

Bulgarian word stress analysis in the frame of prosody morphology interface

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Abstract

Bulgarian lexical accent has been analysed in the frame of *prosody morphology interface* and the *Head dominance* theory of Revithiadou (Revithiadou 1999). The theory suggests that the accent characteristic of the morphological head determines the accent pattern of the lexical unit. The principle of headedness solves the conflicts between the accent specifications of morphemes. The analysis of Bulgarian lexicon proves that claim. For example the accented derivational suffix *-áč* associates with verb's root *gótv-* (*gótvja* 'to cook'), composing a *nomina agentis* noun *gotváč* 'cook'. The accented head morpheme *-áč* deletes the prosodic characteristic of the originally accented root and determines the accentual pattern of the derivative. If both root and inflectional suffix are not marked, as in *stádo* 'herd', a default trochaic foot surfaces.

1. Previous analyses of Bulgarian stress

1.1. Early works

Bulgarian word stress was a peripheral topic in the traditional Bulgarian linguistics. It has been described shortly by early Bulgarian linguists Benjo Conev, Alexandăr Balan, Ljubomir Andrejčin and more profoundly by Stojko Stojkov. It has been defined as dynamic, lexical and free (unfixed). Stojkov distinguished main, secondary and double stress. According to him each word has only one stress and just in some polysyllable words and compounds a multiple variation can appear. Stojkov points out that if the lexical accent is not on its right place, the word cannot be recognized as belonging to the lexicon. The secondary stress appears as a consequence to the alternation of stressed and unstressed syllables. It can be recognized most of all in slow and calm speech. Double stress is rare. It appears on particular

prefixes or particles in words like: *prádjádo* ‘great-grandfather’, *pó-dobár* ‘better’, *náj-sílen* ‘strongest’ (Stójkov 1966)

1.2. Basic works

Bulgarian lexical accent was the topic of two monographs which created the traditional view - of Hristo Kodov and Todor Bojadžiev & Dimităr Tilkov. Kodov define the lexical accent as the *soul and the pulse of the speech*, which organizes the speech sounds 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 Bojadžiev summarized the work already done and defined Bulgarian accent as: **dynamic, free, highly centralizing** and **causing reduction**. It can be mobile in some forms, but in 90% of the lexicon it is not. Bulgarian accent is phonetically characterized on the basis of the complex: intensity, quantity and frequency (Tilkov & Bojadžiev 1978).

1.3. Contemporary works

During the last decades several attempts were done to investigate some aspects of Bulgarian prosody in the framework of generative phonology, metrical theory and optimality theory (OT). A few articles were written in Bulgarian language by Radka Kărlova, Borimir Krăstev, Petăr Conev. Some Bulgarian linguists like: Snežina Dimitrova, Bistra Andreeva, Georgy Ječev, Georgy Hristovsky examine aspects of Bulgarian prosody in works, written in English, German, Portugal. Foreign linguists like Ernest Skatton, Ronald Feldstein, Draga Zec, and

Katherine Crosswhite also use Bulgarian data in their studies (for a review see Paceva 2012). Their ideas influence the way prosodic problems are treated in Bulgarian linguistics.

2. Characteristics of Bulgarian lexical accent, accepted traditionally

2.1. Phonetic characteristics

The vowel of an accented syllable is more precisely articulated - less centralized and/or longer. It can have higher amplitude levels and higher pitch. According to Tilkov and Bojadžiev Bulgarian word accent is accomplished through increasing of the general phonetic features: intensity¹, pitch, duration, timbre. All of them form a complex (Tilkov & Bojadžiev 2013: 152). Usually they predominate in the accented syllable and create contrast with the unaccented one.

Bulgarian accent is defined as dynamic, mainly because it is believed that the **intensity** is the main factor that contributes to its perception (Tilkov & Bojadžiev 2013: 155). The increased intensity however is not always sufficient to determine the accented syllable. In the beginning of the word a wide vowel can have grater intensity in comparison to the accented narrow vowel. This leads to the paradox, described by Tilkov: initial unstressed wide vowel can be pronounced with grater intensity than the accented vowel as in *lalé* ‘tulip’ (Tilkov 1970).

The difference in pitch between stressed and unstressed vowel depends on the position in the word. When the accented vowel is in an initial position, the difference in pitch is about 40%, and in the end of the word the ratio is reduced to 20% (Tilkov & Bojadžiev 2013: 155).

¹ The term “intensity” refers to greater energy but is sometimes used as a cover term for the cumulative effect of duration, amplitude and pitch (Hulst van der 2010).

Regarding the duration the following trend is observed: The unaccented vowels are shorter approximately by 35% at the same position. The wide vowels *a, o, e* are considerably longer (30%) than the narrow vowels *ă, u, i*. (Tilkov & Bojadžiev 2013: 155).

In the field of sound spectrum (timbre) the unaccented vowels are reduced and their formant structure is changed. Open vowels *a, o, e* approximate the closed ones: *ă, u, i* (*a* → *ă*, *o* → *u*, *e* → *i*). The formant characteristic of the vowel *a* changes in greatest degree, in lesser degree –*u* and the most resistant is the front vowel *e*.

2.2. Positional characteristics

Bulgarian accent has been defined traditionally as **free**. The place of the word stress has been considered a result of historical regularities, which have acted in the past and have been changed. Today, the lexical accent cannot be inferred directly by the phonetic and morphological structure of the word (Tilkov & Bojadžiev 2013: 156).

According to the traditional Bulgarian linguistics the word stress can appear on almost any syllable of the word, as well as on various morphological units like prefixes, roots, suffixes and articles. A universal trend appears in Bulgarian language as well: prefixes are usually not accented. Roots and suffixes are the most often accented morphological units. Articles can be accented only in few occasions. Tilkov and Bojadžiev also noted that some affixes attract the stress, while others do not (Tilkov & Bojadžiev 2013: 158). The accentual specification of morphemes was noticed but has not been analyzed in the traditional linguistic.

The middle vowel /*ă*/ bears often the lexical accent in Bulgarian unlike other European languages. Accented *ă* appears in roots, in the masculine gender article *-ăt* and in one suffix of Turkish origin *-lăk* : *dăb* ‘oak’, *dăner* ‘trunk’, *găltam* ‘to swallow’, *žălta* ‘yellow’, *strahăt* ‘the fear’, *vojnklăk* ‘soldiership’.

2.3. Phonological features

The lexical accent has a distinctive function and is considered a phonological unit. It distinguishes the lexical meaning of words and the grammatical meaning of lexical forms. The phonological function of the stress can be observed by comparing words and grammatical forms, consisting of same segments:

A. The word stress distinguishes the meaning of words. They can be:

- whole words, i.e. *homonyms* as:

pára ‘steam’ and *pará* ‘coin’
válná ‘wave’ and *válna* ‘wool of sheep’, or

- forms of different words, i.e. *homofoms*, for example plural forms:

os; *ósi* ‘axis; axes’ and *osá*; *osí* ‘wasp; wasps’.

