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STANG'S LAW IN BALTIC, GREEK AND INDO-IRANIAN¹

Abstract. The article discusses the development of the Proto-Indo-European sequences **-eum* and **-eh₂m*. The former produced **-ēm*, allegedly through loss of **-u-* with compensatory lengthening of the preceding **-e-* (“Stang’s law”), while **-eh₂m* allegedly produced **-ām* within the proto-language (“extended Stang’s law”). The evidence for both claims is scrutinized, with special emphasis on the acc.sg. and acc.pl. endings of the *ā*-stems in Indo-Iranian and Baltic and the Proto-Indo-European paradigm of the word for ‘cow’. It is concluded that “extended Stang’s law” cannot be maintained and that “Stang’s law” is probably incorrect, too. Alternative explanations for the attested forms are given.

Keywords: Indo-European; Baltic; Greek; Indo-Iranian; Stang’s law; laryngeals; *ā*-stems.

1. In the accusative singular forms Gr. Ζῆν ‘Zeus’, βῶν ‘cow’, Skt. *dyām* ‘sky’, *gām* ‘cow’, a Proto-Indo-European **u* was lost before the word-final **-m*. The agreement between Greek and Sanskrit² points to development that took place in the proto-language already (Saussure 1878, 198; Hirt 1921, 39). Stang (1965) argued that the loss of **u* caused compensatory lengthening of the preceding vowel. This development is usually referred to as “Stang’s law”. Later, the same process was argued to have taken place in the accusative singular of the Proto-Indo-European *h₂*-stem: PIE **-eh₂m* > PIE **-ām*. The evidence for this extended version of Stang’s law consists of the monosyllabic endings Skt. *-ām*, Greek *-āv* and Lith. non-acute *-q* (Rix 1992, 75; Beekes 1981, 53f.; 1988a, 27; cf. also Kortlandt 2005, 153f.). The exact phonetics behind the change remain unclear. Schindler (1973, 154 with fn. 24) argued for a change **g^woym* > **g^womm* > **g^wōm*, due to fact that **u* and **m* are labial sounds, but this does not work for **-eh₂m*.

¹ The article benefited from fruitful discussions I had with my Leiden colleagues Frederik Kortlandt, Lucien van Beek, Alexander Lubotsky and Alwin Kloekhorst.

² Cf. also Umb. acc.sg. *bum*, Latv. *giuvs* ‘cow’.

Although there is no consensus about the exact phonetics of $*h_2$, it has never to my knowledge been argued to be a labial sound. Stang’s law is widely, but not universally accepted, cf. Collinge’s conclusion that “[o]ne would like to join the happy throng of believers in STANG II, but the way remains very cloudy” (1995, 37f.). In the following, we will discuss both environments in which Stang’s law is thought to have operated, starting with the accusative singular of the h_2 -stems.

2. The underlying assumption under the proposed sound law is that $*-eh_2m$ should have vocalized as $*-eh_2\bar{m}$ in Indo-Iranian, Greek and Baltic. It will have to be established whether this assumption is correct: would the final nasal vocalize in any or all Indo-European languages if there were no sound law $*-eh_2m > *-ā\bar{m}$?

The majority of Indo-Europeanists is of the opinion that one or more PIE rules predict the vocalization of PIE resonants in most positions (Meillet 1908, 107–109; Schindler 1977, 56f.; Mayrhofer 1986, 162f.; Fortson 2004, 65; Clackson 2007, 35).³ There are several prominent counterexamples that do not follow the proposed rules, most of which were already discussed by Schindler (o.c.).⁴ The existence of these counterexamples allows a different interpretation, viz. that the vocalization of resonants was a post-Proto-Indo-European process. This view was advocated by Beekes (1988a; 1988b, 59f.; 2011, 140), who argued that the rules for vocalization are language-specific. Beekes’ view is supported by examples in which the resonant stands next to a laryngeal. In these cases, the vocalization is unpredictable from a Proto-Indo-European point of view. The following are familiar and clear-cut examples:

³ These can be divided into scholars who believe that the difference between, e.g., $*u$ and $*\bar{u}$ was subphonemic in PIE, those who believe it was phonemically relevant and those who believe it was phonemically relevant for some resonants but not for others. The basic rule for vocalization as formulated by Schindler (1977, 56) is as follows: [+ son, -syll] → [+ syll] / {[- syll] or #} _ {[- syll] or #}.

⁴ Word-initial $*\bar{u}r-$, $*\bar{u}l-$, $*\bar{u}i-$, $*mr-$, $*ml-$ and perhaps $*m\bar{i}-$; the zero grade of the stem of nasal presents; the acc.sg. of static and proterodynamic $i-$, $u-$ and $r-$ -stems; $*m$ in $*C\bar{m}\bar{n}V$; cases in which $*CR\bar{r}V-$ alternates with $*CR\bar{r}C-$. Note that $*m$ does actually vocalize in the cluster $*C\bar{m}\bar{n}V$ in Indo-Iranian, e.g. OAv. ins.sg. *mazdānā-* ‘greatness’, Av. *sraiiian-* ‘beauty’ < $*-m\bar{n}-$, cf. Skt. *mahimán-* ‘greatness’, (AV PS) *śremán-* ‘superiority, priority, beauty’ (Alexander Lubotsky, pers. comm.).

ToB *puwar* ‘fire’ < **p_uh₂r* vs. Gr. πῦρ, U *pir*, ON *fúrr* < **p_uh₂r*;
 ToB *snai* ‘without’ < **s_nHi* vs. Lat. *sine*, OIr. *sain-* < **s_nHi*;
 Gr. ὄσσε ‘eyes’ < **h₃ek^wi_h1* vs. OCS *oči* < **h₃ek^wi_h1*;
 Gr. πότνια ‘mistress’ < **potni_h2* vs. Skt. *pátnī-*, Lith. *-patni* < **potni_h2*;
 Gr. ὄνομα ‘name’, OPhryg. *onoman* < **h₃n_h3mn*, Goth. *namō*
 < **h₃n_h3mōn* vs. OCS *imę* < **h₃n_h3mn*, OPr. *enmens* < **h₃n_h3men-*;
 Gr. (Att.) μείς, (Dor.) μής ‘month’, W *mis* < **meh₁ns-* vs. Skt.
 sometimes disyllabic *mās-*, OAv. disyllabic *mā* < **meh₁ns-*;
 Skt. sometimes trisyllabic *vāta-* ‘wind’, OAv. trisyllabic *vāta-*
 < **ueh₁nt-* vs. W *gwynt*, Goth. *winds*, ToB *yente* < **ueh₁nt-*.

