for CG words; Kroonen (2013), Ringe (2017), and Fulk (2018) for Germanic; LEIA, GPC, and Matasović (2009) for Celtic; de Vaan (2008) for Italic; ALEW and Derksen (2015) for Balto-Slavic.

- 'axle': Proto-Germanic **ahsula-* and Proto-Celtic ***aχsilā** from Proto-Indo-European *√h₂eĥks-i-* 'axle'.
- 'horse+ride': Proto-Germanic ***ehʷa-rīdaz** and Proto-Celtic ***ekʷo-rēdo-** reflect a unique CG compound.
- 'horse' **1**: Proto-Germanic ***hangistaz ~ *hanhistaz** 'horse, stallion, etc.' and Proto-Celtic ***kanχsikā- < *kank-s-ikā-** 'horse, mare'. This peculiarly Celto-Germanic synonym and the nearly synonymous item below reflect the special importance of the horse in the cultural field common to the two language subfamilies.
- 'horse' **2**: Proto-Germanic ***marhaz** 'horse, steed' and Proto-Celtic ***markos** 'horse, steed'.
- 'mane (of a horse)': Proto-Germanic ***mankan-** 'mane, upper part of a horse's neck' and Proto-Celtic ***mongo- ~ *mongā-** 'mane'.
- 'ride (a horse or horse-drawn vehicle)': Proto-Germanic ***rīdan-** 'ride a horse or vehicle; to move, swing, rock' and Proto-Celtic ***rēde- < *reidʰ-e-** 'ride a horse or vehicle, move swiftly'.
- 'wheel' (CG+): Proto-Germanic ***raþa-**, Proto-Celtic ***rotos**, Proto-Italic ***rotā 'wheel'**, and Baltic reflected in Lithuanian *rãtas* 'wheel, circle, ring, (plural) cart'. Proto-Indo-European **(H)róth₂-o/eh₂-* probably meant 'wheel' rather than 'wheeled vehicle', but the meaning 'wheel' either survived or developed only in northwestern branches. As Olander (2019) suggests, Latin *rota* was possibly borrowed from Celtic.
- 'wheeled vehicle': Proto-Germanic ***wagna-** and Proto-Celtic ***wegno-** from Proto-Indo-European *√weĝʰ-* 'move'.

3.2. Maritime words

- 'harbour, shelter for vessels': Proto-Germanic ***habanō-** 'harbour, shelter for boats' < ***χaφánā-** and Proto-Celtic ***kawno-** 'haven, harbour, port, bay' < ***ka(p)ono-**.
- 'load, carry a load': Proto-Germanic ***hlaþan- ~ *hlōþ- < *χlāþ-** 'to burden, load down' and Proto-Celtic ***klout-** 'carriage, the action of carrying, load, burden, heap, pack, bundle, baggage' possibly from North-West Indo-European *√kleh₂-* 'spread out flat'.
- 'mast' (CG+): Proto-Germanic ***masta-** 'post, mast' from Pre-Germanic ***mazdo-**, Proto-Celtic ***mazdyo- ~ *mazdlo-** 'mast,

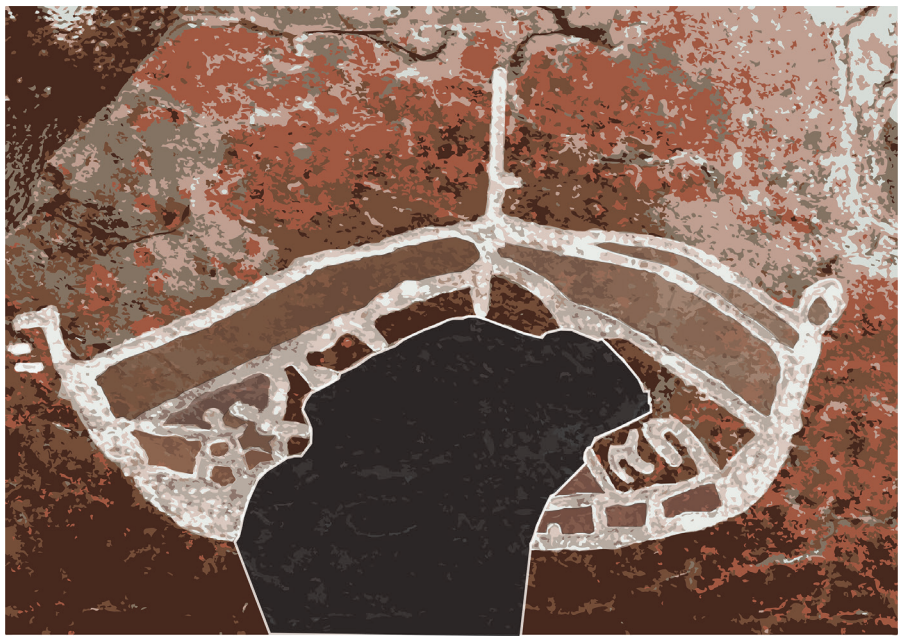

Figure 4. Rock carving depicting a sea-going vessel with a mast, rigging, and crew: Auga dos Cebros, Galicia, Spain. Drawing: J. Koch © License: CC BY-NC.

Figure 5. Bronze Age rock carving depicting a sea-going vessel with a mast, rigging, and crew: Järrested, Skåne, Sweden. Photo: Catarina Bertilsson © shfa.dh.gu.se (SHFA). License: CC BY 4.0.

post', and Proto-Italic ***mazdlos*** > Latin *mālus* 'pole, mast'. There are examples of Scandinavian rock art which appear to depict masts and rigging (Bengtsson 2017).

- 'boatload (of people, domestic animals, or material of value)': Proto-Germanic ***flukka(n)***- and Proto-Celtic ***(p)luχtu***- < Pre-Celtic ***pluk-tu***- from a Proto-Indo-European enlarged root √*pleuk*- < √*pleu*- 'float, swim, flow'.
- 'great waterway, Rhine': Proto-Germanic ***Rīnaz*** 'Rhine' and Proto-Celtic ***rēnos*** 'sea, ocean, course, route, path' < Pre-Celtic ***reino***-. Latin *Rhēnus*, Greek Ῥῆνος 'Rhine' are borrowed from Celtic.
- 'row, paddle' (verb): Proto-Germanic ***rōan***- < Pre-Germanic ***rā***- and Proto-Celtic ***rāmyom*** ~ ***rāmā***. As noted by Hyllested (2010), what is uniquely Celto-Germanic is for √h_1erh_1- 'row' to be a primary verb, CG ***rō***-. There are numerous examples in Scandinavian rock art depicting sea-going vessels with rowers or paddlers.
- 'sail': Proto-Germanic ***segla***- 'sail, canvas' < Pre-Germanic ***sig^{h}lo***- (see Schrijver 1995: 357) and Proto-Celtic ***siglo***- ~ ***siglā***-. For evidence of sails in Bronze Age Scandinavia, see Bengtsson 2017.

Figure 6. Bronze Age rock carving of a sea-going boat with a crew of paddlers and large bihorned figure, from Tanum, Bohuslän, Sweden. Photo: Gerhard Milstreu, Tanums Hällristningsmuseum © shfa.dh.gu.se (SHFA). License: CC BY 4.0.

3.3. Mythology and beliefs: a core of Post-Proto-Indo-European myth

- 'thunder, thunder god' **1**: Proto-Germanic ***þunraz** and Proto-Celtic ***tonaros** > ***toranos** from Proto-Indo-European *√(s)tenh₂-* 'thunder'.[3]

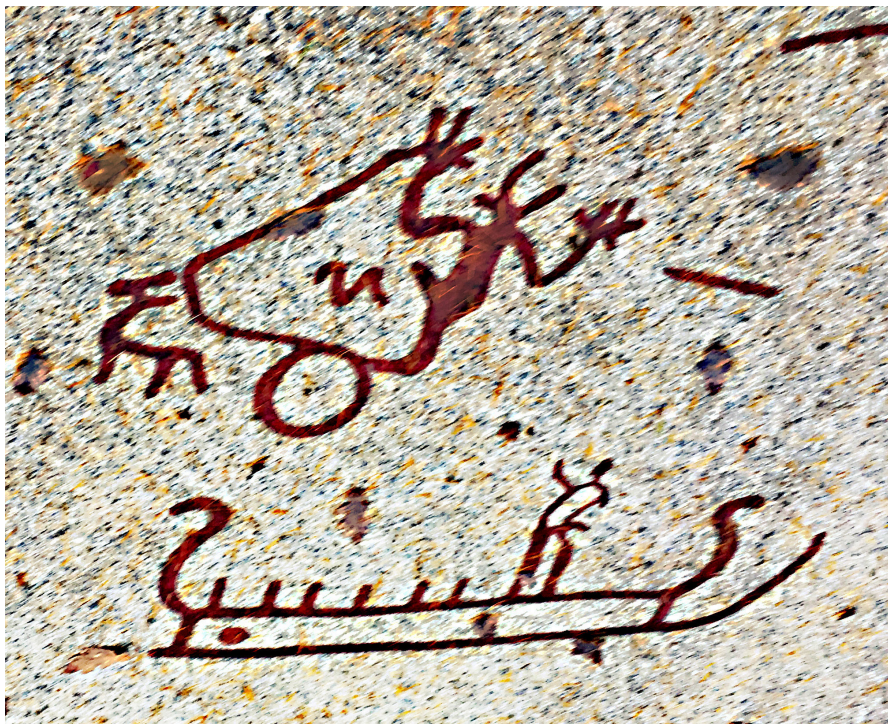

Figure 7. Rock carving, in which a large bihorned figure standing on a chariot pulled by a small horned quadruped to the apparent wonder of man standing aboard a vessel below (Vitlycke panel, Tanum, Bohuslän, Sweden) is reminiscent of the associations of Thor in Norse mythological literature, riding through the sky in a chariot pulled by goats. The zigzag in front of him might represent the namesake thunder bolt. Photo: J. Koch © License: CC BY-NC.

[3] As usefully raised by Peter Kahlke Olesen at the Indo-European Interfaces conference, a comparison of Celtic *Taranus* with the Hittite god's name *Tarḫunzaš/Tarḫunnaš* has been proposed (Watkins 1995: 343, citing Mark Hale). However, that would mean that Ancient Brythonic or Celtiberian **TANARO**, Cisalpine *Tanarus*, and all the Germanic forms had undergone metathesis and were unrelated to Proto-Indo-European *√(s)tenH₂-*. Recognizing these difficulties, Watkins suggested "folk etymology or tabu deformation" as possible explanations for associating ultimately non-cognate names. In any case, the unique persistence of this god's name in Celtic and Germanic amongst the Post-Anatolian branches would remain noteworthy.

- 'hammer of the thunder god = lightning' (CG+): Proto-Germanic ***meldunjaz*** '"Mjöllnir", hammer of the thunder god', Proto-Celtic ***meldo-*** 'lightning' < 'hammer of the thunder god', and Proto-Balto-Slavic ***mild-n- ~ *meld-n*** 'lightning bolt, hammer of the thunder god' from Proto-Indo-European *√melh₂-* 'grind', cf. Latin *malleus* 'hammer' < Proto-Italic ***mol-tlo-*** < **molh₂-tlo-*.
- 'thunder, thunder god' **2** (CG+): Proto-Germanic ***fergunja-*** 'mountain' < ****φerχunyā*** < Pre-Germanic ****Perkʷunyā***, Proto-Celtic place-name ****(P)erkunyā*** in the Latinized Gaulish *silva Hercynia*, and Balto-Slavic forms including Lithuanian *perkū́nas* 'thunder, thunder god', Old Russian *Perunъ* 'thunder god'. Old Norse *Fjǫrgyn* and *Fjǫrgynn* imply that use as a god's name was not limited to Balto-Slavic, but was eclipsed by other names, such as ****þunraz*** < ****ton(a)ros ~ *tn̥ros*** above.
- 'All-father, Great-father (divine epithet)': Proto-Germanic ****Ala-fader*** < ****Ala-faþēr*** and Proto-Celtic ****Olo-(p)atīr***.
- 'military commander (as divine epithet)': Proto-Germanic ****harjanaz*** and Proto-Celtic ****koryonos***. The Indo-European word occurs also as Greek κοίρανος 'ruler, commander, lord'.
- 'divine strength': Proto-Germanic ****nerþu-*** in *Nerthus* 'terra mater' of the Suebi according to Tacitus (*Germania* §40) and Proto-Celtic ****nerto-*** in the Old Welsh personal name *Duinerth* 'having a god's strength', based on Proto-Indo-European *√h₂ner-* 'man, hero, be strong'.
- 'People of the High Goddess': Proto-Germanic ****Burgunþaz*** and Proto-Celtic ****Brigantes ~ *Brigantioi***. These are suffixed forms derived from Proto-Indo-European **bʰr̥ĝʰ-* 'high, hill'.

4. When was most of the contact reflected in the CG words?

For most items, the evidence sits more comfortably within the period ~2500–500 BC, the Greater Bronze Age, as opposed to the following half millennium, ~500 BC to the *Zeitenwende*. Linguistically, because most CG words do not look like loanwords, they are to be explained by shared developments during a period of continued high levels of mutual intelligibility. A smaller set show some Proto-Indo-European to Proto-Celtic sound laws in the Germanic forms and can thus be seen as a later stratum, suggesting an interpretation of Proto-Celtic used as a lingua franca by speakers of Pre-Germanic, i.e. the Germanic branch

before Grimm's Law operated. Overall, the semantic content indicates a period of shared ideological development including mythology and beliefs, as well as interest in, and idealization of, warriors, chariots, seafaring, and a stratified complex society (88 of the CG words or 50.9%). If we turn to the CG+ words (including Italo-Celtic Germanic, Celto-Germanic/Balto-Slavic, and all North-west Indo-European), the meanings connected with warfare and complex stratified societies decreases as a percentage: 12 of the 45 ICG words (26.7%), 6 of the 34 CGBS words (17.6%), and 7 of the 26 ANW words (26.9%). This pattern suggests that these more widely distributed words, as groups, do not reflect the zenith of the Bronze Age so intensely as the larger set found in Celtic and Germanic only. Thus, as groups, they probably reflect earlier layers, as the wider distributions also suggest.

5. A way forward

At present, the "Archaeogenetic Revolution" is seen as providing confirmation for a version of the "Steppe Hypothesis" of the homeland and dispersal of Proto-Indo-European. The gist of this emerging consensus can be summarized as a three-way equivalence: Post-Anatolian Indo-European = Yamnaya Cultures = the steppe genetic component (approximately 50% Eastern Hunter-Gatherer [EHG]: 50% Caucasian Hunter-Gatherer [CHG]). We need to call this a *version* of the Steppe Hypothesis, because in its pre-archaeogenetic form (e.g. Mallory 1989; Anthony 2007), the ancestor of all the Indo-European branches, including Anatolian (the first to split off from Proto-Indo-European), was traced back to the Pontic-Caspian Steppe. As I write this, the full-genome sequencing of ancient DNA remains more consistent with a model in which Proto-Indo-European itself is identified with a homeland south of the Caucasus and lacking the EHG constituent essential in the definition of the steppe cluster (de Barros Damgaard et al. 2018; Lazaridis 2018; Reich 2018: 120).

In the days before aDNA sequencing, Mallory (1996) characterized the period between Proto-Indo-European and the early attested Indo-European languages as the "Indo-European Dark Ages". Despite any instinctive expectation that matters should become easier and clearer as we move towards the horizon of written evidence, the whereabouts of several branches in later prehistory remain obscure, contrasting with the growing confidence in tracing Post-Anatolian Indo-European to the Pontic-Caspian steppe. Broadly speaking, the Indo-European Dark Ages

correspond to the Greater Bronze Age mentioned above, ~2500–500 BC. Even for Post-Anatolian branches attested in the 2nd millennium BC, i.e. Greek and Indo-Iranian, the whereabouts and archaeological contexts of their linguistic forbears ~2500 BC remain uncertain.

Fortuitously, the stage at which the Steppe Hypothesis predicted that Indo-European speech expanded from the Pontic-Caspian steppe corresponded to an episode of stark genetic transformation. Massive gene flow brought double-digit percentages of the steppe component to wide swathes of Western Eurasia in the 3rd millennium BC. The signal was unmissable and more or less exactly when and where we were looking. The great mixing of previously long isolated populations was comparable to what occurred with the European expansion to the New World in modern times. For Europe's population structure, the changes that have occurred in the past 4000 years are subtle by comparison to the changes that occurred in the 3rd millennium BC. That means that for detecting discontinuities after ~2000 BC, as might mark shifts in language, we will have to pick up more subtle signals: such as shifts in relative proportions of steppe and European Neolithic ancestry, shifting levels of survival or resurgence of Hunter-Gatherer genes, post-Yamnaya mutations traceable to their epicentres, and specific details of forward continuity or discontinuity of regional gene pools from the time of the first arrival of steppe ancestry down to the times when the languages of these regions are attested. It is evidence of the last sort that led to the proposal that an Indo-European speech that arrived in Ireland in the Beaker period then evolved *in situ* into Irish Celtic (Cassidy et al. 2016). This is not a new idea (Dillon & Chadwick 1967; Harbison 1975), but represents a major departure from a longstanding prevailing view equating the westward expansion of Celtic with that of Hallstatt- and La Tène-type material culture in the Iron Age.