B. Some grammatical forms of the same word also differ accentually. For example:

jadé ‘eat, present tense’ and *jáde* ‘ate, past tense – aorist’
kúpi ‘buy, present tense’ and *kupí* ‘buy, imperative’

In these cases the lexical accent is defined as a *super-segmental morpheme* by Tilkov, Bojadžiev and Nicolova (Tilkov & Bojadžiev 2013: 156, Nicolova 2009)

2. Theoretical frame of the analysis

Bulgarian lexical accent has been examined here in the frame of *prosody morphology interface* perspective and the *Head dominance* theory in OT (Revithiadou 1999). The theory suggests that the accent characteristic of the morphological head determines the accent pattern of the lexical unit. The principle of headedness solves the conflicts between the accent specifications of morphemes.

3.1. The lexical accent and the prosody morphology interface

The lexical accent has no fixed position in the word. The phonological factors like parsing syllables, foot binarity, alignment constraints, and quantity sensitivity cannot fully determine the word stress. The prosodic principles are only employed to restrict the lexical marking (Hayes 1995, Van der Hulst 1996).

According to Anthi Revithiadou the idiosyncrasy of lexical accent systems relies on their morphological character. The lexical accent position is a result of interactions between morphology and prosody (Revithiadou 1999:15). This interaction is described as a *principle of prosodic compositionality*. It states that the prosody of a complex form is a function of the prosodies of its parts and of the morphological rules by which they are combined (Revithiadou 1999: 4).

The lexical accents are usually associated with the morpheme. Most morphemes are stored in the lexicon with an accent specification². As an autosegment, a lexical accent can be associated to a vocalic peak of the morpheme that sponsors it, or be *floating*. The morphemes can be accentually marked or not. The marked morphemes can be accented, unaccented, pre-accented or post-accented. The conflicts and competition between morphological accents specifications for the main word stress are solved by the principle of *headedness*.

² The idea that morphemes have accent specification needs further argumentation. According to some Indian linguists the inner mental representation of speech units has not prosodic features (Raja 1963). The influential model of speech production of Levelt and co-workers conceive it as a staged process. Each stage produces its own characteristic output representation: lexical concepts, lemmas, morphemes, phonological words, and phonetic gestural scores executed during articulation (Levelt et al., 1999, Hagoort & Levelt 2009). Pitch and intonation are assigned on the morpho-phonological level. It is strongly affected by the limbic system and hence associated with emotions. It is noteworthy that both phonological and morphological processes are represented on a single level.

3.2. Headedness

The idea of headedness or head dependency relations is discussed by Drescher and Hulst as *head-dependent asymmetry* in phonology (Drescher and Hulst 1993). In *Headmost* theory the principle of *headedness* solves the conflicts between lexical accents specifications. In the accentual field the idea of headedness means that when two conflicting accentual specifications occur in a word, the accent specification introduced by the morphological head is prosodically prominent.

In non-derived words the head is the root but in derivatives it is the derivational suffix. Headedness means the ability of a morpheme to determine the word's syntactic category (Radeva 2007). For example in the word *gotváč* 'cook' the head is the suffix *-áč* because it determines the word as noun and agent. The idea that word stress is associated with the *rema* has been suggested by Miroslav Janakiev and Nadežda Kotova (Kotova & Janakiev 2001)

Anthi Revithiadou argues that the lexical stress depends not merely on morphological structure but particularly on the hierarchical relations between the elements of the word. In Optimality theory terms, the head dominance takes the form of the ranking:

HEADFAITH >> FAITH (Revithiadou 1999).

I'll discuss some Bulgarian data in support of Revithiadou's claim. First metrical characteristics of the accentual system will be provided (in 4th paragraph) and then I'll concentrate on the accent specification of the morphemes (in 5th paragraph).

4. Metrical characteristics of Bulgarian lexical accent

4.1. Quantity sensitivity or Weight to Stress Principle (WSP)

The accentuation and the quantitative characteristics of the syllable have a typical relationship – they mutually increase themselves (Kager 1995: 146). That means that the lexical accent is associated with the syllable salience. The stress intensifies the acoustic features of the vowel and in this way increases the weight of the syllable. At the same time the vowels in unaccented syllables tend to shortening and to reduction. Word accents often are on heavy syllables – containing long vowels or diphthongs and also closed syllables. The attraction of the accent by heavy syllables is known as *quantity sensitivity* or *Weight to Stress Principle* (WSP)³. As far as the length of vowel is not phonological and diphthongs are not common in Bulgarian language, so the closed syllables only can be considered heavy. There is positive correlation between the stress and syllable weight as in *čo.vék* ‘person’ - the closed heavy syllable is accented.

A research shows that the *Weight to Stress Principle* can be observed in a bit more than the half of the nouns of masculine and feminine gender: 68% among masculine and 53% among feminine names with final *-a* (Paceva 2012: 133-134). Masculine nouns usually have a final closed syllable and in most cases they have ultimate accent like *čo.vék* ‘person’. Feminine nouns usually have a final open syllable like *bá.ba* ‘grandmother’. They contain more open syllables in general in comparison to masculine gender nouns, so the weight to stress principle is valid in fewer cases.

WSP is evident generally in shorter disyllabic and trisyllabic words and in lesser degree among longer nouns consisting of larger amount of open syllables. So, WSP takes place in Bulgarian prosody, but its position in the constraint hierarchy is not leading⁴.

4.2. Accent mobility and rhythmic organization

³ WSP was first formulated by Prince and Smolensky (1993) in OT and requires heavy syllables to be stressed.

⁴ Hulst included the lexical marking among the weight factors and considered them critical for stress determination (Hulst van der 2010).

According to Tilkov & Bojadžiev the accent does not change its position in different forms of the words in 90% of the lexicon but in about 10 % it is mobile (Tilkov & Bojadžiev 2013). The direction of the mobility is mainly to the right - from the root to flexion. The opposite direction to the left is less common (it appears in vocative forms and aorist form of some verbs).

A. The accent mobility **to the right** can be observed in some defined and plural noun forms and in imperative among verbs.

A.1. The **definite article** bears the stress in three cases only:

a. Approximately in 10% of monosyllable nouns of masculine gender (about 110 words among a group of 1000):

<i>strah; strahát; strahá</i>	‘fear; the fear’
<i>vělk; vělkát; vělká</i>	‘wolf; the wolf’,

b. A large exceptional group of feminine gender nouns with final consonant (approximately 2500 words) regardless the length of the word:

<i>reč; řečtá</i>	‘speech; the speech’,
<i>mládost; mladosttá</i>	‘youth; the youth’
<i>otdádenost; otdadenosttá</i>	‘dedication; the dedication’

c. Numerals:

<i>čétiri; četirité</i>	‘four; the four’
<i>pet; petté</i>	‘five; the five’

A.2. Some **plural inflectional suffixes** attract the stress in masculine and neuter nouns:

a. Approximately 10% of one-syllable masculine nouns with unaccented root:

<i>zvjár; zverové</i>	‘beast; beasts’,
<i>máž; mážé</i>	‘man; men’

A few exceptional plural endings of disyllable nouns:

vjátǎr; vetrové 'wind; winds'
djádo; dedi 'grandfather; grandfathers'.

b. The neuter gender plural inflectional suffix *-a*, and the rare exceptional disyllabic plural inflections *-ená*, *-esá* attract the stress:

dǎno; dǎná 'bottom; bottoms'
pléme; plemená 'tribe; tribes',
čúdo; čudesá 'miracle; miracles'

A.3. The imperative verb endings *-í*, *-éte* are accented: *kúpi* 'to bue', *kupí*, *kupéte* 'bue' – imperative singular and plural.

