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ancestor must also have had it; thus, non-tonal languages must result from loss of tonal contrast over time, and this is argued to explain the large number of homophones found in Semitic. The competing view proposes tonogeneses of various kinds: due to laryngeal effects in Chadic, where tone more commonly has lexical function, or evolving from a predictable stress system coupled with segmental neutralization, and/or due to contact with robustly tonal languages from other language families.

It is beyond the scope of this chapter to resolve this debate, but our survey confirms that the tonal versus non-tonal divide does not equate to a simple 'stress versus tone' dichotomy. Among tonal languages, there is wide variation in the number, distribution, and function of tonal contrasts, and it is now becoming clear that non-tonal languages do not all have stress. The non-binary nature of the stress versus tone distinction is well established in theoretical literature on tone (Hyman 2006) and is matched by more recent analyses of non-tonal but also non-stress languages as 'edge-marking' languages, in which tonal events associate with the edges of prosodic domains (only), within the autosegmental-metrical framework (Jun 2014b).

Our ability to document prosodic variation, with respect to prosodic phrasing, melodic structure, and prosodic expression of meaning, is limited by the availability of descriptions of these aspects of the languages under consideration. This is sometimes due to a general lack of description of a language, but, more commonly, to a lack of description of post-lexical prosody in those descriptions that do exist (with notable exceptions). Going before us, Frajzyngier (2012: 606) also notes, in a discussion of parataxis (marking of the relationship between clauses in complex sentences), that prosodic characteristics are 'seldom indicated in grammars', and our survey shows that this is still the norm. Some of these gaps will be artefacts of methodological choices and priorities, but others may be due to the practical difficulties, perceived or real, involved in the performance of post-lexical prosodic analysis. For example, Watson and Wilson (2017) highlight the importance of information about intonation patterns in contexts that are syntactically ambiguous in written transcription, but also note the 'cumbersome' nature of prosodic annotation, and thus argue for collection and sharing of audio (and audiovisual) recordings of less-described languages. There is so much scope for further research on the prosodic systems of North Africa and the Middle East, and particularly on post-lexical prosody, that the work of overcoming these obstacles is merited.

CHAPTER 14

SOUTH WEST AND CENTRAL ASIA

ANASTASIA KARLSSON, GÜLİZ GÜNEŞ, HAMED RAHMANI, AND SUN-AH JUN

14.1 INTRODUCTION

THIS chapter offers a survey of prosodic features of languages across Southwestern, Central, and Northern Asia. In this rather large area we find a variety of language families. In §14.2, our focus is on Turkish, the standard variant spoken in Turkey (Turkic), while §14.3 deals with Halkh (Khalkha) Mongolian, the standard variant spoken in Mongolia (Mongolic language family). In §14.4, the standard variant of Persian spoken in Iran (Indo-European) is treated. §14.5 deals with standard Georgian (Kartvelian). The Turkic and Mongolic groups are usually regarded as two of the three branches of the proposed Altaic language superfamily, the third being the Tungusic group. Georgian belongs to the South Caucasian language group. The term 'Caucasian' applies to the four linguistic families indigenous to the Caucasus: Kartvelian, Abkhaz-Adyghe, Daghestanian, and Nakh (Kodzasov 1999). Owing to the considerable lack of descriptions of the prosody of languages spoken in the Caucasus and Central Asia, Georgian is the only language in this group that can be given more than a cursory treatment here.

14.2 TURKIC

The majority of Turkic languages lack contrastive lexical stress, and its status and realization in many of them are still debated, something that is characteristic of the Altaic language group generally. According to Özçelik (2014), most Turkic languages have finally prominent words, but the nature and function of this final prominence varies across them. For example, Kazakh has iambic feet, while Uyghur has footless intonational prominence, marked tonally by principles similar to those applying in Turkish. A counterexample to this general right-edged prominence is Chuvash [Turkic; western part of the Russian Federation], which marks words tonally on their left edge (Dobrovolsky 1999).

This book is a collection of essays on the prosody of various languages, with a focus on the analysis of word stress and vowel harmony. The book is divided into four main sections: 'Stress and intonation', 'Vowel harmony and consonant clusters', 'Lexical prosody and morphological structure', and 'Prosodic structure and phonological theory'. The book is intended for researchers in linguistics, particularly those interested in the phonology and prosody of non-Indo-European languages.

14.2.1 Lexical prosody in Turkish: stress

Turkish has long been analysed as a stress-accent language (Lees 1961; Kaisse 1985; Barker 1989; Inkelas and Orgun 1998; Inkelas 1999; Kabak and Vogel 2001; İpek and Jun 2013; İpek 2015; Kabak 2016). In this tradition, word stress is assigned to a word-final syllable (1) with some exceptions, such as place names (2c, 2d), some loanwords, some exceptionally stressed roots, or pre-stressing suffixes (e.g. Sezer 1983; Inkelas and Orgun 1998; Kabak and Vogel 2001). More recently, Turkish has been analysed as a lexical pitch accent language (Levi 2005; Kamali 2011), whereby words with exceptional stress, as in (2c, 2d), are lexically accented with a H*L pitch accent and words with the regular word-final stress, as in (1) and (2b, 2c), are lexically unaccented. Unaccented words acquire a H tone post-lexically, marking the right edge of the phonological word (ω) (Güneş 2015), providing a reliable cue for word segmentation in speech processing (Van Ommen 2016). An event-related potential study investigating the processing of Turkish stress by Domahs et al. (2013) demonstrates that native speakers of Turkish process these two types of stress/accent differently. Turkish participants showed the 'stress deafness' effect (Dupoux et al. 1997; Peperkamp and Dupoux 2002) only for the regular finally stressed or lexically unaccented words, and treated violations of stress/accent location as a lexical violation only for the exceptionally stressed or accented words.

(1) Final word 'stressed'/'accentless' words in Turkish

- a. *tanı* 'know'
- b. *tanı-dık* 'acquaintance'
- c. *tanı-dığ-ım* 'my acquaintance'

In lexically accented words, H*L occurs on roots and creates a lexical contrast between segmentally identical strings, as shown for *bebek* in (2a) and (2c). The word accent remains on the root as the morphosyntactic word (and ω) is extended, as seen in (2c) and (2d).

(2) Final stress (a, b), and exceptional lexical stress plus H*L accent (c, d) in Turkish

- a. *bebék* 'baby'
- b. *bebek-ler-ım* 'my babies'
- c. *Bébek* 'Bebek' (the name of a neighbourhood in Istanbul)
- d. *Bébek-li-ler* 'Those who are from Bebek.'

The Turkish ω -final position is thus assigned a demarcative prominence, a lexical stress, or a post-lexically tone-bearing syllable, depending on the analysis.

14.2.2 Lexical prosody: vowel harmony in Turkish

In Altaic languages, vowel harmony interacts with prosodic constituent structure. Vowel harmony may involve backness, labiality (rounding), vowel height, and pharyngealization (van der Hulst and van de Weijer 1995). Many Turkic languages have backness and labial harmony, while pharyngeal and labial harmony occurs in Mongolian. In Turkish, front vowels must follow front vowels and back vowels must follow back vowels (3) (Clements and Sezer 1982; Charette and Göksel 1996) due to the backness harmony. In rounding

harmony, non-initial vowels in a word can be round only if preceded by another rounded vowel (4) (cf. Göksel and Kerslake 2005). Like Mongolian, Turkish is agglutinative and suffixes harmonize with the root.

(3) a. *araba-lar-da* 'in the cars'
b. *kedi-ler-de* 'in the cats'

(4) a. *üz-gün-üz* 'we are sad'
b. *kız-gın-ız* 'we are angry'

The domain of Turkish vowel harmony is not always the ω (Kornfilt 1996). A single harmony domain may contain two ω 's (Göksel 2010), while multiple vowel harmonic domains may be parsed as a single ω (Güneş 2015). Turkish compounds, regardless of whether they are parsed as single ω 's (5a) or two ω 's (5b), are non-harmonic. Loanwords (5c) and certain suffixes, such as *gen* in (5d), are also non-harmonic.