As the data becomes more extensive and is subjected to more sophisticated analyses, this will improve prospects for credibly locating reconstructed languages in their archaeological contexts. These advances will also enable new methods for linking prehistoric iconography and evidence for rituals to the traditional myths and heroic narratives of the early Indo-European literatures. We can hope to move beyond simply lumping together various comparable details into an omnibus category of the "Indo-European". Prospects will improve for identifying those ideas that changed or arose within regional subsets of Indo-European and determining how local pre-Indo-European knowledge and traditions influenced these.

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11. The Indo-European vocabulary of dairy products

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Abstract

The following preliminary historical-comparative investigation of the Indo-European terminology pertaining to dairy products leads to the conclusion that while the words for the 'cow' and the process of 'milking' belong to the basic vocabulary, a common word for the substance 'milk' cannot be safely demonstrated. On the other hand, at least Core Indo-European possessed a rich and subtle vocabulary for the processing of milk into curds, butter and cheese. The lack of a widespread designation for 'animal milk', which must surely have existed by the time of the proto-language, is rather puzzling. Even though missing evidence is certainly no proof in itself one might hypothesize that the reason why the word for such an important element of a pastoralist society was not faithfully preserved as part of the stable common cultural vocabulary like, e.g., 'cow', 'sheep' or 'wool' was a restricted use of unprocessed milk for human consumption in the oldest period. At least recent archaeobiological observations suggest that lactose tolerance only developed gradually after the disintegration of the Indo-European unity.[1]

1. Introduction

In early Indo-European pastoral societies the importance of cattle, notably cows and sheep, can hardly be overestimated, and we find

[1] As observed by Martine Robbeets p.c. (cf. Robbeets et al. 2021), a similar situation is found in non-Indo-European populations with low lactose tolerance such as the Mongols and Kazakhs. With the Mongols, whose ancestors were originally millet farmers, pastoralism and dairying was a relatively young invention, and hence there is a connection between the words for 'milk, milking' and vegetal fermentation.

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innumerable traces of this defining cultural feature in the inherited vocabulary as such as well as in the linguistic evidence for the economy, sacrificial practices and mythology.[2]

It is, however, remarkable that while the indigenous words for 'cow', 'sheep' and 'wool'[3] may safely be traced back to Proto-Indo-European, including Anatolian, and a verbal root meaning 'to milk' at least to Proto-Indo-Tocharian, defined as the period after the first split of Anatolian, solid evidence for a common term for the basic substance 'milk' is hard to find. On the other hand, a more specialized terminology for processed milk products abounds, as noticed in the brief survey by Mallory & Adams (1997: 381–383).[4]

2. The cow

The importance of the domesticated cow in Indo-European society is undisputed, and the corresponding common term *$g^{w}\bar{o}u̯s$[5] is safely attested in all branches with the possible exception of Albanian,[6] cf. e.g. Hieroglyphic Luwian *wawa-*, Tocharian A. *ko*, B *keu*, Latin *bōs*, Umbrian (acc.) *bum*, Old Irish *bó*, Old Norse *kýr*, Old English *cú*, Old High German *chuo*, Mycenaean *qo-u-*, Greek βοῦς, Armenian *kov*, Vedic *gauḥ*, Avestan *gāuš* and Latvian *gùovs*.

Slavic **govędo* (n) '(head of) cattle' with continuations in Russian (dial.) *govjádo*, Czech *hovado*, Serbo-Croat *gòvedo*, Slovene *govẹ́dọ* and Bulgarian *govédo* undoubtedly contains the same root though the exact stem formation is considered obscure. As is often assumed (cf. e.g. Derksen 2008: 181), the most likely partial explanation would be a derivative in *-*n̥t-*, common in animal names of the type Old Church Slavic *telęt-* 'calf', Greek κεμάς, -άδος 'hind'.[7] However, how to arrive at the *d*-formation is more obscure.

To this question, Trautmann (1923: 94) simply stated: "die Bildung des Kollektiven **govędo* ist unklar", while Berneker (1924: 338) assumed

[2] The work on this paper was supported by the project *Language and Mythology in Prehistory*, funded by Riksbankens Jubileumsfond.

[3] Cf. Olsen 2018 and 2023 with references.

[4] Cf. also Mallory & Adams 2006: 261–262.

[5] The precise reconstruction and morphological interpretation of the word is disputed, cf. NIL 189–195 and the recent treatment by Nielsen Whitehead 2018 with references. However, this question is not directly relevant to the present survey.

[6] The background of Alb. *ka* 'castrated bull; ox' is unclear, cf. Demiraj 1997: 210 and Orel 1998: 160.

[7] On the regular development of *-*n̥t-* > Greek -άδ-, cf. Olsen 1989 and 2004: 221 and van Beek 2017.

that a *d*-formant had been added to an *n*-stem reminiscent of animal names in **-n-*. Vaillant (1974: 490) suggested a stem in **-ēn-*, extended by **-d-* that would first yield a collective, from which a singular neuter would have been secondarily created. Finally, Derksen (l.c.) confines himself to conclude that it is unclear why we find **-do-* instead of **-t-*.

The idea of including a collective in the explanation is widespread, cf. Snoj (2003: 185) who simply describes Old Slavic **govędo* as a collective despite the clear singulative meaning 'head of cattle' in the individual languages. More accurately, Skok (1971: 596–597) talked about a Proto-Slavic collective **govenda* 'boves', which would make the neuter the corresponding singulative, as also implied by Vaillant.

The question is now how to envisage such a collective, and how to integrate the semantic development in a scenario that would also explain the enigmatic *-d-*. Here I would suggest something along the following lines:

(1) a basic singulative **-nt-*stem **$g^{w}o\underset{\frown}{u}$-$\underset{\circ}{n}$t-* would have the expected meaning 'a single cow'
(2) subsequently this *-nt-*stem was the basis of a collective "Hoffmann-formation" **$g^{w}o\underset{\frown}{u}$-$\underset{\circ}{n}$t-$h_3$ōn$h_2$* > **$g^{w}o\underset{\frown}{u}$-$\underset{\circ}{n}$t-$h_3$ō(n$h_2$)* > **$g^{w}o\underset{\frown}{u}\underset{\circ}{n}$dō(n)* > **govędа* 'group, herd of cows' where the basic stem formation is no longer transparent in the nom.sg., the only surviving form of the paradigm, and the *n*-stem inflection is therefore no longer preserved
(3) finally, this collective would trigger the creation of a new neuter singulative **govędo* 'a single head of cattle', whence the attested forms in the individual languages.

The development **-ō* > *-a* in the nom.sg. appears to be regular and synchronically identical with the neuter nom.acc.pl. ending **-ah_2* > *-a*, while the assumed voicing of **t* > *d* by the following **h_3* of the "Hoffmann suffix" would constitute a parallel of Welsh *afon* 'river' < **$h_2$ap-$h_3$on(h_2)-* as famously analysed by Hamp (1972). Finally, the collective meaning in a "Hoffmann-type" substantive/determinative compound – as opposed to the usual type of adjectives/bahuvrīhis – would among other examples also be matched by *afon* with an original meaning 'mass of water' rather than simply 'having water'.[8]

[8] Cf. Olsen 2010 on the distinction between the two subtypes of Hoffmann formations.

Naturally, most of the rich vocabulary pertaining to milking and in theory dairy products may refer to sheep, goats and perhaps horses as well as cows, but as may be gleaned from the role played by cows in the economic and mythological universe of the early Indo-Europeans it seems obvious that they must have been of primary importance.

3. Milking

A verb based on the root **h₂melĝ-* meaning 'to milk' (IEW 722–723; Mallory & Adams 1997: 381; LIV 279) at least goes back to Proto-Indo-Tocharian. It is widely attested in all branches except Anatolian, Indo-Iranian and Armenian:[9] Tocharian A ptc. *mālkant-*, Latin *mulgeō*, *mulsī* with the secondary meaning 'wipe, rub', Middle Irish *bligim*, Old English *melcan*, Old High German *melchan*, Greek ἀμέλγω, Albanian *mjel*, Lithuanian *mélžu* and Russian Church Slavic *mьlzu*. The ablaut difference between e.g. Greek ἀμέλγ- < **h₂melĝ-* and Middle Irish *blig-* < **h₂mḷĝ-* points to an archaic root present.

In Indo-Iranian, however, a different root is used to designate the notion of milking, viz. **dʰeu̯gʰ-* or **dʰeugH-* > Indo-Iranian *dau̯gh-* (IEW 271; Mallory & Adams 1997: 614; LIV 148).[10] The Vedic intransitive *duhé*, *duhré* (EWAia I: 747) has the meaning 'give milk' as opposed to the transitive *dógdhi* 'milks' (cf. also Middle Persian *dōxtan* 'to milk'), also more broadly 'extract', mostly fluids, e.g. semen from a bull or the juice of a plant; another important form is the perfect *dudóha*.

The most obvious external verbal comparandum is the Germanic preterito-present continued in Gothic *daug*, Old English *dēah*, Old Saxon *dōg*, Old High German *toug* 'is useful, fit', an old perfect corresponding to Vedic *dudóha*.

Other cognates are Old Irish *dúal* 'natural', probably from a zero-grade verbal adjective **dʰugʰ-tló-*,[11] as opposed to the full-grade instrument

[9] Armenian uses the denominative verb *kʿtʿem* 'gather, reap', but also 'milk'. Here, the root **h₂melĝ-/*h₂mḷĝ-* would yield **amelǰ-/amałǰ-* that, both in verbal and nominal formations, would perhaps have been felt uncomfortably similar to *małǰ* 'gall, bile' with the opposite connotations, as in Shakespeare's "take my milk for gall".

[10] The further atomizing analysis by Garnier, Sagart & Sagot(2017) of the Vedic *s*-stem *dóhas-* < **dʰeu̯gʰe/os-* 'milking' as **dʰeh₁-u-g-h₂-e/os-* 'sucking (mother's milk)' seems unnecessarily complicated, quite apart from the fact that the root relates to animals, not human babies.

[11] Traditionally **dʰugʰlo-*, cf. LÉIA D–208. This is still a possibility, and it is true that cases like Old Irish *focul* 'word' < **u̯okʷtlo-* would seem to contradict a reconstruction **dʰugʰ-tlo-*. However, it seems that while restitutions often occurred, clusters of the type **-Ctl-* would regularly have been simplified already in the

noun *d^héu̯g^h-tlo- > Sanskrit *dogdhra-*, Middle Persian *dwł* '(milk) pail, bucket' with the Armenian loanword *doyl*. Further, e.g., Lithuanian *daũg* 'much', possibly *d^hou̯g^{h}ó-, originally 'streaming in abundance' or the like as the adjectival counterpart of Vedic *dógha-* (m) '(stream of) milk'.[12]

On this basis, it would be possible to make a case for a basic meaning 'be prolific, stream abundantly' (→ Germanic 'be useful') with a corresponding transitive 'extract (a liquid), make stream', especially about milking since milk would have been the liquid natural resource par excellence. Nevertheless, a semantic narrowing in Indo-Iranian from 'be useful, prolific' to 'provide milk' would still be an option.

However, a problem arises if it is assumed that the Greek verb *τεύχω* 'manufacture, accomplish, produce' must necessarily fit into the straitjacket of a joint verbal complex. According to Kümmel (LIV 148–149), the basic root meaning would be "treffen" with a corresponding stative "taugen",[13] and both τεύχω and dógdhi could be considered oppositional factitive formations, 'make fitting'. Beekes (2010: 1475) maintained the close connection between Greek and Indo-Iranian and attributed a more original meaning 'hit the mark, meet' to the root in view of the nasal present τυγχάνω 'achieve an aim, encounter accidentally'. Finally, Mayrhofer (l.c.) prudently concluded his treatment of the Indo-Iranian material with the verdict: "Weitere Zuordnung von iir. *d^hau̯g^h ist schwierig".

Now, as is also commonly acknowledged (e.g. LIV l.c., note 3 and 10), the Greek forms must to some degree have been contaminated with derivatives of the root *teu̯k- 'hit' (LIV 640–641), cf. e.g. τύκος 'hammer', pf. τέτυκον 'made', Old Church Slavic *tykati* 'thrust'. Thus, it seems most reasonable to establish the original root meaning on the basis of extra-Greek material.[14]

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proto-language, cf., e.g., Latin restituted *iugulum* 'collar bone' (root *ieu̯g-) vs. regular *pālus* 'post, stake' (root *paĝ-; cf. Nielsen 1998: 97–98). Seen in this light, primary deverbative *-*lo*-derivatives would be quite rare, while accented *-*tló*- with zero grade in the root are either verbal adjectives – as may be the case here – or or substantivized neuter verbal abstracts.

[12] RV 5.15.5: *úrum dógham̐ dharúṇam … rāyáḥ* '(as you give) as your milk broad support for wealth' (translations of the Rigveda according to Jamison & Brereton: 2014). Alternatively, Geldner connected *úrum* with *dógham*, translating "einen breiten Milchstrom".

[13] This was assumed to be the basic meaning by Kümmel 1996: 62.

[14] A formation of special interest is Greek τύχη 'luck, (good) fortune', which has been considered a direct match of Vedic *kāma-dúgha-*, 'letting the (objects of) desires

The interpretation of the root is potentially relevant for the understanding of the Indo-European word for 'daughter', reconstructed as *d^hugh_2-tér-.[15] Incidentally, this is the only basic kinship term that can be safely projected back to Proto-Indo-European, including Anatolian (though here a secondary derivative), and with continuations in all branches except Albanian. Cf. Hieroglyphic Luwian ^{filia}*duwa/itara/i-*, Lycian *kbatra*, Tocharian A *ckācar*, B *tkācer*, Oscan **futír**, Gaulish *duχtir*, Gothic *dauhtar* etc., Mycenaean *tu-ka-te-re*, Greek θυγάτηρ, Armenian *dustr*, gen. *dster*, Vedic *duhitár-*, Old Avestan *dugədar*, Lithuanian *duktẽ*, gen. *dukteĩs* and Old Church Slavic *dъšti*, gen. *dъštere*. The original status of this term is secured not only by its wide distribution, but also by its archaic-looking morphological character:

A handful of kinship terms are characterized by a final segment *(-h_2)ter-: besides *d^hugh_2tér-, also *ph_2tér- 'father', *$máh_2$ter- 'mother', *$b^hráh_2$-ter- 'brother' and *h_1i̯énh$_2$ter- 'sister-in-law, husband's brother's wife'. Of these only the word for 'daughter' is attested in Anatolian, and only the words for 'father' and 'daughter' conform to the regular pattern of accent and ablaut according to which a full-grade suffix such as *-ter- should be stressed in the strong forms (nominative, vocative and accusative) as opposed to a zero-grade *-tr- in the weak cases. This in turn means that we only arrive at a transparent derivational picture if 'father' and 'daughter' are considered original formations, while 'mother', 'brother' and 'sister-in-law' are to some degree modelled after this nucleus, presumably 'mother' and 'brother' after 'father', and 'sister-in-law' after 'daughter'.

Now, a suffix *-$h_2$ter- is not otherwise known, but if the roots contained in the terms for 'father' and 'daughter' accidentally ended in *-h_2- we would be dealing with regular agent nouns in *-tér-. As for the 'father' word, the analysis is fairly simple: as is often assumed, this would originally be a 'protector' from *pah_2- 'protect', cf. e.g. Vedic *pāti* 'protects', *go-pā́-* 'cowherd'. But if this analysis is correct, which root is then the derivational basis of the word for 'daughter', or in other words, what did a daughter do? In view of the archaic word formation, it seems worthwhile to probe a little further into this matter despite widespread opposition against etymologizing primary kinship terms. Thus, Huld (Mallory & Adams 1997: 148) concludes: "Persistent efforts to

stream like milk', i.e. 'fulfilling (the object of) desires', Sanskrit fem. subst. *kāma-duh(ā)-* 'the cow of plenty' (cf. GEW II: 941).

[15] IEW 277; Mallory & Adams 1997: 147–148; NIL 126–130; Olsen 2019: 146–148 and 2020: 60–62.

create just-so stories about Indo-European home-life by etymologizing 'daughter' as 'milker' (< *$d^heu̯g^h$-, though the meaning 'milk' for this verb is restricted to Indo-Iranian) more recently as the person who prepares the meals … provide no insight into the actual state of affairs".

Some earlier attempts are indeed abortive, as Szemerényi's suggestion (1977: 19ff) of a derivation from *$d^heu̯g$-, as in Goth. *gadauka*- 'housemate', which must be rejected for formal reasons. However, an etymological connection with Vedic *duhé* etc. would still be an option.[16] The root would then have to be reconstructed as *$d^heu̯gh_2$- rather than *$d^heu̯g^h$-, which is perfectly possible, allowances made for analogical generalization of the prevocalic alternant *$dhau̯gh$- in Indo-Iranian verbal forms leading to analogical elimination of the laryngeal-based vowel *-i-* in Vedic (e.g. regular *duhé* vs. analogical *duhré* for *$duhiré$). With all due reserve, one may then suggest a revival of the old hypothesis that a daughter, a *d^hugh_2-tér-*, was indeed a 'milker', someone 'extracting' or 'making stream' the life-giving milk, presumably with the secondary derivative *$d^hugh_2tló$- > Old Irish *dúal* (*'freely streaming (like mother's milk)' →) 'native, natural'. In a pastoral society, potentially comparable with e.g. the Maasai where the women milk the cattle while the men are herders and warriors, a line of thought of this kind would hardly seem inappropriate.

