Features of Common Slavic Ablaut Alternation

0 The issue of the proposed paper is, first, that the system of Common Slavic Ablaut Alternation (represented on Old Church Slavonic which is close to the proposed model of Common Slavic) could be algebraically described with the use of the set of ablaut features, and second, that such features form a metric space in which all differences between ablaut grades could be exactly stated. Our approach is vaguely similar to the methods of Dependency Phonology (ANDERSON – EWEN 1987, DURAND 1996) and the method of phonemic description of Hubey (HUBEY 1999).

1 Such a system could be described as a graph (*A, O*) in which *A* is the set of all ablaut grades and *O* is the set of minimal contrastive oppositions between them. Each such contrastive opposition is considered as the sum of two pertinent values which are incompatible, homogeneous and contrastive (here we follow MARCUS 1967, cf. KORTLAND 1972, details of the method will be shown).

1.1 In Old Church Slavonic (and similarly in CSl) we encounter the following ablaut grades: {reduced palatal} (represented by ь, marked ${}_{e}$G), {reduced non-palatal} (represented commonly by ъ, marked ${}_{o}$G), {*e*-full} (represented commonly by *e*, marked *e*G), {*o*-full} (represented commonly by *o*, marked *o*G), {*e*-lengthened} (represented commonly by *ě*, marked *ē*G), {*o*-lengthened}, (represented commonly by *a*, marked *ō*G), {reduced palatal lengthened} (represented by *i*, marked ${}_{\bar{e}}$G), {reduced non-palatal lengthened} (represented by *y*, marked ${}_{\bar{o}}$G)[1].

(1) Examples of Old Church Slavonic verbs with different ablaut grades, derived from different roots:

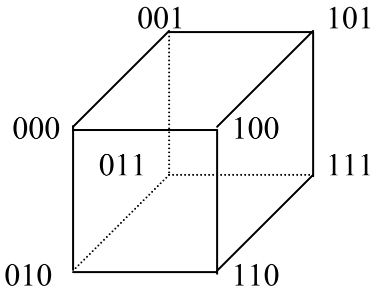
root	*e*G	*o*G	*ē*G	*ō*G	${}_{e}$G	${}_{o}$G	${}_{\bar{e}}$G	${}_{\bar{o}}$G
√*r_k*	*rekǫ*	*rokъ*	*rěčь*		*rьci*		*-ricati*	
√*t_k*	*tečetь*	*tokъ*	*-těkati*	*-tačati*	*tьci*			
√*g_n*	*ženǫ*	*goniti*		*-gańati*		*gъnati*		
√*sl_v*		*slovǫ*		*slaviti*				*slyšati*
√*b_r*	*berǫ*	*-borъ*			*bьrati*		*-birati*	
√*v_d*	*vedǫ*	*voditi*	*věsъ*					
√*m_r*	**merti*	*moriti*		*-mariti*	*-mьrǫ*		*-mirati*	
√*d_x*		*duxъ*				*dъxnǫti*		*dyxati*

1.2 Analyzing all grades in pertinent values, we face the following triple of morphonemic binary features: {±reduced} (formed by values {+reduced} and {-reduced}), {±*o*-graded} (formed by the values {+*o*-graded} and {-*o*-graded}) and {±lengthened} (formed by the values {+legthened} and {–lengthened}). Any “negative” value we can express in a code as *0*, any “positive” value as *1*, and each ablaut grade could be expressed as a binary code.

Values and features could then be represented as orthonormal vectors, and such vectors could be expressed in the graphs (*A, O*) below:

[1] Reasons for this way of marking will be given in the paper proper.

(2)



Note: 000 = eG, 100 = oG, 010 = ${}_{e}G$, 001 = $\bar{e}G$, 101 = $\bar{o}G$, 111 = ${}_{\bar{o}}G$, 110 = ${}_{o}G$, 011 = ${}_{\bar{e}}G$

3 Hence we can understand the difference between the “negative” and “positive” value of a given feature as a distance sui generis in a metric space[2]. The distance between elements (here between the ablaut grades) is given by the distance between *n*-tuples of the sets of values of given elements (i.e. by the number of differences between given codes). This type of distance is known as the Hamming distance.

(3) Examples of distances:

1: $eG – oG$ = 000 – 100 = eG - ${}_{e}G$ = 000 – 010 = eG - $\bar{e}G$ = 000 – 001 = 1
2: $eG – \bar{o}G$ = 000 – 101 = eG - ${}_{u}G$ = 000 – 110 = eG - ${}_{\bar{e}}G$ = 000 – 011 = 2
3: $eG – {}_{\bar{o}}G$ = 000 – 111 = $oG – {}_{\bar{e}}G$ = 100 – 011 = 3

The modeling of the ablaut system as a metric space thus leads toward a precise description of the ablaut system which could be confronted with either younger Slavic systems or parallel other Indo-European models (Baltic languages).

SELECTED LITERATURE:

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[2] As metric is considered any space which complies with the axiom of *identity* (i.e. $\rho(x, y) = 0$, if $x = y$), the axiom of *symmetry* (i.e. $\rho(x, y) = \rho(y, x)$), and the axiom *triangle inequality* (i.e. $\rho(x, y) + \rho(y, z) \geq \rho(x, z)$).