Eugen HILL
Universität zu Köln

ON CONTRACTION AND COMPENSATORY LENGTHENING IN BALTIC ē-STEMS

Abstract. This paper deals with those verbal and nominal ē-stems of Baltic which exhibit a secondary lengthening of short vowels in the root and/or a secondary metatony in acute long vowels or diphthongs. These are a particular class of ē-preterits as well as feminine abstract nouns based on adjectives and verbs. In both cases, the stem formative is traditionally explained as having arisen from a more ancient post-consonantal *-i̯ā. This paper argues that both categories can be explained by assuming a change of early-Proto-Baltic post-consonantal *i̯ into *i when followed by a long vowel or diphthong.
Keywords: Proto-Baltic; historical morphology; historical phonology; preterit tense; abstract nouns.

1. Introduction

The purpose of the present paper is to clarify the origin of the Baltic verbal and nominal stem formations ending in Proto-Baltic *-ē- (which always bears the circumflex intonation). As is widely known, these include the ē-preterit in the conjugation, several types of feminine ē-stems of nouns and, finally, the feminine ē-forms of some adjectives. In the following sections, I will argue that the stem formative of all these ē-stems ultimately reflects early-Proto-Baltic *-i̯ā, where the first vowel may be of different origin and the second may be either circumflex or acute. As is widely known, the formation of Baltic ē-stems in nouns and verbs may correlate with a lengthening of or metatony in their root vowel. Accordingly, any theory of the Baltic ē-stems should not only explain their *-ē- but also provide an explanation of this additional feature and/or lack thereof. This will be also tried in the present paper where I suggest a unified explanation for such lengthening and/or metatony in all relevant categories of both verbs and nouns. As will become obvious in the following sections, this comprehensive theory of Baltic ē-stems

is crucially based on the recent insights achieved, among others, especially by Jenny H. L a r s s o n (2004a; 2004b) and Miguel V i l l a n u e v a S v e n s s o n (2005; 2014; 2023b).

The paper is organised in the following way. The discussion starts with the Baltic ē-preterit in section 2. A closer look at this formation reveals both the origin of its characteristic stem formative *-ē- and the mechanism responsible for the lengthening of and/or metatony in the root vowel, which often accompany this formative's evolvement. Both insights are subsequently applied to the different categories of nouns and adjective stems ending in *-ē- in section 3. The phonetics of the assumed developments are explored in sections 4 and 5. Taken together, sections 2 to 5 contain a comprehensive theory of Baltic ē-stems and their origin. The following section 6 is dedicated to a brief discussion of alternative attempts to explain the phenomena discussed in the preceding sections. It shows that all such attempts exhibit features making them ultimately less than satisfactory. Section 7 points out what still remains unexplained and has to be left to future research. The results of the paper are summarised in section 8.

2. The Proto-Baltic ē-preterit

As is widely known, the overwhelming majority of Baltic verbs form their past tense stem either with the formative Proto-Baltic *-ā-, or with the formative Proto-Baltic *-ē-.[1] Both these Baltic past tense formations, henceforth the ā-preterit and the ē-preterit, are broadly attested in Lithuanian since the very beginning of its text records in the 16th c. In Latvian, the ā-preterit was recently generalised to all verbs, but the ē-preterit is preserved in dialects (see E n d z e l ī n s 1923, 668–671; 1971, 234–239; S t a n g 1966a, 374–386). The situation in Old Prussian is more difficult to assess, but the limited data also point to an ā-preterit alongside an ē-preterit (see S t a n g 1966a, 375–376; R i n k e v i č i u s 2017, 189–190; V i l l a n u e v a S v e n s s o n 2023a, 179–181).

Both Baltic preterit formations appear to possess a counterpart in the most closely related Slavonic. Among the different past tense formations of

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[1]   The following conventions are applied throughout the paper. In all Proto-Baltic and Proto-East-Baltic reconstructions, the acute intonation on long vowels and diphthongs (including sequences of vowels with a tautosyllabic resonant) is marked with ´ over the relevant vowel or the first component of the relevant diphthong. The circumflex intonation remains unmarked. The word-stress is marked by ' preceding the stressed vowel or diphthong.

Slavonic, one encounters an aorist formed with Proto-Slavonic *-a- and an aorist formed with Proto-Slavonic *-ě-. In theory, the formatives of both Slavonic aorist formations may be the regular counterparts of Proto-Baltic *-ā- and *-ē- in the respective preterits. However, this seems to be true only for the Baltic ā-preterit. This preterit shares with the Slavonic a-aorist not just the stem formative but all its major morphological features (cf., most recently, V i l l a n u e v a   S v e n s s o n 2020). In both language groups, the relevant formation is responsible for the past tense of verbs designating actions, which form a thematic root present. Both the ā-preterit and the a-aorist exhibit a characteristic inclination towards a zero-grade of the root, which often does not match the ablaut grade of the present-stem. It follows that the Baltic ā-preterit and the Slavonic a-aorist most probably reflect one and the same formation inherited from Proto-Balto-Slavonic times.

By contrast, the Baltic ē-preterit and the Slavonic ě-aorist have hardly anything in common. In Slavonic, this aorist formation is confined to verbs designating states, which form an i-present. In most cases, both the ě-aorist and the i-present exhibit zero-grade of the root. The infinitive of such verbs ends in Proto-Slav *-ěti, i.e., it is based on the aorist stem. The Baltic counterparts of such Slavonic verbs form a similar infinitive in Proto-Balt *-ḗti and a similar i-present, they also designate states and are typically zero-grade in the root. However, such verbs do not form an ē-preterit. On the contrary, Baltic verbs with an infinitive in Proto-Balt *-ḗti and a zero-grade i-present form an ā-preterit in *-ḗi̯ā–: cf. Lith *turéti*, Latv *turêt* 'to hold, have' with 3prt Lith *turéjo*, Latv *turẽja*, etc. And, vice versa, the Slavonic counterparts of Baltic verbs which typically display an ē-preterit do not exhibit an ě-aorist in Slavonic. For instance, the ē-preterit is frequent in Baltic root verbs forming a i̯a-present (such as Lith *šaũkti*, 3prs *šaũkia*, Latv *sàukt*, 3prs *sàuc* 'to call', etc.), whereas Slavonic root verbs with a je-present (such as OCS *sъľǫ*, 2sg *-eši* 'to send', etc.) typically form an a-aorist (OCS 3sg.aor *sъla*, etc.).

It follows that, of the two Baltic preterit formations, only the ā-preterit, which has a counterpart in Slavonic, can be securely assumed to reflect a formation inherited from Proto-Balto-Slavonic or even older times. By contrast, the Baltic ē-preterit, which finds no counterpart in Slavonic or anywhere else in Indo-European, is not necessarily older than Baltic itself, i.e., it might have evolved out of other sources as recently as in Proto-Baltic. In the remaining part of the present section, I will try to clarify the origin of this Baltic ē-preterit.

In order to achieve this, it is advisable to make use of two sources of information. The first source is the position of the ē-preterit in the system of Baltic conjugation; i.e., one has to establish to which inflectional classes of Baltic verbs the ē-preterit typically pertains. Since the Old Prussian data are very limited, the relevant information is most conveniently collected from Lithuanian and Latvian verbs ending in tectals (whose palatalisation reveals a former ē-preterit),[2] as well as Latvian dialects preserving the ē-preterit in all verbs. The second source of information is the structural properties of the Baltic conjugation as well as the attested patterns of morphological change in Baltic. Here, evidence provided by all three Baltic languages may be used.

