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CHAPTER 15

CENTRAL AND EASTERN EUROPE

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15.1 INTRODUCTION

THE languages of Central and Eastern Europe form a typologically divergent collection that includes Baltic (Latvian, Lithuanian), Finno-Ugric (Estonian, Finnish, Hungarian), Slavic (Belarusian, Bulgarian, Czech, Macedonian, Polish, Russian, pluricentric Bosnian-Croatian-Montenegrin-Serbian (BCMS), Slovak, Slovenian, Ukrainian), and Romance (Romanian). Most of them have well-established positions as official state languages, but there are also a good many minority and regional languages varying in their history, status, and number of speakers (e.g. Sorbian, Latgalian, Kashubian, a number of Uralic languages, and groups of Romani dialects).

Slavic and Baltic languages are assumed to have emerged from a hypothetical common ancestor—Proto-Balto-Slavic (also referred to as very late Proto-Indo-European; Comrie and Corbett 1993: 62)—and to have split some 2,000 years ago (Mallory and Adams 2006: 103–104). Slavic broke up into East, West, and South Slavic (Mallory and Adams 2006: 14, 26; Sussex and Cubberley 2006; Clackson 2007: 8, 19). Romanian (Eastern Romance) arose from the Romanization of Dacia in the first centuries AD and the later invasion of Goths (Du Nay 1996). Hungarian is considered to have emerged from the Ugric branch of Proto-Uralic, while Estonian and Finnish belong to the Finnic branch (Abondolo 1998).

Beyond genetic relations, it was migration, language policy, and language contacts that shaped the present linguistic picture of Central and Eastern Europe, including many prosodic aspects. This chapter discusses the word prosody (§15.2) and sentence prosody (§15.3) of the major languages of the region.

15.2 WORD PROSODY

15.2.1 Quantity

Quantity distinctions play an important role in the word prosody in the region and may involve consonants in addition to vowels. In the majority of cases, vowel quantity distinctions are accompanied by a difference in vowel quality (e.g. Kovács 2002; Podlipský et al. 2009; Skarnitzl and Volín 2012; Grigorjevs and Jaroslavienė 2015).

15.2.1.1 *Baltic*

Latvian and Lithuanian have a quantity contrast in vowels, and Latvian has additionally developed contrastive quantity in consonants. Some dialects have lost quantity in unstressed syllables. The durational proportion between short and long vowels, pronounced in isolation, has been shown to be 1:2.1 for both Latvian (Grigorjevs 2008) and Lithuanian (Jaroslavienė 2015). In Lithuanian, short open vowels are lengthened under stress in non-final syllables in the word, except in certain grammatical forms; see (1) below (Girdenis 1997). In Latvian, voiceless intervocalic obstruents are lengthened if preceded by a short stressed vowel, which has been attributed to Finnic influence (Daugavet 2013).

15.2.1.2 *Finno-Ugric*

Estonian has developed a three-way quantity system with short (Q1), long (Q2), and overlong (Q3) degrees, where duration closely interacts with stress and tone (Lehiste 1997). A decisive factor in determining the degree of quantity is the duration ratio of the first (stressed) syllable and the second (unstressed) syllable in a disyllabic foot (Lehiste 1960a), while pitch remains a vital cue for distinguishing the long and overlong quantity degrees (e.g. Lehiste 1975; Danforth and Lehiste 1977; Eek 1980a, 1980b; Lippus 2011). In disyllabic Q1 and Q2 feet, the f0 steps down between the two syllables, while in Q3 feet there is an f0 fall early in the first syllable.

In Finnish, both consonant and vowel durations are contrastive, independent of each other and of word stress. That is, short and long vowels may occur before and after both short and long consonants in both stressed and unstressed syllables (Suomi et al. 2008: 39). As in Estonian, in Finnish the f0 contour may act as a secondary cue for distinguishing phonological quantities (Lehtonen 1970; O'Dell 2003; Järvikivi et al. 2007; Vainio et al. 2010).

Additionally, Hungarian differentiates between short and long vowels and consonants, although the quantity contrast for consonants is less crucial, as various phonotactic constraints make consonant length predictable (Siptár and Törkenczy 2007).

