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**MORPHO-SYNTACTIC BEHAVIOUR OF BALTIC
NUMERALS IN THE NUM.-N. PHRASE: MODERN
LITHUANIAN AND LATVIAN**

During the seventies, a large interest for numerical systems was spreading among linguists (see Hurford 1975; Stampe 1976; Greenberg 1978). Corbett (1978a; 1978b) provided a good pattern for the analysis of the syntax in Slavic numerals and proposed some interesting typological universals.

Numerals have always received noticeable attention in Indo-European as well as in Baltic studies because of the archaism of their morphology. Unfortunately, Baltic numerals have been studied almost *exclusively* in (historical) morphology. One rarely meets specific Baltic studies on this topic (an exception is Mažiulis 1957), nevertheless much information can be found in more general works such as modern and historical grammars, etymological dictionaries, handbooks of morphology, etc.¹

Considering this, it would be interesting to concentrate on new fields. I think that the behaviour of the numeral-noun (NUM.-N.) phrase is a very intriguing topic, as we are going to see. This topic also maintains interesting connections with the general history of number, and I hope to show it in the future. Here I wish to use the above-mentioned Corbett's model as a starting point for the analysis of modern Baltic numerals. We will focus on three main aims:

1. to test the validity of this model for Baltic languages, with particular reference to the *squish* hypothesis;

¹ See, for instance, the classic works by Endzelīns (1923; 1957), Mažiulis (1965), Stang (1966), Zinkevičius (1981). More recent works for Lithuanian are Kniūkšta 1994, Paulauskienė 1994, Kniūkšta 1997 in English, Valeckienė 1998 about numerals' accentuation, Ružė 2008; for Latvian Forssman 2001, MLLVG, LLVMSA. Here I should also mention papers by Comrie (1992), Rūķe-Draviņa (1979), Senn (1935–36) and Smoczyński (1986).

2. to point out Baltic peculiarities in comparison with Slavic (this is in fact often treated like a unique Balto-Slavic system; see e.g. Szemerényi 1960);
3. to provide a complete description of morpho-syntactic behaviour in the NUM.-N. phrase for all the possible Baltic numerals.

These points deal with three different areas of inquiry involving general, Indo-European and Baltic linguistics.

1. Corbett's model for Slavic

We shall briefly recall Corbett's approach in its main assumptions before applying it to Baltic languages.

- (1) Numerals share typical adjectival or substantival features, nonetheless they are not fully adjectives or nouns (cf. Corbett 1978a, 358; 1978b, 55).
- (2) *The syntactic behaviour of simple cardinal numerals will always fall between that of adjectives and nouns* (Corbett 1978a, 363).

The last inductive assumption is based on data from a large catalogue of languages. Since 1978 there have been many other typological studies and, as far as I know, this universal has not yet been disproved.

- (3) *The cardinal numerals of Russian cannot be assigned to discrete syntactic categories; they form a continuum from those like adjectives to those like nouns* (*ibid.*, 355).
- (4) *If the simple cardinal numerals of a given language vary in their syntactic behaviour, the numerals showing nounier behaviour will denote higher numerals than those with less nouny behaviour* (*ibid.*, 363). 'Nouniness increases with numerical value' (*ibid.*, 355).

The author shows that the lowest Russian numeral *odin* is the most adjectival and *million*, the highest numeral considered is the most substantival. All the others are arranged in a *continuum*, i.e. they show increasing substantival features proceeding from *odin* onwards (see Table 1). This kind of distribution is called "squish".²

Tests 1–4 refer to adjectival, 5–7 to substantival behaviour. As we see, the distribution goes uniformly and progressively from left (lower numerical values, adjectival features +) to right (higher values, substantival features +). It means that the space between the two extremes Adj and Subst (see (2)) is not anarchic; it is actually ruled by the above-mentioned *ratio*: 'nouniness' increases with numerical value.

² The term "squish" was first introduced by Ross (1972).

Table 1. **Syntactic behaviour of Russian cardinal numerals**³

	1 <i>odin</i>	2 <i>dva</i>	3 <i>tri</i>	5 <i>pjat'</i>	100 <i>sto</i>	1000 <i>tysjača</i>	1.000.000 <i>million</i>
1. Agrees with N in syntactic number	+	–	–	–	–	–	–
2. Agrees in case throughout	+	–	–	–	–	–	–
3. Agrees in gender	+	(+)	–	–	–	–	–
4. Marks animacy	+	+	+	–	–	–	–
5. Has own plural	–	–	–	–	(+)	+	+
6. Takes agreeing determiner	–	–	–	–	–	+	+
7. Takes N in genitive plural throughout	–	–	–	–	–	±	+

(5) *A squish is a natural state of things for simple cardinal numerals* (Corbett 1978b, 50).