I am not aware of any examples of similar resonant-laryngeal clusters where all major branches of Indo-European behave alike. The examples above conclusively show that the vocalization of a resonant followed or preceded by a laryngeal was branch-specific. The rules for vocalization of two or more resonants were then probably branch-specific as well, which is reflected by the exceptions to Schindler’s vocalization rule (see fn. 3 above).⁵ Because the vocalization of a resonant followed or preceded by a laryngeal was

⁵ At the 12th International Congress of Balticists (Vilnius, 28–31 October 2015), Miguel Villanueva Svensson asked me how I think clusters of resonants were realized in Proto-Indo-European. I find it impossible to provide a conclusive answer to this question and will limit myself to a few observations. As long as the vocalization of resonants was sub-phonemic, it is to be expected that realization differed over time and between speakers. There may well have been free variation, perhaps limited to a subset of the resonants or depending on the environment. Take e.g. the Gailtal dialect of Slovene, where syllabic /r/ can be realized as [r] or [ər] in all positions in the word, but syllabic /l/ is always realized as [l], except word-initially before any consonant but a voiceless occlusive, when it is realized as [lə] (Pronk 2009, 29f.). Because I accept Brugmann’s idea that pre-Proto-Indo-European underwent large-scale deletion of vowels in unstressed syllables, resonants not adjacent to the stressed vowel will originally have been consonantal. I consider it quite possible if not likely that the realization of at least some PIE clusters of resonants was such that it was impossible to say which of the resonants formed the syllabic nucleus. In these cases, too, there may have been free variation in the realization of the resonants. Further, the realization may have been uniform in some positions or in some clusters, along the lines of Schindler’s rule, with a later shift in one or more daughter languages. An example of such a shift may be the realization of word-final *-*eHm* discussed below, where final *-*m* may have been unsyllabic in Proto-Indo-European, but became syllabic in Indo-Iranian.

branch-specific, the expected outcome of the PIE accusative singular ending $*-eh_2m$ will have to be decided per branch.

3. In Greek, there is no evidence that $*-eh_2-m$ would have become $*-eh_2\bar{m}$ $>$ $*-aHa$, cf. $\pi\bar{\upsilon}\rho$ ‘fire’ $<$ $*puh_2r$ $<$ $*ph_2ur$, $\mu\epsilon\acute{\iota}\varsigma$, $\mu\eta\acute{\varsigma}$ ‘month’ $<$ $*m\bar{e}ns-$ $<$ $*meh_1\bar{n}s-$.⁶ Even if it did, we would probably not expect this ending to be preserved: if $*-eh_2m$ vocalized as $*-aHa$, the nasal must have been restored in $-\bar{a}v$, as in acc.sg. $\tau\rho\acute{\alpha}\pi\epsilon\zeta\alpha\nu$ ‘table’ $<$ $*-ih_2-m$ after nom.sg. $\tau\rho\acute{\alpha}\pi\epsilon\zeta\alpha$ $<$ $*-ih_2$. Cf. also acc.pl. $-\bar{a}\varsigma$ $<$ $*-ans$ $<$ $*-eh_2-ms$, with restored $*-ms$ after $*-o-ms$ etc. (Rix 1992, 131, 133).

4. In Sanskrit, the long vowel of the \bar{a} -stem ending $-\bar{a}m$ is in first instance to be compared to the \bar{i} -stem ending $-\bar{i}m$ $<$ $*-ih_2m$, not $**i\bar{y}am$. The acc.pl. $-\bar{a}s$ $<$ $*-aH\bar{n}s$ of the \bar{a} -stems and $-\bar{i}s$ of feminine \bar{i} -stems of the *devī*-type contain an unexpected consistent monosyllabic vowel as well, while the nominative singular endings $-\bar{a}$ and $-\bar{i}$ of the \bar{a} - and \bar{i} -stems never undergo shortening before a pausa, which also points to an underlying long vowel, not $*-aH$ or $*-iH$ $<$ $*-eh_2$, $*-iH$ (Kuiper 1955, 36; Litscher 2015, 303ff.).⁷ The monosyllabic ending of the acc.sg. \bar{a} -stems cannot be explained in isolation, nor can its long vowel be the model for all the other long-vowel endings mentioned above. It is especially difficult to see how nom.sg. $-\bar{i}$, acc.sg. $-\bar{i}m$

⁶ Similarly, Germanic reflects $*-eh_2m$ without vocalization of the nasal in Goth., OHG $-a$ (cf. Stiles 1988, 119f.; 130; Boutkan 1995, 139 on these endings).

⁷ Litscher (2015) proposes to reconstruct PIE nom.sg. $*-āh_2$, $*-īh_2$ to account for the long-vowel endings of Vedic. In Baltic, the laryngeal would have been preserved to produce the attested acute intonation of the endings $-\grave{a}$ and $-\grave{i}$ (l.c., 33). Note, however, that it has been argued by Kortlandt (1985, 115; 118; 120) that a long vowel followed by a laryngeal produced non-acute intonation in Baltic in the examples Lith. *duōs* ‘will give’ $<$ $*dēh_3s-$, *dēs* ‘will put’ $<$ $*d^hēh_1s-$, $-dē$ $<$ $*-d^hēh_1$ in *arklīdē* ‘stable’, *avidē* ‘sheepfold’ etc., Latv. *gūovs* ‘cow’ $<$ $*g^wh_3u-$ and *sāls* ‘salt’ $<$ $*sēh_2l$ (if not $<$ $*g^wh_3ēu-$, $*sh_2ēl$, see below). A further objection against Litscher’s reconstruction $*-īh_2$ is that there is no independent evidence for a PIE phoneme $*ī$. The Indo-European word for ‘poison’, $*uis-$, is sometimes thought to have a variant with long $*ī$, but this is disputed (cf. Matasović 2009, 424f.), and there are no other cases where a reconstruction with $*ī$ is to be preferred over one with $*iH$. Unlike Litscher (2015, 303, fn. 17), I find it impossible to derive Greek and Tocharian $*-īa$ from earlier $*-īh_2$. It clearly points to $*-ih_2$ and undermines Litscher’s argument that a reconstruction $*-āh_2$ is superior to $*-eh_2$ because the latter would be insufficiently marked. Accordingly, I prefer the traditional reconstructions nom.sg. $*-eh_2$ and $*-ih_2$.

and acc.pl. $-\bar{i}s$ could have been created if none of them obtained their $-\bar{i}$ by sound law.