15.2.1.3 *Slavic*

The historically widespread presence of vowel quantity in the area is now absent from Bulgarian, Macedonian, Polish, Ukrainian, Belarusian, and Russian, and it never existed in the only Romance language in the region, Romanian. It is preserved in Czech, Slovak, Slovenian, and pluricentric BCMS. It is found in stressed and unstressed syllables in Czech, Slovak, and BCMS, where long vowels are, however, excluded from a pre-stressed position. In Slovenian, phonological quantity is present only in final stressed syllables, stressed vowels being otherwise long and unstressed short.

Syllabic /l/ occur in West Slavic and syllabic /r/ in South Slavic. Syllabic liquids participate in the quantity contrast in Slovak and BCMS, but in Slovenian the only syllabic liquid /r/ is always long.

Duration ratios between short and long nuclei, relevant to rhythm, vary considerably, in part depending on style (laboratory speech vs. reading) (for Czech see Janota and Jančák 1970 and Palková 1994; for Slovak see Daržágín et al. 2005 and Beňuš and Mády 2010; for BCMS see Lehiste and Ivić 1986: 63 and Smiljanić 2004). The relevance of distinctions between long and short vowels has been called into question in Slovenian (Srebot-Rejec 1988) as well as in the Zagreb dialect of BCMS (Smiljanić 2004).

15.2.2 Word stress

The entire range of word stress patterns—mobile and fixed, left edge and right edge, based on various phonetic properties, interacting with other prosodic domains (van der Hulst 2014b)—is represented in the languages of the region as a result of both genetics and contact factors.

15.2.2.1 *Baltic*

Lithuanian retains the mobile stress of the Balto-Slavic system (Young 1991; Girdenis 1997; Stundžia 2014) and features a tonal contrast in the stressed syllable (Dogil 1999a: 878; see also Revithiadou 1999; Goedemans and van der Hulst 2012: 131). Latvian stress tends to fall on the initial syllable of the main word of the clitic group (e.g. /uz ˈjumta/ 'on the roof') (Kariņš 1996), which is sometimes attributed to Finnic influence (Rinkevičius 2015; cf. Hock 2015), although what may be seen as early stages of the tendency towards initial stress are also found in Lithuanian dialects, where there is no Finnic influence. Secondary stresses in both Latvian and Lithuanian occur at intervals of two or three syllables, but may also depend on syllable weight and morphological structure (Daugavet 2010; Girdenis 2014). A unique feature of Latvian, a weight-insensitive unbounded system (van der Hulst et al. 1999: 463), is the existence of distinctive patterns involving pitch and glottalization on both stressed and unstressed heavy syllables (Seržants 2003). Lithuanian orthography distinguishes three marks traditionally referred to as 'accents', which conflate stress and length. 'Grave' indicates a stressed light syllable, as in the final syllable of the instrumental case for 'wheel' in (1), while 'acute' and 'circumflex' indicate what is traditionally referred to as a tonal contrast on heavy syllables, as in (2a, 2b), which is now lost on long vowels. Phonetically, the role of f0 is secondary compared to the duration ratio between the first and second halves of the heavy rhyme (Dogil and Williams 1999: 278–284). In syllables with the acute accent, the first element of the diphthong and of short-vowel-plus-sonorant combinations is lengthened, while the second is short and presumably non-moraic; the circumflex accent indicates that the second element is lengthened, while the first is short and qualitatively reduced, indicating a possible loss of its mora (Daugavet 2015: 139). The circumflex is traditionally believed to be the accent of the short vowels that are lengthened under stress, as observed in §15.2.1.1, shown in (1). Stress on circumflex syllables may also shift to certain morphemes ('stress mobility').

