Alwin Kloekhorst

Evidence for a new pre-Proto-Indo-European sound law *-*ĕm* > PIE *-*ŏm*

Abstract: Several PIE forms with a word-final sequence *-*ŏm* would be morphologically better understandable if they ended in *-*ĕm*. It is therefore proposed that, in its prehistory, Proto-Indo-European underwent a sound law *-*ĕm* > *-*ŏm*. This article will treat the relevant evidence in favor of this new sound law, as well as discuss an apparent counterexample. Moreover, it will offer some typological parallels for this development.

Keywords: Indo-European, phonology, sound change

1 Introduction

In this article, it will be argued that, in its recent prehistory, Proto-Indo-European underwent a sound law *-*ĕm* > *-*ŏm*, i.e. a coloring of pre-PIE **ĕ* to PIE **ŏ* when standing before a word-final *-*m*. To my mind, this sound law would explain several PIE forms ending in *-*ŏm* that are thus far unexplained (see §§2–4). Moreover, there are no serious counterexamples to it (see §5). After a discussion of a few possible additional examples in favor of this sound law (§6), I will come to conclusions (§7) and will subsequently say something about its relative chronology (§8) and typological parallels (§9). But let us first discuss the Proto-Indo-European lexemes that, in my view, have undergone this new sound law.

2 **dʰǵŏm* 'earth (loc.sg.)'

The Hittite paradigm for 'earth' is generally reconstructed as in (1).[1]

1 Note that this word is usually reconstructed **dʰeǵʰ-em-*, with **ǵʰ*, but see Kloekhorst 2014b: 61–63 for arguments that indicate that the velar stop was not a *media aspirata* **ǵʰ*, but rather a *media* **ǵ*, i.e. **dʰeǵ-em-*.

Alwin Kloekhorst, Leiden University; A.Kloekhorst@hum.leidenuniv.nl

https://doi.org/10.1515/if-2024-0008

(1) nom.sg. *tēkan* < **dʰégʰ-ōm*
acc.sg. *tēkan* < **dʰégʰ-om-m*
gen.sg. *taknaš* < **dʰgʰ-m-ós*
dat.sg. *taknī* < **dʰgʰ-m-éi*
loc.sg. *tagān* < **dʰgʰ-Vm*

The interpretation of most of its case forms is clear, except for the loc.sg. form *tagān*. Synchronically, there can be no doubt that this form represents /t(ə)kắn/, with a long accented /ắ/ in its suffixal syllable (Kloekhorst 2014a: 311f.), but the etymological origin of this vowel is debated. On the basis of the Skt. loc.sg. form *kṣámi* 'earth', which unambiguously reflects **dʰgʰ-ém-i*, with *e*-grade in its suffix, it is sometimes assumed that the Hitt. endingless loc.sg. form *tagān* must go back to a form with *e*-grade in its suffix, too. It is for this reason that Kimball (1999: 164) proposes that Hittite *tagān* is the direct outcome of a PIE "**dhĝh-én*", i.e. in our notation, **dʰgʰém*, through a lowering of **é* to *a* before word-final nasal. However, as Melchert (1994: 135) argues, in all other cases where a PIE **é* is colored to an *a*-vowel in Hittite, the result is a short vowel, which makes it unlikely that *tagān*, with its clearly long /ắ/, can go back to **dʰgʰém* (cf. also Melchert 2003: 150, fn. 17). According to Zeilfelder (2001: 52f.), another possibility would be to assume that *tagān* reflects **dʰgʰḗm*, with long **ē*,[2] but according to Melchert (2003: 150, fn.17), this is "phonologically impossible." Melchert himself (1994: 135) rather follows Neu 1980: 8, fn. 7, who states that *tagān* can "unbedenklich" be interpreted as reflecting "**dhgʰóm*," i.e. in our notation **dʰgʰóm*.[3] Although at first sight this seems attractive since PIE accented **ó* generally yields a Hittite long /ắ/, this is not the case before word-final **m* in a monosyllabic word: on the basis of the example of PIE **ḱóm* > Hitt. *ku-u-un* 'this (one) (acc.sg.c.)' = /k:ő́n/ (EDHIL: 99; Kloekhorst 2014a: 523), we would rather expect that a preform **dʰgʰóm* should have yielded Hitt. ***ta-ku-u-un* = **/t(ə)kő́n/, with /ő́/. An alternative interpretation offered by Melchert (2003: 150) is that Hitt. *tagān* "could reflect the old endingless locative **dʰgʰém* (> PA **(d)zgʰém*), renewed after **dégom* as **(d)zgʰóm*."[4] Yet, this faces the same problem as with **dʰgʰóm* above: we would then expect an outcome ***takūn* = **/t(ə)kő́n/. Another alternative proposed by Melchert (2003: 150) is that *tagān* "could also continue a zero-grade accusative **dzgʰőm* (= Skt.