(5) a. *(çek-yát)_ω* 'pullover sofa'
b. *(keç)_ω(boynuzú)_ω* 'carob'
c. *kitap* 'book'
d. *altı-gen* 'hexagon'

14.2.3 Post-lexical prosody in Turkish

Unless pragmatically marked tunes dictate otherwise, sentence-internal prosodic constituency in Turkish can be traced to syntactic branching and relations between syntactic constituents.

Root clauses are parsed as intonational phrases (i) (Kan 2009; Güneş 2015). i's contain (a number of) phonological phrases (φ), which correspond to syntactic phrases (Kamali 2011) and contain maximally two ω 's (Güneş 2015). The prosodic hierarchy proposed in the intonational model of İpek and Jun (2013) and İpek (2015) is similar to this, but their intermediate phrase (ip), which corresponds to φ , can contain more than two prosodic words.

Four major cues are employed to distinguish between intonational phrases (i) and phonological phrases (φ) in Turkish. These are (i) boundary tones (H- for the right edges of non-final φ 's, and H% or L% for the right edges of i's), (ii) pauses (shorter across φ 's and longer across i's), (iii) head prominence, and (iv) final lengthening (shorter final syllable before φ boundaries and longer final syllable before i boundaries). Figure 14.1 presents the prosodic phrasing of (6) with one i and three φ 's.

(6) *[(Nevriye)_ω_φ ((araba-da)_ω_φ ((yağmurluğ-u-nu)_ω_φ (ar-iyor.)_ω_φ)]*,
Nevriye car-LOC raincoat-3POSS-ACC search-PROG
'Nevriye is looking for her raincoat in the car.' (Güneş 2015: 110)

In Turkish, i's are right-prominent and φ 's are left-prominent (Kabak and Vogel 2001; Kan 2009). Prominence is marked with variation in pitch register and prosodic phrasing across the head and non-head part of φ 's. In φ 's with two ω 's, the head- ω (i.e. the leftmost ω in a φ) exhibits a higher f0 register and a final H, which is accompanied by a rise in non-final φ 's and a plateau in final φ 's (7). The head- ω of the final φ is also the head of its i (i.e. the nucleus), yet its register is not higher than the heads of prenuclear φ 's. Any item that follows the nucleus receives low-level f0 and is prosodically integrated with the non-head

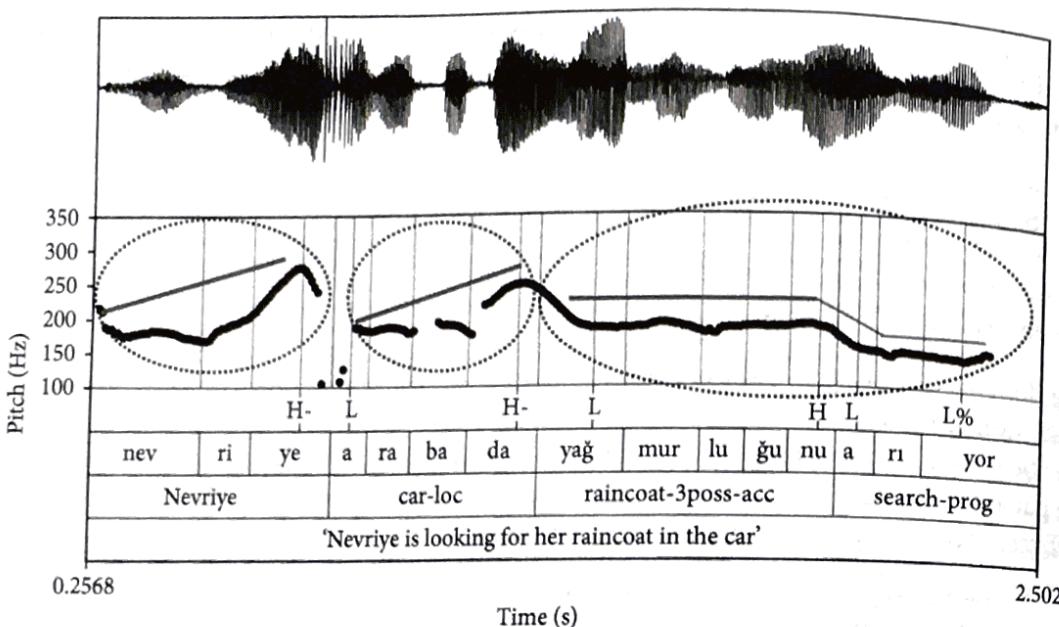


FIGURE 14.1 Multiple φ's in all-new context and with canonical SOV order.

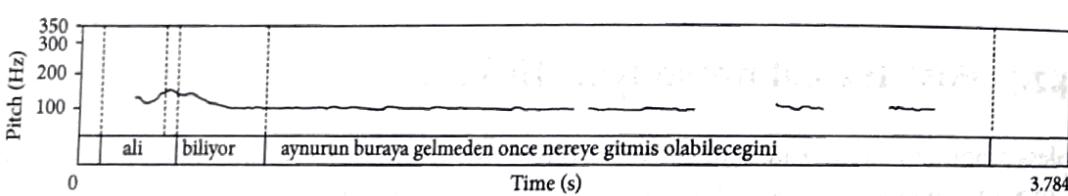
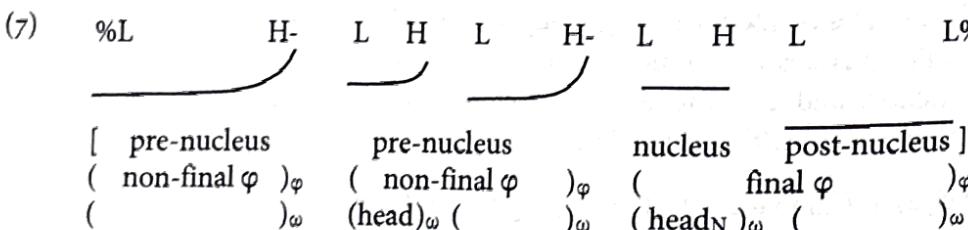
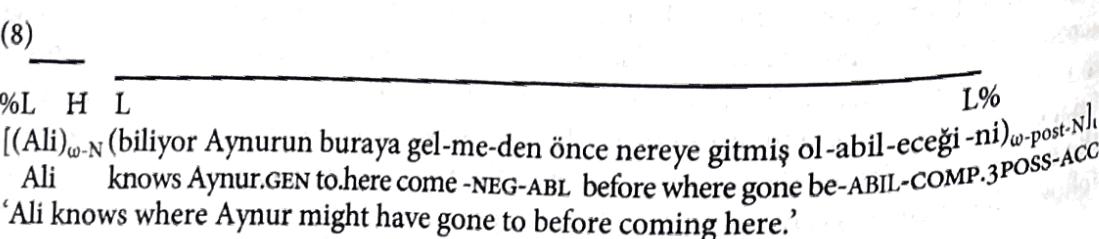


FIGURE 14.2 Pitch track of *Ali biliyor Aynurun buraya gelmeden önce nereye gitmiş olabileceğini* 'Ali knows where Aynur might have gone to before coming here', illustrating multiple morphosyntactic words as a single ω, with focus for the subject *Ali* (Özge and Bozşahin 2010: 148).

part of the final φ. A schematic illustration of the prosodic and tonal structure of a declarative with unaccented words is given in (7).



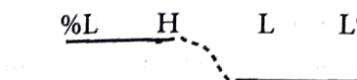
Regardless of its morphological and syntactic complexity, the postnuclear ω bears low levelled, flat f0 (Özge and Bozşahin 2010), as illustrated in (8) and Figure 14.2.



