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Word Stress

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1.1 Introduction

One of the central properties of words, from a phonological perspective, is their prominence structure. A word corresponds to a sequence of sounds, grouped into syllables that vary in the degrees of prominence, with the most prominent syllable characterized as the bearer of stress. The stressed syllable possesses phonetic properties that set it apart from its unstressed counterparts, such as an increase in intensity and duration. Stress is not a universal prosodic property, yielding a classification of languages into those that are, and those that are not characterized by this feature (see e.g. Hyman 1977). All Slavic languages clearly exhibit word stress but vary with regard to its typological properties.

From a typological perspective, stress can be fixed or free (see Trubetzkoy 1939, Hayes 1995: 31, among others). In fixed stress systems, the stress-bearing syllable occurs in a predictable position within a word, such as initial, final, or penultimate, while in free stress systems, stress may fall on any syllable, and thus, being unpredictable, calls for lexical specification (see e.g. Revithiadou 1999: 11 and references therein). This classification is highly relevant for Slavic stress systems, which can be exhaustively classified as belonging to a fixed or free stress type (see e.g. Bethin 1998: 112). As shown in example (1), West and South Slavic groups include languages with fixed as well as free stress, while all East Slavic languages are of the latter type. The two pitch accent languages, BCS and Slovenian, the only ones in Slavic, have been classified as free stress systems due to the many traits they share with other Slavic systems of free stress. The classification in (1) for the most part refers to standard languages, with the situation in non-standard dialects often departing from the standard idiom.

(1)	Typology of Slavic word stress (Bethin 1998: 112, 175–177)		
	East Slavic	West Slavic	South Slavic
	Fixed	Czech	Macedonian
		Polish	
		Slovak	
		Southern Kashubian	
		Upper Sorbian	
		Lower Sorbian	
	Free	Northern Kashubian	Bulgarian
		Russian	Bosnian/Croatian/Serbian (BCS)
		Ukrainian	Slovenian

Within this general classification, Slavic languages exhibit a diversity of stress patterns which is consistent with the broader, cross-linguistic range of attested systems of word stress. We will show this relying on metrical phonology, a subarea of theoretical phonology that investigates the universal properties of stress systems as well as modes of their cross-linguistic variation (for detailed surveys, see Hyman 1977, Hayes 1995, Revithiadou 1999). This aspect of Slavic word stress will be addressed in Sections 1.2 and 1.3, with Section 1.2 dedicated to the phonological organization of fixed, and Section 1.3 to the organization of free stress systems. Another important aspect of Slavic word stress, to be addressed in Section 1.4, is its diachrony, that is, how its diverse properties evolved over time, which has been researched by reconstructing its earlier structural stages.

1.2 Fixed Stress

A crucial property of fixed stress systems in general, as well as in Slavic, is that the distribution of stress is for the most part regular, and is unaffected by the morphological composition of words. According to Trubetzkoy (1939), fixed stress primarily performs a delimitative function, marking off the edges of word units.

Cross-linguistically, fixed word stress predominantly falls on the initial, final, or penultimate syllable, and much less so on the syllable in peninitial or antepenultimate position, that is, second from the word's beginning and third from the word's end respectively (as reported in Hyman's 1977 broad typological survey of stress systems). Only some of these systems are evidenced in Slavic: those with initial, penultimate, and the rarely occurring antepenultimate stress. These three types of fixed stress have been characterized in metrical phonology as having trochaic organization (see Hayes 1995, Bethin 1998: 175). That is, a trochaic foot, which corresponds to a disyllabic grouping with prominence on its leftmost syllable, is associated with one of the word edges: initial in systems with initial stress, and final in systems with penultimate and

antepenultimate stress. (The two fixed stress systems that do not occur in Slavic, final and peninitial, are iambic.)

1.2.1 Initial Stress in West Slavic

Systems with initial stress predominate in Slavic, occurring in Czech, Slovak, Southern Kashubian, as well as in Upper and Lower Sorbian (Stone 1993a, 1993b, Short 1993a, 1993b, Bethin 1998: 175). In these languages, stress invariably falls on the word's first syllable. Initial stress in Czech and Slovak is illustrated in (2)–(3). This type of stress, as noted earlier, is analyzed in metrical phonology by matching a trochaic foot, that is, a disyllabic unit with initial prominence represented as (*o o*), with the word's left edge, as in *voda* → (*voda*), resulting in the initially stressed *'voda* (2a).