2 Zeilfelder proposes to interpret *tagān* as "einen dehnstufigen Lokativ," i.e. with lengthened grade, but is not explicit about the color of the long vowel. However, from the context, it seems clear she means **ē*.

3 The same reconstruction is given by Mayrhofer (1986: 152) without explicit argumentation.

4 Note that Melchert (2003) attempts to argue that PIE **TK*-clusters underwent a "thorn"-development in Anatolian, and that **dʰgʰ-* should therefore have yielded PAnat. **(d)zg-*. See EDHIL: 861f.; Kloekhorst 2014b: 63–65 for a refutation of this idea: **TK*-clusters in Anatolian were retained as *TK*-clusters.

kṣắm), again with trivial renewal of the initial consonantism after the synchronically productive weak stem." This idea is problematic, however, since the original PIE acc.sg. form **dʰégʰ-om-m* is generally thought to have been preserved as such in Anatolian, yielding PAnat. */tḗḱom/, which merged with nom.sg. **dʰégʰ-ōm* > PAnat. */tḗḱom/ into Hitt. nom.-acc.sg. *tēkan*. Therefore, Melchert's morphological analysis cannot be correct. Nevertheless, phonologically, a preform with an **ō* in the suffix, i.e. **dʰgʰ-ṓm*, would indeed regularly yield Hitt. *tagān* = /t(ə)kắn/.

All in all, we can conclude that, from the point of view of Hittite historical phonology, *tagān* can only be interpreted as reflecting a (transposed) PIE preform **dʰgṓm*, with **ṓ*. Yet morphologically speaking, this form is difficult to interpret. Our knowledge of the Indo-European accent-ablaut classes predicts that the endingless loc.sg. form of 'earth' should be **dʰgʰ-ém*, with *e*-grade,[5] or possibly **dʰgʰ-ḗm*, with *ē*-grade.[6] Yet, as we have seen above, both **dʰgʰém* and **dʰgʰḗm* would not regularly yield Hitt. *tagān* = /t(ə)kắn/, which rather seems to reflect a form **dʰgṓm*.

In order to bridge the gap between these forms, I hereby propose that the PIE endingless locative of the word for 'earth' was **dʰgṓm* (as reflected in Hittite *tagān*), but that this form goes back to a pre-PIE form **dʰgḗm* through a pre-PIE sound law **-ĕm* > **-ŏm*, i.e. a development in which earlier **ĕ* is colored to PIE **ŏ* in the position before word-final **-m*. Moreover, we may assume that pre-PIE **dʰgḗm* is the reflex of an even earlier form **dʰgʰém* that underwent lengthening of its **e*, possibly conditioned by the fact that it stood in a monosyllable before a resonant (but this is more speculative).[7] See the developments in Table 1, in which "A" denotes the possible sound law of monosyllabic lengthening, and "B" the sound law **-ĕm* >

5 Compare e.g. Skt. loc.sg. *áśman* 'stone' < **-men* (the reconstruction with **e* suggested by the corresponding *i*-loc.sg. *áśmani* 'stone' < PIE **-men-i*). Note that the existence of a stem with *e*-grade in the suffix in the Proto-Anatolian word for 'earth' is confirmed by CLuw. *tiịamm(i)-* 'earth', which because of Čop's Law can only reflect a (transposed) formation **dʰ(e)ǵ-ém-* with **é* in its suffixal syllable: PIE **ém-V°* > CLuw. *-ammV°*. This seems to imply that the PIE *i*-locative **dʰgem-i* was inherited as such into Anatolian.

6 Compare the situation in Sanskrit *u*-stems, where we find endingless loc.sg. forms in *-au* < PIE **-ēu* (next to *i*-loc.sg. forms in *-avi* < PIE **-eu-i*).

7 Already Wackernagel (1896: 68) proposed that in Proto-Indo-European one of the original loci of lengthened grade was formed by monosyllabic words, which would be the result of "Vokaldehnung in Monosyllabis unter dem Druck des Akzents." And although it is clear that not every monosyllabic word that can be reconstructed for the proto-language contains a long vowel, there are enough PIE monosyllables with a long vowel to seriously consider the possibility that in the prehistory of PIE at a certain point in time, vowels in monosyllabic words under some (still to be determined) conditions were lengthened, cf. e.g. Kortlandt 1975: 84–86; Beekes 1990: 39–45; Pronk 2016: 28; Byrd 2017: 2069. However, since the present article is primarily concerned with vowel quality and less with quantity, it goes beyond its scope to discuss the exact place of monosyllabic lengthening within the relative chronology of (pre-)PIE developments and its possible conditions. I will therefore limit

Tab. 1: The development of the PIE endingless loc.sg. **dʰǵőm* 'earth'

	pre-pre-PIE	A	pre-PIE	B	PIE		Anat.		Skt
i-loc.	**dʰǵ-ém-i*	=	**dʰǵ-ém-i*	=	**dʰǵ-ém-i*	>	CLuw. *tiḭamm-*	~	*kṣámi*
Ø-loc.	**dʰǵ-ém*	>	**dʰǵ-ḗm*	>	**dʰǵ-ṓm*	>	Hitt. *tagān*	~	...

