

Indo-European Nominal Ablaut Patterns: The Anatolian Evidence*

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(1) Introduction

In most recent handbooks on Indo-European, a consensus seems to have been reached as to which nominal accent-ablaut patterns must be reconstructed for Proto-Indo-European. In e.g. Meier-Brügger 2002: 203-20, Fortson 2004: 107-10 and Clackson 2007: 79-86, the following four paradigms are cited (the ‘strong’ cases are nominative and accusative, the ‘weak’ cases all other cases, except the locative;¹ ‘R’ = root, ‘S’ = suffix, ‘E’ = ending):

	acrostatic			proterokinetic			hysterokinetic			amphikinetic		
	R	S	E	R	S	E	R	S	E	R	S	E
strong	é/ó	-	-	é	-	-	-	é	-	é	o	-
weak	é	-	-	-	é	-	-	-	é	-	-	é
loc.	é	-	-	-	é	-	-	é	(-i)	-	é	(-i)

Since the foundations for this system were laid by a group of scholars, among which Schindler, Eichner, Rix, and Hoffmann, during the 1964 Erlanger Kolloquium that discussed the works of Pedersen (1926) and Kuiper (1942) on nominal accent-ablaut patterns in Indo-European, this system is sometimes referred to as the Erlangen model.² In Leiden, Kuiper’s student Beekes, together with his colleague Kortlandt, developed an alternative model on the basis of Pedersen’s and Kuiper’s works, most explicitly presented in Beekes 1985. This Leiden model seems to have received little support by scholars from outside Leiden.

In the following article, it is my intention to assess to what extent Anatolian material can elucidate the discussion on the reconstruction of nominal accent-ablaut patterns in Indo-European. I will not treat the ablaut patterns of root nouns, which present their own problems.³

(2) Acrostatic / static

The pattern that in the Erlangen model is called ‘acrostatic’ is referred to as ‘static’ in the Leiden model, because ‘acrostatic’ is regarded as a redundant term: there are no other types of static patterns with which the acrostatic one would contrast.⁴ I will therefore use the term ‘static’ as well. Schindler (1975a: 4f.) reconstructs two types of (acro)static patterns, namely a type 1 that shows an ablaut *ó/é, and a type 2 that shows an ablaut *é/é.

According to Schindler, type 1 is synchronically attested in the Hittite paradigm for ‘water’, *uātar*, *uīten-*, which he reconstructs as **uód-r*, **uéd-n-*. However, as I argue in Kloekhorst fthc.a,⁵ the stem *uīten-* phonologically represents /uīdén-/ , which is the regular outcome of a preform **udén-*, with zero-

* This research was financially supported by the *Netherlands Organisation for Scientific Research* (NWO). The symbol ‘>’ represents phonological, i.e. regular developments, whereas the symbol ‘>>’ represents morphological, i.e. analogical developments.

¹ Note that Meier-Brügger in his overview of paradigms states that in the acrostatic paradigm the locative has the structure **CC-éC* (2002: 216), whereas in the paradigm of **nok^w-t-*, **nek^w-t-*, his main example for an acrostatically inflected noun, he cites a locative form **nek^w-t* (2002: 218), i.e. according to the structure **CéC-C*.

² Cf. Meier-Brügger 2002: 203f. for a *Forschungsgeschichte*.

³ For instance, the word for ‘foot’, which is usually reconstructed as having a static paradigm, **pód-s*, **pód-m*, **péd-s*, seems to be mobile in Hittite: acc.pl. *pāduš* < **pód-ms* vs. gen.pl. *patān* < **pd-óm*.

⁴ The idea of reconstructing a ‘mesostatic’ pattern (i.e. accented full grade on the suffix syllable throughout), which had been postulated by some scholars (e.g. Rix 1976: 123 for the **h₂*-stems), is nowadays commonly abandoned (cf. Beekes 1985: 174, Meier-Brügger 2002: 220).

⁵ Cf. also Kloekhorst 2008: 987-8.

grade of the root syllable.⁶ This means that ‘water’ should in fact go back to a proterodynamic paradigm **uód-r*, **ud-én-⁷*. Also the word for ‘knee’, which is usually reconstructed as a static *u*-stem **gón-u*, **gén-u-*, rather shows a proterodynamic inflection in Hittite: the stems *genu-* besides *ganu-*⁸ (instr. *ganut*) point to a paradigm **gén-u*, **gn-éu-⁹*. Since the only other alleged **o/e* ablauting statically inflected noun, **nok^w-t-*, **nek^w-t-* ‘night’,¹⁰ is not synchronically attested as such, I am sceptical as to whether this type really existed in PIE.

For type 2, static nouns with an **é/é* ablaut, Schindler (1975a: 5-6) gives two main examples, which in my view both must be interpreted differently. The first example is the word for ‘liver’, which was reconstructed by Schindler as **iék^w-r*, **iék^w-ŋ-s* (followed by e.g. Fortson 2004: 108 and Clackson 2007: 94f.), but for which I rather reconstruct a proterodynamic paradigm, **iék^w-r*, **ik^w-én-s¹¹*. The second example is Hittite *mēhur*, *mēhunaš* ‘time, period’, for which Schindler reconstructs **mēh₂-ur*, **méh₂-un-s*, following Eichner 1973. Although I certainly believe that this latter word is static in the sense that it was root-accented throughout the paradigm, I have doubts regarding the reconstruction of the ablaut grades. As I have argued elsewhere,¹² I assume that *mēhur*, *mēhun-* should rather be reconstructed as **méih₂-ur*, **méih₂-un-*, i.e. a derivative of the root **meih₂-* (as attested in Skt. *mināti*, Lat. *minuō* ‘to diminish’) with *e*-grade in both the nom.-acc. and the oblique stem.¹³ An *e*-grade can also be found in the endless loc.sg. form *mēhur* < **méih₂-ur*. This ablaut pattern is supported by the

⁶ This **udén-* is the outcome of **udén-* in which the **u-* of **uódr* was secondarily introduced in order to eliminate the alternation between consonantal **u-* and vocalic **u-*.

