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STANG'S LAW IN BALTIC, GREEK AND INDO-IRANIAN[1]

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. Zῆν 'Zeus', βῶν 'cow', Skt. *dyā́m* 'sky', *gā́m* 'cow', a Proto-Indo-European *u was lost before the word-final *-m*. The agreement between Greek and Sanskrit[2] points to development that took place in the proto-language already (S a u s s u r e 1878, 198; H i r t 1921, 39). S t a n g (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 *h_2*-stem: PIE *-eh₂m* > PIE *-ām*. The evidence for this extended version of Stang's law consists of the monosyllabic endings Skt. *-ām*, Greek *-ᾱν* and Lith. non-acute *-ą* (R i x 1992, 75; B e e k e s 1981, 53f.; 1988a, 27; cf. also K o r t l a n d t 2005, 153f.). The exact phonetics behind the change remain unclear. S c h i n d l e r (1973, 154 with fn. 24) argued for a change *$g^w o\mu m$ > *$g^w omm$ > *$g^w\bar{o}m$, due to fact that *μ and *m are labial sounds, but this does not work for *-eh₂m*.

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[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. *gùovs* '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. C o l l i n g e'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 *-$eh_2m̥$ 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 > *-$ām$?

The majority of Indo-Europeanists is of the opinion that one or more PIE rules predict the vocalization of PIE resonants in most positions (M e i l l e t 1908, 107–109; S c h i n d l e r 1977, 56f.; M a y r h o f e r 1986, 162f.; F o r t s o n 2004, 65; C l a c k s o n 2007, 35).[3] There are several prominent counterexamples that do not follow the proposed rules, most of which were already discussed by S c h i n d l e r (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 B e e k e s (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 un-predictable from a Proto-Indo-European point of view. The following are familiar and clear-cut examples:

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[3] These can be divided into scholars who believe that the difference between, e.g., *u and *$u̯$ 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 S c h i n d l e r (1977, 56) is as follows: [+ son, -syll] → [+ syll] / {[- syll] or #} _ {[- syll] or #}.

[4] Word-initial *$u̯r$-, *$u̯l$-, *$u̯i̯$-, *mr-, *ml- and perhaps *$mi̯$-; the zero grade of the stem of nasal presents; the acc.sg. of static and proterodynamic i-, u- and r-stems; *m in *$Cm̥nV$; cases in which *$CR̥rV$- alternates with *$CR̥C$-. Note that *m does actually vocalize in the cluster *$Cm̥nV$ in Indo-Iranian, e.g. OAv. ins.sg. $mazānā$- 'greatness', Av. $sraii̯an$- 'beauty' < *-$m̥n$-, cf. Skt. $mahimán$- 'greatness', (AV PS) $śremán$- 'superiority, priority, beauty' (Alexander Lubotsky, pers. comm.).

ToB *puwar* 'fire' < *$pu\underset{\circ}{h}_2r$ vs. Gr. πῦρ, U *pir*, ON *fúrr* < *$pu\underset{\circ}{h}_2r$;

ToB *snai* 'without' < *$sn\underset{\circ}{H}i$ vs. Lat. *sine*, OIr. *sain-* < *$sn\underset{\circ}{H}i$;

Gr. ὄσσε 'eyes' < *$h_3ek^w i\underset{\circ}{h}_1$ vs. OCS *oči* < *$h_3ek^w i\underset{\circ}{h}_1$;

Gr. πότνια 'mistress' < *$potni\underset{\circ}{h}_2$ vs. Skt. *pátnī-*, Lith. *-patni* < *$potni\underset{\circ}{h}_2$;

Gr. ὄνομα 'name', OPhryg. *onoman* < *$h_3\underset{\circ}{n}h_3mn$, Goth. *namō* < *$h_3\underset{\circ}{n}h_3mōn$ vs. OCS *imę* < *$h_3\underset{\circ}{n}h_3mn$, OPr. *enmens* < *$h_3\underset{\circ}{n}h_3men-$;

Gr. (Att.) μείς, (Dor.) μής 'month', W *mis* < *meh_1ns- vs. Skt. sometimes disyllabic *mā́s-*, OAv. disyllabic *mā̊* < *$meh_1\underset{\circ}{n}s-$;

Skt. sometimes trisyllabic *vā́ta-* 'wind', OAv. trisyllabic *vāta-* < *$ueh_1\underset{\circ}{n}t-$ vs. W *gwynt*, Goth. *winds*, ToB *yente* < *$ueh_1\underset{\circ}{n}t-$.

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

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[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 *-eh₂m* will have to be decided per branch.