*-*ŏm* that is the topic of this article.[8] See §8 below, for the reasons that these two developments should be chronologically ordered in this way.

3 **dṓm* 'house'

In Kloekhorst 2014c, it was argued that PIE did not know acrostatic *o/e*-ablauting suffixed nouns, but that the acrostatically inflected nouns that PIE did know can be reconstructed as showing accented *e*-grade in their root throughout the paradigm as shown in (2).

(2) nom.sg. **CéC-C(-s)*
acc.sg. **CéC-C(-m)*
gen.sg. **CéC-C-s*
dat.sg. **CéC-C-i*

In the case of root nouns, it was argued in Kloekhorst 2014c: 152f., 161, with fn. 80 that the allegedly acrostatically inflected PIE noun **pod-/ped-* 'foot' was in fact mobile and showed the following original paradigm shown in (3).

(3) nom.sg. **pḗd(-s)*
acc.sg. **péd-m*
gen.sg. **pod-és* (<< **pd-és*)
dat.sg. **pod-éi* (<< **pd-éi*)

However, in that article, the noun **dom-/dem-* 'house' was left out of consideration, and it will therefore be discussed here.

The noun **dom-/dem-* 'house' is usually reconstructed as an acrostatic *o/e*-ablauting neuter root noun with the paradigm shown in (4).

myself to merely pointing out the possibility that in some of the forms discussed in this paper a long vowel may originate from an earlier short vowel through monosyllabic lengthening without insisting on it.

8 Cf. Kloekhorst 2018: 189–192 for the terms "*i*-locative" vs. "Ø-locative".

(4) nom.-acc.sg. **dṓm* (Arm. *tun*)
gen.sg. **dém-s* (Gr. δεσ-, Skt. *dán*, GAv. *dāŋg*)
loc.sg. **dḗm* (Av. *dąm*)

Note that in some publications, the word for 'house' is reconstructed as a masculine noun (with nom.sg. **dóm-s*, acc.sg. **dóm-m*) (e.g. Meier-Brügger 2002: 217; Fortson 2010: 121), but there is no clear argument in favor of that. In fact, if Gr. δῶ 'house', which is a nom.-acc.sg. neuter form, goes back to **dom-/dem-* as well,[9] it would specifically point towards a reconstruction of this noun as showing neuter gender. Another remark that needs to be made is that the Avestan loc.sg. form *dąm* can indeed reflect **dḗm*, as is usually reconstructed, but could in principle reflect a PIE form **dṓm* as well.

One of the major problems regarding this reconstruction of the word 'house' is that, if one agrees with the conclusions of Kloekhorst 2014c, it would be the only **o/e*-ablauting acrostatic noun left that needs to be reconstructed for PIE. However, if we assume that the form **dṓm* goes back to an earlier **dḗm* through our new rule, i.e. pre-PIE **-ĕm* > PIE **-ŏm*, we would arrive at the pre-PIE paradigm shown in (5).

(5) nom.-acc.sg. **dḗm*
gen.sg. **dém-s*
loc.sg. **dḗm*

Moreover, if the lengthened grade in **dḗm* is due to lengthening in monosyllables (conditioned by the word-final resonant? Cf. fn. 7), we arrive at the following earlier paradigm (6).

(6) nom.-acc.sg. **dém*
gen.sg. **dém-s*
loc.sg. **dém*

This paradigm would then correspond to the acrostatic paradigm of suffixed nouns with *e*-grade throughout as was proposed for PIE in Kloekhorst 2014c.[10] I therefore

9 Note, however, that the etymological analysis of Gr. δῶ is not fully clear. Its interpretation as reflecting a form **dṓm* of a root noun (thus e.g. Schmidt 1889: 222–224; Schwyzer 1939: 569; Chantraine 1942: 230) does not square with the fact that, e.g., Gr. nom.sg. χθών 'earth' is generally interpreted as reflecting **dʰǵṓm*, implying that a preform **dṓm* should have yielded Gr. **δών. One could argue, perhaps, that in Homer the virtually consistent position of δῶ at the end of the verse is relevant for its aberrant shape. Alternatively, one could argue that in χθών the word-final *-ν* was restored on the basis of the rest of the paradigm, but this would still leave the circumflex accentuation of δῶ to be explained.

10 I will not go into the Arm. gen.sg. form *tan* 'house', which seems to reflect **dn̥-*, and which presupposes that some cases in the paradigm of 'house' were of the shape **dm-(C)V́°*. Since in Sanskrit

view this example as an interesting piece of evidence in favor of the sound law pre-PIE *-*ĕm* > PIE *-*ŏm* as proposed in this article.

