The relative chronology of Monosyllabic Circumflexion

Yoko Yamazaki, Stockholm University

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1 Introduction

1.1 Monosyllabic Circumflexion

- Tones:

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<tr>
<th>Language</th>
<th>Tone</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Lithuanian</td>
<td>(')</td>
<td>([V]V] falling)</td>
</tr>
<tr>
<td>Latvian</td>
<td>(')</td>
<td>(sustained), (') (broken)</td>
</tr>
<tr>
<td></td>
<td>Circumflex:</td>
<td>(') ([V]V] rising)</td>
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<tr>
<td></td>
<td></td>
<td>(') (falling)</td>
</tr>
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</table>

- de Saussure (1894: 492ff.) hypothesized that PIE long vowels (and also long diphthongs (Kuryłowicz 1948: 1ff.)) are reflected with the acute tone in Balto-Slavic (BS), whereas Kortlandt (1985) considers they yielded circumflex. While žveris (3) ‘wild animal’ (acc.sg. žvėrį) < PIE *gʰuér speaks for Saussure’s view, the nominative singular ending of consonantal stems (-uō, -ē) and many monosyllabic forms speak for Kortlandt’s view.

- The phonetic realization of “acute syllable” remains unclear. The “acuteness” of a syllable nucleus will be denoted with an underline following a convention introduced by Jasanoff (2004).

- Monosyllabic Circumflexion (MC) is a phenomenon according to which long vowels in monosyllabic words exhibit a circumflex tone instead of the expected acute (in the Balto-Slavic languages ~ Lithuanian; Hanssen (1885: 616), Zinkevičius (1980–81: II, 161ff.), Rasmussen (1999: 481ff.));

  1. pronominal forms (tiē [ < *toi pl.nom. ~ gerėjį ‘the good (pl.nom)’], tuōs [ < *-oons pl.acc. ~ gerēios ‘id. (pl.acc.)’; Zinkevičius 1980–81: II, 162])

  2. reflexes of PIE root nouns (Latv. gūovs ‘cow’ [ < *gʰōus ← acc.sg. *gʰōm (Larsson 2010a: 73ff.); (Villanueva Svensson 2011: 20)]

  1šūō ‘dog’ [ < *gʰūō] (Hanssen 1885) may be an n-stem noun, but this can be also considered to have been in the environment of MC.
3. **prepositions/adverbs** *(nuō ‘from’ ~ núotaka ‘bride’ [Zinkevičius: id.]; vēl ‘again’ ~ Latv. vēl ‘still, yet’ [< PB *vēli; Būga 1924: 95]; vōs ‘hardly’ ~ OCS jedvaw, SCr jėdvaw, Čak. jedvā; PBS *edvās)*

4. 3rd person future forms of monosyllabic stems

   šōks – šōkti ‘to jump;’ vīs – vīti ‘to drive,’ etc.

### 1.2 Relative chronology

- Rasmussen (1999: 481ff.) suggests a possibility that MC happened at a Proto-Balto-Slavic stage, based on the pronominal forms and the reflexes of PIE root nouns. But his data are mostly the nouns derived in accordance to the Baltic nominal formation from verbs.

- Kortlandt (1895; 2014) considers that there are two chronological layers of MC.
  - 3rd person future forms in Lithuanian (~ s-subjunctive) and Latv. šāls ‘salt,’ gūovs ‘cow’ represent the older layer in **Proto-Balto-Slavic**.
  - pronominal forms with dialectal variants with the acute tone represent the younger layer in **Lithuanian**.

In this paper, I will show that MC seems to have happened twice as Kortlandt assumes, yet based on different analyses of the reflexes of PIE root nouns and particles in the Baltic languages.