Outside the acc.sg. forms discussed here, the regular vocalization of PIE $*-VHm$ appears to be $*-VH\bar{m}$ in Indo-Iranian, similar to the vocalization in Skt. *más-* ‘moon, month’, *vāta-* ‘wind’ < $*-VH\eta C-$. Examples are the following:

acc.sg. ending of roots ending in $*-aH-$, $*-iH-$, $*-uH-$, e.g. Skt. disyllabic *gnām*, *dhiyam*, $-bhūvam$, Av. trisyllabic *mazdqm*

acc.sg. of the type Skt. *vṛkīam*, *tanúam* < $*-ih_2m$, $*-uh_2m$

1sg. thematic optative ending $*-iaH-\bar{m}$, e.g. trisyllabic Skt. *yāyām*, OAv. *xiiām*

1sg.aor.ind. *abhuvam* < $*b^huH\bar{m}$ next to 2sg.aor.inj. *bhūs*, 3sg. *bhūt*

It seems likely that these are the forms that reflect the phonetic disyllabic outcome, while the monosyllabicity of acc.sg. $-\bar{a}m$, $-\bar{i}m$, occurring in two closely related categories, is due to analogy. There is in fact a distribution in the acc.sg. endings: Skt. *gnām*, *vṛkīam*, Av. *mazdqm* etc. correspond to a nom.sg. in $*-s$, while $-\bar{a}m$, $-\bar{i}m$ correspond to a nom.sg. zero ending. This suggests that the shape of the nominative played a role in the analogy and that the origin of the long vowel might lie in the nominative. We will have to start from Kuiper’s observation that the nominative endings $-\bar{a}$ and $-\bar{i}$ are never shortened before a pause. They form an exception to Kuiper’s law, which states that, in Vedic, word-final long vowels could be shortened before a pause. This shortening has been shown by Kuiper (1955) to have affected instrumentals in $-t\bar{i}$, gerunds in $-y\bar{a}$, $-ty\bar{a}$, neuter plurals in $-\bar{i}$, $-\bar{u}$ and $-\bar{a}$ (< $*-\eta H$), *ácchā* ‘towards’ and instrumental singular *sámī* ‘with effort’. Because the final long vowel in these categories goes back to a Proto-Indo-European sequence of short vowel plus laryngeal, the shortening is best formulated as loss of a word-final laryngeal before a pause. Kuiper’s law is clearly not a synchronic rule of Vedic as it was transmitted to us. Its limitation to certain morphological categories indicates that Kuiper’s law became a feature of certain endings in the epic tradition. This means that the sound change most likely predated Vedic and provided the tradition with potential prepausal shortening in certain forms but not in others.⁸ Prepausal instances of nominative

⁸ I.e. pre-Vedic or Proto-Indo-Aryan. Kuiper himself (1955, 9f., 28) argued that the rule must have been productive in post-Indo-Iranian times because it affected forms that appear to be an innovation of Indic, such as the gerunds in $-y\bar{a}$ and $-ty\bar{a}$, which are

singular forms would have been so rare that the epic tradition did not hand down a prepausal shortened variant.⁹ This is not surprising in view of the default sentence-initial position of the subject in Sanskrit, with sentence-final subjects occurring only under very specific circumstances (Delbrück 1888, 16f.). An originally bisyllabic accusative **-aHam* or **-iHam* could easily be replaced by a monosyllabic ending on the basis of the pre-Vedic monosyllabic nominative ending. The same happened in the plural, where monosyllabic *-ā-* arose in the nominative as a result of regular contraction of **-aHa-* to *-ā-* (which did not affect **-aHṅ-* of the accusative, cf. Lubotsky 1995, 229) and was subsequently introduced into the accusative plural **-aHas* >> **-ās* > Skt. *-ās*, Av. *-ā̇*, cf. also the secondary proterodynamic *ī-*stem nom.acc.pl.f. Skt. *-īs*, Av. *-ī̇*. The motivation for this analogy can be sought in the merger of the nominative and accusative plural forms in many consonant stems as well as some other classes, e.g. hysterodynamic *ī-*stem nom.pl. Skt. *-iyas*, Av. *-iīō* < **-ih₂es*, acc.pl. Skt. *-iyas*, Av. *-iīō* < **-ih₂ms*.

5. In Baltic, final **-m* was consonantal after a laryngeal. However, the attested acc.sg. endings (Lith. *-q*, Latv. *-u*, OPr. *-an*) go back to **-ām*, not the expected **-aHm*.¹⁰ The long vowel is proven by the Lithuanian illative in

petrified instrumentals, and *n-*stem plurals like *nāmā* for older *nāmāni*. However, even though they do not exist in Iranian, the gerunds are petrified instrumentals derived from an inherited class of verbal adjectives of the type Gr. ἀρσῆος ‘accursed’ to ἀρῆ ‘curse’ and Lat. *anxius* ‘prone to distress’ to *angor* ‘distress’ (Nussbaum 2016). It can therefore be assumed that the preform of the gerunds existed in Proto-Indo-Iranian already. Vedic nom.pl. *nāmā* reflects **-mṅh₂* (Harðarson 1987, 97) and its vocalization indicates that the form already existed in Proto-Indo-Iranian (*pace* Kuiper 1955, 15). It seems, therefore, that a Proto-Indo-Iranian date cannot be ruled out for Kuiper’s law. There is, however, to my mind no reason to assume that Kuiper’s law took place in Proto-Indo-European already (cf. Pronk 2015, 209f., fn. 33).

⁹ Except perhaps vocatives of the type *dévi* to *deví* (Kuiper 1961, 18).

¹⁰ Note that Beekes (1985, 15ff.; 2011, 200) makes a strong case for the reconstruction of the PIE nom.sg. of the **h₂-*stems as **-h₂* in all paradigms. The ending **-eh₂m* found in, e.g., Gr. *-ῆ* and Skt. *-ā* would be based on the acc.sg. **-eh₂m*. If this is correct, and I believe that it is, the PIE acc.sg. ending cannot have been **-ām* < **-eh₂m*. Note also that in Beekes’ framework, the Lithuanian acute nom.sg. ending *-a* < **-aH* replaces earlier **-H* on the basis of the accusative **-aHm*. This contradicts Beekes’ statement (1988b, 61) that the Lith. non-acute acc.sg. *-q* goes back to **-ām* with loss of the laryngeal “very early, perhaps already in PIE”.