(2) Czech (Bethin 1998: 175, 176)

- | | | | | | |
|----|------------|--------|----|------------|----------------|
| a. | 'voda | 'water | d. | 'býva,lý | 'former |
| b. | 'zele,ný | 'green | e. | 'býva,lého | 'former-GEN.SG |
| c. | 'nepří,tel | 'enemy | | | |

(3) Slovak (Rubach 1993: 41–42, based on Letz 1950)

- | | | | | | | | | |
|----|--------------|-----------------|----|-------------|-----------|----|------------|-----------|
| a. | 'učí,tel | 'teacher | b. | 'záhrad,ník | 'gardener | c. | 'silnej,ší | 'stronger |
| d. | 'nepo,veziem | 'I won't carry' | | | | | | |

Both Czech and Slovak allow multiple stresses in a word. Stress on the first syllable, which counts as primary, is followed by alternating secondary stresses on successive odd-numbered syllables (see e.g. Bethin 1998, Rubach 1993). Note that long vowels (designated in orthography with an acute diacritic), which in both languages are contrastive, may occur not only in stressed but also in unstressed syllables, such as *í* in the second syllable of (2c) and the diphthong in the last syllable of (3d).

Secondary stress in Czech has been described as optional (Hayes 1995, Kučera 1961: 54, Palková 1994: 287). According to Kučera (1961: 54), it is mostly absent “in more casual pronunciation.” But according to Bethin (1998), long vowels can reinforce the alternating trochaic rhythm, which is “most stable in Czech when the strong position coincides with length, especially in the case of secondary stresses” (Bethin 1998: 176). The distribution of secondary stress in Slovak has received multiple characterizations in the literature (see Rubach 1993: 41–42 and references therein). In addition to the alternating pattern in (3), a less regular distribution has also been reported, with secondary stresses separated by more than one unstressed syllable and absent word-finally.

1.2.2 Penultimate Stress in Polish

In Polish, stress regularly falls on the penultimate syllable in words of at least two syllables (see Comrie 1976, Dogil 1979, Rubach & Booij 1985, Franks 1985, Halle & Vergnaud 1987, Hammond 1989, Hayes 1995, Idsardi 1992,

Bethin 1998: 176–177, and references therein). Penultimate stress persists through all forms within a paradigm, as illustrated in (4), regardless of whether the stem is bare, as in (4a), or combines with a suffix (-a in (4b) and -ami in (4c)); and regardless of how many syllables the suffix has (one in (4b) and two in (4c)).

- (4) Polish (from Franks 1985: 145)
- a. 'język 'language-NOM.SG'
 - b. ję'zyka 'language-GEN.SG'
 - c. języ'kami 'language-INST.PL'

Systems with penultimate stress manifest trochaic organization, just like systems with initial stress (see Section 1.2.1). In this case, a trochaic foot is matched with the right edge of the word, as shown in (5), thus assigning stress to its penultimate syllable:

- (5) Stress assignment in Polish
- | Input | Trochaic foot ('o o) assignment | Output |
|----------|---------------------------------|-----------|
| język | ('język) | 'język |
| języka | ję('zyka) | ję'zyka |
| językami | języ('kami) | języ'kami |

There are, however, exceptions to the regular penultimate stress, exemplified in (6) and (7), which are the norm of the standard language but not observed by all speakers. Note that the exceptional forms, (6a) and (7b), are stressed not on the penultimate but on the antepenultimate syllable. What is puzzling here is that only some members of the paradigm have antepenultimate stress; and that (6) and (7) differ in which forms are exceptional in this fashion.

- (6) Exceptional stress in Polish 1 (Franks 1985: 146)
- a. uni'wersytet 'university-NOM.SG'
 - b. uniwersy'tetu 'university-GEN.SG'
 - c. uniwersyte'tami 'university-INST.PL'
- (7) Exceptional stress in Polish 2 (Franks 1985: 148)
- a. mate'matyk 'mathematician-NOM.SG'
 - b. mate'matyka 'mathematician-GEN.SG'
 - c. matematy'kami 'mathematician-INST.PL'

This pattern of exceptional antepenultimate stress is treated in metrical phonology as a special case of penultimate stress (see Rubach & Booij 1985, Franks 1985, 1991, Hayes 1995, Halle & Vergnaud 1987, among others). What is exceptional about the stem in (6) is that its final syllable is invisible to stress assignment, or extrametrical, to use the technical designation. Thus, as shown in (8), the nominative singular form (6a), which corresponds to the bare stem, enters the phonology with its final syllable marked as extrametrical (designated by angled brackets). A trochaic foot is then right-aligned with the penultimate syllable *sy*, assigning stress to the immediately preceding syllable *wer*, which occupies the antepenultimate position within the word.

- (8) Exceptional stress assignment in Polish: class 1
- | | | |
|---------------|---------------------------------|--------------|
| Input | Trochaic foot ('o o) assignment | Output |
| uniwersy<tet> | uni('wersy)<tet> | uni'wersytet |

Note, however, that extrametricality is licensed only in word-final position. If a suffix is added, as in (6b) and (6c), the stem-final syllable is no longer word-final, so extrametricality cannot take effect and stress is penultimate, assigned in a regular fashion.

