The Accentuation of East Baltic Reflexes of PIE Root Nouns
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1 Introduction
1.1 Preliminaries

• 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 źvērıs (3) 'wild animal’ (acc.sg. źvéři) < PIE *ǵhukēr 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. ~ gerēji ‘the good (pl.nom)’], tuōs [ < *-ōns pl.acc. ~ gerōsius ‘id. (pl.acc.)’; Zinkevičius 1980–81: II, 162])

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

3. prepositions/adverbs (nuō ‘from’ ~ nūotaka ‘bride’ [Zinkevičius: id.]; vēl ‘again’ ~ Latv. vēl ‘still, yet’ [ < PB *vēli; Būga 1924: 95]; vōs ‘hardly’ ~ OCS jedva, SCr jēdva, Čak. jēdvā; PBS *edvās)

4. 3rd person future forms of monosyllabic stems šōks – šōkti ‘to jump;’ vīs – vīti ‘to drive,’ etc.

1šō ‘dog’ [ < *kṑ] (Hanssen 1885) may be an n-stem noun, but this can be also considered to have been in the environment of MC.
1.2 Data
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 (2010); Villanueva Svensson (2011):

(1) a. nòsis (1) ‘nose’ (∼ Latv. nāss)
    b. žvērīs (3) ‘wild animal’ (∼ Latv. zvērs)
    c. širdīs (3) ‘heart’ (∼ Latv. sirūds), šerdis (1/3/4; ~ Latv. seître) ‘core of wood’

(2) Latvian forms to be considered
    a. sāls ‘salt’ (m./f.)
    b. gūvs ‘cow’ (f.)

• They are typically i-stems in Baltic (and Slavic; see below).
• The nominative singular and accusative singular under certain environments were monosyllabic. The possibility that at least the Latvian forms (2a) and (2b) may reflect the result of MC has been pointed out.

1.3 Research question
Whereas the circumflex tone of the Latvian forms in (2) seems to exhibit the result of MC, the acute tone of other forms in (1) does not. How could MC affect those forms to give rise to different tones in them? What is the relative chronology?

2 Brief summary of preceding works
2.1 Morphological history of root nouns: PIE ∼ PBS
• In nom.sg., the root could be lengthened either by Szemerényi’s Law [e.g., *gʰjer-s > *gʰjer as in Gk. ḏér-, Lith. žvērīs ‘wild animal’] or by the loss of a consonant in the final consonant cluster [*pod-s > *pód; Sihler (1995: 130, 280)], or secondarily by Stang’s law (Stang 1965: 292ff.).

• Expansion of syllabic resonants (*R > iR) affected the accusative endings (PIE *-η (sg.acc.)/*-ης (pl.acc.) > PBS *-in / *-ins), together with nom.du. -i (< *-i₁), causing root nouns to join i-stems (Vaillant (1958: 169ff.); Stang (1966: 219); Larsson (2010: 34ff.)) → monosyllabic forms in nom.sg. resulted in disyllabic forms.
2.2 MC and root noun

- Rasmussen (1999: 480ff.) discusses the possibility of MC to be traced back to a PBS stage, based on pronominal forms, s-aorist forms in Slavic, and alleged root-nouns.

However, in light of the discussions in Larsson (2002) and Larsson (2010), Rasmussen’s analysis should be applied to better-established root nouns. The same can be applied to the list of root nouns found in Kortlandt (1985: 117ff.), Kortlandt (1997: 26).

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

- Villanueva Svensson (2011: 19ff.):
  - for (2b), the monosyllabic *gwód is likely to have been inherited in PBS as well as in other IE languages; *gwów > *gwód.
  - B-S could inherit two different paradigms:
    (3) a. nom.-acc.sg. *nás- / obl. *nás- (= 1a)
    b. nom.-acc. sg. *guér- / obl. *guér- (= 1b)
    b. nom.sg. *sál- /acc.sg. *sál- (= 2a)

While (3a), (3b), (4a) are derived from the stem of accusative-origin, (4b) from the nominative-originated stem.

Why was nominative favored for particularly (4b)?

3 Ablauting/leveled paradigms inherited in PBS and PB

As observed in previous studies, the East Baltic accentuation of the former root nouns does not look coherent. I will clarify how MC could have affected the paradigms of the nouns in (1) and (2), looking into the ablaut pattern (suggested in Villanueva Svensson 2011) and the relative chronology of MC.

