Bulgarian word stress in the light of Primary Accent First formal theory

Bulgarian word stress in the light of *Primary Accent First* formal theory

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Резюме

В статията е направен опит да се приложи формалната теория на Хари ван дар Хулст, озаглавена *Приоритет на главното ударение,* спрямо българската акцентна система (Hulst 1999, 2004, 2009). Българското словно ударение се определя като свободно, лексикално и зависимо от морфологичната структура. Прави се преглед на акцентните характеристики на някои морфеми: корени и афикси при съществителните от мъжки и женски род. Корените се разглеждат като акцентувани и неакцентувани, а афиксите – като доминантни, рецесивни и неутрални, а членните морфеми – в общия случай - екстраметрични. Българското словно ударение се представя чрез формалния алгоритъм: *област: непределна, екстраметричност: лява, проекция: лексикална и дясно регулярно правило*.

Abstract

The paper aims to apply the *Primary Accent First* formal theory, proposed by Harry van der Hulst (Hulst 1999, 2004, 2009) to Bulgarian word stress (BWS). BWS is lexical, free, and morphologically governed. Bulgarian morphemes are considered to have intrinsic accentual characteristics: roots – accented and unaccented, affixes: dominant, neutral and recessive, post-lexical article morpheme – extrametrical in most of the cases. BWS is presented in the formal algorithm: *domain: unbounded, extrametricality: yes, project: lexically marked, default rule: right.*

1. Introduction: Short survey on works done on Bulgarian word stress and Basic facts

Bulgarian word stress (BWS): was a peripheral topic in traditional Bulgarian linguistics. It has been described shortly by Bulgarian linguist B. Tsonev, A.Balan, L. Andreichin and more profoundly by St. Stoykov. It has been defined by as *dynamic, lexical* and *free* (*unfixed*). In some cases it can be important in defining the meaning of the words, for example:

vəl*na* (with oxiton stress) means "*wave*" and the same string of phonems:

v*ə*lna (with paroxiton stress) means "*wool*"

Stoykov states that each word has only one stress and just in some multysyllable words and compounds a multiple variant can appear. So he differs:

1. The **main** stress is an important lexical characteristic. If the word stress is not on its right place,

the word can not be recognized as belonging to the lexicon.

2. The **secondary** stress appears as a consequence to alternate stressed and unstressed syllables. It can be recognized most of all in slow and calm speech

3. **Double** stress is rare. It appears on particular prefixes or particles in words like:

pr**a**dy**a**do "great-grandfather",

p**o**-dob**ə**r "better",

n**a**y-s**i**len "strongest"

Bulgarian word stress was the topic of two monographs: of C. Kodov and T. Boyadzhiev & D. Tilkov. Kodov calls the stress *soul* and *pulse* of the speech, which organizes the word as a lexical unit (Kodov 1966). He traced shortly the historical evolution of Bulgarian accent system from Proto-Slavonic language and described the distribution of stress in the groups of nouns, adjectives and verbs. Tilkov and Boyadzhiev (1978) summarize the work already done and define Bulgarian accent as: dynamic, highly centralizing, causing reduction, free or unfixed. It can be mobile in some forms, but in 90% of words it is not. Bulgarian accent is phonetically characterized on the basis of the complex: intensity, quantity and frequency.

During the last decades there were several attempts to examine different aspects of Bulgarian prosody in the theoretical framework of generative phonology, metrical theory and optimality theory (OT). There are few articles written in Bulgarian language by R. Kurlova, B. Krustev, P. Tsonev. Some Bulgarian linguists: S. Dimitrova, B.Andreeva, G. Zhetchev, G. Hristovsky examine aspects of Bulgarian prosody in works, written in English, German, Portugal by. Foreign linguists like Skatton, Feldstein, Zec, and Crosswhite use Bulgarian data in their studies.

2 Primary Accent First formal theory

I'll follow the suggested by Harry van der Hulst formal theory of word accent named *Primary accent first*. In his theory the account of primary accent location is not based on iterative foot structure (Hulst 2009). This approach was presented as alternative to the metrical theory. Hulst proposed that the primary accent should be derived first. This decision enables the treatment of lexical and unbounded accent systems, which were less successfully accounted for in the frame of metrical theory.

The key idea of Hulst's theory is that primary accent is always located on the left or right syllable within the accentual domain. Hulst explores the grid structure as in standard metrical phonology (Prince 1983). Heavy syllables are projected at level 1 of the grid if the system is weight sensitive. Lexically marked syllables are presented at level 1. If there is no heavy or lexically marked syllable, level 1 will be provided with a mark by the default rule. The general scheme for primary accentuation consists of three parameterized constraint or parameters.