### 2 Reflexes of root nouns

The Baltic reflexes of the PIE nouns which are securely reconstructed as root-nouns with “long root” according to preceding works, e.g. Schindler (1972); Larsson (2010a); Villanueva Svensson (2011):

(1) a. nōsis (1) ‘nose’ (~ Latv. nāss)

   b. žvēris (3) ‘wild animal’ (~ Latv. zvērs)

   c. širdis (3) ‘heart’ (~ Latv. siirds), šerdis (1/3/4; ~ Latv. seŕde) ‘core of wood’

(2) Latvian forms to be considered

   a. šāls ‘salt’ (m./f.)

   b. gūovs ‘cow’ (f.)
• They are typically *i*-stems in Baltic (and Slavic). Expansion of syllabic resonants (*R > iR*) affected the accusative endings (PIE *-m* (sg.acc.) / *ms* (pl.acc.) > PBS *-in / *-ins*), together with nom.du. *-i* (< *-ih*1), causing root nouns to join *i*-stems (Vaillant (1958: 169ff.); Stang (1966: 219)) → monosyllabic forms in nom.sg. resulted in disyllabic forms.

• Larsson (2010a: 73ff.) discusses a possibility that MC affected the tone of *gʷou-s/*gʷom ‘cow’ and sāl-s ‘salt.’ Also, it is implied that MC was prior to the generalization of *i*-stem.

2.1 Latv. *gūvs* [2b]

cognates:
other IE: Skt. nom.sg. gáus, acc.sg. gám, gen.sg. gós ‘cow;’ Gk. βοῦς, acc.sg. βοῦ (Dor. βόον; Lat. bōs);
PIE: nom.sg. *gʷou-s* (→ *gʷou-s*), acc.sg. *gʷou-m* (> *gʷom* [Stang’s Law]), gen.sg. *gʷou-s*

• no evidence for BS ablauting paradigm; but it is possible that BS inherited a monosyllabic accusative singular form with a long root because of the operation of Stang’s law in late PIE: *gôm* (< *gʷom* < *gʷoum*; Stang (1965: 292ff.)).

• The reconstruction *gʷeh3-us/*gʷh3-ou-s* → *gʷeh3-ou-s/*gʷh3-ou-s* (influence from *džeus* ‘god;’ Kortlandt 1985: 118; Lubotsky 1990: 133) may pose a few problems. For example, it is never scanned disyllabic (as opposed to náus) in Vedic, and some case forms (acc.sg. and loc.sg.) do not match the attested forms at all (Sihler 1995: 335).

• Probably, the *i*-stem was generalized to nom.sg. *gōus/acc.sg. *gōm* analogically after other root nouns shifting to *i*-stems. When the stem-forming *-i-* was introduced to the paradigm, the accusative *gōm* got -v- inserted in the root-final position as a hiatus breaker to result in *gōvi-m*. The paradigm was leveled with the new nom-acc. stem *gōvi-.*

• relative chronology:

(3) acute assignment → MC → generalization of *i*-stem → Osthoff’s Law (shortening of long diphthong: *VR > V̥R*)

– MC premises the existence of the distinction of acute/non-acute: acute assignment → MC
- MC should be prior to the generalization of *i-stems.
- if Osthoff’s law took place before the generalization of *i-stems, it would have given rise to *gous or possibly *gom (→ Latv. *gavis).

<table>
<thead>
<tr>
<th>PIE</th>
<th>nom.sg.</th>
<th>acc.sg.</th>
<th>gen.sg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>*gʷous</td>
<td>*gʷoum</td>
<td>*gʷom</td>
<td>*gʷeu-s</td>
</tr>
<tr>
<td>*gʷous</td>
<td>*gʷom</td>
<td>*gʷom</td>
<td>*gʷeu-s</td>
</tr>
<tr>
<td>PBS</td>
<td>acute assignment to long vowels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*góus</td>
<td>*góm</td>
<td>*geu-s</td>
<td></td>
</tr>
<tr>
<td>MC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*góus</td>
<td>*góm</td>
<td>*geu-s</td>
<td></td>
</tr>
<tr>
<td>analogical generalization of *i-stem with the vocalism in strong cases with the epenthesis of *v in the accusative stem-final position</td>
<td></td>
<td></td>
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<tr>
<td>*góvi-s</td>
<td>*góvi-m</td>
<td>*góvi-es</td>
<td></td>
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<tr>
<td>Osthoff’s Law: vacuous operation</td>
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</tbody>
</table>