4. Milk

As the verb 'to milk' is extremely well attested, one would have expected a corresponding noun to be equally widespread. However, this is not so. A root noun *$meluk$- > Gothic *miluks*, Old Norse *mjǫlk*, Old English *meoloc*, Old High German *miluh*, as if from *$h_2melĝ$-, is restricted to Germanic[17] and may well be a secondary deverbal formation.[18] Similarly, though the Tocharian word, B *malkwer*, A *malke* 'milk' (Adams 2013: 475) follows an archaic derivational pattern, it has no immediate parallels in other languages. Thus, even though the knowledge of milking cannot be doubted, the oldest designation for the substance was generally lost and later substituted by other terms in the individual branches.

[16] Pârvulescu (1993), accepting the root *$d^heu̯g^h$-, assumed a semantic development from 'worker' to 'girl, daughter'.

[17] Probably borrowed into Slavic as Old Church Slavic *mlěko* etc.

[18] Cf. also Kümmel 2004, Kroonen 2013: 364 and Hansen 2017.

4.1. The word family of Greek γάλα

The closest we come to a common word for 'milk' is represented by Greek γάλα(κτ)-, Latin *lac*, *lactis* 'milk' and Albanian *dhallë* 'buttermilk' (Demiraj 1997: 153; Orel 1998: 80). However, the root structure is somewhat peculiar, so that one might suspect a non-Indo-European origin, and if the European words are related to Hittite *galaktar-* 'a soothing substance' with the verb *gala(n)k-* 'soothe, appease' (Rieken 1999: 379) the meaning 'milk' would not have been coined until after the first split of Anatolian.

4.2. **peH̯-*

As substitutions of an extinct word for 'milk', Indo-Iranian and Baltic agree on derivatives of the root **peH̯-* 'swell, overflow, be fat' (LIV 464). Thus Vedic *páyas-*, Avestan *paiiah-* 'milk' (EWAia II: 83) point to an *s*-stem **peH̯-He/os-* 'milk' and Avestan *paēman-* 'mother's milk' < **peH̯-Hmen-* goes back to the **-men-*stem that constitutes the derivational basis of Lithuanian *píenas* (Fraenkel 1962: 585) < **peH̯-Hno-* < **peH̯-Hmno-* 'milk'. The most remarkable correspondence is that between the fem. pf. participles Vedic *pipyúṣī-* 'swelling (with milk)', Avestan *a-pipiiūšī-* 'not suckling' (Vd.15.8), and Lithuanian *papìjusi kárvė* 'milching cow, cow that does not hold its milk back'.

Another potentially relevant derivative traditionally connected with this root may be Old English *fæmne* 'virgin, (young) woman' < **faimnia-* for which one may suggest an origin as the corresponding middle participle with analogical *o*-grade – transposit **(pe)poH̯-mh₁no/ah₂-* – with secondary suffix **-iah₂-* and a meaning 'a swelling, exuberant female'. As an interesting match, Vedic has the regular zero-grade formation **pi-piH-m̥h₁náh₂-* → *pipyānā-* in a similar context: RV 3.33.10: *pīpyānéva yóṣā* 'like a young woman swollen (with milk, to her infant)'.[19] Within the semantic field of dairy terminology one may perhaps also point to Swedish *filmjølk*, Danish *filmælk* 'soured milk' if *fil-* is derived from **piHtlo-* rather than seen as an obscure variant of Old Norse *þél* < **temktlo-* with the same meaning (cf. Hellquist 1980, I: 209).

Actual verbal forms are only attested in Indo-Iranian and Baltic, where the basic meaning seems to be 'swell, overflow (with milk)'.

[19] Cf. also RV 3.1.10: *éko adhayat pī́pyānāḥ* 'alone, he suckled upon the many swelling females' and 10.102.11: *pī́pyānā … siñcán* 'she swelling, he dripping'.

Cf. the perfect forms, Vedic *pīpāya* 'is swollen' with the above-mentioned participles, the nasal present of Vedic *pínvati* 'makes swell', Avestan *fra-pinaoiti* 'makes thrive', and the *i̯*-present of Lithuanian *pyjù* (*pýti*) 'yield plenty of milk' (about cows) and 'become soft and humid' (about the ground). No more far-reaching analysis of the root is needed, and Lubotsky's bold analysis (2011: 121), followed by Derksen (2015: 359), is unlikely: "Since the root actually means 'to yield milk', it can hardly be separated from **peh₃-* 'to drink'".

According to Lubotsky, we are dealing with an enlarged root, arising from an alleged *i̯*-perfect, but one may raise formal objections to this interpretation. As demonstrated by Rasmussen (1989: 56 and 265–267), the root meaning 'drink' has a long-diphthong structure, **peh₃i̯-*. The semantic aspect proposed by Lubotsky is equally objectionable. Even though he goes so far as to equal Lithuanian *pýti* with Old Church Slavic *piti* 'drink', of which the latter definitely belongs to the root **peh₃i̯-*, the difference in meaning is far from negligible. First, 'to yield milk', even if this is interpreted as 'to make drink, give to drink', is certainly not the same as 'to drink'. Secondly, there is no evident connection between 'milk' and 'drink' in so far as the habitual drinking of milk after infancy is a relatively late phenomenon, restricted to populations with a sufficiently developed lactose tolerance. For the suckling of infants, we have ample evidence that the Indo-Europeans used a different root, **dʰeh₁i̯-* (LIV 138).

On the other hand, the double reference of *pýti* to cows and soil, as found in Lithuanian, fits perfectly with the semantic scope of **pei̯H-*. Thus, the Greek adjective πίων < **piHu̯ōn*, fem. πίειρα < **píHu̯er-ih₂* 'fat, fertile' (= Vedic *pī́van-*, fem. *pī́varī-*) is used as an epithet of ἄρουρα 'ploughland, soil' (Il.18.541; Od. 2.328 and 23.31), ἀγρός 'field' (Il.23.832; Od.4.757 and 8.560) and δῆμος 'land' (Il.5.710, 16.437, 514, 673, 683 and 20.385; Od.17.526 and 19.271). The same background is further suspected for the substantivized Old Irish *īriu* < **pīu̯eri̯ō*, gen. *īrenn* 'land, earth, soil', supplied with the individualizing *n*-stem suffix and identical with the old Welsh name for Ireland, *Iwerddon* with an assumed implicit feminine noun.[20] The idea of 'fatness of the land' in words based on the same root is also apparent in e.g. Middle Irish *íath* 'land, country' < **pei̯Htu-* beside the zero-grade

[20] Cf. Stüber (1998: 95–97) for details, also on Old Irish *Ériu* 'Ireland' with a problematic initial *é-*.

forms *íth* < **pītu-* 'fat, lard, grease' and *ith* < **pit$^{(h)}$u-* 'corn, grain' (de Bernardo Stempel 1999: 292).[21]

The twofold reference of derivatives of the root **peiH-* to the swelling of breasts or udders with milk on the one hand and fertile or humid land on the other is quite striking, but perhaps not too surprising to an Indo-European frame of mind. At least the connection must go back to Core Indo-European, here defined as the stage immediately following "Indo-Tocharian". What is more, it fits perfectly into the well-attested equation made between the Cow and the Earth, as described in Olsen 2020, and perhaps even more remarkable, the idea of the earth having an udder, as in Latin *ūbera campi* 'the udders of the fields', Greek οὖθαρ ἀρούρης 'the udder of the ploughland'.[22]

5. Other dairy products

As opposed to words for milk, the terminology for processed dairy products such as curds, buttermilk, cheese and whey is surprisingly rich.

5.1. **temk-*

A root for which a specialized meaning pertaining to dairy must be attributed to at least Core Indo-European, is **temk-* (LIV 625). The precise reconstruction depends on Anatolian, since only Hittite *tame(n)k-* (trans.) 'affix, attach'/(mid. and intrans) 'stick to', metaphorically 'join, have an affection for' (Tischler 1991: 77–79; Kloekhorst 2008: 824–825) points to **-m-* rather than **-n-* as the original nasal. In the other languages, the meaning seems to be 'get thick, solid; curdle', so this seems to be one of the cases where Anatolian, as the first member to leave the Proto-Indo-European community, preserved a more original meaning. While a semantic development from 'be sticky, gluey' to 'curdle' whence 'get solid, tight' seems fairly straightforward, a transition from 'get/be sticky' to 'get/be solid' is less evident. Thus one may

[21] Of these **pĭt^{h}u-* would be the regular development of **pih$_{1/2}$tu-* with laryngeal metathesis **-h$_{1/2}$t-* > **-th$_{1/2}$-* and otherwise unexplained short vowel according to the principle stipulated in Olsen 1994 and later works, while **pītu-* would reflect an analogical preservation of the zero-grade form **piH-* > **pī-*. The *tu*-stem is also continued in Indo-Iranian, cf. Vedic *pitú-*, Avestan *pitu-* (short *i*-vowel) 'solid nourishment' and Armenian *hiwt^{c}* 'moisture; thickness; matter' where the vowel quantity cannot be determined (cf. Klingenschmitt 1982: 180).

[22] I intend to address this question in more detail on a later occasion.

perhaps venture the assumption that the meaning 'curdle' developed as a common Core Indo-European dairy term.

The root is known from several derivatives, including verbal forms such as Vedic (YV) *á-tanakti* 'cause coagulation by casting one liquid into another' with the noun *ā-tañcana-* (n) 'that which causes coagulation (as buttermilk which is thrown into fresh milk to turn it), rennet', Old Irish *co-técim* 'congeal, curdle (of milk)' (cf. McCone 1998: 469–470) and with a more general meaning Gothic *þeihan*, German *gedeihen* etc. 'thrive, prosper'.

A particularly striking correspondence is found between Indo-Iranian and Germanic, where Sanskrit *takra-* (n) denotes 'buttermilk mixed with (a third part of) water',[23] while Modern Icelandic *þél* (n; 18th century) is explained by Magnússon (1989: 1175) as 'skyrþetti, kögglar i skyri', i.e. 'skyr mixed with milk with the addition of rennet; lumps in skyr' – *skyr* is made by letting the whey run from sour milk. The background of *takra-* would be **tm̥k-tlo-*, that of *þél *temk-tlo-* with an ablaut difference that may reflect an original neuter/collective **tm̥k-tló-* : **témk-tlah₂-*, and the function must be that of an action noun 'curdling'.[24]

From a full-grade *to*-derivative **temkto-* an exact correspondence exists between Middle Irish *técht* 'thick, sluggish, viscid; curdled (of milk)'[25] and ON *þéttr* 'solid'. Here the semantic connection becomes even clearer when the modern Nordic languages are included. Thus, beside the Swedish adjective *tät* 'thick', we also find *tätmjölk*, dial. subst. *tätt* (m) 'curdled milk', and *tätte*, *tete* (m), Norwegian *tette* (n) 'rennet', cf. Hellquist (1980: 1267), who hypothesizes that *tätmjölk* was probably what Tacitus was referring to (Germania 23.1) when he allegedly talked about the Germanic peoples' preference for 'lac compactum' – in reality '*lac concretum*':

> *cibi simplices, agrestia poma, recens fera aut lac concretum: sine apparatu, sine blandimentis expellunt famem*

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[23] Cf. also *takrāṭa-* m. 'churning-stick'.

[24] The **-t-* would be regularly deleted in interconsonantal position, i.e. **temk-tlo/ah₂-* > **temklo/ah₂-*, which means that *takra-* for expected **taktra-* would be analogical after the full-grade form. Still, this reconstruction seems preferable to the traditional **temklo-/tm̥klo-* as derivatives in **-lo-* would not normally have ablaut in the root (cf. Olsen in preparation). A derivation from **tek^{w}-* with connections to the word for 'whey', offered as an alternative suggestion by Kroonen (2013: 542), seems less attractive for semantic reasons, the whey being the fluid rather than the curdled component.

[25] Vb. *téchtaid* 'freezes, congeals, coagulates', trans. 'freezes, solidifies, curdles'.

> 'Their diet is simple: wild fruit, fresh game, curdled milk. They banish hunger without great preparation or appetizing sauces'.

Morphologically **temkto-* may be a partially adjectivized substantive which would explain the full grade of the root.

5.2. **dʰeh₁-*

Another relatively old formation within the same word field is dialectally restricted to Albanian, Indo-Iranian and Baltic: Vedic *dádhi*, gen. *dadhnáḥ* 'sour, coagulated milk' (EWAia I: 692–693), Albanian *djathë* 'cheese' (Demiraj 1997:195–196, Orel 1998: 67), Old Prussian (*ructan*) *dadan* '(sour) milk'. There seems to be almost general agreement that the basic root is **dʰeh₁i̯-* 'suck, suckle' (LIV 138–139; also in several nominal derivatives), thus, apart from the above-mentioned works, e.g. Pokorny (IEW 241–242) and Mallory & Adams (1997: 382). However, the meaning of this root is clearly 'breastfeed' (about the mother), respectively 'suck mother's milk' (about the baby/young), whereas 'curd' or 'sour milk', not to mention 'cheese', are the results of secondary production. I therefore consider it more likely that we are dealing with derivatives of **dʰeh₁-* 'stellen, legen, setzen; herstellen, machen' (LIV 136–138; NIL 99–117).

For the process of making curd or cheese, the English expression is *setting of milk*, in German the term for curd is *Setzmilch*, and in Danish the same produce is called *oplagt mælk*, calqued on older German. Thus, Uno von Troil, in his chapter *Von den Speisen der Isländer*, offers the following description of *aufgelegte Milch* (1785: 74): "Skyr (aufgelegte Milch), die saure Milch, woraus die Molken gepreßt sind, wird in Tonnen und Gefäßen verwahrt".

In the Rigveda, neuter nom.acc.sg. *dádhi* 'sour, coagulated milk' is matched by the gen.sg. *dadhnáḥ* (2×) and the inst.sg. *dadhnā́* (2×). Though the existence of *i/n*-heteroclitics is rather extraordinary, Mayrhofer (l.c.) feels justified to conclude: "Der Erbcharakter der Heteroklisie *dádhi/dadhn°* ist wohl nicht zu bezweifeln". A more hesitant judgement is expressed in the *Altindische Grammatik* (Wackernagel 1975: 306) where, exceptionally, the appurtenance to the root for 'suck(le)' is not taken for granted: "In *dádhi* war das *i* wurzelhaft, wenn es wirklich zur Wurzel **dhēi-* 'saugen'" gehört … dann wäre *dádhi* erst nachträglich in die *i/n*-Flexion geraten; aber das *n* scheint hier schon ig. zu sein …".

As a reduplicated formation, *dádhi*, if from **dʰe-dʰh₁-i*, would be structurally similar to archaic deverbal adjectives, frequently with

an intensive meaning (Wackernagel 1954: 291). Cf. examples (all Rigveda) such as *dadí-* 'giving', *papí-* 'drinking', *yayí-* 'going', and even from **dʰeh₁-*, *dádhi-* 'establishing' in RV 10.46.1: *dádhir yó dhā́yi sá te váyāṁsi yantī́ vásūni vidhaté tanūpā́ḥ*: 'he who has been established establishes vital power for you; he is the extender of goods to the man who does honor and he is the protector of bodies'. The accent in these adjectives usually falls on the *-i-* when the first syllable is short, otherwise on the root, thus e.g. *cákri-* 'working' (= Old Avestan *caxri-* 'making') and *jághni-* 'slaying'. Incidentally this may suggest that the cluster **-dʰh₁-* in *dádhi* counted as two consonants longer than **-dh₃-* in *dadí-* where the presumably voiced **h₃* would have assimilated to the preceding consonant at an earlier stage.

A category of proper heteroclitics with nom.acc. *-i* in Vedic is weakly founded, and as for the background of *ásthi-* 'bone', it is debatable whether the final *-i* goes back to a laryngeal or an *i*-vowel. At least the cognate Hittite *ḫastai-* and Greek ὀστέον would point to an ablauting suffix, and with the other "*i/n*-heteroclitics", *ákṣi-* 'eye' and *sákthi-* 'thigh', the dual form may have played a role. Thus, *dádhi* remains isolated, and at least, as stressed by Beekes (1987: 50), *i/n*-stems cannot be established as an Indo-European stem type. Consequently, it seems preferable to consider *dádhi* : *dadhn-áḥ* a secondary constellation of two originally independent forms of which *dádhi* is presumably a lexicalized substantivization of the agent noun 'setting'.

The creation of the suppletive oblique stem is less clear. Possibly the reduplicated 'pseudo-root' **dʰedʰh₁-* formed a **-men-*stem **dʰédʰh₁-mn̥* > **dadhman-*.[26] At least a stem in (**-mno-* >) **-mo-* is substantiated by Greek θεσμός, Doric τεθμός, θεθμός 'that which is laid down, established', i.e. 'law, ordinance', Middle Welsh *dedyf*, Modern Welsh *deddf* 'law' < **dʰe-dʰh₁-mo-* (cf. Thurneysen 1923: 57).[27] However, by a process of dissimilation, we expect the suffix variant **-mo-*, as indeed in **dʰe-dʰh₁-mo-*, after neutral roots as opposed to **-no-* after roots containing a labial, thus e.g. **gʷʰorno-* > Latin *furnus* 'oven' (cf. Rasmussen 1989: 187–198). The same distribution is originally valid for the end-stressed weak cases of Vedic *-man*-stems, as already observed by Schmidt (1895: 121–122), thus inst.sg. *drāghmā́* from *drāghimán* 'length' and *raśmā́* from (*a*)*-raśman-* '(without) reins' vs. *prathinā́* from

[26] With laryngeal loss after the reduplication syllable as is also found in reduplicated verbal formations such as 1.pl. *dadhmási, dadmasi* from **dʰeh₁-* 'put' and **deh₃-* 'give' respectively.