1. Projection: Project weight (yes/no) to level 1.
2. Default Rule: assign a mark to the (leftmost/rightmost) syllable in case level 1 is empty.
3. End Rule: assign primary accent to the (leftmost/rightmost) mark at level 1. it can be set only in case the domain can contain more than one level which is rare in weight insensitive systems[1].

The domain parameter differentiate between unbounded and bounded systems.. In the first case it embraces the whole word and in the second – the left or right edge syllable. Extrametricality can be left or right.

The first step in bounded systems is to delimit the domain for primary stress on the left/right edge and than to apply the default Rule. If primary accent is weight sensitive, a heavy syllable projects a mark in the two syllable domain. In weight insensitive systems no special syllable is projected, so the domain edge, extrametricality and default rules are decisive for the primary stress. If syllables are lexically marked or have *diacritic weight* (Hulst 1999) they behave just like heavy syllables.

The algorithm for defining the primary accent includes the following steps[2]:

1. Domain: unbounded / bounded: left/right
2. Extrametricality: yes/no
3. Project: heavy syllable/ lexically marked
4. Default rule: left/right
5. End Rule: left/right

Hulst applies the algorithm to weight-sensitive bounded systems (Rotuman, Yapese, Aklan, Awadhi, Capanahua, Archi, Ossetic, Malayalam) and also to weight-insensitive unbounded lexical accent systems like Russian. In the last case words may contain lexically marked units. East-Slavic languages are considered systems with *diacritic* weight. The stress position is lexically defined for a considerable part of the lexicon (Hulst 1999: 458). .

3. Reasons to apply *Primary Accent First* formal model for Bulgarian facts

Primary accent first approach is relevant for the following facts of BWS:

1. It is problematic to apply the metrical theory to BWS because the secondary word stress, which forms the metrical feet, has a limited role in Bulgarian. It has never (until 2009[3]) been indicated in dictionaries. The primary stress is *strong, highly centralizing and causing reduction of unstressed syllables* (Tilkov, Boyadzhiev 1978). It is able to organize a multisyllable word consisting of 6 - 7, syllables without any need of secondary stress:

*osnovopol**o**zhnitsite* 00001000[4] "the *founders*"

2. BWS is lexical (Stoykov, Tilkov, Boyadzhiev).
3. BWA is morphologically governed: Savitska and Boyadgiev pointed out that BWS is dependent on the morphological structure (Savitska Boyadzhiev 1988: 136). The position of the BWS is defined by the morphological structure of the word and by the strength of the morpheme to attract stress. For example the suffix *–ach* always attracts the stress, the suffix *–tel* requires it on the previous vowel. The morphemes have different degree of attraction of stress, some of them are *week* in relation to stress, others are *strong* (Tilkov 1983; 268).

4.Application of Hulst's algorithm for BWS

A. Domain

The bounded accent systems were traditionally characterized by equal distance between : (i) the word edge and the stressed syllable, and (ii) between stresses in the word. It is problematic to parse Bulgarian syllables into feet and to align them with the word edge. The stressed syllable can appear on almost every position in the word.

(i) The distance between the left word edge and the stressed syllable vary from 0 to 4 syllables:

0 *k**a**rta* 10 "*cart*"

1 *hot**e**l* 01 "*hotel*"

2 *restor**a**nt* 001 "*restaurant*"

3 leksikogr**a**fia 000100 "*lexicography*"

4 osnovopol**o**zhnik 000010 "*founder*"

(ii) The distance between stressed syllables is not even. It also can vary between 0 and 4 syllables:

0 gubivr**e**me 0210 "*waste of time*"

1 m**o**top**i**sta 1010 "*motor-cycle track*"

2 h**i**drostro**i**telstvo 100100 "*hydraulic-engineering*"

3 tyuty**u**noproisv**o**dstvo 0200010 "*tobacco-industry*"

4 na**u**chnoizsledov**a**telski 010000100 "*scientific research (aj.)*"

Long lapses and accent clashes are nor rare. On the bases of these arguments Bulgarian word stress domain can be defined as **unbounded**.

B. Extrametricality

Post-lexical articles (ət, ta, to, te, ta...) and the majority of inflectional suffixes can be considered extrametrical in most of the cases (approximately in 90%):

pros**o**rets, pros**o**retsət **"**window, the window"

m**a**sa, m**a**sata "table, the table"

det**e,** det**e**to "child, the child"

Post-lexical articles are stressed in following cases:

1. Approximately 10% of monosyllable nouns of masculine gender (about 110 words): *strah, strah**ə**t fear – the fear*

2. A large exceptional group of feminine gender nouns ending on consonant[5] :

rech, recht**a** speech, the speech,

ml**a**dost, mladostt**a** youth, the youth

3. Numbers:

Ch**e**tiri, chetirit**e** four, the four

 Some of the cases of accented inflectional suffixes will be considered later.