14.2.4 Focus in Turkish

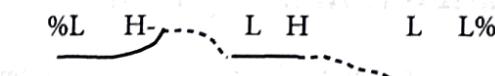
In Turkish, prosodic phrasing is the main focus alignment strategy. In single focus contexts, focus is aligned as the head of an φ, the nucleus (9). Word order variation can also be indirectly related to focus alignment, in which case the focused constituent is realized in a *default nuclear position* (i.e. the immediately pre-verbal area) (10) (cf. Kennelly 1999; İşsever 2003; İpek 2011; Gürer 2015; but cf. İşsever 2006).

(9) (O_{FOC}SV), focused object, not immediately pre-verbal but the nucleus (adapted from Özge and Bozşahin 2010: 139)



[((KAPİYI)_{ω-N/FOC} (Ali *kirdı*)_{ω-Post-N})FINAL-φ]_i
door.ACC Ali broke
'Ali broke the DOOR_{FOC}'

(10) (O)(S_{FOC}V), focused subject immediately pre-verbal and the nucleus



[(Kapıyi)_{φ-Pre-N} ((ALİ)_{ω-N/FOC} (*kirdı*)_{ω-Post-N})FINAL-φ]_i
door.ACC Ali broke
'ALİ_{FOC} broke the door.'

In addition to prosodic phrasing and word order, focus in Turkish is marked by f0. Unlike intonation languages where the pitch range of a focused word is expanded compared to that of the pre-focus words, the pitch range of a focused word in Turkish is reduced in comparison to pre-focus words. The syllable before the nuclear word has a higher f0 than an equivalent syllable at a default phrase boundary. The pitch range of post-focus words is, however, substantially compressed (İpek and Jun 2013; İpek 2015), see Figure 14.2. When words with non-final lexical accent are focused, right after the accented syllable, a steep f0 fall is observed (Kamali 2011). In such cases, the non-final lexical pitch accent marks the prosodic head of the final φ, and hence is associated with focus if this head is aligned with a focused item. If words with non-final lexical accent occur in the post-verbal, postnuclear area, they get deaccented and bear low-level f0 (Güneş 2015; İpek 2015).

14.3 MONGOLIAN

14.3.1 Lexical prosody in Mongolic: stress

There is no consensus among linguists on the status and realization of lexical stress in Mongolian and Mongolic in general (for an overview see Svantesson et al. 2005). Native speakers also disagree about the placement of lexical stress in judgement tasks and in some

cases do not perceive any stress at all (Gerasimovič 1970 for Halk Mongolian; Harnud 2003 for Chakhar [Standard Mongolian; China]). Analysis by Karlsson (2005) suggests that Mongolian has no lexical stress, and three potential correlates of stress (vowel quality, vowel duration, and tone) do not correlate in marking any single syllable as stressed. Moreover, vowels, even phonemically long, can be completely deleted in all positions in casual speech. Since the initial syllable governs vowel harmony in Mongolian, this position is often ascribed stress. However, this vowel is often elided in casual speech. Mongolian speakers often devoice and completely delete all vowels in a word, which leads to chains of words with very little or no voiced material. Neither does vowel epenthesis always occur as predicted by syllabification rules, as when underlying /oʂg̡-tʃ/ 'kick-CONVERB', which is pronounced [oʂg̡tʃ] in formal speech, is pronounced [ʂtʃ] in casual speech, with failed epenthesis and deletion of the phonemic vowel (Karlsson and Svantesson 2016). Extreme reduction is frequent. For example, /gaxai/ is reduced to [qχ] in /xar gaxai xəjr-in/ *xap gaxai xər̥yin* 'black pig two-GEN' realized as [xarq.χəj.rin], with syllabification taking place across word boundaries.

14.3.2 Lexical prosody: vowel harmony in Mongolian

Pharyngeal harmony prevents pharyngeal /ʊ a ɔ/ and non-pharyngeal /u e o/ from co-occurring in the same word, with transparent /i/ occurring in either set. Harmony spreads from left to right in a morphological domain and the root word thus determines the vowel in affixes in this agglutinative language, as in the reflexive suffix -e, (e.g. *ug-e* 'word', *xoʐ-o* 'foot', *am-a* 'mouth', *moor-a* 'cat', and *ər-ə* 'place'). Non-initial /i/ is ignored by vowel harmony (e.g. the reflexive suffix in *moor-a* 'cat' does not change in *moor-ig-a* 'cat-ACC-RFL'). Rounding harmony applies in the same domain, with /i/ again being transparent and high back /ʊ u/ being opaque. The opaque vowels block rounding harmony, as in *ər-əd* 'enter-PERF' (cf. *ər-əʐ-ad* 'enter- CAUS-PERF') (Svantesson et al. 2005: 54).

14.3.3 Post-lexical prosody in Mongolian

In read speech, major-class words have rising pitch, due to L_a being associated with the first mora and H_a with the second, as a result of which /moor.ra/ 'cat' has a pitch rise in its first syllable and /xo.ʐo/ 'foot' a pitch rise over its two syllables. The assignment of $L_a H_a$ to the left edge of the accentual phrase (α) is post-lexical, as shown by its sensitivity to post-lexical syllabification. For instance, /nʊtʰgtʰai/ 'homeland-COM' is either trisyllabic due to schwa epenthesis, [nʊ.tʰəg.tʰai], or disyllabic, [nʊtʰx.tʰai], with H_a appearing on [tʰəg] in the first and on [tʰai] in the second case. The domain of syllabification has been described as the ω and the domain of $L_a H_a$ assignment as α . Post-positions always share the same ω (or α) as their left-edge host. Many word combinations that function as compounds (often written as two words) are realized as one α , such as the compound *gaʐtʰiʂəg* 'train' (literally: 'fire vehicle'), pronounced with one $L_a H_a$ in [gaʐtʰiʂəg]. In spontaneous speech, vowels are often deleted and words are syllabified across a word boundary. Several lexical words can thus be clustered

as one ω and marked as α , which will lead to a discrepancy between the morphological domain of vowel harmony and the phonological domain for prosodic parsing.

$L_a H_a$ mark the left edge of an accentual phrase (α) and by implication an ip in Mongolian. The ip corresponds to the syntactic phrase and often contains more than one α . As a consequence of α -phrasing, almost every major-class word in neutral declaratives in read speech begins with a lowering of f_0 towards the phrase-initial L_a , as illustrated in Figure 14.3. The H_a tones in a series of $L_a H_a$ boundary rises show a downtrend across the ip that is reset at the beginning of every ip except the last, which corresponds to a verb phrase and is pronounced with distinctly lower pitch on the last word. Figure 14.4 shows the downtrend on the second syllable of *marqas* and the reset on the second syllable of /gɔlʒig/. Tonal marking with a right-edge ip boundary tone H - occurs optionally in subordination, coordination, and enumeration.

Clauses are parsed as intonational phrases (ι), which come with a right-edge $L\%$ or $H\%$ and contain one or more ip's. However, in spontaneous speech, units larger than root clauses can be marked as ι , something that is somehow connected to discourse structure. Moreover, $L\%$ is rare in spontaneous speech, where final rises due to $H\%$ are frequent.