(1)   stressed-vowel lengthening
       rātas [ˈrɑː.tas] 'wheel', cf. *ratù* [ra.ˈtʊ] INST.SG

(2)   a.   acute   *áukštas* [ˈɑˑʊk.ʃtas] 'high'
                          táiką [ˈtɑˑɪ.kaː] 'aim; apply' PRS.PRTC.NOM.PL

      b.   circumflex   *aūkštas* [ˈɒuˑk.ʃtas] 'storey of a building'
                          taīką [ˈtəiˑ.kaː] 'peace' ACC.SG

15.2.2.2 *Finno-Ugric*

In Estonian, the primary stress in native words always falls on the first syllable, but it may occur elsewhere in recent loans (e.g. *menüü* [meˈnyː] 'menu'). Secondary stresses normally occur on odd-numbered syllables; their placement is determined by the derivational and syllabic structure of the word (Viitso 2003). The foot is maximally trisyllabic; words of more than three syllables may consist of combinations of monosyllabic, disyllabic, and trisyllabic feet (Lehiste 1997). A tetrasyllabic word is generally made up of two disyllabic trochees. The main phonetic correlate of stress in Estonian is vowel duration in interaction with the three-way quantity system: in long (Q2) and overlong (Q3) quantity, the stressed vowels are longer than the unstressed ones, whereas in short quantity (Q1) it is the other way round (Lippus et. al 2014).

Primary stress in Finnish always falls on the first syllable of the word (Iivonen 1998: 315). The placement of secondary stress depends on several factors, including the segmental structure of syllables and the morphology of the word (Karlsson 1983: 150–151; Iivonen 1998: 315; Karvonen 2005). Long words are formed of disyllabic feet. In compound words, the secondary stress falls on the first syllable of the second element, even if both elements are monosyllabic (e.g. *puupää* [ˈpuːˌpæː] 'blockhead'). The main phonetic correlate of stress in Finnish is the duration of segments when they constitute the word's first or second mora (relative to segment durations elsewhere in the first foot) (Suomi and Ylitalo 2004). There is virtually no reduction of vowel quality in unstressed syllables relative to stressed syllables (Iivonen and Harnud 2005: 65).

In Hungarian too, primary stress is fixed to the word-initial syllable but, unless the word carries a pitch accent, is not marked by salient acoustic cues such as vowel quality, duration, or intensity (Fónagy 1958; Szalontai et al. 2016). The existence of secondary stress is disputed (Varga 2002).

15.2.2.3 *Slavic*

All modern West Slavic languages feature weight-insensitive word stress systems (van der Hulst et al. 1999: 436). Word stress is bound in different ways to the left or to the right edge of the word. It falls on the initial syllable in Czech and Slovak but mostly on the penultimate syllable in Polish (Jassem 1962; Steffen-Batóg 2000). In Czech, stress is achieved mainly by means of intensity with no systematic vowel reduction in unstressed conditions (Palková 1994). As an exception to the Polish penultimate syllable stress rule, stress may fall on the antepenultimate syllable in some loanwords (3a) or even on the preantepenultimate one in some verb forms (3b).

(3)   a.   *matematyka* [matɛˈmatɨka] 'mathematics' NOM.SG
      b.   *pojechalibyśmy* [pɔjɛˈxalʲibɨɕmɨ] 'we would go'

The primary stress may also move to a different syllable in order to keep its penultimate position in inflectional forms.

(4) *bałagan* [baˈwagan] 'mess' NOM.SG
     bałaganu [bawaˈganu] 'of mess' GEN.SG

The nature of secondary stress in Polish is still under discussion (Rubach and Booij 1985; Newlin-Łukowicz 2012; Łukaszewicz 2018), with recent studies showing the lack of systematic acoustic evidence for it (Malisz and Żygis 2018).

Czech and Slovak proclitics are integrated into the prosodic word (5a), while Polish word stress preserves its position except in the case of one-syllable pronominals (5b) (Dogil 1999b: 835).

(5) a. Czech/Slovak *do domu*   [ˈdo domu]   '(to, towards) home' GEN.SG.M
     b. Polish   *do mnie*   [ˈdɔ mɲɛ]   'to me' I.GEN.SG.M

In the Eastern South Slavic group, Bulgarian has traditionally been described as having distinctive (non-predictable) dynamic word stress (Stojkov 1966). In Bulgarian, three of the six vowels are subject to stress-related phonological vowel reduction (Pettersson and Wood 1987; Andreeva et al. 2013). Macedonian is the only non-West Slavic language with fixed stress, which is antepenultimate in trisyllabic and longer words (Koneski 1976, 1983; Bethin 1998: 178; van der Hulst et al. 1999: 436). Unlike Bulgarian, Polish, and Slovenian, BCMS apply stress assignment rules to clitic groups (Nespor 1999: 145; Werle 2009). In Macedonian, for example, post-verbal clitics cause a stress shift to the antepenultimate syllable (Rudin et al. 1999: 551).