B. The accent mobility to the **left** appears in vocative forms in feminine and in some verbal forms in aorist.

B.1. The vocative inflectional suffix *-o* in feminine gender is never accented, so it can cause accent mobility to the left among ultimate feminine nouns:

žená, žéno 'woman, you, woman'
glavá, glávo 'head, you, head'

This is one of the few cases among Bulgarian nouns which contradict to the basic statement of the *Headmost* theory that the accentual specification of the head dictates the accentual pattern of the word. The vocative forms are rare in contemporary speech. They occur more often in personal names which have never ultimate accent, so there is no mobility in their forms.

B.2. Verbs with ultimate accent in 3-rd person singular present tense appear with penultimate accent in past tense (aorist): *dadé; dáde* 'gives; gave'.

The grammatical meaning of both forms is contrasted by the accent position only.

The last two examples are the only cases of *stress retraction* in Halle and Vergnaud (Halle and Vergnaud 1987) terms, which could be interpreted as marker for iambic structure. Most often the stress is transferred to the right. The direction of the mobility indicates a **trochaic** grouping of syllables according to Idsardi and Revithiadou (Idsardi 1992, Revithiadou 1999: 131)

4.3. Unbounded stress system

Main and secondary stresses fall within limited distances both from each other and from word edges in bounded systems (Kager 1995). In the unbounded accent systems the lexical units usually have only one stress, and a secondary one occurs rarely. So, the distribution of stresses is not restricted. Bulgarian language hasn't regular alternation of feet. The following arguments can serve in support of the claim that Bulgarian accent represents an **unbounded** accentual system:

(1) Words in Bulgarian language usually have only one lexical accent (Stojkov 1966, Tilkov and Bojadžiev 1978). The prefixes and the suffixes can be more than one, so even simple words can reach significant word length of 6-7 syllables pronounced with one accent only:

să.o.té. čest.ve.ni.tsi 'countrymen'
iz.po.na.sjá.dah.me 'we all sit'.

These words haven't secondary stress, so, the unaccented syllables cannot be organized in feet. A secondary stress occurs only in some complex words in slow speech rate (Tilkov and Bojadžiev 1978: 14, 70). The majority of the complex words usually have only one lexical accent also:

dăr.vo.dé.lec 'carpenter'

vo.do.láz ‘diver’.

The examples show that syllables are not parsed exhaustively in feet. That means that the OT constraint *ParseSyll* has low position in the prosody of the language.

(2) Secondary and double accents do not fall within limited distances both from each other and from word edges. The distances between the main and the secondary stress may vary from zero to four syllables. For example:

0	<i>prábába</i>	‘grandmother’
1	<i>stógodišnina</i>	‘centennial’
2	<i>enérġospetjávane</i>	‘energy saving’
3	<i>tjutjúnoproizvódstvo</i>	‘production of tobacco’
4	<i>naúčnoizsledovátelski</i>	‘scientific research’ ⁵

The secondary stress usually does not migrate from its original position in the components of the compound.

The distance between stressed syllables and word edges also can vary from zero to four syllables. The four possible accent positions from the right word boundary are ultimate, penultimate, antepenultimate and pre-antepenultimate. The pre-antepenultimate appears rarely – among several decades feminine gender nouns like: *káterica* ‘squirrel’. When the definite article is added however the accent can occur on the fifth syllable from the right edge *kátericata* ‘the squirrel’. The addition of plural endings and definite article usually (with few exceptions) does not change the position of the stress.

The distance between the left boundary and the lexical accent also varies:

1	<i>kárta</i>	‘card’
2	<i>hotél</i>	‘hotel’
3	<i>restoránt</i>	‘restaurant’
4	<i>restorantjór</i>	‘restaurateur’

⁵ The examples are derived from the Pašov & Purjev. 2009. Orthoepic and orthographic dictionary of Bulgarian language.

5 *osnovopolóžnik* ‘founder’

So we can define the Bulgarian accent system as **unbounded** because there are not alternations of rhythmic feet. The accented syllable most often is only one, so the foot can also be only one. If a secondary stress appears, its distance both from the main one and from the word edges varies.

Harry van der Hulst defined such languages as systems with **unlimited accent window** (Hulst 1996). Some Bulgarian linguists also argue that the stress can occur on every position of the word in the language. This observation can be accepted for disyllabic and trisyllabic lexical units only. Still some preferences and missing positions of the word stress can be observed:

4.4. Preferred, not preferred and unattested positions of the word stress. Default accent.

The penultimate syllable is statistically the most often accented one according to several Bulgarian statistical surveys⁶ (Miševa 1991, Kotova, Janakiev 2001). So, the **penultimate** position can possibly be considered as the **default** or regular accent.

The dominant and missing accentual patterns also provide information about the general prosodic requirements in the language. I’ll provide some quantity data about accentual pattern in several lexical groups: masculine, feminine and one group of neuter gender nouns, based on Murdarov et al. 2011 *Reverse dictionary of Bulgarian language*.

4.4.1. Accentual patterns of masculine gender nouns

⁶ Misheva states that the most common lexical unit in Bulgarian consist of tree syllables and has penultimate stress, so the prevailing pattern is *amphibrach* (short on both sides).

The predominant accentual model of masculine gender nouns is the **ultimate**. The last syllable is accented among 66% of all polysyllabic nouns. This accentual characteristic appears as a distinctive feature of the masculine gender nouns which oppose them to the penultimate model dominant among feminine nouns, verbs and adjectives.

Table 1. Accentual pattern of masculine gender nouns, with final consonant⁷

Accent pattern	U	PU	APU	Pre- APU	Total
2 σ	1700	730			2430
3 σ	1070	550	50		1620
4 σ	300	555	40	-	895
5 σ	70	200	15	-	285
6 σ	50	50	-	10	110
7 σ	10	10	-	-	20
8 σ	10	10	-	-	20
9 σ	1	-		-	1
Total	3211	2105	105	10	5330
%	66%	40%	1.97%	0.02%	

Masculine gender nouns (with few exceptions) have final consonant, i.e. the last syllable is heavy and attracts the stress according to the *WSP*⁸. *WSP* in Bulgarian language is associated with a morphological pattern: most masculine gender derivational suffixes consist of closed syllables⁹. Derivational suffixes are heads of the word and often are marked accentually. Not all of them are accented, but they anyway dictate the prosodic organization of the derived word in accordance with the prosody morphology interface theory.

Furthermore the table outlines missing fields and some fields with few representatives only, which apparently represent not preferred accent positions. It is noteworthy that the stress is never at the beginning of four-syllable and longer masculine gender nouns. This

⁷ Limited number of masculine gender nouns have vowel ending -a and -o: *bastá* 'father', *čičo* 'uncle'. They are not represented in the data, so as the monosyllable words.

⁸ Feminine and neutral nouns end with open syllable, which is accented in limited cases only.

⁹ Exceptional is the Turkish derivational suffix -*džija* / -*čija*: *kafedžija* 'café keeper', *majtapčija* 'joker'.

observation may indicate that Bulgarian regular stress is not oriented towards the left end of the word, as in Russian and in some Germanic languages.