4 The gen.pl. ending *-om*

At first sight, the gen.pl. endings of Sanskrit (*-ām* in *o*-stems and in *n*-stems), Avestan (*-ąm* in *o*-stems and in consonant-stems), and Greek (*-ων* in *o*-stems and in consonant-stems) seem to point to a PIE ending *-*ōm*, but this reconstruction is in fact impossible: in Sanskrit and Avestan PIE *-*ōm* should have yielded **-*ā*,[11] not the *-ām* and *-ąm*, respectively, that we actually find; and in Greek, PIE *-*ōm* should, when accented, have yielded **-ών,[12] not the *-ων* that we actually find. Moreover, in Indo-Iranian, the gen.pl. endings Skt. *-ām*, Av. *-ąm* are in fact disyllabic *-ăăm* (Kümmel 2013), matching the circumflex accentuation of Greek *-ων*. Together, these point to *-*oom* (or *-*oHom*). In Slavic (gen.pl. *-ъ) and Baltic (Lith. gen.pl. *-ų̃*), the ending contains a short vowel, which is best explained by a reconstruction *-*om*.[13] This also goes for Lat. *-um* (in consonant-stems),[14] which at face value seems to reflect *-*om*, although here a shortening of earlier *-*ōm* cannot be excluded (Weiss 2020: 136). In Celtic, the Old Irish gen.pl. ending *-^{N}* (in *o*-stems, e.g. *fer*^{N} 'of men', as well as consonant-stems. e.g. *rígN* 'of kings') points to a short vowel, too: *-*om* (Kortlandt 1978: 290f.). In Gothic, we find a gen.pl. ending *-e* in *o*-stems, *u*-stems and consonant-stems, but *-∅* in *eh_2*-stems (e.g. gen.pl. *gib-o-∅* 'gifts') and **i*-stems

the gen.pl. form *damā́m* has an oxytone intonation that can hardly be of an analogical nature, I am inclined to assume that in the paradigm of **dem-* (at least some) plural case forms may originally have been accented on their endings (e.g. loc.pl. **dm-sú*). Compare the situation that in proterodynamic nouns, the loc.pl. form has zero-grade of its suffix, e.g. Skt. *sūnúṣu* 'sons' (not **sūnóṣu*), implying an originally desinentially stressed *-*u-sú* instead of suffixal stressed **-*éu-su* that one *a priori* may have expected in a proterodynamic paradigm. Perhaps this implies that in acrostatic paradigms, too, we should reconstruct loc.pl. **CC-sú* instead of the **CéC-su* that one would *a priori* expect.

11 Cf. the fact that Skt. nom.sg. *kṣā́ḥ* 'earth' reflects **kṣā́* + *-s* (not **kṣā́m* + *-s*, which would have yielded **kṣā́n*), in which **kṣā́* is the direct cognate of Gr. nom.sg. χθών 'earth' < (virtual) **dʰǵōm*, implying that PIE *-*ōm* > Skt. *-ā*. Similarly in Avestan, where nom.sg. *zå* 'earth' reflects **zā* + *-s* (not **zām* + *-s*, which would have yielded **zāŋg*), in which **zā* < **dʰǵōm*.

12 As in χθών 'earth' < **dʰǵōm*, cf. also the previous footnote.

13 Cf. Kortlandt 1978. The assumption that the short vowels in Baltic and Slavic are the result of language-specific shortenings (e.g. Kümmel 2013: 198–200, with references) is *ad hoc*, and does not match the retention of vowel length in e.g. *-*ōn* > Lith. *-uõ*, Slav. *-y* (cf. Kortlandt 1978: 287).

14 Note that in Classical Latin, *o*-stem nouns show the renewed ending *-ōrum*, replacing earlier *-um*.

(e.g. gen.pl. *gast-e-∅* 'guests'). The latter can only go back to an ending with a short vowel, and in view of the other branches, we can reconstruct *-*om*. The ending *-e* was generalized from the *-*i*-stems, where *-e* is a reflex of *-*ei-om* (cf. Kortlandt 1978: 293; 2007 for these analyses). In Anatolian, we find Hitt. gen.pl. *-an* (when unaccented) and *-ān* (when accented), which can in principle reflect either *-*om* or *-*ōm*. All in all, we find *-*om* in Balto-Slavic, Celtic, and Germanic, but *-*oom* (or *-*oHom*) in Indo-Iranian and Greek (Latin and Anatolian are ambiguous). This pair, *-*om* vs. *-*oom* (*-*oHom*), resembles, e.g., the pair *-*ei* vs. *-*oei* (*-*oHei*) that is found in the dat.sg. case, where *-*ei* is the consonant-stem ending and *-*oei* (*-*oHei*) the *-*o*-stem ending, going back to a combination of the suffix *-*o*- + the consonant-stem ending *-*ei*. It therefore seems best to assume that, in the gen.pl. case, *-*om* was the original consonant-stem ending, whereas *-*oom* (*-*oHom*) is the original *-*o*-stem ending (i.e. suffix *-*o*- + the consonant-stem ending *-*om*), but that in most languages this distribution was lost through time.[15]