Among Western South Slavic languages, Serbian and Croatian have a lexical high tone that spreads to the syllable to its left if there is one, with some exceptions specific to the region of Zagreb (e.g. Smiljanić 2004). Stress in Slovenian falls on the first syllable with a strong low tone or, if there is no tone, on the last syllable (van der Hulst 2010b: 455). Slovenian stress is independent of lexical low and high tones, which are obligatory in some dialects but optional in the standard language (Gvozdanović 1999; Jurgec 2007).

East Slavic languages, Russian, Ukrainian, and Belarusian, have unbounded distinctive word stress systems where the stress may occupy any position in a word and differ across inflexional forms, for example as shown in (6).

(6) Russian   *борода*   [bərɐˈda] 'beard' NOM.SG
              бороды   [ˈborədɨ] 'beards' NOM.PL

Russian is often characterized as having free-stress assignment (Danylenko and Vakulenko 1995; Hayes 1995; Lavitskaya 2015). Longer word forms may feature secondary stress, but rules for its location remain a matter of dispute. Duration and intensity, the latter being less significant, are the major acoustic correlates of word stress, while pitch may be important when duration- and intensity-based cues are inconclusive (Eek 1987: 21). Duration and intensity would also appear to be the major correlates of word stress for Ukrainian and Belarusian, but they may differ in terms of their weight (Nikolaeva 1977: 111–113, 127–130; Łukaszewicz and Mołczanow 2018). In Russian, vowels are systematically reduced in unstressed positions (Bethin 2012). In standard Belarusian, the contrast between non-high vowels is neutralized to [a] or a more lax [ɐ] in unstressed syllables, and vowel reduction is categorical (Czekman and Smułkowa 1988).

15.2.2.4 *Romance*

Romanian features weight-sensitive, right-edge word stress, influenced in both verbs and nouns by derivational affixes but not by inflexional ones (Chitoran 1996; Franzen and

Horne 1997). Vowel quality in Romanian does not change significantly across stressed and unstressed tokens. Empirical studies show greater vowel dispersion under stress and limited centralization in unstressed positions (Renwick 2014).

15.3 Sentence prosody

Intonational properties of the languages of the region have been studied to varying degrees employing both the more traditional contour-based methods and target-based descriptions such as the autosegmental-metrical (AM) framework (Table 15.1). Empirical studies of speech rhythm in these languages have contributed to the discussion on interval-based rhythm metrics.

Table 15.1 Available descriptions based on the autosegmental-metrical framework

Language	Prosodic units	Pitch accents	Boundaries	Source
		Finno-Ugric		
Estonian	Intonation phrase	H*, L*, H*+L, ^H*+L, L*+H, H+L*, H+!H*	%, H%	Asu (2004, 2006), Asu and Nolan (2007)
Finnish	Intonation phrase	L+H*, L*+H	L%, H%	Välimaa-Blum (1993)
		Slavic		
Czech	Intonation phrase	H*, L*, H*L, L*H, and a flat contour S*	L%, H%, M%, 0%	Duběda (2011, 2014)
Slovak	Accentual phrase	H*, L*, !H*, L*	-	Rusko et al. (2007), Reichel et al. (2015)
	Intermediate phrase	-	H-, L-, !H-	
	Intonation phrase	-	%H, H%, L%	
Polish	Intermediate phrase (aka Minor phrase)	H*L, L*H, LH*, HL*, LH*L	H-ᵃ, L-	Wagner (2006, 2008)
	Major phrase	-	H%, L%	
Russian	Intonation phrase	H*L, H*H, H*M, L*, L*, L*H, ^HL*, H*M/(H)L*	%H, %M, %L, L%, 0%	Odé (2008)
BCMS	Phonological word	H*+L, L*+H	%L, %H	Godjevac (2000, 2005)
	Intermediate phrase	-	LH-	
	Intonation phrase	-	L%, H%, HL%	
Bulgarian	Intermediate phrase	H*, L*, L+H*, L*+H, H+!H*, H+L*	L-, H-	Andreeva (2007)
	Intonation phrase	-	%H, L%, H%	
		Romance		
Romanian	Intermediate phrase	H*, L*, L+H*, L+<H*, H+L*, L*+H, H*+L	H-, L-, !H-	Jitcă et al. (2015)
	Intonation phrase	-	L%, H%, !H%	