One of our aims is to verify this strong claim, which we can refer to as “the squish hypothesis”.

2. Application on modern Baltic languages

Let us give an account of the tests / parameters we are using. Firstly, we can remove *Marks animacy*: Baltic languages do not distinguish between animate and inanimate beings – as opposed to Slavic (and other linguistic families, e.g. Celtic; see Motta, Nuti 2003, 332).

Agrees with N in syntactical number is never the case for numerals, except for 1, which in some languages can take a plural form for a specific class of nouns, the *pluralia tantum*. That is the case of Lithuanian *vieneri, vienerios (dauginiai skaitvardžiai)* and Latvian *vienēji, vienējas*.⁴

Takes agreeing determiner means that it is possible to modify the numeral with an agreeing adjective, e.g. Russian *èta tysjača* “this thousand”, *ètot million* “this million”.

Lith. *vienas* and Latv. *viens* “1” agree with N in gender (e.g. Lith. *vienas kelias, viena giesmė*, Latv. *viens ceļš, viena dziesma*), case (Lith. *vieno kelio*,

³ Round brackets mean that the general answer is +, but it may not always occur in all cases; the symbol ± means that both + and – are possible.

⁴ We should point out that in both languages also the plural forms of simple cardinals can be used in these contexts, e.g. Lith. *vieneri / vieni metai* “one year”, *vienerios / vienos žirklys* “one pair of scissors”, Latv. *vienēji / vieni rati* “one cart”, *vienējas / vienas ragavas* “one sledge”.

vieną giesmę, Latv. *viena ceļa, vienu dziesmu*) and number (Lith. *vienas litas, vieneri metai*, Latv. *viens lats, vienēji rati*).

Lithuanian and Latvian numerals 2–9 agree with N in gender and case. Nevertheless, readers will find round brackets for Lith. *du, trys* and Latv. *trīs* (see Tables 2–3); that is because the flexional paradigms of these numerals do not show a complete distinction in two genders. Lith. “2” has differentiated forms only for nominative–accusative (*du, dvi*), and locative (*dviejuose, dviejose*), whereas the common forms *dviejų* and *dviem* are used for genitive, dative and instrumental cases. Lith. *trys* has differentiated forms only for locative case (*trijuose / trijose*), so its agreement in gender is very weak. Latvian “3” has common forms for nominative–accusative (*trīs*) and genitive (*triju*). The other cases have both differentiated (dat.-instr. *trijiem / trijām*, loc. *trijos / trijās*) and common forms (dat.-instr. *trim*, loc. *trīs*).

In both languages numerals 4–9 have complete paradigms and show full agreement with N.

Numerals for 10 are more peculiar. Lith. *dešimt / dešimtis* does not agree with N in gender and case like the others do, on the contrary, it rules the N requiring the genitive plural, e.g. Lith. *dešimt minučių* (“ten of minutes”). It requires the genitive even in more complex syntactical contexts, for instance, when a preposition is present: compare *su keliais draugais* [instr. plur.] (“with some friends”) and *su dešimt draugų* [gen. plur.] (“with ten of friends”). This numeral has two forms: the first, *dešimtis*, has its own plural (*dvi dešimtys* “twenty – two tens”), the second, *dešimt*, is invariable (*dvidešimt* “twenty”, *trisdešimt* “thirty”, etc.), hence the answer *Has own plural* ±. For the same reason we answer *Takes agreeing determiner* ±: we can modify *dešimtis* with agreeing adjectives, e.g. *visa ta dešimtis* (“all that ten”), but it is not possible for *dešimt*.

What we have just said for Lithuanian holds true for Latvian, too. Here we have a full form *desmits* with its own plural (*divi desmiti* “twenty – two tens”) and agreeing determiner (*vesels desmits* “a whole ten”); the reduced form *desmit* is invariable and does not take an agreeing determiner. In reference to *Takes N in genitive plural throughout*, Latvian shows a more complex situation than Lithuanian; see the following examples (*a*, *b* and *c* are taken from Mathiassen 1997, 77f.):

- | | | | | | |
|----|-----------------|---------------|--------------|---|--------------|
| a. | <i>Atnāca</i> | <i>desmit</i> | <i>zēnu</i> | / | <i>zēni</i> |
| | V. | NUM. | N.-gen.plur. | | N.-nom.plur. |
| | “Ten boys came” | | | | |

- b. *Mēs sastapām desmit zēnu / zēnus*
 Pron. V. NUM. N.-gen.plur. N.-acc.plur.
 “We met ten boys”

Moreover, when the NUM.-N. phrase is found in a sentence with prepositions or verbs requiring a specific case, the N necessarily takes *that* case:

- c. *Viņš palīdzēja desmit zēniem*
 Pron. V. NUM. N.-dat.plur.
 “He helped ten boys”

- d. *Pēc desmit gadiem*
 Prep. NUM. N.-dat.plur.
 “After ten years”

Here the N takes the case required by the verb (Latv. *palīdzēt* requires the dative) or by the preposition (all the Latvian prepositions require the dative when referring to plural nouns).