If we focus on the original consonant-stem ending *-*om*, it is an interesting fact that this ending is only attested with *o*-grade: other case endings that are attested with *o*-grade are also attested with *e*-grade: gen.sg. *-*os* next to *-*es* (also *-*s*); abl. *-*oti* next to *-*eti* (also *-*ti*); all.sg. *-*o* next to *-*e* (also *-∅); cf. Kloekhorst 2018: 192f. for these examples. This raises the question of why gen.pl. *-*om* is only attested with *o*-grade. I want to propose that here too a pre-PIE sound law *-*ĕm* > *-*ŏm* has taken place, and that, originally, the gen.pl. ending had both an *e*-grade and an *o*-grade form, *-*em* next to *-*om*, but that the former regularly turned into *-*om*.

On the basis of the other cases that show *e*- as well as *o*-grade, the original distribution of the two variants seems to have been that *e*-grade is found when the ending was accented, whereas *o*-grade is found when the ending was unaccented (Kloekhorst 2018: 192f.). This may mean that we have to assume pre-PIE accented *-*ém* vs. unaccented *-*om*. We may therefore assume that, for instance, the original, pre-PIE, gen.pl. form of 'foot' was **pod-ém*, which, through our new sound law, changed to **pod-óm*, as is directly attested in Hitt. *patān* 'of the feet' = /patán/.

5 A possible counterexample

Next to these three cases where a sound law *-*ĕm* > *-*ŏm* would elucidate the presence of an *ŏ*-grade before word-final **m*, we also have to discuss an apparent counterexample, *viz.* the Greek nom.-acc.sg.n. form ἕν 'one', which seemingly reflects PIE

15 Cf. Kortlandt 2014: 10f. and Kloekhorst 2017: 385, fn. 3 for a similar analysis.

**sém*, with **e* before word-final **m*. However, the form ἕν must be viewed within the larger contact of the paradigm it belongs to, cf. (7).

(7) nom.sg.m εἷς < *ἕν-ς
acc.sg.m ἕν-α
nom.-acc.sg.n ἕν
gen.sg. ἑν-ός

All forms in the paradigm show the stem ἑν-, but this is not the original situation. On the basis of the Myc. dat.sg. form *e-me* 'one' = /hemei/, it is clear that the paradigm originally contained a stem /hem-/ as well, and that /hen-/ apparently became productive and has in relatively recent times spread throughout the entire paradigm. According to Rix (1992: 145), the stem ἑν- spread on the basis of the nom.sg.m form εἷς < *ἕν-ς, which itself reflects PIE **sém-s* or **sém-s* (through Osthoff's Law). This implies that the nom.-acc.sg.n. form ἕν need not be old: it may be the result of the relatively recent spread of the stem ἑν-.

Moreover, next to the *e*-grade root stem **sem-* that we find in Gr. ἑν-, in other Indo-European languages we find evidence for the existence of formations based on the numeral 'one' with other ablaut-grades in their root. First, we find **sēm-* in **sēm-i* 'half' (Skt. *á-sāmi* 'not half, completely', Gr. ἡμι- (in cpds.) 'half', Lat. *sēmi-* (pref.) 'half'), which probably is an old locative of 'one' (e.g. Beekes 2010: 520). Second, we find **sōm-* in OCS *samъ* 'self, alone' < **sōmo-*, which can hardly be the regular **o*-stem derivative of the root **sem-* (we would expect **o*-grade in the root), so may rather be seen as the result of a transfer of the original root noun to the **o*-stem inflection. Therefore, assuming that the original paradigm of 'one' had forms with *ē*-grade (**sēm-*) and *ō*-grade (**sōm-*) in their roots as well, we may envisage that this paradigm had the following shape, cf. (8).

(8) nom.sg.m **sḗm-s*
acc.sg.m **sém-m*
nom.-acc.sg.n **sṓm*
gen.sg. **sm-és*
dat.sg. **sm-éi*

If we take into consideration the possibility that PIE nom.sg.m **sḗm-s* derives from original **sém-s* through monosyllabic lengthening, and nom.-acc.sg.n. **sṓm* is the result, through our new coloring rule, of earlier **sḗm*, which itself underwent lengthening from an earlier **sém*,[16] we arrive at a pre-PIE paradigm, cf. (9).

16 Cf. fn. 7 for a discussion of the possibility of a monosyllabic lengthening rule in (pre-)PIE.

(9) nom.sg.c. **sém(-s)*
acc.sg.c. **sém-m*
nom.-acc.sg.n **sém*
gen.sg. **sm-és*
dat.sg. **sm-éi*

Whatever the correct reconstruction of the paradigm of 'one' is, it is clear that Gr. ἕν cannot be used as a counterargument to the new sound law proposed here.