-on, e.g. *rañkon*, which consists of the accusative plus the suffix *-n(a)*.¹¹ The development in the accusative singular is contradicted by that of the ins.sg. ending Lith. *-q̄-ja* in definite adjectives, which in all probability also reflects PIE **-eh₂m*, corresponding to the ending of Skt. loc.sg. *tásy-ām* (Kortlandt 2005a, 24).¹² The question is which of the two reflects the phonetic development. I think it is the latter. The paradigm of the *h₂*-stem contained endings with **-aH-* (Lith. nom.sg. *-a* and acc.pl. *-as*), next to endings with **-ā-* through contraction of **-aHa-* (Lith. gen.sg., nom.pl. *-os*, dat.sg. *-ai*, if from **-eh₂ei* and not **-h₂ei*). In the ins.sg. **-aH* and acc.pl. **-aH(m)s*, the laryngeal was synchronically analysable as part of the ending, while the nom.sg. **-aH* was ambiguous in this respect. This allowed replacement of acc.sg. **-aHm* by **-ām* on the basis of the ending **-m* in the *o-*, *u-* and *i-*stems (thus already, in different terms, Pedersen 1933, 29).

6. There is thus, in Indic and Baltic, clear internal motive for replacement of the inherited acc.sg. endings. In Greek, there is no indication that **-eh₂m* would produce anything else than *-āv*. The accusative plural shows no trace of a laryngeal in Indo-Iranian, but this should be understood in the light of the merger of the endings of the nominative and accusative plural in a number of other classes. In Baltic, the laryngeal is very much present in the accusative plural. In fact, it is the nasal that appears to have been lost. We will take a closer look.

7. The acc.pl. of the *ā*-stems in East Baltic is *-as* in both Lithuanian and Latvian. Stang (1966, 200) has shown that the ending cannot continue **-aHns* because this should have produced **-us* in Latvian and eastern dialects of Lithuanian. The illative, which is formed by adding the suffix *-na* to the accusative, shows no trace of a nasal in the plural either, neither in Old Lithuanian and the Lithuanian dialects, nor in the Latvian loc.pl. in *-ās*, which continues an old illative (Vanags 1994, 125; Kortlandt 2005b). In Lithuanian, forms with a nasal in the ending are attested in the definite form of the adjective: Lith. acc.pl.f. *gerąsias* (but m. *gerúosius* and dialectal f. *gerósias* corresponding to the nasalless Latv. acc.pl.f. *mazās*). Stang (l.c.) argued that the

¹¹ There is thus no Balto-Slavic shortening **-ām > *-am* (pace Hill 2013). On the acc.sg. ending in Old Prussian see Kortlandt 1988, 93f.

¹² According to Kortlandt, the acute was taken over from the nominal endings, which ended in **-h₁*. This seems unlikely to me, because I do not see why only the intonation of the nominal ending would be generalized.

\bar{a} -stems inherited the ending $*-aHs$ from Proto-Indo-European, and that the adjectival forms with a nasal would be analogical. He based his reconstruction of a nasalless ending on Skt. $-\bar{a}s$, which, however, continues $*-eh_2ms$ (see above), and Go. *gibos*, which actually reflects $*-eh_2ms$ (Boutkan 1995, 141f.). According to Stang, the adjectival forms and the Old Prussian ending could easily have obtained their nasal secondarily. The absence of a nasal in the endings of the other Lithuanian declensions (o -stems, i -stems, u -stems, \bar{e} -stems, consonant stems) would be due to a regular development $*-VHns > *-\bar{V}ns > *-\bar{V}s$ (Stang 1966, 186), cf. Lith. *mėsà*, but southern Žemaitian *mensà* $< *mēmseh_2$.¹³ Derksen (1998) argued that the loss of a nasal after a long vowel operated only in final position, with *mėsà* from the original nom. sg. $*mēms$ or $*mēns$ and Žemaitian *mensà* from the oblique cases.

Summing up, the nasal was lost in the acc.pl. ending in East Baltic with the exception of the definite form of the adjective, Lith. acc.pl.f. *gerásias*. This ending is not easily explained as analogical and it is therefore best to assume that the nasal was lost regularly in final syllables only. This dovetails with Derksen's explanation of *mėsà* next to *mensà*.

8. The remaining problem is the fact that the accusative plural ending has acute intonation in all declensions in East Baltic. This is best explained as spread of $*-HNs$ from the \bar{a} -stems to the u -, i -, \bar{e} - and consonant stems (Kortlandt 1975, 46). This spread was probably anterior to the loss of the nasal, i.e. $*-HNs$ replaced $*-Ns$. The spread of the laryngeal pre-dated the merger of short $*o$ and $*a$, which is a Balto-Slavic development, cf. the Lith. o -stem definite adjective acc.pl. in $-\acute{u}osius$ and the ill.pl. in $-\acute{u}osna < *oHNs-$. Note also the consonant-stem ending Lith., Latv. $-is$, which reflects Proto-East-Baltic $*-iHs$ (cf. Lith. ill.pl. *širdýsna* without shortening) $<< *iNs < PIE *ms$. The motivation for the reinterpretation of the acc.pl. ending of the \bar{a} -stems as $*-HNs$ must be sought in the fact that the laryngeal was no longer recognizable as a suffix, since it had been lost in a number of forms in the same paradigm, most crucially acc.sg. $*-\bar{a}m$ and nom.pl. $*-\bar{a}s$. We can combine the observations on the accusative singular and plural endings of the \bar{a} -stems into a relative chronology:

¹³ For the feminine i -stems, Stang allows an alternative explanation involving analogical influence from the \bar{a} -stems (1966, 213).

Balto-Slavic

1. $*-aHa-$ > $*-\bar{a}-$.
2. acc.sg. $*-aHm$ >> $*-\bar{a}m$.
3. $*_r$ > $*iR$, $*uR$. This development may also be anterior to 1. and/or 2.
4. acc.pl. $*-ons$, $*-ins$, $*-uns$ >> $*-oHns$, $*-iHns$, $*-uHns$.
5. $*o$ > $*a$

East Baltic

6. univerbation of adjectives and pronouns to form definite adjectives.
7. the rise of the broken tone: $*-aHns$ > $*-\hat{a}ns$, $*-oHns$ > $*-\hat{o}ns$, $*-iHns$ > $*-\hat{i}ns$, $*-uHns$ > $*-\hat{u}ns$.
8. loss of a nasal between a long vowel and $-s$ in final syllables.¹⁴

Returning to Stang's law, I hope to have shown that neither acc.sg. $*-eh_2-$ *m*, nor acc.pl. $*-eh_2-$ *ms* underwent a change to $*-\bar{a}m$ or $*-\bar{a}ms$ in Proto-Indo-European.