ᵃThe specific symbols used by Wagner (2006, 2008) have been adapted to conform with the ToBI conventions.

15.3.1 Baltic

Intonation in Lithuanian is characterized by a set of seven intonation patterns closely resembling the intonation constructions postulated for Russian by Bryzgunova (1963; see also Kundrotas 2004, 2008, 2010). The patterns are distinguished by the strength of stress and pitch patterns on the stressed syllable of the intonation unit in comparison to other parts of the unit. Certain intonation contours have a neutralizing effect on the lexical pitch accents in Lithuanian (Pakerys 1982; Girdenis 2014).

A similar inventory of intonation units has also been suggested for Latvian (Auziņa 2013). The most detailed study on Latvian intonation (Tseplitis 1974), however, deals with 'intonemes' divided into several groups, conveying sentence category or speaker emotions. One sentence may be characterized by more than one intoneme, as discussed by Steffen-Batóg (1996) for Polish.

15.3.2 Finno-Ugric

An analysis of Estonian intonation within the AM framework is provided by Asu (2004) (see Table 15.1). The most frequent pitch accent in both nuclear and prenuclear position is H*+L, constituting the default pattern of Estonian intonation for both declarative and interrogative utterances. Another frequent pitch accent in both read and colloquial speech is H+L* (Asu 2004; Asu and Nolan 2007). Rising nuclei where a low tone on an accented syllable is followed by a high boundary tone (L* H%) are not uncommon, particularly in colloquial speech (Asu 2006). Despite its flexible word order, which is largely exploited to express information structure (Lindström 2005), intonational prominence in Estonian signals focus, as demonstrated in research on both production (Sahkai et al. 2013) and perception (Salveste 2013). Topics/foci and new/given contrasts are, however, not signalled by accent type (Sahkai et al. 2013).

The basic non-emphatic utterance in Finnish is prosodically realized as a descending f0 curve consisting of rising-falling peaks on the accented syllables of all content words except finite verbs (e.g. Iivonen 1998: 317; Suomi et al. 2008: 114–116). This pattern is common to both statements and questions, and is used for broad and narrow focus and topic (Arnhold and Kyröläinen 2017). Final rises are rare, while in utterance-final position creaky voice frequently occurs (Iivonen 1998: 317; Ogden 2001).

Table 15.1 also shows the AM analysis of Finnish by Välimaa-Blum (1993), which assumes two contrastive pitch accents. According to Arnhold (2014b), however, the rise-falls are realizations of HpLp tones associated with the prosodic phrase, and thus Finnish may be classified as a phrase language following the typology of Féry (2015). Suomi et al. (2008: 122) suggest that (Northern) Finnish accents are best represented as a tritonal sequence LHL without a starred tone since the L is anchored to the onset and the H to the first mora of the (initial) stressed syllable (for a comparison of these annotations, see Arnhold 2015).

Information structure in Finnish may be marked using f0 range, duration, intensity, pauses, and voice quality (Vainio et al. 2010; Arnhold 2016; Arnhold and Kyröläinen 2017) but not with categorically different f0 contours (Arnhold 2014b). Narrow focus is signalled by a larger f0 range (Välimaa-Blum 1993; Vainio and Järvikivi 2007), longer durations

(Mixdorff et al. 2002; Suomi et al. 2003), higher-intensity peaks, and less tense voice quality (Vainio et al. 2010) or increased use of creaky voice and whisper (Arnhold 2016) as compared to broad focus, while given words have lower intensity peaks (Vainio and Järvikivi 2007).