### 2.2 žvēris (3) ‘wild animal’ [1b]

cognates:
- Baltic: Latv. zvērs < PB *žvēris
- Slavic: OCSzvēr, SCr. zvēr, Sln. zvēr < PS *žvēr (c)
- PBS: *žvēris ← *žvēr < PIE *g̅h yēr
- other IE: Gk. ñyḕr, ñηρός (m.), Lat. fera ‘wild beast’

<table>
<thead>
<tr>
<th>PIE</th>
<th>nom.sg.</th>
<th>acc.sg.</th>
<th>obl.</th>
</tr>
</thead>
<tbody>
<tr>
<td>*g̅h ye-r-s (&gt;*g̅h yēr)</td>
<td>*g̅h ye-r-m</td>
<td>*g̅h ye-r-´</td>
<td></td>
</tr>
<tr>
<td>PBS</td>
<td>simplification of ablaut and palatalization of *g̅h</td>
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<td></td>
</tr>
<tr>
<td>*žvēr</td>
<td>*žvēr-m</td>
<td>*žvēr-´</td>
<td></td>
</tr>
<tr>
<td>acute assignment to long vowels and extension of syllabic resonant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*žvēr</td>
<td>*žvēr-im</td>
<td>*žvēr-´</td>
<td></td>
</tr>
<tr>
<td>MC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*žvēr</td>
<td>*žvēr-im</td>
<td>*žvēr-´</td>
<td></td>
</tr>
<tr>
<td>generalization of accusative stem in *i-stem</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*žvēri-s</td>
<td>*žvēri-m</td>
<td>*žvēri-´</td>
<td></td>
</tr>
<tr>
<td>Osthoff’s Law: vacuous operation</td>
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</tbody>
</table>

- Its mobile paradigm with the acute root in Lithuanian and Latvian means the vacuous operation of Hirt’s Law, which points to an anīt root.
• The generalized stem *žvéři- provided the attested forms.

2.3 nṓsis (1) ‘nose’ [1a]

cognates:

Baltic: Latv. nās ‘nostril,’ nāse ‘nose’ < PB *nā́sis

Slavic: OCS nosь, SCr. nōs, nōśa, Sln. nōs < PS *nṓsa

[nom.pl ← nom./acc. du. (Fritz 1996: 15)] < *nā́s-oh₁

other IE:

Skt. nās-/nās- (f.) ‘nostril’ (du. nāśa ‘nose’), Lat. nāris (f.)/nārēs


‘nostril’

<table>
<thead>
<tr>
<th>PIE</th>
<th>nom.sg.</th>
<th>acc.sg.</th>
<th>obl.</th>
<th>nom.du.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(*nā́s-s? &gt;)</td>
<td>*nā́s</td>
<td>*nā́s-m</td>
<td>(*nā́s-? →)</td>
<td>*nā́s- (i)h₁ (→ *nā́s-oh₁)</td>
</tr>
</tbody>
</table>

Late PIE

semantic split of paradigm

† †

‘nostril’

<table>
<thead>
<tr>
<th>PIE</th>
<th>nom.sg.</th>
<th>acc.sg.</th>
<th>obl.</th>
<th>nom.du.</th>
</tr>
</thead>
<tbody>
<tr>
<td>*nā́s</td>
<td>*nā́s-m</td>
<td>*nā́s-̀</td>
<td>*nā́s-oh₁</td>
<td></td>
</tr>
</tbody>
</table>

late PIE

loss of laryngeal

* nā́s | *nā́s-m | *nā́s-̀ | *nā́s-ō

(→ PS / PGmc.)