Because of this alternation of possibilities, the answer to *Takes N in genitive plural throughout* in Table 3 will be ±.

Lith. *šimtas* “100” is similar to *dešimtis*. This numeral does not have an invariable form, so the answers to *Has own plural* and *Takes agreeing determiner* are fully positive.

Latv. *simt / simts* “100” behaves exactly like *desmit / desmits*, e.g. *simt(s) gadu* [gen. plur.] / *gadi* [nom. plur.] (“a hundred of years / a hundred years”), *pēc simt(s) gadiem* [dat. plur.] (“after a hundred years”).

Lith. *tūkstantis* “1000”, *milijonas* “1.000.000” and *milijardas* “1.000.000.000” behave like *šimtas*; Latv. *tūkstotis / tūkstoš* like *simt / simts*.

Latv. *miljons* has both morphologic and syntactic peculiarities. As far as morphology is concerned, *miljons* is the first Latvian “round” numeral showing exclusively the full form, with no reduced variant (hence *Has own plural* +). Its syntactic behaviour is often described as completely substantival; see, for instance, Fennell, Gelsen 1980, 450:

The word *miljons* is a noun, whereas the others are numerals. Hence, the normal rules for precedence of other cases over the genitive (cf. *ar desmit vīriem*) do not apply, *miljons* being *always* followed by the genitive: *ar miljonu vīru* «with a million men».

So, it seems to be the only numeral taking always N in genitive case. Nevertheless, I learn from Latvian mother tongue speakers that the behaviour of *miljons* is quite different today. As opposed to what we read in some texts, *miljons* can be followed by the genitive (e.g. *ar miljonu cigarešu* “with a million cigarettes”), but it may also be followed by the dative plural, according to the request of the preposition (e.g. *ar miljonu iecerēm* “with a million intentions”, *pēc miljons gadiem* “after a million years”). In these examples *miljons* behaves syntactically like the other round numerals: see *pēc desmit (simt, tūkstoš) gadiem*. This is a snapshot of a linguistic change which has occurred in the last decades. We conclude that the answer to *Takes N in genitive plural throughout* cannot be +, but ±.

Latvian *miljards* behaves like *miljons*.

We can now provide a first account of the collected data for Lithuanian and Latvian:

Table 2. **Syntactic behaviour of modern Lithuanian cardinal numerals**

Lithuanian	1 <i>vienas</i>	2 <i>du</i>	3 <i>trys</i>	4–9 <i>keturi – devyni</i>	10 <i>dešim- t(is)</i>	100 <i>šimtas</i>	1000 <i>tūks- tantis</i>	1.000.000 <i>milijonas</i>	1.000.000.000 <i>milijardas</i>
1. Agrees with N in syntactic number	+	–	–	–	–	–	–	–	–
2. Agrees in case throughout	+	+	+	+	–	–	–	–	–
3. Agrees in gender	+	(+)	(+)	+	–	–	–	–	–
4. Has own plural	+	–	–	–	±	+	+	+	+
5. Takes agreeing determiner	–	–	–	–	±	+	+	+	+
6. Takes N in genitive plural throughout	–	–	–	–	+	+	+	+	+

Table 3. **Syntactic behaviour of modern Latvian cardinal numerals**

Latvian	1 <i>viens</i>	2 <i>divi</i>	3 <i>trīs</i>	4–9 <i>četri – deviņi</i>	10 <i>desmit(s)</i>	100 <i>simt(s)</i>	1000 <i>tūkstošis tūkstoš</i>	1.000.000 <i>miljons</i>	1.000.000.000 <i>miljards</i>
1. Agrees with N in syntactic number	+	–	–	–	–	–	–	–	–
2. Agrees in case throughout	+	+	+	+	–	–	–	–	–
3. Agrees in gender	+	+	(+)	+	–	–	–	–	–
4. Has own plural	+	–	–	–	±	±	±	+	+
5. Takes agreeing determiner	–	–	–	–	±	±	±	+	+
6. Takes N in genitive plural throughout	–	–	–	–	±	±	±	±	±

2.1. Lithuanian – Latvian

A fact we can observe at first glance is that we find more ± answers in Latvian. It means that Lithuanian structure is more clear-cut and constant, whereas Latvian shows more variability.