The intonation of other Mongolic languages has been described by Indjieva (2009) in her comprehensive account of prosody of the Houg Sar and Bain Hol varieties of Oirat, a Western Mongolic language spoken in the Xinjiang region of China. Oirat lacks lexical

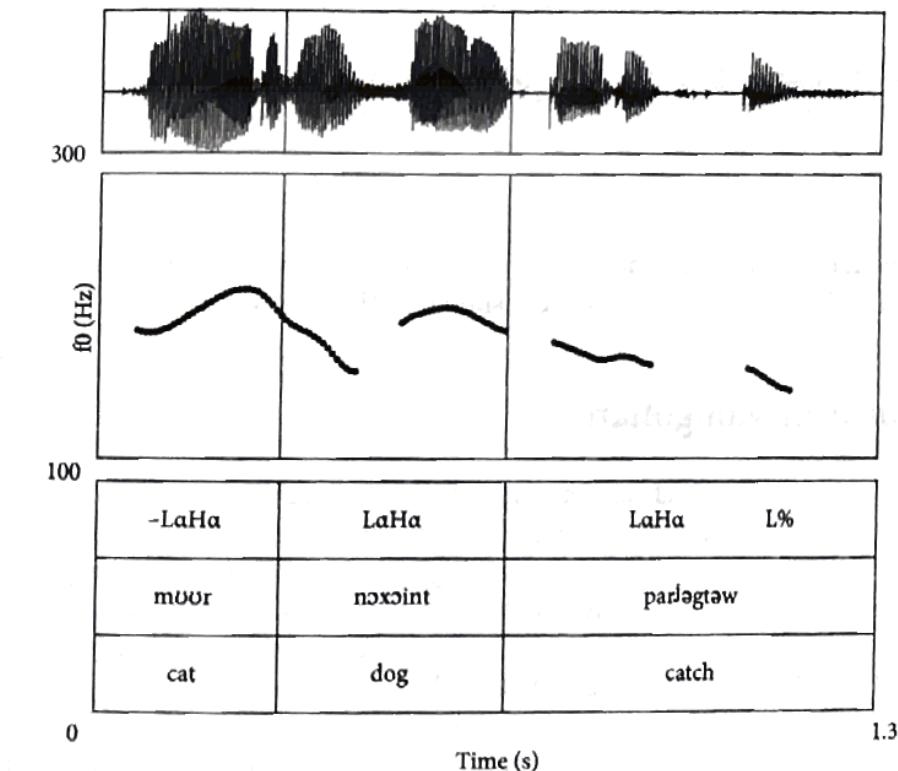


FIGURE 14.3 Pitch track showing the division into α 's of all-new [moor][noxoint][parəgtəw]ᵢₚ. 'A cat was caught by a dog', where underlined bold symbols correspond to the second mora in an α . -LH marks the beginning of the ip (Karlsson 2014: 194).

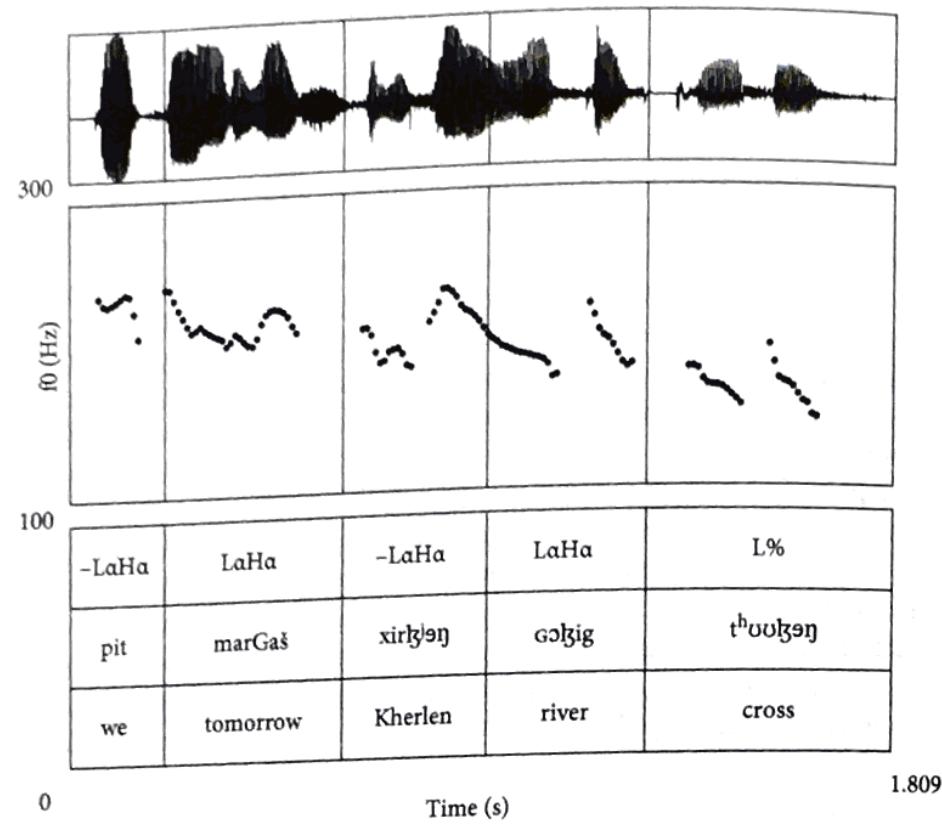


FIGURE 14.4 Pitch track of [[pit]_a [margas]_a_{ip} [[xirk̥əŋ]_a [gək̥ig]_a_{ip} [tʰuužəŋ]_a_{ip}], 'We will cross the Kherlen river tomorrow' (Karlsson 2014: 196). -LH marks the beginning of an ip.

stress and nuclear pitch accents, and instead marks edges of prosodic units, the α , with its initial $L_a H_a$, and the ι . These features are very similar to those of Mongolian.

14.3.4 Focus in Mongolian

Mongolian is strictly a verb-final subject-object-verb (SOV) language. The pre-verbal position is sometimes claimed to be a focus position, but this has not been confirmed (Karlsson 2005). Focus is marked by strengthening the initial boundary of the ip that contains the focused word(s), resulting in an enhanced pitch reset. A similar pattern is found in Oirat (Indjieva 2009). Dephrasing does not occur except for a special marking of focal constituents by pitch lowering. This is only found for the ι -final position in read speech. Even in such cases, α -boundaries are often traceable. In spontaneous speech, focus is most often marked by H_{foc} at the end of the focused phrase(s), as illustrated in Figure 14.5. Its scaling brings more evidence that it correlates with the new/given dichotomy: it is higher when new information coincides with the second part of the ι . To formally show the leftward spreading of H_{foc} to the beginning of the ip that contains the focus constituent, an arrow is used: $\leftarrow H_{foc}$.

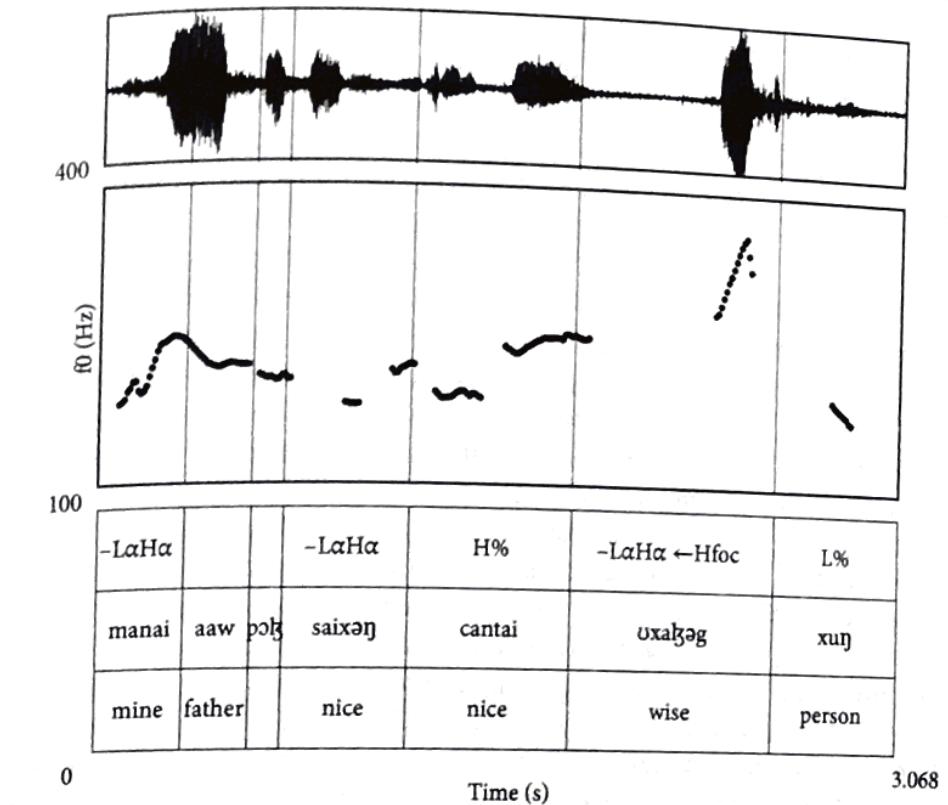


FIGURE 14.5 Pitch track and speech waveform illustrating final $\leftarrow H_{foc}$ marking focus on all the preceding constituents. The utterance is [[[manai aaw pož]_a_{ip} [[[saixəŋtsantai]_a_{ip} [[uxalžəg]_a_{ip} $\leftarrow H_{foc}$ [xunj]_a_{ip}], 'My father is nice and wise'.