PBS

simplification of ablaut

* nā́s | *nā́s-m | *nā́s-̀ | *nā́s-ō

acute assignment to long vowels and extension of syllabic resonant

* nā́s | *nā́s-im | *nā́s-̀ | *nā́s-ō

MC

* nā́s | *nā́s-im | *nā́s-̀ | *nā́s-ō

generalization of accusative stem in i-stem for ‘nostril’

* nā́s-i-s | *nā́s-i-m | *nā́s-i-̀ | *nā́s-ō

• Skt. gen.du. nas-ōs speaks against the weak stem *nh₂-s- of the reconstruction *neh₂-s/*nh₂-s-os (Kortlandt 1985:118), since neither *nh₂-s- (> Skt. Kās-)

nor *nh₂-s- (> Kās-) would give rise to the attested weak stem Skt. nas-̀, cf. Larsson (2010: 83).

• Besides, an acrostatic paradigm with ā ~ ā ablaut (Rasmussen 1989: 260; Larsson 2010: 84) and a mobile paradigm with ā ~ ō (Schindler 1972: 37)

or ā ~ a ablaut (Mayrhofer 1986–96: Vol. II, 31) are suggested.
Schindler’s paradigm *nás-s (> *nās) / *ps-´ developed to Mayrhofer’s ablaut pattern *nās / *nas-´?

The fact that Sl. *nōs (c) ‘nose’ does not have the long root generalized (either in Germanic) in contrast to PB. *nāsis ‘nostril’ (cf. Latv. nāss ‘nostril,’ nāsis (pl.) ‘nose’) suggests a possible split of paradigm into ‘nostril’ and ‘nose’ in PBS or before. The paradigm for ‘nostril’ underwent the simplification of ablaut pattern and the generalization of accusative stem in -i-.

2.4 sân ‘salt’ [2a]
cognates:
Baltic: OPruss. sal (unknown length of the root)
Slavic: OCS solb (f.), Scr. só, sóli, Sln. sōl, soli < PS *sōlb (c)
other IE: Gk. ἱλ, ὡλζ m. ‘salt,’ f. ‘sea,’ Lat. sāl, salis m./n. ‘salt’

<table>
<thead>
<tr>
<th></th>
<th>nom.sg.</th>
<th>acc.sg.</th>
<th>obl.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIE</td>
<td>*sáž-s (&gt; sál)</td>
<td>*sáž-m</td>
<td>(*sλ? →) *sal-´</td>
</tr>
<tr>
<td>PBS</td>
<td>*sáž</td>
<td>*sáž-im</td>
<td>*sal-´</td>
</tr>
<tr>
<td>MC</td>
<td>*sáž</td>
<td>*sáž-im</td>
<td>*sal-´</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>generalization of i-stem, keeping the ablaut pattern</td>
</tr>
<tr>
<td></td>
<td>*sális</td>
<td>*sážim</td>
<td>*sali-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Osthoff’s law: vacuous operation</td>
</tr>
<tr>
<td></td>
<td>*sáži-s</td>
<td>*sáži-m</td>
<td>*sali-</td>
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</tbody>
</table>


the Proto Slavic form *solb has a short root in the same i-stem as in Baltic. This suggests an ablauting paradigm for Proto-Balto-Slavic (Larsson 2010a: 75).

nom.sg. stem *sáži- was generalized in Baltic, whereas acc.sg. stem *sáži- in Slavic
2.5 **širdis** (3) ‘heart’ [1c]

Cognates:

| Slavic: | OCS *srđce*, Cz *sće* < *širdi* (~ Gk. *kárdia*, OIr. *crde* < *khr̂djom*); OCS *srđa* ‘middle,’ SCr *srijeda* ‘Wednesday’ |
| other IE: | Gk. *kârdip*, *kârdopç* (n.), Lat. *cor*, *cordis* (n.), Skt. *hārdi* (< *kērd-h2*; n.) |


- Ablauting paradigm in PBS, later a split of the paradigm: both Baltic and Slavic preserve cognates in zero grade and e-grade with similar semantic variations. This explains why the oblique stem (not the accusative stem as usual) was generalized for ‘heart.’