6 Some possible other examples

If the newly proposed sound law pre-PIE *-ĕm > PIE *-ŏm can be substantiated, it would also be interesting to consider the possibility that the thematic secondary 1sg. ending *-*o-m* (e.g. **g^{w}m-skó-m* from **g^{w}m-ské/ó-* 'to come') can be derived from earlier *-*e-m* (**g^{w}m-ské-m*). Moreover, if the thematic primary 1sg. ending was not *-*o-H* (e.g. **g^{w}m-skó-H*), but in fact *-*e-h$_3$* (**g^{w}m-ské-h$_3$*), we would arrive at the following pre-PIE paradigms for the singular, with all forms having accented *e*-grade, cf. Tab. 2.[17]

Tab. 2: Possible pre-PIE reconstructions of the thematic singular endings

	pres.	**pret.**
1sg.	**g^{w}m-ské-h$_3$*	**g^{w}m-ské-m*
2sg.	**g^{w}m-ské-h$_1$i*	**g^{w}m-ské-s*
3sg.	**g^{w}m-ské*	**g^{w}m-ské-t*

Another interesting case is the word for 'snow, winter'. The forms Gr. χιών 'snow' ~ Arm. *jiwn* 'snow' ~ Av. *ziiå* 'winter' all reflect a virtual **ǵ^{h}i-ōm*, whereas we find a stem **ǵ^{h}i-em-* in Lat. *hiems* 'winter' and Hitt. *giemi* 'in winter'. In order to explain

17 On a side note: I think the ending of PIE thematic 1pl. forms can be reconstructed as (primary/secondary) *-*o-m* (e.g. 1pl. **g^{w}m-skó-m*), which, because of its homophony with (secondary) 1sg. *-*o-m*, was in the different IE branches remade in different ways, e.g. Slav. *-*emom* (OCS -*emъ*), PGr. *-*omem*/*-*omes* (Gr. -ομεν/-ομες), IIr. *-*omes* (Skt. -*āmas(i)*). This ending *-*o-m* could then, through our new sound law, go back to pre-PIE *-*e-m* (e.g. **g^{w}m-ské-m*), in which *-*m* is the zero-grade variant of the 1pl. ending *-*mé* as found in, e.g., athematic root verbs (**h$_1$s-mé* 'we are', **h$_1$i-mé* 'we go', etc.). I hope to elaborate on this idea on a different occasion.

the relationship between these two stems, this word is usually explained as showing an originally amphidynamic *m*-stem paradigm, cf. (10).[18]

(10) nom.sg. **ǵʰéi-ōm* >> **ǵʰi-ōm* > Gr. χιών, Arm. *jiwn*, Av. *ziiå̊*
acc.sg. **ǵʰéi-om-m*
gen.sg. **ǵʰi-m-és*
loc.sg. **ǵʰi-ém-i* > **ǵʰi-em-* > Lat. *hiem-*, Hitt. *giemi*

It is remarkable, however, that nowhere in Indo-European can forms of this lexeme be found that show full grade in the root, ***ǵʰei-(V)m-*.[19] This absence need not be an insurmountable problem: for instance, outside of Anatolian we do not find forms with full-grade root of the *m*-stem noun **dʰeǵ-(V)m-* 'earth', either. Nevertheless, it may be more attractive to reconstruct an original hysterodynamic (*patēr*-type) paradigm for 'snow, winter', with nom.sg. **ǵʰi-ṓm* reflecting pre-PIE **ǵʰi-ém* through our new sound law. This would result in the paradigm in Tab. 3.

Tab. 3: Reconstruction of 'snow, winter' as a hysterodynamic noun

	pre-PIE		**PIE**		
nom.sg.	**ǵʰi-ém*	>	**ǵʰi-ṓm*	>	Gr. χιών, Arm. *jiwn*, Av. *ziiå̊*
acc.sg.	**ǵʰi-ém-m*	>	**ǵʰi-ém-m*	>	Lat. *hiem-*
gen.sg.	**ǵʰi-m-és*	>	**ǵʰi-m-és*		
loc.sg.	**ǵʰi-ém-i*	>	**ǵʰi-ém-i*	>	Hitt. *giemi*

With this reconstruction, we no longer need to assume several analogical reshufflings of ablaut grades throughout the paradigm.

7 Conclusions

If we postulate a pre-PIE sound law **-ĕm* > **-ŏm*, it would explain the following forms:

1. Hitt. loc.sg. *tagān* 'earth' < PIE **dʰǵ-ṓm* < pre-PIE **dʰǵ-ém* < **dʰǵ-ém* (beside *i*-loc. **dʰǵ-ém-i* > Skt. *kṣámi*)

18 E.g. Beekes 2011: 196; NIL: 162 (with many references). Steer's (2013) proposal that this word was in fact a root noun does not convince.