In Lithuanian, the ē-preterit pertains to the following three classes of verbs. The first class, given in Table 1a below, are the verbs with an infinitive in Proto–Balt *-íti and a present-stem formed with Proto–Balt *-ā-. The second class, given in Table 1b, are the verbs with an infinitive in Proto–Balt *-ti attached directly to the root and a present-stem ending in Proto–Balt *-i̯a-. The third class, given in Table 1c, is constituted by verbs with an infinitive in Proto–Balt *-ti attached, again, directly to the root and a present-stem in plain Proto–Balt *-a-.

Table 1

	Proto-Balt inf *s'akíti	Proto-Balt 3prs *s'akā	Proto-Balt 3prt *s'akē	'to talk, say'
a	(Lith *sakýti*, Latv *sacît*)	(Lith *sāko*, Latv *saka*)	(Lith *sākė*)	
b	Proto-Balt inf *ś'aukti	Proto-Balt 3prs *ś'auki̯a	Proto-Balt 3prt *ś'aukē	'to call'
	(Lith *šaũkti*, Latv *sàukt*)	(Lith *šaũkia*, Latv *sàuc*)	(Lith *šaũkė*, Latv *sàuca*, dial. *-e*)	

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2   The transition from an inherited ē-preterit to ā-preterit was probably motivated by the 1sg and 2sg.prt whose endings are shared by both preterit types. However, in verb roots ending in tectals *k* and *g*, the 1sg and 2sg.prt exhibit the characteristic palatalisation to *c* and *dz* in the former ē-preterit but not in the ā-preterit, hence Latv 1sg.prt *sàucu* 'to call' vs. *pìrku* 'to buy', cf. Lith 1sg. prt *šaukiaũ* vs. *pirkaũ*. Accordingly, Latv 3.prt *sàuca*, etc., although synchronically an ā-preterit, still clearly reveals its origin in the ē-preterit.

c	Proto–Balt inf *s'egti	Proto–Balt 3prs *s'ega	Proto–Balt 3prt *s'egē	'to stick'
	(Lith sègti, Latv segt)	(Lith sẽga, Latv seg)	(Lith sẽgė, Latv sedza, dial. -e)	

These are the morphological environments in which the Baltic ē-preterit evolved. In order to understand how it might have evolved, it is advisable to take into consideration those patterns of morphological change which have to be assumed for the preterit-stem formation in Baltic. Here, two major morphological innovations must be registered, both of which considerably increased the number of Baltic verbs forming an ā-preterit. Originally, the ā-preterit pertained to three classes of morphologically simple verbs, given respectively in Table 2a, b, and c. The inherited character of these patterns is implied by the fact that each of them finds an exact counterpart in Slavonic.

Table 2

	Proto–Balt inf *l'ikti	Proto–Balt 3prs *l'eika	Proto–Balt 3prt *l'ikā	'to leave'
a	(Lith lìkti, Latv likt	(Lith lìẽka, Latv liek)	(Lith lìko, Latv lika)	
	Proto–Balt inf *t'ilpti	Proto–Balt 3prs *t'elpa	Proto–Balt 3prt *t'ilpā	'to fit in'
	(Lith tìl̃pti, Latv dial. tèlp)	(Lith tel̃pa, Latv dial. tèlp)	(Lith tìl̃po, Latv tìlpa)	
	Cf. OCS židǫ, 3sg.aor žьda 'to wait', etc. (see Vaillant 1966, 207–211).			
b	Proto–Balt inf *r'išti	Proto–Balt 3prs *r'iša	Proto–Balt 3prt *r'išā	'to bind'
	(Lith rìšti, Latv rist)	(Lith rìša, Latv ris)	(Lith rìšo, Latv risa)	
	Proto–Balt inf *l'upti	Proto–Balt 3prs *l'upa	Proto–Balt 3prt *l'upā	'to peel'
	(Lith lùpti, Latv lupt)	(Lith lùpa, Latv lup)	(Lith lùpo, Latv lupa)	
	Cf. OCS tъkǫ, 3sg.aor tъka 'to weave', etc. (see Vaillant 1966, 201–203).			
c	Proto–Balt inf *k'áuti	Proto–Balt 3prs *k'áui̯a	Proto–Balt 3prt *k'au̯ā	'to strike'
	(Lith káuti, Latv kaût)	(Lith káuja, Latv kaûj)	(Lith kãvo, Latv kava)	
	Proto–Balt inf *ṓg'áuti	Proto–Balt 3prs *ṓg'áui̯a	Proto–Balt 3prt *ṓg'au̯ā	'to pick berries'
	(Lith uogáuti)	(Lith uogáuja)	(Lith uogãvo, Latv dial. ûogava)	
	Cf. OCS darujǫ, 3sg.aor darova 'to donate' (see Vaillant 1966, 347–350).			

The morphological innovations in the preterit tense formation of Baltic are both ultimately based on the inherited pattern given in Table 2b and c. The first innovation pertains to verbs ending in Proto-Balt inf *-áti, 3prs *-'ái̯a and Proto-Balt inf *-éti, 3prs *-'éi̯a, given in Table 3a below. As shown by Slavonic, such verbs did not originally form an ā-aorist ending in *-i̯ā- (but only an aorist based on the respective infinitive stem). This must have changed in Proto-Baltic times. From a synchronic perspective, in such verbs as Proto-Balt 3prs *r'iśa, *k'áu̯i̯a ~ 3prt *r'iśā, *k'áu̯ā, etc., the preterit was formed in a very simple way: by a lengthening of the present-stem's last vowel. This means of preterit-stem formation was evidently extended to such verbs as Proto-Balt 3prs *kil'ái̯a, *ak'éi̯a, producing 3prt *kil'ái̯ā, *ak'éi̯ā, etc. Note that the Proto-Baltic origin of such present–stem–based preterits is clearly comfirmed by OPr 3prt *billai* = Lith *bylójo* 'spoke', etc. The second innovation affected verbs ending in Proto-Balt inf *-éti, 3prs *-i, given in Table 3b. The well-attested Slavonic counterparts of such verbs show, again, that they originally did not form an ā-aorist (but only an aorist based on the infinitive-stem). This must have, again, changed in Proto-Baltic times. However, verbs ending in Proto-Balt inf *-éti, 3prs *-i did not follow the inherited pattern of verbs given in 2b and c but instead joined the more recent pattern of other verbs with an infitive-stem ending in a long vowel, i.e., verbs given in Table 3a. After the first innovation, the new pattern Proto-Balt inf *-áti, *-éti ~ 3prt *-'ái̯ā, *-'éi̯ā could be easily extended to all verbs forming an infinitive in Proto-Baltic *-éti.