⁷ In a paper presented at the 14th World Sanskrit Conference (Kyōto, September 2009), Lubotsky has shown that in Vedic, nom.-acc.sg. *vār* ‘water’ < **uéh₁r* forms one paradigm with the stem *ud(a)n-* ‘id.’ < **ud-(e)n-*. Lubotsky assumes that this situation is original, and that **uéh₁r* is in fact the phonetic outcome of an original form **uéd-r* (showing a development **d > *h₁*, as also known in **h₁kmtom* < **dkmtom* ‘100’, **h₁uih₁kmti* < **duidkmti* ‘20’). If so, we must assume that ‘water’ originally inflected **uéd-r*, **ud-én-*, which already within PIE yielded **uéh₁r*, **udén-*. Since CLuwian *uār(ša)* ‘water’ attests to nom.-acc.sg. **uéh₁r*, this paradigm must have been present as such in Proto-Anatolian as well. Only in pre-Hittite, **uéh₁r* apparently was replaced by **uódr*, although the exact origin of this latter form is unclear to me (perhaps it was taken from compounds?).

⁸ Note that *ganu-* cannot reflect **gónu-*, since this would have yielded Hitt. **gānu-*.

⁹ Supported by Av. *žnubias* ‘knees (dat.-loc.pl.)’ and Germ. **kniu-* ‘knee’.

¹⁰ It is true that for ‘night’ an *o*-grade stem is attested in Lat. *nox*, Gr. *vóξ*, Germ. **naχt-*, Lith. *naktis*, OCS *noštъ*, whereas Hitt. *nekuz* (gen.sg.) shows an *e*-grade, but this does not necessarily mean that we must reconstruct an **o/e* ablauting static paradigm. Moreover, in his fthc. *Etymological Dictionary of Proto-Germanic*, my colleague Guus Kroonen (p.c.) will propose to connect the word for ‘night’ with the root **d^hng^w-* as attested in the Germanic words for ‘dark’ (OHG *tunkal*, OSax. *dunkar*) and in Hitt. *dankui-* ‘dark’. His idea is that the root originally was **d^hneg^w-*, in which the cluster **d^hnV-* was simplified to **nV-* in PIE already. We could therefore imagine that when in e.g. an original hysterodynamic paradigm **d^hneg^w-t*, **d^hng^w-ét-m*, **d^hng^w-t-és* (for which see section 5) the nom.sg. form regularly developed into **nég^w-t*, the whole paradigm was reshaped. We may have to assume that on the one hand, the stem **nég^w-t* was used as a basis for a static paradigm (**nég^w-t*, **nég^w-t-m*, **nég^w-t-s*), or that the root **neg^w-* was generalized throughout the paradigm, yielding **nég^w-t*, **nog^w-ét-m*, **nog^w-t-és* (with regular change of unaccented **e > *o* as described in section 8). The former paradigm could have yielded the Hitt. gen.sg. form *nekuz*, whereas the latter could have been the basis for **nok^w-t-* as attested in the other IE languages.

¹¹ The reconstruction of a lengthened grade stem **iēk^w-* is based on two forms. For the first form, Av. *yākarā*, De Vaan (2003: 68-9) has shown that this hapax is less trustworthy than its duplicate *yakarā*, which rather points to a short vowel in the root syllable (with which it would be parallel to the other Iranian languages that all point to a Plr. form **iakar*). The second form, Gr. *ἦπαρ* is not trustworthy either. Already Szemerényi (1956: 191) argued that, since in Greek several words for organs contain an *-η-* (*ἦτρον* ‘heart’, *κῆρ* ‘heart’, *σπλήν* ‘spleen’), the *-η-* in *ἦπαρ* might be secondary. This would mean that there is no reliable evidence for reconstructing a lengthened grade stem **iēk^w-* anymore. A stem **iek^w-* is well attested, however: Skt. *yáχrt*, Lat. *iecur*, Lith. *jėknos* ‘liver’. Moreover, evidence for a stem **ik^w-* can be found as well: Lith. *ikras* ‘roe, spawn, caviar’, Latv. *ikri* ‘id.’, and Slav. **jьkrà* ‘id.’ go back to a stem **ik^w-r-*. The existence of a stem **iek^w-* beside **ik^w-* rather points to a proterodynamic paradigm, which is supported by the full grade in the suffix syllable of the Lat. gen.sg. form *iocineris* (cf. footnote 33 for the exact origin of this latter form). Hence the reconstruction **iék^w-r*, **ik^w-én-s*.

¹² See Kloekhorst 2008: 567-8.

¹³ The idea that the ‘strong’ stem should always contain an ablaut grade that is one grade ‘heavier’ than the ‘weak’ stem (**ē* besides **e*, or **o* besides **e*) is a theoretical preconception.

paradigms for ‘mother’ and ‘brother’, which probably were static as well, and also show *e*-grade throughout: **méh₂-tr*, **méh₂-tr-m*, **méh₂-tr-s* and **b^hréh₂-tr*, **b^hréh₂-tr-m*, **b^hréh₂-tr-s*.¹⁴ Concluding, we must reconstruct the static paradigm as follows: nom.sg. **CéC-C*, acc.sg. **CéC-C(-m)*, gen.sg. **CéC-C-s*, loc.sg. **CéC-C*.

(3) Proterokinetic / proterodynamic

The pattern that is called ‘proterokinetic’ in the Erlangen model is in the Leiden model called ‘proterodynamic’. Since this latter term is the term originally coined by Pedersen (1926: 24, cf. Kuiper 1942: 4), I prefer to use ‘proterodynamic’ as well. In Anatolian, a well-attested proterodynamic paradigm is exhibited by the Hittite word for ‘fire’:

nom.-acc.sg.	<i>paḫḫur</i>	<	<i>*péh₂-ur</i>	i.e.	<i>*CéC-C</i>
gen.sg.	<i>paḫḫuenaš</i>	<	<i>*ph₂-uén-s</i> ¹⁵		<i>*CC-éC-s</i>

Unfortunately, this paradigm does not possess an original (i.e. endingless) locative form (instead, the dative form *paḫḫueni* is used). In the word for ‘heaven’, which goes back to an original proterodynamic neuter *s*-stem **neb^h-es-*,¹⁶ an endingless locative is attested in the form *nepiš*, which ultimately goes back to **nb^h-és*. This form is the Anatolian pendant to forms like Skt. *sánau* ‘on the back’ < **són-ēu* < **sn-ēu*, which proves the existence of a proterodynamic loc.sg. **CC-éC*.¹⁷

Before we will have a look at the ‘hysterokinetic’ and ‘amphikinetic’ patterns of the Erlangen model and the ‘hysterodynamic’ pattern of the Leiden model, we must first discuss the Hittite word for ‘hand’, *keššar*.