In multisyllabic nouns (of seven syllables up) the only accentual positions are the ultimate and the penultimate. Ante-penultimate and the fourth from the end are accented only in some words of Latin origin with unaccentable inflection as *konsórtium*, *sanatórium*.

The missing pre-antepenultimate position can be interpreted after Anthy Revithiadou in terms of the leading role of the **End Rule –R (ER-R)** constraint for masculine gender nouns. The prosodic head in derivatives is oriented towards the right margin of the word in its basic form. The inflectional suffixes for plural and the postfixed articles don't attract the accent among longer words consisting of more than one syllable. So, inflectional suffixes are not accentually marked and articles remain *extrametrical* or *invisible* for the prosodic processes¹⁰.

We can conclude that the lexical accent among masculine gender nouns is oriented towards the right edge of the stem (not of the word boundary). So, the constraint can be reformulated as:

End Rule –R Stem, ER-R Stem

The prevalent foot type among masculine gender nouns is *jambus*, a characteristic which distinguished them from feminine gender nouns and verbs with prevalent foot type *trochee*.

A morpho-syntactic and pragmatic note might be relevant here: masculine gender nouns appear in the speech most often with articles – full or short. The difference between them indicates their syntactic role in the sentence (subject-object relations). In most of the

¹⁰ This observation has a few exceptions among two syllable words *vjátār*, *vetrové* 'wind, winds', but among one syllable words 10% have accent on the article or on the inflectional suffix.

cases the articles are not accented. So, the lexical accent appears on the penultimate position in the speech.

4.4.2. Accentual patterns of feminine gender nouns

The prevalent accent model of feminine gender nouns is **penultimate** (67%). The final syllable is open, so according to the Hayes iamb /trochee law the expected final foot is **trochee** (Hayes 1995). The penultimate position implies preferred accentuation of the root among short simple words, so, the lexical accent prefers the morphological head.

Table 2. Accentual pattern of feminine gender nouns with final vowel *-a¹¹*.

Accent pattern	U	PU	APU	Pre- APU	Total
2 σ	130	750	-	-	880
3 σ	140	1200	300		1640
4 σ	50	620	360	110	1140
5 σ	-	180	200	10	390
6 σ	-	50	100	3	153
7 σ	-	20	6	1	27
8 σ	-	1	1	1	3
9 σ	-	1	2		3
Total	320	2822	969	125	4235
%	7.5%	67%	23%	3%	

The second prevalent is the antepenultimate pattern represented in 23%. It is most often among four-syllable words with disyllabic unaccented suffixes such as *-(n)ic(a)*: *sladkárnica* ‘pastry shop’. It appears seldom in non-derived nouns like *pánelka* ‘ribbon’. The antepenultimate stress is prevailing among five- and six-syllable words. That reveals an accentual **orientation towards the word center** in longer lexical units consisting of light syllables.

¹¹ The feminine gender nouns with final consonant are not included in the data. Their prevalent accentual model is penultimate also: *mládost* (youth).

The lexical accent can appear on the first position among four-syllable feminine gender nouns (which is never accented in masculine gender): *krástavica* ‘cucumber’. This can be explained with the accentual specification of the derivational suffixes *-av* and *-(n)ica* which are unaccented.

The inflection *-a* is accented in 7.5% only among simple nouns with unaccented roots like *vodá* ‘water’ (15% among 2σ, 8% among 3σ and 4% among 4σ). The post-accented derivational suffixes are few: *-ot(á)*, *-in(á)*, *-b(á)* in *krasotá* ‘beauty’, *dobriná* ‘goodness’, *molbá* ‘request’. They are not productive and compose a bundle of words only.

The ultimate accent on open syllable exists mainly among two- and trisyllabic words. Among four-syllable words it is rare - *visočíná* ‘height’ and among longer words it does not appear at all. With increasing the word length the accent diversity decreases and is limited to the penultimate and antepenultimate syllables. The final open syllable cannot bear the accentual salience in longer units.

So we can conclude that the lexical accent in both masculine and feminine nouns is oriented towards the **right edge of the stem**. The inflections for feminine gender *-a*, for plural *-i* are not marked and the postfixed articles *-ta*, *-te* are in most of the cases *invisible* for the accentuation.

4.4.3. Accentual patterns of neuter gender nouns with final vowel *-e*

Table 3. Neuter gender nouns with final vowel *-e*¹²

¹² The neutral gender nouns with final vowel *-o* are not included in the data.

Accent pattern	U	PU	APU	Pre- APU	Total
2 σ	120	93	-	-	213
3 σ	4	86	69	-	159
4 σ	12	10	301	4	327
5 σ	2	5	533	1	541
6 σ	-	4	240	-	244
7 σ	-	-	137	-	137
8 σ	-	-	39	-	39
9 σ	-	-	3	-	3
Total	138	198	1322	5	1663
%	8%	12%	79.5%	0.03%	

The accent is almost homogeneously distributed among short two- and three-syllable neuter nouns. The non-derived words with ultimate stress however are mainly from foreign origin – Turkish and French (*minaré, atašé*). So, **penultimate** patterns are most common among domestic neuter nouns (like those of feminine gender nouns and verbs).

Among longer neuter nouns however the **antepenultimate** accent is dominant. It appears in derivatives with two-syllable pre-accented suffixes *-ie, -nie, -ište* like *spokójstvie* ‘calmness’, *sáznánie* ‘mind’, *učilište* ‘school’. Among non-derivative the accent of domestic words is mainly on the root, and in derivatives it is dominated by the accentual characteristics of the derivational suffix.

So, penultimate accent is statistically prevailing in the language (mainly among feminine nouns and verbs). The lexical and semantic groups have accent peculiarities, based on the accent specifications of morphemes.

5. Accentual specification of morphemes

Morphemes in Bulgarian have different accentual specification. Using Revithiadou’s terminology they can be unmarked (lack inherent accentual properties) or marked with a

strong (head) or a weak (tail) lexical accent (Revithiadou 1999: 108). The marked morphemes can be: accented, pre-accenting, post-accenting and unaccentable.

I'll present some Bulgarian data on accentual characteristics of different morphemes. Prefixes are usually not accented with several exceptions, which will be given below.

5.1. Prefixes

Prefixes are usually not accented. Some authors assume that they are not part of the prosodic word at all. Prefixes are typical for verbs, among nouns they appear seldom. They are never accented in verbs. Among nouns and adjectives they can be unaccented: *razhódka* 'walk', *pokúpka* 'purchase' *izvésten* 'known' and accented in few cases only:

- a) A limited group of words (110) with untypical accent pattern for masculine gender nouns is composed by prefix and root without suffixes like *izhod* 'exit', *rázhod* 'expense', *dóhod* 'income'. These words belong to the semantic group of *nomina patientis*.
- b) Foreign prefixes: *ántiobštéstven* 'antisocial', *ámorálen* 'amoral' and
- c) Few nouns and adjectives: *príkazka* 'fairytale', *pódzaglávie* 'subtitle', *prábába* 'great-grandmother', *prá-prádjádo* 'great-grandfather', *prédovolen* 'more than satisfied'.

5.2. Accentual specification of morphemes in non-derived words

Some accent specification of roots and suffixes in non-derived words will be provided.

5.2.1. Accentual specification of roots

The roots in non-derived words are heads of the linguistic units. They can be marked and unmarked.