9. Now that it is clear that there is no reason to believe that the acc.sg. of the h_2 -stems underwent Stang's law, we are in a better position to judge the history of Stang's original examples, viz. Gr. Ζῆν and βῶν.¹⁵ There are two possible scenarios. The first, argued for by Stang, explains the long vowel

¹⁴ During the presentation of this paper at the 12th International Congress of Balticists, I hesitatingly considered the possibility that a tautosyllabic nasal was regularly lost after a vowel and a laryngeal in Proto-Balto-Slavic. This would account for the absence of the nasal in the East Baltic acc.pl. and a few lexemes, viz. Lith. *vėtra*, Opr. *wetro*, OCS *větrъ* 'wind' < $*ueh_1nt-r-$ or $*ueh_1-tr-$; OCS *měšęcb* (Lith. *mėnuo*) < $*meh_1ns-$; Lith. *nókti* 'to go ripe', Latv. *nākt* 'to come' < $*h_2ne-h_2nĕ-$ 'to reach, arrive' (?) (Kortlandt 1994). I now think that these cases are unrelated. We have seen above that the loss of the nasal in the acc.pl. endings can be dated to Proto-East-Baltic. OCS *měšęcb* < $*meh_1ns-$ probably shows dissimilation of the first nasal against the nasal in the following syllable. Lith. *vėtra* etc. reflects an inner-Balto-Slavic formation $*ueh_1-tr-$ without the nasal. For Lith. *nókti* etc., Kortlandt (l.c.) suggests reinterpretation of the second nasal of $*h_2ne-h_2nĕ-$ as a present marker and subsequent analogical loss of the infix, a scenario which cannot be ruled out.

¹⁵ The long vowel of Skt. acc. *kṣām* 'earth', which is sometimes adduced as an example of Stang's law (e.g. by Vaux 2002), is clearly analogical to the nom.sg. *kṣās*. The PIE acc.sg. can probably be reconstructed as $*d^h(e)ǵom-m$ > $*d^h(e)ǵom$, which is preserved in Hitt. *tēkan* (cf. Kloekhorst 2014, 231f.) and ToA *tkaṃ*, B *keṃ* (cf. Adams 2013, 205) and supported by the short $-o-$ of Gr. χθόνα.

as a result of the loss of **u*. As we have seen above, Schindler argued for a two-stage process: first assimilation of **u* to **m*, then simplification of the resulting geminate **-mm* with compensatory lengthening of the preceding vowel. According to the alternative scenario, the long vowel of **diēm* is not due to the loss of **-u-*, but rather to lengthening of **-e-* in a monosyllabum. Because (pre-)PIE **diēm* was probably monosyllabic (Schindler 1973, 154) and lengthened grade appears to have been regular in PIE monosyllables (Wackernagel 1896, 66ff.; Kortlandt 1975, 84ff.; Beekes 1990),¹⁶ its long vowel would arise regularly from a proto-form **dieum* > **diēm*. PIE **diēm* would subsequently lose its **-u-*. The same scenario would apply to **g^wh₃ēum* (OAv. *gqm*, Gr. (Dor., H.) βῶν). In this scenario, the loss of **-u-* was restricted to the position between long **ē* and **m* and did not cause the length of the preceding vowel (Hirt 1921, 55; Nassivera 2000, 60). The two canonical examples of Stang's law allow for both scenarios, so additional data will have to be included.

Additional data in favour of Stang's law come from Greek, where, depending on the dialect, hysterodynamic *u*-stems turn up as nouns in -εϋς or -ης, e.g. Ion., Att. ἰερεϋς, Myc. *ijereu*, but Arc. ἰερης, Cypr. ιερεες 'priest'. Based on the paradigm nom.sg. Ζεϋς, acc.sg. Ζῆν, this situation could be explained by the reconstruction of nom.sg. **-ēus*, acc.sg. **-ēm* in early Greek,

¹⁶ There are, however, also some counterexamples to this rule. Some root-nouns with a root ending in an obstruent are attested with a short vowel in the monosyllabic nom. sg. Skt. *spas-*, Av. *spas-* 'spy', Lat. *haru-spex*, *au-spex* 'augur', *os* n. 'bone', *nex* f. 'violent death, murder', *nox* f. 'night', *grex* m. (f.) 'flock, herd', *prex* f. 'prayer', *ops* f. 'power, ability', *vas* m. 'surety', *au-ceps* 'bird-catcher', *arti-fex* 'craftsman', *auri-fex* 'goldsmith', *ob-ses* 'hostage, surety', *prae-ses* 'guardian, custodian', Gr. ἐπί-τεξ 'close to delivery' etc. These can be explained as regularized from the more archaic ablauting paradigm. The full grade would originate in the polysyllabic acc.sg. **CeT-m*. PIE **h₁neun* 'nine' was apparently already (subphonemically) disyllabic at the time of the lengthening. Some particles and prepositions, like PIE **h₂eu*, **h₁en*, **h₂en*, **h₂ed*, **h₁eǵ^hs*, **ne*, appear to be exceptions to the rule of monosyllabic lengthening. They may indicate that lengthening only took place under full stress. This requires the assumption that particles and preposition were not fully stressed at the time of the lengthening, for which there is no independent evidence, but which would not be inconceivable either. YAv. loc.sg. *duuarə* 'door' appears to be another exception (**due/or*), but the authenticity of the form is debated (Kellens 1974: 385f.) and its vocalism could be after that of the securely attested acc.sg. *duuarəm*. Finally, Skt. *dán*, gen. *datás* 'tooth' must have a secondary short vowel in the nominative, cf. *uśán*, *uśatás* 'willing'.

with generalization of the suffix from the acc.sg. **-ēm* in Arcado-Cypriot. Needless to say, the Arcado-Cypriot would only indirectly reflect an acc.sg. in **-ēm*, and influence from the paradigm Ζεύς, Ζῆν cannot be ruled out (cf. Schwyzler 1977, 575f.; Schindler 1976; de Vaan 2009, with further lit.). The reconstruction of a PIE hysterodynamic *u*-stem acc.sg. **-ēm* finds some support in Avestan *hiθāuš*, acc. *hiθqm* ‘companion’ (Tremblay 1998, 202), although here, too, influence from the (unattested) counterparts of Skt. *dyáus*, *dyám* ‘god of the sky, heaven’ (cf. YAv. gen.sg. *diiaoš* ‘hell’ = Skt. *dyós*) may have played a role. Willi recently (2014) proposed to derive the Greek theonym Ἄρης, Aeolic Ἄρεος from a paradigm **h₂reu-s*, acc.sg. **h₂reu-m* > **h₂rēm* through Stang’s law. If this is correct, we would expect the paradigm to evolve along approximately the same lines as **dieus*, **diēm* or the type ἰππεύς. Because this is not the case, I prefer the traditional explanation, according to which the Aeolic form is analogical to Ζεύς, acc. Ζῆν.