The peculiarity of the exceptional forms in (7), which are restricted to loanwords from classical languages, is that extrametricality is assigned to the syllable immediately following the stem. As shown in (9), the genitive ending *-a* in (7b) is marked as extrametrical, and the trochaic foot is aligned with the immediately preceding syllable, placing stress on *ma*, which occupies antepenultimate position.

- (9) Exceptional stress assignment in Polish: class 2
- | | | |
|--------------|---------------------------------|-------------|
| Input | Trochaic foot ('o o) assignment | Output |
| matematyk<a> | mate('maty)k<a> | mate'matyka |

But, if the ending is disyllabic, as in (7c), the syllable immediately following the stem is not word-final, so that extrametricality cannot take effect and stress is assigned to the penultimate syllable. Stress is also penultimate in (7a) since there is no post-stem syllable to be made extrametrical.

We now turn to further properties of Polish stress, including its phonetic realization. Polish has been described as allowing more than one stress per word: stress on the penultimate (or exceptionally antepenultimate) syllable, which counts as primary, can be preceded by one or more secondary stresses. As illustrated in (10), secondary stress falls on all odd-numbered syllables excluding the one that immediately precedes the bearer of primary stress (Hayes & Puppel 1984, Rubach & Booij 1985, Franks 1991, Hayes 1995, Kraska-Szlenk 2003).

- (10) Secondary stress in Polish (from Kraska-Szlenk 2003: 13)
- Amery'kanin 'American-NOM.SG'
 - Amé,ryka'nami 'American-INST.PL'
 - zame,ryka,nizo'wany 'Americanized'

Furthermore, secondary stress occurs not only in longer words but also in larger domains that include function words (Rubach & Booij 1985 and references therein).

Phonetic realization of stress in Polish has been addressed in several experimental studies. Their findings, however, only partially confirm what has been claimed in the phonological accounts. It has been found that syllables bearing primary stress have robust acoustic cues, which include increase in duration and intensity as well as relatively high pitch (Dogil 1999, Newlin-Łukowicz 2012, Malisz & Żygis 2018). But according to Newlin-Łukowicz (2012) and Malisz & Żygis (2018), no clear acoustic evidence for secondary stress can be detected. With quite a few phonological studies that

investigate secondary stress (as noted above), it remains for future research to determine how this phenomenon relates to the realm of phonetic realization.

1.2.3 Antepenultimate Stress in Macedonian

In Macedonian, regular stress falls on the antepenultimate syllable in words that are minimally trisyllabic, as in (11), and is otherwise initial. This stress system has been analyzed in a number of studies (see Franks 1987, 1989, 1991, Hammond 1989, Halle & Kenstowicz 1991, Idsardi 1992, Beasley & Crosswhite 2003); here we follow the account in Franks's work.

- (11) Regular stress in Macedonian (from Franks 1991: 146)
- | | |
|---------------|---------------|
| vo'deničar | 'miller' |
| vode'ničari | 'millers' |
| vodeni'čarite | 'the millers' |

This is a rare type of stress system which is treated in metrical phonology as a special case of penultimate stress (as noted in the discussion of Polish, Section 1.2.2). In both penultimate and antepenultimate stress systems, a trochaic foot is aligned with the right edge of the word. However, in the case of antepenultimate stress, the word-final syllable is marked as invisible, that is, extrametrical, which redefines what counts as the word's right edge. But while in Polish antepenultimate stress is exceptional, in Macedonian it constitutes a regular stress pattern. The extrametricality of the word-final syllable is a uniform structural feature that has to be marked by a regular rule (Franks 1987, 1989, 1991). Thus, forms in (11) are assigned stress as shown in (12): the right-alignment of a trochaic foot is preceded by the extrametricality marking which makes the word-final syllable unavailable for footing. As a result, stress falls on the antepenultimate syllable in all forms, regardless of their morphological setup.

- (12) Regular stress in Macedonian (Franks 1991: 146)
- | Input | Extrametricality | Trochaic foot assignment | Output |
|--------------|------------------|--------------------------|---------------|
| vodeničar | vodeni <čar> | vo('deni) <čar> | vo'deničar |
| vodeničari | vodeniča <ri> | vode('niča)<ri> | vode'ničari |
| vodeničarite | vodeničari <te> | vodeni('čari) <te> | vodeni'čarite |

There are two types of exceptions to regular antepenultimate stress. One type corresponds to stems that attract stress to their final syllable, as in (13), and the other to those attracting stress to the penult, as in (14). While both types include loanwords, the latter also includes native forms such as verbal adverbs (see Koneski 1982); the locus of stress attraction is marked with an asterisk. In (13), stress invariably falls on the syllable containing the asterisked vowel, which is word-final in (13a), penultimate in (13b), and antepenultimate in (13c).