14.4 PERSIAN

14.4.1 Lexical prosody in Persian

Persian word prominence has been described as having stress in nouns, adjectives, and most adverbs. Right-edge clitics, such as the indefinite [=i] and the possessive markers, are excluded from stress assignment, whereas verbs with inflectional prefixes take stress on the leftmost prefix, as illustrated in (11) (Ferguson 1957; Lazard 1992).

- (11) a. pedár
father
- b. pedár=am
father=1SG
'my father'
- c. mí-goft
DUR-said.3SG
's/he would say'

This
of cu
pros
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brea
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While some authors have attempted to show that Persian 'stress' is exclusively governed by prosodic phrasing (e.g. Kahnemuyipour 2003), recent research suggests that it is in fact a post-lexical tone that is assigned on the basis of the morphosyntactic label, independently of prosodic phrasing (Rahmani et al. 2015, 2018; Rahmani 2018, 2019). That analysis is in line with three recent experimental findings. First, the syllabic prominence at issue is created only by f_0 , suggesting that it is a tone or accent, rather than a metrical entity (Abolhasanizadeh et al. 2012; but see Sadeghi 2017 for a different view). Second, it is not obligatory on the surface in that it disappears in some sentential contexts (Rahmani et al. 2018), thus escaping a hallmark feature of stress as defined by Hyman (2006). Third, despite the high functional load of 'stress' location, for instance due to homophony between derivational suffixes and clitics ([xubi] 'goodness' vs. [xúbi] 'good.2SG'), Persian listeners are 'stress deaf' in the sense of Dupoux et al. (2001), indicating that there is no word-prosodic information in the lexicon (Rahmani et al. 2015).

Phonologically, the Persian accent consists of a H tone. The syntactic motivation behind the location of accent is based on several observations, two of which are given here. First, a given word may receive accent on different syllables depending on the syntactic environment it appears in or the grammatical function it performs. Thus, nouns are accented on the initial syllable when appearing as vocatives as opposed to their default final accent (cf. [pédar] 'father!' vs. [pedár] 'father') (Ferguson 1957). Similarly, the position of accent on various grammatical words is sensitive to sentential polarity. Examples are the intensifier/xejli/ 'very' and the compound demonstrative /hamin/ 'this same one', which are accented on the first syllable in positive sentences (cf. [xéjli], [hámin]) but take a final accent in negative sentences (cf. [xejlí], [hamín]). Second, whenever an expression (including phrases or clauses) is used in such a way as though the entire group were syntactically a single noun, it follows the accentual pattern of nouns—that is, it is assigned one accent on its final syllable irrespective of its default phrasal accent pattern (Vahidian-Kamyar 2001). (12a) illustrates a clause in its default accentuation. As shown in (12b), when the same form is used as a head noun in a possessive construction to refer to a movie title, it is reanalysed as a noun by the accent rule—that is, the entire unit is assigned one accent on its final syllable.

(12) a. [bód mó=rø xphád bord]
wind 1SG=OBJ want.3SG carry
'The wind will carry us.'
b. [bód mó=rø xphád bórd]=e kírostamí
wind 1SG=OBJ want.3SG carry=EZ Kiarostami
'Kiarostami's *The wind will carry us*'

Independently of their accentual pattern, Persian words have iambic feet, which serve as the domain for assimilation processes such as vowel harmony (Rahmani 2019). Mid vowels assimilate to the following high vowels, if only the two syllables are grouped into a single foot. Thus, while [o] normally raises to [u] in [ho.lu] 'peach', which is a disyllabic iamb, it cannot do so in [hol.gum] 'pharynx', which contains two monosyllabic iambs.

In Ossetian [Indo-Iranian; Central Caucasus], accent becomes actualized only as a function of prosodic phrasing. Words do not have an individual stress but are organized in groups by a tonal accent (Abaev 1949).

14.4.2 Post-lexical prosody in Persian

The Persian prosodic hierarchy includes the φ and ι , in addition to the ω . ω is the domain of obligatory syllabification (Hosseini 2014). It roughly corresponds to a (simple or derived) stem plus inflectional affixes and clitics. φ and ι may be characterized by different degrees of pause length and pre-boundary lengthening (Mahjani 2003).

Persian has a small tonal inventory. In addition to the syntactically driven accent H, there are two ι -final boundary tones, L% and H% (see §14.6). Some models of Persian intonation have assumed 'focus accent' and 'phrase accent' in the tonal inventory of the language (e.g. Scarborough 2007), for which there would appear to be insufficient supporting evidence (Rahmani et al. 2018).

The two prosodic segmentations for each of the members of the minimal pair (13a, 13b) show the irrelevance of prosodic constituency to the distribution of accent. Their pitch tracks are presented in Figure 14.6.

(13) a. bód mó=rø xphád bórd
wind 1SG=OBJ want.3SG carry
'The wind will carry us' (naming expression)
[((bód)_ω (mó=rø)_ω)_φ ((xphád)_ω (bórd)_ω)_φ],
[((bód)_ω)_φ ((mó=rø)_ω (xphád)_ω (bórd)_ω)_φ],
b. bód mó=rø xphád bord
wind 1SG=OBJ want.3 SG carry
'The wind will carry us.' (sentential expression)
[((bód)_ω (mó=rø)_ω)_φ ((xphád)_ω (bord)_ω)_φ],
[((bód)_ω)_φ ((mó=rø)_ω (xphád)_ω (bord)_ω)_φ],

The intonation systems of other Iranian languages are not well documented, an exception being Kurdish (Northern Kurmanji) (Hasan 2016).

14.4.3 Focus in Persian

Persian has SOV as the unmarked word order with all possible combinations for pragmatic purposes (Sadat-Tehrani 2007). It is still unclear whether word order variations cue focus, intonation being the most reliable cue. Under broad focus, post-verbal words are obligatorily unaccented and all other words obligatorily accented. Thus, while in an SAOV utterance every word is accented, in VSAO only an accent on the verb remains. Under narrow focus, post-focal words are deaccented, irrespective of the position of the verb. Thus, $S_{\text{foc}} \text{AOV}$ will have one accent, on S_{foc} . The prosodic expression of focus is syntactically restricted. While in sentences with the unmarked SOV word order, any word can be prosodically marked for focus, in sentences with pragmatically marked word order, post-verbal words cannot be focused if the unmarked position of these words is pre-verbal. Some clause types may deviate slightly from these patterns, such as those with nonspecific objects, manner adverbials, or clauses with motion verbs, which are ignored here for lack of space. See Sadat-Tehrani (2007) and Kahnemuyipour (2009) for more information.