3. In Greek, there is no evidence that *-eh₂-m* would have become *-eh₂m̥* > *-aHa*, cf. πῦρ 'fire' < *puh₂r̥* < *ph₂ur*, μείς, μής 'month' < *mēns-* < *meh₁n̥s-*.[6] Even if it did, we would probably not expect this ending to be preserved: if *-eh₂m* vocalized as *-aHa*, the nasal must have been restored in -ᾱν, as in acc.sg. τρᾱπεζαν 'table' < *-ih₂-m* after nom.sg. τρᾱπεζα < *-ih₂*. Cf. also acc.pl. -ᾱς < *-ans < *-eh₂-ms*, with restored *-ms* after *-o-ms* etc. (R i x 1992, 131, 133).

4. In Sanskrit, the long vowel of the *ā*-stem ending -ām is in first instance to be compared to the *ī*-stem ending -īm < *-ih₂m*, not **-iyam*. The acc.pl. -ās < *-aHn̥s* of the *ā*-stems and -īs of feminine *ī*-stems of the *devī*-type contain an unexpected consistent monosyllabic vowel as well, while the nominative singular endings -ā and -ī of the *ā*- and *ī*-stems never undergo shortening before a pausa, which also points to an underlying long vowel, not *-aH* or *-iH* < *-eh₂*, *-iH* (K u i p e r 1955, 36; L i t s c h e r 2015, 303ff.).[7] The monosyllabic ending of the acc.sg. *ā*-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. -ī, acc.sg. -īm

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[6] Similarly, Germanic reflects *-eh₂m* without vocalization of the nasal in Goth., OHG -a (cf. S t i l e s 1988, 119f.; 130; B o u t k a n 1995, 139 on these endings).

[7] L i t s c h e r (2015) proposes to reconstruct PIE nom.sg. *-āh₂*, *-īh₂* 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 -à and -ì (l.c., 33). Note, however, that it has been argued by K o r t l a n d t (1985, 115; 118; 120) that a long vowel followed by a laryngeal produced non-acute intonation in Baltic in the examples Lith. *duõs* 'will give' < *dēh₃s-*, *dẽs* 'will put' < *dʰēh₁s-*, -*dė* < *-dʰeh₁* in *arklìdė* 'stable', *avìdė* 'sheepfold' etc., Latv. *gùovs* 'cow' < *gʷēh₃u-* and *sãls* 'salt' < *seh₂l* (if not < *gʷh₃eu-*, *sh₂ēl*, see below). A further objection against Litscher's reconstruction *-īh₂* 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. M a t a s o v i ć 2009, 424f.), and there are no other cases where a reconstruction with *ī is to be preferred over one with *iH. Unlike L i t s c h e r (2015, 303, fn. 17), I find it impossible to derive Greek and Tocharian *-i̯a* from earlier *-īh₂*. It clearly points to *-ih₂* and undermines Litscher's argument that a reconstruction *-āh₂* is superior to *-eh₂* because the latter would be insufficiently marked. Accordingly, I prefer the traditional reconstructions nom.sg. *-eh₂* and *-ih₂*.

and acc.pl. *-īs* could have been created if none of them obtained their *-ī-* by sound law.

Outside the acc.sg. forms discussed here, the regular vocalization of PIE **-VHm* appears to be **-VHm̥* in Indo-Iranian, similar to the vocalization in Skt. *mā́s-* 'moon, month', *vā́ta-* 'wind' < **-VHn̥C-*. Examples are the following:

> acc.sg. ending of roots ending in **-aH-*, **-iH-*, **-uH-*, e.g. Skt. disyllabic *gnā́m*, *dhíyam*, *-bhúvam*, Av. trisyllabic *mazdąm*
>
> acc.sg. of the type Skt. *vr̥kíam*, *tanúam* < **-ih₂m*, **-uh₂m*
>
> 1sg. thematic optative ending **-iaH-m̥*, e.g. trisyllabic Skt. *yāyám*, OAv. *x́iiəm*
>
> 1sg.aor.ind. *abhuvam* < **bʰuHm̥* next to 2sg.aor.inj. *bhū́s*, 3sg. *bhū́t*

It seems likely that these are the forms that reflect the phonetic disyllabic outcome, while the monosyllabicity of acc.sg. *-ām*, *-īm*, occurring in two closely related categories, is due to analogy. There is in fact a distribution in the acc.sg. endings: Skt. *gnā́m*, *vr̥kíam*, Av. *mazdąm* etc. correspond to a nom.sg. in **-s*, while *-ām*, *-īm* 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 *-ā* and *-ī* 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 *-tī*, gerunds in *-yā*, *-tyā*, neuter plurals in *-ī*, *-ū* and *-ā* (< **-n̥H*), *ácchā* 'towards' and instrumental singular *śámī* '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

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[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 *-yā* and *-tyā*, 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 (D e l b r ü c k 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 *-aHn̥- of the accusative, cf. L u b o t s k y 1995, 229) and was subsequently introduced into the accusative plural *-aHas >> *-ās > Skt. -ās, Av. -ā̊, cf. also the secondary proterodynamic ī-stem nom.acc.pl.f. Skt. -īs, Av. -īš. 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. -iiō < *-ih₂es, acc.pl. Skt. -iyas, Av. -iiō < *-ih₂m̥s.