(4) Hittite *keššar* ‘hand’

The attestations of *keššar* are the following:¹⁸

	OS	MS	NS
nom.sg.	<i>ke-eš-šar</i>	<i>ki-iš-šar-aš</i>	<i>ke-eš-ši-ra-aš, ki-iš-ši-ra-aš</i>
acc.sg.	[<i>ki-i</i>]š-še-ra-an	<i>ki-iš-še-ra-an</i>	<i>ke-eš-ši-ra-an, ki-iš-ši-ra-an</i>
gen.sg.	--	<i>ki-iš-ra-aš, ki-iš-ša-ra-aš</i>	<i>ki-iš-še-ra-aš</i>
dat.-loc.sg.	<i>ki-iš-ša-ri-i</i>	--	<i>ki-iš-ri, ki-iš-ši-ri</i>
all.sg.	<i>ki-iš-ra-a</i>	--	<i>ki-šar-ra</i>
abl.	--	<i>ki-iš-ra-az, ki-iš-ša-ra-az,</i>	<i>ki-iš-šar-az</i>
instr.	--	<i>ki-iš-šar-at, ki-iš-šar-ta</i>	<i>ke-eš-šar-ta, ki-iš-(ša-)ri-it,</i>
acc.pl.	--	--	<i>ki-iš-še-ru-uš</i>
dat.-loc.pl.	--	--	<i>ki-iš-ra-aš</i>

In 1967, Schindler discussed *keššar* and reconstructed its paradigm as “Nom. **ġhés-ōr* f., Gen. **ġhes-r-és*, Dat. **ġhes-r-ēi*, Akk. **ġhés-or-ḡ*, Lok. **ġhes-ér(-i)* mit derselben Suffixabstufung, wie wir sie bei den *n*-Stämmen kennen” (1967: 246), i.e. according to the ‘amphikinetic’ pattern. Yet, not all reconstructed forms can easily account for the Hittite forms. Especially the reconstruction of the acc.sg. form is remarkable: the preform **ġhés-or-ḡ* as postulated by Schindler can in no way explain the

¹⁴ Cf. Beekes 1985: 174-5; Kloekhorst fthc.b.

¹⁵ With generalization of the full grade in the root: *paḫḫuenaš* reflects **peh₂-uén-os*, which must have replaced original **ph₂-uén-s*.

¹⁶ Cf. section 8 for a more detailed treatment of the prehistory of the *s*-stem **neb^h-es-* ‘heaven’ in Anatolian.

¹⁷ In *sánau* < **sn-ēu*, the **é* was in pre-PIE lengthened to **ē* before a word-final resonant, as discussed in section 8.

¹⁸ Cf. Puhvel 1997: 160f., Rieken 1999: 278f. and Kloekhorst 2008: 471 for attestations. In Friedrich 1952: 108 an endingless locative form *keššar* is cited, but the interpretation of this form is incorrect, cf. Neu 1980: 33-5. The abbreviation OS stands for ‘Old Script’ (i.e. Hittite texts written in the Old Hittite period), MS for ‘Middle Script’ (texts written in the Middle Hittite period) and NS for ‘Neo-Script’ (texts written in the Neo-Hittite period).

attested acc.sg. form *kiššeran*. He himself is aware of this as well. In a footnote he remarks: “Da im idg. Paradigma *-er-, *-or-, *-r- wechselten, [...] werden sich die alten Ablautstufen über ihren jeweiligen Geltungsbereich hinaus verbreitet haben, ohne daß eine feste Norm erreicht wurde. So erklär[t] sich auch Akk. *keššeran* statt **keššaran*” (1967: 247⁴⁰). Yet, if we look at the overview of forms above, we see that in OH and MH texts in each case form the vowel of the suffix is consistent. Only in NH times do we find a slight productivity of *-er-* (also spelled *-ir-*). In Schindler’s defence, in 1967 it was not yet possible to date Hittite texts, so Schindler did not have the diachronic overview at his disposal that we have today. Nevertheless, I cannot help feeling that Schindler was biased towards a reconstruction similar to the *n*-stem paradigm to such an extent that he did not take all data regarding Hittite ‘hand’ as serious as he should have done. In spite of this, Schindler’s reconstruction has been influential. For instance, Rieken (1999: 280-1) follows Schindler’s reconstruction and assumes that the *-e-* in acc.sg. *kiššeran* was taken over from the loc.sg. form **ḡ^hs-ér(-i)*. Some scholars do not take the spelling *kiššer-* seriously at all. E.g. Melchert (1994: 151) states that he views “spellings such as *ki-iš-ra-*, *ki-iš-ša/še-ra-* as alternates for [kis.sra-]”, therewith fully ignoring the consistent spelling difference between acc.sg. *kiššer-* and the oblique stems *kiš(ša)r-*.¹⁹

In my opinion, these views do not do justice to the forms as they are attested. I therefore want to propose a new reconstruction. I will start from the Hittite data, without any preconceptions about PIE ablaut paradigms. On the basis of the data presented above, the oldest paradigm of ‘hand’ can be summarized thus:

nom.sg.	<i>keššar</i>
acc.sg.	<i>kiššeran</i>
gen.sg.	<i>kiš(ša)raš</i>
dat.-loc.sg.	<i>kiš(ša)rī</i>
all.sg.	<i>kišrā</i>

It should be noted that the reality of the acc.sg. form *kiššeran* is supported by the fact that in NH times the stems *kiššera-* /kiSéra-/ and *keššira-* /kéSera-/ become productive. Per case form, I will discuss possible preforms. On the basis of cognates like Gr. *χείρ*, Arm. *jeṛn*, Skt. *hásta-* ‘hand’, we can reconstruct the root of this word as **ḡ^hes-*.

nom.sg.: The *-e-* in *keššar* can only go back to an accented short **é*. The geminate *-šš-* in *keššar* can only be explained from an **s* that has been in contact with another consonant. Since contact with **ḡ^h-* is excluded (because of the **é* in between), **s* must have been in contact with **r*. So *keššar* can only reflect **ḡ^hésr*.

acc.sg.: The *-i-* in *kiššeran* can either go back to an unaccented **e*, or it can represent an anaptyctic vowel in a cluster **Ks-*.²⁰ Since the geminate *-šš-* can only be explained from an **s* that has been in contact with another consonant, we must assume that it originally was adjacent to **ḡ^h-*. The *-e-* must go back to an accented **é*. We arrive at a mechanic reconstruction **ḡ^hsérom*.

gen.sg.: The first *-a-* in the spelling *kiššaraš* could in principle go back to **-o-*. Yet, since the spelling *kiššaraš* alternates with *kišraš*, it is much more likely that the first *-a-* of *kiššaraš* is a dead vowel: the sign ŠA in *ki-iš-ša-ra-aš* is only used to indicate the geminateness of *-šš-* and does not point at the presence of a real vowel *-a-*.²¹ So both *kiššaraš* and *kišraš* represent /kiSras/. The *-i-* in *kišraš* can either go back to an unaccented **e*, or it can represent an anaptyctic vowel in a cluster **Ks-*. We therefore can reconstruct either **ḡ^hesrós* or **ḡ^hsrós*.

dat.-loc.sg.: For the part *kiš(ša)r-* the same considerations are valid as for gen.sg. *kiš(ša)raš*. The *-ī* points to an accented ending **-éi*. So *kiš(ša)rī* represents **ḡ^hesréi* or **ḡ^hsréi*.