[27] Cf. also the Old Irish hapax gen.sg. *deidmea* 'law' (*LÉIA* D–41).

prathimán- 'width', *preṇā́* from *premán-* 'love', *bhūnā́* from *bhūmán-* 'riches'/*bhū́man* 'earth', *mahinā́* from *mahimán-* 'greatness' and *variṇā́* from *varimán-* 'breadth'. Thus the expected instrumental of a hypothesized **dadhman* 'setting' or 'something set', lexicalized as 'coagulated milk', would be **dadhmā́* with corresponding genitive **dadhmáḥ*.

A slight adjustment to the attested *dadhnā́*, *dadhnáḥ* is perhaps best explained as influence from one of the other members of this extremely rare type of heteroclitics, viz. *ákṣi* 'eye' with the suppletive *n*-stem, gen. *akṣnáḥ*, inst.pl. *akṣábhiḥ* (for which, cf. EWAia I: 42–43 with references).

As for the suggested interpretation of the nom.acc. *dádhi* as a reduplicated deverbal adjective, this would correlate with the likewise reduplicated Old Prussian *dadan* apart from the discrepancy between the Vedic *i*-stem and the thematic stem in Baltic. Here we would have the type matching intensive nominal stems in Vedic, e.g. *dadhṛṣá-* 'bold' and in particular the inherited **kʷe-kʷlh₁ó-* > *kʷekʷló-* 'wheel' > Ved. *cakrá-* etc. (Wackernagel 1954: 85). Thus *dadan* would continue a neuter **dʰe-dʰh₁óm*, probably with distant assimilation *-e-a-* > *-a-a-* (cf. also Mažiulis 1988: 171–172).

5.3. **ĥerH-*

In his etymological dictionary, Martirosyan (2010: 574–575) noticed a remarkable correspondence between Armenian *ser* 'cream of milk, skin on milk or sour, clotted cream' (unknown stem class) and Vedic *śáras-* (n) 'skin on milk' (EWAia II: 617–618), both pointing to a regular *e*-grade *s*-stem **ĥer(H)os* beside Sanskrit *śara-* < **ĥor(H)o-* 'sour cream'. Cf. also the continuations in Modern Indic, e.g. Kashmiri *har* 'cream, skin, scum on curdled mil or oil', Bengali *sar*, Oriya *sara* 'cream, thick milk', Hindi *sar* 'cream, curds' (Turner 1962: 714).

According to Mayrhofer (l.c.) the basic root is *śarⁱ-* < **ĥerh₂-* 'break' (cf. also Lidén 1934: 5–6), but for semantic reasons a better option may be **(s)ĥerH-* 'trennen, teilen' (LIV 558) which is, after all, what sour cream or milk does. In that case, the root with addition of a mobile **s-* would be identical with that of Icelandic *skyr* < **skurja-*, Danish *skørmælk* 'sour milk' (Magnússon 1989: 880) and the corresponding verb Old Norse *skerask* 'separate' (of milk). Quite similarly, Lithuanian *at-skìrti* 'separate' from the same root is used in connection with *píenas* 'milk'.

5.4. **ser(H)-*

Also the root **ser(H)-* 'flow, stream' (IEW 909–910) seems to have been the basis of words in the context of cheese production at least at the pre-stage including Italic and Greek. Thus Latin *serum* 'whey, serum' is connected with Greek ὀρός 'whey, the watery part of curdled milk', potentially a substantivization of the adjective underlying Sanskrit *sará-* 'liquid, fluid' < **sor(H)ó-*, though the root **sel-* 'sich losschnellen, springen' (LIV 527), cannot be definitely excluded for the Indic form.[28] The morphological background of *serum* would be a full-grade neuter **sér(H)om* of the type **u̯érĝom* 'work'.

5.5. **(h₁)reu̯g-*

For the production of cream and butter, derivatives from a root **(H)reu̯G-* are attested with cognates in Germanic, Iranian and Baltic, of which Kroonen (2011: 186–187) has treated the Germanic evidence in detail. Here an *e*-grade formation is posited for Icelandic *rjómi*, Norwegian *rømme*, Swedish *römme* 'cream' and Old English *réama*, *réoma* 'membrane, meninx' (cream settling as the skin or top layer of milk), while Old English *réam*, Middle High German *roum*, German *Rahm* 'cream' point to an *o*-grade. As an original paradigm, Kroonen tentatively suggests an ablauting *-men*-stem "*Hréu(H)g^{wh}-mōn*, gsg. **Hru(H)g^{wh}-mn-ós*, apl. **Hrou(H)g^{wh}-mn-n̥s*". However, a *men*-stem would not usually exhibit *o*-grade in the root, and actually only the *e*-grade forms point unambiguously to an *n*-stem, while Old English *réam* etc. may just as well reflect an *a*-stem **rauma-*. It therefore seems preferable to operate with a *men*-stem **(H)reu̯g$^{(h)}$mn̥* with a secondary *o*-grade derivative **(H)rou̯g$^{(h)}$mno-* → **(H)rou̯g$^{(h)}$mo-*. Strictly speaking, one would expect the suffix variant **-no-* rather than **-mo-* after a root containing a labial, cf. **leu̯ksmn̥* → **lou̯ksnah₂-* > Latin *lūna*, Russian *luna* 'moon', but **-mo-* is productive in such formations, and moreover the more archaic form is preserved in Avestan as *raoγna-* 'butter'. What looks like a substantivized *to*-participle is found in Old Prussian *ructan dadan* ('sour curds', i.e.) 'sour milk'.

[28] The background of Albanian *gjizë* 'goat cheese, cottage cheese' is unclear, cf. Demiraj 1997: 189–190 and Orel 1998: 136 for suggestions and discussion. For Tocharian B *ṣarwiye* not even the meaning is clear, 'cheese' or 'fleece', cf. Ching 2010: 399–400 (thank you to Simon Poulsen for the reference) and Adams 2013: 713.

The further etymological background still has to be defined, and as has already been suggested, a series of supplementary cognates may be found in Lithuanian *ráugas* 'sourdough', *ráugėti* 'turn sour (about milk)' (cf. Fraenkel II: 705; Derksen 2015: 377–378). Semantically this connection makes good sense as sour cream is traditionally used for butter production. From a formal point of view, we may then define the root as containing a **-g-* rather than **-g^{h}-* on account of Winter's Law.[29] This brings us to the underlying root, **(h$_1$)reu̯g-* 'belch' (LIV 509), which is the basis of a verb continued in Italic, Germanic, Greek, Armenian and Balto-Slavic: Latin *ērugō* 'belch' (cf. also *rūmen* 'first stomach of a ruminant' with denominative *rūminō* 'chew, ruminate'), Old High German *ita-rucken* 'ruminate', Greek ἐρεύγομαι 'belch out', Armenian *orcam* 'belch; vomit', perhaps from a denominative **pro-(h$_1$)rug-ah$_2$-i̯e-*, and Lithuanian *ráugėti* 'belch' beside 'turn sour'. The exact shape of the root remains uncertain, **h$_1$reu̯g-* or **reu̯g-*, as both **h$_1$-* and an initial **r-* in Greek would trigger a prothetic vowel ἐ-.[30]

The question of how to combine 'belching', 'vomiting' or 'chewing the cud' semantically with (sour) cream or butter is usually passed over in silence in the literature, but the most obvious solution would be to think of babies with reflux, burping and spitting out curdled, sour milk.

5.6. **tu̯erh$_1$-*

A Greco-Iranian set of cognates includes Greek τῡρός (m) 'cheese' with the compound βούτυρον/-ος 'butter' and Avestan *tūiri-* 'cheeselike milk, whey' with the derivative *tūiria-* 'curdle (of milk)',[31] of which the etymological background has not been definitely established. According to the IEW (1083), we are dealing with a **-ro-*derivative of the root **teu̯h$_2$-* 'swell'. However, this is formally problematic, since **-uh$_2$-* in unaccented syllables is expected to yield **-wā-*, not **-ū-* in Greek (cf. Olsen 2009), and besides, the semantic connection is not obvious. Mallory and Adams (1997: 382–383) hesitantly state that the stem "looks to be a nominal derivative of an underlying verb **tu̯eh$_x$-* which, however, is otherwise unknown". Beekes (2010: 1520) tended to

[29] For the loss of the root-final stop in Germanic **reuman-*, **rauma-*, cf. Hirt (1931: 1927): "Guttural ist nach Diphthong oder langem Vokal vor *m* geschwunden", other examples being Old Norse *taumr* 'rein' from **deu̯k-* and *draumr* 'dream' from **d^{h}reu̯g^{h}-*.

[30] The irregular initial *o-* of *orcam* is perhaps best explained as a preverb, cf. e.g. Greek προσ-ερεύγομαι 'belch at' (Olsen 1999: 764).

[31] Perhaps also apabhraṁśa *tūra-* 'cheese' (KEWA I: 516).

accept the old connection with **teu̯h₂-* 'be strong, swell' as "phonologically unproblematic, and semantically possible", while rejecting alternative suggestions for formal reasons: "Phonologically, τῡρός can be derived neither from PIE *tu̯er-* 'to stir' … nor from PIE *tu̯erH-* 'to hold, fence in'".

Of these roots, the only reason for bringing **tu̯erH-* 'fassen' (LIV 656) into the discussion would be a tentative analysis of Slavic **tvarogъ* 'curds' > Russian *tvoróg* as something 'formed' or 'made' from the verb *tvoriti* with a semantic development similar to French *fromage* and Italian *formaggio* from Latin *formāre*. Vaillant (1974: 496) assumed that an explanation along these lines could at best be the result of popular etymology because the final element remained unexplained.[32]

From **tu̯er-* 'aufrühren, erregen, antreiben' (LIV 655), the verbal derivatives are assumed to include Greek ὀτρῡ́νω 'encourage, urge, incite, stir up', Vedic *tvárate* 'hurry', and from Germanic, Old English *þweran* 'twirl, stir' and Old High German *dweran* 'stir up'. These in turn are further connected to the instrument noun **þwerila-* > Old English *þwirel* '(handle of a) churn', Old Norse *þyrill*, Old High German *thwiril* 'beater, whisk' and in particular Old English *ge-þweor* 'curds' which, as noted by Kroonen (2013: 555), is semantically reminiscent of the above-mentioned Slavic **tvarogъ*. Indeed, the unanimous semantic specialization of the Germanic and Slavic derivatives makes it tempting to see an old connection between the two branches in this lexeme. If the formal details turn out to be compatible, this idea may by further corroborated by Latin *trua* 'stirring spoon' and Greek τορῡ́νη 'stirrer, ladle for stirring things while boiling'.

The best way to unite this semantically closely-knit group of derivatives must be by way of an assumption that the basic root was **tu̯erH-* with a final laryngeal.[33] While the full grade **tu̯erH-* would in principle remain intact, the zero grade **tu̯rH-* would undergo metathesis to

[32] Cf. also Sorbian *tvarog*, borrowed into Middle High German as *twarc, quarc, zwarg*, German *Quark* (Kluge 1995: 659).

[33] Kümmel's motivation for positing an aniṭ root (LIV 655) is the lack of consonant gemination is Germanic, but this is hardly decisive. A separation of **-r-* and **-H-* may have been transferred from either a *i̯*-present (cf. Old Norse *þyrja* 'rush'), or from a nasal present as indirectly continued in Greek ὀτρύνω. Sanskrit *tvára-* as such is ambiguous in this respect, but if the participle *-tūrta-* belongs to this root as **-tu̯ŕHtó-* it may have an exact match in Young Avestan *θβāšа-* 'fast, quick' apart from the accent retraction to **tu̯ŕH-to-*, cf. the thorough discussion in Gotō (1987: 169–70).

**truH-*,[34] which would explain the Latin form as a zero-grade *a*-stem. The Greek nasal present ὀτρῡ́νω with preverb ὀ- is not quite clear. However, the most likely solution may involve a protoform **-tu̯r̥-n-H-* > **-trun-* with restitution of the zero grade to **-trūn-*, as if **-tu̯r̥H-* + nasal suffix *-n-*, rather than the thematicized **-neu̯-/-nu-*present **tu̯r̥n-u̯-*> **tru-nu̯-* reconstructed in LIV l.c. or the combination of nasal present and *i̯*-present suggested by Frisk (GEW II: 441).

As for the noun τορῡ́νη, we are probably dealing with a contamination between *o*-grade **tu̯or(H)-nah₂-* – the type of Greek πόρνη 'prostitute', στόρνη 'belt' – and zero grade **tu̯r̥H-nah₂-* > **trū́nā-*, which would be secondary derivatives of a **-men-*stem **tu̯erHmn̥*. Here, as we have already seen, the dissimilatory selection of the suffix variant **-no/ah₂-* rather than **-mo/ah₂-* would be regular after roots containing a labial. A similar type of contamination between full grade and zero grade is seen with the root **u̯elHu̯-* 'roll' in the **-men-*stem (**u̯elHu-* : **u̯l̥Hu-* > **u̯luH-*) → **u̯eluH-mn̥* > Latin *volūmen*, Greek εἴλῡμα, Armenian *gelumn*.

Still, Greek τῡρός, βούτυρον/-ος, Avestan *tūiri-*, *tūiria-* and Slavic **tvarogъ* have not been adequately explained. As the lack of breaking in Greek would only be compatible with an **-h₁-*, an automatic transposition of the stems would be **tuh₁ró-* and **tu̯oh₁ro-* respectively, not accounting for the Slavic end segment. Certainly, these forms are not immediately compatible with the zero grade and *o*-grade of a root **tu̯erh₁-*, so we cannot be certain if we have to accept an entirely different, and unfortunately so far obscure, etymological background or there may be a more or less convincing way out to combine the whole group.

At any rate, the ablaut difference suggests that we are dealing with derivatives of an older alternating pattern, be it a root noun or a heteroclitic, of which the latter may be the most likely option as it could potentially favour a dissimilatory loss of the first **-r-*. Thus, from the weak form of a paradigm **tu̯orh₁-r̥/*tu̯r̥h₁-n-ós* → **tu̯r̥h₁-r-ós* 'stirring' or the like, one might get a thematicized **truh₁r-ó-* → **tuh₁ró-* by dissimilation, whence the Greek form 'something stirred' and Avestan *tūiri-* with *i*-stem substantivization.

For the predecessor of the Slavic form there are various possibilities. It might have been thematicized from the strong forms of the paradigm

[34] Cf. Rasmussen 1989: 75ff on the morphophonemic alternation of **-eRHu-/*-RHu-*structures.

suggested above, i.e. **tu̯oh₁ro-*, also with dissimilation, or it might go back to a long *o*-grade, **tu̯ōrh₁o-* as a vṛddhi derivative. Still, we have not accounted for the puzzling final *-ogъ*, for which only tentative hypotheses are at hand – perhaps originally a derivative in **-okъ* with a similar variation of **-k-* and *-g-* as Old Church Slavic *inogъ* vs. *inokъ* 'solitary'?

5.7. **tkʷei̯H-*

The liquid by-product of cheese production is whey, for which Rasmussen (1990) assumed that ramifications of a common stem have survived in Germanic and Indo-Iranian. Most likely, Old English *whæg* 'whey' goes back to **tkʷoi̯Ho-* with *o*-grade in the root as opposed to the derivatives Vedic *kṣīrá-*, Persian *šīr* 'milk' < **tkʷiHro-*, to which may be added Albanian *hirrë* 'whey' < **tkʷiH-r-nah₂-* (?),[35] as posited by Kroonen (2013: 261–262).[36] The Indo-Iranian and Albanian forms may be seen as possible derivatives of a heteroclitic (**tkʷoiH-r̥*), **tkʷiH-n-ós*, which would explain the variation in the stem formation, especially the Albanian reflex of **-r-n-* that seems to combine the two stem alternants.[37] One may speculate whether the root is an extension of **tekʷ-* 'run, flow' (LIV 620–621) as a semantic parallel of Latin *serum*, Greek *ὀρός*, also 'whey'.

5.8. Armenian *katᶜn*, Old Irish *bannae, bainne*

The interpretation of the following word group presents serious difficulties: Rasmussen (1999) ingeniously suggested that Armenian *katᶜ* (*i-* and *o*-st.) 'drop' and *katᶜn* (*n*-st; gen. *-in*) 'milk'[38] would be most naturally connected with Old Irish *bannae* 'drop', later *bainne* 'drop; milk',[39] Middle Cornish *banne*, Middle Breton *banne*, *bannech* 'drop'.

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[35] A connection between *kṣīrá-* and *hirrë* is assumed by Huld (1984: 75), and Orel (1998: 149), while Demiraj (1997: 202) seems to hesitate between this solution and a linking with Icelandic *skyr* etc. For semantic reasons the first option seems preferable.

[36] Rasmussen's reconstruction of the root as **kʰu̯ei̯h-* was probably inspired by the explicit comparison with Avestan *xšuuīdəm-*, of which the traditional translation 'milk' is, however, erroneous (Jamison 2011 [2015]. Thanks to an anonymous reviewer for the reference).

[37] Alternatively, Kroonen (2013: 261–262) assumes a basic alternating *i*-stem.

[38] On the traditional, but formally problematic comparison with Greek γάλα, Latin *lac*, cf. Martirosyan 2008: 345–346.

[39] Registered as being 'without etymology' by LÉIA B–8. Cf. also Matasović 2009: 54–55.

In Armenian, *katᶜn* is abundantly attested since the oldest period. *Katᶜ*, which is at least internally connected with the verb *katᶜem* 'drop, trickle', also known from 5th-century texts, is especially used about water, dew, tears, but also blood, honey etc. Thus, there is no particular reason to assume an original etymological connection between the two. Moreover, the semantic correspondence between Armenian and Celtic is not quite smooth since *katᶜn* only means 'milk' while the primary meaning in Celtic is clearly 'drop'.