5. In Baltic, final *-m was consonantal after a laryngeal. However, the attested acc.sg. endings (Lith. -ą, 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 nā́mā for older nā́māni. 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. ἀραῖος 'accursed' to ἀρή 'curse' and Lat. anxius 'prone to distress' to angor 'distress' (N u s s b a u m 2016). It can therefore be assumed that the preform of the gerunds existed in Proto-Indo-Iranian already. Vedic nom.pl. nā́mā reflects *-mn̥h₂ (H a r ð a r s o n 1987, 97) and its vocalization indicates that the form already existed in Proto-Indo-Iranian (pace K u i p e r 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. P r o n k 2015, 209f., fn. 33).

[9] Except perhaps vocatives of the type dévi to devī́ (K u i p e r 1961, 18).

[10] Note that B e e k e s (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 *-eh₂ found in, e.g., Gr. -η 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 B e e k e s' statement (1988b, 61) that the Lith. non-acute acc.sg. -ą 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. -*ą́-ja* in definite adjectives, which in all probability also reflects PIE *-*eh₂m*, corresponding to the ending of Skt. loc.sg. *tásy-ām* (K o r t l a n d t 2005a, 24).[12] The question is which of the two reflects the phonetic development. I think it is the latter. The paradigm of the h_2-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, P e d e r s e n 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 -ᾱν. 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. S t a n g (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 -*âs*, which continues an old illative (V a n a g s 1994, 125; K o r t l a n d t 2005b). In Lithuanian, forms with a nasal in the ending are attested in the definite form of the adjective: Lith. acc.pl.f. *gerą́sias* (but m. *gerúosius* and dialectal f. *gerósias* corresponding to the nasalless Latv. acc.pl.f. *mazãs*). Stang (l.c.) argued that the

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[11] There is thus no Balto-Slavic shortening *-*ām* > *-*am* (*pace* H i l l 2013). On the acc.sg. ending in Old Prussian see K o r t l a n d t 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. -ās, which, however, continues *-eh₂m̥s (see above), and Go. *gibos*, which actually reflects *-eh₂ms (B o u t k a n 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, *ē*-stems, consonant stems) would be due to a regular development *-VHns > *-V̄ns > *-V̄s (S t a n g 1966, 186), cf. Lith. *mė̃sà*, but southern Žemaitian *mensà* < *mēmseh₂.[13] D e r k s e n (1998) argued that the loss of a nasal after a long vowel operated only in final position, with *mė̃sà* 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. *gerą́sias*. 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 *mė̃sà* 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*-, *ē*- and consonant stems (K o r t l a n d t 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 -*úosius* and the ill.pl. in -*úosna* < *-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. *-ām and nom.pl. *-ās. We can combine the observations on the accusative singular and plural endings of the $\bar{a}$-stems into a relative chronology:

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[13] For the feminine *i*-stems, S t a n g allows an alternative explanation involving analogical influence from the $\bar{a}$-stems (1966, 213).

Balto-Slavic

1. *-aHa- > *-ā-.
2. acc.sg. *-aHm >> *-ām.
3. *r̥ > *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 > *-âns, *-oHns > *-ôns, *-iHns > *-îns, *-uHns > *-ûns.
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. *-eh₂-m, nor acc.pl. *-eh₂-ms underwent a change to *-ām or *-āms 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

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[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. *vétra*, OPr. *wetro*, OCS *větrъ* 'wind' < *ueh₁nt-r- or *ueh₁-tr-; OCS *měsęcь* (Lith. *ménuo*) < *meh₁ns-; Lith. *nókti* 'to go ripe', Latv. *nãkt* 'to come' < *h₂ne-h₂nḱ- '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 *měsęcь* < *meh₁ns- probably shows dissimilation of the first nasal against the nasal in the following syllable. Lith. *vétra* etc. reflects an inner-Balto-Slavic formation *ueh₁-tr- without the nasal. For Lith. *nókti* etc., Kortlandt (l.c.) suggests reinterpretation of the second nasal of *h₂ne-h₂nḱ- 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 *dʰ(e)ǵom-m > *dʰ(e)ǵom, which is preserved in Hitt. *tēkan* (cf. Kloekhorst 2014, 231f.) and ToA *tkam̐*, B *kem̐* (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 *dieum 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 > *diēum. PIE *diēum would subsequently loose its *-u-. The same scenario would apply to *gʷh₃ēum (OAv. gm̥, 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 -ευς or -ης, e.g. Ion., Att. ἱερεύς, Myc. ijereu, but Arc. ἱερης, Cypr. ιjερες 'priest'. Based on the paradigm nom.sg. Ζεύς, acc.sg. Ζῆν, this situation could be explained by the reconstruction of nom.sg. *-ēus, acc.sg. *-ēm in early Greek,