- **neuter** gender: cf. Lat. *cor*, *cordis*, Skt. *hārdi*, and Gk. *kârdip*, *kârdopç* in neuter; it turned animate in a later stage in BS, through a process of neuter plural (= collective) reinterpreted as a feminine *širdâ*, or through a thematization as attested by *širdai* (3/4) ‘quarrel.’ (Szemerényi 1970: 53148)

<table>
<thead>
<tr>
<th>‘heart’</th>
<th>nom.sg.</th>
<th>acc.sg.</th>
<th>obl.</th>
<th>nom.-acc.pl.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIE</td>
<td>*kērd (&gt; <em>kēr</em>)</td>
<td>*kērd (&gt; <em>kēr</em>)</td>
<td><em>kērd-´</em></td>
<td>kērd-(e)h2 (→ kērd-(e)h2?)</td>
</tr>
<tr>
<td>PBS</td>
<td>palatalization of <em>k</em>, and Winter’s law</td>
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<tr>
<td></td>
<td><em>šēr</em></td>
<td><em>šēr</em></td>
<td><em>šērd-´</em></td>
<td>šērdā</td>
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<tr>
<td></td>
<td>Acute assignment to long vowels</td>
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<td></td>
<td><em>šēr</em></td>
<td><em>šēr</em></td>
<td><em>šērd-´</em></td>
<td>šērdā</td>
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<td></td>
<td>extension of syllabic resonant</td>
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<td></td>
<td><em>šēr</em></td>
<td><em>šēr</em></td>
<td><em>šērd-´</em></td>
<td>šērdā</td>
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<tr>
<td>MC</td>
<td>Osthoff’s Law</td>
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<tr>
<td></td>
<td><em>šēr</em></td>
<td><em>šēr</em></td>
<td><em>šērd-´</em></td>
<td>šērdā</td>
</tr>
</tbody>
</table>
• PIE *kēr → … → OPruss /sēr/?? (unknown accentuation); it is more plausible to consider that this also reflects *šīrd- which may have been thematized (Larsson 2010b: 275).

• *šērd-ā → Lith. šerdis (1/3 (→ 4))

• Lith. šerdis is attested also as a masculine noun in OLith. It may be more likely that *šīrd started to accept the i-stem inflection due to the coincidence of the oblique endings, while širdai is a thematized form meaning ‘*belonging to anger.’

• Since the long vowels generated by Winter’s Law also receive the acute feature, Winter’s Law should be before the acute assignment. (3) can be updated as follows:

(4) Winter’s Law → acute assignment → MC → generalization of i-stem → Osthoff’s Law

3 Particles/prepositions
Does the relative chronology (4) apply to the particles...?
3.1 Old particles

3.1.1 nū ‘NOW’

Cognates: Lith. nūnai, nūn, Latv. nū\(^2,3\) nūr\(^2,3\) OCS nyně ‘now;’ Gk. νῦν ‘now,’ Lat. *num* (interrogative particle), Ved. nū, YAve. nū (< PL-Ir. *nūH*), and Alb. -ni (the 2nd.pl. ending of the imperative; < PIE *nū-h\(_1\)*).

- Lith. nūn is syncopated from nūnai (= OCS nyně), which is from PIE *nuh\(_1\)-nāi* (with nominal suffix *-nō* - in m./n. loc. sg. or fem.dat.sg.; see Stang 1966: 276, Dunkel 2014: II, 578\(^12\)), which gave rise to PBS *nūnai*; Gk. νῦν = Lat. num < *nuh\(_1\)-m* [Dunkel (2014: II, 580\(^25\))]
- For Latin num, compare the secondary and longer form nunc ‘now’ which took over the primary meaning, while the secondary meaning is left in the old form num; for the semantic change from temporal to interrogative meaning, there is a parallel with OHG. nū (Lühr 1997: 340).
- Lith. nū, Ved. nū, YAve. nū, Alb. -ni < PIE *nū-h\(_1\)* [with modal/instrumental adverbial ending *-h\(_1\)* (Dunkel 2014: I, 21, 127ff.)]
- Since the long vowel is likely to be traced back to a sequence with a laryngeal, the circumflex tone in nū can be the result of MC.