¹⁹ In 2002, Rieken stated something similar, namely that “[z]ur Erklärung des *e*-Vokalismus in *kiššeran* Akk. Sg. c. „Hand“ läßt sich [...] an eine Anaptyxe denken: **ḡ^hés-or-ṃ* → *ḡ^hissran* → *ḡ^hkisseran* <*ki-iš-še-ra-an*>” (2002: 102), apparently abandoning her 1994 view in which she regarded the *-e-* in *kiššeran* as going back to an original **e*.

²⁰ Cf. *kištuuant-* ‘hungry’ < **Kst-uént-*, derived from *kāšt-* ‘hunger’ < **Kóst-* (Kloekhorst 2008: 74).

²¹ Similarly in e.g. *e-eš-ša-ri-* besides *e-eš-ri-*, representing /*ṛeSri-* ‘shape, image’, or *te-et-ḫe-eš-ša-na-aš* besides *te-et-ḫe-eš-na-aš*, representing /*tetHeSnas-* ‘of thunder’.

all.sg.: For the part *kišr-* the same considerations are valid as for the gen. and the dat.-loc. forms. The \bar{a} points to an accented ending $*-ó$ (cf. Kloekhorst 2008: 161). So *kišrā* represents $*g^h esr\acute{o}$ or $*g^h sr\acute{o}$.

Thus, a simple transposition of the Hittite data would yield the following paradigm:

nom.sg.	$*g^h \acute{e}sr$
acc.sg.	$*g^h \acute{e}rom$
gen.sg.	$*g^h esr\acute{o}s$ or $*g^h sr\acute{o}s$
dat.-loc.sg.	$*g^h esr\acute{e}i$ or $*g^h sr\acute{e}i$
all.sg.	$*g^h esr\acute{o}$ or $*g^h sr\acute{o}$

Since it is unlikely that the oblique cases would contain a full grade root while the accusative form did not, I assume that the *kiš(ša)raš*, *kiš(ša)rī* and *kišrā* reflect $*g^h sr\acute{o}s$, $*g^h sr\acute{e}i$ and $*g^h sr\acute{o}$, respectively. If we now assume that in the accusative the ending $*-om$ replaced an original $*-m$, and in the genitive the ending $*-ós$ replaced original $*-és$ (both trivial assumptions since in Hittite the endings $-an < *-om$ and $-aš < *-os$ have been generalized in all nominal paradigms), we arrive at the following original paradigm for ‘hand’:²²

nom.sg.	$*g^h \acute{e}s-r$
acc.sg.	$*g^h s-\acute{e}r-m^{23}$
gen.sg.	$*g^h s-r-\acute{e}s$
dat.-loc.sg.	$*g^h s-r-\acute{e}i$
etc.	

(5) Hysterodynamic

It is interesting to see that the paradigm of ‘hand’ exactly corresponds to the paradigm that was reconstructed by Beekes (1985: 7f.) for e.g. $*meg-h_2-$ ‘large’, and which he calls ‘hysterodynamic’.²⁴

nom.sg.	$*C\acute{e}C-C$	i.e.	$*m\acute{e}g-h_2(-s)$	(Gr. μέγας)
acc.sg.	$*CC-\acute{e}C-m$		$*m\acute{g}-\acute{e}h_2-m$	(Gr. ἄγαν)
gen.sg.	$*CC-C-\acute{e}s$		$*m\acute{g}-h_2-\acute{e}s$	(Skt. maháh)

Crucial to this paradigm is the nominative form, which shows a full grade in the root, but zero-grade in the suffix (with which it is identical in shape to the proterodynamic nominative form). In Anatolian, the word for ‘hand’ most faithfully reflects this paradigm, but there are other traces of it to be found as well. For instance, the Hittite word for ‘boundary, line’ shows the following forms (note that the reconstructed forms are just mechanic transpositions, without any comparison to other IE languages or preconceived ideas on ablaut paradigms).

nom.sg.	<i>er-ḫa-aš</i>	<	$*h_1erh_2os$
acc.sg.	<i>ar-ḫa-an</i> (OS)	<	$*h_1rh_2om$
gen.sg.	<i>ar-ḫa-aš</i>	<	$*h_1rh_2os$
dat.-loc.sg.	<i>ar-ḫi</i> (OS)	<	$*h_1rh_2(e)i$
all.sg.	<i>ar-ḫa</i> (OS)	<	$*h_1rh_2o$
abl.	<i>a-ra-aḫ-za</i> (OS)	<	$*h_1reh_2ti$

As we see, we find three different stems in this paradigm, namely *erḫ-* < $*h_1erh_2-$, *arḫ-* < $*h_1rh_2-$ and *araḫ-* < $*h_1reh_2-$. Since Schwebe-ablaut is a not a normal phenomenon in Indo-European, these stems must be interpreted as containing a root $*h_1er-$ followed by a suffix $*-(e)h_2-$: $*h_1er-h_2-$, $*h_1r-h_2-$, $*h_1r-eh_2-$. It is crucial that in this paradigm we find a stem in which the root contains a full grade but

²² Cf. already Beekes 1985: 56.

²³ According to Kortlandt (1986: 560), an acc.sg. $*g^h sérm$ is also reflected in TochB *šar* ‘hand’.

