

**Alexius BELOV**

Moscow State University, Russia

## SLAVIC PLEOPHONY, MORAE AND TONES IN THE ASPECT OF POPULATION GENETICS

The paper treats the well-known problem of Slavic *pleophony* (*polnoglasie*) and *apleophony* (*nepolnoglasie*) in the untypical aspect of the moraic theory and population genetics. It is shown that we have probable evidences of pre-Indo-European-substrate influence, associated with the I1 and I2 haplogroups, causing the resistance of apleophony and some moraic features in Slavic and some other neighbouring languages. Slavic apleophony is discussed in a wider typological perspective.

**Keywords:** pleophony (*polnoglasie*), apleophony (*nepolnoglasie*), mora, population genetics, I1 and I2 haplogroups, Indo-European and pre-Slavic substrate.

### 1.

Since the first part of the XIX century it has been a commonplace in Slavistics that the Slavic languages could be divided in two groups on the reason of so-called *polnoglasie*<sup>1</sup> (pleophony): in that which have pleophonic forms (Russian, Ukrainian and some others) and that which have apleophonic forms (Bulgarian, other South-Slavic, Czech etc.) The pleophony generally is regarded as the result of liquid metathesis in groups like *\*TorT*, *\*TolT* into *-ToroT-*, *-ToloT-* etc. in the common Slavic period (*\*gord* > Russ. *город* 'town'). The other strategy of metathesis is vowel lengthening<sup>2</sup>, which produces apleophonic roots of South- and some of the Western Slavic languages (*\*gord* > Bulg. *град*); some authors suggest also the third strategy producing metathesis without lengthening vowel, which modifies roots in Lehitic dialects (Pol. *\*gród* 'castle': see Kempgen (ed.) 2014: 1160; the standard point of view: see Супрун & Скорвид 2005: 19).

The situation became much more complicated, since the strong correspondence between pleophony and accent had been discovered by two Russian linguists: first

<sup>1</sup> The term *полногласие* was proposed by M. Maksimovich (1804–1873), a famous Russian and Ukrainian scientist and scholar.

<sup>2</sup> Sometimes the authors call this lengthening 'compensatory', but it is not quite correct (see below).

by Alexander Potebnja (Потебня 1866) and then by Philip Fortunatov (1880), who strictly formalised this idea. Now, it is also commonplace, that acute forms in Serbian or Croatian correspond the second syllable accent in Russian pleophonic forms, whereas the apleophonic roots correspond to the circumflex (1)<sup>3</sup>.

## (1)

Accent	Russian	Czech	польский	Serbian (Stokavian)	Croatian (Chakavian)	Slovenian
Acute	ворона 'crow'	vrána	wrona	врѣна	vrāna	vrána
	гороx 'peas'	hráx	groch	грѣx	grāh	gráh
New acute	король 'king'	král	król	крѣль	králj	
Circumflex	ворон 'raven'	havran 'rook'		врѣн		vrân
	волос 'hair'	vlas	wlos	влѣс		lâs

Similar correspondence occurs in Lithuanian, where e.g. Russ. *воромна* ~ Lith. *várna*, but Russ. *вурон* ~ Lith. *vaĩnas*, although phonetic features of the Lithuanian accent is rather different from that of South-Slavic languages.

Also it is notable that Czechoslovak languages show similar apleophonic roots to the South-Slavic (Cz. *kráva* 'cow' ~ Bulg. *крава*), but Lehitic forms like Pol. *krowa* 'cow', while-look like very similar to Czechoslovak, have indeed different history: since J. Rozwadowski it is well known, that they didn't have any vowel lengthening at all and it is very likely that they derive from earlier pleophonic roots (something like *\*k'róvâ*: see Супрун & Скорвид 2005: 19). So, we could talk about (if it is possible to say so) 'true and false aplephony'.