Table 3

	Proto-Balt inf *k'iláti	Proto-Balt 3prs *kil'ái̯a	Proto-Balt 3prt *kil'ái̯ā	'to lift'
a	(Lith *kilóti*, Latv *cilât*)	(Lith *kilója*, Latv *cilā*)	(Lith *kilójo*, Latv *cilãja*)	
	Cf. OCS *rydajǫ*, 3sg.aor *ryda* 'to cry' (see Vaillant 1966, 354–359).			
	Proto-Balt inf *'akéti	Proto-Balt 3prs *ak'éi̯a	Proto-Balt 3prt *ak'éi̯ā	'to har-row'
	(Lith *akéti*, Latv *ecêt*)	(Lith *akéja*, Latv *ecē*)	(Lith *akéjo*, Latv *ecēja*)	
	Cf. OCS *umějǫ*, 3sg.aor *umě* 'to have skills' (see Vaillant 1966, 366–371).			
b	Proto-Balt inf *t'uréti	Proto-Balt 3prs *t'uri	Proto-Balt 3prt *tur'éi̯ā	'to hold'
	(Lith *turéti*, Latv *turêt*, OPr *turīt*)	(Lith *tùri*, Latv *tùr*)	(Lith *turéjo*, Latv *turẽja*)	
	Cf. OCS *trъpl'ǫ*, 2sg.prs *trъpiši*, 3sg.aor *trъpě* 'to endure' (see Vaillant 1966, 377–398).			

It must be stressed that both innovations must be necessarily assumed for Proto-Baltic times in this chronological order. This is the only way to understand how the preterit stems of inflectional classes given in Table 3 came about in Baltic. Now, we may ask whether one of these innovations can be instrumental in explaining at least one of the three Baltic ē-preterit patterns given in Table 1 above. This seems to be indeed promising in the case of verbs with Proto-Balt inf *-ti attached directly to the root and a 3prs ending in *-i̯a-; see Table 1b above = Table 4a below. As shown in Table 4b, the Slavonic counterparts of such Baltic i̯a-presents systematically form a-aorists (cf. Vaillant 1966, 307–326), whose Baltic counterparts should be ā-preterits which, evidently, have not been preserved in Baltic. It is tempting to assume that such Proto-Baltic verbs as given in Table 4a participated in the same innovation which affected all the other verbs with a present-stem ending in Proto-Baltic *-i̯a-. In the given case, this innovation would produce a preterit-stem in Proto-Balt *-i̯ā-, i.e., 3prt *ś'auki̯ā, *br'auki̯ā, *k'ōpi̯ā, etc. How would such preterit forms develop further? As is clearly shown by 3prt in Proto-Balt *-ái̯ā, *-éi̯ā > Lith -ójo, -éjo, Latv -ãja, -ẽja, in post-vocalic position Proto-Balt *-i̯ā remained virtually unchanged until most recent times. However, there is evidence suggesting that after a consonant Proto-Balt *-i̯ā might have regularly developed into *-ē as early as in Proto-Baltic. This evidence is provided by the Proto-Baltic nominal system in which, as is well known, the counterparts of Slavonic ja-stems often appear as stems in *-ē-.

Table 4

	Proto-Balt inf *ś'aukti	Proto-Balt 3prs *ś'auki̯a	Proto-Balt 3prt *ś'aukē	'to call'
a	(Lith šaũkti, Latv sàukt)	(Lith šaũkia, Latv sàuc)	(Lith šaũkė, Latv sàuca, dial. -e)	
	Proto-Balt inf *br'aukti	Proto-Balt 3prs *br'auki̯a	Proto-Balt 3prt *br'aukē	'to streak'
	(Lith braũkti, Latv bràukt)	(Lith braũkia, Latv bràuc)	(Lith braũkė, Latv bràuca, dial. -e)	
	Proto-Balt inf *k'ōpti	Proto-Balt 3prs *k'ōpi̯a	Proto-Balt 3prt *k'ōpē	'to clear out'
	(Lith kuõpti, Latv kùopt)	(Lith kuõpia, Latv kùopj)	(Lith kuõpė, Latv kùopa, dial. -e)	

	Proto-Slav 1sg.prs *drěm'ǫ	Proto-Slav 2sg.prs *drěm'eši	Proto-Slav 3sg.aor *drěma	'to doze'
b	(OCS *drěmľ ǫ*, Ru *dremljú*)	(OCS *drěmľ eši*, Ru *drémlješ'*)	(OCS *drěma*)	
	Proto-Slav 1sg.prs *sъl'ǫ	Proto-Slav 2sg.prs *sъl'eši	Proto-Slav 3sg.aor *sъla	'to send'
	(OCS *sъľ ǫ*, Ru *šlju*)	(OCS *sъľ eši*, Ru *šleš'*)	(OCS *sъla*)	
	Proto-Slav 1sg.prs *maz'ǫ	Proto-Slav 2sg.prs *maz'eši	Proto-Slav 3sg.aor *maza	'to smear'
	(OCS *mažǫ*, Ru *mážu*)	(OCS *mažeši*, Ru *mážeš'*)	(OCS *maza*)	

3. Proto‑Baltic nominal ē‑stems

That Proto-Baltic nominal ē-stems, which are all feminine, are somehow associated with Proto-Slavonic ja-stems (i.e, Slavonic a-stems exhibiting j-palatalisation of the last consonant of the root) is implied by several obvious word-to-word matches, such as those given in Table 5a below. Such matches can be, however, purely coincidental. The ē-inflection has become productive in Baltic dialects, creating recent ē-stem nouns along inherited ā-stems (see E n d z e l ī n s 1923, 196–197; S k a r d ž i u s 1943, 74–75); cf. Table 5b. This calls into question the significance of such cases as, for instance, Lith dial. *žarẽ* 'dawn' given in Table 5a, which are found beside Lith *žarà* 'dawn'.

T a b l e 5

	Proto-Balt nom.sg *ź'emē	Proto-Slav nom.sg *zem'a	'earth'
a	(Lith *žẽmė*, Latv *zeme*, OPr III *semmē*)	(OCS *zemľ ě*, Ru *zemljá*, Pol *ziemia*)	
	Proto-Balt nom.sg *k'úrpē	Proto-Slav nom.sg *kъrp'a	'shoe'
	(Lith *kùrpė*, Latv *kuřpe*, OPr E *kurpe*, III *kurpi*)	(Sln *kŕplja*)	
	Proto-Balt nom.sg *źar'ē	Proto-Slav nom.sg *zor'a	'dawn'
	(Lith dial. *žarẽ*)	(OCS *zor'a*, Ru *zorjá*, Pol *zorza*)	
	Proto-Balt nom.sg *l'éipā	Proto-Slav nom.sg *lipa	'linden'
b	(Lith *líepa*, dial. -*ė*, Latv *liẽpa*, dial. -*e*)	(Ru *lípa*, Pol *lipa*)	
	Proto-Balt nom.sg *migl'ā	Proto-Slav nom.sg *mьgla	'fog'
	(Lith *miglà*, dial. -*ẽ*, Latv *migla*)	(OCS *mьgla*, Ru *mgla*)	

More significant is the fact that Baltic ē-stems are attested with the same synchronic functions which are characteristic for groups of derived ja-stems in Slavonic. The first group of Baltic ē-stems, which obviously correspond to ja-stems in Slavonic, are abstract nouns derived from adjectives. These are given in Table 6 below, where the Slavonic material has been taken from Vaillant's (1974, 513–524) collection of Slavonic ja-stems; see also Fecht (2010, 183–189). The Baltic pattern is discussed in Skardžius (1943, 72–73), Endzelīns (1923, 197), Derksen (1996, 55–56, 59), and Larsson (2004b, 308–309). Note that abstract nouns often secondarily develop a more concrete meaning, which may lead to a recent semantic distance between their successors in the individual Baltic and Slavonic languages.