C. Project

Open syllables predominate in contemporary Bulgarian language, so it is not likely to expect the fulfillment of the Weight to Stress Principle (WSP). A quantitative study of the majority of masculine and feminine gender nouns show fulfillment of WSP in 53% among feminine and 67% among masculine gender nouns (Patseva 2007). This facts do not allow to treat Bulgarian language quantity sensitive. The marking is *lexical or morphological*, calling *diacritic* by H. van der Hulst. Bulgarian morpheme can be considered as possessing underlying accentual characteristic (Savitska, Boyadzhiev 1988, Tilkov 1983). Some of them forming basic nouns of masculine and feminine

gender will be examined here:

C. 1. Roots in basic nouns

The root is the main morpheme – bearer of the basic lexical meaning, and is expected to be stressed. The root is accented in many cases, for example: *uchi –"to study"*. But the stress changes its place in derivation and this is important for recognizing the forms in speech.

*uch**i**tel "teacher"*

*uchen**i**k "student"*

*uch**e**bnik "textbook"*

*uch**i**liste "school"*

<

Accented and **unaccented** roots

C. 1. 1. Accented roots

a. Monosyllable nouns of masculine gender in most cases (90%) keep the accent on the root in all forms:

*p**a**rk "park"*

*p**a**rkət "the park"*

*p**a**rkove "parks"*

*p**a**rkovete "the parks"*

These monosyllables nouns denote most often concrete objects and rarely participate into derivation processes: *p**a**rkov (aj.), p**a**rkche (deminutive).*

2. Basic (underived) feminine gender nouns have accented roots in all forms in about 90%:

*m**a**sa "table"*

*m**a**sata "the table"*

*m**a**si "tables"*

*m**a**site "the tables"*

The only possible derivation of this noun is the diminutive *m**a**sichka*.

3. Neutral gender nouns:

*b**e**be "baby"*

*b**e**beto "the baby"*

*b**e**beta "babies"*

*b**e**betata "the babies"*

Possible derivations are: the adjective *bebeshki* and the diminutive *bebentse*.

C. 1. 2. Unaccented roots

a. Monosyllable masculine gender nouns: Approximately 10% of monosyllable masculine gender nouns change their accent in plural and/or in the forms with article.

strah "fear"

strahət "the fear"

strahove "fears"

strahovete "the fears"

Why these few in number monosyllable words (about 110) exhibit contrastive accent pattern in comparison to the main group monosyllable nouns with fixed stress on the root (more than 1000)? There are several possible directions to seek the answer – semantic and prosodic among.

The following **semantic** groups can be distinguished among the exceptional noun group with shifting stress on the article:

1. Elements: dəzhd, dəzhdət **"rain, the rain"**

grəm**,** gərm**ət** **"thunder, the thunder"**

snjag, sneg**ət** "snow, *the* snow"

led, led**ət** "ice, *the* ice"

(mraz, mraz**ət)**[6] "frost, *the* frost"

dim, dim**ət** "smoke, *the* smoke"

lə*ch*, lə*ch**ət** **"ray, the ray"*

2. *Basic space categories: krəg, krəg**ət** "ring, the ring"*

 *rəb, rəb**ət** "edge, the edge"*

*(rid, rid**ət**) "hill, the hill"*

*(dol, dol**ət**) "gorge, the gorge"*

*vrəh, v**ə**rh**ət** "top, the top"*

*and borderlines of human space: dom, dom**ət** "home, the home"*

 *grad, grad**ət** "town, the town"*

 *zid, zid**ət** "wall, the wall"*

 *plet, plet**ət** "fence, the fence"*

 *svjat, svet**ət** "world, the world"*

3. Basic temporal categories: *den, den**y**ət "day, the day"*

chas, chasət "hour, the hour"

vek, vekət "century, the century"

4. Emotions,: *strah, strahət* "fear, the fear"

jad, jadət "anger, the anger"

gnjav, gnevət "rage, the rage"

bjas, besət "fury, the fury"

plach, plachət "crying, the crying"

smjah, smehət "laugh, the laugh"

sram, sramət "shame, the shame"

sensations: *glad, gladət* "hunger, the hunger"

stud, studət "cold, the cold"

sluh, sluhət "hearing, the hearing"

dəh, dəhət "breath, the breath"

and cognitive categories: *um, um ət* "mind, the mind"

duh, duhət "spirit, the spirit"

sən, sənjət "sleep, the sleep"