19 We do find **ǵʰei-* in *n*-stem and **h_2*-stem derivations, e.g. Gr. χειμών < **ǵʰei-m-ōn*, Lith. *žiemà* < **ǵʰei-m-eh$_2$-*, but these are different formations.

2. Nom.-acc.sg.n. Arm. *tun* 'house' < **dṓm* < pre-PIE **dém̆* < **dém* (next to gen.sg. **dém-s*)
3. PIE gen.pl. ending **-óm* < pre-PIE **-ém* (just like gen.sg. **-és* next to **-os*)

And possibly:
4. Thematic 1sg.pret.act. **-o-m* < pre-PIE **-e-m*
5. Nom.sg. **ǵʰi-ṓm* < pre-PIE **ǵʰi-ém̆*

The only apparent counterexample, Gr. nom.-acc.sg.n. ἕν 'one' < virtual **sém*, must then be explained secondarily, probably as a form that has taken over the stem ἑν- from nom.sg.m εἷς < *ἑν-ς < **sém̆-s*.

8 Relative chronology

Some remarks may be made about the relative chronology of this sound law with respect to other sound laws. The nom.sg.m **sḗms* 'one' (> Gr. εἷς) must have received its ending **-s* in relatively recent times, since we would expect this form originally to have been **sḗm* (either because the original nom.sg. ending was -∅, or because an earlier form **séms* underwent Szemerényi's Law to **sḗm*). However, the addition of **-s* to **sḗm* must have preceded our new sound law **-ĕm* > *-ŏm*. We therefore arrive at the following relative chronology:

1. (possible) lengthening rules:
   - nom.sg.m. **sém(-s)* > **sḗm*
   - nom.-acc.sg.n. **sém* > **sḗm*
   - nom.-acc.sg.n. **dém* > **dḗm*
   - loc.sg. **dʰǵém* > **dʰǵḗm*
2. addition of **-s* in nom.sg.m. **sḗm* >>**sḗm-s*
3. coloring of **-ĕm* > **-ŏm*

9 Typological parallels

In order to substantiate the phonetic side of our newly proposed sound law, I present here some typological parallels, i.e. cases where a language shows a specific development of a vowel preceding a word-final **-m* that is not found before other word-final consonants or before word-medial **m*. The first parallel comes from Hittite, where PIE **ó* develops into Hitt. /ṓ/ before word-final **-m* in mono-

syllables (PIE **ḱóm* > Hitt. *kūn* 'this one (acc.sg.)' = /kṓn/), but shows the regular development to /ā/ before other word-final consonants (e.g. PIE **ḱós* > Hitt. *kāš* 'this one (nom.sg.c.)' = /kā́s/) or before word-medial **m* (PIE **Hómh$_1$s-* > Hitt. *ānš-* 'to wipe' = /ʔā́ns-/). The second parallel is from Lithuanian, where PIE **o* develops into *u* before word-final **-m* (PIE gen.pl. **-om* > Lith. *-ų*), but shows the regular development to *a* before other word-final consonants (e.g. PIE nom.sg. **-os* > Lith. *-as*) or before word-medial **m* (e.g. PIE **domo-* > Lith. *nãma-* 'house'). These two cases therefore support our proposal that pre-PIE knew a sound law **-ĕm* > PIE **-ŏm* that is specifically conditioned by word-final **-m*.

Abbreviations

EDHIL — Alwin Kloekhorst (2008). *Etymological Dictionary of the Hittite Inherited Lexicon*. Leiden & Boston: Brill.

NIL — Dagmar S. Wodtko, Britta Irslinger & Carolin Schneider (2008). *Nomina im indogermanischen Lexikon*. Heidelberg: Winter.

Bibliography

Beekes, Robert S. P. (1990). "Wackernagel's explanation of the lengthened grade". In: *Sprachwissenschaft und Philologie. Jacob Wackernagel und die Indogermanistik heute*. Ed. by Heiner Eichner & Helmut Rix. Wiesbaden: Reichert, 33–35.

Beekes, Robert S. P. (2010). *Etymological Dictionary of Greek*. 2 vols. Leiden & Boston: Brill.

Beekes, Robert S. P. (2011). *Comparative Indo-European Linguistics. An Introduction*. Ed. by Michiel de Vaan. 2nd ed. Amsterdam & Philadelphia: Benjamins.

Byrd, Andrew M. (2017). "The phonology of Proto-Indo-European". In: *Handbook of Comparative and Historical Indo-European Linguistics. An International Handbook*. Ed. by Jared S. Klein, Brian D. Joseph, Matthias Fritz & Mark Wenthe. Vol. 3. Berlin & Boston: de Gruyter Mouton, 2056–2079.

Chantraine, Paul (1942). *Grammaire homérique*. Vol. 1: *Phonétique et morphologie*. Paris: Klincksieck.

Fortson, Benjamin W. (2010). *Indo-European Language and Culture. An Introduction*. 2nd ed. Chichester & Malden: Wiley-Blackwell.

