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Prosodic Systems: Mainland Southeast Asia

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Abstract:

Mainland Southeast Asia is often viewed as a linguistic area where five different language phyla – Austroasiatic, Austronesian, Hmong-Mien, Sino-Tibetan and Kra-Dai – have converged typologically. This chapter illustrates areal features found in their prosodic systems, but also emphasizes their oft-understated diversity.

The first part of the chapter describes word level prosodic properties. A typology of word shapes and stress is first established: we revisit the concept of monosyllabicity, go over the notion of sesquisyllabicity (as typified by languages like Mon or Burmese) and discuss the realization of alternating stress in languages with polysyllabic words (such as Thai and Khmer). Special attention is then paid to tonation. Although many well-known languages of the area have sizeable inventories of complex tone contours, languages with few or no tones are common (20% being atonal). Importantly, the phonetic realization of tone frequently involves more than simply pitch: properties like phonation and duration often play a role in signaling tonal contrasts, along with less expected properties like onset voicing and vowel quality. We also show that complex tone alternations (spreading, neutralization and sandhi processes), although not typical, are well-attested.

The second part of the chapter addresses the less well-understood topic of phrasal prosody: prosodic phrasing and intonation. We reconsider the question of the amount of conventionalized intonation in languages with complex tone paradigms and pervasive final particles. We also show that information structure is often conveyed by means of overt markers and syntactic restructuring, but that it can also be marked by means of intonational strategies.

1. Scope of the chapter

Mainland Southeast Asia (MSEA) is often defined as a Sprachbund, a linguistic area where languages from five different phyla (Austroasiatic, Austronesian, Hmong-Mien, Kra-Dai and Sino-Tibetan) converge and develop similar structures (Matisoff 1973; Alieva 1984; Enfield 2003; 2005)¹. While convergence processes are easy to identify in the region, its geographical boundaries are ill-defined, and one should not understate its typological diversity (Henderson 1965; Brunelle & Kirby 2016, Kirby and Brunelle 2017). In this chapter, we cover the area encompassing the Indochinese Peninsula (Vietnam, Cambodia, Laos, Thailand, Myanmar and Malaysia), but also include Guangxi and Yunnan in Southern China (excluding Chinese varieties, covered in Chapter XXX) and Northeast India. As Austronesian languages are covered in a separate chapter, our discussion of this phylum is limited to Chamic languages spoken in Vietnam and Cambodia, and to Austronesian languages of the Malay peninsula.

Our main goal is to give an overview of representative types of word-level (§2) and phrase-level prosody (§3), highlighting areas of convergence between families, without understating their diversity.

2. Word-level prosody

In this section, we first discuss the most common word shapes and stress patterns found in MSEA (§2.1). As these two properties are largely dependent, they are discussed together. We then give an overview of the diverse tonation systems of the region (§2.2).

2.1 Word shapes and stress

The basic vocabulary of many MSEA languages is monosyllabic. This is the case in most Kra-Dai and Hmong-Mien languages, but also in Vietnamese, an Austroasiatic language. However, in most of these languages, a significant part of the lexicon is made up of compounds, and most languages also have some polysyllabic loanwords. This can be illustrated with Vietnamese. The Vietnamese basic lexicon is largely monosyllabic, as illustrated in (1). Our transcriptions follow the transcription conventions in Kirby (2011), except for the tone notation.

¹ Indo-European and Dravidian languages are also spoken by sizeable language communities in Burma, Malaysia and Northeast India, but are not covered in this chapter.

(1) Vietnamese monosyllables

<i>đi</i>	[dī ⁴⁴]	‘to go’	<i>ngiêng</i>	[ŋiəŋ ⁴⁴]	‘to be leaning’
<i>tuyết</i>	[tɥiət ⁴⁵]	‘snow’	<i>ngoan</i>	[ŋwa:n ⁴⁴]	‘to be well-behaved’

However, Vietnamese has a significant proportion of non-monosyllabic words. According to Trần and Vallée (2009), 49% of its lexicon is disyllabic and 1% is trisyllabic. Native compounds (2) and reduplicants (3) make up most of the disyllabic vocabulary.