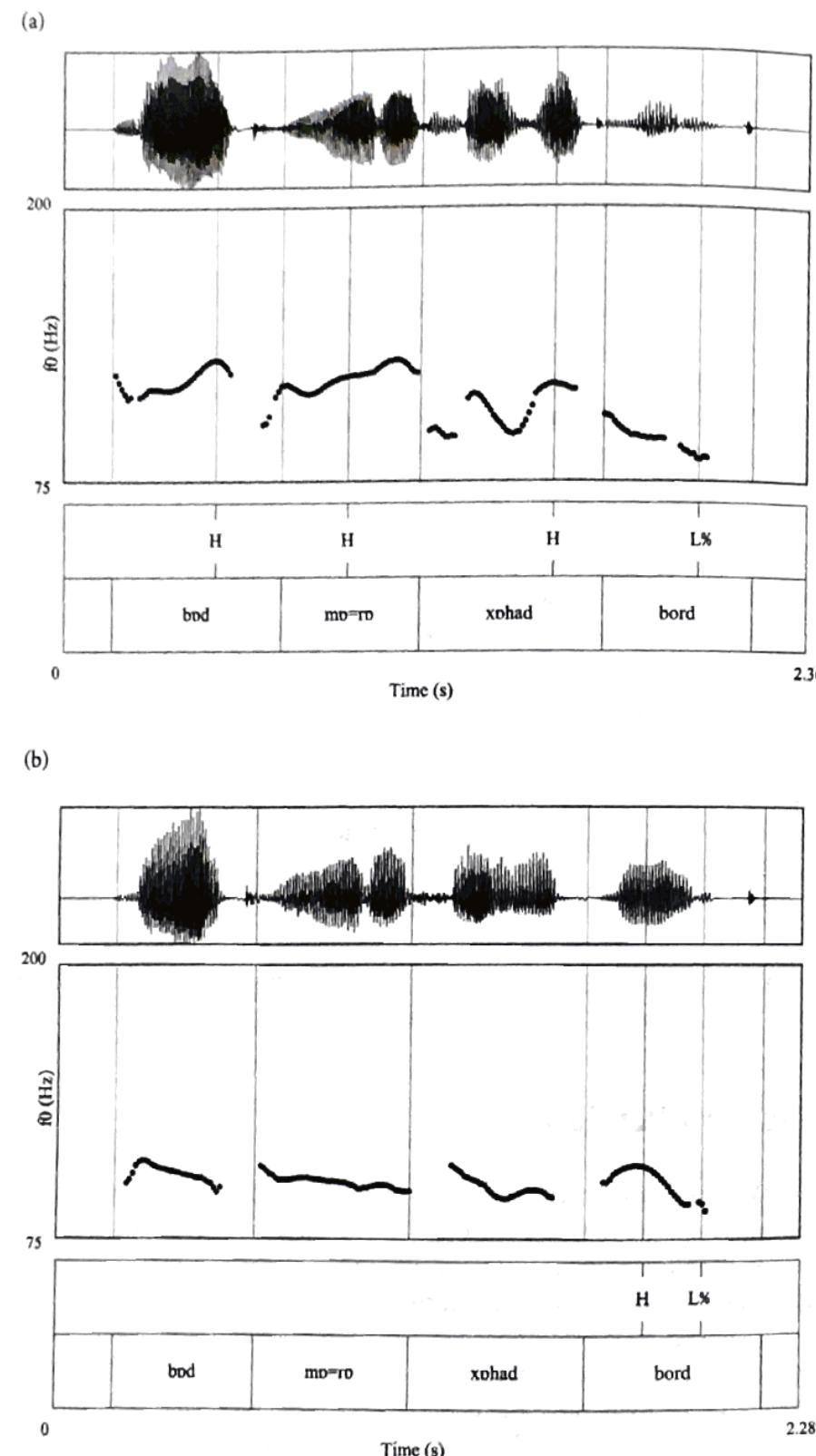


FIGURE 14.6 F0 contours of 13a (a) and 13b (b).

14.5 CAUCASIAN

About 50 languages are spoken in the Caucasus, 37 of which are indigenous (Kodzasov 1999). Among these, Georgian, a member of the South Caucasian language group, is the most studied and is described in §14.5.1. Daghestanian, a member of the Northern Caucasian language group, is briefly described in §14.5.2.

14.5.1 Georgian

14.5.1.1 Lexical prosody in Georgian

Although the existence and location of lexical stress in Georgian are debated in the literature, a general consensus has been that stress is assigned word-initially (Robins and Waterson 1952; Aronson 1990). Some studies further claim that, for words longer than four syllables, both the initial and the antepenultimate syllables are stressed, with primary stress on the antepenult (Harris 1993). However, Vicenik and Jun (2014) showed that the domain of antepenult stress is not a word, but the α .

Stress is not influenced by syllable weight (Zhgenti 1963) or vowel quality (Aronson 1990). The main phonetic correlate of Georgian stress was claimed to be high pitch by Robins and Waterson (1952) based on the word in isolation data, or to be related to a rhythmical-melodic structure by Zhgenti (1963; cited in Skopeteas et al. 2009). However, based on the acoustic measurements of words in a carrier sentence with the same quality of target vowels, Vicenik and Jun (2014: 157) found that the word-initial syllable had significantly greater duration and intensity than all following syllables, while the antepenultimate syllable was not stronger than the syllable immediately preceding it. The F0 of the word-initial syllable was typically low, demarcating the beginning of a word (and an α) in declaratives with neutral focus, but was often high or rising in question sentences (see §14.6) or when the word was narrowly focused (see §14.5.1.3). That is, the pitch of the stressed syllable is determined post-lexically based on the sentence types or focus, confirming the observations made in earlier studies (Zhgenti 1963; Tevdoradze 1978).

14.5.1.2 Post-lexical prosody in Georgian

There are only a few studies that have examined prosody at the post-lexical level in Georgian (Bush 1999; Jun et al. 2007; Skopeteas et al. 2009; Skopeteas and Féry 2010; Vicenik and Jun 2014; Skopeteas et al. 2018) (studies published in Russian and Georgian are not included here). These studies all agree that the intonation of simple declarative sentences typically consists of a sequence of rising F0 contours. Jun et al. (2007) and Vicenik and Jun (2014) showed that the domain of a rising F0 contour, an α , often contains one content word, though it can have more. They proposed that Georgian, like Mongolian, has three prosodic units above the word: an ι , an ip , and an α . The rising contour of the α is analysed as a L^* pitch accent on the initial syllable, followed by a H_a boundary tone on the final syllable. However, when the α is part of an embedded syntactic constituent or occurs in a (WH or polar) interrogative sentence, it is often realized with a falling contour, i.e. initial H^* and

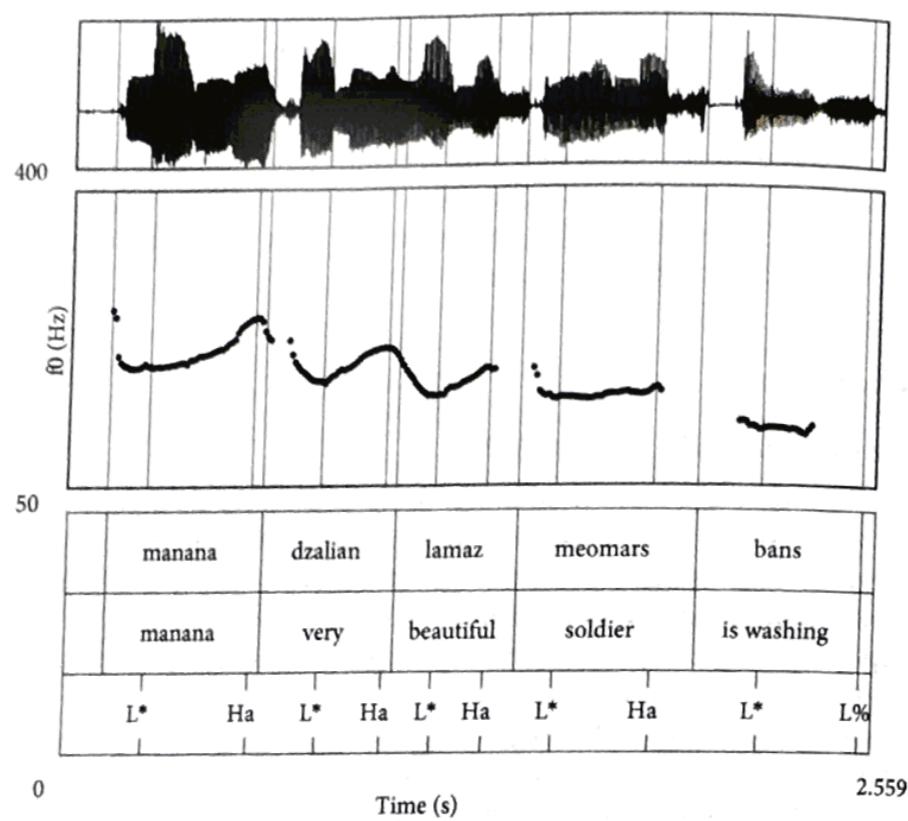


FIGURE 14.7 Pitch track and speech waveform of *Manana dzalian lamaz meomars bans*, 'Manana is washing the very beautiful soldier'. Each word forms an α with a rising contour, $[L^* H_a]$.
(Vicenik and Jun 2014: fig. 6.1, redrawn in Praat)