3.1 A special case: Latv. gūovs [2b]

cognates:
other IE: Skt. nom.sg. gáus, acc.sg. gám, gen.sg. gós ‘cow;’ Gk. βόους, acc.sg. βοῦ (Dor. βοῦν); Lat. bōs;
PIE: nom.sg. *gwou-s (→ *gwós), acc.sg. *gwou-m (> *gów ‘salt’) [Stang’s Law]), gen.sg. *gweu-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: *gōm (< *gʷōm < *gʷoum).

The reconstruction *gʷeh₃-us/*gʷh₃-ou-s → *gʷēh₃-us/*gʷh₃-ou-s (influence from *dḥēus ‘god’; Kortlandt 1985: 118; Lubotsky 1990: 133) may pose a few problems. For example, it is never scanned disyllabic (as opposed to nāus) 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 *gōvī-ṃ. The paradigm was leveled with the new nom-acc. stem *gōvī-.

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

- 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 *gōus or possibly *gōm (→ Latv. *gavis).

‘cow’

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<thead>
<tr>
<th>PIE</th>
<th>nom.sg.</th>
<th>acc.sg.</th>
<th>gen.sg.</th>
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<tbody>
<tr>
<td>*gʷōus</td>
<td>*gʷoum (&gt; *gʷōm)</td>
<td>*gʷcu-s</td>
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<tr>
<td>*gʷōus</td>
<td>*gʷōm</td>
<td>*gʷcu-s</td>
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PBS | acute assignment to long vowels |
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<tr>
<td>*gōus</td>
<td>*gōm</td>
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MC | analogical generalization of i-stem with the vocalism in strong cases with the epenthesis of v in the accusative stem-final position |
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<tbody>
<tr>
<td>*gōvī-s</td>
<td>*gōvī-ṃ</td>
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Osthoff’s Law: vacuous operation
3.2 Paradigms with simplified ablaut pattern in PBS

3.2.1 žvēris (3) ‘WILD ANIMAL’ [1B]

cognates:
Baltic: Latv. žvērs < PB *žvēris
Slavic: OCS žvēř, SCR. žvěř, Sln. žvěr < PS *žvěř (c)
PBS *žvēris ← *žvěr < PIE *gʰyēr
other IE: Gk. ὄνκος, ὄνος (m.), Lat. fera ‘wild beast’

nom.sg. acc.sg. obl.
PIE *gʰyēr-s (> *gʰyēr) *gʰyēr-m *gʰyēr-
PBS simplification of ablaut and palatalization of *gʰ

acute assignment to long vowels and extension of syllabic resonant

*MČ *žvēr *žvēr-m *žvēr-

generalization of accusative stem in i-stem

*MČ *žvēri-s *žvēri-m *žvēri-

Osthoff’s Law: vacuous operation

- Since Lithuanian and Latvian forms point to the acute root with the mobile paradigm, it was not affected by Hirt’s Law. That speaks against the existence of a root-final laryngeal.

- The generalized stem *žvēri- provided the attested forms.

3.2.2 nōsis (1) ‘NOSE’ [1A]

cognates:
Baltic: Latv. nāss ‘nostril,’ nāse ‘nose’ < PB *nāsis
Slavic: OCS nosь, SCR. nōs, nōsa, Sln. nōs < PS *nōsъ (c) ← *nōsa
[nom.pl ← nom./acc. du. (Fritz 1996: 15)] < *nās-oh₁

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2Fritz (1996: 15) reconstructs an amphikinetic paradigm derived from a root *h₂-énh₁- ‘breathe,’ i.e., nom.sg. *h₂-énh₁-ōs / acc.sg. *h₂-énh₁-ōs-m / gen.sg. *h₂-énh₁-s-ēs. He considers in Baltic this paradigm developed to PB nom.sg. *nōs ( < PIE *h₁-nōs < *h₂-énh₁-ōs) / acc.sg. *nāsim, where the root was leveled with *-ā-, with the length from nom.sg. and the quality of the
`nostril`