According to Rasmussen, the protoform of *katᶜn* is **gʷəɪtsnah₂-* whence the secondary derivative **gʷəɪtsniah₂- > *basniā > bannae*. The reason for positing **hɪ* was an assumed relationship on the one hand to Armenian *kitᶜ* (*o*-st.), defined in Ačaṙyan's dictionary (HAB: 585) as 'produce from domestic animals, milk, eggs or butter', and on the other with Faroese *kváð* 'sticky juice coming from the teats of a cow'. The aspirate *-tᶜ-* in *kitᶜ* presupposes an older **tʰ*, i.e. a laryngeal cluster, whether **-t-+ -hɪ/₂-* or **-hɪ/₂- + -t-* by the principle of laryngeal metathesis as stipulated in Olsen 1989 and later works. However, since the laryngeal appears in its vocalic form in *katᶜ* and *katᶜn*, Rasmussen had to assume that *-tᶜ-* was here analogically transferred from *kitᶜ*.

To this solution one may object that the broad meaning of the rather scarcely attested Armenian *kitᶜ* makes it unlikely that it was originally a dairy term, cf. e.g. *aygekitᶜkᶜ* 'produce from the vineyard' or *hawkitᶜ* ('chicken-produce', i.e.) 'egg'. One must therefore agree with Ačaṙyan (l.c.) that "from the same root, another form is *kutᶜ* (*o*-st.)". The latter is known from early attestations in the Bible and the 5th-century author Agathangelos in the meaning 'harvest, vintage'. Internally, it is connected with the denominative verb *ktᶜel* 'reap, harvest', but also 'milk', likewise well attested, e.g. 1.Sam.8.12: *ktᶜel z-kutᶜs nora* 'to reap his harvest'. For the interpretation of *kutᶜ(kᶜ)*, I have suggested (Olsen 1999: 39) a substantivized **-to-*participle **guhɪ/₂-to-* from the root **g(ʷ)eu̯H-* (LIV 189) as in Lithuanian *gáuti* 'reach, get'. The side form *kitᶜ*, on the other hand, may easily have been created as a retrograde formation based on either the oblique cases of *kutᶜ* (gen.pl. *ktᶜocᶜ*) or on the verb *ktᶜel* due to the regular syncope of both *-u-* and *-i-* in unaccented syllables.

Consequently, it appears that the Germanic terms with lengthened grade, Faroese *kváð* 'viscous fluid from a cow's teat', Norwegian dial. *kvaada*, *kōda*, *kōa* 'raw milk' etc., have no direct external match.

Rather, as is generally assumed, the basic meaning must be something like 'resin', as is still the case of Icelandic *kváða*, Swedish *kåda*.[40] More specifically, Darms (1978: 49–53) has demonstrated that we are dealing with vṛddhi-derivatives of a *u*-stem **g^{w}etu-* as continued in e.g. Old English *kwidu* 'cud' and Sanskrit *jatu-* 'varnish, gum'. Thus, the use of **g^{w}ētV-* in the context of sticky fluids coming from cows' udders is secondary, due to similarity with resin in texture and colour, somewhat like Greek *πῡ́ς* 'beestings, colostrum' from *πύον, πύος* 'pus'.

This, then, leaves Armenian *kat^{c}n* and Old Irish *bannae* on a side track. While the Irish form must still be considered etymologically obscure, it is possible that *kat^{c}n* 'milk' was secondarily influenced by *kat^{c}* 'drop', *kat^{c}em* 'drop, trickle', itself of unknown origin,[41] which would be reminiscent of the situation in Celtic, perhaps in combination with the word corresponding to Latin *lac*, Greek γάλα, from which one may at least defend an initial **g- > k-*.

Quite tentatively, one might suggest an original connection between the noun 'milk' and the adjective (**sm̥ah$_2$do-* >) **sm̥ādo-* 'sweet'. A protoform **sm̥ā́d-no-* 'a sweet substance' would regularly yield **k^{c}at-n-*, whence *kat^{c}n* with secondary reversal of the modes of articulation aspirate and plain voiceless stop, i.e. *k^{c} – t → k – t^{c}*, by some sort of "blending" – whether with the word for 'drop', the predecessor of γάλα or both. Clackson (2017) has presented an impressive collection of 49 likely examples of blending or contamination in Armenian where this phenomenon for some reason seems to be particularly frequent, cf. e.g. *taygr* 'brother-in-law' : **cal → tal* 'sister-in-law', or *dustr* 'daughter' : **suH- → ustr* 'brother'.[42]

If we follow this basic idea, *kat^{c}n* 'milk' would be a secondary derivative of **sm̥ā́dmn̥-* (n)/**sm̥ādmón-* (m) 'sweetness', as in Vedic *svā́dman-/svādmán-*, Old Swedish *sótme*, Danish *sødme*. In RV 1.69.3,

[40] Hellquist 1980, 1: 542; Magnússon 1989: 530; Kroonen 2013: 315–316.

[41] It may be noticed that *kat^{c}* shares its initial *ka-* with *kaylak* 'drop', apparently **kali- > *g$^{(w)}$l̥(h)i-* with diminutive suffix *-ak*, which may be related to Sanskrit *gulikā-* '(small) ball, globule' (Olsen 1999: 244; probably from **g^{w}elH-* 'trickle', LIV 207), and its final *-t^{c}* with yet another synonym, *šit^{c}* 'drop' (perhaps < **skeh$_1$t-*, cf. Latin *scatō* 'gush forth', Olsen 1999: 207).

[42] The adjective *k^{c}at͡c^{c}r* itself with the synchronic meaning 'sweet' would be another telling example (Clackson 2017: 103–104 with reference to de Lamberterie 1990: 502): first merger of the two adjectives **sm̥ah$_2$du-* 'sweet' and **saldu-* 'salty > **sm̥aldu-*, and then a final merger with **dluk̂u-* (cf. Gk. γλυκύς 'sweet').

svā́dman- is specifically used in connection with what comes from the cow's udder, i.e. milk:

udhar ná gónāṁ svā́dmā́ pitūnám

'like the udder of cows he is the sweetness of foods'

Likewise, whole milk, due to its high content of lactosis, used to be called 'sweet milk' in English, as is still the general term in Danish, *sødmælk*.

The above-mentioned list of examples is far from exhaustive, as I have confined myself to lexemes whose early semantic specialization as dairy terms is reasonably certain. Thus, the cognates of Vedic *sarpíṣ-* 'clarified butter', Albanian *gjalpë* 'butter' include Old High German *salba* 'ointment', and Old Irish *imb*, Old High German *ancho* and Old Prussian *anctan* 'butter' are related to Latin *unguen* 'fat, grease', so that we might be dealing with later, independent lexical narrowings. The same goes for Tocharian B *kewiye*, Armenian *kogi* 'butter' as opposed to the more general Vedic adjective *gávya-* 'consisting of cattle, pertaining to cows, coming from a cow'.

6. Dairy-related verbs

It is not only this impressive inventory of nouns denoting dairy products that have a long history behind them. There are also verbs that describe the working processes. The most striking, beside the basic word for 'milk', must be **mentH-* 'churn', which will need a specific treatment. Another root that is relevant in this context is **g^{h}er-* 'sprinkle', as discussed in more detail by Olsen (2011). As a finite verb, the only relic is found in Vedic **ghṛ-* with present *jígharti*. Thus RV 2.10.4 with an apparent figura etymologica:

jígharmy agníṁ havíṣā ghṛténa pratikṣiyántam bhuvanāni víśvā …

continued in the following stanza:

ā́ viśvátaḥ pratyáñcaṁ jigharmy arakṣasā mánasā táj juṣeta

for which I have suggested the following translation: 'I besprinkle Agni with sprinkled libation … I besprinkle him',[43] where *ghṛtá-* is

[43] As opposed to e.g. Jamison & Brereton who follow the traditional interpretation with an asyndetic construction: "I sprinkle Agni with a libation, with ghee …".

interpreted as the passive participle of *jígharti*,[44] only secondarily lexicalized in the neuter as 'clarified butter, ghee', and often used in connection with *mádhu* 'sweet substance' or *páyas-* 'milk', thus RV 7.95.2:

ghṛtám páyo duduhe

'they yield sprinkled milk' (rather than 'ghee and milk').

Similarly, RV 9.31.5:

túbhyaṁ gā́vo ghṛtám páyo bábhro duduhré akṣitam

'For you, o brown one, the cows have yielded imperishable sprinkled milk',

and RV 9.74.4:

ātmaván nábho duhyate ghṛtám páyaḥ

'the embodied cloud is milked of sprinkled milk'.

In all three cases, *páyaḥ* is connected with the verb *duh-* 'yield milk'. Obviously ghee does not come directly from the cow's udder, so here the interpretation of *ghṛtám* as a verbal adjective 'sprinkled' rather than a noun 'ghee' in asyndetic position seems most likely.

As a close match of *mádhu* + *ghṛtám* in Vedic, we have the Greek compound μελιχρός 'honey-sprinkled' < **-g^{h}ró-*, pointing to a predialectal poetic phrase.

A third important piece of evidence comes from Celtic where Middle Irish *gert* < **g^{h}értah$_2$-*, apparently a full-grade collective corresponding to the zero-grade neuter **g^{h}r̥tóm*, is a joint designation of 'by-products of cattle, milk or manure'. Here a similar idea is expressed by Sanskrit *pañcagavya-* (Lex.) 'complex of five cow-products', i.e. 'milk, coagulated/sour milk, butter, liquid and solid excretes'. In the same vein, Vedic *ghṛtá-* is also used in connection with *vā́r* 'water', understood as the urine or semen of bulls or horses, thus RV 10.12.3: *divyáṁ ghṛtám vāḥ* 'the heavenly sprinkled water' (not 'the heavenly ghee, the water') or RV 10.99.4: … *áśvāsa íṛate ghṛtáṁ vā́ḥ* '… horses let their sprinkled water (urine) stream'. Despite the somewhat modest evidence, it thus seems reasonable to conclude that all products coming from cows were considered valuable, be it milk that could be processed to curds, butter or cheese, urine that came in handy for washing – **muHtlo-* > Vedic *mū́tra-* 'urine', Avestan *mūθra-* 'dirt', Czech *mýdlo* etc. 'soap' – or

[44] Cf. Grassmann 1964: 423.

even dung, which was probably used for burning. In particular, the substantivized participle **g^h̥r̥tóm*/**g^hértah₂* from the root **g^her-* 'sprinkle' seems to have been lexicalized already in Core Indo-European as a designation of liquid by-products of cattle, whether milk or urine.

7. Conclusion

To early Indo-European societies, the cow was as much a defining feature as the horse. It was the fixed point of their daily lives, a symbol of wealth and status and a constant source of nourishment. However, by the order of nature, it has not always been possible to take uninhibited advantage of this nourishment. As the largest part of the world's population above the age of infancy is incapable of digesting milk, societies relying on animal husbandry have always been compelled to adapt to the situation.

As recently discussed by Segurel et al. (2020) in continuation of earlier studies (cf. in particular Allentoft et al. 2015), two models of adaptation have been observed. Either the population in question could perfect methods to produce fermented products such as curds, butter or cheese that can be digested without major problems, or they could develop lactase persistence. The first scenario – cultural adaptation – is seen among cattle breeders in western Asia such as the Kazakhs, while the second – biological adaptation – spread with what is now associated with the migrations of Indo-European speaking populations.

Garnier, Sagart & Sagot (2017) correctly observe that a common word for 'milk' or 'milking' cannot be traced back to Proto-Indo-European, as the root **$h_2$melĝ-* is unknown in Anatolian. However, their conclusion that "the ability to digest milk in adulthood played an important role in boosting Proto-Indo-European demography" is simplified and cannot be corroborated by linguistic data. On the contrary, while we know that the knowledge of milking must at least go back to Proto-Indo-Tocharian, the evidence for a specific word for the substance 'milk' is scarce. What we do find, are various independent creations in the separate branches beside a multitude of technical terms for the processing of milk into curds, butter and cheese including by-products such as whey. In many cases, these terms go back to at least "Core Indo-European" including Italo-Celtic, and they are typically created from known verbal roots such as 'curdle', 'be fat', 'separate', 'flow' or 'stir' through archaic procedures of word formation.

This state of affairs rather leads to the conclusion that by the time of the first wave of Indo-European migrations, the ability to digest fresh milk was not yet fully developed, and when the dairy vocabulary based

on inherited elements is particularly rich in Germanic, Baltic and Indo-Iranian, this is most naturally seen in relation to the high percentage of lactase tolerance among the populations of Northern Europe and the North of India.

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12. Priests, oxen and the Indo-European taxonomy of wealth in the Iguvine Tables

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Abstract

The Iguvine Tables are seven bronze tablets from Iguvium (modern-day Gubbio) in Italy, dating from between the late third to late second or early first century BC. They are written in Umbrian, a Sabellic language, and record the rituals and acts of a group of priests, known as the Atiedian brotherhood. In this chapter I will focus on the word *arsmo* and its derivatives, which are attested in a number of contexts. In general, *arsmo* has been translated as something like like 'rites, rituals', or 'priests, magistrates', which is largely a guess based on its appearance in contexts of formulae like the following: *nerf. arsmo. ueiro pequo. castruo. fri. pihatu.* 'purify the magistrates, *arsmo*, men, cattle, heads (of corn?), crops'. I argue that *arsmo* should be understood as the Umbrian equivalent of Latin *armenta* 'herds of (large) cattle', and that this formula is an expanded version of a well-attested Indo-European merism which represents the types of mobile wealth **u̯iHro- pe*k̂*u-* 'men and cattle'; in this case each member has been subject to a doubling. The first member has been divided into *nerf* 'magistrates, upper class men', and *ueiro* '(other) men', and the second into *arsmo* 'large cattle' and *pequo* 'small cattle'. Derivatives of *arsmo* are found in *arsmahamo* 'form up into groups' and in *perca arsmatiam* 'cowherd's staff'. The latter is part of the equipment of the Umbrian augur, suggesting that the Atiedian brothers, like Roman and Etruscan augurs, carried a crook which was originally the equipment of an animal herder.

1. Introduction

The Iguvine Tables are seven bronze tablets from Iguvium (modern-day Gubbio) in Italy, dating from between the late third and late second

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or early first century BC.[1] They are written in Umbrian, a Sabellic language, and record the rituals and acts of a group of priests, known as the Atiedian brotherhood.[2] In this chapter I will focus on the word *arsmo(r)* and its derivatives, which are attested in a number of contexts. In general, *arsmo(r)* has been translated as something like 'rites, rituals', 'priests', or 'social orders', which is largely a guess based on its appearance in formulaic contexts. I argue that *arsmo(r)* should be understood as the Umbrian equivalent of Latin *armenta* 'herds of (large) cattle', and that this formula is an expanded version of a well-attested Indo-European merism which represents the types of mobile wealth **u̯iHro- pe͡ku-* 'men and cattle';[3] in this case each member has been subject to a doubling. The first member has been divided into *nerf* 'magistrates, patricians', and *ueiro* '(other) men, *plebs*',[4] and the second into *arsmo(r)* 'large cattle' and *pequo* 'small cattle'. Derivatives of *arsmo(r)* are found in *arsmahamo* 'form up into groups' and in *perca arsmatia(m)* 'cowherd's staff'. The latter is part of the equipment of the priest known as the *arsfertur*, suggesting that the Atiedian brothers, like Roman and Etruscan priests, carried a crook which was originally the equipment of an animal herder.

2. *arsmo(r)* and its derivatives in the Iguvine Tables

The last two tablets of the Iguvine Tables feature two repeated formulas involving the neuter plural noun *arsmo(r)*.[5] In addition, derivatives of this word are also attested, in the form of the imperative verb **arma<m>u**, *arsmahamo* and the adjective *arsmatia(m)*.[6] Sometimes the form **ařmune** (IIb 7) is also associated with *arsmo(r)*, but the mean-

[1] I would like to thank the editors for inviting me to contribute to the present volume, Michael Weiss for sending me his unpublished article, and Tim Barnes for listening to me talk about this topic at length in the pub (and giving me sage advice). As usual, I am to blame for errors and omissions. This chapter was written while I held a Pro Futura Scientia Fellowship, funded by the Stiftelsen Riksbankens Jubileumsfond.

[2] All Umbrian forms in this article are quoted from the edition of the Iguvine Tables given as Um 1 in Rix (2002). Words in other Sabellic languages come from Crawford et al. (2011), though Rix's numeration is also provided.

[3] A merism is "a two-part figure which makes reference to the totality of a single higher concept" (Watkins 1995: 9; see also 46).

[4] Or 'free men' and 'slaves'; see below.

[5] Neuter plurals in Umbrian were sometimes marked with the animate endings (Buck 1928: 118–119), so the ending of *arsmor* reflects **-ā + s*. On the variant spelling *asmo* see further below.

[6] The form is in the accusative in both contexts in which it appears, but final *-m* is often omitted in Umbrian.

ing and origin of this word is completely uncertain (Untermann 2000: 51–52), and it will not be considered further.

Passages (1a) and (1b) are two variants of a prayer, addressed to Jupiter Grabovius, differing only in what verb (-phrase) is used:

(1a) *nerf. arsmo. ueiro pequo. castruo. fri. pihatu.* (VIa 30)[7]

'Purify the magistrates, *arsmo*, men, cattle, heads (of corn?), crops'

(1b) *nerf. arsmo. ueiro. pequo. castruo fri. salua / seritu.* (VIa 32–33)[8]

'Keep safe the magistrates, *arsmo*, men, cattle, heads (of corn?), crops'.