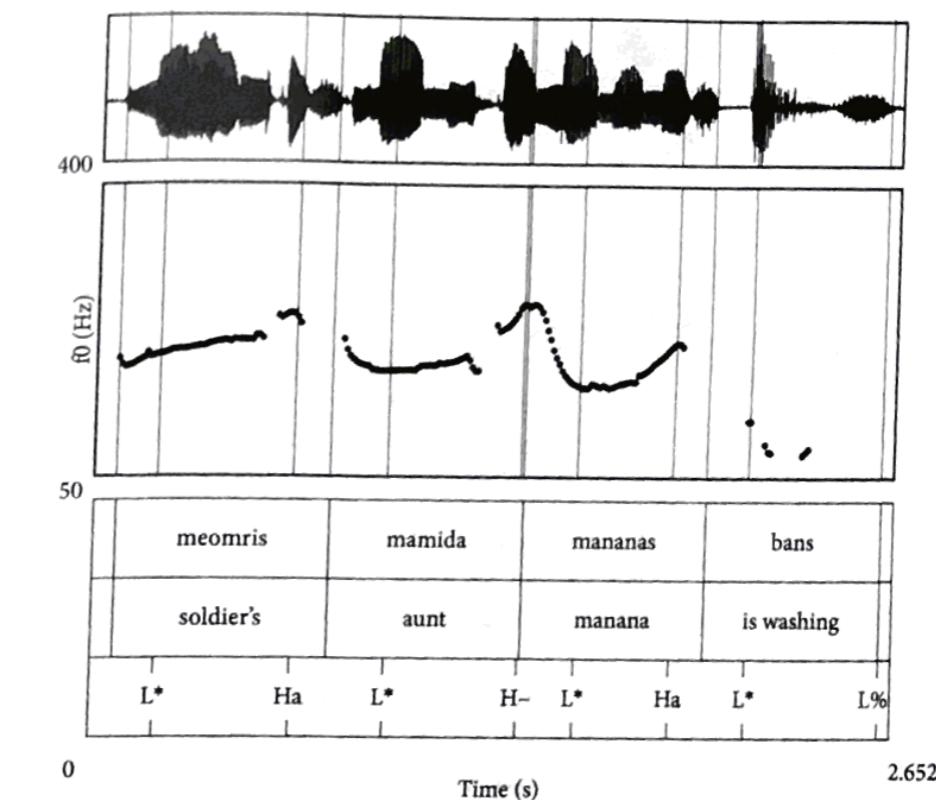


FIGURE 14.8 Pitch track of *The soldier's aunt is washing Manana*. The complex NP subject [meomris mamida] forms an ip, marked with a $H-$ boundary tone that is higher than the preceding H_a .
(Vicenik and Jun 2014: fig. 6.4, redrawn in Praat)

final L_a . Figure 14.7 shows the f_0 of a simple declarative sentence where each word forms one α , and illustrates a downtrend of final H_a tones over the whole utterance. In Figure 14.7, the sentence-final syllable is marked with a low boundary tone, $L\%$, a common ι boundary tone for a declarative sentence. This means that the whole sentence forms one ι and also one ip, which includes five α 's.

A sequence of α 's can form an ip when the α 's are close together syntactically or semantically. This higher prosodic unit is marked by a High boundary tone, $H-$, which is higher than the High tone of the preceding α . Figure 14.8 shows an example pitch track of a declarative sentence, *The soldier's aunt is washing Manana*, where a complex NP subject, [meomris mamida], forms an ip, marked with a $H-$ boundary tone. The f_0 height of $H-$ breaks the downtrend of α -final H tones across the utterance, as in Figure 14.7.

Finally, the Georgian α can have one more tonal property. When it exceeds four syllables, a falling tone occurs over the antepenult and penult, in addition to the α -initial pitch accent. In that case, the antepenult has a H tone and the penult a L tone, regardless of the location of a word boundary inside the α . Since this f_0 fall is not a property of a word, it is categorized as a $H+L$ phrase accent of an α . As shown in §14.6 and §14.5.1.3., this phrase accent occurs frequently in questions and as a marker of focus in Georgian.

14.5.1.3 Focus in Georgian

Focus in Georgian is marked by word order and prosody. As in Turkish, a pre-verbal argument receives prominence in the neutral focus condition, showing that word order is sensitive to information structure. However, an infelicitous word order for focus may become felicitous by an appropriate prosodic structure, suggesting that prosodic constraints outrank syntactic constraints in encoding information structure (Skopeteas et al. 2009). In addition, Georgian shows different intonation patterns depending on the location of the word in a sentence. Skopeteas and Féry (2010), Vicenik and Jun (2014), and Skopeteas et al. (2018) show that a focused word is realized with high f_0 (due to H^*) sentence-initially, but with a low flat f_0 (L^*) sentence-finally. Sentence-final focused words are often preceded by a phrase break marked with a high boundary tone ($H-$ in Vicenik and Jun 2014).

Though a $(L)H^*$ pitch accent marks prominence of a focused word in Georgian, it is not always realized in an expanded pitch range, especially when the focused word is sentence-medial. However, there is nevertheless salient prominence for the focused word due to increased intensity and duration of its stressed syllable and a reduced pitch range of the post-focus words. Interestingly, Vicenik and Jun (2014) show that a focused word is often marked by an additional tone, a $H+L$ phrase accent, on the antepenultimate syllable of the focused word itself or a larger phrase that consists of a focused word and the following word. Figure 14.9 shows an example where a pre-verbal argument (*Gela*) is focused but the $H+L$ phrase accent

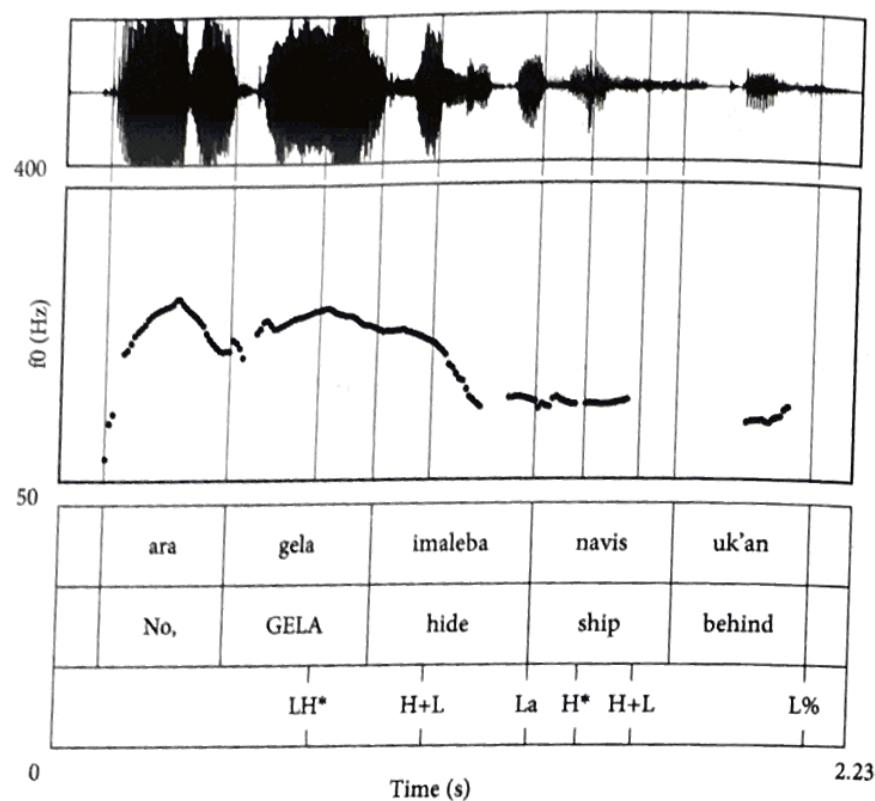


FIGURE 14.9 Pitch track of *No, GELA is hiding behind the ship*, where the subject noun is narrowly focused and the verb, instead of being deaccented, has a H+L phrase accent. The focused word and the verb together form one prosodic unit.

is realized on the following word, a verb. In addition to tonal prominence marked by pitch accent and phrase accent, prosodic phrasing may mark focus, too. In terms of Vicecik and Jun's (2014) model, a focused word often begins an ip. Production data in fact suggest that focus can be expressed by word order, prosodic phrasing, and pitch accent; any of these can mark focus, but none of them seems obligatory.