(13) Exceptional stem *kandi'dat* (Franks 1991: 147)

	Input	Stress assignment	Output	
a.	kandida*t	kandi'da*t	kandi'dat	'candidate'
b.	kandida*ti	kandi'da*ti	kandi'dati	'candidates'
c.	kandida*tite	kandi'da*tite	kandi'datite	'the candidates'

In (14), however, the syllable containing the asterisked vowel does not bear stress in all cases. This syllable is stressed if it occurs in either the penultimate or the antepenultimate position, as in (14a) and (14b), respectively, but not when it occurs further towards the word's left edge, as in (14c). Note that the form in (14c), *televi'zorite*, is assigned regular antepenultimate stress.

(14) Exceptional stem *tele'vizor* (Franks 1991: 147)

	Input	Stress assignment	Output	
a.	televi*zor	tele'vi*zor	tele'vizor	'television'
b.	televi*zori	tele'vi*zori	tele'vizori	'televisions'
c.	televi*zorite	televi*'zorite	televi'zorite	'the televisions'

What emerges as a likely generalization is that stress in Macedonian, regular as well as exceptional, has to fall within the three-syllable window at the word's right edge. That is, exceptional stress can only be realized within the domain of regular antepenultimate stressing. This complex stress pattern seems to defy the resources of metrical phonology, and is hard to capture in a straightforward fashion; for an insightful account of exceptional stress in Macedonian as well as its relatedness to regular antepenultimate stress, see Franks (1987).

A further interesting property of Macedonian stress, found mostly in the non-standard dialects, is that its domain is larger than the word, and includes the surrounding clitics (for details, see Rudin et al. 1999; also Franks 1989, Bennett et al. 2018, among others).

1.3 Free Stress

Slavic languages with free stress are found in all three major groups, and include one West Slavic, three South Slavic, and all East Slavic languages (see table in (1)). The general property of free stress systems is that no position within a word is predictably designated for stress. According to Trubetzkoy, free stress is potentially contrastive, that is, may serve as the sole basis for differentiating meanings of words, as in the Russian minimal pair '*muka* 'torture' vs. *mu'ka* 'flour' (Trubetzkoy 1939: 188). Nonetheless, Slavic free stress exhibits a significant measure of systematic, and thus predictable, organization. This becomes obvious if a substantial role is assigned to the morphological component: the place of stress is marked not on morphologically complex forms but, rather, on their simplex subparts; that is, on stems and affixes. Such markings, generally referred to as accent, are of an abstract nature: which accentual mark within a morphologically complex form is realized as stress depends on the accentual properties of the participating

morphemes as well as the principles of their combination (see Garde 1976, Halle 1971, Revithiadou 1999, among others).

1.3.1 Free Stress in Russian

A paradigm case of a stress system based on accentual organization is that of Russian, in which both stems and affixes are classified into accented, unaccented, and postaccenting (cf. Halle 1973, Garde 1976, Halle & Vergnaud 1987, Melvold 1990, Idsardi 1992, Revithiadou 1999, Alderete 1999, among others). How such simplex entities combine into morphologically complex forms is illustrated with the basic accentual types of the Russian nominal declension in (15). The barytone class has stress fixed on one of the stem syllables in all case forms, the oxytone class has stress fixed on the ending (or on the stem's last syllable if the ending is null, as in the genitive plural form *gos'pož*), and in the mobile class stress is on the stem's initial syllable in some case forms, and on the ending in others. The four case forms in (15) are representative of the entire paradigm.

(15) Russian accentual classes

	Barytone	Oxytone	Mobile
NOMSG	ko'rova	gospo'ža	boro'da
DATSG	ko'rove	gospo'že	boro'de
ACCSG	ko'rovu	gospo'žu	'borodu
NOMPL	ko'rovy	gospo'ži	'borody
	'cow'	'lady'	'beard'

The patterns in (15) result from the accentual properties of the participating stems and affixes. The stem is accented in the barytone class, unaccented in the mobile class, and postaccenting in the oxytone class. And, in all three classes, the NOMSG and DATSG endings are accented, while the ACCSG and NOMPL endings are unaccented. The place of stress is then computed according to the Basic Accentuation Principle (cf. Halle 1971, 1973, Kiparsky & Halle 1977, Halle & Kiparsky 1981, Melvold 1990, Idsardi 1992, among others):

(16) Basic Accentuation Principle

Stress falls on the leftmost accented vowel, or on the only accented vowel; or, if no accent is present, on the word-initial vowel.

As shown in (17), a stem of the barytone class has an accent mark associated with one of its vowels (marked with an asterisk). This accented vowel will invariably be selected by the Basic Accentuation Principle as the bearer of stress, regardless of whether the ending is accented as in (17a), or unaccented, as in (17b).

(17) Barytone accentual class

a.	NOMSG	koro*v+ a*	ko'rova
b.	ACCSG	koro*v+ u	ko'rovu

Stems of the mobile class are unaccented. In a complex form an accent can thus only come from an accented ending, which receives stress, as in (18a). If the ending is unaccented, as in (18b), the Basic Accentuation Principle assigns stress to the word's initial syllable.