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<th>nom.sg.</th>
<th>acc.sg.</th>
<th>obl.</th>
<th>nom.du.</th>
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<tr>
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<td>(*nás-s? &gt;) *nás</td>
<td>*nás-m</td>
<td>(*nás-? →) *nas-</td>
<td>*nás-(i)h₁ (→ *nás-oh₁)</td>
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<td>Late PIE</td>
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<td>nom.sg.</td>
<td>acc.sg.</td>
<td>obl.</td>
<td><code>nostril</code></td>
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<td>*nás-ō</td>
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<td>simplification of ablaut</td>
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<td>acute assignment to long vowels and extension of syllabic resonant</td>
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<td>*nas-ō</td>
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<td>MC</td>
<td>generalization of accusative stem in i-stem for <code>nostril</code></td>
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<tr>
<td></td>
<td>*nāsi-s</td>
<td>*nāsi-m</td>
<td>*nāsi-´</td>
<td>*nas-ō</td>
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</table>

- Skt. gen.du. nas-ōs speaks against the weak stem *nh₂s- of the reconstruction *neh₂s-/*nh₂s-os (Kortlandt 1985:118), since neither *nh₂s- (> Skt. Xās-) nor *nh₂s- (> Xnis-) 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 ~ ə (Schindler 1972: 37) or ā ~ a ablaut (Mayrhofer 1986–96: Vol. II, 31) are suggested.

- Schindler’s paradigm *nās-s (> *nās) / *ns-´ developed to Mayrhofer’s ablaut pattern *nās / *nas-´?

- The fact that Sl. *nōsə (c) ‘nose’ does not have the long root generalized (either in Germanic) in contrast to PB. *nāsis ‘nostril’ (cf. Latv. nāss ‘nostril,’ vowel from acc. stem. On the other side, he considers that the Slavic forms are derived from an old dual stem of the amphikinetic paradigm *h₂n-ōs-oh₁ (> PS *nōsa). Although it is questionable if it is plausible to reconstruct an amphikinetic paradigm with rather complicated combination of phonological and analogical processes, the argument for the reinterpretation of the nom.acc. dual as nom.acc.plural of the o-stem sounds plausible in light of similar arguments for the Germanic cognates.
nāsis (pl.) ‘nose’) suggests a possibility of a split of paradigm into ‘nostril’ and ‘nose’ in PBS or before. The paradigm for ‘nostril’ probably underwent the simplification of ablaut pattern and the generalization of accusative stem in i-stem.

3.3 Ablauting paradigms in PBS

3.3.1 sāls ‘SALT’ [2A]

cognates:
- Baltic: OPruss. sal (unknown length of the root)
- Slavic: OCS solh (f.), SCR. sōlī, SlN. sōl, solī < PS *sōlh (c)
- other IE: Gk. ἁλός, ἀλός m. ‘salt,’ f. ‘sea,’ Lat. sāl, salīs m./n. ‘salt’

\[
\begin{array}{l|c|c|c}
 & \text{nom.sg.} & \text{acc.sg.} & \text{obl.} \\
\hline
\text{PIE} & *sāl-s (> sāl) & *sāl-m & (*sēl? →) *sal-́ \\
\text{PBS} & \text{acute assignment to long vowels and extension of syllabic resonant} & \text{generalization of i-stem, keeping the ablaut pattern} & \text{Osthoff’s law: vacuous operation} \\
& *sāl & *sāl-im & *sal-́ \\
& MC & *sāl & *sal-́ \\
& generalization of i-stem, keeping the ablaut pattern & *sālis & *salim \\
& & *sālim & *sali- \\
& & Osthoff’s law: vacuous operation & *sāli-s & *sāli-m & *sali- \\
\end{array}
\]

- the Proto Slavic form *solh has a short root in the same i-stem as in Baltic. This suggests an ablauting paradigm for Proto-Balto-Slavic (Larsson 2010: 75).
- nom.sg. stem *sāli- was generalized in Baltic, whereas acc.sg. stem *sāli- in Slavic
3.3.2 ṣirdís (3) ‘HEART’ [1c]

Cognates:

Baltic: Latv. sīrds, ’OPruss. seyr (/sēr/ neut. sg.nom. only in Elbingener Vocabulary; with a-stem masc. declension in Catechisms) ‘heart;’
Lith. šerdis (1/3/4), Latv. seरde ‘the core of wood’ < PB *šerdis (*šerdis?/) /*širdís

Slavic: OCS srđce, Cz sреce < širdi- (~ Gk. καρδία, OIr. cride < *krídion); OCS srđa‘middle,’ SCR srijeda ‘Wednesday’

other IE: Gk. χερά, χερός (n.), Lat. cor, cordis (n.), Skt. hárda (~ *kérd-h₂;


- This may be also a special case in that it may involve a split of the paradigm in accordance to the meanings.