14.5.2 Daghestanian

The majority of Daghestanian languages have no stress (Kodzasov 1999), appearing instead as tonal languages (e.g. Andi, Akhvakh) or quasi-tonal languages (most languages of North Dagestan), besides stress languages (most languages of Southern Dagestan). In the quasi-tonal languages, tone is probably connected to a stiffness/slackness contrast, whereby the articulatory transition from slackness to stiffness generates a rising f0. Thus, while the tonal contours of Andi words like *hiri* (LowLow) 'red' and *mic'a* (HighHigh) 'honey' are generated by lexical tones, the tonal contrasts in /a:/ (RisingLow) 'broth', /a:/ (LowLow) 'pus', and /a:/ (HighHigh) 'ear' result from underlying stiffness/slackness contrasts in Chamalal. In Ingush, tones are grammatical, and some tonal suffixes have a rising-falling tone, as in *lät-är* 'fought (WITNESSED PAST)' vs. *lät-ar* 'used to fight (IMPERFECT)', where the opposition is marked by ablaut and tone shift (Nichols 2011). Tone in Ingush can occur only on one syllable per word.

Chechen, a North East Caucasian language, mainly uses word order to signal focus (Komen 2007). Certain clitics and suffixes have an inherent high pitch (Nichols 1997),

which suggests the presence of lexical tone. Komen recognizes an i and an a in Chechen, both marked by L at their left edge and followed by H*.

14.6 COMMUNICATIVE PROSODY: QUESTION INTONATION

In Turkish questions, the WH-word and the item that precedes the polar question particle are parsed as the nucleus (14). While in WH-questions right edges of i's are decorated with H%, polar questions end with %L (Göksel and Kerslake 2005; Göksel et al. 2009). Like focused items, the item preceding the Q-particle is aligned with the nucleus via prosodic phrasing (Shwayder 2015). Göksel et al. (2009) observe that the pre-WH-word area exhibits higher pitch than the pre-nuclear area in polar questions and declaratives.

(14) Prosodic phrasing of polar and WH-questions compared with declaratives

	i-boundary tone	
Declarative:	[..... ((nucleus) _ω (post-nucleus) _{φi}]	L%/H%
WH-question:	[..... ((WH-word) _ω (post-nucleus) _{ωφi}]	H%
Polar question:	[..... ((a constituent) _ω (Q-particle+post-nucleus) _{ωφi}]	L%

A vocative proper name will exhibit a pitch fall (H*L%) (15a), which may convey surprise if spoken with an expanded pitch range (15b). Rising f0 in the same environment (i.e. LH*H%) conveys a question with the meaning of 'Is it you?' (15c) (Göksel and Pöchtrager 2013).

(15) Vocatives with various meanings

Calling address	Surprise address	Is-it-you address
H*L%	H*L%	LH*H%
a. Asli	b. Asli	c. Ashi

Mongolian polar questions are marked by a final question particle. It typically also appears at the end of WH-questions, in which the WH-word is *in situ*, but it may be omitted in colloquial speech. While Mongolian interrogatives often have f0 shapes that are similar to declaratives, with final H% being used in both of these, in all-new interrogatives dephrasing and suspension of the downtrend (i.e. inclination) may occur.

Persian polar questions have similar intonation contours to declaratives (Sadat-Tehrani 2011). The question particles are often omitted in colloquial speech, in which case a final H% distinguishes them from declaratives, which have L%. Additionally, questions are characterized by sentence-final syllable lengthening and wider pitch range. WH-questions are generally characterized by deaccentuation of the elements after the WH-word and a final L% boundary. Native listeners can easily differentiate WH-questions from their declarative counterparts on the basis of the part of the utterances before the WH-word (Shiamizadeh et al. 2017).

In Georgian, both polar and WH-questions are marked by word order and prosody. The WH-word occurs sentence-initially and is immediately followed by a verb, with which it tends to form a single ip. This phrase is marked by the sequence H* H+L, where H* occurs on the WH-word and H+L on the antepenultimate and penultimate syllables of the verb if it

has four or more syllables or only L appears on the penult if the verb is shorter than three syllables. Most commonly, a final H- appears on the final syllable of the ip, although L- is also possible. The end of wh-question is often marked by H% or L%, less frequently HL%, without obvious differences in meaning.

In polar questions, the verb occurs either sentence-initially or sentence-medially. A sentence-initial verb forms an ip by itself, with a H* L H- pattern. A sentence-medial verb either shows a H* L H- pattern by itself or appears together with a preceding subject in an ip marked by H* H+L H-, similar to the pattern in the wh-word + verb group described above. Polar questions, too, end in H%, L%, or HL%. Bush (1999) pointed out that HL% is characteristic of polite questions.

14.7 CONCLUSION

All the languages discussed in this chapter lack contrastive lexical stress and, more generally, they lack culminative stress, in Trubetzkoy's (1939/1969) terms. That is, minimal word pairs like English *éport* versus *expórt* do not occur, or are at best limited to a few cases, and stress is not morphologically conditioned. Moreover, pitch, intensity, and duration are not found to coincide in marking the prominent word-initial or word-final syllable, indicating that it is not metrically strong and instead is marked by tone. Interestingly, this seems to be true for most Altaic, Caucasian, and Indo-Iranian languages and may be the reason for the lack of consensus about the status, realization, and placement of lexical stress in these languages.

Vowel harmony can be seen as signalling a word as an entity in speech. Baudouin de Courtenay (1876) and Kasević (1986), for instance, suggested that this coherence-signalling function parallels Indo-European lexical stress. If vowel harmony has a demarcative function similar to lexical stress, this may explain the redundancy of stress in harmonic languages. The absence of contrastive stress is a common feature of many harmonic languages, as we reported here for Turkic. Other examples are a number of Uralic languages (among them Finnish and Hungarian), while stress is completely absent in Mongolian (as described in §14.3), Erzya [Finno-Ugric; Mordovia], and some Chukchi-Kamchatkan languages [Paleo-Asian] (Jarceva 1990). Some languages, such as Uzbek [Turkic; Uzbekistan] and Monguor [Mongolic; China, Qinghai, and Gansu provinces], have developed lexical stress after losing vowel harmony (Binnick 1980; Kasević 1986). In Monguor and its dialects, final lexical stress has arisen and the first syllable, which governs vowel harmony in other Mongolic languages, is lost in some words; for example, Old Mongolian **Onteken* 'egg' has become *ontəg* in Halk and *ndige* in Monguor. These correlations suggest that harmony has a demarcative function similar to lexical stress.

Though the languages treated in this chapter share some structural features, such as SOV word order, agglutination, and some prosodic similarities, their tonal tunes are aurally rather different, due to (among other things) different interactions between lexical and post-lexical prosody (micro- and macro-rhythm; Jun 2014b) as well as the shapes and distribution of pitch accents and boundary tones.

CHAPTER 15

CENTRAL AND EASTERN EUROPE

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EVA LIINA ASU, ANNA DAUGAVET, ŠTEFAN BEŇUŠ,
AND KATALIN MÁDY

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.