- (18) Mobile accentual class
- a. NOMSG borod + a* boro'da
 - b. ACCSG borod + u 'borodu

Postaccenting stems, those of the oxytone class, have a special status. Like accented stems, they are provided with an accent mark. However, this accent mark is required to be associated with a vowel immediately following the stem, which results in stress on the ending (for details, see Melvold 1990, Idsardi 1992, Revithiadou 1999). Note that postaccenting stems have also been analyzed as unaccented, with a special rule assigning stress to the post-stem syllable (see for example Halle 1973, Alderete 1999).

In addition to the principal accentual classes in (15), there are a few further patterns, most notably the shifting classes, with the place of stress alternating between the singular and the plural. Stress falls uniformly on the stem in the singular and on the ending in the plural in *'bereg* (SG) – *bere'ga* (PL) 'shore', while in *kolba'sa* (SG) – *kol'basy* (PL) 'sausage' the pattern is reversed, with stress on the ending in the singular, and on the stem in the plural (see Halle 1973, Melvold 1990, Idsardi 1992, Alderete 1999).

To conclude, the accentual classes in (15) characterize the entire set of nominals (with the highest representation of the barytone class), and extend further to verbs and adjectives. In the set of verbs, this can be exemplified by past participle forms: *'lezla/lezli* 'CLIMBED.FEM.SG/PL', with accent on the stem, belongs to the barytone class, *pek'la/pek'li* 'BAKED.FEM.SG/PL', with accent on the ending, belongs to the oxytone class, and *ži'la/žili* 'LIVED.FEM.SG/PL' belongs to the mobile class (Melvold 1990: 80–81). Thus, the organization into accentual classes is a pervasive property, characterizing in fact the entire lexicon of Russian stems (see Halle 1973, Melvold 1990). While both inflectional and derivational suffixes can be accented, derivational suffixes exhibit a wider range of options. They can be recessive, as exemplified by the diminutive suffix *-ic* which, like inflectional suffixes, bears stress when combined with an unaccented stem, as in *vo'dica* (*vo'da* 'water'), but not when combined with an accented stem, as in *'rybica* (*'ryba* 'fish') (Melvold 1990: 66). Or, derivational suffixes can be dominant, that is, impose their accent as a winner regardless of the accentual properties of the stem. This is exemplified by the augmentative suffix *-an*, which is invariably stressed whether the stem it combines with is accented, as in *bra'tan* 'big brother', or unaccented, as in *golo'van* 'big head'. For further details, see Halle (1973), Melvold (1990), Idsardi (1992), and Alderete (1999), among others.

A further phonologically relevant aspect of Russian stress is related to its realization and is manifested as a marked distinction between stressed and unstressed syllables. The stressed syllable is cued by admitting the full range of

vocalic contrasts [i e a o u], while unstressed syllables only allow the reduced vowels [i u ə], with the exception of the syllable in pre-stress position which, being less reduced than the rest, allows [i u ʌ], as exemplified in *molo'ko* →[mɔlʌ'ko] ‘milk’ (see e.g. Crosswhite 1999, Gouskova 2010). This aspect of phonological organization has been addressed in several phonetic studies. It has been found that the principal phonetic correlate of stress is increase in duration. Stressed syllables have greater duration than unstressed ones; and, among unstressed syllables, those in the pre-stress position are longer than the rest (Padgett & Tabain 2005, Gouskova 2010, Gouskova & Roon 2013), thus supporting the three-way distinction established phonologically.

1.3.2 Other Slavic Languages with Free Stress

The general approach to Russian stress outlined in Section 1.3.1 is applicable to, and has indeed been adopted for, other Slavic languages with free stress. Starting with East Slavic, the accentual organization in Ukrainian and Belarusian is remarkably similar to that in Russian, with barytone, oxytone, and mobile classes as basic accentual types (Stankiewicz 1993, Butska 2002, Steriade & Yanovich 2013, Osadcha 2019). This is shown in (19) with the examples of the three basic stem classes in Ukrainian nominals:







(19) Ukrainian: accentual classes

	Barytone	Oxytone	Mobile
NOMSG	ko'rova	knja'žna	holo'va
DATSG	ko'rovi	knja'žni	holo'vi
ACCSG	ko'rovu	knja'žnu	'holovu
NOMPL	ko'rovy	knja'žny	'holovy
	'cow'	'princess'	'head'

As in Russian, barytone stems are accented, mobile stems are unaccented, and oxytone stems are postaccenting, with suffixes exhibiting like accentual properties, and a formal device comparable to the Basic Accentuation Principle governing the place of stress in complex forms (see Stankiewicz 1993, Butska 2002, Dubina 2012, Osadcha 2019). The shifting accentual classes occur in both Ukrainian and Belarusian (Osadcha 2019, Bethin 2012), as in the Ukrainian examples *'more* (NOM.SG) – *mo'rja* (NOM.PL) ‘sea’ and *se'lo* (NOM.SG) – *'sela* (NOM.PL) ‘village’ (Osadcha 2019: 110). Moreover, the accentual properties of the derivational morphology are close to those in Russian, with the accented derivational suffixes split into the recessive and dominant classes (see Dubina 2012, Steriade & Yanovich 2013).