In both languages it is possible to trace a borderline between 9 and 10. So, 10 is a turning point for the whole system. I will call *Primary Turning Point* (TP1) this line dividing adjectival (on the left) and substantival numerals (on the right). Primary turning points can be represented by lines (see Table 4); as we see, Lithuanian TP1 is a double line and Latvian TP1 is a simple line. That is because in Lithuanian we recognize a stronger division between 9 (adjectival) and 10 (substantival), on the contrary, Latvian 10 does not always have substantival syntactic behaviour. For instance, let us recall the above-mentioned sentence *pēc desmit(s) gadiem*. Here the numeral *desmit* partly behaves like the adjectival numeral *deviņi*, see *pēc deviņiem gadiem*. The difference is that *desmit(s)* does not agree with N. Nevertheless, it allows N to take the case required by the preposition. In this case Latvian borderline is weaker than Lithuanian.

Table 4. **Lithuanian and Latvian Primary Turning Point**

Lithuanian	9 <i>devyni</i>	10 <i>dešimt(is)</i>	Latvian	9 <i>deviņi</i>	10 <i>desmit(s)</i>
1. Agrees with N in syntactic number	–	–	1. Agrees with N in syntactic number	–	–
2. Agrees in case throughout	+	–	2. Agrees in case throughout	+	–
3. Agrees in gender	+	–	3. Agrees in gender	+	–
4. Has own plural	–	±	4. Has own plural	–	±
5. Takes agreeing determiner	–	±	5. Takes agreeing determiner	–	±
6. Takes N in genitive plural throughout	–	+	6. Takes N in genitive plural throughout	–	±

Let us now turn to morphology. All “round” numerals were originally full and declinable;⁵ these forms still exist but linguistic evolution has led to more recent, reduced and invariable forms. Such a phenomenon can be described like this:

(6) Flexion → No flexion

This historical change involved the two languages to a different extent. In order to describe this fact, I suggest introducing a *Secondary Turning Point* (TP2): synchronically, it divides numerals with and without double forms; diachronically, it shows to what extent the change (6) has worked. In Table 5 both TP1 and TP2 are represented; TP2 is depicted by thin lines:

Table 5. **Primary and Secondary Turning Points in Lithuanian and Latvian**

Lithuanian	9 <i>devyni</i>	10 <i>dešimt(is)</i>	100 <i>šimtas</i>	1000 <i>tūkstantis</i>	1.000.000 <i>milijonas</i>
Latvian	9 <i>deviņi</i>	10 <i>desmit(s)</i>	100 <i>simt(s)</i>	1000 <i>tūkstoš (tūkstotis)</i>	1.000.000 <i>miljons</i>

⁵ In the oldest Lithuanian and Latvian texts we find only full forms, see Old Lith. *dėščimtis* (Mažvydas, Vilentas), *dėšimtīs* (Daukša); Old Latv. *dešmette* (EuEp1587), *dėšmits* (Dres1682), *šumpte* (EuEp1587), *šimts* (TJT1685) and so on.

This situation leads to two main observations:

1. The phenomenon (6) does not work by chance but following the criterion of increasing numerical value. This morphological reduction happens at 10, then at 100, then at 1000 and so on. For instance, we cannot be sure that a reduced form for Lithuanian 100 will ever appear but we can predict that if it happens, it will be before the reduction of 1000.
2. Lithuanian TP2 is “near”, whereas Latvian TP2 is much more towards the right. It means that (6) has involved Latvian to a higher extent than Lithuanian. In other words, Lithuanian shows a more conservative situation than Latvian.

2.2. Baltic – Slavic

We can now take into account data from Russian (Corbett 1978a; see Table 1) and other Slavic languages (Corbett 1978b). According to Corbett, Polish (western Slavic) as well as Serbo-Croat (southern Slavic) show a “squishy” situation very similar to Russian. Comparing Slavic and Baltic a macroscopic difference emerges: in all the Slavic domain there is an evident numeral squish – i.e. numerals are arranged in a *continuum* from more adjectival to more substantival –, whereas Baltic numerals are more sharply divided into two blocks. In fact in Baltic it is possible to recognize a *Turning Point* (stronger in Lithuanian, weaker in Latvian) between 9 and 10, but it is not the case for Slavic.

So, which situation represents the older state of affairs? We can answer recalling Corbett’s hypothetical but precious reconstruction of the Old Church Slavic numeral system (Corbett 1978b, 54), that we reproduce in Table 6.