Table 6

a	Proto-Balt nom.sg *līg'ē	Proto-Balt nom.sg m *lī́g'ùs	'flat, even'
	(Lith lygė̃)	(Lith lygùs, dial. lýgas, OPr acc.sg III po-llīgun)	
	Proto-Balt nom.sg *dail'ē	Proto-Balt nom.sg m *dail'us	'refined'
	(Lith dailė̃, Latv dial. daile)	(Lith dailùs, Latv dàiļš)	
	Proto-Balt nom.sg *i̯ōd'ē	Proto-Balt nom.sg m *i̯'ṓdas	'black'
	(Lith dial. juodė̃, juõdė)	(Lith júodas)	
b	Proto-Slav nom.sg *suša	Proto-Slav nom.sg m *suxъ	'dry'
	(OCS suša, Štok sûša, Ru súša, Pol susza)	(OCS suxъ, Štok sûh, Ru suxój, Pol suchy)	
	Proto-Slav nom.sg *tъlst'a	Proto-Slav nom.sg m *tъlstъ	'thick, fat'
	(OCS tlъšta, Slov tólšča, Ru tólšča, Pol tłuszcza)	(OCS tlъstъ, Štok tùst, Ru tólstyj, Pol tłusty)	
	Proto-Slav nom.sg *tvъrd'a	Proto-Slav nom.sg m *tvъrdъ	'hard, solid'
	(OESlav tvъrža, Pol twierdza)	(OCS tvъrdъ, Štok tvr̂d, Ru tvërdyj, Pol twardy)	

The second group, which is given in Table 7, is constituted by abstract nouns derived from verbs. The Slavonic data have been taken from the same sources; for Baltic ē-stems see Endzelīns (1923, 196), Skardžius (1943, 71–72), Derksen (1996, 56, 59–60), and Larsson (2004b, 310–311).

Table 7

a	Proto-Balt nom.sg *kand'ē	Proto-Balt inf *k'ánsti, 3prt *k'ándā		'to bite'
	(Lith kąsti, 3prt kándo, Latv kuôst, 3prt kuôda)		
	(Lith kandẽ, Latv kuôde)		
	Proto-Balt nom.sg *plīš'ē	Proto-Balt inf *pl'íśti, 3prt *pl'íśā		'to crack'
	(Lith plýšẽ)	(Lith plýšti, 3prt plýšo, Latv plîst, 3prt plîsa)	
	Proto-Balt nom.sg *u̯īt'ē	Proto-Balt inf *u̯íti, 3prt *u̯ítā		'to wilt'
	(Lith vytẽ, Latv vîte)	(Lith výsti, 3prt výto, Latv vĩst, 3prt vĩta)	
b	Proto-Slav nom.sg *gryz'a	Proto-Slav 2sg.prs *gryzeši		'to gnaw'
	(Štok, Čak grìža, Ru grýža)	(OCS gryzeši, Čak grīzèš, Ru gryzёš')	
	Proto-Slav nom.sg *krad'a	Proto-Slav 2sg.prs *kradeši		'to steal'
	(Štok krȁđa, Ru kráža)	(OCS kradeši, Čak krādèš, Ru kradёš')	
	Proto-Slav nom.sg *pas'a	Proto-Slav 2sg.prs *paseši		'to pasture'
	(OCS paša, Ru dial. páša, Pol pasza)	(OCS paseši, Ru pasёš')	

It follows that the ē-stem nouns of Baltic are, at least partially, the etymological counterpart of Slavonic feminine ja-stems. This implies that Proto-Balt *-ē in the nom.sg of such nouns must descend from a more ancient *-i̯ā́. This yields a clear parallel to Proto-Balt 3prt *-ē found in verbs with a 3prs ending in Proto-Balt *-Ci̯a. In both cases, one has to assume a very similar development *-Ci̯ā or *-Ci̯ā́ > *-Cē. Note that this development must have been more recent than two specifically Proto-Baltic innovations: (a) the generalisation of *a in the inflection of thematic presents which created a new pattern of preterit formation (by lengthening of the last vowel of the present-stem), and (b) extension of this pattern on verbs with a 3prs in Proto-Balt *-Ci̯a. At the same time, the hypothetical development *-Ci̯ā or *-Ci̯ā́ > *-Cē left reflexes in all three Baltic languages and thus clearly preceded the split-up of Proto-Baltic.

4. The phonetics of Proto-Balt *-Ci̯ā, *-Ci̯ā́ > *-ē

The assumed development early-Proto-Balt *-Ci̯ā, *-Ci̯ā́ > late-Proto-Balt *-ē is very similar to a sound change which must be equally postulated for Proto-Baltic times. It is the *communis opinio* that in Proto-Baltic the ancient sequence of vowels *-ia- secondarily contracted into late-Proto-Balt *-ī-, while early-Proto-Baltic *-iā́ yielded late-Proto-Balt *-ē. This is implied by the following plain fact. In PIE, thematic adjectives as well as a percentage of thematic nouns of masculine gender formed the feminine gender stem and/or their feminine counterpart by simply replacing the thematic vowel of the derivational base with PIE *-ah₂ > early-Proto-Balt *-ā́. This process is shown in Table 8a and b with data from Vedic Sanskrit and Ancient Greek. Table 8c demonstrates the same pattern in Baltic.

Table 8

a	nom.sg m *návas*	nom.sg f *návā*	'new'
	nom.sg m *priyás*	nom.sg f *priyā́*	'dear'
	nom.sg *áśvas* 'male horse, stallion'	nom.sg f *áśvā* 'female horse, mare'	
b	nom.sg m *stádios*	nom.sg f *stádiā*	'upright'
	nom.sg m *mīkrós*	nom.sg f *mīkrá̄*	'small'
	nom.sg. *tʰeós* 'god'	nom.sg. *tʰeā́* 'goddess'	
c	Proto-Balt nom.sg m *l'abas	Proto-Balt nom.sg f *l'abā́	'decent'
	(Lith *lãbas*, Latv *labs*, OPr III *labs*)	(Lith *lãba*, def. -ó=ji, Latv *laba*, def. -ã)	
	Proto-Balt nom.sg m *p'írmas	Proto-Balt nom.sg f *pírm'ā	'first'
	(Lith *pìrmas*, OPr I *pirmas*)	(Lith *pirmā́*, def. -ó=ji, Latv def. *pìrmā*, OPr III def. *pirmo=j*)	
	Proto-Balt nom.sg *'údras 'otter'	Proto-Balt nom.sg *'údrā́ 'otter'	
	(Lith dial. *údras*, Latv *ûdrs*)	(Lith *údra*, OPr E *udro*)	

This pattern of feminine stem formation was certainly also at work in adjectives and nouns formed with the suffix PIE *-io-, cf. Table 8a (Ved *priyás*, *-iyá̄*) and 8b (Gk *stádios*, *-iā*). In Proto-Baltic, the nom.sg of such adjectives and nouns should end in m. *-ias and f. *-iā́. However, the individual Baltic languages presuppose rather m. *-īs and f. *-ē; cf. Table 9 for a selection of the relevant data. This implies that inherited early-Proto-Balt *-ia- and *-iā́ were contracted in late-Proto-Baltic into long monophthongs with circumflex intonation.