Bulgarian, the only South Slavic language with free stress but no pitch component, has undergone significant changes in its morphological organization. This resulted in considerably reduced nominal paradigms which nonetheless manifest the three accentual classes present in East Slavic as well as the classification of stems into accented, postaccenting, and unaccented (see Patseva 2017). Thus, a barytone stem, being accented, invariably bears stress,

(21) Distribution of stress

	initial syllable	medial syllable	final syllable
Short Falling	 növine	---	---
Long Falling	 nâmere	---	---
Short Rising	 mârame	 ramèna	---
Long Rising	 nâzori	 románi	---

In (21) are also shown the pitch excursions that characterize the two pitch accents. Note that highest pitch coincides with the stressed syllable in Falling accents, and with the post-stress syllable in Rising accents. That is, Falling accents comprise one, and Rising accents comprise two syllables, as first noted in Masing (1876) and confirmed in a number of experimental studies (see Lehiste & Ivić 1986, Smiljanić 2002, Zsiga & Zec 2013, Zec & Zsiga 2022). Taking this important property as their starting point, Browne & McCawley (1965) propose to capture the relevant aspects of the BCS pitch accent system by positing abstract accent marking in lexical forms, thus paralleling other accounts of Slavic free stress. While adopting this approach, Inkelas & Zec (1988) add a further refinement. With pitch as a crucial component in the realization of stress, they propose to replace abstract accent marking with a High tone, as in (22a); see also Halle (1971), Bethin (1994, 1998). Stress is then assigned to the syllable preceding the High-toned one, or to the High-toned syllable if no syllable precedes, as in (22b).

- (22) a. Underlying no_Hvine mara_Hme ramena_H
 b. Stress assignment 'no_Hvine 'mara_Hme ra'mena_H

High tone markings on the initial syllable yield Falling accents, and those on non-initial syllables yield Rising accents. This approach thus captures the asymmetric distribution of the Falling and Rising accents, as well as the monosyllabic status of the former, and the disyllabic status of the latter.

The analysis of the BCS pitch accent in terms of lexical High tone marking brings out striking similarities with Slavic systems of free stress, including the classification of stems and affixes into accented, unaccented, and postaccenting (see Section 1.3.1), and giving rise to barytone, oxytone, and mobile accentual classes (see Browne & McCawley 1965 and Zec 1999 for further argumentation). This classification does not follow straightforwardly from the place of stress, but does follow from the place of the abstract High tone, which is marked on the stem in the barytone class, on the ending in the oxytone class, and on some endings but not on the stem in the mobile class, as shown in (23).

(23) Lexical High tone marking in BCS

	Barytone	Oxytone	Mobile
NOMSG	ri _H ba _H	terasa _H	voda _H
DATSG	ri _H bi _H	terasi _H	vodi _H
ACCSG	ri _H bu	terasu _H	vodu
NOMPL	ri _H be	terase _H	vode
	'fish'	'balcony'	'water'

However, stress falls on the stem in all three accentual classes, thus obscuring the differences between them. In all cases, as shown in (24), stress is associated with the leftmost High tone. If both the stem and the suffix are unaccented, as in the ACCSG and NOMPL of the mobile class, stress is assigned to the initial syllable, concomitantly supplying it with a High tone. This mode of stress assignment is consistent with the Basic Accentuation Principle in (16), posited for other Slavic free stress systems.

(24) Stress assignment in BCS, based on the position of lexical High tone

	Barytone	Oxytone	Mobile
NOMSG	'ri _H ba	te'rasa _H	'voda _H
DATSG	'ri _H bi	te'راسi _H	'vodi _H
ACCSG	'ri _H bu	te'rasu _H	'vo _H du
NOMPL	'ri _H be	te'rase _H	'vo _H de
	'fish'	'balcony'	'water'

A few comments are in order regarding the phonetic realization of the Neo-Štokavian pitch accents. The disyllabic phonetic realization of the Rising accents, noted above, characterizes the eastern dialects, where the abstract High marking coincides with the phonetic pitch maximum. In the western dialects, however, the High tone gravitates towards the stressed syllable, thus leading to a virtually monosyllabic realization of the Rising accents. This variation was noted in the dialectal literature (Belić 1926–1927, Kapović 2015: 686–689), and confirmed experimentally (Peco & Pravica 1972, Zec & Zsiga 2022). Stress, on the other hand, is uniformly realized as increase in duration: the stressed vowel, whether short or long, is phonetically cued by greater duration than its unstressed counterpart (Lehiste & Ivić 1986: 62).