²⁴ Note that Beekes consistently reconstructs the gen.sg. ending as $*-ós$, but that need not concern us here.

the suffix shows zero grade next to a stem in which the root shows zero-grade but the suffix contains a full grade. This combination of stems is inexplicable within the Erlangen model. The only way in which it can be accounted for, is by reconstructing a hysterodynamic paradigm according to the Leiden model:²⁵

nom.sg. **h₁ér-h₂*
 acc.sg. **h_{1r}-éh₂-m*
 gen.sg. **h_{1r}-h₂-és*

(6) Connection between Leiden ‘hysterodynamic’ and Erlangen ‘hysterokinetic’

The pattern that in the Erlangen model is called hysterokinetic is reconstructed with the following forms:

nom.sg. **CC-éC* e.g. **ph₂-tér* ‘father’
 acc.sg. **CC-éC-m*
 gen.sg. **CC-C-és* **ph₂-tr-és*

As we see, the acc.sg. and gen.sg. forms are identical to the forms in the Leiden hysterodynamic paradigm. Only the nominative form is different. Beekes (1985: 154) therefore assumes that there is a close connection between the hysterodynamic paradigm and the hysterokinetic one. According to him, the hysterodynamic paradigm, containing the nom.sg. form **CéC-C*, is original, whereas the hysterokinetic paradigm, containing the nom.sg. form **CC-éC*, is a younger off-shoot of it.²⁶ The idea is that in the original hysterodynamic paradigm the accusative stem secondarily spread to the nominative case (with subsequent lengthening of **e* to **ē* when standing before a word-final resonant, cf. section 8).

nom.sg. **CéC-C* >> **CC-éC*
 acc.sg. **CC-éC-m* = **CC-éC-m*
 gen.sg. **CC-C-és* = **CC-C-és*

It must be stressed that this scenario involves only one trivial assumption, namely influence of the accusative stem on the nominative stem, which is a process that can be observed in many languages over and over again.

This scenario implies that the hysterokinetic nom.sg. **CC-éC* always is a younger version of original **CéC-C*. For e.g. **ph₂tér* ‘father’, this means that there must have been an original nom.sg. form **péh₂-tr*, which according to Kortlandt (2009: 7) is identical to the verbal noun **péh₂-tr* as attested in Skt. *pātár-* ‘protector’.²⁷ For e.g. **d^huǵh₂tér* ‘daughter’, I have already argued on other grounds that the original nom.sg. form must have been **d^hueǵh₂-tr*.²⁸ For e.g. **h₂stér* ‘star’, Pinault (2007: 273) posits a nom.sg. **h₂éh_{1s}-tr*,²⁹ a verbal noun to the root **h₂eh_{1s}-* “to burn, glow” (which implies that ‘star’ actually is **h₂h₁stér*).

(7) Hysterokinetic in Anatolian

In Anatolian, we find some traces of hysterokinetic paradigms as well, although not all details are always clear. The best example is the word for ‘star’:

nom.sg. *hašterza* < **h₂s-tér(+s)* ‘star’

²⁵ Cf. Kloekhorst 2008: 247 for the reconstruction of this paradigm.

²⁶ In Beekes 1995: 175, the hysterokinetic paradigm is therefore called ‘subtype 1’ of the hysterodynamic inflection.

²⁷ Cf. footnote 35 for a detailed discussion of the connection between ‘protector’ and ‘father’.

²⁸ Cf. Kloekhorst fthc.b where I argue that a stem **d^hueǵh₂-tr-*, i.e. with full grade in the root, is reflected in the Anatolian words for ‘daughter’, HLuw. *tuwatra/i-*, Lyc. *kbatra-* < Proto-Luwic **tuatra-* < **d^hueǵh₂-tr-eh₂-*.

²⁹ Pinault’s scenario to explain the hysterokinetic paradigm **h₂stér*, etc. differs from the one presented here, however.

acc.sg. *hašteran* < **h₂s-tér-m*

In the following two examples, the *-*é*- of the nom.sg. form seems to have been coloured to -*a*- in a sequence *-*én-s*:

nom.sg. *išhimāš* < **sh₂i-mén-s* (?) ‘string, rope’
 acc.sg. *išhimenan* < **sh₂i-mén-m*

nom.sg. *kutruūaš* < **k^wtru-én-s* (?) ‘witness’
 nom.pl. *kutrueneš* < **k^wtru-én-*

(8) Connection between Leiden ‘hysterodynamic’ and Erlangen ‘amphikinetic’

As we saw above, the paradigm that in the Erlangen model is called amphikinetic, is reconstructed as follows:

nom.sg.	* <i>CéC-ōC</i>	e.g.	* <i>h₂éus-ōs</i>	‘dawn’
acc.sg.	* <i>CéC-oC-m</i>		* <i>h₂éus-os-m</i>	
gen.sg.	* <i>CC-C-és</i>		* <i>h₂us-s-és</i>	

According to Beekes, also this paradigm is a younger off-shoot of the original hysterodynamic paradigm.³⁰ In order to understand how this would have worked, we have to have a look at the development of the Proto-Indo-European ablaut system. Kortlandt (2001, building on Beekes 1985: 157) assumes the following chronology of developments:

“A. Indo-European vowel reduction, giving rise to full grade **e* under the stress and zero grade elsewhere;” [At this stage there was only one phonemic vowel, **e*, which was always stressed; **i* and **u* are to be regarded as mere syllabic variants of **i̯* and **u̯* and do not count as vowels.]

“B. phonetic lowering of **u* (= syllabic **w*) to **o*,³¹ giving rise to a full grade (= non-high) vowel in unstressed syllables;” [At this stage the vowel **e*, which is always accented, and the new vowel **o*, which is always unaccented, are in a complementary distribution, and can therefore in fact be regarded as allophones of a single phoneme.]

“C. analogical introduction of a full grade vowel in unstressed syllables (e.g. in compounds), which automatically yielded new **o*;” [Since accented **é* and unaccented **o* are allophones of each other, whenever the accented vowel **é* by analogical (morphological) developments was introduced in an unstressed syllable, it automatically becomes **o*.]

“D. introduction of **o* in stressed syllables (e.g. by decompounding), resulting in a phonemic opposition between /*e*/ and /*o*/ under the stress;” [At this stage also analogical (morphological) developments take place by which unstressed **o* is introduced into a stressed syllable or is secondarily stressed (e.g. by generalization of a stress pattern throughout a paradigm). The result of a secondarily stressed **o* is not **é* however, but **ó*. Consequently, **e* and **o* become two distinct phonemes at this point.]

“E. analogical introduction of full grade **e* in unstressed syllables, generalizing the opposition between /*e*/ and /*o*/;” [Since **e* and **o* are at this stage two distinct phonemes, whenever stressed **é* is

³⁰ In Beekes 1995: 175, the amphikinetic paradigm is therefore called ‘subtype 3’ of the hysterodynamic inflection.

³¹ According to Kortlandt (2001), this rule “accounts for the frequent instances of **wo* after a consonant where the semivowel was restored on the basis of an alternating **w*, especially before **i* and **r*, which were syllabic in the zero grade, e.g. in the words for ‘two’ and ‘four’.” This means that he for instance assumes that the stem for ‘four’, **k^wétur-*, in antevocalic position, **k^wéturV-*, yielded **k^wétor-*, whereas in anteconsonantal position, **k^wéturC-*, it remained as such. A blend of the two stems yielded **k^wetūor-* as attested in e.g. nom.pl.c. **k^wétūores* > Skt. *catvāras* (my colleague Lucien van Beek informs me that the original nom.pl.c. form, **k^wétores*, might be directly reflected in Dor. τέτορες ‘four’).

now through analogical developments introduced in an unstressed syllable or secondarily loses its stress, it does not become **o* anymore, but remains **e*.]