- Ablauting paradigm in PBS: both Baltic and Slavic preserve cognates in zero grade and e-grade with similar semantic variations

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

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<tr>
<th>PIE</th>
<th>nom.sg.</th>
<th>acc.sg.</th>
<th>obl.</th>
<th>nom.pl (= collective)</th>
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<tr>
<td>*kěrd (&gt; *kěr)</td>
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<td>*šėr</td>
<td>*šėr-´</td>
<td>šērdā</td>
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<tr>
<td>*křd-´</td>
<td>šěrd-´</td>
<td>šěrd-´</td>
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<td>Šěrd (e)h₂</td>
<td>(→ kěrd(e)h₂?)</td>
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<th>PBS</th>
<th>palatalization of *k, and Winter’s law</th>
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<td>Šěr</td>
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<td>Šěrd-´</td>
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<td>Šěrdā</td>
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<td>*šěr</td>
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<td>Šěrdā</td>
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<td>*šěr</td>
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<td>*šěr-´</td>
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<td>Šěrdā</td>
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\[ \begin{array}{cccc}
*\text{šēr} & *\text{šēr} & *\text{šird-ós} & *\text{šērdā} \\
\text{split of paradigm}
\end{array} \]

- PIE \(*\text{ḱēr} \rightarrow \ldots \rightarrow \text{OPruss} /\text{šēr}/ ??\) (unknown accentuation)

- \(*\text{šērd-ā} \rightarrow \text{Lith. šerdis} (1/3 (\rightarrow 4))\)

- Winter’s Law should be before the acute assignment: Winter’s Law \(\ldots \rightarrow\) MC.

- \(*\text{šird-ā} (\text{collective}) \rightarrow \text{East Baltic forms (Lith. širdis, Latv. siūds ‘heart;’ Lith. širdai (3 (\rightarrow 4)) ‘quarrel’); generalization of \text{i-stem} took place at a later stage, motivated by other feminine body-part terms in \text{i-stem}, e.g. akis (4) ‘eye,’ ausis (4) ‘ear,’ nōsis (1) ‘nose’ cf. Szemerényi 1970: 53148.\)

- Thus, the results of MC in this paradigm seem to have died out.

### 4 Conclusion

- Relative Chronology derived in this paper:
  
  Winter’s law/acute assignment \(\rightarrow\) MC
  
  \(\rightarrow\) generalization of \text{i-stem} among root nouns \(\rightarrow\) Osthoff’s law.

- Each word or paradigm has its own history. The relative chronology of MC and the generalization of \text{i-stem} and various morphological changes played a major role for the reflexes of MC to disappear.

### 5 Excursus: \(\text{šūō} ‘\text{dog}’ (4)\)

Cognates:

- Baltic: Latv. \text{suns} (dial. so [suo]), ’ OPruss. sunis ‘dog;’ PB \(*\text{sō}\)
- other IE: Gk. \(\chiυ\omega\nu\), gen.sg. \(\chiυ\omega\nu\zeta\), OIr. \(\text{cú}\), gen.sg. \(\text{con}\), Skt. \(\text{śuā}\),
  
  gen.sg. \(\text{sunās} <\text{PIE nom.sg.} \ \*\text{ḱu(-)ón-s}, \ \text{gen.sg.} \ \*\text{ḱu(-)n-ós}\)

- It is unclear whether it was a root nouns or an \text{n-stem} noun.
• The ending of the nom.sg. is considered to have undergone the following sound change in PIE: *-on-s > *-őn > õ /


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<th>nom.sg.</th>
<th>acc.sg.</th>
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<tbody>
<tr>
<td>PIE</td>
<td>*kũ(-)ón-s</td>
<td>ŵón-m</td>
<td>*kũ(-)n-ős</td>
</tr>
<tr>
<td>PBS</td>
<td>*kúð</td>
<td>śuñm</td>
<td>*숙(-)n-ős</td>
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palatalization of *ḱ, acute assignment
extension of syllabic resonant
MC

• *ũ disappeared between a sibilant and a vowel; cf. Lith. sesuð ‘sister’ ~ Skt. svāsār-, Goth. swistar.

• The nominative singular of Latv. suns is an i-stem form (*sunis), but in the Lithuanian paradigm, the i-stem was not generalized throughout, with the nominative singular šuð still keeping n-stem ending (NB: in Lithuanian šuð is classified as an n-stem synchronically). This may provide an interesting case where a trace of MC can be persistently preserved when the generalization of the accusative stem in i-stem has failed.

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