5.2.1.1. Marked roots

The marked roots can be accented and unaccentable (or post-accented).

5.2.1.1.1. Accented roots

The lexical accent is on the root in the majority of non-derived nouns and verbs in all their forms (nearly in 90%)¹³:

Masculine gender nouns:

hljab, hljábăt, hljábove, hljábovete ‘bread, the bread, breads, the breads’
jástreb, jástrebăt, jástrebi, jástrebite ‘hawk, the hawk, hawks, the hawks’

Feminine gender nouns:

bába, bábata, bábi, bábite ‘grandmother, the grandmother, grandmothers, the grandmothers’

Neuter gender nouns:

bébe, bébeto, bébeta, bébetata ‘baby, the baby, babies, the babies’

Adjectives:

čéren, čérna, čérno, čérni ‘black’

Verbs:

hódja, hódish, hódi ‘walk, walks’ (with accent shift in imperative and aorist only)

5.2.1.1.2. Unaccentable or post-accented roots

The roots are not accented in limited percentage of the main lexical classes:

¹³ It is also possible that some of these cases reflect a default trochaic accent model.

- a) The lexical accent migrates in 10% of monosyllabic masculine gender nouns

(approximately 100 nouns among 1000) in plural and/or in the defined form:

strah, strahát, strahá, strahové, strahovéte ‘fear, the fear, fears, the fears’

- b) 7.5% of the non-derived feminine gender nouns have unaccented roots:

žená, ženáta, žení, ženíte ‘woman, the woman, women, the women’

c) The percentage of neuter gender nouns with ultimate stress on *-e* is 8%. Most of them however are foreign words – mainly from French and Turkish origin such as: *antré* ‘vestibule’, *minaré* ‘minaret’. Oxyton words with domestic origin are few: *nebé* ‘sky’

Unaccentable roots are morphemes with a **floating** accent which is realized outside the morpheme. The migration of a lexical accent is enforced by the constraint *DOMAIN¹⁴. This constraint ensures that the location of the floating accent can be a morpheme other than its sponsor. Usually the unaccentable roots have their accent located on the inflectional suffix or on the definitive article¹⁵.

5.2.1.1.3. Are there pre-accented roots?

A limited group (of 110 items) of disyllabic nouns of masculine gender has accented prefixes like: *iz-*, *po-*, *pre-*, *pod-*, *pri-*, *raz-*, attached to verbal roots:

<i>ízbor</i>	‘choice’
<i>pólet</i>	‘flight’
<i>prévod</i>	‘translation’
<i>pódpis</i>	‘signature’
<i>prihod</i>	‘income’
<i>rázkaz</i>	‘story’

¹⁴ The direction of the migration of the lexical accent is determined by an alignment constraint.

¹⁵ Possible reasons of unaccentuation of particular roots are discussed in Patseva (2012). After Dobrev we can believe that in some cases they lie mainly in the history (Dobrev 1982). According to the social analysis of the elementary forms of religious life of Durkheim the mythological mind arranges the world and the words respectively in accordance to mystical believes (Durkheim 1995). They are not relevant nowadays but they have influenced the way words are grouped. Dobrev believes that some declination in Old Bulgarian language consist of words denoting elements of ritual practices which imply taboo. This can be one historical reason not to accentuate particular roots, as if not to awake the mystical forces they are associated to, such as *nebé* ‘sky’.

It is problematic to interpret these roots as pre-accented because in other words the roots can be accented: *vódja* ‘to lead’, *káža* ‘to say’ and post accented: *berá* ‘to pick’, *letjá* ‘to fly’¹⁶. A possible explanation of these cases can be that the prefix acts as the *rema* – introducing the new content (in terms of Kotova and Janakiev 2001 after the Prague linguistic school) or as the *focus* of the unit. One other explanation can be that these words belong to the group of *nomina patientis* for which the ultimate accent is not typical.

5.2.1.2. Unmarked roots

There is a group of neuter gender nouns with unmarked inflection –o which undergo migration of the accent to the right in plural - from the unmarked root to the accented inflection: *stádo*; *stadá* ‘herd; herds’.

These roots can be interpreted as unmarked because only an unmarked word head can retreat the lexical accent to the inflectional suffix (which is accented, but is not the head).

If both the root and the inflectional suffix are not marked (as in the singular form *stádo* ‘herd’), a default trochaic model surfaces.

5.2.2. Accent specification of inflectional suffixes in non-derived words:

5.2.2. 1. Unmarked inflectional suffixes

Unmarked nouns inflectional suffixes are: *-a*, *-o*, *-e*, *-i*, *-ove*.

¹⁶ The verb meaning can be modified or changed by means of accented prefixes: *nakáža* ‘to punish’, *izberá* ‘to choose’.

- (1) **-a** is a singular inflectional suffix for feminine gender nouns and adjectives. In most cases it does not bear accent: *bába* ‘grandmother’, but in about 7.5% of the words with unaccentable or post-accented root it takes the accent: *žená* ‘woman’.
- (2) **-o** is a singular inflectional suffix for neuter gender nouns and adjectives. It appears without accent in the majority of words with accented root like *ézero* ‘lake’ and takes the stress in words with post-accented root: *okó* ‘eye’.
- (3) **-e** is another singular inflectional suffix for neuter gender nouns. It appears without accent in words with accented or unmarked roots: *slánce* ‘sun’, *magáre* ‘donkey’ and takes the stress in few domestic words when the root is post-accented: *nebé* ‘sky’ and in foreign words like *minaré*.
- (4) **-i** is a plural inflectional suffix for feminine and masculine polysyllabic words. It is usually not accented: *bábi* ‘grandmothers’, *prozórci* ‘windows’. This suffix can take the lexical accent when the roots are unaccentable or post-accented as *ženi* ‘women’, *láč; láčí* ‘ray; rays’. The plural ending *-i* takes the word stress also when the accented vowel of the basic form of the word is dropped in plural: *koněc, koncí* ‘thread, threads’ and derivatives: *lověc, lovci* ‘hunter, hunters’.
- (5) **-ove** is a plural inflectional suffix for monosyllabic masculine gender nouns. It is usually unaccented (in 90%): *hljab; hljábove* ‘bread; breads’, but when the roots are post-accented (in 10%) it takes the word stress: *zvjár; zverové* ‘beast; beasts’. It is accented also in few exceptional disyllabic words as *vjátār; vetrové* ‘wind; winds’, *ógān; ognjóve* ‘fire; fires’ with elision of *ǎ* in the plural form.
- (6) **-ta** is a plural inflectional suffix for neuter gender nouns with final –e: *momčé; momčéta* ‘boy; boys’
- (7) **-ovci** is a plural inflectional suffix for a limited group of masculine gender nouns with final -o: *čič; čičovci* ‘uncle; uncles’.

Verbs inflectional suffixes usually are not marked. In third conjugation they are never accented: *obíčam* (I love), but in first and second they can bear the lexical accent (in about 10%): *četá* ‘I read’.

We can conclude that most of the inflectional suffixes in the language are unmarked. In the framework of the *Headmost theory* they depend on the accentual characteristic of the head – the root in non-derivatives.

5.2.2.2. Marked inflectional suffixes

5.2.2.2.1. Accented inflectional suffixes

The accented inflectional suffixes appear in plural forms in neuter gender nouns and among some exceptional forms.