Passage (2) forms part of another prayer, as part of the purification of the Fisian mount:

(2) *persei. ocre. fisie. pir. orto. est. toteme. iouine. arsmor. dersecor / subator. sent. pusei. neip. heritu.* (VIa 26–27)[9]

'If fire has arisen on the Fisian mount, (if) the *dersecor arsmo* have been *subator* in the Iguvine state, (be it) as not intended'.

Passages (3a) and (b) are the same formula in an earlier and later tablet, which addresses the 'men of Iguvium' (**ikuvinu**, *iouinur*) involved in the *lustrum*, and orders them to do something represented by two denominative verbs. As Poultney (1959: 276) observes: "it is clear that the Iguvini are ordered to arrange themselves in formation, and it is altogether unlikely that *arsmahamo* and *caterahamo* are merely synonyms".[10]

(3a) **arma<m>u: kateramu: ikuvinu** (Ib 19)[11]

(3b) *arsmahamo. caterahamo. iouinur* (VIb 56)

'Men of Iguvium, *arsmahamo*, form into troops'.

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[7] Also, with minor spelling variations, at VIa 39–40 and 49–50.

[8] Also, with minor spelling variations, at VIa 42 and 52, VIIa 17 and 30–31.

[9] Also, with minor spelling variations, at VIa 36–37, 46–47, and VIb 29.

[10] He goes on to suggest that "one may refer to larger and the other to smaller military units, the former including the latter, or one may refer to infantry and the other to cavalry units".

[11] The tablet has **armanu**, but the **<n>** is generally agreed to be a mistake for correct **<m>**. These verbs appear to be deponents with the 2nd singular imperative ending, but the context requires a 2nd plural (Buck 1928: 176–177).

Passages (4a) and (4b) are from parts of the text describing the purification of the Fisian mount and the lustration of the people respectively. In each case, the auspices have been taken by observing the flight of birds prior to the ceremony (involving both the *arsfertur* and another priest). In both cases, the *arsfertur* should hold a *perca arsmatia(m)*. The translations are based on those of Poultney (1959).

(4a) *esisco. esoneir. seueir popler. anferener. et. ocrer. pihaner. perca. arsmatia. habitu.* (VIa 18–19)

'At each of these rites for the lustration of the people and the purification of the mount he shall have an *arsmatia perca*.'

(4b) *ape. angla. combifiansiust. perca. arsmatiam. anouihimu. cringatro hatu destrame. scapla. anouihimu … pone esonome. ferar. pufe. pir. entelust. ere. fertu. poe perca. arsmatiam. habiest* (VIb 49–50)

'When he has announced the birds he shall *anouihimu* an *arsmatiam perca*, take a stole, and *anouihimu* it over his right shoulder… When that in which he has placed the fire is brought to the sacrifice, he who holds the *arsmatiam perca* shall carry it'

Of these passages, the variants of (1) have tended to be the basis for claims regarding the meaning and origin of *arsmo*, since the rest of this part of the prayer is reasonably well understood. The word *nerf* is found also in South Picene and in Oscan, and here represents the politically active citizens of Iguvium (Untermann 2000: 496).[12] By comparison, *ueiro* means 'men' in the sense of the labouring population in a rural economy (possibly only the slaves, but perhaps also lower class free or freed-men: the *plebs*; Untermann 2000: 858–859).[13] The forms *pequo* (= Latin *pecua*) and *frif* (= Latin *frūgēs*) mean '(small) cattle, sheep' and 'crops' respectively (Untermann 2000: 527–528 and 297–298 respectively). Less clear is the signification of *castruo*, for which two main possibilities arise: either it means something like 'fields', and

[12] Whether this applies only to the upper-class or all free citizens is, I think, unclear. Compare Untermann (2000: 496), who states that the *nerf* are those belonging to the upper-class and suggests 'patricians', 'magistrates', or 'senate' as translations and (2000: 858), where he states that they are the free men of the city.

[13] On the neuter plural (collective) ending see Eichner (1985: 146–147).

is to be compared with Latin *castra* 'military encampment, fort', or it means 'heads', which has no good etymological support but is based on the expression **pusti: kastruvuf:** (e.g. Va 13). The context is how much the Atiedian brothers should pay; while 'per head' seems the more natural reading, 'per estate' is not impossible.[14] On all this see Untermann (2000: 374–375).[15]

In any case, the overall context is clear. We have here a list of items that together consist of the things that are required to be protected by Jupiter Grabovius for the Iguvine state to prosper. Moreover, it is a poetic formula which – at least in part – is of a type which can be traced back a significant distance into Italic and Indo-European prehistory, which Watkins (1979; 1995: 42–43, 210–213; see also Benveniste 1970) calls the "Indo-European folk taxonomy of wealth". The phraseology *ueiro pequo … salua seritu* is paralleled by Cato's prayer to Mars *pastores pecuaque … salua seruassis* 'that you shall keep the shepherds and flocks safe' (*De Agri Cultura* 141.3), while *ueiro pequo* is a merism representing both kinds of mobile wealth, men (i.e., originally, slaves) and animals, which has exact cognates in Old and Young Avestan phrases and in Vedic *virapśá-* 'wealth, abundance' < **u̯iHro-pḱu̯-o-* (Schmitt 1967: 213–217; Mayrhofer 1986–2001: 2. 559). Immobile wealth is (probably) represented by another merism *castruo frif*, if this means 'land and crops' or 'heads of grain and (other) crops'.

One of the characteristic features of this taxonomy is that it forms a branching tree that allows greater specificity as one proceeds through the tree's nodes, by means of what I will call 'doubling'. Thus, for example, Watkins shows that the lexeme **pe͡ku-* could stand for 'cattle' in general, but this category could also be split into small cattle (sheep, goats etc.), which were then also represented by **pe͡ku-*, and into large cattle (oxen, horses etc.). He gives a Vedic example of the splitting of the formula in this way, where *gā́m áśvaṃ* together represent the category of large cattle: *gā́m áśvaṃ puruṣaṃ paśúm* (Atharva Veda 8. 7. 11) 'cow, horse, man, small cattle'. Another instance of this doubling is found in Cato's prayer as *fruges frumenta uineta uirgultaque*, which

[14] If *castruo* means 'fields', the connection with the other things belonging to the Iguvine state that are to be protected is obvious; if it means 'heads', the context is more complex – it could refer to 'heads of cattle' or 'heads of corn', or be a metaphorical usage to mean 'lives'. In the latter case, the preceding *ueiro pequo* could in principle be genitive plurals dependent on *castruo* (although the *communis opinio* is that they are neuter plurals). For recent, but inconclusive, discussions of the problem see Prosdocimi (2015: 447–451), and Zair (2021: 199–201).

[15] And, on the meaning 'head (of grain)', Watkins (1995: 210 fn. 20).

Watkins (1995: 205) sees as reflecting an original formula **fruges uinetaque* 'grape and grain'. We also find doubling in the Umbrian formula, in the case of the splitting of the category of 'menfolk' into *nerf* and *ueiro*,[16] and perhaps in the case of *castruo frif*, if this means 'heads of grain and (other) crops', which would be the equivalent of Cato's *fruges frumenta*.

All this being established, we can now turn to the meaning of *arsmo(r)*. Up to now, notwithstanding Untermann's (2000: 123–124) observation that the meaning of *arsmo(r)* is "nicht sicher bestimmt", the scholars whose views he describes have generally agreed that it falls in the semantic field of priestly activity: depending on the context, it has generally been seen as meaning something like 'rites, rituals', 'priests, magistrates', although 'assemblies' or 'social orders' more generally have also been suggested.[17]

None of these meanings are really satisfactory, either semantically, or for phonological or morphological reasons (or both). For example, Devoto (1937: 225–227) defines *arsmo* as "*ordo*, *collegium sacrum*, ce qui est disposé (en sens abstrait), ordonné (avec des buts sacraux)", *arsmahamo* as "*ordinare*, se disposer par collèges (sacrés)", and *arsmatia(m)* as "qui appartient à un membre du collège sacré". This has the advantage of providing for passages (3a) and (3b) a meaning "arrange yourselves in priestly ranks and military ranks" (thus Poultney 1959: 22, 164, 276), but this sort of meaning does not really work in the context of passages (1a) and (1b), which otherwise lists concrete items that are essential to Iguvium's safety either in terms of personnel or sources of food and wealth. Abstract notions do not belong in this context (as Poultney 1959: 245 notes).

Still too abstract is the suggestion of Ancillotti (1993: 23 fn. 12), Ancillotti and Cerri (1996: 340) that *arsmo* means 'assembly, equivalent to Latin *curia*', although it produces reasonably good sense for both formulas in which *arsmo* appears, and allows the verb **arma<m>u**,

[16] Since *nerf* clearly refers to (at least) free men, if not the nobility, it has no place in the original taxonomy of wealth. However, whereas Cato's prayer is on behalf of a single owner's estate, in the Iguvine Tables the original context has been expanded to include the 'wealth', broadly defined, of the entire state of Iguvium, including its free population. On this point see Prosdocimi (2015: 428–429, 446–447).

[17] In addition to the translations mentioned by Untermann, Watkins (1995: 210, 221) chooses the rather unpromising 'formulations'.

arsmahamo to be understood as 'group yourselves into *curiae*' (cf. Cicero, *De Republica* 2. 32: *populum consuluit curiatim*).[18]

Most of these proposed meanings, including those of Devoto and Ancillotti and Cerri, assume a connection with another Umbrian word, *arsier*, *asier* (gen. sg., VIa 24, VIb 27, VIb 8), *arsie* (abl. sg.?, VIa 24, VIb 8, VIb 27). This lexeme is generally taken as meaning 'sacrifice' or 'ritual', or possibly an adjective 'holy' (Untermann 2000: 121), but the context does not allow any greater certainty than does that of *arsmo*. If *arsier* does indeed belong to this semantic field, it could be exactly cognate with Old Irish *adae* 'due, fitting, suitable' < **ad-i̯i̯o-* (oddly not mentioned by Untermann);[19] to the same root are Middle Irish *ad* 'law, custom' < **ad-o-*, from which *adae* is presumably derived, and further derivatives in Old Irish *adas* 'according to; fit, suitable', Middle Irish *adma* 'knowledgeable, skillful, dexterous'.

While the connection with *adae* works well for *arsier* – assuming the semantics are correct – it is much less satisfactory with regard to *arsmo*. Devoto implies a reconstruction **ad-mo-* for *arsmo*, which is also commonly stated by other scholars (e.g. Poultney 1959: 287; Hamp 1973: 322; Ancillotti and Cerri 1996: 340; Heidermanns 1996: 118), but is impossible since **-d-* > *-rs-* otherwise takes place only intervocalically (Meiser 1986: 222–226). So *arsmo* would need to reflect a more complex derivational history: Untermann (2000: 124) suggests **ado-mo-*, but the suffix **-mo-* is not generally added to thematic stems. In the abstract, it would be more plausible to suppose **ad-imo-* or **ad-umo-*, with a suffix derived by adding **-mo-* onto an original *i-* or *u*-stem. However, there is no direct comparative evidence for **ad-i-* or **ad-u-*, and the complex suffixes are not very productive in Sabellic, as far as we can tell.[20] The only candidate I know of is South Picene **meitims** (Interamnia Praetuttiorum 1/TE 5), **meitimúm** (Asculum Picenum 2/AP 2) 'memorial' < **mei̯t-imo-*. In neither case would *arsmo* be exactly

[18] Although the proposed semantic shift from a substantivized adjective "l'ente ritualizzato" to "organismo rituale per eccellenza", i.e. the *curia*, is unconvincing.

[19] Matasović (2009: 26) wrongly identifies *adae* (in its Middle Irish spelling *ada*) as the genitive of *ad*, which he thus takes to be a *u*-stem (eDIL gives it as a *i̯o*-stem, as its earliest spelling *adae* shows).

[20] Or in Latin: Leumann (1977: 319) mentions *uictima* 'victim' and *lacrima* 'tear' (which is derived from a *u*-stem, assuming it is not somehow borrowed from Greek δάκρυμα).

cognate with Middle Irish *adma*, which goes back to **admiḭos*,[21] and this lessens the attractiveness of the comparison significantly.

There are also phonological reasons to doubt that *arsmo* goes back to something like **ad-imo-*. Such a preform entails that the sequence *-rs-* in *arsmo* represents the result of intervocalic **d*, which regularly becomes a phoneme represented in the Umbrian alphabet by the grapheme <ř>, and in the Latin alphabet by <rs> (Meiser 1986: 222–226). But *arsmo* and its derivatives are found almost entirely in the Latin alphabet, so it is not possible to tell whether <rs> actually represents the sequence /rs/ or the reflex of intervocalic **d*.[22] And, in fact, /rs/ is more likely, given the variant spelling *asmo* (VIa 49). Although Buck (1928: 48, 83) states that <r> is omitted before <s> both for *-rs-* < **d* and **-rs-*, in fact there are very few instances for **d*: I have found only *Acesoniame* (VIb 52) 'into Acedonia',[23] *atropusatu* (VIb 36) 'perform a *tripudium*',[24] and *asier* (if this does come from **ad-iḭo-*).

By comparison, in original **-rs-* sequences the <r> is omitted much more frequently, including in the Umbrian alphabet: **fasiu** (IIa 12), *fasio* (VIb 44) 'spelt cakes' < **bʰarseḭo-*;[25] *śesna* (Vb 9, 13, 15, and 18) 'dinner' < **kersnā*; **pesnimu** (twenty-three times between Ia 6 and IIb 20), *pesnimu* (VIb 9 and 23) 'let him pray', *pesnimumo* (VIb 64 and 65, VIIa 1) 'let them pray', *pesnis* (VIb 40 and 41) 'prayed', *pesclu* (VIb 15, VIIa 8), *pescler* (VIa 47 and 48, twice in VIb 30) 'prayer' < **perk-sk-*, all ultimately derived with a renewed full grade from **pr̥k̂-ske/o-* (LIV 490);[26] **pestu** (IIb 19) 'let him lay', *pepescus* (VIIa 8) 'he will have lain' < **perk̂-ske/o-*, derived with a renewed full grade from **pr̥k̂-ske/o-* (?, LIV 476);[27] **pesuntrum** (Ia 30), **pesuntru** (Ia 27), **pesutru**

[21] Later sources in eDIL s.v. *adma* have the spelling *adhma*, which implies /aðmə/. A preform **adVmiḭos*, where *V* was **ă̆* or **o*, would have given /aðṽə/ (spelt *ˣadhmha* in late sources), while **adimiḭos* or **adumiḭos* would have resulted in *ˣaidma* and **audma* respectively (McCone 1996: 116 and 111–112 respectively).

[22] On **arma<m>u**, the only relevant form in the Umbrian alphabet, see below.

[23] Beside *Acersoniem* (VIIa 52), and, confirming the original **d*, **Akeřuniamem** (Ib 16), **Akeřunie** (Ib 43).

[24] Beside *ahatripursatu* (VIIa 23), *atripursatu* (VIb 16), **ahtrepuřatu** (IIa 24, 25, 31, and 38), **atre{:}puřatu** (IIb 18).

[25] Beside *farsio* (VIb 2).

[26] Beside **persnimu** (Ib 7 and 21, IV 8 and 10), **persnihmu** (eleven times between IIa 27 and IIa 42, IV 11, 23, 25, and 29), *persnimu* (twenty times between VIa 55 and VIIa 54), *persnihimu* (VIb 17, VIIa 9, 39, and 45), *persnimumo* (VIb 57), *persnihimumo* (VIIa 47), *persnis* (VIb 39), **persklum** (Ia 1), *persclo* (VIa 1), **persklumař** (III 21), *perscler* (VIa 27, 28, 37, and 38), **persklu** (III 12), *persclu* (VIb 36, VIIa 20, 24, and 34).

[27] Beside **perstu** (IIa 32), *peperscust* (VIb 5).

(IIa 8), *pesondro* (VIb 24, twice at VIb 37, VIb 39 and 40), *persondrisco* (VIb 40) 'a kind of offering';[28] **Tuse** (Ib 31 and 43) 'a goddess' < **torsā*;[29] *tuscer* (VIb 54 and 59, VIIa 12, 48); *tuscom* (VIb 58, VIIa 47) 'Etruscan' < **tursko*-;[30] **tuseṭu** (Ib 40) 'let him terrify', **tusetutu** (Ib 41) 'let them terrify' < **torsē*-;[31] **vepesutra** (IIb 15 and 18), **vempesuntres** (IV 7), uncertain translation.[32]

Given this imbalance in the absence of <r>, I take it that there was an actual weakening of **r* before *s* (Poultney 1959: 72), which led it not to be written in many cases, whereas the occasional omission in the sequence <rs> representing **d* is a mere error. The spelling *asmo*, therefore, while not completely probative, makes an original **arsmo*- far more likely than **adimo*-.