“F. rise of lengthened grade vowels **ē* and **ō*, yielding the conventional Proto-Indo-European vowel system.” [Only in certain specific positions, namely in monosyllabic words (e.g. *diéus*) and in word-final position before a resonant (e.g. **ph₂tér*), original short **e* and **o* are phonetically lengthened to **ē* and **ō* (Kortlandt 1975: 85, going back to Wackernagel 1896: 66f.).³² This means that **ē* and **ō* did not belong to the original ablaut patterns.]

This chronology of developments can explain certain phenomena that thus far remained unexplained, for instance, the development of neuter *s*-stems. Since Schindler 1975b, it is commonly accepted that neuter *s*-stems originally had the proterodynamic shape **CéC-s*, **CC-és-s*, but were later on reshaped to **CéC-os*, **CéC-es-os*:

nom.-acc.sg.	<i>*mén-s</i>	>>	<i>*mén-os</i>
gen.sg.	<i>*mn-és-s</i>	>>	<i>*mén-es-os</i>

Schindler (1975b: 266) could not explain the origin of **-o-* in **mén-os*, however: “Eine sichere Deutung der *o*-Qualität [of *mén-os*] läßt sich freilich nicht geben, und ich verzichte auf Spekulationen darüber”. In the light of Beekes-Kortlandt’s chronology above, this and the other forms of the paradigm can now be explained in the following way. We first have to assume that at stage C, i.e. the stage in which an unaccented **e* automatically turned into **o*, “[**ménos*] arose when *-es-* from the oblique cases was introduced into the nominative” (Beekes 1985: 158).

nom.-acc.sg.	<i>*mén-s</i>	>>	<i>*mén-os</i>
gen.sg.	<i>*mn-és-s</i>	=	<i>*mn-és-s</i>
dat.sg.	<i>*mn-és-i</i>	=	<i>*mn-és-i</i>

At the same time, the hysterodynamic gen.sg. ending **-és* was introduced in order to keep the genitive recognizable as such “da idg. /ss/ [in **mn-és-s*] als [s] realisiert wurde und somit der Genitiv phonetisch nicht mehr durch eine Endung charakterisiert war” (Schindler 1975b: 264). Since this ending became unaccented, its vowel **-e-* automatically turned into **-o-*.

nom.-acc.sg.	<i>*mén-os</i>	=	<i>*mén-os</i>
gen.sg.	<i>*mn-és-s</i>	>>	<i>*mn-és-os</i>
dat.sg.	<i>*mn-és-i</i>	=	<i>*mn-és-i</i>

Later on, at stage D,³³ when **e* and **o* had become distinct phonemes, the full grade of the root was generalized.³⁴

³² This is the reason why introduction of the accusative stem **ph₂-tér-* (with short **é*) into the nominative case yielded **ph₂-tér* with long **é*, cf. section 6.

³³ For Latin *iecur*, *iocineris* ‘liver’ we must assume that in the original proterodynamic paradigm **iék^w-r*, **ik^w-én-*, the full grade of the root spread through the paradigm at stage C already. In this way, the unaccented full grade root automatically turned into **-o-*, yielding **iék^w-r*, **iok^w-én-*, which eventually developed into Lat. *iecur*, *iocineris*.

³⁴ On the basis of e.g. Skt. *mánas*, *mánasas* and Gr. μένος, μένεος the PIE paradigm is usually reconstructed as **ménos*, **ménesos*. Yet, if HLuw. *tipas-* ‘heaven’ indeed reflects **neb^hés-* (thus Hajnal 1995: 63), which contrasts with CLuw. *tappaš-* ‘heaven’ that reflects **neb^he/os-*, we must assume that in Proto-Luwic, and, by extension, in Proto-Anatolian, neuter *s*-stems still showed a mobile accentuation, **CéC-os*, **CeC-és-os* (cf. Kloekhorst 2008: 604). This mirrors the situation in Slavic, where *s*-stems (e.g. OCS *nebo* ‘heaven’) inflect according to accent paradigm c, which points to an earlier mobile accentuation as well (as kindly pointed out to me by Frits Kortlandt). Moreover, Kroonen (2007) argued that on the basis of e.g. Lat. *imber* ‘rain’ and Arm.

nom.-acc.sg.	* mén -os	=	*mén-os
gen.sg.	*mn-és-s	>>	*men-és-os
dat.sg.	*mn-és-i	>>	*men-és-i

A similar scenario may now explain the origin of the Erlangen amphikinetic paradigm out of the Leiden hysterodynamic paradigm. We have to assume that first a spread of the full grade of the root from the nominative to the accusative form took place at stage C. This caused the suffix syllable to become unaccented and turned its **e* into **o*: **CC-éC-m* >> **CéC-oC-m*. Only afterwards, the accusative stem **CéC-oC* was introduced into the nominative. The regular lengthening of the suffix syllable of nom.sg. **CéC-oC* to **CéC-ōC* (if the final consonant is a resonant) then took place at stage F.

nom.sg.	* CéC -C	=	*CéC-C	>>	*CéC-oC	>	*CéC-ōC
acc.sg.	*CC-éC-m	>>	*CéC-oC-m	=	*CéC-oC-m	=	*CéC-oC-m
gen.sg.	*CC-C-és	=	*CC-C-és	=	*CC-C-és	=	*CC-C-és

Again we see that this scenario involves only two trivial assumptions, namely first the spread of the full grade of the root syllable of the nominative to the accusative, and then the introduction of the accusative stem into the nominative. Both of these are well attested developments.³⁵

(9) Amphikinetic in Anatolian

In Anatolian, the amphikinetic paradigm is best reflected in the Hittite diphthong stems, for which I will give *lingai-* ‘oath’ and *ħarnau-* ‘birthing stool’ as examples here. In NH times, these nouns show no stem alternations: nom.sg. *lingaiš*, acc.sg. *lingain*, gen.sg. *lingajiaš*; nom.sg. *ħarnauš*, acc.sg. *ħarnaun*, gen.sg. *ħarnaūaš*. In OH times, we still find the original gen.sg. forms *linkijaš* and *ħarnuūaš*,

amb ‘cloud’ < **nb^h-*, the PIE paradigm for ‘cloud’ must be reconstructed as **néb^h-os*, **nb^h-és-os*. This would mean that the generalization of the full grade of the root throughout the paradigm as attested in Sanskrit, Greek, Anatolian, Slavic, etc., was not a PIE development, but rather took place in the separate branches independently. In the Graeco-Indo-Iranian branch, the accent was later on regularized as well, yielding **CéC-os*, **CéC-es-os*.