-á is a plural inflectional suffix for neuter gender nouns (with final *-o* in singular). This is the only regular accented inflection among non-derived nouns. It surfaces after unmarked roots and determines the accent characteristic of the word: *stádo*; *stadá* ‘herd; herds’

-é is an exceptional inflectional suffix of five monosyllable masculine gender nouns only: *máž*; *máže* ‘man; men’, *car*; *caré* ‘king; kings’.

-ená appears in few words like *pléme*; *plemená* ‘tribe; tribes’

-esá appears in few words like *čúdo*; *čudesá* ‘miracle; miracles’

5.2.2.2.2. Unaccentable inflectional suffixes

The following suffixes are never accented in the language: *-a* (numeral plural), *-o* (feminine vocative). They are the only inflectional suffixes which can affect the accentual characteristic of the root in limited cases. Both of them have the same form with other unmarked inflectional suffixes: *-a* is the usual feminine gender ending and *-o* is the neuter one. The marked unaccentable suffixes *-a* and *-o* have specific grammatical function in the language: *-a* is a numeral plural inflectional suffix for masculine nouns used after numbers and related words as in: *dva stóla* ‘two chairs’.

The suffix does not affect the accent position of longer words: *dva prozóreca* ‘two windows’. Its combination with unaccented onesyllable nouns consisting of unaccentable root however might affect the accent position: *grad*; *gradát*; *gradové*, but *dva gráda* ‘town; the town; towns; two towns’.

-o is a feminine vocative inflection, used rarely. It does not affect the accent position of personal names like *Kalína*, *Kalíno* (vocative), because feminine names have never ultimate stress. The suffix causes stress shift on the root in limited cases like: *žená*; *žéno* ‘woman; you, woman’

Interim summary

Most of the roots in non-derived words are accented (nearly in 90%) and not accented in limited cases. The inflectional suffixes in non-derived words can be unmarked (most of them) and marked: accented (only one regular and one exceptional) and unaccentable (used with grammatical function in limited cases).

We can conclude that the accentual characteristic of the root dominates that of the inflectional suffix with limited exceptions. So, the metaconstraint formulated by Maccarthy & Prince 1995 takes place in the field of non-derived words:

Root Faith >> Suffix Faith

The accented inflectional suffixes appear only when the root is not accented or not marked. If both the roots and the inflectional suffixes are not marked, the default trochaic pattern surfaces as penultimate accent.

5.3. Accentual specification of morphemes in derivatives

The derivational suffixes are morphological heads defining the class and semantic group of the words. Their accentual specification can be: unmarked and marked as accented, pre-accented and unaccentable. The roots in derivatives have accentual specification which surface only when the derivational suffixes are not marked.

5.3.1. Marked derivational suffixes

5.3.1. 1. Accented derivational suffixes in nouns, adjectives and verbs

The accented derivational suffixes delete the accentual characteristics of the base and impose their own accent.

a. Nouns, composed by accented derivational suffixes

Accented derivational suffixes compose nouns belonging to different semantic groups like:

Table 4. Distribution of accented derivational suffixes in semantic groups

Semantic groups	Derivational suffixes	Examples
<i>nomina agentis</i>	-áč, -jór, -ént, -ánt	<i>gotvác</i> ‘cook’, <i>kontroljór</i> ‘controller’, <i>emigránt</i> ‘emigrant’, <i>studént</i> ‘student’
<i>nomina actoris</i>	-ár, -íst -džía/ číja	<i>baničár</i> ‘pie maker’, <i>sportíst</i> ‘sportsman’, <i>šegadžíya</i> , <i>maitapčía</i> ‘joker’
<i>nomina instrumenti</i>	-áč(ka), -ló	<i>otvaráčka</i> ‘opener’, <i>grebló</i> ‘paddle’
<i>nomina patientis</i>	-bá, -ézh	<i>molbá</i> ‘application’, <i>graběž</i> ‘robbery’
<i>nomina attributiva</i>	-ák, -ják	<i>rusnák</i> ‘Russian’, <i>dobrnák</i> ‘good man’
<i>nomina essendi</i>	-ízám, -otíja	<i>budízám</i> ‘Buddhism’, <i>skāpotíja</i> ‘costliness’

Accented derivational suffixes consisting of closed syllable are typical for masculine gender nouns, most often expressing active animate agents (*nomina agentis* and *actoris*). The suffixes determine the ultimate accent model of the word groups. These findings correspond to the ideas of the existence of association of stress and particular morphological classes, semantic and gender groups (Revithiadou, Lengeris and Ioannou 2013).

b. Adjectives, composed by accented derivational suffixes

Mainly **qualitative** adjectives are composed by accented derivational suffixes like *-jáv*, *-át*, *-ív*, *-ít*, *-ist*:

<i>késten</i>	‘chestnut’	<i>-jáv</i>	→	<i>kestenáv</i>	‘brownish-crimson colour’
<i>kósām</i>	‘hair’	<i>-át</i>	→	<i>kosmát</i>	‘hairy’
<i>márzel</i>	‘laziness’	<i>-ív</i>	→	<i>mārzelív</i>	‘lazy’
<i>djával</i>	‘devil’	<i>-ít</i>	→	<i>djavolít</i>	‘puckish’
<i>trevá</i>	‘grass’	<i>-ist</i>	→	<i>trevíst</i>	‘grassy’

The accent position is stable on the suffix in all gender forms of the adjective in singular and in plural:

trevíst (masculine gender),
trevísta (feminine gender),
trevísto (neuter gender),
trevísti (plural gender).

c. Verbs, composed by accented derivational suffixes:

Vocal derivational suffixes of first conjugation verbs –a, –e are accented:

-á- : *igrá*; *igrája* ‘play; I play’

-é-: *star*; *staréja* ‘old; I get old’

Dissyllabic verbal suffixes accented on the first vowel compose the third conjugation verbs:

-úva- : *pāt*, *pātúvam* ‘road, I travel’

-(iz)*íra*: *grim*, *grimíra* ‘makeup, I apply makeup’, *irónia*, *ironizíra* ‘irony, I deride’

-(j)*ása*: *koróna*, *koronjásam* ‘crown, I crown’

-*isa*: *sapún*, *sapunísam* ‘soap, I soap’

-*ósa*: *krášt*, *kráštósam* ‘cross, I cross’

-*dísa*: *bojá*, *bojadísam* ‘paint, to paint’

5.3.1. 2. Pre-accented derivational suffixes

The pre-accented derivational suffixes have **floating** accent which appears on the previous syllable. In some cases they change the accent of the base:

úča ‘to study’, *učitel* ‘teacher’,
píša ‘to write’, *pisátel* ‘writer’

Among nouns they appear in few semantic groups only: *nomina agentis*, *nomina actoris* and *nomina loci*.

Table Distribution of pre-accented derivational suffixes in semantic groups

Semantic groups	Derivational suffixes	Examples
<i>nomina agentis</i>	- <i>tel</i> , - <i>tor</i> , - <i>nik</i>	<i>učitel</i> ‘teacher’, <i>diréktor</i> ‘director’, <i>zaměstnik</i> ‘deputy’
<i>nomina actoris</i>	- <i>nik</i>	<i>pomóštnik</i> ‘assistant’
<i>nomina loci</i>	- <i>ište</i> , - <i>lnja</i> , <i>nica</i>	<i>učilište</i> ‘school’, <i>čítálnja</i> ‘reading room’, <i>sladkárnica</i> ‘pastry shop’

The verbal suffix from Russian origin –*nič*- is pre-accented and composes a few verbs with untypical antepenultimate accentual pattern: *grimásniča* ‘I grimace’.