Table 6. Old Church Slavic syntactic behaviour

Old Church Slavic	1 <i>jedinъ</i>	2 <i>dъva</i>	3 <i>trъje</i>	5 <i>pętb</i>	10 <i>desętb</i>	100 <i>sęto</i>	1000 <i>tysęšta</i>
1. Agrees with N in gender	+	(+)	((+))	–	–	–	–
2. Agrees in number	+	+	+	–	–	–	–
3. Agrees in case	+	+	+	–	–	–	–
4. Takes N in genitive plural throughout	–	–	–	+	+	+	+
5. Takes agreeing determiner	–	–	–	+	+	+	+
6. Has own dual and plural	–	–	–	+?	+	+	+

Let me quote two considerations by Corbett (*ibid.*): “In this hypothetical system the numerals are sharply divided into two groups” and “[...] could we

go [...] back in time we might reach a situation where there was no squish”. So, in Slavic the oldest situation had no squish, but linguistic evolution produced it in modern languages. Now it is clear that we can assume the sharply-divided situation as older than the squishy one.

This analysis reveals that Baltic numeral system – preserving a sharply-divided situation – is more conservative than Slavic. Within the Baltic domain, Lithuanian is more conservative than Latvian in both syntactical (TP1) and morphological (TP2) changes. From a contrastive point of view, it is very noticeable that modern Lithuanian – and, to a lesser extent, modern Latvian – is much more similar to Old Church Slavic (IX–X century!) than to any modern Slavic language (compare Tables 2–3 and 6). The only difference is that Baltic TP1 falls between 9 and 10, whereas it falls between 4 and 5 in Old Church Slavic.

3. Further numerals

3.1. *The sequence 11–19*

Complex numerals usually do not have specific features; their morphological shape is built from simple numerals and their syntactic behaviour is determined by the last simple numeral on the right (for instance, Lith. *šeši šimtai keturiasdešimt du* “642” [nom.], *šeši šimtai keturiasdešimt dviem* [dat.]). The only “special” complex numerals are those of the sequence 11–19. They have morphologic as well as syntactic peculiarities in both languages. They do not agree with N in gender and case like 1–9, conversely they require the genitive like round numerals do (Latvian shows the known alternation, e.g. *divpadsmit grāmatu / grāmatas* “twelve of books / twelve books”). As opposed to round numerals, they cannot be modified by agreeing determiner, e.g. Lith. *visi / visos penkiolika* (see *visi / visos dešimt*) but not **visa penkiolika* (see *visa dešimtis*).

Table 7. **Syntactic behaviour of Lithuanian and Latvian numerals 11–19**

11–19	Lithuanian <i>vienuolika... devyniolika</i>	Latvian <i>vienpadsmit... deviņpadsmit</i>
1. Agrees with N in syntactic number	–	–
2. Agrees in case throughout	–	–
3. Agrees in gender	–	–
4. Has own plural	–	–
5. Takes agreeing determiner	–	–
6. Takes N in genitive plural throughout	+	±

This table reveals that numerals 11–19 have “hybrid” behaviour: answers to tests 2, 3 and 6 are typically substantival, answers to 4 and 5 are typically adjectival. This fact points out that the peculiarities of these numerals are not only morphologic (as has always been highlighted), but also syntactic.

3.2. Numerals for pluralia tantum

Table 8. **Syntactic behaviour of Lithuanian and Latvian numerals for pluralia tantum**

Numerals for <i>pluralia tantum</i>	Lithuanian <i>vieneri/-os, dveji/-os...</i>	Latvian <i>vienēji/-ējas, divēji/-ējas...</i>
1. Agrees with N in syntactic number	–	–
2. Agrees in case throughout	+	+
3. Agrees in gender	+	+
4. Takes agreeing determiner	–	–
5. Takes N in genitive plural throughout	–	–

This is an adjectival behaviour, the same as simple cardinals 2–9, see Tables 2–3. (Here we have omitted the test *Has own plural*, since these forms are always and only plural.)

3.3. Collective numerals

Any grammar would ascribe Lithuanian *kuopiniai* to collective numerals: they are formed from numerical roots with the specific ending *-etas*, they have numerical meaning (“a group of *n* elements”) and they can be found in the NUM.-N. phrase.

Table 9. **Syntactic behaviour of Lithuanian *kuopiniai***

Lithuanian	<i>dvejetas, trejetas...</i>
1. Agrees with N in syntactic number	–
2. Agrees in case throughout	–
3. Agrees in gender	–
4. Has own plural	+
5. Takes agreeing determiner	+
6. Takes N in genitive plural throughout	+

These forms have fully substantival behaviour like *šimtas, tūkstantis, milijonas, milijardas* (compare *ketvertas obuolių* “a cluster of four apples” and *šimtas obuolių* “a hundred of apples”).⁶

In Latvian we meet a more complex situation; grammar texts often do not agree in the treatment of collective forms like *divatā, trijatā*, etc. They are considered *Ableitungen von Zahlwörtern* by Endzelīns 1923, *kopuma skaitļa vārdi* by MLLVG and *Zahladverbien* by Forssman 2001. I maintain that *they are not actually numerals*, nevertheless they are sometimes considered as such for parallelism with Lithuanian. They are formed from numerical roots, but they differ from numerals in both meaning and lexical class; I agree with Forssman 2001 in considering them adverbs. They cannot be found in the NUM.-N. phrase, conversely they can modify a verb, e.g. *spēlēt trijatā* “to play in three (in a group of three)”. These are the only “numerals” which are not suitable for the model of analysis that we are using (it just does not make sense to apply our tests to these forms). That is one more proof that they are *not* numerals. Texts of grammar should point out that Latvian forms in *-atā* do not correspond to Lithuanian *kuopiniai*, but to adverbs in *-iese* like *dviese, trise, keturiese*, etc.