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[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. spaś-, 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, *h₁eǵʰs, *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. Schwyzer 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. *hiθąm* '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 Ἄρευς from a paradigm *$h_2$reu-s*, acc.sg. *$h_2$reu-m > *h_2rēm* 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 ἱππεύς. 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. *ḫarnuu̯aš* < *-u-os* 'birthing chair', perhaps also in Av. nom. sg. *nasuš*, acc.sg. *nasāum* < *-āvam* 'corpse' < *neḱus*, *neḱou̯ṃ* (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 *$g^{w}h_3ēms$ < *$g^{w}h_3eums$.[17] It is reflected in Umb. *buf* and Ion., Att. βοῦς (next to regularized βόας). The Greek form reflects older *$g^{w}ōns$* 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. *gā̊* 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*, *gām* cannot be decided with any certainty. Both scenarios discussed here have their merits. Because the second scenario explains the facts with fewer

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[17] Traditionally *$g^{w}ōms$*. 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.	*$di\bar{e}us$ (< pre-PIE *$dieus$ << *$deius$)[19]
	acc.sg.	*$di\bar{e}m$ (< pre-PIE *$di\bar{e}um$ < *$dieum$)
	gen.sg.	*$diue/os$
	dat./loc.sg.[20]	*$diuei$
'cow'	nom.sg.	*$g^{w}oh_3u(s)$ or *$g^{w}eh_3us$
	acc.sg.	*$g^{w}h_3\bar{e}m$ (< pre-PIE *$g^{w}h_3\bar{e}um$ < *$g^{w}h_3eum$)[21]

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[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. *gā́m* is probably secondary (cf. disyllabic readings of *kṣā́* 'earth'), OAv. *gąm* is monosyllabic. The difference between monosyllabic *gáus* 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. *gáus* may be due to Brugmann's law if from *$g^{w}oh_3u(s)$ (Kuiper 1942, 32f.), or analogical to *dyáus* on the basis of the accustives *gā́m* and *dyā́m*. The short vowel in the monosyllabic gen.sg. *$g^{w}h_3eus$ 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. *déva-* < *$deiuo-$ '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. *dyávi*, 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 ih_2-stems Lith. *patì*, acc.sg. *pãčią*, gen.sg. *pačiõs* 'wife', OCS *bogyńi*, acc.sg. *bogyńǫ* 'goddess', and Goth. *bandi*, acc. sg. *bandja*, gen.sg. *bandjo* 'band' < *-ih_2, acc,sg. *-ieh_2-m, gen.sg. *-ieh_2-s, as opposed to the *u*-stems Skt. *sūnús*, *sūnúm*, *sūnós*, Lith. *sū́nus*, acc.sg. *sū́nų*, gen.sg. *sūnaũs* 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.	*$g^w h_3 \bar{e}ms$ (< pre-PIE *$g^w h_3 \bar{e}ums$ < *$g^w h_3 eums$)

Gr. βῶν is the regular reflex of PIE *$g^w h_3 \bar{e}m$, 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. *gùovs*, 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 *eh_3.

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. *$nh_2 \bar{e}m$. This form is, however, unattested, because Doric νᾶν is probably not *sprachwirklich* (v a n B e e k apud K o r t l a n d t 2014). It is conceivable that, if it ever existed, *$nh_2 \bar{e}m$ had been replaced by *$neh_2 um$ (Skt. *nā́vam*, Gr. νῆα, Lat. *nāvem*) in the proto-language already:

'ship' nom.sg.	*$neh_2 us$	
acc.sg.	*$neh_2 um$	(<< *$nh_2 \bar{e}m$ < pre-PIE *$nh_2 \bar{e}um$ < *$nh_2 eum$)
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 *$-eh_2 m$ > *$-\bar{a}m$.

STANGO DĖSNIS BALTŲ, GRAIKŲ IR INDŲ-IRANĖNŲ KALBOSE

Santrauka

Straipsnyje aptariama ide. garsų junginių *-eum* ir *-eh₂m* raida. Pirmasis jų virto *-ēm*, spėjant, kad *-u-* išnykdamas kompensaciškai pailginęs prieš tai ėjusį *-e-* („Stango dėsnis"), o *-eh₂m* virto *-ām* dar prokalbėje („išplėstas Stango dėsnis"). 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 dėsnis" nėra pagrįstas, o „Stango dėsnis" taip pat greičiausiai nėra teisingas. Siūlomi alternatyvūs paliudytų formų aiškinimai.

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