The typical penultimate accent of third conjugation verbs is achieved by means of pre-accented suffixes (or thematic vowels) like:

-*a*, -*ja*: *óbič*; *obíčam* ‘love; I love’, *strelá*; *stréljam* ‘arrow; shoot’, *véčer*; *večérjam* ‘evening; eat dinner’

-va: *objád*; *objádvam* ‘lunch; have lunch’

5.3.1. 3. Unaccentable derivational suffixes

a. Nouns, composed by unaccentable derivational suffixes

As an example of noun unaccentable derivational suffix will serve the *nomina essendi* suffix for feminine gender *-ost*. It is never accented. The lexical accent is usually on the previous syllable, so in most cases the words have penultimate accent: *mlad*; *mládost* ‘young; youth’.

Antepenultimate accent pattern are less common. They appear when the base has penultimate accent, as in: *ízraz*; *ízraznost* ‘expression; expressiveness’ or when another unaccented suffix like *-en* precedes it:

uvéren; *uvérenost* ‘confident; confidence’
písmen; *písmenost*¹⁷ ‘written; script’

The preceding suffix can be also be augmented by another one, as in *-tel-en*, but in such cases the final vowel *-e* is dropped in the *nomina essendi* word. So the accent remains on the antepenultimate syllable: *otnosítelen*; *otnosítelnost* ‘relative; relativity’

The derivational suffixes *-ost* does not change the accent of the base in indefinite forms, but when the definite article *-ta* is added in singular, the lexical accent migrates to the right and lands on the article: *rádost*; *radosttá* ‘joy; the joy’.

The definitive article *-ta* bears the accent in all feminine gender nouns ending with consonant regardless of the number of syllables in the word:

2 σ	<i>mladosttá</i>	‘the youth’,
3 σ	<i>pismenosttá</i>	‘the writing’,
4 σ	<i>uverenosttá</i>	‘the confidence’,
5 σ	<i>otnositelnosttá</i>	‘the relativity’.

There is no accent migration in plural, when the word ends with two open syllables
rádosti, *rádostite*.

¹⁷There are only few cases among tree-syllable nouns: *dádenost* ‘given for granted’, *pókaznost* ‘ostentation’.

So, unaccentable morphemes introduce a **floating** accent which is accomplished on another morphological domain. The floating accent of unaccentable suffix can be located on the root or on the article. In any case the accentual characteristic of the derivational suffix determines the accent model of the word.

b. Ajectives, composed by unaccentable suffixes:

The unaccentable derivational suffixes *-est* and *-ski* are added after the stem and don't cause an accent change if the stress is originally on the stem:

múskul 'muscle', *múskulest* 'muscular' and
sáséd 'neighbor', *sásédski* 'neighbor'

When the accent is originally on the inflection in feminine and neuter gender nouns with unaccented root, the unaccentable derivational suffixes cause accent migration. The root takes the lexical accent because in derivatives it cannot impose its original accentual specification.

káľbó 'globe', *káľbest* 'as a globe'
moré 'sea, noun', *mórski* 'sea, adj'.

5.3.1.4. Post-accented derivational suffixes

There are only few post-accented derivational suffixes like: *-ot(á)*, *-in(á)*, *-b(á)* in *krasotá* 'beauty', *dobriná* 'goodness', *molbá* 'request'. They are not productive and take part in the composition of limited number of words.

5.3. 2. Unmarked derivational suffixes

(1) The abstract derivational suffix *-stvo* does not change the accentual specification of the base. The derivatives are penultimate in most cases, when the root or the previous derivational suffix is accented:

rob ‘slave’, *róbstvo* ‘slavery’
bogát ‘rich’, *bogátstvo* ‘wealth’

Some words have antepenultimate stress when the original word contains pre-accented suffix *-tel* like: *svidétel* ‘witness’, *svidételstvo* ‘testimony’

The derivational suffix *-stvo* is accented in few words only: *obštestvó* ‘society’ or *mážestvó* ‘manliness’¹⁸.

(2) Another example for unmarked derivational suffix *-ne* compose nouns belonging to *nomina actionis* semantic group. Usually it is pre-pre-accented: *spestjávam* ‘save’, *spestjávane* ‘saving’.

In few words it is pre-accented and accented: *brojá* ‘to count’, *broéne* ‘counting’ and *spja* ‘to sleep’, *spané* ‘sleeping’

(3) The second conjugation verbal suffix *-i-* depends on the accentual characteristic of the stem, so it can be interpreted as an unmarked suffix: *gost*; *gostí* ‘guest; to feast’, *vtóri*; *povtóri* ‘second; to repeat’.

Interim summary

The derivational suffixes have different accentual specification. They are unmarked and marked as accented, pre-accented and unaccentable.

It noteworthy that the word class, the subclass (gender) and the semantic group have particular accent preferences: for example the masculine *nomina agentis nouns* most often have accented and pre-accented derivational suffixes.

¹⁸ In some of them the root is unaccentable like: *máž* ‘man’: *mážát*, *mážá*, *mážé*, *mážéte* ‘the man, a man, men, the men’.

6. Discussion

6.1. Word form constraints

The main word form constraints which control the prosodic shape of the words are:

- **FootType Trochee:** The main metrical foot is trochee consisting of a stressed syllable followed by an unstressed one. It is consistent with the statistically prevailing penultimate accent and ER-R.

If both root and inflectional suffix are not marked, as in *stádo* ‘herd’, a default trochaic foot surfaces. The ultimate accent in ultimate words like *nebé* ‘sky’ can be treated as monosyllabic trochee *ne(bé)*. In these cases the constraint FtBin (Feet are binary)¹⁹ is violated.

- **End Rule –R Stem²⁰, ER-R Stem:** The lexical accent is oriented towards the end of the **stem**. This constraint means that predominantly the lexical accent is on the root in non-derived words and on derivational suffix in derivatives. It can be dominated by the specification of morphemes.
- **HierAl²¹:** Every prosodic constituent is aligned with some prosodic constituent that contains it (σ with F, F with PrW). This constraint is violated in longer forms like:
slad(kárni)ca [σ ($\acute{\sigma}$ σ) σ] ‘pastry shop’.

Further studies are needed to define the prosodic well-formedness in Bulgarian.

- **Parse- σ :** A syllable is parsed into a foot.

¹⁹ FtBin: Feet are binary under syllabic or moraic analysis (Hayes 1995 among others).

²⁰ EDGEMOST in Prince and Smolensky 1993

²¹ The constraint is composed of statements of the type: a syllable/foot must be L/R aligned with the prosodic constraint that contains it (Ito, Kitagawa & Mester 1996)

The last constraint has low position in Bulgarian because the secondary stress is not obligatory and numerous syllables can be unparsed.