Table 9

a	Proto-Balt nom.sg m *d'eśinas, –ā́	→	Proto-Balt nom.sg m *deśin'īs, f -'ē 'on the right'	
	(Lith dẽšinas, -à)		(Lith dešinỹs, -ė̃)	
	Proto-Balt nom.sg *u̯'akaras 'evening'	→	Proto-Balt nom.sg m *u̯ak'arīs, f –ē 'western'	
	(Lith vãkaras, Latv vakars)		(Lith dial. vakāris, -ė)	
b	Proto-Balt-Slav nom.sg *tlā́ká 'fell, fur'	→	Proto-Balt nom.sg *tlā́k'īs 'male bear'	*tlā́k'ė 'female bear'[3]
	(Štok dlàka, Sln dláka)		(Lith lokỹs, Latv lâcis, OPr E clokis)	(Lith lókė, lokẽ)
	PIE *h₂aĝós 'male goat'	→	Proto-Balt nom.sg *áź'īs 'male goat'	*áź'ė 'female goat'
	(Ved ajás, YAv azō)		(Lith ožỹs, Latv âzis)	(OPr E wosee)

It is tempting to attribute the development early-Proto-Balt *-Ci̯ā, *-Ci̯ā́ > late-Proto-Balt *-Cē, which is implied by the preterit stem of verbs with 3prs in Proto-Balt *-Ci̯a and the abstract nouns discussed above, to the same sound change. However, there are three obvious obstacles:

(a) The *-i̯- in the preterit stem of the relevant verbs and abstract nouns must have been consonantal, whereas its counterpart in nouns and adjectives formed with early-Proto-Balt *-ia-/*-iā́- > late-Proto-Balt *-ī-/*-ē- was vocalic since PIE times.

(b) In nouns and adjectives formed with early-Proto-Balt *-ia-/*-iā́- > late-Proto-Balt *-ī-/*-ē- the contraction affected both the short *a and the long *ā́, whereas in verbs with early-Proto-Balt 3prs in *-Ci̯a and 3prt in *-Ci̯ā only the long *ā was subject to contraction.

(c) In the preterit stem of the relevant verbs as well as in the abstract nouns the contraction has been systematically accompanied either by a lengthening of the vowel in the root, if this vowel was short, or by metatony, if it was an acute long vowel or diphthong. This is shown in the Table 10 below (more data are given in Villanueva Svensson 2014; 2020; Larsson 2004b). By contrast, in nouns and adjectives formed with early-Proto-Balt *-ia-/*-iā́- > late-Proto-Balt *-ī-/*-ē-, neither lengthening nor metatony is observed (see Table 9 above).

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[3] The onset of this word is discussed in Hock et al. (2015, 692).

Table 10

	Proto-Balt 3prt *kr'ētē	Proto-Balt 3prs *kr'etia	'to jolt, shake'
a	(Lith *krė̃tė*, Latv *krèta*)	(Lith *krẽčia*, Latv *kreš*)	
	Proto-Balt 3prt *sr'ēbē	Proto-Balt 3prs *sr'ebia	'to slurp, gulp'
	(Lith *srė̃bė*, Latv *strèba*)	(Lith *srẽbia*, Latv *strebj*)	
	Proto-Balt 3prt *b'eldē	Proto-Balt 3prs *b'éldia	'to knock, strike'
	(Lith *béldė*, dial. *bel̃dė*)	(Lith *béldžia*, dial. *bel̃džia*, Latv *bel̂ž*, dial. *bèlž*)	
b	Proto-Balt nom.sg *gīl'ē	Proto-Balt nom.sg m *gil'us	'deep'
	(Lith *gylė̃*, *gỹlė*, Latv *dzìle*)	(Lith *gilùs*, Latv *dziļš*)	
	Proto-Balt nom.sg *drūt'ē	Proto-Balt nom.sg m *dr'útas	'thick, strong'
	(Lith *drūtė̃*, *drũtė*)	(Lith *drũtas*)	
	Proto-Balt nom.sg *i̯ōd'ē	Proto-Balt nom.sg m *i̯'ódas	'black'
	(Lith dial. *juodė̃*, *juõdė*)	(Lith *júodas*)	
c	Proto-Balt nom.sg *mīn'ē	Proto-Balt 3prs *m'ina	'to trample'
	(Lith *mynė̃*, *mỹnė*, Latv *mìne*)	(Lith *mìna*, Latv *min*)	
	Proto-Balt nom.sg *dūr'ē	Proto-Balt 3prs *d'úria	'to thrust, stab'
	(Latv dial. *dùre*)	(Lith *dùria*, Latv *duŗ*)	
	Proto-Balt nom.sg *bēg'ē	Proto-Balt 3prs *b'éga	'to run'
	(Lith *bėgė̃*, *bė̃gė*)	(Lith *béga*, Latv *bêg*)	

However, the assumption that all stems in late-Proto-Baltic *-ē- from a more ancient *-ā- or *-ā́- emerged by one and the same contraction is still the most economical explanation. Accordingly, the next question to ask is whether the obstacles in its way can be overcome. I think that all three can be indeed removed by postulating the following sound change: early-Proto-Balt *-Ci̯V̄# > *-CiV̄#. This hypothetical sound change would:

(a) remove the difference between etymological *-i̯- and etymological *-i- at the input of the contraction,

(b) account for the lack of contraction in 3prs in early-Proto-Balt *-i̯a as opposed to nom.sg in early-Proto-Balt *-ias > late-Proto-Balt *-īs,

(c) explain the lengthening and/or metatony, which may both result from a change in the prosody of the root syllable (from closed to open).

Note that from a typological perspective the change of an inherited post-consonantal *-i̯ into syllabic *i is nothing unheard of. Such a change is

documented, for instance, in Old Irish: see the data given in Table 11 (cf. Pedersen 1909, 68–70; Schrijver 1995, 282–289).

Table 11

pre-OIr nom.sg *donios	<	Proto-Celtic *gdoni̯os 'human'	←	PIE *dʰĝʰóm- 'earth' (Ved kṣā́, Gk kʰtʰṓn, OIr dú)
(OIr *duine*)		(MWelsh *dyn*, MBret *den*)		
pre-OIr nom.sg *kʷarios	<	Proto-Celtic *kʷari̯os 'cauldron'		
(OIr *coire*)		(MWelsh *peir*, MoBret *per*)		
pre-OIr nom.sg *satios	<	Proto-Celtic *sati̯os 'swarm'		
(OIr *saithe*)		(MWelsh *heid*, MBret *hed*)		

As for the compensatory lengthening, it is usually attributed to a loss of segments. However, in some cases the evidence suggests that it was not the segmental loss as such that triggered the lengthening, but rather the change in the prosodic characteristics of syllables which lost a segment. For instance, in Ancient Greek the fricative *s was lost both between vowels and between a resonant and a vowel. However, the compensatory lengthening $e > ei$ /ẹː/ is only observed in the latter case, where the loss of *s turned a closed syllable into an open one (Table 12b), but not in the former, where no such change occurred (Table 12a).

Table 12

	pre-Proto-Greek		Homeric Greek	
a	nom.sg *génos		*genos*	'family'
	gen.sg *génes-os	>	*géneos*	
	nom.pl *génes-ā	>	*géneā*	
	pre-Proto-Greek		Homeric Greek	
	1sg.prs *némō		*némō*	'to allocate'
b	1sg.aor *é-nem-s-m̥	>	*é-neima*	
	1sg.prs. *dérō		*dérō*	'to skin'
	1sg.aor *é-der-s-m̥	>	*é-deira*	

5. Implications of the change early-Proto-Balt *-Cii̯V̄# > *-CiV̄#

The hypothetical sound change *-Cii̯V̄# > *-CiV̄# – feeding the subsequent development of early-Proto-Balt *-ii̯ā, *-ii̯ā́ into late-Proto-Balt *-ē in the preterit stem of verbs with a 3prs in *-Ci̯a and in abstract nouns – bears several important implications for other domains of Baltic historical phonology and/or morphology. The first of such implications follows from the fact that this sound change obviously did not affect the relevant case forms of feminine nouns and adjectives in Proto-Balt *-í/*-i̯ā-, which are securely established as reflecting PIE stems formed with *-ih₂-/*-i̯ah₂-. The relevant data are given in Table 13. Lith *o*, Latv *a* in the gen.sg and nom.pl of such nouns and adjectives show the lack of the contraction, which means that the inherited *i̯ remained consonantal in them.