## 2.

The modern achievements in structural prosodics and phonology allow us to apply the well known concept of *mora* (reintroduced into the general phonology by R. Jakobson and N. Trubezkoy: see Трубецкой 2001/1939) to the description of this situation. The modern interpretation, exposed e.g. in (Белов 2015) suggests that the moraic relations could be established by so-called '*syllabic* and *vocalic morae*': the former are used only in structural opposition of one- and polymoraic syllables (presumably concerned with rhythm), whereas the latter, which are regarded as the special case of the former, are used for establishing various prosodic opposition inside the polymoraic syllable and thus divide it in parts: they often maintain the tone or pitch oppositions, and so they are necessary for a (phonologically) pitch accent to exist in a language. Logically, all vocalic morae are syllabic, but not all syllabic are vocalic. It is important to notice that there are some languages, in which all bimoraic syllables are syllabic and vocalic (like Japanese), or there are languages which have

<sup>3</sup> The accentological account can be found in Дыбо 1973, Дыбо 2001, Зализняк 1985.

syllabic moras, without having vocalic (Arabian, Latin). Old Greek and Slavic used vocalic moras only in certain positions<sup>4</sup>.

The concept of vocalic mora, firstly, helps us in closer understanding the problem of Slavic pleophony as the moraic recomposition (not compensatory lengthening!) of previously bimoraic unit.

Thus, common Slavic root syllables like *\*kor-* (in *\*korwā* 'cow' cf. Lat. *cerva* 'she-deer') were closed and bimoraic; the cluseter *-or-* in it could be considered as behaving like a diphthong (cf. Lithuanian diphthongs with liquids) and therefore having two vocalic moras. After the 'open syllables law' had started to operate, such consequences became inadmissible and should have been transformed into something else. In Eastern-Slavic and Lehitic dialects this transformation (2, morae are distinguished with rounds) produced emergence of another vowel phoneme from the (previously non-phonological) 'parasitic' vowel, which after became the host of the second mora, whereas the liquid became an ordinary consonant:

(2)

*\*kɔɾ-wā > \*kɔɾ̣-wā > \*kɔɾ̣ɔ-wā > Russ. корова.*

In South-Slavic and Czechoslovak dialects this problem was solved by a metathesis of liquids, which was accompanied by the moraic recomposition, providing the vowel to be lengthened in order to save two vocalic moras in the root. It has some differences from the classical compensatory lengthening, because the latter implies syllabic moras substituted by vocalic<sup>5</sup>, whereas here we have got only vocalic moras recomposed (3). (It is well known that later all long *\*ā* have become *\*â* in common Slavic.)

(3)

*\*kɔɾ-wā > \*krɔ-wā > \*krɔɔ-wā > \*krō-wā > Bulg. крава.*

### 3.

Secondly the moraic approach shows us a lot of common prosodic features between Slavic and some other languages. E.g. we could talk about pleophonic and apleophonic forms in Old Greek, where we have such pairs like *θqνατος* 'death' ~ *θνητης* 'dead' and many others. But also the idea of syllabic and vocalic morae could supply us with an interesting typological and areal problem.

It is clear, that these two strategies of syllable transformation in Slavic should have a dialectological base. But we see, that the areas of pleophony and apleophony are wider, than that of Eastern- or South-Slavic dialects. Why some of Western dialects use the first strategy and some the second?

If we look at this problem even more widely [Белов 2015: 8.2.2], we could see that the problem is more complicated.

<sup>4</sup> In (Belov 2015) it is shown that Latin did have syllabic moras, but not vocalic, and this is the only and sufficient reason to reject the pitch accent in it. On the other hand, Old Greek did have the both morae types, which suggested the rather complicated system of rhythm and pitch.

<sup>5</sup> Cf. Doric Greek *\*pods* 'foot' > pōs (πῶς, Attic ποῖς).

What is an apleophony? It is a strategy, which preserves vocalic moras in a bimoraic unit; the pleophony, instead, splits bimoraic unit into two ordinary (short) syllables, without preserving (later) moras at all. While the latter feature is familiar to many Indo-European languages, including the modern, the former looks like something specific for the Indo-European languages<sup>6</sup>. So we understand, the problem of pleophony is to be discussed on the typological background of other languages using the same or similar moraic correlation.

If we would ask a question, which other neighbour languages could be regarded as having vocalic moras in bimoraic syllables, the answer would be surprising. Certainly, the decision whether a language have got such (moraic) features, or not, depends on the principles of its description which usually are in strong correlation with the theoretical framework of a particular researcher or a linguistic tradition. Here, for illustration we could sketch the most narrow and the most wide shortlist of the European languages with vocalic morae, depending on weak or strong criteria used.