3.1.2 vūs ‘HARDLY’

Cognates: Lith. vūs, advūs, adva; OCS jed(у)va ‘hardly’ Fraenkel (1962–65: 1274), Ru. edvá, SCr. jedva; Čak. jedvá (Derksen 2008: 139–40); Germanic *-uōz ‘(emphasis of multiplicative);’ Skt. kṛt-vas ‘(multiplicative) time.’

- Unfortunately, no Latvian cognate. Two of the three Lithuanian forms are of secondary origin: adva (Bretkūnas, Širvydas) is a borrowing from Belorussian, and advūs is probably vūs + a Slavic adverb *odva* (Fraenkel 1962–65: 2).

\(^2\)Attested in Alūksne (E), Vārkava (E), and Krustpils (E) (ME II 754), and also in Kaldabruna (E), Liepā (E), Līvāni (E), Lubāna (E), Pilda (E), Skaista (E), Sunāksts (E), and Varakļāni (E) (EH II 29)

\(^3\)This form is mentioned in Endzelēns (1923: 478) and Endzelēns (1951: 626) as an East Latvian form, which probably is a form more phonetically accurate, considering that the Std. Latv. ĕ corresponds to northern area of ELatv. ou. Those East Latvian forms, however, do not provide a clear information about the accentuation, since the falling tone (circumflex) and sustained tone (acute) are merged to the falling tone in the eastern dialects.
• For Proto-Slavic, *ed(ŭ)vā with the final acute syllable can be reconstructed.

• PBS *edvaHs is reconstructed in Derksen (2008: 140), however, no convincing evidence for laryngeal. Rather, *edvās.

• PIE *ed ūa-es (Dunkel 2009: 49ff.)
  - *ed-: found also in *ed oñom ‘that alone’ (> OCS jedimь ‘one’); an anaphoric pronoun *e-ď in neuter nom.-acc. sg., attested as Hitt. -at ‘that,’ Pal. -at, CLuw. -ata, Skt. adás, adó (< adá-ŭ) ‘that one.’ Probably, univerbated with *ũa-es in PS.
  - *ũa-: an allomorph of *(s)ũa-, which is etymologically related to Lat. suăd ‘so,’ Goth. swa ‘so,’ probably the quatative particles in Anatolian, Hitt. -wa(r) and Luw. -wa, Skt. /va/ ‘as’ as in iva ‘in the way as, to the (same) degree as,’ va‘indeed (emphasizing its previous word).’ The particle *(s)ũa- is reconstructed for PIE, with the meaning ‘so, as’ (Dunkel 2014: 763ff.)
  - *-es: an emphatic particle, lexically meaning ‘entirely, completely, quite, etc.’

• *ũa-es ‘*just so, barely’ > BS ‘hardly, with difficulty’ through a possible pejoration process, as could be observed in ‘he barely managed it’ to ‘he managed it with effort’ (Dunkel 2014: 76511).

• Length and accentuation of the vowel:
  It is assumed in Dunkel (2014: II, 764) that the contraction in *ũa es took place already in PIE (*ũās). Such an old contracted vowel in *ũās could be expected to be reflected with the acute tone (cf. Latv. nuost ‘away’ below). The tone of the second syllable in the Čak. jedvā ‘hardly’ may support it.

• The circumflex tone in Lith. vōs can be possibly from MC.