We should turn, therefore, to analyses of *arsmo* which fit this criterion. Bader (1978: 149) sees *arsmo* as meaning 'institutions', 'political and social order' and as possibly coming from **ard-smo*- or **ard(i)-mo*-, to the same 'root' as Latin *ordo* 'order'. Of the proposed preforms, the former might be possible if **d* was lost in this context, the latter is not. This suggestion could be made to fit all examples of *arsmo* and its derivatives semantically, but again is too abstract for the 'taxonomy of wealth' formula in passages (1a) and (1b). It is also rather otiose if *nerf* and *ueiro* mean 'patricians' and '*plebs*'. Latin *ordo* < **h₁or-d-ōn* is probably built on the root **h₁ar*- of Greek ἀραρίσκω 'fit together', Vedic *ṛtá*- 'true; truth, order' (LIV 269–270, with note 0), but the origin of the *d* is itself mysterious (de Vaan 2008: 434), so it is better not to assume that an 'extended' root **h₁ard*- was available and used to form other derivations.

The reconstruction **h₁r̥s-mo*- implied by Pisani's (1964: 135) connection with the Hesychian gloss ἄρσιον· δίκαιον (backformed from ἀνάρσιος 'incongruous, strange'; Beekes 2010: 99), Vedic *ṛ́ṣi*- 'poet, seer, singer', is phonologically acceptable. Again, **h₁r̥s*- is considered to be a version of the root **h₁ar*-. Whether *ṛ́ṣi*- really belongs here is uncertain (Mayrhofer 1986–2001: 261), so the '*s*-extension' **h₁ars*- is

[28] Beside **persuntru** (IV 17 and 19), **persuntre** (IV 21), **persutru** (IIb 13), *persontru* (VIb 28), *persondru* (VIb 31 and 35).

[29] Beside **turse** (IV 19), *turse* (VIIa 41 and 53), *tursar* (VIIa 46), *tursa* (VIb 58 and 61, VIIa 47 and 49).

[30] Beside **turskum** (Ib 17), *tursce* (VIIa 12).

[31] Beside *tursitu* (VIb 60, VIIa 49), *tursituto* (VIIa 51), *tursiandu* (VIIb 2).

[32] Beside **ṿenpersuntra** (IIa 30).

on rather shaky ground, but one could operate instead with a suffix *-*smo*-, to the root *h_1*ar*- (see below).

However, there remains the problem of the semantics: Pisani (1964: 146) considers *arsmo* to be the equivalent of both Latin *ordo* and *ritus*: "e precisam(ente) 'ordo' come 'rito, procedimento stabilito' in passi quale il presente [i.e. in the formula *arsmor. dersecor / subator. sent*], 'ordo' come 'ordine sociale' nella formula *nerf arsmo*"; this polysemy arises from the difficulty of matching the meaning of *arsmo* and its derivatives to all the contexts in which it appears, and seems close to special pleading. In the same way, Poultney (1959: 244; comment at 243, 245 and 276) translates *arsmor* as 'rites' (at VIa 26) and as 'priesthoods' (at VIa 30),[33] but does not explain how the same word can mean both (and operates with the impossible preform *ad-mo-). Both are anyway overly abstract, and, at least if *nerf* refers to the patrician class, there would be no need to include 'priests' in the categories to be protected, since in the context of Italic religion these would not consist of a separate group from the *nerf*.[34]

It is particularly difficult to get useful information of the meaning of *arsmo(r)* from passage (2) due to uncertainty regarding the two words *dersecor* and *subator*, which modify *arsmor*. The *communis opinio* is that the former means something like 'due, appropriate' (Untermann 2000: 168), while the latter means something like 'neglected' (Untermann 2000: 705–706). In the case of *dersecor*, it is attested nowhere else in the tablets, so no other context is available. It is generally taken to be a reduplicated thematic adjective *de-dek̂-o- based on the root *dek̂- found in Latin *decet* 'it is fitting, suitable' (Untermann 2000: 168). On the other hand, Prosdocimi (1978: 657) suggests precisely the opposite meaning ("indebitamente"), as do Ancillotti and Cerri (1996), analysing it as the same root with a privative prefix *de-.

Both suggestions have their disadvantages. Untermann compares *de-dek̂-o- to reduplicated (substantivized) adjectives in Greek and Vedic: Greek τετανός 'stretched, rigid' < *te-tn̥h$_2$-o-, Vedic *dadhṛṣá-* 'bold'

[33] Very similar is the translation of Prosdocimi (1978: 651, with not particularly clarificatory comments at 750), "(sacri) collegi" for passage (2), "(sacri) istituti" for passage (1a).

[34] Untermann attributes to Heidermanns, in the 1999 version of his 1996 Habilitationsschrift, an etymology "Prv. *ad-* + Vb.-Subst. *emo- zur Wz. *em- 'nehmen', als 'angenommener Ritus'". Unfortunately, despite being intended as part of the *Handbuch der italischen Dialekte*, this version has never been published, and consequently no further information or argumentation is available. In the 1996 version, there is no sign of this etymology.

< *$d^{h}e$-$d^{h}\mathring{r}s$-*o*-, *sasrá-* 'flowing' < *se-sr-*o*-, *vavrá-* 'hole' < *$\underset{\frown}{u}e$-$\underset{\frown}{u}r$-*o*-[35] (Wackernagel and Debrunner 1954: 85). However, the antiquity of this type is unclear. The proto-language certainly had a reduplicated formation of the same shape, which made (agent?) nouns, and of which the most certain example is *$k^{w}é$-$k^{w}\mathring{l}h_{1}$-*o*- > Vedic *cakrá-*, Greek κύκλος etc. 'wheel' < *'the one that rolls' (on this type and with other examples see Rix 1995: 82–83; Oettinger 2012), and this may reflect substantivization of original adjectives. On the other hand, the adjectival forms in Greek and Vedic could be secondary: τετανός could be backformed from the 'wheel'-type noun τέτανος 'erection; convulsive straining, tetanus', which is attested slightly earlier, by analogy with the pattern whereby adjectives in *-*no*- tend to be stressed on the suffix, while nouns (especially those in *-*ano*-) tend to be stressed on the root (Probert 2006: 200–208, 229).[36] In any case, τετανός 'stretched, rigid' cannot in fact reflect *te-$t\mathring{n}h_{2}$-*o*- directly, since this would have given *$tetno$- by the νεογνός-rule, which deleted laryngeals in compounds and reduplicated formations, so it must have undergone a certain amount of remodelling.[37] Wackernagel and Debrunner (1954: 85, 291–293) suggest that *dadhṛṣá-*, *sasrá-* and *vavrá-* could be new formations based on the *i*-stem reduplicated category such as *sásri-* 'sliding' < *se-sr-*i*-.

In any case, neither of these formations seem to have been particularly productive in the individual languages, especially in Italic,[38] and the root is consistently in the zero-grade, unlike in the proposed *de-$dek\hat{}$-*o*-.[39] Of course, we could assume replacement of expected *$dedko$- by *$dedeko$- by the influence of the full grade of the verb (which exists in Umbrian **tiçit** 'ought', IIa 17, as well as Latin *decet*). But overall the

[35] If this is a substantivized adjective, rather than a 'wheel'-type form (on which see directly below).

[36] Of course, τετανός is not, diachronically speaking, an adjective in *-*(a)no*-, but this may not have been clear synchronically. The opposite process is also possible: substantivization of τετανός with accent retraction to give τέτανος.

[37] Presumably under the influence of forms like τιταίνω 'stretch', ταναός 'outstretched, tall'.

[38] I know of no other instances of the adjectival type and of the agent noun type only Latin *populus* 'people' < *pe-$p\mathring{l}h_{1}$-*o*- (Rix 1995: 82; Oettinger 2012: 245), *aurum* 'gold' < *$h_{2}e$-$h_{2}us$-*o*- (Driessen 2003), whose original reduplication must have been obscured early due to the loss of the laryngeals.

[39] There is a tendency for TeT roots (where T represents any obstruent) to appear in the full grade in zero-grade contexts to avoid problematic consonant clusters, but this is primarily when another consonant rather than a vowel follows (Vine 2004: 360).

justification for the continued existence into Umbrian of a reduplicated thematic adjective of this type does not seem very strong.

The alternative reconstruction with **de-* as a privative prefix is also problematic. Since **ē* is also spelt <e> in the Latin alphabet, **dē-* can be proposed instead, which at least would have the advantage of matching Latin. But there is still the difficulty that there is no proof that **dē-* existed in Sabellic: the equivalent preposition to Latin *dē* '(away) from, of etc.' appears to be **dā(d)*, attested in Oscan *dat* (Bantia 1.6, .8, .9/ Lu 1), and in Umbrian as a preverb in *daetom* (VIa 28, 37 and 47, VIb 30) 'gone away, missing'. Even if we accept its existence, no parallels are put forward for a Proto-Italic derivational process which would have produced an *o*-stem adjective in *dersecor* beside an *s*-stem noun in Latin *dēdecus* 'disgrace, honour, shame'.

As for *subahtor*, most scholars translate *arsmor. dersecor / subator. sent* as 'the due (?) *arsmor* have been neglected', on the basis that this verb, used in the imperative **subahtu**, *subotu*, seems to mean something like 'leave behind, put down'. The relevant passages are:

(5) **amparihmu: statita: subahtu** (IIa 42)

'He is to stand up (?), he is to leave (?) the things which have been set up'

(6) *capirso. subotu* (VIb 25)

'He is to put down (?) the cup'

Passage (5) describes what is to happen after the ceremony whereby the *arsfertur* sacrifices a puppy to *Hondus Jovius*. Passage (6) takes place during one of the sacrifices involved in the purification of the Fisian mount, and follows the instruction that the *arsfertur* shall hold the cup in his left hand, apparently to perform a libation. There are a couple of possible suggestions for the etymology, on which see Untermann (2000: 705–706).[40]

As can be seen, while the meanings attributed to the imperative forms are plausible – although not absolutely certain – from the context, the application to the *arsmo(r)* requires something of an extension of the semantics. On the whole, I am inclined to accept a sense 'the

[40] It cannot be connected with Latin *subigo* 'bring under, up' (thus e.g. Prosdocimi 1978: 750). While **sub-ag-to-* would give *subator* without difficulty, in the imperative **sub-ag-e-tōd* should have given **subeitu* (Meiser 1986: 124–125).

appropriate *arsmo(r)* have been neglected' for *arsmor. dersecor / subator. sent*, but I do not rule out alternative possibilities.

Turning to passages (3a) and (3b), the standard explanation of **katerамu**, *caterahamo* is that it is derived from **katesu̯ā*, which gives Latin *caterua* 'mob, troop, crowd', while **arma<m>u**, *arsmahamo* is derived from *arsmo*. There is a phonological problem with **arma<m>u**, because the <r> does not reflect either of the possible phonological environments which could produce the <rs> spelling in the Latin alphabet, either intervocalic **d* or **-rs-*. Under the etymologies which involved **ad(V)mo-*, it was usually supposed to be a mistake for <ř>. This is possible; as we shall see, there are a couple of other instances where a scribe may have used the letter <ř> instead of <r>.[41] But, if we should reconstruct **-rs-*, it is equally possible that he accidentally omitted the <s> in what should be **ar<s>ma<m>u**.

Meiser (1986: 286–287) operates with a different approach, suggesting that a sound law operated in Umbrian whereby the sound represented by <ř> became /r/ regularly before a labial, but was often restored on the basis of instances where <ř> was not before a labial. This explanation is used to explain cases of *arfertur* (VIa 3, VIIb 3) 'a kind of priest' beside **ařfertur** (Ib 41, IIa 16, Va 3 and 10), *arsfertur* (VIa 8), **ařferture** (Vb 3, 5, and 6), *arsferturo* (VIa 17), *arsferture* (VIa 2), and **arveitu** (Ib 6), *arueitu* (VIb 23) 'add' beside **ařveitu** (IIa 12 and 29, IIb 13, III 34, IV 5), *arsueitu* (11 times between VIa 56 and VIIa 54), as well as **arma<m>u**.

However, this theory has a number of problems which make it hard to accept. In the first place, while the replacement of **ar**- with **ař**- is conceivable in words like **ařfertur** and **ařveitu**, where it is a preverb, and existed as **ař**- in other phonological contexts, this is not the case in *arsmo*, *arsmahamo*, where *ars*- is part of the stem. So, once *arsmo*, ***ařmamu** had become **armo*, **arma<m>u** by regular change there should have been no model for its recreation as *arsmo*, *arsmahamo*. Secondly, we also find examples of <r> and <r> for <ř> and <rs> in words where they are not before a labial: *arnipo* (VIb 25 and 41) 'until', and **tertu** (IV 28) 'give' < **didatōd* beside **teřtu** (IIa 40, twice), *dirstu* (VIb 17, 38, twice, and 39, VIIa 5). According to Meiser, in *arnipo*, the opposite process has occurred, with spread of the *ar*- allomorph appropriate before a labial. This seems implausible, given the clear drift in

[41] Note that <r> and <ř> are different letters in the Umbrian alphabet; the issue is not one of simply omitting a diacritic as the graphemic representation implies.

favour of the *ars-* allomorph even before labials. And even then, **tertu** must still be attributed to scribal error. The simpler explanation is to be preferred, that in all these – very infrequent – cases, we are dealing with scribal error: either the use of <r> instead of <ř> (**arveitu**, **tertu**), or the omission of <s> (**arma<m>u**) or <s> (*arfertur*, *arueitu*, *arnipo*).

For the meaning of the adjective *arsmatia(m)* in passages (4a) and (4b), it is crucial to identify what the *perca* it modifies might be. It is generally agreed that this is the equivalent of Latin *pertica* 'staff', but there are two schools of thought as to what it might mean in this context.[42] The more straightforward approach is to also translate it as 'staff'. There is evidence for the carrying of staffs by Roman priests, in particular the *flamines* and augurs (Siebert 1999: 130–132, 267–268). The alternative view is that *perca* means a type of clothing characterized by a coloured stripe. Although Latin *pertica* does not carry this meaning, similar semantics are found in *trabea* 'robe of state', which is derived from *trabs* 'beam, timber', and in *clauus* 'nail; stripe on a tunic'. The argument in favour of this second approach comes from the fact that *perca* is the object of the same verb, *anouihimu*, as the *cringatro*, which is to be placed on the right shoulder. The *cringatro* is generally agreed to be an item of clothing (Untermann 2000: 404), while *anouihimu* is identified as cognate with Latin *induō* 'I put on'. As Untermann (2000: 536) observes, if *perca* is a staff of some kind, *anouihimu* will have had to undergo a widening of meaning to add 'take up, hold' to the basic meaning 'put on'.[43] All other instances of *perca* in the Iguvine Tables are the object of the verb 'to have', which does not help us any further with the semantics. For a good brief discussion of the issue see Poultney (1959: 239). I agree with his conclusion that the easier analysis is to accept that *perca* means 'staff'.

In both the case of **arma<m>u**, *arsmahamo*, and *arsmatia(m)*, no further information on the origin and meaning of *arsmo* is really supplied: the context shows that *arsmo* must mean something that can be used as the basis for a denominative verb which represents some kind of gathering of men, while *arsmatia(m)* must be plausibly capable of modifying a 'staff' (or 'toga'). Most of the suggestions for the meaning of *arsmo* already mentioned can be stretched to cover both these uses with varying degrees of plausibility, and will not be further discussed here.

[42] Yet another interpretation is that of Prosdocimi (1978: 783–784), who sees the *perca* as a twig on the headgear worn by the priest; he recently recanted this view (Prosdocimi 2015: 1366–1371).

[43] Poultney (1959: 296) glosses *anouihimu* as 'wear, put on, hold (clothing, etc.)'.

3. A new suggestion for *arsmo*

As we have seen, none of the previous attempts to provide a meaning or etymology for *arsmo* and its derivatives have been entirely successful or satisfactory. I suggest a completely different approach, which is that *arsmo* is to be understood instead with the meaning 'herds of (large) cattle'.

This would both make sense within the context of passages (1a) and (1b), and also fit the Indo-European formulaic context extremely well. If *arsmo* means 'large cattle', then we have exactly the same doubling of the category 'cattle' into 'large' and 'small' as in the Vedic version of the formula *gắm áśvaṃ puruṣaṃ paśúm*. However, unlike in Vedic, doubling has affected both items in the **u̯iHro- pe̯ku-* merism: in addition to 'cattle' being split into *arsmo* and *pequo*, 'men' has been separated into *nerf* 'patricians' (or 'free men') and *ueiro* '*plebs*' (or 'slaves'). This subdivision is shown in Figure 1.