Table 13

a	nom.sg Proto-Balt *mart'í̄	<	PIE *-íh₂	cf.	Ved *devī́* 'goddess', Goth *mawi* 'girl'
	(Lith *martì* 'bride')				
	gen.sg Proto-Balt *marti̯'ās	<	PIE *-i̯ah₂-ás		Ved *devyā́s*, Goth *maujos*
	(Lith *marčiõs*, Latv *màršas*)				
	nom.pl Proto-Balt *m'arti̯ās	<	PIE *-i̯áh₂-as		Ved *devyā́s*, Goth *maujos*
	(Lith *mařčios*, Latv *màršas*)				
b	nom.sg f *gil'í̄	<	PIE *-íh₂	cf.	Ved *pāpī́* 'evil'
	(Lith *gilì* 'deep')				
	gen.sg f *gili̯'ās	<	PIE *-i̯ah₂-ás		Ved *pāpyā́s*, Goth *hardjos* 'hard'
	(Lith *giliõs*, Latv *dziļas*)				
	nom.pl f *g'ili̯ās	<	PIE *-i̯áh₂-as		Ved *pāpyā́s*, Goth *hardjos*
	(Lith *gìlios*, Latv *dziļas*)				

However, this failure of the change *-Cii̯V̄# > *-CiV̄# to affect the gen. sg and nom.pl of such nouns and adjectives is not necessarily unexpected. As shown by the PIE reconstructions in Table 14, originally the relevant case forms did not contain long vowels but rather sequences of two short vowels. It is not known when exactly these sequences PIE *-áh₂-as and *-ah₂-ás contracted into Proto-Balt *-ās.[4] If this development postdated the

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[4] Slavonic also exhibits reflexes of long vowels in the relevant morphological positions. However, this does not necessarily imply that the contraction across a laryngeal was an already Proto-Balto-Slavonic development. Beside Baltic and Slavonic, long vowels reflecting PIE *-áh₂a- and

early–Proto–Balt change *-Ci̯V̄# > *-CiV̄#, then the lack of contraction is regular.

The second implication, which is intimately connected with the first, is of a rather morphological nature. It pertains to the original inflection of Baltic ē-stem nouns. As has been discussed above, at least two etymologically different groups have to be distinguished. The first is constituted by such nouns as late–Proto–Balt *tlā́k'ē 'female bear' (> Lith *lókė, lokė̃*), the second by abstract nouns represented by, for instance, late–Proto–Balt *līg'ē 'evenness' (> Lith *lygė̃*). The hypothesis proposed in the present paper implies a particular scenario of their respective inflectional development. This scenario is given in Table 14, where a applies to late–Proto–Balt *tlā́k'ė and similar words, while b shows the same case forms of late–Proto–Balt *līg'ē and other abstract nouns. The chronological stages are the same for both types: early–Proto–Baltic starts with *-Ci̯V̄# > *-CiV̄#, while late–Proto–Baltic is the stage after the contraction which led to the Baltic ē-stems.

Table 14

	Proto–Balto–Slav		early–Proto–Balt		middle–Proto–Balt		late–Proto–Balt
a	nom.sg *-Ci'ā́	>	nom.sg *-Ci'ā́	>	nom.sg *-Ci'ā́	>	nom.sg *-C'ē
	gen.sg *-Cia'as	>	gen.sg *-Cia'as	>	gen.sg *-Ci'ās	>	gen.sg *-C'ēs
	nom.pl *-Ciaas	>	nom.pl *-Ciaas	>	nom.pl *-Ciās	>	nom.pl *-Cēs
	Proto–Balto–Slav		early–Proto–Balt		middle–Proto–Balt		late–Proto–Balt
b	nom.sg *-Ci̯'ā́	>	nom.sg *-Ci'ā́	>	nom.sg *-Ci'ā́	>	nom.sg *-C'ē
	gen.sg *-Ci̯a'as	>	gen.sg *-Ci̯a'as	>	gen.sg *-Ci̯'ās	>	gen.sg *-Ci̯'ās
	nom.pl *-Ci̯aas	>	nom.pl *-Ci̯aas	>	nom.pl *-Ci̯ās	>	nom.pl *-Ci̯ās

As Table 14 shows, in late–Proto–Baltic *tlā́k'ė and *līg'ē should have shared the nom.sg, but not the other case forms. Rather, the gen.sg and nom.pl of late–Proto–Baltic *līg'ē should have resembled those of late–Proto–Balt *mart'í (given in Table 13 above). This theoretical expectation is at variance with the reality of Lithuanian and Latvian, where the descendants of late–Proto–Baltic *līg'ē and other abstract nouns follow exactly the same inflectional pattern as late–Proto–Baltic *tlā́k'ē. However, this situation might

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*-ah₂á– are found at least in Germanic, Italic, and Greek, but the contraction hardly preceded the separation of all these branches from each other.

be recent. As shown in Table 15, in dialects of both Lithuanian and Latvian, the abstract nouns in late-Proto-Balt *-ē often possess variant forms implying a stem in late-Proto-Baltic *-i̯ā- (cf. E n d z e l ī n s 1923, 200; S k a r d ž i u s 1943, 70). In case of abstract nouns, such variant forms sometimes do not exhibit the lengthening and/or metatony which have to be expected in the nom.sg, where the change early-Proto-Balt *-Ci̯V̄# > *-CiV̄# once operated. This seems to imply that the inflectional pattern reconstructed for abstract nouns in Table 14b indeed existed in late-Proto-Baltic and was probably preserved in East Baltic dialects until much more recent times.

T a b l e   15

a	late-Proto-Balt nom.sg *aukśt'ē, gen.sg. *áukśti̯'ās	late-Proto-Balt nom.sg m *'áukśtas		'high, tall'
	(Lith aūkštė, Latv aûgša)	(Lith áukśtas, Latv aûgsts)		
	late-Proto-Balt nom.sg *kalt'ē, gen.sg. *kalti̯'ās	late-Proto-Balt nom.sg m *k'altas		'guilty'
	(Lith kaltė̃, kal̃tė, dial. kalčià)	(Lith kal̃tas)		
	late-Proto-Balt nom.sg *ankśt'ē, gen.sg. *ankśti̯'ās	late-Proto-Balt nom.sg m *'ankśtas		'tight'
	(Lith dial. ankštė̃, dial. ankščià)	(Lith añkštas)		
b	late-Proto-Balt nom.sg *kūl'ē, gen.sg *kúli̯'ās	late-Proto-Balt inf *k'últi, 3prs *k'úli̯a		'to beat'
	(Lith kūlė̃, kū́lė, dial. kulià, Latv dial. kûle)	(Lith kùlti, 3prs kùlia, Latv kul̃t, 3prs kuļ)		
	Proto-Balt nom.sg *mīn'ē, gen.sg *mini̯'ās	Proto-Balt inf *m'ínti, 3prs *m'ina		'to tram-ple'
	(Lith mynė̃, mỹnė, minià, Latv mìne, miņa)	(Lith mìnti, 3prs mìna, Latv mĩt, 3prs min)		
	late-Proto-Balt nom.sg *kand'ē, gen.sg *kándi̯'ās	late-Proto-Balt inf *k'ánsti, 3prs *k'ánda		'to bite'
	(Lith kandė̃, dial. kándžia, Latv kuôde, dial. kuõža)	(Lith ką́sti, 3prs kánda, Latv kuôst, 3prs kuôd)		