The alternative hypothesis that **u* was lost before **m* only after a long vowel would account for its preservation in Hitt. acc.sg. *ḫarnaun* < **-ou-m*, cf. nom.sg. *ḫarnāuš* < **-ōu-s*, gen.sg. *ḫarnuuaš* < **-u-os* ‘birthing chair’, perhaps also in Av. nom. sg. *nasuš*, acc.sg. *nasāum* < **-āvam* ‘corpse’ < **nekus*, **nekoṃṃ* (Beekes 1985, 88f.; Nassivera 2000, 59). The acc.sg. *nasāum* could be analogical (de Vaan 2000) and it cannot be ruled out that the same is true for Hitt. *ḫarnaun*, even if it is difficult to see how.

Another potentially relevant form is the acc.pl. of the word for ‘cow’, which can be reconstructed as PIE **g^wh₃ēms* < **g^wh₃eums*.¹⁷ It is reflected in Umb. *buf* and Ion., Att. βούς (next to regularized βόας). The Greek form reflects older **g^wōns* with shortening as a result of Osthoff’s law followed by loss of the nasal with compensatory lengthening of the preceding vowel. The accent was analogically placed on the first mora as in other root-nouns (cf. βόας). Skt. *gās*, OAv. *gā* show the same loss of **-u-* as the Greek and Umbrian forms with subsequent analogical loss of the nasal.

I conclude that the exact history of Gr. Ζῆν ‘Zeus’, βῶν ‘cow’, Skt. *dyám*, *gám* cannot be decided with any certainty. Both scenarios discussed here have their merits. Because the second scenario explains the facts with fewer

¹⁷ Traditionally **g^wōms*. The reconstruction of the laryngeal has been a matter of debate for some time (cf. Schindler 1973, 151ff.; De Decker 2011). For the to my mind convincing arguments in favour of the reconstruction of a laryngeal in this word see Pronk forthc. and the literature listed in Wodtko et al. 2008, 191.

operations at a Proto-Indo-European level (I consider the lengthening in monosyllabic nouns to be independently secured, even if there are a few exceptions), it is to be preferred. I reconstruct the following paradigms, with lengthening in monosyllables before final **-m* would have become syllabic:¹⁸

‘sky’	nom.sg.	<i>*diēus</i> (< pre-PIE <i>*dieus</i> << <i>*deius</i>) ¹⁹
	acc.sg.	<i>*diēm</i> (< pre-PIE <i>*diēm</i> < <i>*dieum</i>)
	gen.sg.	<i>*diue/os</i>
	dat./loc.sg. ²⁰	<i>*diuei</i>
‘cow’	nom.sg.	<i>*g^woh₃u(s)</i> or <i>*g^weh₃us</i>
	acc.sg.	<i>*g^wh₃ēm</i> (< pre-PIE <i>*g^wh₃ēm</i> < <i>*g^wh₃eum</i>) ²¹

¹⁸ For an extensive discussion of the problems involved and partly different reconstructions see Kortlandt 1985, 118f.; Kortlandt 2014; Nassivera 2000. The disyllabic reading of Skt. *gām* is probably secondary (cf. disyllabic readings of *kṣā* ‘earth’), OAv. *gqm* is monosyllabic. The difference between monosyllabic *gāus* and disyllabic *naús* is due to restoration of the laryngeal in **naHus* on the basis of the cases in which *-u-* was followed by a vowel, e.g. gen.sg. **naHuas*, but not in **gāus*, which had a gen.sg. **g(H)aus* (Lubotsky 1995, 228f.; Nassivera 2000, 62). The long vowel of Skt. *gāus* may be due to Brugmann’s law if from **g^woh₃u(s)* (Kuiper 1942, 32f.), or analogical to *dyáus* on the basis of the accusives *gām* and *dyām*. The short vowel in the monosyllabic gen.sg. **g^wh₃eus* must be due to analogy with disyllabic oblique cases in which the suffixal vowel had remained short. Av. acc.sg. *gaom* is an analogical form (Stang 1965, 295).

¹⁹ The prior existence of a nom.sg. **deius* can be inferred from the full grade in the root of Skt. *dēva-* < **deiuo-* ‘god’ (Kortlandt 1985, 118).

²⁰ I believe that the dative in **-ei* and locative in **-i* were essentially the same case in Proto-Indo-Hittite, like in Anatolian. The dative in **-ei* was originally limited to non-neuter nouns and the amphidynamic and hysterodynamic paradigms, while the locative in **-i* was limited to neuter nouns and the proterodynamic paradigm. The post-Indo-Hittite loc.sg. **dieui* (Skt. *dyāvi*, Lat. *Iove*) was created in analogy to neuter nouns when the distinction between dative and locative was formalized. This is, however, irrelevant for the present discussion.

²¹ This accusative was probably at some point created in analogy to **dieum*. The word for ‘cow’ may originally have been a neuter, which would explain its proterodynamic flexion (cf. Beekes 1985, 5). A “hysterodynamic accusative” with full grade of the suffix is not unique in a proterodynamic paradigm, cf. the *ih₂*-stems Lith. *paī*, acc.sg. *pāčią*, gen.sg. *pačios* ‘wife’, OCS *bogyñi*, acc.sg. *bogyñq* ‘goddess’, and Goth. *bandi*, acc.sg. *bandja*, gen.sg. *bandjo* ‘band’ < **-ih₂*, acc.sg. **-ieh₂-m*, gen.sg. **-ieh₂-s*, as opposed to the *u*-stems Skt. *sínús*, *súnúm*, *súnós*, Lith. *súnus*, acc.sg. *súny*, gen.sg. *sinaūs* with a zero-grade in the suffix of the acc.sg.

gen.sg.	*g ^w h ₃ eus
dat./loc.sg.	*g ^w h ₃ eui
nom.pl.	*g ^w h ₃ eues
acc.pl.	*g ^w h ₃ ēms (< pre-PIE *g ^w h ₃ ēums < *g ^w h ₃ eums)

Gr. βῶν is the regular reflex of PIE *g^wh₃ē̄m, there is no good evidence to support the view that a long vowel would not be coloured by an adjacent laryngeal in Indo-European (“Eichner’s law”) (Pronk forthc.). The Greek form is supported by Latv. *gūovs*, the vocalism of which is based on the acc. sg. form. The circumflex intonation of the Latvian form points to an earlier long vowel, not *eh₃.