3.4. Ordinal numerals

Table 9. Syntactic behaviour of Lithuanian and Latvian ordinal numerals

Ordinal numerals	Lithuanian	Latvian
1. Agrees with N in syntactic number	+	+
2. Agrees in case throughout	+	+
3. Agrees in gender	+	+
4. Has own plural	+	+
5. Takes agreeing determiner	–	–
6. Takes N in genitive plural throughout	–	–

Ordinal numerals present a very adjectival pattern (compare these results with those for the numeral 1 in Tables 2–3). A very specific feature of these numerals is that they have definite forms like adjectives (Lith. *trečiasis, trečioji*, Latv. *trešais, trešā* “the third one”). In Lithuanian we can find both

⁶ The substantival features of these numerals are so evident that, for instance, in the old *Compendium Gramaticæ Lithvanicæ* by Sapūnas and Šulcas they are called “Numeralia Substantiva”: *Dantur etiam Numeralia Substantiva, ut: Dweietas Numerus binarius. Treėtas / Ternarius* (CGL1673, 31).

short (indefinite) and long (definite) forms, whereas in modern Latvian the latter are the only possible.⁷

4. Further tests

Corbett's model must be reconsidered by introducing also further tests for the analysis of the Baltic system. I wish to introduce the following parameters:

- *Can be inflected for definiteness*;⁸
 - *Can be inflected for number*;⁹
 - *Can be inflected for case*;
 - *Can be inflected for gender*;
 - *When a preposition is present, takes the case required by it*;
- and three sub-parameters for *Takes N in genitive plural throughout*:
- *...also when a preposition is present*;
 - *...also when an agreeing determiner of N is present*;
 - *...also in a syntactic context requiring a different case*.

The last test refers to expressions of time or verbs requiring a specific case.

Here is the new list of tests and their order:

1. *Can be inflected for definiteness*;
2. *Can be inflected for number*;
3. *Can be inflected for case*;
4. *Can be inflected for gender*;
5. *Agrees with N in syntactic number*;
6. *Agrees with N in case throughout*;
7. *Agrees with N in gender*;
8. *When a preposition is present, takes the case required by it*;
9. *Takes agreeing determiner*;
10. *Takes N in genitive plural throughout*;
- 10.a. *...also when a preposition is present*;
- 10.b. *...also when an agreeing determiner of N is present*;
- 10.c. *...also in a syntactic context requiring a different case*.

⁷ We meet indefinite ordinal numerals in Old Latvian, e.g. *Tas Pecktz Boußlis* (Ench1586) and in traditional folksongs, e.g. *Man deviņi bāleņiņi, Devīts kunga karavīrs; Septīts, pats mazākais, Uguntiņu dedzināja*, cf. Ozols 1961.

⁸ I.e. they have definite forms. Here we do not distinguish between Lithuanian where both are possible and Latvian where only definite forms are used in standard language.

⁹ This test takes the place of the previous *Has own plural*.

Given these tests, it is possible to predict *a priori* some answers on the basis of negative implications.

Table 10. *A priori* implications

test	answer	<i>implies</i>	test	answer
2	–		5	–
3	–		6, 8	–
4	–		7	–
10	–		10.a, 10.b, 10.c	–

Finally, we can produce a synoptic table where all the numerals and the tests are represented. Table 11 describes the behaviour of all the possible Lithuanian and Latvian numerals. Redundant answers are marked by “R”. Each numbered box (e.g. “4–9”) is sub-divided into two other boxes: the first column is for Lithuanian, the second for Latvian; the only exception is the box “kuopiniai”, since there is no equivalent in Latvian (see above, § 3.3).