3.1.3 tė, tē (PERMISSIVE PARTICLE)
Cognates: Lith. tė, tē, Latv. te, OAVE., YAVE. tā (hortative), Gk. τῆ (hortative), in addition, Goth. þe ‘um so,’ and OPruss. ūt ‘thus, therefore’
  - dial. tē (Kvedarna, Rietavas, Dusetos, Mosėdis, Salantai)
    - equated with Gk. τῆ ‘there,’ which initiates an imperative always in Homer and mostly later, often in the sequence τῆ νῦν (Trautmann 1910: 449; Endzelins 1923: 478; Büga 1958–61: voll, 4542; Fraenkel 1962–65: 1071; Dunkel 2014: II, 789)
– OPruss. ūt ‘thus, therefore’ also related; ← ū (cf. Gk. τῇ) + -t (cf. Cze. tak ‘so’) (Trautmann 1910: 449). According to Dunkel’s (2014: I, 178; II, 789) further analysis, *te-h1 (instr.sg.) + -te (temporal particle, attested in Southern Greek dialects, e.g., τῇ τῷ ‘at that time’ < *tό-te).

- the relation between të and tē:
  - të has been shortened from tē:
    * Hirt (1892: 29):
      *tē, an i-less locative of the pronominal stem *to- with the lengthening in the root, got shortened (possibly in the proclitic position [Endzelĭns 1923: 478]).
    - të and tē continue different proto forms [Streitberg (1892: 270ff.); Fraenkel (1962-65: 1071)]; short të may be from the old i-less locative form, with the parallel of OCS te ‘and;’ while the long form is from the old instrumental singular form, cf. Gk. τῇ.
  - Probably, Streitberg (1892) and his followers are right, considering the difference in the usage between tē (permissive free morpheme) and të (locative meaning → permissive bound morpheme).

- tē < *te-h1 is a good example of MC.

3.1.4 nuō ‘FROM’
Cognates: Lith. nuo, Latv. nūo, OPruss. no (< PB *nō), OCS na, Ru. na (< PS *na ‘on(to), in(to)’ < PBS *nō), Gk. ἄνω ‘above, onto.’

- Lith. nūobara ∼ Latv. nuōbara ‘lamb’s wool (collected in spring).’ nūo-pelnas ∼ nuō-pēlns ‘merit,’ etc. shows the original acute tone of the preposition? (Būga 1923/24: 97)
- Latv. nuōst ‘away’ < *nō-steh2- rather shows the phonological tonal outcome of the morpheme.

  – An adverb formation with a preposition and one of the suffixes *-tā-, *-jā-, and *-stā- (< *-steh2-) (Forssman 2003: 97ff.):

  (5) a. Lith. prūojais ‘for naught,’ Latv. pruojām ‘away’ ← (PB) preposition *prō ‘forward, forth, early’ + *-jā-;
    b. Latv. nuōst (nuōst2) ← (PB) preposition *nō ‘from’ + *-stā-;
    c. Latv. bešā, bešū, bešu, beš ‘alone, solely’ ← preposition be ‘without’ + *-tā-.
Possibly, *nō did not undergo MC in a disyllabic PBS *nōstā to be preserved with the acute tone in Latv. nuōst.

Dunkel’s (2014: I, 154,156; II, 52) analysis of PIE *nō ‘upwards, above:’

- *no-o ← locative adverb *no ‘above, up’ + directional particle *o
- *no: attested in *nō-h3kʷ-o- ‘looking above/seen above’ (> Skt. nāka-
  ‘heavenly vault,’ OCS vəznakō ‘on one’s back’)
- directional particle *o: found in verbal prefixes, *prō ‘forward’ (> Hitt. parā, Gk. πρό, Goth. fra, OCS pro, Lith. pra), *apō ‘back’ (Gk. ἀπό, Lat. po-, Goth. af, OCS opaky ‘again’), *sūpo ‘down’ (Gk. ἄπο, Gaul.
  uo-, OIr. fo), etc. (Dunkel 2014: I, 154ff.).

(5a) and (5b) can be good pieces of evidence for an inherited plain long vowel reflected with the acute tone at least in East Baltic.

The circumflex tone of Lith. nuō and Latv. nūo is highly likely to be resulted from MC.

3.2 Baltic particles
3.2.1 laī (OPTATIVE PARTICLE)
Cognates: Lith. lai̯, Kupiškis lōi; Latv. laī.

- no such particles are found outside of East Baltic. (OPruss. conditional particle -le is not a direct cognate, cf. Stang (1966: 443))

Lith. laī is from the 3rd person optative form of leisti (dial. lai̯sti) ‘let,’ and Latv. laī also from laid, the shortened imperative form of lai̯st ‘let.’