As in the case of the word level, the prosody of higher units in Hungarian is left-headed. Words form accentual phrases that feature a uniform f0 contour shape, typically falling in Hungarian (Beňuš et al. 2014b), and enhancement of the prominence of the following lexical unit (Mády et al. 2016). There are thorough descriptions of prosodic phrasing following the contour-based approach (Fónagy and Magdics 1967; Varga 2002), and attempts at AM analyses have also been made (e.g. Kornai and Kálmán 1988; Varga 2002, 2008, 2010).

Focus in Hungarian is located immediately before the finite verb and bears an eradicating accent (deaccenting post-verbal units) (Kálmán and Nádasdy 1994), typically of H+L* type (Mády 2012; Genzel et al. 2015), as the following finite verb and post-verbal units are deaccented. Topics usually bear H* or L+H* accents. Morphosyntactically unmarked polar questions in Hungarian are characterized by the L* H-L% pattern, whereby the H- phrase accent has a secondary association to the penultimate syllable (Grice et al. 2000). In final-accented IPs, the fall is typically truncated (Ladd 2008b: 182). wh-questions start with a lower pitch than morphosyntactically identical wh-exclamatives (Gyuris and Mády 2014), while polar questions are accompanied by lower sentence-initial pitch than structurally identical declaratives (Mády and Szalontai 2014). They also feature different pitch accents.

15.3.3 Slavic

Czech linguistics has a rich tradition of analysing intonation both descriptively and in relation to information structure (Daneš 1974; Firbas 1992; Hajičová et al. 1998; Hajičová 2012). Daneš (1957), Romportl (1973), and Palková (1994) provide the foundational studies that differentiate three basic types of melodic pattern (commonly referred to as 'melodeme' or 'cadence') for neutral speech: (i) complete/concluding falling (e.g. declaratives, wh-questions, imperatives), (ii) complete/concluding rising (e.g. polar questions), and (iii) incomplete/continuative for syntactically incomplete units. These basic types may be further modified, for example in the placement of sentence stress, interval size of adjacent syllables, or other ways, to convey expressivity and modality of the phrases.

In what is probably the most complete analysis of Czech intonation, Duběda (2014) combines the AM framework with contour-based descriptions from Duběda and Raab (2008) (see Table 15.1).

Slovak, like Czech, offers the potential for unique research in intonational phonology due to the relative flexibility of its word order; the relationship between pitch accents and boundary marking, which falls in between that of Germanic languages (with a rather independent relationship) and that of Hungarian or French (with a tightly linked relationship between the two); and the numerous links to cross-linguistic research on the relation of intonation to information structure in Czech and Hungarian. Earlier descriptions of Slovak intonation follow the Czech tradition, listing typical intonational contours for pragmatic functions, and primarily use the degree of finality or completeness for basic taxonomy (e.g. Kráľ 1988).

For a description of Slovak intonation within an AM framework, see Table 15.1. Using a data-driven, bottom-up, parametric method of intonation stylization, Slovak contours of an intermediate domain identified as the accentual phrase (α) have been shown to have a primarily convex (rising-falling) shape, suggesting that trailing tones might align with unstressed syllables (Reichel et al. 2015).

One of the most comprehensive studies of Polish intonation (Steffen-Batóg 1996) operates within its idiosyncratic framework, offering a hierarchy of prosodic domains involving intonational phrases, intonemes (melodic patterns), tonal units, and intonation units. Studies inspired by the British School propose inventories of seven or eight nuclear melodies (Demenko 1999; Demenko and Jassem 1999; Francuzik et al. 2005; Karpiński 2006; see Table 15.1 for an AM-based representation). As word order in Polish does not determine sentence category, intonation strongly influences its identification and may override lexical cues (e.g. question words). Overall intensity, duration, and pitch are the main acoustic correlates of phrase accent but not necessarily of word stress (Malisz and Wagner 2012; Newlin-Łukowicz 2012).