The most weak criterion gives us languages, which were traditionally regarded as having moras associated with some pitch features or with a prosodic contrast inside any 'long' (i.e. bimoraic) syllable. In this group, except some of mentioned above South-Slavic (Serbian, Croatian, Slovenian), we will have:

- Baltic languages (Lithuanian and Latvian), which have so-called 'syllable intonations' (contour tone accents)<sup>7</sup>;
- Old Greek, which is the most well-known language in this relation (Belov 2015);
- Some of Scandinavian languages: Swedish and Norwegian are known for their opposition of accents 1 and 2; Danish is well-known for its *stød* (Клейнер 2002; *Basbøll 2005*; *Күзьменко 1986*).
- Also some of Uralic languages (like Estonian) could be regarded as having a kind of vocalic morae.

We see, that there are *two* language areas distinguished with such kind of prosodic phenomena: the first area could be called circum-Baltic and the second – circum-Balcanic (see map below).

But even if we apply the more strict criterion of the pitch accent and the vocalic mora (for example, like in Garde 1968), we cannot escape from this situation of biareality, since then, except South-Slavic (Croatian) and Old Greek, we will have also Danish, the evidence of mora in which and its ancient origin is supported by new researches (*Basbøll 2005*; *Lieberman 1982*).

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<sup>6</sup> It was a rather old idea of prof. Leonhard Herzenberg (Герценберг 1981) that the Indo-European area could be splitted in two almost non overlapping zones: the zone of tonal languages, and that of aspirated.

<sup>7</sup> See (Kiparsky 1973; Blevins 1993; Клейнер 2002) for the discussion.

Indeed, we have a kind of hierarchy (4) here:

- (4)  
*Old Greek + (Serbo-)Croatian + Danish (existence of vocalic morae)*  
 > *Lithuanian + Latvian (probability of vocalic morae )* >  
*Swedish + Norwegian (no vocalic morae, but there are some close phenomena).*

A kind of hierarchy could be found and among the Slavic languages (5):

- (5)  
*apleophony + vocalic morae (Serbo-croatian, prob. Slovenian)*  
 > *apleophony without vocalic morae (Bulgarian, Czech etc.)*  
 > *pleophony (Russian, Old Polish etc.)*

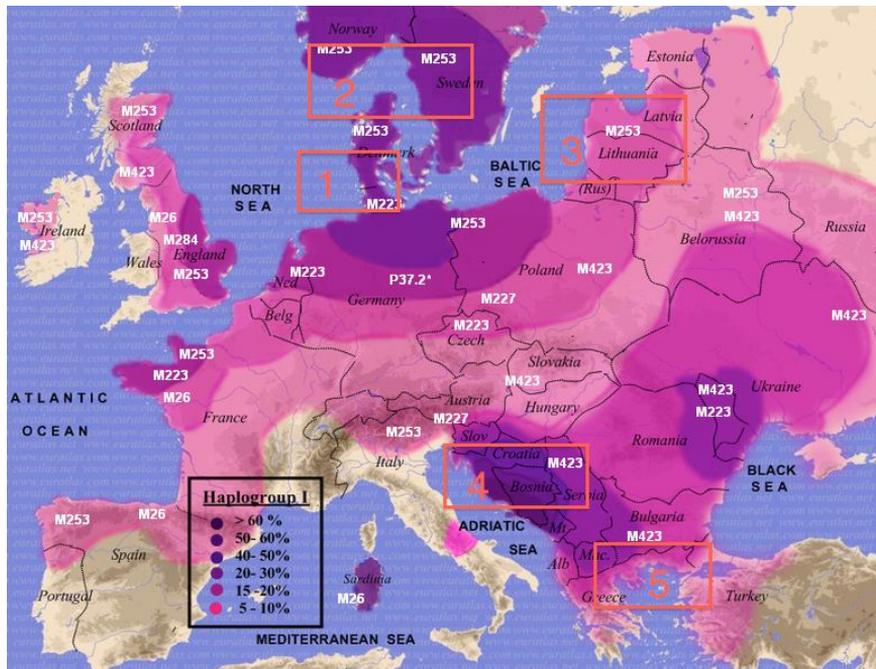
We see that, anyway, we have got two apleophonic zones: the circum-Baltic and the circum-Balcanic. This discovery gives us a rather new problem, than an explanation for the reasons of this variety. The modern language science tries to answer such questions with the support of population genetics, applying the haplogroup analysis and using its results as evidences of population varieties and (probably) peoples' migrations.