Lith. laī and Latv. laī can be historically traced back to Proto East-Baltic at most. Consequently, the circumflex tone of Lith. laī cannot be attributed to the Monosyllabic Circumflexion which was in operation in PBS, but to an inner-Lithuanian phenomenon.

This view is also supported by the acute lōi in east Aukštaitian (< pre-
Lith. *lai̯), for this form indicates that the metatony that produced laī happened after the divergence of Lithuanian dialects.
3.2.2  vēl ‘AGAIN’

Cognates: ELith. vēl’, Lith. dial. vēl (Šakiai, Suvalkai), Latv. vēl (ELatv. viēl) ‘still.’

- Būga (1923/24: 95ff.): Lith. vēl and ELith. vēl’ < *vēli; vēl (also vēl’ei, vēlek) < *vēli(a).

  Latv. vēl (dial. viēl) should be from Baltic *vēli (with accent on -i⁴), where the final adverbial ending *-i⁵ was lost later, as the narrow root vowel ē implies (also Endzelīns (1923: 465)).⁶

- Lith. vēl, vēl/Latv. vēl is an deadjectival particle, descended from an adjective stem *vēlu- which is attested as adjectives, Lith. vēlūs (4) ‘late’ and Latv. vēls ‘id’ (Forssman 2003: 221).

- Diachronic summary:
  - The mētatonie douce in Lithuanian u-stem adjectives observed in a relatively recent history of Lithuanian (e.g., saldūs (3) ‘sweet’ [Daukša’s Postilė (1599)] → saldūs (4), cf. Latv. salds (Stang 1966: 160)) must have affected also Lith. vēlūs (*3 → 4), cf. Latv. vēls.
  - On the other hand, the formation of the adverb *vēli is in PB and much older than the metatony. It must have been formed based on the acute stem *vēlu-.
  - Therefore, the acute tone of Latv. vēl shows the original acute tone, while the circumflex tone of Lith. vēl is secondary. One possibility is that it underwent a late MC after the loss of the adverbial ending *-i. Its acute variants found in Latvian, Lithuanian dialectal forms (parallel to the case of lai) and disyllabic forms can be understood as the forms which have not undergone MC.

3.3  Analysis

The old particles which have good etymology in PIE as a monosyllable have either the circumflex tone both in Lithuanian and Latvian, or only in Lithuanian,

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⁴The form meant by him is probably *vēli (with the acute root and accented ending).
⁵This may be the de-locatival adverbial ending PIE *-ēj > PEB *-ė (Frossman 2003: 143ff.)?
⁶It is known that PIE knew two ways to form adverbs from adjectives: a particular case form and contrastive accent shift. In Lithuanian, we often find pairs like ilgai ~ ilgai (ilgas ‘long’); skersai ~ skeš sai (skešas ‘across’). Such accent alternation may be a remnant of the old contrastive accent shift (Fossman 2003: 119). *vēli and *vēli(a) above may be one such case.
lacking the attested equivalent form in Latvian. These forms support the relative chronology in (4).

On the other hand, MC in PBS could not have operated on the Baltic particles, but still have a reflex with circumflex tone in Lithuanian, and the acute tone in Latvian. At least laĩ (Latv. laî) exemplifies a clear case where Lithuanian form underwent a late MC after the divergence of Lithuanian and Latvian. More particle data and chronological analyses of other categories are needed to confirm this working hypothesis.

4 Conclusion

- the relative chronology based on the root nouns:
  - Winter’s Law → acute assignment → MC → generalization of i-stem → Osthoff’s Law (= 4)
- The particle laĩ/Latv. laî and vêl/Latv. vêl may imply another MC in Lithuanian, which Kortlandt (2014: 217) considers to spread over West Aukštaitian dialects (and not in the East Aukštaitian).

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