5. *Sense impacts: tsvjat, tsvetət* "color, the color"

glas, glasət "voice , the voice"

zvuk, zvukət "sound, the sound"

(vik, vikət) "cry, the cry"

zov, zovət "call, the call"

zvən, zvənət "peal, the peal"

ləh, ləhət "whiff, the whiff"

vkus, vkusət "taste, the taste"

vid, vidət "look, the look"

6. Prototype words for beings and trees: m*əzh, məzhət* "man, the man"

vəlk, vəlkət "wolf, the wolf"

ləv, ləvət lion, the lion"

bik, bik ət "bill, the bill"

dəb, dəbət "oak, the oak"

(buk, bukət) "beech, the beech"

7. Strong body parts: grə*b*, gərb*ət "back, the back"*

zəb, zəbət "tooth, the tooth"

krak, krakət "leg, the leg"

nos, nosət "nose, the nose"

rog, rogət "horn, the horn"

8. Basic activities: *trud, trudət "labour, the labour"*

lov, lovət "hunt, the hunt"

shev, shevət "sewing, the sewing"

pir, pirət "priest, the priest"

stih, stihət "verse, the verse"

and instruments: *chuk, chukət "hammer, the hammer"*

9. Moral, and social categories: grjah, grehə*t* "sin, *the* sin"

də*lg*, dəlg*ət "debt, the debt"*

gnet, gnetət "oppression, the oppression"

mir, mirət "peace, the peace"

vrag, vragət "enemy, the enemy"

red, re ət "order, the order"

rod, rodət "clan, the clan"

səd, sədət "court, the court"

klas, klasət "class, the class"

and kinship terms: *sin, sinət "son, the son"*

kum, kumət "godfather, the godfather"

The monosyllable nouns with accent shift are among the most often used basic words. They denote powerful or "edge" entities: natural and social forces, emotions, basic prototypical forms. Emotions are that part of cognitive processes which are experienced as force outside of men's will, stream in which one falls and become dependent on (D' Andrade 1997). One possible interpretation of their stress shift is connected with the typical for the primitive mind tendency to taboo or not to accent (in order not to activate)[7]

Another part of the prosodically marked nouns denotes focal categories. According to the cognitive **prototype** theory of E. Rosch everyday mind operates with so called **good forms** or central examples of the category (Rosch 1978). For example the class of trees is represented by *oak*, the

class of wild animals – by *wolf* or *lion (*depending of the region|. The lexemes representative of the class have to be marked. Prosody is a possible mechanism for revealing the prominence in semantics. Todd Bailey (Bailey 1995) points out the idiosyncratic role of accentuation.

 A metrical interpretation is also possible: by stressing the final syllable the **iambic** foot bring the words out of the usual accent model of monosyllables. It connects them to the major class of two syllable noun of masculine gender like *Balkan*[8]. A formal interpretation explores the constraint of *maximality* in OT. It assumes that the well formed language unit should have a branching structure (Zec 2002). Monosyllable nouns are depicted as *moraic* branching. By stressing the final article (treated usually extrametrically) the noun becomes a branching structure on syllable level also. In this way it legitimates the *well-formedness* of the unit and at the same time ranks it together with the major class of masculine gender nouns with oxiton stress. So a prosodic branching and marking of the morphological class is achieved.

2.2. Feminine gender nouns with unaccented roots

The majority of two-syllable non-derivative feminine gender nouns have accented root. Oxytone stress appears among about 50 items only. They are a small group in comparison of about 750 two-syllable nouns with penult stress on the root[9]. Among them the following semantic groups can be outlined:

1. Elements: *voda "water"*

 reka "river"

 dəga "rainbow"

 luna "moon"

 gora "forest"

 zora "daybreak"

2. "Edge" body parts: *glava " head"*

 rəka "hand"

 kosa "hair"

 usta "mouth"

 peta "heel"

3. Female relatives: *sestra "sister"*

 kuma "sponsor at wedding"

and prototypes *zhena "woman and wife"*

 moma "girl"

 roda " relative"

4. Emotive concepts: *təga "sedness"*

 beda "misfortune"

 vina "guilt"

ləzha *"lie"*

dusha *"soul"*

shega *"joke"*

5. Technical and social instruments: *igla* *"needle"*

masha *"tongs"*

kama *"dagger"*

vrata *"door"*

kola *"car"*

tsena *"price"*

para *"money"*

6. Domestic animals: *ovtsa* *"sheep"*

koza *"goat"*

pchela *"bee"*

muha *"fly"*

The accent of all listed words is post-root in all forms: *voda, vodata, vodi, vodite.* Most of them participate in various derivative processes: *vodenitsa (water-mill), vodenichen (water-mill adj.), voditsa (diminutive), vodichka (diminutive), voden (water-adj.) , vodka (alcoholic drink).*

The specific accentual properties of the listed words with non-stress ruts can be explained in terms of **semantic motivation** following S.V. Kodzasov: *many lexically no stress roots designate deictically actualized objects: earth, sky, water, river, sea, night, day, year, head, hand, etc. The typical discursive functions of such words may determine their lexical prosody* (Kodzasov 2003).