On this reading, *arsmo* would be the Umbrian equivalent of Latin *armenta* 'herds of cattle'. Although Cato's prayer does not include the doubled merism **armenta pecuaque*, the two are found together in a poetic context in both Virgil and Lucretius (with the minor difference of use of *pecudes* '(heads of) small cattle' rather than *pecua*).[44] In both cases, the poets use the phrase as part of a larger sequence describing the living creatures of the earth, which suggests a similar kind of taxonomical context to the wealth formula. Thus we have *uariae crescunt pecudes armenta feraeque* (Lucretius, *De Rerum Natura* 5.228) 'the various sheep, cattle and wild animals grow', while the two are separated in *uolucres armenta feraeque et pecudes et equae* (Lucretius *De Rerum Natura* 4. 1197–1198) 'birds, cattle, wild beasts, sheep and

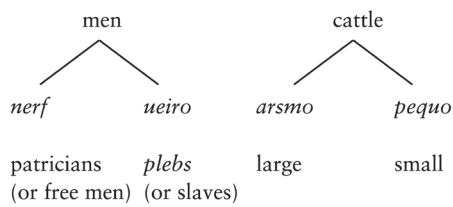

Figure 1. Doubling of the 'men and cattle' merism. Graphics: Nicholas Zair

[44] For the (undoubled) 'men and cattle' formula in classical Roman poetry, cf. *hominumque boumque labores* (Virgil, *Georgics* 1.118), *pecudesque uirosque* (Ovid, *Metamorphoses* 1.286) (Watkins 1995: 15, 211 fn. 23).

mares'. In the case of the line of Virgil, the list even includes *uiros*: *pecudes, armenta, uiros, genus omne ferarum* (Virgil, *Georgics* 4. 223): 'sheep, cattle, men, every type of wild beast'.[45]

Etymologically, *arsmo* would then consist of the same root as in Latin *armenta* (which we will represent for now simply as **ar-*), but with an apparent suffix **-smo-* rather than **-mento-* as in Latin.[46] However, these suffixes can both be traced back to an original stem formant **-(s)mn̥*. Latin **-mento-* is the "neuter substantivization of a possessive derivative in *-to-* derived from neuters in *-men*" (Weiss 2020: 334). Meanwhile, *arsmo* < **ar-smo-* < **ar-smn-o-* reflects a similar derivation from **ar-smn̥*, this time by means of the thematic vowel, since in a sequence **-CmnV-* in Indo-European either the **m* or the **n* was lost; exactly what the conditioning environment was is not yet clear.[47]

The stem variant **-smen* beside **-men* is found frequently in a number of Indo-European languages, including Latin, where it is attested in forms like *iouxmenta* (CIL I².1) > *iūmenta* 'beasts of burden', **leu̯k̂-smn̥* > *lūmen* 'light', **-h₂eĝ-smn̥* in *exāmen* 'swarm' beside *agmen* 'train, march' (Brugmann and Delbrück 1897–1900: 2. 242–243; Stüber 1998: 52–53).[48] Since in Latin **-s-* was lost before **-m-* without reflex after long vowels and liquids, the original form can equally be **ar-smen-to-* or **ar-men-to-*.

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[45] The same formula may also lie in the background of *siluas armenta uirosque* (Virgil, *Aeneid* 12.688), which describes the victims of a large boulder rolling down a hillside, where *armenta uirosque* 'cattle and men' is the equivalent of Cato's *pastores pecuaque*. But an echo of *arma uirumque* from the first line of the Aeneid is also in play here.

[46] It must be said that there is very little other evidence for **-smo-* in Italic (the derivation of Latin *rēmus* 'oar' from **hₓret-smo-* depends on *triresmos* 'triremes' in CIL I².25 reflecting an original spelling rather than being a false archaism; otherwise **hₓreh₁-mo-* is possible). But the suffix **-mo-* is unproductive in this language family anyway, and in many contexts it is not possible to tell the difference between **-smo-* and **-mo-* in Latin: of the eight nouns in **-mo-* (and **-meh₂*) listed by Weiss (2020: 286), all but two could equally reflect **-smo-* (or **-smeh₂*). For examples of **-mo-* in Sabellic, see Heidermanns (1996: 118–120).

[47] The more commonly cited examples involve loss of **m* rather than **n*, but cf. **gʷʰer-mn̥* 'heat, warmth' > Armenian *ǰermn* 'fever' beside **gʷʰer-mn-o-* > **gʷʰer-mo-* > Greek θερμός 'hot'. For this example, brief discussion and further references see Steer (2015: 211–214), and for some more examples Nussbaum (2014a: 249).

[48] There seems to be no semantic difference between **-men-* and **-smen-*, and both could exist within the same language, as demonstrated by *exāmen* 'swarm' beside *agmen*, and, e.g., Attic πρᾶγμα 'deed' < **preh₂g-mn̥* beside Ionic πρῆγμα < **preh₂g-smn̥*.

Exactly what the root of *arsmo* and *armentum* may be is not entirely clear. In order to assess the possibilities, it is important to understand exactly what meanings *armentum*, its plural *armenta*, and the feminine form *armenta** have associated with them. This is not an easy task. The OLD (188–189), under the headword *armentum*, gives the following meanings: (1) 'herd, drove (of cattle etc.)'; (2) 'an individual bull etc.; a head of cattle; (plural or collective singular) cattle'; (3) (plural) 'the larger domesticated animals, cattle'. However, on the basis of the passages given in the OLD and TLL, it appears that the sense 'an individual bull etc.' is not attested for *armentum*. In the singular, *armentum* has only the meanings 'herd' (i.e. a count noun),[49] and 'cattle, horseflesh etc.' (a mass noun).[50] The plural *armenta*, however, can mean 'heads of cattle, horses etc.',[51] as well as 'herds'.[52] In addition, the early feminine *armentae* also exists, only attested in the plural: *ipsus ad armentas eosdem* (Ennius, *Annales* 604, Skutsch 1985), for which the context does not allow a translation, and *tu pascere cornifrontes soles armentas* (Pacuvius 5, Schierl 2006) 'you are accustomed to pasture (a) horn-headed *armentas*', in which *armentae* could be translated as any of 'herd', 'herds' (thus Schierl), 'cattle', or 'cows, heads of cattle'.

In this regard, *armentum*, *-a*, *armenta* fits with the general tendencies of Latin nouns in *-mentum*, which often have a more abstract meaning in the singular, and more usually appear in the plural with more concrete meanings, and exist beside a feminine which appears

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[49] Not always easily distinguishable from 'cattle', but e.g. *ductus ab armento taurus detrectet aratrum* (Ovid, *Ex Ponto* 3. 7. 15) 'led away from the herd, the bull refuses the plough'.

[50] E.g. *dum Priami Paridisque busto insultet armentum et catulos ferae celent inultae* (Horace, *Odes* 3. 3. 41) 'so long as cattle trample upon the tombs of Priam and Paris, and wild animals, unpunished, hide their cubs'; *Pan erat armenti, Pan illic numen equarum* (Ovid, *Fasti* 2. 277) 'Pan was the god of cattle there, Pan the god of horses', *amissa parente in grege armenti reliquae fetae educant orbum* (Pliny the Elder, *Naturalis Historia* 8.165) 'if a foal loses its mother in the herd of horses, the other mares bring up the orphan'. It can also have the sense 'a (specific) type of domesticated animal', e.g. *tauros III milia, pretiosum in ea regione acceptumque animis regnantium armentum* '(he gave) three thousand bulls, which in that region were a precious type of cattle and well-received by rulers' (Curtius Rufus 8. 12. 11), *eiusmodi armentum maritima et aprica hiberna desiderat* 'cattle of this type needs sunny winters near the sea', *externi frigoris tolerantior equino armento vacca est* 'the cow is more tolerant of the cold outside than is equine cattle' (both Columella 6.22).

[51] E.g. *qui gregem armentorum emere uult* 'who wants to buy a herd of cows…' (Varro, *De Re Rustica* 2. 5. 7).

[52] E.g. *multi greges ouium, multa ibi equorum, boum armenta* (Pliny, *Epistulae* 2. 17. 3) 'there you will find many flocks of sheep, many herds of horses and cows'.

only or predominantly in the plural (Perrot 1961: 263–267, 300–308). According to Perrot (1961: 340), the feminine plural represents "un collectif conçu comme un ensemble d'unités individualisées" (which would presumably equate to 'herd' for *armentas*).

Notwithstanding Perrot's monograph, an updated and wide-ranging examination of the relationship between nouns in *-mentum*, *-menta* and the verbal nouns in *-men* in Latin is clearly required. However, the most plausible picture in my view is that 'cattle' is the original meaning of *armentum* because this explains how *armenta* can come to mean 'heads of cattle'. In Latin when – if – neuter mass nouns form plurals, the effect of pluralisation is to make bounded, and hence countable, nouns whose semantic relationship to the singular is rather unpredictable: *aes* 'money', *aera* 'wages'; *frumentum* 'grain', *frumenta* 'cereals'; *lignum* 'wood', *ligna* 'pieces of wood'; *fragmen* (originally) 'the action of breaking', 'a piece broken off', *fragmines* 'woodchips' (some of these examples taken from Nussbaum 2014b: 303). This sort of relationship is visible in *armentum* 'cattle' → *armenta* 'heads of cattle', 'herds'. If *armentum* had originally meant 'herd', this would have been straightforwardly pluralised as 'herds', and not have developed the sense 'heads of cattle'. I take it that the meaning 'herd' for *armentum* emerged from 'cattle' partly by semantic shift: 'look at the cattle in that field' ≈ 'look at the herd in that field', partly by analogy with the plural meaning 'herds', and partly due to taking over the semantics of *armentae*, if it indeed meant 'herd', when this fell out of use.

The most commonly reported etymology for *armentum* involves the root **h₁ar-* 'join', with the suffix **-mento-* (Walde and Hofmann 1938–1954: 1. 68; Ernout and Meillet 1985: 47; de Vaan 2008: 54 s.v. *arma*). So *arsmo*, *armentum* would have originally meant 'a joining together', and undergone a semantic shift to 'a grouping of animals, herd'. An origin in this root has the advantage that Greek ἅρμα 'chariot' < **h₁ar-smn̥* and ἁρμός 'joint (in masonry), peg, arm joint' < **h₁ar-smo-*, with their initial /h/, also demonstrate the **-smo-/-smn̥* variants. The disadvantage of this approach, as pointed out by Nussbaum (2014a: 256–257), is that it is semantically difficult, since it "ignores the ample evidence indicating that **h₂ar(hₓ)-* [i.e. **h₁ar-*, NZ] first and foremost meant 'join, fit (together), articulate' rather than 'join, associate' or, still less, 'join, aggregate', as well as providing no explanation for why *armentum* (and its early variant *armenta*) can mean a single animal".

Nussbaum's (2014a: 256–257) etymology for *armentum* sees it as an "instantial", "a *nomen rei actae* that denotes not a concrete thing like a

patient or a result, but rather an individual instance of an action, event, or state" (Nussbaum 2014a: 247).[53] So, from *h_2enh_1-$m̥n$ 'breath of life' is formed *h_2enh_1-$m̥n$-*to*- as a possessive adjective, substantivized as 'living thing, livestock', with a semantic narrowing to 'large cattle' under pressure from a subsequent derivative *animal*. Nussbaum makes a plausible argument for this origin story, but it is not entirely straightforward even in its own terms. I do not understand whether Nussbaum means to imply that both the count noun meaning 'living thing' and the mass meaning 'livestock' belong to *armentum*, or whether 'livestock' belongs with the neuter or feminine plural forms. But certainly a mass noun is not what his own theory of derivation would predict as the neuter substantivization of *h_2enh_1-$m̥n$-*to*-: according to him (Nussbaum 2014a: 241, 249), an instantial is a type of "delibative", which is a count noun derived, via a possessive suffix, from a mass noun (which is unbounded, but may or may not be internally unsubdivided). It essentially adds boundedness, allowing pluralisability (Nussbaum 2014a: 240; 2014b: 278). This being the case, Nussbaum's theory would predict that *armentum* would mean 'living thing' → 'head of cattle', or possibly 'herd', but not 'livestock' → 'cattle'. Since *armentum* primarily means 'cattle', this raises a problem. Now, semantics of these related formulations are clearly prone to change, and Nussbaum himself (2014a: 250) notes that there tends to be a slippage between the verbal abstract and the noun derived from it. Nonetheless, the meaning 'cattle' rather than 'head of cattle' for *armentum* leads to doubt about the precise chain of derivational events which might have taken place, and similar latitude, at least, ought to be extended to etymologies from different roots.

At any rate, Nussbaum's etymology is not compatible with Umbrian *arsmo*, since Umbrian does not undergo the same change *-*nm*- > -*rm*- as Latin. So if the link between *arsmo* and *armentum* is correct, we must look for another etymology, of which there are a number of possibilities. Nussbaum is sceptical of a derivation from *h_2erh_3- 'plough' on several grounds. One of these is that *armentum* is a type of herd animal, not a plough animal. This assertion is strange, since (a) this etymology goes back to the ancients, and it seems unlikely that they would have believed it if a member of an *armentum* could not be used for ploughing, and (b) there is literary evidence for oxen used for ploughing treated as members of an *armentum* (Ovid, *Ex Ponto* 3.7.15, Juvenal, *Satires*

[53] I am grateful to Sergio Neri for drawing my attention to this article.

8.109). Another is that Lithuanian *armuõ*, *armenà*, the only (other) good evidence for an original *men*-stem, mean 'field' (but also 'ploughing', according to NIL 322). In fact, this latter point seems to me an advantage for the *$*h_2erh_3$*- etymology. It is quite difficult to see how a verbal abstract *$*h_2erh_3$-$mn̥$ meaning 'ploughing' could come to mean 'cattle',[54] but if it had already come to mean 'field', we could operate with a possessive adjective *$*h_2erh_3$-$mn̥$-*to*- 'having the field, living in the field', which could have been substantivized to give *armentum* 'that which lives in the field', i.e. 'cattle'.

An alternative connection could be Old Norse *jǫrmuni* 'horse, ox', which looks as though it could reflect something like *$*h_1erH$-$mn̥$ 'great size' (cf. OHG *ermun*- 'immense, large', Old Russian *ramjanŭ* 'huge'; IEW 58), which would work well as the basis for *armentum*.[55] Another possibility that springs to mind – and which I do not believe has yet been suggested – is a connection with the root *$*h_3er$- 'set oneself in motion' (LIV 299–301); *arsmo* and *armentum* in the sense of 'mobile wealth; cattle' could then be possessive derivatives of a putative *men*-stem *$*h_3r̥$-*smen*- 'motion', with the same semantic shift seen in present-day English *gang* 'a group of people', originally 'a going', and Oscan **eítuns** (e.g. Pompeii 2/Po 34) 'group of people on the march' < *$e\underset{\frown}{i}t\bar{o}n$- 'having a way' ← *$e\underset{\frown}{i}$-*tom* 'a going' (Weiss 2022: 952–954). It must be noted, however, that there is no comparative evidence for the existence of a *(s)men*-stem to this root.

In short, the advantages of the connection between *arsmo* and *armentum* seem to me to outweigh the advantages of Nussbaum's etymology based on *$*h_2enh_1$-$mn̥$-*to*-. Whichever etymology is ultimately correct is less important to understanding the Umbrian forms than the recognition that these forms are the equivalent of each other in their respective languages.

As far as passage (2) goes, given the essential nature of correct sacrifice in the Italic world, and the number of sacrifices required in the rituals of the Atiedian brotherhood, a meaning something like "the due cattle have been neglected" fits perfectly well here. But since the meaning

[54] Possessive suffixes can also have agentive semantics, but it is hard to see how a substantivized adjective meaning 'the one who ploughs' could end up as *armentum* 'cattle' rather than *^{x}armentus* 'ox'.

[55] This connection is owed to a presentation on "*$*arm$-. The link between a wheel, an arm and an ox", given by Isabelle de Meyer at the *Form and Meaning: Nominal Word Formation and Derivational Semantics in Indo-European* conference held at the University of Copenhagen on 13–14 November 2020.

of the whole phrase is on rather shaky ground, other translations are also possible. For passages (3a) and (3b), although the exact difference between 'forming into troops' and 'forming into herds' remains uncertain, the latter provides a plausible meaning in context.

For passages (4a) and (4b), I suggest that the *arsmatia(m) perca* should be understood as a 'herder's staff'. The derivational chain will have been: **ars-mo-* 'cattle' → **arsmā-to-* 'having cattle',[56] substantivized to mean 'cattle-herd' → **arsmāt-iio̯-* 'pertaining to the cattle-herd'. Why should we imagine that the *arsfertur* should carry a herdsman's staff? Because one of his Roman counterparts did, although in this case it was a shepherd's staff. The characteristic equipment of an augur was the crooked staff known as the *lituus*, which was based on that of a shepherd.[57] This may be connected with the idea of rulers as 'shepherds of the people',[58] a concept well attested in Indo-European languages, as well as in Hebrew (Watkins 1995: 45), but staffs – presumably originally those of herdsmen – were also used in ritual contexts in Etruria and the Near East (Ambos and Krauskopf 2010).

4. Conclusion

The previous suggestions as to the meaning of *arsmo(r)* and its derivatives *arsmahamo* and *arsmatia(m)* are unsatisfying semantically, or phonologically or morphologically problematic (or both). A better meaning for *arsmo(r)* is 'cattle, herds', which can be connected with Latin *armentum*, and which perfectly suits the context of the formulaic language connected to the Indo-European taxonomy of wealth, providing the expected 'large cattle' counterpart to *pequo* 'small cattle'. This identification also provides plausible meanings for *arsmahamo* ('form into herds') and *arsmatia(m)* ('belonging to the herder'). The idea that Umbrian priests carry a herder's staff is in tune with the origin of the

[56] The (originally collective) *ā*-stem is regularly the basis for possessive adjectives in **-to-* to *o*-stems in Italic. Cf. Oscan **Pukalatúí** (Abella 1/Cm 1) 'having a lot of children' < **puklā-to-* ← **puklo-* 'child', Latin *argentātus* 'silvered; moneyed' ← *argentum* 'money' (Hajnal 1993).

[57] As we are informed by glossators: *lituo: nunc tuba, alias lituus est baculum curuum quo augures utuntur uel pastores* (*Glossae Vergilianae*, Goetz 1888–1923: 4. 450. 21), 'the *lituus*: here with the sense "a trumpet", elsewhere the *lituus* means a curved staff which augurs or shepherds used'; *lituo: uirga incurua pastoralis* (Placidus, *Libri Glossarum*, Goetz 1888–1923: 5. 81. 11; Grondeux and Cinato 2016: LI570), 'the *lituus*: a curved shepherd's staff'.

[58] As pointed out to me by Riccardo Ginevra.

Roman *lituus* as a shepherd's staff, and with the use of a herder's staff in similar contexts by the Etruscans as well as cultures in the Near East.

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