For completeness’ sake I will also give the paradigm of the word for ‘ship’, which is often discussed in connection with the paradigms of the words for ‘sky’ and ‘cow’. On the basis of the development of the accusative singular of the latter two words, one would expect an acc.sg. *nh₂ē̄m. This form is, however, unattested, because Doric *vāv* is probably not *sprachwirklich* (van Beek apud Kortlandt 2014). It is conceivable that, if it ever existed, *nh₂ē̄m had been replaced by *neh₂um (Skt. *nāvam*, Gr. νῆα, Lat. *nāvem*) in the proto-language already:

‘ship’ nom.sg.	*neh ₂ us
acc.sg.	*neh ₂ um (<< *nh ₂ ē̄m < pre-PIE *nh ₂ ē̄um < *nh ₂ eum)
gen.sg.	*nh ₂ ue/os
dat./loc.sg.	*nh ₂ uei

10. I conclude that the loss of *u before the accusative singular ending *-m was most likely conditioned by a preceding long vowel. Stang’s idea that the long vowel resulted from the loss of *u does not provide a better explanation of the data. Furthermore, there is no support for a special Proto-Indo-European sound change *-eh₂m > *-ā̄m.

STANGO DĒSNIS BALTŲ, GRAIKŲ IR INDŲ-IRANĒNŲ KALBOSE

Santrauka

Straipsnyje aptariama ide. garsų junginių *-eum ir *-eh₂m raida. Pirmasis jų virto *-ēm, spėjant, kad *-u- išnykdamas kompensaciškai pailginęs prieš taiėjusį *-e- („Stango dėsniš“), o *-eh₂m virto *-ām dar prokalbėje („išplėstas Stango dėsniš“). Straipsnyje kruopščiai patikrinta abiem teiginiams pagrįsti paprastai pasitelkiama medžiaga, didžiausią dėmesį skiriant ā kamieno acc. sg. ir acc. pl. galūnėms indų-iranėnų bei baltų kalbose ir indoeuropiečių prokalbės žodžio ‘karvė’ paradigmai. Daroma išvada, kad „išplėstas Stango dėsniš“ nėra pagrįstas, o „Stango dėsniš“ taip pat greičiausiai nėra teisingas. Siūlomi alternatyvūs paliudytų formų aiškinimai.

LITERATURE

Adams, Douglas Q. 2013, *A dictionary of Tocharian B: Revised and greatly enlarged*, Amsterdam–New York: Rodopi.

Beekes, Robert S. P. 1981, Intervocalic laryngeal in Gatha–Avestan, in Yoël L. Arbeitman, Allan R. Bomhard (eds.), *Bono homini donum: Essays in historical linguistics in memory of J. Alexander Kerns*, Amsterdam: John Benjamins, 47–64.

Beekes, Robert S. P. 1985, *The origins of the Indo-European nominal inflection* (= *Innsbrucker Beiträge zur Sprachwissenschaft* 46), Innsbruck: IBS.

Beekes, Robert S. P. 1988a, PIE. RHC- in Greek and other languages, *Indogermanische Forschungen* 93, 22–45.

Beekes, Robert S. P. 1988b, Laryngeal developments: a survey, in Alfred Bammesberger (ed.), *Die Laryngaltheorie und die Rekonstruktion des indogermanischen Laut- und Formensystems*, Heidelberg: Winter, 59–105.

Beekes, Robert S. P. 1990, Wackernagel’s explanation of the lengthened grade, in Heiner Eichner, Helmut Rix (eds.), *Sprachwissenschaft und Philologie: Jacob Wackernagel und die Indogermanistik heute*, Wiesbaden: Reichert, 33–53.

Beekes, Robert S. P. 2011, *Comparative Indo-European linguistics. An introduction*. Revised and corrected by Michiel de Vaan, Amsterdam, Philadelphia: John Benjamins.

Boutkan, Dirk 1995, *The Germanic ‘Auslautgesetze’*, Amsterdam, Atlanta: Rodopi.

Clackson, James 2007, *Indo-European linguistics. An introduction*, Cambridge, New York: Cambridge University Press.

Collinge, Neville E. 1995, Further Laws of Indo-European, in Werner Winter (ed.), *On languages and language*, Berlin, New York: Mouton de Gruyter, 27–52.

De Decker, Filip 2011, Stang’s Law and the Indo-European word for “cow”, *Indogermanische Forschungen* 116, 42–59.

De Vaan, Michiel 2000, Die Lautfolge *āum* in *Vidēvdād*, in Bernhard Forssman, Robert Plath (eds.), *Indoarisch, Indoiranisch und die Indogermanistik*, Wiesbaden: Reichert, 523–533.

De Vaan, Michiel 2009, The derivational history of Greek ἴπλος and ἴπλεύς, *Journal of Indo-European Studies* 37(1–2), 198–213.

Delbrück, Berthold 1888, *Altindische Syntax*, Halle: Verlag der Buchhandlung des Waisenhauses.

Derksen, Rick 1998, Lithuanian *mēsà*, *Res Balticae* 4, 131–137.

Fortson IV, Benjamin W. 2004, *Indo-European language and culture. An introduction*, Malden, MA–Oxford: Blackwell Publishing.

Harðarson, Jón Axel 1987, Zum indogermanischen Kollektivum, *Münchener Studien zur Sprachwissenschaft* 48, 71–113.

Hill, Eugen 2013, Historical phonology in service of subgrouping. Two laws of final syllables in the common prehistory of Baltic and Slavonic, *Baltistica* 48(2), 161–204.

Hirt, Hermann 1921, *Indogermanische Grammatik 2: Der indogermanische Vokalismus*, Heidelberg: Carl Winter.

Kellens, Jean 1974, *Les noms-racines de l’Avesta*, Wiesbaden: Reichert.