We observe that some numerals show the same behaviour: e.g. Latv. 10, 100 and 1000 behave the same way; Lith. *kuopiniai* behave like *milijonas*, etc. It is possible to group numerals showing the same behaviour and to arrange them from the most adjectival (a) to the most substantival (i):

Table 12. **All Lithuanian and Latvian numerals from the most adjectival to the most substantival**

Adjective	
a.	Lith. and Latv. ordinal numerals;
b.	Lith. and Latv. 1;
c.	Lith. and Latv. numerals for <i>pluralia tantum</i> , Lith. and Latv. 2–9;
d.	Latv. 11–19;
e.	Lith. 11–19;
f.	Latv. 10, 100, 1000;
g.	Latv. 1.000.000, 1.000.000.000;
h.	Lith. 10;
i.	Lith. 100, 1000, 1.000.000, 1.000.000.000, <i>kuopiniai</i>
Substantive	

So, it is possible to assert that Lith. 10 is more substantival than Latv. 1.000.000.000 or that ordinals are the most adjective-like among numerals.

Table 11. Extended analysis. Morpho-syntactic behaviour of all the Baltic numerals in the NUM.-N. phrase

	1		2		3		4-9		10		11-19		100		1000		10 ⁶ 10 ⁹		Pluralia tantum		Kuopiniiai		Ordinal num.		
1. Can be inflected for definiteness	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+
2. Can be inflected for number	+	-	-	-	±	±	-	-	±	±	-	-	±	±	±	±	+	+	-	-	-	+	+	+	+
3. Can be inflected for case	+	+	+	+	±	±	+	+	±	±	+	+	±	±	±	±	+	+	+	+	+	+	+	+	+
4. Can be inflected for gender	+	+	(+)	(+)	+	+	(+)	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
5. Agrees with N in syntactic number	+	+	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	+
6. Agrees with N in case throughout	+	+	+	+	-	-	+	+	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	+
7. Agrees with N in gender	+	+	(+)	(+)	+	+	(+)	+	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	+	+
8. When a prep. is present, takes the case required by it	+	+	+	+	±	±	+	+	±	±	+	+	±	±	±	±	±	±	±	±	±	±	±	±	+
9. Takes agreeing determiner	-	-	-	-	-	-	-	-	-	±	±	-	±	±	±	±	±	±	±	±	±	±	±	±	-
10. Takes N in genitive plural throughout	-	-	-	-	+	+	-	-	±	±	±	±	±	±	±	±	±	±	±	±	±	±	±	±	-
10.a. ...also when a preposition is present	R	R	R	R	+	+	R	R	+	+	+	+	+	+	+	+	+	±	±	R	R	R	R	R	R
10.b. ...also when an agreeing determiner of N is present	R	R	R	R	+	+	R	R	+	+	+	+	+	+	+	+	+	±	±	R	R	R	R	R	R
10.c. ...also in a syntactic context requiring a different case	R	R	R	R	+	+	R	R	+	+	+	+	+	+	+	+	+	±	±	R	R	R	R	R	R

From Table 11 we can also note a few positive implications:

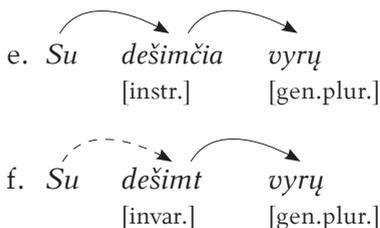
Table 13. **A posteriori implications**

		test	answer		
		4	+	test	answer
Only		3	+	7	+
Lithuanian		10	+	8	+
				10.a, 10.b, 10.c	+

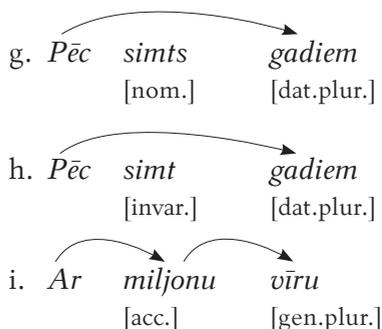
The first implication shows that if a numeral has masculine and feminine forms (test 4), it will agree with N like an adjective (test 7). In fact, more substantival numerals have either masculine (Latv. *simts*) or feminine (Lith. *dešimtis*) gender.

The second and third implications are particularly important, since they divide Lithuanian from Latvian.

The second one means that when a preposition is present in Lithuanian, it always rules the case of the numeral (see *e*), unless the latter is invariable (see *f*):



This is not always the case for Latvian, where there is a wider variety of possibilities:



1. *Ar* *miljōnu* *iecerēm*
 [acc.] [dat.plur.]
-

The last implication means that Lithuanian substantival numerals always require the genitive plural of N. In Latvian it is not the case: sub-parameters 10.a, 10.b and 10.c indicate three syntactic contexts where this rule does not apply, i.e. three contexts where substantival numerals tend to lose their noun-like properties.

5. Conclusion

To sum up, Corbett’s model has been used as a starting point, but it has been shown to be not sufficiently adequate for Baltic languages. The introduction of *Turning Points* was fruitful. The analysis of TP1 revealed that:

- Lithuanian is more conservative than Latvian (strong vs. weak borderline);
- Baltic is more conservative than Slavic (sharply-divided vs. squishy);
- The Lithuanian situation is more similar to that of Old Church Slavic than of any modern Slavic language.