It should be noted that a number of BCS regional dialects depart from the standard Neo-Štokavian pitch accent organization. The set of Štokavian dialects includes the Old Štokavian, in which stress invariably coincides with High tone, as well as a range of other configurations that form a dialectal continuum with Old- and Neo-Štokavian as end points (see dialectal surveys in Ivić 1985 and Kapović 2015: 686–689, and a theoretical account in Zec & Zsiga 2022). The Štokavian dialects also include regional idioms in which the pitch component has been lost, resulting in free stress systems that may, or may not, have vowel length (Ivić 1985). In addition to the Štokavian dialects, BCS also includes the Kajkavian and Čakavian dialects, both with a pitch accent organization that considerably differs from that in the standard language (Lehiste & Ivić 1986: 75–83, Lončarić 1996, Langston 2006).

1.3.3.2 Slovenian

The pitch accent system of Slovenian (cf. Halle 1971: 11–17, Garde 1976: 253–262, Becker & Bethin 1983, Stankiewicz 1993, Bethin 1998, Greenberg 2006) includes both stress and a pitch contour and, as in BCS, can be lexically marked by an abstract High tone. This is shown in (25)–(27), where the first column lists forms with traditional accent marking, the second provides the corresponding phonological representation, and the third gives the gloss. For the most part, stress falls on a long vowel which, depending on the locus of the High marker, has either a rising or a falling melody. In (25), the High marker occurs on the first mora of the stressed long vowel, yielding a falling pitch, and in (26), on its second mora, yielding a rising pitch. Stress may fall on a short vowel only in monosyllables, as in (27), or the final syllable of polysyllabic words.

- (25) Falling (long)
 a. mōž 'mo_Hož 'man, husband-NOM.SG'
 b. možâ mo'žâ_Ha 'man, husband-GEN.SG'
- (26) Rising (long)
 rāka 'raa_Hka 'crab-GEN.SG'
- (27) Falling (short):
 rāk 'ra_Hk 'crab-NOM.SG'

The Slovenian pitch accent system has been subject to several prosodic innovations that include stress shifts as well as lengthening of stressed vowels. While the traditional accentual classes can still be discerned, they have been substantially reshaped. Thus, in the barytone stem, the stressed vowel is lengthened in polysyllabic but not in monosyllabic forms, as shown by (26) and (27), respectively, with vowel lengthening resulting in a long rising accent. In the unaccented forms of the mobile class, illustrated in (25), stress is assigned to the second syllable if there is one, otherwise to the only syllable of the monosyllabic form. In both cases, it is accompanied by vowel lengthening and High tone placement, yielding a long falling accent. The oxytone class became mostly non-distinct from the barytone class, due to systematic stress retraction from the word-final syllable (Garde 1976: 261). While the two classes merged with respect to the place of stress, which invariably fell on the stem, the merger was only partial due to different tonal melodies in some case forms (see Becker & Bethin 1983: 71).

It should be noted that only the conservative dialects of the Contemporary Standard Slovene are characterized by pitch accent. In the innovative dialects, stress is not accompanied by a tonal component (see Stankiewicz 1993, Bethin 1998, Greenberg 2006).

1.4 Historical Perspective on Slavic Word Stress

The diachrony of Slavic word stress (or rather, Slavic accent) has been extensively researched, with important findings that shed light on the historical background of the typologically diverse modern Slavic stress systems (e.g. Stang 1957, Illič-Svityč 1963, Garde 1976, Kortlandt 1975, Kiparsky & Halle 1977, Dybo 1981, Bethin 1998, Jasanoff 2017). It is broadly assumed that Common Slavic was a free stress system with a pitch component, and with an organization into accentual classes. This prosodic system, inherited from the Balto-Slavic, has been subject to changes that brought several innovative traits. An important change concerns the original pitch component, which has for the most part been lost. Nowadays, only two Slavic languages, BCS and Slovenian, have stress systems of the pitch accent type (Section 1.3.3). Two of those, the barytone and the mobile classes, were a historical legacy that Common Slavic inherited from the Balto-Slavic era. The oxytone class is a Slavic innovation. It resulted from a rightward accent shift that affected a subclass of accented stems, as described in Illič-Svityč (1963) and Dybo (1981); and referred to in the literature as either Dybo's Law (see Jasanoff 2017: 57, Kortlandt 1975), or Illič-Svityč's Law (Garde 1976: 16, 208, Halle & Kiparsky 1981: 175).