The third and last implication pertains to the acc.sg of the late-Proto-Baltic ē-stem abstract nouns. If such nouns indeed reflect more ancient stems with a nom.sg ending in *-i̯ā́, then their acc.sg must have once ended in *-i̯an, with a short *a. As is well known, in this case form the stem vowel of all Baltic ā-stems must have been short in Proto-Baltic times. This follows from the circumflex intonation of this inflectional ending, which is in a sharp

contrast with reflexes of Proto-Balt *-ā́n in the instr.sg, see Table 16a below. How this acc.sg in Proto-Balt *-i̯an would respond to the change early–Proto-Balt *-Ci̯V̄# > *-CiV̄# is unclear. On the one hand, the short *a of this acc.sg ending should keep the *i̯ consonantal. On the other, at least in East Baltic as well as in the distantly related Slavonic, all tautosyllabic sequences of the type *an are prosodically treated like long vowels and/or true diphthongs. It is thus not unreasonable to assume the same for early-Proto-Baltic, and this implies a change *-Ci̯an > *-Cian, accompanied by lengthening and/or metatony, in the acc.sg of all stems with a nom.sg ending in *-i̯ā́. The subsequent late-Proto-Baltic contraction *-Cian > *-Cīn – cf. middle-Proto-Balt *tl'ā́kian > *tl'ā́kīn > Lith *lókį*, Latv *lâci* 'male bear', etc.) – should then generate a masculine looking acc.sg within an otherwise clearly feminine ē/i̯ā–stem paradigm.

Table 16

Lithuanian		late-Proto-Baltic	
acc.sg. f *mãžą*	<	*m'aźan	'small'
acc.sg. f def. *mãžą-ją*	<	*m'aźan=i̯an	
inst.sg. f *mažà*	<	*m'aźā́n	
inst.sg f *mažą́-ja*	<	*m'aźā́n=i̯ā́n	

Interestingly, many ē-stem abstract nouns of East Baltic possess masculine ī-stem variant forms. This tendency is shown in Table 17 for a selection of such ē–stems, chosen from the material already treated above. I think that the special status of the acc.sg within the paradigm of such abstract nouns and, consequently, their late-Proto-Baltic ending *-īn in this case form facilitated their frequent transition into the inflection of masculine ī-stems. However, the widespread vacillation between the feminine ē- and the masculine ī-stems in the East Baltic dialects of present times points to a very recent date of this last step in the evolution of the relevant groups of abstract nouns.

Table 17

	late-Proto-Balt nom.sg *aukśt'ē, gen.sg *áukśti̯'ās	late-Proto-Balt acc.sg *'aukśtīn → nom.sg *-īs
a	(Lith *aũkštė*, Latv *aûgša*)	(Lith *aũkštis*)
	late-Proto-Balt nom.sg *i̯ōd'ē, gen.sg *i̯ódi̯'ās	late-Proto-Balt acc.sg *i̯'odīn → nom.sg *-īs

	(Lith dial. *juodẽ, juõdė*)	(Lith *juõdis*)
	late-Proto-Balt nom.sg *gīl'ē, gen.sg *gili̯'ās	late-Proto-Balt acc.sg *g'īlīn → nom. sg *-īs
	(Lith *gylẽ, gỹlė*, Latv *dzile*)	(Lith dial. *gỹlis*)
b	late-Proto-Balt nom.sg *dūr'ē, gen.sg *duri̯'ās	late-Proto-Balt acc.sg *d'ūrīn → nom. sg *-īs
	(Latv dial. *dùre*)	(Lith *dũris*, Latv dial. *dûris, dùris*)
	late-Proto-Balt nom.sg *bēg'ē, gen.sg *bégi̯'ās	late-Proto-Balt acc.sg *b'ēgīn → nom. sg *-īs
	(Lith *bėgẽ, bė̃gė*)	(Lith *bė̃gis*)
	late-Proto-Balt nom.sg *mīn'ē, gen.sg *mini̯'ās	late-Proto-Balt acc.sg *m'īnīn → nom. sg *-īs
	(Lith *mynẽ, mỹnė, minià*, Latv *mìne, miņa*)	(Latv *mìnis*)

6. Alternative solutions

The discussion in the preceding sections has shown that both (a) the stem formative *-ē- in the late-Proto-Baltic preterit of verbs with a 3prs in *-C̦ia and (b) the stem formative *-ē- in late-Proto-Baltic counterparts of Slavonic ja-stem abstract nouns can be explained in one and the same way. A unified explanation for both categories is required because of the well-known fact that in both, the development of late-Proto-Baltic *-ē was accompanied by a lengthening of and/or metatony in the root vowel. Accordingly, any explanation applying to only one of both categories is uneconomical and thus probably wrong. This immediately disqualifies such theories as all s-aorist or root-aorist based explanations of the ē-preterit (see Petit 2004, 344–361; 2010, 249–254; Kortlandt 2017, 39; 2020; Ostrowski 2019) or the use of the imperfect to PIE Narten's presents (Yamazaki 2019). Equally unsatisfactory are all explanations of lengthening and/or metatony in nouns which cannot be applied to the ē-preterit. This is true for Stang's (1966a, 144–151; 1966b) theory, accepted in Derksen (1996, 52–54, 62–66, 369–370) and Larsson (2004a; 2004b, 311–312, 316–319), which attributes the lengthening and/or metatony in nouns to a stress retraction either preceding or accompanying the contraction.

By contrast, Villanueva Svensson (2005; 2014; 2023b, 184–187; 2023c, 72–73) explains the emergence of late-Proto-Baltic *-ē and the lengthening and/or metatony in both relevant categories in a unified way. According to him, late-Proto-Baltic *-ē resulted from a more ancient *-ii̯ā or

*-iii̯ā́, whereby the lengthening and/or metatony originated from syllable loss during this development. This explanation, although clearly superior to all its predecessors, is still unsatisfactory for the following reasons.

(a) The development into late-Proto-Baltic *-ē with a loss of a syllable is equally attested in such adjectives as nom.sg f *u̯ak'arē and such nouns as *tlā́k'e̯ē 'female bear'. Neither category exhibits a lengthening and/or metatony.

(b) Proto-Balt *-ii̯ā did not develop into late-Proto-Baltic *-ē, but was preserved as Lith *-ijo*, Latv *-ija* in the 3prt of denominal verbs such as Lith *akýti*, 3prt *-ijo*, Latv dial. *sàlît*, 3prt *-ija* (see V i l l a n u e v a S v e n s s o n 2023a).

(c) It remains unclear how early-Proto-Balt *-Cii̯ā can have emerged in the 3prt of verbs with a 3prs in early-Proto-Balt *-Ci̯a.[5]

Especially the last point seems to be, first, a fatal objection to Villanueva Svensson's theory in its 2023 state and, second, a natural bridge to the solution advocated in the present paper, i.e., to assuming a change *-Ci̯V̄# > *-CiV̄# in early-Proto-Baltic.