6.2. The lexical constraints

The accent position in Bulgarian cannot be predicted on the basis of the phonological properties of the word or syllable structure only. The position of primary stress is affected by idiosyncratic stress properties of morphemes. Some morphemes are marked with a lexical accent whereas others are not. The main lexical constraint which solves the conflicts between accentual specifications is HeadFaith. Other important constraints are *Flop and *Domain.

6.2.1. Non-derived words

Accented roots

In non-derived words with accented roots the antimigration constraint *Flop has a leading position. This constraint prohibits the migration of an accent beyond the input.

1. Tableau

Input: <i>/jástreb/ + /i/</i>	*Flop	Foot Type Trochee	ER–R Stem	HierAll	Parse- σ
<i>→a.(jástre)bi</i>			*		*
<i>b. ja(strébi)</i>	*!				*
<i>c. jastre(bí)</i>	*!				**

The lexical accent in *jástrebi* ‘hawks’ remains on the root violating the word form constraints End Rule – R Stem and Parse- σ .

Unaccentable roots

The final accent in the word *nebé* ‘sky’ is taken not to originate from the inflection. The ultimate accent is based on the accentual specification of the root. The unaccentable root

neb- has a **floating** accent, caused by the structural constraint *Domain. The *Domain constraint states that a lexical accent should not be associated to the morphological domain that sponsors it (Revithiadou 1999: 54):

2. Tableau

Input: /neb/ + /e/	FaithHead-Root	*Domain	FtBin
a. (<i>nébe</i>)	*	*	
→ b. <i>ne(bé)</i>			*

Candidate b. *ne(bé)* surfaces despite the fact that the constraint FtBin is violated and the stress is on the unmarked inflectional suffix –e, obeying the FaithHead-Root and *Domain.

Accentuation of nouns with no lexical accents

When the morphemes are not marked, the **default trochaic** accent surfaces. The word *stádo* ‘herd’ consists of an unmarked root and an unmarked inflection. In plural it appears with accent on the inflectional suffix *stadá* ‘herds’ which would be not possible if the root was accentually marked.

3. Tableau

/stad/ + /o/	Foot Type Trochee	Foot Type Iambus
(<i>stadó</i>)	*!	
→ (<i>stádo</i>)		*

Accented inflectional suffixes

A marked inflectional suffix can reveal its accent specification only when it is combined with an unmarked root as in *stadá* ‘herds’.

4. Tableau

/stad/ + /á/	Faith	FtBin
→ <i>sta(dá)</i>		*
<i>(stáda)</i>	*!	

The faithfulness constraint²² is deemed more important than prosodic well-formedness and the constraint FtBin is violated.

If the root is marked, however, the accented inflectional suffix cannot surface. This is an instance of competition when an accented root meets an accented suffix in the plural form of *govédo*; *govéda* ‘ox; cattle’.

In the field of non-derived words the well-established constraint ranking can be observed: Faith(Root) >> Faith(Affix). If both root and affix are accented, the accent specification of the root wins (McCarthy & Prince 1995, Kager 1999: 75-76). Faithfulness requirements are enforced more strictly within the root than non-root morphemes, such as affixes.

4. Tableau

/ govéd/ + / á /	Faith(Root)	Faith(InflSuf)
→ <i>a. govéda</i>		*
<i>b. govedá</i>	*!	
<i>c. góveda</i>	*!	*

The preferred form *govéda* reflects the domination of Faith(Root) over Faith(Affix) in the field of non-derived words. The constraint ranking means that the accent of the root prevails over that of the suffix.

²²Faithfulness means that the surface form (the output) matches the underlying or lexical form (the input).

The meta-constraint RootFaith >> SuffixFaith (McCarthy and Prince 1995), which holds that, in conflict situations, the lexical information of the root is preserved over that of the affix is stated in Headmost theory as a type of positional faithfulness ranking where the more specific HeadFaith is ranked above the general Faith. In the frame of Headmost theory this constraint ranking is consistent with the dominant position of the accent specification of the head. That means that the marked head dictate the accentual pattern of the word. When the root is not marked, as in *stádo*, *stadá* (*herd*, *herds*) the accentual characteristic of the inflectional suffix can surface.

The domination of Faith(Root) over Faith(Affix) is not valid for the prosody - morphology interaction of derivatives where the HeadFaith domination takes place.

6.2.2. Derivatives

In derivatives the derivational suffix is the head determining the word prosody. The dominant constraint here is the faithfulness to the morphological head of the word, in Rethiadou's term – HeadFaith. The head dominance takes the form of the ranking:

HeadFaith >> Faith

In conflict cases for example of accented morphemes like the root *gótv-* 'to kook' + *áč* (agentive derivational suffix) the conflict is solved by the head principle. The accented root *gótv-* loses its accentual specification dominated by the the derivational suffix –*áč*. The noun *gotváč* 'kook' has ultimate pattern. The head-faithfulness is more specific faithfulness constraint and according to the Panini theorem²³ outranks the general faithfulness constraint Faith. The prosody-morphology interface is realized as head dominance.

Tableau 5.

<i>input: /gótv-/</i> , <i>/-áč/</i>	HeadFaith	Faith (Root)	Faith	Trochee	FtBin
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²³ See Prince & Smolenski 1993, chapter V

→	a. <i>got(váč)</i>		*	*		*
	b. (<i>gótvač</i>)	*!		*		

The candidate that verifies the highest ranking of HeadFaith is *gotváč*. The suffix *-áč* is the head of the word and its accent specification prevails over the accent specification of the root. So, the morphological head is assigned stress prominence.

An important feature of prosody morphology interface is that the analysis induces dominant effects from **marking**. Only marked heads impose their own accentual pattern to the word. Stress-neuter heads are unmarked²⁴.

Conclusion

- Bulgarian accent system is **unbounded**. The accented syllable most often is only one, so the foot can be also only one. If a secondary stress appears, its distance varies both from the main one and from word edges.
- The prevalent accent pattern of verbs and feminine and neuter gender nouns is **penultimate**. The penultimate position implies preferred accentuation of the root among non-derived words.
- **Foot typeTrochee**: Most often the stress is transferred to the right in the cases of mobility. The direction of the mobility indicates a trochaic grouping of syllables.
- Syllables are not always exhaustively parsed into feet. So, the constraint **ParseSyll** is low in the hierarchy.
- **WSP** is evident in shorter disyllabic and trisyllabic words and in lesser degree among longer words.
- The language cannot be defined unconditionally as a system with **unlimited accent window** because the lexical accent passes the three syllable window in limited cases

²⁴ The unmarked heads correspond to the *recessive* suffixes in the terms of the Lexical phonology.

and some preferences and unattested patterns positions of the word stress can be observed.

- The lexical accent is oriented towards the end of the stem described with the constraint: **End Rule–R Stem**.
- The primary stress is affected by idiosyncratic stress properties of morphemes. Some morphemes are marked with a lexical accent whereas others are not. The main lexical constraint which solves the conflicts between accentual specifications is **HeadFaith**.
- In non-derived words the head is the root, so the meta-constraint **RootFaith >> SuffixFaith** takes place.
- In derivatives the derivational suffix is the head determining the word prosody. The dominant constraint here is the faithfulness to the morphological head – **HeadFaith** which outranks the general faithfulness **Faith**: The head dominance takes the form of the ranking: **HeadFaith >> Faith**
- Word classes, subclasses (gender) and semantic groups have particular accent preferences.

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