In earlier work (Bryzgunova 1963/1967), Russian intonation was described in terms of five phonological intonational constructions (IKs) that have several non-phonemic variants. IK-1 is typical of statements; IK-2 of wh-questions; IK-3 of questions without a question word. IK-4 occurs in incomplete questions ('And you?'), while IK-5 is used for exclamations. Intonation may determine utterance category (e.g. question vs. statement). In utterances built of multiple syntagmas, intonation is more probably paralinguistic and reflects mostly feelings and attitudes (Bryzgunova 1963/1967). Each IK has a centre, which is the accented syllable of one of its words. The IK centre may be optionally preceded by a pre-tonic part and followed by a post-tonic part. Other descriptions of Russian intonation include Nikolaeva (1982) and Svetozarova (1982, 1998), based on the pragmatic functions of intonation, and the Institute for Perception Research approach (Odé 1989) and some strictly acoustic-phonetic studies (Kodzasov 1996). Odé (2008) established an AM-based transcription system for Russian intonation (see Table 15.1). A perception experiment by Odé (2005) suggests that the truncation of the final fall in the interrogative tune LH*L does not cause a neutralization of the contrast with declarative H*L, meaning that the truncation is phonetic rather than due to a phonological tone deletion. In Ukrainian, pitch accents are associated with prominent syllables, depending on information structure and the position in an utterance. A rising-falling or falling intonation is typical of the main stressed syllable, which is normally longer than non-stressed ones. Unstressed syllables can become longer in phrase-final positions (Pompino-Marschall et al. 2016). Statements, wh-questions, and exclamations are most often based on falling contours, while polar questions and continuation are formed with rising contours (Bagmut et al. 1985). Narrow focus in Ukranian is signalled by H*L while broad foci are realized with a prenuclear LH* followed by a nuclear HL* accent (Féry et al. 1997). Work on Belarusian intonation is even more limited. Nikolaeva (1977: 101–103) proposes five variants of phrase melody for phrases closing with an accented syllable and four for those where post-accented syllables are present. She also analyses the melody of incomplete syntagmas.

Traditional analyses of BCMS intonation (Lehiste and Ivić 1963, 1986; Browne and McCawley 1965; Nikolić 1970; Gvozdanović 1980; Kostić 1983; Inkelas and Zec 1988; Stevanović 1989) distinguish four lexical pitch accents: short falling, long falling, short

rising, and long rising. Within the AM framework, the BCMS accent distinction is analysed as based on the location of a lexically specified H tone, associated with the tonic syllable in the case of falling accents and with the post-tonic syllable (spreading one syllable to the left) in the case of rising accents (Inkelas and Zec 1988; cf. Zec 1993, 1994). The L tones are assigned to the tone-bearing units post-lexically by default. Godjevac (2000, 2005) provides an alternative analysis that argues for a sparse specification of tones (see Table 15.1). The %L boundary tone occurs in broad-focus utterances and the %H signals narrow contrastive or corrective focus. HL% is used for the vocative chant. The LH- phrase accent is a property of the focused word in polar questions. The phonetic implementation of the lexical pitch accents is determined by an interaction of lexical, pragmatic, and prosodic factors (Inkelas and Zec 1988; Smiljanić 2004).

The traditional model of Slovenian intonation (Jože 1967) proposes different types of contour for statements, commands, and questions, with an inventory of three nuclear tones: fall (cadent), rise (anti-cadent), and level (semi-cadent). On the basis of an extensive corpus of dialogues and O'Connor and Arnold's (1973) model of British English intonation, Šuštaršič (1995) established that Slovenian intonation is by no means restricted to falling, rising, and level nuclear tones. Television news and sport broadcasters were found to use fall-rise pitch movement to introduce new information (the fall) and to point to semantic and syntactic non-finality (the rise). There are seven possible combinations of key and termination establishing cohesive and coherent links between a series of tone units (Komar 1999, 2006, 2008, based on Brazil's 1997 framework).

In Bulgarian, intonation is studied according to different sentence types: question, statement, exclamation, and command (Nikolaeva 1977; Tilkov 1981; Miševa 1991). Following the American structuralist approach, Penčev (1980) postulates 10 basic intonation contours, six neutral (depending on the focus position), and four emphatic (regardless of the focus position). Earlier studies on the relationship between intonation and information structure (Miševa 1991; Miševa and Nikov 1998) demonstrate that themes are deaccented, and rhemes of narrow and broad focus are realized with the same intonational pattern, but the contrast between the prominent and the surrounding syllables is greater in narrow focus than in broad focus.