Kloekhorst, Alwin 2014, *Accent in Hittite: A study in plene spelling, consonant gradation, clitics, and metrics*, Wiesbaden: Harrassowitz.

Kortlandt, Frederik 1975, *Slavic accentuation: A study in relative chronology*, Lisse: Peter de Ridder.

Kortlandt, Frederik 1985, Long vowels in Balto-Slavic, *Baltistica* 21(2), 112–124.

Kortlandt, Frederik 1988, Van Wijk’s *Altpreussische Studien* revisited, *Studies in Slavic and General Linguistics* 12, 89–97.

Kortlandt, Frederik 1994, The etymology of Latvian *nākt* ‘to come’, *Linguistica Baltica* 3, 191–193.

Kortlandt, Frederik 2005a, Holger Pedersen’s *Études lituaniennes* revisited, *Baltistica* 6 priedas, 151–157.

Kortlandt, Frederik 2005b, On the accentuation of the illative, *Baltu Filologija* 14(1), 67–69.

Kortlandt, Frederik 2014, Metatony in monosyllables, *Baltistica* 49(2), 217–224.

Kuiper, Franciscus B. J. 1942, *Notes on Vedic noun-inflection* (= *Mededeelingen der Koninklijke Nederlandsche Akademie van Wetenschappen, Afdeling Letterkunde, Nieuwe reeks*, 5(4)), Amsterdam.

Kuiper, Franciscus B. J. 1955, *Shortening of final vowels in the Rigveda* (= *Mededeelingen der Koninklijke Nederlandsche Akademie van Wetenschappen, Afdeling Letterkunde, Nieuwe reeks* 18(11)), Amsterdam.

Kuiper, Franciscus B. J. 1961, Zur kompositionellen Kürzung im Sanskrit, *Die Sprache* 7, 14–31.

Litscher, Roland 2015, Word-final vowel shortenings in the Rigveda, *Indogermanische Forschungen* 120, 297–312.

Lubotsky, Alexander 1995, Reflexes of intervocalic laryngeals in Sanskrit, in Wojciech Smoczyński (ed.), *Kuryłowicz memorial volume 1*, Kraków: Universitas, 213–233.

Matasović, Ranko 2009, *Etymological dictionary of Proto-Celtic*, Leiden, Boston: Brill.

Mayrhofer, Manfred 1986, *Indogermanische Grammatik 1: Lautlehre*, Heidelberg: Winter.

Meillet, Antoine 1908², *Introduction à l'étude comparative des langues indo-européennes*, Paris: Librairie Hachette et Compagnie.

Nassivera, Michele 2000, The development of the PIE words for 'sky', 'cow' and 'ship' and the relative chronology of Osthoff's law, *Historische Sprachforschung* 113(1–2), 57–70.

Nussbaum, Alan J. 2016, Some "gerundival" adjectives in Indo-Iranian and elsewhere (paper presented at *Indo-Iranian and its Indo-European origins. Workshop in honor of Sasha Lubotsky on the occasion of his 60th birthday*, Leiden University, 8–9 April 2016).

Pedersen, Holger 1933, *Études lituaniennes*, København: Levin & Munksgaard.

Pronk, Tijmen 2009, *The Slovene Dialect of Egg and Potschach in the Gailtal, Austria*, Amsterdam, New York: Rodopi.

Pronk, Tijmen 2015, On the origin of the dual endings Tocharian A *-m*, B *-ne*, in Melanie Malzahn et al. (eds.), *Tocharian texts in context. International conference on Tocharian manuscripts and Silk Road culture, June 25–29th, 2013*, Bremen: Hempen Verlag, 199–214.

Pronk, Tijmen (forthc.), Eichner's law: a critical survey of the evidence.

Rix, Helmut 1992², *Historische Grammatik des Griechischen: Laut- und Formenlehre*, Darmstadt: Wissenschaftliche Buchgesellschaft.

Saussure, Ferdinand de 1878, *Mémoire sur le système primitif des voyelles dans les langues indo-européennes*, Leipzig: Teubner.

Schindler, Jochem 1973, Bemerkungen zur Herkunft der idg. Diphthongstämme und zu Eigentümlichkeiten ihrer Kasusformen, *Die Sprache* 19, 148–157.

Schindler, Jochem 1976, On the Greek type *ἰππεύς*, in Anna Morpurgo Davies, Wolfgang Meid (eds.), *Studies in Greek, Italic and Indo-European linguistics*, Innsbruck: IBS, 349–352.

Schindler, Jochem 1977, Notizen zum Sieverschen Gesetz, *Die Sprache* 23, 56–65.

Schwyzler, Eduard 1977, *Griechische Grammatik 1: Allgemeiner Teil, Lautlehre, Wortbildung, Flexion*, München: C. H. Beck.

Stang, Christian S. 1965, Indo-européen **g^ʷōm*, **d(i)jēm*, in Jan Safarewicz, Franciszek Sławski (eds.), *Symbolae linguisticae in honorem Georgii Kuryłowicz*, Wrocław: Zakład Narodowy Im. Ossolińskich, 292–296.

Stang, Christian S. 1966, *Vergleichende Grammatik der baltischen Sprachen*, Oslo: Universitetsforlaget.

Stiles, Patrick V. 1988, Gothic nominative singular *brōþar* 'brother' and the reflexes of Indo-European long vowels in the final syllables of Germanic polysyllables, *Transactions of the Philological Society* 86(2), 115–143.

Tremblay, Xavier 1998, Sur *parsui* du Farhang-i-Ōim, *ratu-*, *pərātu-*, *pitu-* et quelques autres thèmes avestiques en *-u*, *Studia Iranica* 27(1), 187–204.

Vanags, Pēteris 1994, Die Entwicklungstendenzen der Kasusendungen in den ältesten lettischen Sprachdenkmälern, *Linguistica Baltica* 3, 121–130.

Vaux, Bert 2002, Stang's law and Szemerényi's law in nonlinear phonology, in Mark Southern (ed.), *Indo-European perspectives*, Washington: Institute for the Study of Man, 317–327.

Wackernagel, Jacob 1896, *Altindische Grammatik 1: Lautlehre*, Göttingen: Vandenhoeck & Ruprecht.

Willi, Andreas 2014, Ares the ripper, *Indogermanische Forschungen* 119(1), 207–226.

Wodtko, Dagmar, Britta Irslinger, Caroline Schneider (eds.) 2008, *Nomina im Indogermanischen Lexikon*, Heidelberg: Winter.

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