The set of Common Slavic pitch accent melodies included a rising and a falling pitch contour on long vowels, the former known as the acute, and the latter as the circumflex accent; and a falling contour on short vowels (see e.g. Bethin 1998: 122, Jasanoff 2017: 43). The accented syllable in the barytone class bore an acute accent, that is, a rising melody on a long vowel. The word-initial stress in the mobile class was a circumflex, and could fall on either a short or a long vowel. This accentual system was considerably reshaped by subsequent changes. One is the so-called shortening of the acutes, whereby vowels under the acute accent became short, thus eliminating the pitch contrast in long vowels (see Garde 1976: 214–217, Bethin 1998: 127, Kapović 2015: 216–230). The reflexes of this change can be detected in BCS, where the High-toned vowels in the barytone class are generally short (see Zec 1999), but have been partially obscured in Slovenian, due to secondary lengthening of stressed vowels in polysyllabic barytone forms (Kapović 2015: 223). In Czech, syllables corresponding to old acutes are long, indicating that the shortening never took effect (Garde 1976: 217, Kapović 2015: 226); or alternatively, that it was obscured by secondary lengthening (Kortlandt 1978: 84).

Another significant change was brought about by the retraction of accent from high lax vowels, or yers (Stang 1957, Bethin 1998: 129 and references therein). These vowels were elided in certain collocations (that is, when word-final or followed by a vowel other than yer), and if accented, their accent shifted to the immediately preceding syllable. Among relevant instances were nominal endings corresponding to a yer vowel. If a yer suffix was accented, as in the oxytone class, its loss caused accent retraction to the stem-final syllable.

This is illustrated by the Russian genitive plural form *gos'pož* 'lady.GEN.PL' (see Section 1.3.1) whose ending, now null, used to correspond to an accented yer vowel, and whose accent, when it was lost, shifted to the stem. In sum, accent retraction from yers, while considerably affecting the distribution of stress, also disrupted the uniformity of the oxytone class, whose accent was no longer invariably associated with the ending.

In pitch accent languages, where accent markings correspond to High tones, retraction from a yer vowel resulted in the shift of a High tone to the immediately preceding syllable. In the Čakavian, Kajkavian, and Slavonian dialects of BCS (all non-standard), the High tone, when retracted to a long vowel, associated with its second mora, resulting in a rising pitch melody (Lehiste & Ivić 1986: 75–90). This newly created accent is referred to in the literature as the *neoacute* because its pitch contour is comparable to that of the original acute accents, prior to their shortening (Stang 1957, Bethin 1998: 129–135 and references therein; for a different view, see Kapović 2015: 363). Note that in most other BCS idioms, including the Neo-Štokavian, High tone retracted to the first mora of a long vowel, resulting in a falling pitch melody (see Inkelas & Zec 1988, Zec 1999 and references therein).

Slavic free stress prosodic systems were further modified by several stress shifts. In North Kashubian and Slovenian, stress shifted from the word-final syllable, resulting in the loss of the oxytone accentual class (see Sections 1.3.2 and 1.3.3.2). Slovenian underwent another stress shift: word-initial stress in the polysyllabic words of the mobile accentual class advanced to the second syllable. The shifted stress in polysyllables as well as the stress in monosyllables were subject to vowel lengthening, yielding in all cases long vowels with a falling pitch contour, that is, of the circumflex type. Vowel lengthening under stress was in fact a general change in the Slovenian accentual system, as evidenced by the lengthening of stressed vowels in the barytone class, which affected only the polysyllabic forms. Significantly, this case of vowel lengthening resulted in a rising pitch contour, thus obscuring an earlier phonological change (described above), the shortening of the acutes, which eliminated rising contours in long vowels (for details, see Becker & Bethin 1983, Kapović 2015: 223). Best known is the stress shift in BCS, referred to as the Neo-Štokavian stress shift, whereby stress retracted to the syllable immediately preceding the High-toned one, if such syllable was available (Ivić 1985, Lehiste & Ivić 1986, Inkelas & Zec 1988). This stress shift created Rising accents, in addition to the already existent Falling accents, and significantly modified the overall organization of the pitch accent system, including its distribution and its pitch inventory. (See Section 1.3.3 for a synchronic perspective on the BCS and Slovenian pitch accent systems.)

The emergence of fixed stress systems, which is probably a Late Common Slavic innovation, constitutes a major prosodic change that affected West Slavic areas. Its result was a regular distribution of stress and elimination of the accentual classes (Garde 1976, Bethin 1998: 172–175). According to Garde (1976: 294–295), initial stress in West Slavic developed by generalizing the

placement of stress on word-initial syllables in unaccented forms. The outcome of this prosodic change was retained in Slavic languages with fixed initial stress, while Polish underwent a further change which resulted in fixed penultimate stress. Fixed stress in South Slavic is a more recent phenomenon. In particular, Macedonian acquired a system of antepenultimate stress, characterized by a trisyllabic stress window. This stress pattern, according to Koneski (1983: 19), can be viewed as related to the surrounding non-Slavic Balkan languages also characterized by a trisyllabic stress window, and possibly emerging under their influence, within the larger Balkan Sprachbund (see also Bethin 1998: 295, n. 46).

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