Andreeva (2007) develops an AM-based analysis of Bulgarian intonation (see Table 15.1). The default nuclear pattern for declaratives is H+!H* L-%, and for YES/NO questions L*+H L-%.[1] L*+H is predominant in prenuclear position. Given information is not necessarily deaccented. Givenness lowers the pitch accent in prenuclear positions and usually cancels it out in a postnuclear position (Avgustinova and Andreeva 1999; Andreeva et al. 2001). The same focus type is not always expressed with the same pitch accent (Andreeva and Oliver 2005; Dimitrova and Jun 2015; Andreeva et al. 2016). Andreeva et al. (2016) showed that speakers employ both local and global prosodic cues in terms of duration, peak alignment, mean f0, f0 change, intensity, and spectral balance to obtain the contrast between different focus conditions.

Apart from a few instrumental studies on intonation in Macedonian (Nikolaeva 1977; Sawicka 1991; Sawicka and Spasov 1997), there are no theoretical contributions using contemporary phonological frameworks.

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[1] According to Grice et al. (2005a), in cases where phrase accents and boundary tones represent the same pitch level, only one tone is transcribed: L-% instead of L-L%.

15.3.4 Romance

For an AM-based system for Romanian see Table 15.1. The most frequently occurring pitch accent is H*, which is aligned with the end of the stressed syllable. L+<H* is only used in prenuclear position. The 'neutral' nuclear configuration for statements is H+L* L%. In comparison with broad focus, narrow focus is signalled by expanded pitch range on the word in focus and by compressing the durations of the adjacent words (Manolescu et al. 2009). Nuclear stress is on the verb in YES/NO questions and on the WH-word (followed by a postfocal accent in long sentences) in WH-questions, a pattern typical also of Hungarian, Greek, and the Slavic languages (Ladd 1996; Apopeiu et al. 2006). Regarding the prosodic marking of information status, Romanian (like many other Romance languages; see chapters 16 and 17) resists deaccentuation (Ladd 1996; Swerts 2007).

Empirically established rhythmic properties have been reported for Lithuanian and Latvian (Stockmal et al. 2005; Kazlauskienė 2015), Estonian (Asu and Nolan 2006; Nolan and Asu 2009), Finnish (Leino 1986: 154; Wiik 1989; O'Dell et al. 2008), Hungarian (White et al. 2012), Bulgarian (Dimitrova 1997; Barry et al. 2009), Czech and Slovak (Dankovičová and Dellwo 2007; Beňuš and Šimko 2012), Polish (Malisz 2013; Klessa 2016; Wagner et al. 2016; Wagner 2017), Russian (Zlatoustova 1975; Ordin and Setter 2008a, 2008b), Ukrainian (Ishchenko 2015), Serbian (Rakić 2010; Bjelica 2012; Marković and Milićev 2017), Croatian (Josipović 1994), and Romanian (Chitoran 1996).

15.4 Conclusion

The prosodic systems of Central and Eastern Europe offer an exciting, promising, and multi-faceted area for extending our understanding of the role of prosody in the linguistic system. However, it was only possible in this chapter to provide a cursory picture of the prosody of the area's main languages. Multiple issues and problems within prosodic systems and their interfaces with the rest of the linguistic system could not be discussed. Among them, there are the relationships between quantity, intensity, and pitch, which are interrelated in complex ways (e.g. quantity and f0 in Finnish and Estonian or lexical tones in Baltic languages, and cross-linguistic differences in their impact in cueing word stress patterns). More light also needs to be shed on coding and decoding of the prosodic prominence and its acoustic-phonetic correlates, as recent research still reveals facts incoherent with traditional views (e.g. the secondary stress in Polish). Another issue is the interface of prosody with syntax and information structure, with important steps already made for Czech, Hungarian, and Estonian. The richness and complexity of the relationship between prosody and surface word order, which is free in some of the area's languages, offers a unique testbed for hypotheses and models regarding the cognitive aspects of meaning. A different type of issue for future research concerns the prosodic aspects of language variation within the Slavic dialect continuum as well as with contiguous non-Slavic languages.