Prefixes and suffixes

The prosodic difference between prefixes and suffixes in Bulgarian language becomes obvious by considering their *mirror* syllable structure. There are 18 prefixes and most of them are open syllables: *do-, za-, na-, po-, pre-, pri-, pro-, s(ə)-, v(ə)-.* Some consist of only one vowel*: u-* and *o-.,* two of them have no onset *iz-, ot-,* and the rest are closed syllables with coda: *vuz-, nad-, pod-, nped-, raz-.* Bulgarian prefixes never influence the accent models by verbs: *pisha (write),prepisha (copy) dopisha (finish writing),napisha (write out).*

Only few dozen nouns with short stems (without suffixes) are composed by accented prefixes. For example the root *hod-* (go) serves a base for several nouns:

izhod *"exit"*

dohod *"earning"*

prohod *"pass"*

pohod *"march"*

*pr**i**hod.* "income"

Conversely is the picture among suffixes. Most productive among them are onsetless structures with coda: *-ach, -ar, -ak, -azh, -ant, -ent, -ik, -ist, -ir, -it, -ok, -uk, -ut* and others. Their open structure connects them with the consonant of the word root. Bulgarian phonetician Vutov called their prosodic behavior *aggressive* because they attract the accent on themselves:

*kov**a**ch* "smith"

*vrat**a**r* "goal-keeper"

*golt**a**k* "poor person"

*ekip**a**zh* "crew"

*doctor**a**nt* "postgraduate student"

*asist**e**nt* "assistant"

*teoret**i**k* "theoretician"

*sport**i**st* "sportsman"

*komand**i**r* "commander"

*zhab**o**k* "male frog"

*instit**u**t* "institute"

. The change of the stress marks the different class of word and the difference in meaning. These suffixes build heavy final syllable which contribute to the major oxyton word stress among mail gender nouns:

An other group of suffixes: *-tel, -tor, -lets, -nik* represent closed syllables with onset. They involve pre-accentuation in most of the cases (except *-nik*, which appears stressed also):

*uch**i**tel* "teacher"

*oper**a**tor* "operator"

*pokaz**a**lets* "forefinger"

*v**e**stnik* "newspaper"

The presented affixes can be considered as **dominant** (in Kiparsky's 1982 and Alderete's (1999) term). Dominant suffixes, contrast to few **recessive** and *neutral* ones.

Conclusion

Among the presented prosodic groups a specific prosodic difference can be outlined, which can be treated as *semantically motivated*: In OT's term the it may sounds as follows:

1. *Prosodic faithfulness to the root* is characteristic for a large amount of nouns of concrete objects and activities. They do not shift the stress in different forms.

2. *Lack of prosodic faithfulness of the root* is characteristic for restricted group of frequently

used lexemes, denoting basic nouns with typical discoursive function.

We can consider the second group as nouns with unaccented roots as an area where the **D. Default rule**: **right** is applied. So we obtain the final definition of Bulgarian Word Stress in Hulst's algorithm:

1. Domain: unbounded
2. Extrametricality: yes
3. Project: lexically marked
4. Default rule: right

Notes

1 In BWS it is not relevant.

2 The way of description was formed on the basis of the analysis in *StresTyp* – a typological database, containing information of metrical systems of 510 languages. Bulgarian is not among them.

3 Pashov, P., Purvev P. 2009 Orthoepic and Orthographic Dictionary of Bulgarian language, SU "St. Kl.Ohridski"

4 The primary stress is indicated by number 1 and bold in the word, and the secondary stress – by 2, and underlined in the word.

5 In the usual case feminine gender nouns end on vowel *–a: masa"/table"*.

6 The parenthesis indicate double accentuation.

7 In Bulgarian folklore exist euphemisms: *sweet* and *honey* instead of illnesses like measles.

8 The iambic foot is called *masculine* in Greek versification, so their accent model distinguishes them from the feminine nouns.

9 Among them exists a group of nouns of Eastern origin: *tava* -"*tin*", *kaba* -"*soft bagpipe*", accepted through Turkish.

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