The modern researches (Peričić et al. 2005; Rootsi et al. 2004; Bataglia et al. 2008) show an interesting interaction between R1a and I (I1 and I2) haplogroups in this area. Although the cultural attribution problem is too complicated, it is generally assumed that R1a1 is associated with the early Indo-European tribes, whereas I1 and I2 is attributed to the old pre-Indo-European substrate.

The archeological cultures regarded as having probable connection with the I1 haplogroup are the Ertebølle culture, the one of Kongemose, the Funnel Beaker culture, the Pitted Ware culture. Later, they formed a significant part of pre-Germanic ethnos. The I2 haplogroup is associated with the consequence of Balkan neolithic cultures, Illyro-Thracian tribes, the culture of impresso, the Linear Pottery culture, the Cucuteni-Trypillian culture. The common ancestor age of I haplogroup is ca 25,000 years, the age of the I2 – 15,000 years.

The I haplogroup most commonly could be found among: Bosnian Serbs 40.7% [Bataglia et al. 2008], up to 70% according other data; Sardinians 42.3% [Rootsi et al. 2004]; Bosnians 42.0% [Peričić et al. 2005], more than 60% according the other data; Norwegians (I1) 40.3% [Rootsi et al. 2004]; Swedes (I1) 40.0% [Rootsi et al. 2004]; Danes (I1) 38.7 % [Rootsi et al. 2004]; Slovenians 38.2% [Rootsi et al. 2004]; 30.7% [Bataglia et al. 2008]; Croats 37% [Peričić et al. 2005]; 38.1% [Rootsi et al. 2004]; Serbs (Ñāđāèý) 36.3 % [Peričić et al. 2005]; up to 48% according other data; Macedonians (ethn.) 34.2% [Peričić et al. 2005]; Albanians 23.6% [Rootsi et al. 2004]; Russian (cossacks) 22.7% [Rootsi et al. 2004]; Ukrainians 21.9% [Rootsi et al. 2004], up to 25%; Russian 20% (average).

(6)



The haplo-I map comes from the free sources (ru.wikipedia.org). Additionally, I have superimposed the areas of the prosodic features, discussed above. They are notated with numbers: 1 – Danish *stød* correlation zone (Lieberman 1982, Кузьменко 1986). 2 – zone of tonal features in Swedish and Norwegian accents (Клейнер, 2002). 3. Tonal features in Baltic languages (Трубецкой 2000/1939). 4 – Tonal features in Balkan Slavic languages, esp. Chakavian Croatian (Garde 1968). 5 – Tonal features in Old Greek (Белов 2015).

The map (6) shows us that zones of maxima in haplogroup I1 and I2 representation almost exactly<sup>8</sup> match the areas of the prosodic features in question. The most important is of ‘bottleneck’ divergence of the ancestral I haplogroup matching with the double distribution of cirum-Balkanian and cirum-Baltic Indo-European dialect zones, discussed above. This interesting fact could have an explanation that the sustainable conservation of apleophony and some other prosodic phenomena, associated with the vocalic morae in these languages, results from to the pre-Indo-European substrate, having yet unknown prosodic features in its languages. Of course, the genetics data demands very careful treatment and should be regarded only as an oblique evidence of the substrate influence, but not as its cause; probably, here we

<sup>8</sup> Except the lower Danube zone of the Cucuteni-Trypillian culture which is possessed now by non-moraic Rumanian language.

could talk about phenomena, like Romance lenition, which sometimes has been explained through the influence of Celtic substrate languages, which could have lenition and/or consonant elimination similar to the historically well-known Celtic languages. Some recent ideas are exposed in Belov (2015: 356 sqq.); the newest will be published in my forthcoming papers.

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