³⁵ Since both the hysterokinetic and the amphikinetic paradigms are derived from the hysterodynamic paradigm, the question arises why a given noun would turn up as hysterokinetic or as amphikinetic. In my opinion, the following chronology applied. The first major morphological development that took place was the introduction of the full grade vowel in the root from the nominative to the accusative: **CéC-C*, **CC-éC-m*, **CC-C-és* > **CéC-C*, **CéC-oC-m*, **CC-C-és*. Only some specific (often-used) nouns resisted this regularization and remained as such. The second major morphological development that took place was the introduction of the accusative stem in the nominative. Nouns that had undergone the first development as well thus became amphikinetic: **CéC-C*, **CéC-oC-m*, **CC-C-és* > **CéC-ōC*, **CéC-oC-m*, **CC-C-és*. Nouns that had not undergone the first development, but did participate in the second one, became hysterokinetic: **CC-éC*, **CC-éC-m*, **CC-C-és*. Nouns that resisted the second development as well, remained hysterodynamic, **CéC-C*, **CC-éC-m*, **CC-C-és*.

This scenario explains the semantic development of **peh₂-ter-*. This noun originally was a verbal abstract of the verb **peh₂-* and therefore meant ‘protector’, which was also used to refer to the father of a family. Its inflection was hysterodynamic, **péh₂-tr*, **ph₂-tér-m*, **ph₂-tr-és*. Like most other hysterodynamic nouns, also **peh₂-ter-* participated in the development by which the full grade of the root spread from the nominative to the accusative stem, yielding **péh₂-tr*, **péh₂-tor-m*, **ph₂-tr-és*. However, in its specific semantic usage as the designator of the father of a family it resisted the regularization and kept its original inflection, **péh₂-tr*, **ph₂-tér-m*, **ph₂-tr-és*. This difference can be explained by the fact that syntactically a ‘protector’ is especially used as an actor (= nominative), whereas a ‘father’ is used in all kinds of functions (cases). When the second development as described above took place, namely introduction of the accusative stem in the nominative form, the paradigmatic split was complete: the word for ‘protector’ had become amphikinetic, **péh₂-tōr*, **péh₂-tor-m*, **ph₂-tr-és* (reflected in e.g. Skt. *pātár-*), whereas the word for ‘father’ had become hysterokinetic, **ph₂-tér*, **ph₂-tér-m*, **ph₂-tr-és* (reflected in e.g. Skt. *pītár-*).

however, which clearly betray the amphikinetic origin of these nouns. I set up the following chronology of developments:³⁶

	hysterodyn.		amphikinetic		OH		NH				
nom.sg.	<i>*h₁lénġ^h-i</i>	=	<i>*h₁lénġ^h-i</i>	>>	<i>*h₁lénġ^h-ōi</i>	=	<i>*h₁lénġ^h-ōi</i>	>>	<i>link-ai-š</i>	=	<i>linkaiš</i>
acc.sg.	<i>*h₁lnġ^h-éi-m</i>	>>	<i>*h₁lénġ^h-oi-m</i>	=	<i>*h₁lénġ^h-oi-m</i>	=	<i>*h₁lénġ^h-oi-m</i>	>	<i>link-ai-n</i>	=	<i>linkain</i>
gen.sg.	<i>*h₁lnġ^h-i-és</i>	=	<i>*h₁lnġ^h-i-és</i>	=	<i>*h₁lnġ^h-i-és</i>	>>	<i>*h₁lénġ^h-i-os</i>	>	<i>link-i-aš</i>	>>	<i>linkajaš</i>
nom.sg.	<i>*h₃ér-nu</i>	=	<i>*h₃ér-nu</i>	>>	<i>*h₃ér-nōu</i>	=	<i>*h₃ér-nōu</i>	>>	<i>ħar-nau-š</i>	=	<i>ħarnauš</i>
acc.sg.	<i>*h₃r-néu-m</i>	>>	<i>*h₃ér-nou-m</i>	=	<i>*h₃ér-nou-m</i>	=	<i>*h₃ér-nou-m</i>	>	<i>ħar-nau-n</i>	=	<i>ħarnaun</i>
gen.sg.	<i>*h₃r-nu-és</i>	=	<i>*h₃r-nu-és</i>	=	<i>*h₃r-nu-és</i>	>>	<i>*h₃ér-nu-ós</i>	>	<i>ħar-nu-aš</i>	>>	<i>ħarnaūaš</i>

In the original hysterodynamic paradigm **CéC-C*, **CC-éC-m*, **CC-C-és*, first the full grade of the root was generalized from the nominative to the accusative, yielding **CéC-C*, **CéC-oC-m*, **CC-C-és*. Then the accusative stem was introduced into the nominative, yielding the paradigm that is called ‘amphikinetic’, **CéC-ōC*, **CéC-oC-m*, **CC-C-és*. Introduction of the full grade of the root from the nominative and accusative into the oblique cases yielded **CéC-ōC*, **CéC-oC-m*, **CéC-C-os*. After addition of the nom.sg. ending *-s*, this paradigm yielded OH **CéC-aC-š*, **CéC-aC-n*, **CéC-C-aš*. The generalization of the full grade vowel of the suffix from the nominative and accusative into the oblique cases then yields the NH paradigm **CéC-aC-š*, **CéC-aC-n*, **CéC-aC-aš*. This development can be regarded as the last step in a chain of developments that all took place in order to regularize the original paradigm.