7. The loose ends

The comprehensive theory of Baltic ē-stems and their root vocalism presented in this paper still leaves a part of the evidence without a satisfactory explanation. The most important point which could not be clarified in the framework of the proposed theory is the origin of those Baltic ē-preterits which do not exhibit lengthening and/or metatony in their roots. These are the ē-preterits belonging to verbs with a 3prs in Proto-Balt *-Ca (see Table 1c above) and Proto-Balt *-Cā (Table 1a). Note that the ē-preterits of verbs belonging to the former category are attested, at least, in both East Baltic languages and are thus probably inherited from Proto-Baltic. By contrast, the ē-preterits of verbs in the second category are attested only in Lithuanian, which makes their Proto-Baltic provenance less secure.

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[5]   This is explicitly left open in V i l l a n u e v a S v e n s s o n (2023, 183, 186). Attempts to attribute the development *i̯ > *i to Sievers-Edgerton's law (i.e., syllabic pronunciation of the semivowel after a heavy preceding syllable, see for such an explanation H. H. H o c k 1972a, 158 and 1972b) are unconvincing. The numerous Proto-Baltic heavy root syllable presents in 3prs *-Ci̯a (such as *ś'auki̯a, *br'auki̯a, *k'ōpi̯a, etc., without contraction) show the lack of a correlation between the quantity of the preceding syllable and the pronunciation of *i̯ in Proto-Baltic. Assuming a secondary generalisation of *i̯ in the present-stem but not in the corresponding preterit-stem (Y a m a z a k i 2019; 2022) makes the explanation too complex.

The second point which had to be left to future research is the lack of lengthening and/or metatony in such feminine ē-stems of Baltic as late-Proto-Balt *ź'emē 'earth' or *k'úrpē 'shoe' (see Table 5 above). The Slavonic counterparts of such nouns end in Proto-Slav *-'a, i.e., *zem'a and *kъrp'a, like the Slavonic counterparts of abstract nouns in late-Proto-Baltic *-ē. However, in contrast to the abstract nouns, late-Proto-Balt *ź'emē 'earth' and *k'úrpē 'shoe' do not exhibit a lengthening and/or metatony. This implies, in the framework of the present theory of Baltic ē-stems, an origin in nouns ending in Proto-Balto-Slav *-iá̄. The problem is that such an origin might be at variance with Slavonic, where one would then expect not Proto-Slav *-'a but rather Proto-Slav *-ьja (such as *oldьja 'boat' in OCS *ladija*, Ru dial. *lodʹá*, etc.).

However, this problem is far from providing crucial counter-evidence against the proposed theory. Firstly, despite the perfect semantic match, late-Proto-Balt *ź'emē and Proto-Slav *zem'a may have arisen independently from each other. The former might be a recent nominalisation of an adjective based on Proto-Balt *ź'emas 'low' (in Lith *žẽmas*, Latv *zęms*) and derived from it following the pattern Proto-Balt nom.sg m *d'eśinas 'on the right' → *deśin'īs 'on the right' (see Table 9a above). The latter might be derived from the i-stem Proto-Slav *zemь 'earth' (in Ru dial *zem'* 'floor'). Secondly, the development early-Proto-Slav *-CьjV̄ > middle-Proto-Slav *-CjV̄ > late-Proto-Slav *-C'V is actually attested in Slavonic: see Table 18 for the 1sg of such iterative presents as late-Proto-Slav *vod'ǫ 'to lead' (OCS *voždǫ*, Ru *vožú*, see W. H o c k 1995). It remains unclear why not all forms ending in early-Proto-Slav *-CьjV̄ developed like the 1sg.prs of such verbs and/or whether such a development can be assumed for late-Proto-Slav *zem'a.

T a b l e 18

	late-Proto-Slav		early-Proto-Slav		pre-Proto-Balto-Slav
inf	*voditi (OCS *voditi*, Ru *vodíť*)	<	*vodītī	<	*u̯ad–ei̯e-tei̯ei̯
1sg.prs	*vod'ǫ (OCS *voždǫ*, Ru *vožú*)	<	*vodьjǭ	<	*u̯ad–ei̯ṓ=
2sg.prs	*vodiši (OCS *vodiši*, Ru *vódiš'*)	<	*vodīsjī	<	*u̯ad–ei̯e-si=
3sg.prs	*voditъ (OCS *voditъ*, Ru *vódit*)	<	*vodītъ	<	*u̯ad–ei̯e-t=

The third and last point to be addressed in the present section is, at the same time, the least problematic. The lengthening and/or metatony characteristic of the ē-preterit in Baltic verbs with a 3prs in Proto-Balt *-Ci̯a as well as of Baltic ē-stem abstract nouns is also attested in stems ending in something close to late-Proto-Balt *-Ci̯u-. A small selection of the relevant material is given in Table 19; more data can be found in S t a n g (1966a, 144–145), D e r k s e n (1996, 36–37), L a r s s o n (2004b), and M i k u l ė n i e n ė (2005, 80).

Table 19

Lith *puõdžius* 'potter'	cf.	Lith *púodas*, Latv *puôds* 'pot'
Lith *gir̃nius* 'maker of millstones'	cf.	Lith *gìrna*, Latv pl *dziȓnas* 'millstone'
Lith *šaũkščius* 'kitchen-cupboard'	cf.	Lith *šáukštas* 'spoon'

The theory of Baltic ē-stems and their root vocalism advocated in the present paper implies that such nouns must have participated in the early-Proto-Baltic change *-Ci̯V̄# > *-CiV̄# despite the fact that their stem formative contained a short vowel. However, several oblique cases of such nouns ended not in a short vowel, but in a true diphthong (early Proto-Balt gen.sg *-Ci̯au̯s) or in a short vowel followed by a tautosyllabic resonant (early Proto-Balt acc.sg *-Ci̯un). As already discussed above, such case forms should also be affected by the hypothetical sound change.

8. Summary
The paper argues that all ē-stems of Proto-Baltic with a lengthening or metatony in the root should and can be explained in a unitary way. This can be achieved by assuming a sound change early-Proto-Baltic *-Ci̯V̄# > *-CiV̄# which, in the case of *V̄ = *ā or *ā́, would be feeding the well-known contraction of early-Proto-Baltic *-iā- and/or *-iā́- into late-Proto-Baltic *-ē-.

DĖL KONTRAKCIJOS IR KOMPENSACINIO PAILGĖJIMO BALTŲ KALBŲ ē KAMIENUOSE

Santrauka

Straipsnyje nagrinėjami veiksmažodžių ir vardažodžių ē kamienai, kuriems būdingas antrinis trumpųjų šaknies balsių pailgėjimas ir / ar antrinė metatonija akūtiniuose ilguosiuose balsiuose ar dvigarsiuose. Jiems priklauso tam tikra ē preteritų klasė ir moteriškosios giminės abstraktai, padaryti iš būdvardžių ar veiksmažodžių. Abiem atvejais kamieno formantas tradiciškai aiškinamas kaip atsiradęs iš senesnio postkonsonantinio *-i̯ā. Straipsnyje teigiama, kad abi kategorijos gali būti paaiškintos suponuojant ankstyvosios baltų prokalbės postkonsonantinio *i̯ virtimą *i pozicijoje prieš ilgąjį balsį ar dvigarsį.

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Eugen HILL
Historical-Comparative Linguistics
Department of Linguistics
University of Cologne
D-50923 Cologne
Germany
[*eugen.hill@uni-koeln.de*]