The analysis of TP2 pointed out that:

- Rule (6) proceeds according to the criterion of increasing numerical value;
- Lithuanian is more conservative than Latvian in morphologic evolution, too (“near” vs. “far” – on the right borderline).

Corbett’s universal claims (2), (4) and (5) are confirmed by data from Baltic. In particular, we have shown that universal (2) can be extended: it holds true not only for simple cardinals, but for any numeral (see Table 12). Baltic languages also confirm the “squish hypothesis”. Lithuanian – presenting a very clear-cut borderline between adjectival and substantival numerals – seems to deny the assumption that the squish is a natural state of things. Nevertheless, we see the first signals of squish in Latvian, e.g. the adjectival behaviour of *desmit(s)*. Well, it is known that Latvian is more subject to linguistic evolution than Lithuanian. This leads us to conclude that the squish hypothesis holds true for Baltic languages as well, though these still present a very “pre-squish” situation: in Lithuanian the squish is not present at all, in Latvian it is at the very first stage.

Another peculiarity of the Baltic system is that the sequence 11–19 constitutes a specific class that deserves to be treated independently (§ 3.1). These numerals have not only morphologic, but also syntactic peculiarities

presenting “hybrid” behaviour (see Table 12: they stand in the middle between the two extremes Adjective and Substantive).

We have seen that Latvian forms ending in *-etas* are not suitable for the model of analysis presented here. Therefore it is a proof that these forms are not numerals but adverbs, though sometimes grammar texts erroneously consider them *kopuma skaitļa vārdi* (§ 3.3).

In the last section (§ 4), we have produced an extended analysis for the behaviour of all the possible Baltic numerals in the NUM.-N. phrase (Table 11); then we have grouped numerals presenting the same behaviour and we have arranged them in a succession of the most adjectival to the most substantival (Table 12).

Finally, it is useful to highlight an important phenomenon one more time: Latvian substantival numerals – as opposed to Lithuanian – tend to lose their noun-like properties, especially the request of genitive plural of N. This is particularly true in three syntactic contexts described by sub-parameters 10.a, 10.b and 10.c.

BALTŲ KALBŲ SKAITVARDŽIŲ MORFOSINTAKSINIS ELGESYS SKAITVARDŽIO IR DAIKTAVARDŽIO JUNGINYJE: DABARTINĖS LIETUVIŲ IR LATVIŲ KALBOS

Santrauka

Straipsnyje analizuojamas skaitvardžių morfosintaksinis elgesys baltų kalbose, remiantis Corbetto (1978a; 1978b) siūlomu modeliu slavų kalboms. Parodoma, kad šį modelį, norint pateikti išsamų baltų kalbų sistemos aprašą, reikia modifikuoti ir plėsti. Daugiausia siūloma naudotis *pirminiu* ir *antriniu posūkio punktu* (*Primary and Secondary Turning Point*), kurių pirmasis siejasi su sintaksiniu, antrasis – su morfologiniu pakitimu. Ši analizė išryškina daug specifinių baltų kalbų ypatybių, palyginti su kitų kalbų (ypač slavų) sistemomis.

Dabartinių baltų kalbų duomenys patvirtina Corbetto „squish“ hipotezę ir kitus universalius teiginius, nors abi kalbos – tiek lietuvių, tiek latvių – rodo labai archajišką situaciją. Lietuvių kalba yra konservatyvesnė nei latvių kalba tiek sintaksinio, tiek morfologinio pakitimo atžvilgiu. Lietuvių kalboje „squish“ visai nėra, tuo tarpu latvių kalboje jau matome pirmuosius jo požymius. Kontrastyviniu požiūriu dabartinė lietuvių kalba, rodanti stiprų pasidalijimą tarp būdvardiškųjų ir daiktavardiškųjų skaitvardžių, yra daug panašesnė į senąją bažnytinę nei į bet kurią šiuolaikinę slavų kalbą.

Straipsnio pabaigoje galima rasti visų baltų kalbų skaitvardžių (įskaitant kelintinius, dauginius ir kuopinius) morfosintaksinio elgesio skaitvardžio ir daiktavardžio junginyje (*NUM.-N. phrase*) analizę. Skaitvardžiai skirstomi į grupes pagal savo elgesį ir išdėstomi nuo būdvardiškiausių (grupė *a*: lie. ir la. kelintiniai skaitvardžiai) iki daiktavardiškiausių (grupė *i*: lie. *šimtas, tūkstantis, milijonas, milijardas* bei kuopiniai skaitvardžiai).

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