Kimball, Sara E. (1999). *Hittite Historical Phonology*. Innsbruck: Institut für Sprachwissenschaft.

Kloekhorst, Alwin (2014a). *Accent in Hittite. A Study in Plene Spelling, Consonant Gradation, Clitics, and Metrics*. Wiesbaden: Harrassowitz.

Kloekhorst, Alwin (2014b). "Proto-Indo-European "thorn"-clusters". In: *Historische Sprachforschung* 127, 43–67.

Kloekhorst, Alwin (2014c). "The Proto-Indo-European acrostatic inflection reconsidered". In: *Das Nomen im Indogermanischen. Morphologie, Substantiv versus Adjektiv, Kollektivum*. Ed. by Norbert Oettinger & Thomas Steer. Wiesbaden: Reichert, 140–163.

Kloekhorst, Alwin (2017). “The Hittite genitive ending *-ăn*”. In: *Usque ad radices*. Indo-European Studies in Honour of Birgit Anette Olsen. Ed. by Bjarne Simmelkjær Sandgaard Hansen, Adam Hyllested, Anders Richardt Jørgensen, Guus Kroonen, Jenny H. Larsson, Benedicte Nielsen Whitehead, Thomas Olander & Tobias Mosbæk Søborg. København: Museum Tusculanum, 385–400.

Kloekhorst, Alwin (2018). “The origin of the Proto-Indo-European nominal accent-ablaut paradigms”. In: *100 Jahre Entzifferung des Hethitischen. Morphosyntaktische Kategorien in Sprachgeschichte und Forschung*. Ed. by Elisabeth Rieken, Ulrich Reupel & Therese M. Roth. Wiesbaden: Reichert, 179–203.

Kortlandt, Frederik H. H. (1975). *Slavic Accentuation. A Study in Relative Chronology*. Lisse: DeRidder.

Kortlandt, Frederik H. H. (1978). “On the history of the genitive plural in Slavic, Baltic, Germanic, and Indo-European”. In: *Lingua* 45, 281–300.

Kortlandt, Frederik H. H. (2007). “Gothic Gen.Pl. *-e*”. In: *Historische Sprachforschung* 120, 237–240.

Kortlandt, Frederik H. H. (2014). “Reconstructing Balto-Slavic and Indo-European”. In: *Baltistica* 49.1, 5–13.

Kümmel, Martin J. (2013). “Zur Endung des Genitivs Plural im Indoiranischen”. In: *Indogermanische Forschungen* 118, 193–212.

Mayrhofer, Manfred (1986). *Indogermanische Grammatik*. Vol. 1.2: *Lautlehre [Segmentale Phonologie des Indogermanischen]*. Heidelberg: Winter.

Meier-Brügger, Michael (2002). *Indogermanische Sprachwissenschaft*. 8th ed. Berlin & New York: de Gruyter.

Melchert, H. Craig (1994). *Anatolian Historical Phonology*. Amsterdam & Atlanta: Rodopi.

Melchert, H. Craig (2003). “PIE “Thorn” in Cuneiform Luvian?” In: *Proceedings of the Fourteenth Annual UCLA Indo-European Conference*. Ed. by Karlene Jones-Bley, Martin E. Huld, Angela Della Volpe & Miriam Robbins Dexter. Washington, DC: Institute for the Study of Man, 145–161.

Neu, Erich (1980). *Studien zum endungslosen „Lokativ“ des Hethitischen*. Innsbruck: Institut für Sprachwissenschaft.

Pronk, Tijmen (2016). “Stang’s Law in Baltic, Greek and Indo-Iranian”. In: *Baltistica* 51.1, 19–35.

Rix, Helmut (1992). *Historische Grammatik des Griechischen. Laut- und Formenlehre*. 2nd ed. Darmstadt: Wissenschaftliche Buchgesellschaft.

Schmidt, Johannes (1889). *Die Pluralbildungen der indogermanischen Neutra*. Weimar: Böhlau.

Schwyzer, Eduard (1939). *Griechische Grammatik*. Vol. 1: *Allgemeiner Teil. Lautlehre, Wortbildung, Flexion*. München: Beck.

Steer, Thomas (2013). “Uridg. *d^h(e)ǵ^{h}ōm*, ‚Erde‘ und *ǵ^h(e)iōm*, ‚Winter‘. Eine kurze Revision der Stammbildung”. In: *Indogermanische Forschungen* 118, 55–92.

Wackernagel, Jakob (1896). *Altindische Grammatik*. Vol. 1: *Lautlehre*. Göttingen: Vandenhoeck & Ruprecht.

Weiss, Michael (2020). *Outline of the Historical and Comparative Grammar of Latin*. 2nd ed. Ann Arbor: Beech Stave.

Zeilfelder, Susanne (2001). *Archaismus und Ausgliederung. Studien zur sprachlichen Stellung des Hethitischen*. Heidelberg: Winter.