Other examples are e.g. Hitt. *ħāran-* ‘eagle’ and *šūatt-* ‘day’:

	hysterodyn.		amphikinetic		pre-Hitt.		OH				
nom.sg.	<i>*h₃ér-n</i>	=	<i>*h₃ér-n</i>	>>	<i>*h₃ér-ōn</i>	=	<i>*h₃ér-ōn</i>	>	<i>*ħār-an</i>	>>	<i>ħāraš</i>
acc.sg.	<i>*h₃r-én-m</i>	>>	<i>*h₃ér-on-m</i>	=	<i>*h₃ér-on-m</i>	=	<i>*h₃ér-on-m</i>	>	<i>*ħār-an-an</i>	=	<i>ħāranan</i>
gen.sg.	<i>*h₃r-n-és</i>	=	<i>*h₃r-n-és</i>	=	<i>*h₃r-n-és</i>	>>	<i>*h₃ér-n-ós</i>	>	<i>*ħār-n-aš</i>	>>	<i>ħāranaš</i>
nom.sg.	<i>*diéu-t</i>	=	<i>*diéu-t</i>	>>	<i>*diéu-ot</i>	=	<i>*diéu-ot</i>	>	<i>*šū-at</i>	>>	<i>šūaz</i>
acc.sg.	<i>*diu-ét-m</i>	>>	<i>*diéu-ot-m</i>	=	<i>*diéu-ot-m</i>	=	<i>*diéu-ot-m</i>	>	<i>*šū-att-an</i>	=	<i>*šūattan</i>
gen.sg.	<i>*diu-t-és</i>	=	<i>*diu-t-és</i>	=	<i>*diu-t-és</i>	>>	<i>*diéu-t-ós</i>	>	<i>*šū-tt-aš</i>	>>	<i>šūattaš</i>

Interestingly, within the paradigm of *šūatt-*, an archaic endingless locative is attested, namely *šūat*. This form reflects a virtual **diéu-ot*, which in view of the developments described above probably goes back to an original form **diu-ét*. This form is therewith the Anatolian pendant to forms like Skt. loc.sg. *kṣám(i)* ‘on the earth’ < **d^hġ-ém(-i)* or *tmán* ‘in the soul’ < **h₁h₁t-mén(-i)*, which prove the existence of hysterodynamic locatives of the shape **CC-éC(-i)*.

(10) Conclusions

We have seen that the Anatolian language branch provides evidence for nominal paradigms inflecting according to the following ablaut patterns:

- the static one, as reconstructed in both the Erlangen and the Leiden model (albeit that I find evidence for the ablaut grade **e* only, and not **o/e* or **ē/e*).
- the proterodynamic one, as reconstructed in both the Erlangen and the Leiden model.
- the hysterokinetic one, as reconstructed in the Erlangen model.
- the amphikinetic one, as reconstructed in the Erlangen model.

³⁶ I now retract my treatment of the prehistory of the Hittite diphthong stems, *ħāran-* and *šūatt-* as given in Kloekhorst 2008: 106.

- the hysterodynamic one, as reconstructed in the Leiden model.

This means that all these paradigms must have existed as such in Proto-Indo-European and that in that sense both the Erlangen and the Leiden model are correct. We have moreover seen that the hysterokinetic and the amphikinetic paradigm (as reconstructed in the Erlangen model) can be regarded as younger off-shoots of an original hysterodynamic paradigm **CéC-C*, **CC-éC-m*, **CC-C-és* (as reconstructed in the Leiden model), which within Proto-Indo-European underwent some morphological regularizations. Thus, the difference between the Erlangen and the Leiden model is that the Leiden model describes a stage that is relatively older than the Erlangen model. It must be stressed, however, that the postulation of a hysterodynamic paradigm from which the hysterokinetic and the amphikinetic paradigms originated is not based on internal reconstruction. It is synchronically still attested in the Hittite paradigm of the word for 'hand', *keššar*, *kiššeran*, *kišraš*, which therewith can be regarded as one of the most archaic paradigms within Indo-European.

To sum up, the Erlangen model describes the state of affairs as it was in late Proto-Indo-European, its hysterokinetic and amphikinetic paradigm having developed out of the hysterodynamic paradigm only rather recently. For early Proto-Indo-European we therefore have to assume a situation as described in the Leiden model, namely that at that stage only three accent-ablaut paradigms existed: the static, the proterodynamic and the hysterodynamic one.

	static	proterodynamic	hysterodynamic
nom.sg.	<i>*CéC-C</i>	<i>*CéC-C</i>	<i>*CéC-C</i>
acc.sg.	<i>*CéC-C(-m)</i>	<i>*CéC-C(-m)</i>	<i>*CC-éC-m</i>
gen.sg.	<i>*CéC-C-s</i>	<i>*CC-éC-s</i>	<i>*CC-C-és</i>
loc.sg.	<i>*CéC-C</i>	<i>*CC-éC</i>	<i>*CC-éC</i>

Note that in these paradigms there is a one to one correlation between the presence of the full grade vowel and the place of the accent, which speaks in favor of a historical connection between the two.

(11) Consequences

It has been noted before that the proterodynamic inflection is mainly found with neuter words, whereas the hysterodynamic inflection occurs almost only with non-neuter words.³⁷ This seems to point to an original complementary distribution. If this is correct, we can reduce the number of ablaut-accent patterns even further. We now only have to distinguish between a static pattern (which includes neuters as well as non-neuter nouns) and a mobile pattern (which was proterodynamic when the noun is neuter and hysterodynamic when the noun is non-neuter).

		Static			Mobile		
Neuter	nom.sg.	<i>CéC</i>	<i>-C</i>		<i>CéC</i>	<i>-C</i>	
	acc.sg.	<i>CéC</i>	<i>-C</i>		<i>CéC</i>	<i>-C</i>	
	gen.sg.	<i>CéC</i>	<i>-C</i>	<i>-s</i>	<i>CC</i>	<i>-éC</i>	<i>-s</i>
	loc.sg.	<i>CéC</i>	<i>-C</i>		<i>CC</i>	<i>-éC</i>	
Non-neuter	nom.sg.	<i>CéC</i>	<i>-C</i>		<i>CéC</i>	<i>-C</i>	
	acc.sg.	<i>CéC</i>	<i>-C</i>	<i>-m</i>	<i>CC</i>	<i>-éC</i>	<i>-m</i>
	gen.sg.	<i>CéC</i>	<i>-C</i>	<i>-s</i>	<i>CC</i>	<i>-C</i>	<i>-és</i>
	loc.sg.	<i>CéC</i>	<i>-C</i>		<i>CC</i>	<i>-éC</i>	

³⁷ Beekes 1985: 167-171.

The hypothesis that the proterodynamic and the hysterdynamic paradigms are both representatives of a single underlying mobile paradigm, is supported by the fact that the nom.sg. form, *CéC-C, and the loc.sg. form, *CC-éC, are identical in shape in both paradigms.

The exact origins of these ablaut patterns must lie in pre-Proto-Indo-European times, and it would go beyond the scope of this paper to speculate on these. Yet, a few predictions can be made: the difference between static vs. mobile inflection was probably dependent on the phonetic shape of the root, whereas the difference between the proterodynamic and the hysterdynamic inflection must have been due to the morphologic / syntactic differences between neuter and non-neuter words.

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