(2) Native Vietnamese compounds

<i>nhà nghỉ</i>	[ŋa ²¹ ŋi ²¹]	house+rest	‘inn, low-end hotel’
<i>kiếm ăn</i>	[kiəm ⁴⁵ an ⁴⁴]	search+eat	‘to make a living’
<i>bố mẹ</i>	[bɔ ⁴⁵ mɛ ^{31?}]	father+mother	‘parents’
<i>vui tính</i>	[vuɨ ⁴⁴ tiŋ ⁴⁵]	happy+temper	‘to be good-tempered’

(3) Vietnamese reduplicants

<i>bạn bè</i>	[bɑ:n ^{31?} bɛ ²¹]	friends + RED	‘friends’
<i>tim tím</i>	[tim ⁴⁴ tím ⁴⁵]	RED + purple	‘purplish’

Vietnamese also has a large number of compounds whose morphemes are borrowed from Chinese. These often have opaque semantics that, as such, seem better analyzed as polysyllables (4). A significant number of loanwords from other languages are also polysyllabic, even if monomorphemic (5). Besides, although this is rarely pointed out in the literature, a number of native Austroasiatic words like *tắc kè* [tak⁴⁵ kɛ²¹] ‘gecko’ and *thọc lét* [t^hɔk³¹ lət⁴⁵] ‘to tickle’ seem to constitute polysyllabic morphemes.

(4) Opaque Sino-Vietnamese compounds

<i>tuần lộc</i>	[twǎn ²¹ loŋp ³¹]	docile + deer	‘elk, reindeer’ 馴鹿
<i>thái độ</i>	[t ^h ɑ:j ²⁴ đɔ ^{31?}]	appearance + degree	‘behavior’ 態度

(5) Vietnamese monomorphemic polysyllables (loanwords)

<i>ban công</i>	[bɑ:n ⁴⁴ koŋm ⁴⁴]	balcony (< French <i>balcon</i>)
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<i>phô tô cốp pi</i>	[fo ⁴⁴ to ⁴⁴ kɔ̌kp ⁴⁵ pi ⁴⁴]	photocopy (< French <i>photocopie</i>)
<i>Trà Vinh</i>	[tɕa ²¹ viŋ ⁴⁴]	place name (< Khmer [<i>Preah</i>] <i>Trapeang</i> ព្រះត្រពាំង)

By definition, monosyllabic words cannot bear paradigmatic or syntagmatic word stress. However, even in languages whose core lexicon is monosyllabic, polysyllabic words can have fairly complicated stress patterns. While Vietnamese polysyllables do not seem to show any type of word-level prominence (Brunelle 2017), the Indic loanwords of many Southeast Asian languages have alternating stress systems that are not necessarily attested in their native lexicon (Luangthongkum 1977; Potisuk *et al.* 1994; Potisuk *et al.* 1996; Green 2005). For instance, polysyllabic Thai words show a tendency to alternating iambic stress, stress clash avoidance and the application of the stress-to-weight principle, as illustrated in (6).

(6) Stress in Thai polysyllabic words

(examples adapted from Luangthongkum 1977:199)

โทรทัศน์	,t ^h o:rə't ^h át	'television'
มะเร็งในเม็ดโลหิต	mə,ɾeŋnəi,métlo'hít	'leukemia'
ไวยากรณ์ปริวรรต	,waijə,kə:npəri'wát	'transformational grammar'

In these Thai polysyllables, stress is realized primarily through longer duration. The tones of stressed syllables are also realized more fully, while those of unstressed syllables are raised and partially neutralized (Potisuk *et al.* 1996).

Many MSEA languages also have a canonical *sesquisyllabic* word shape, a structure typical of the region. The concept of sesquisyllable seems to be attributable to Henderson (1952), but the term was coined by James Matisoff (1973) to designate words containing “one syllable and a half”. Generally-speaking, a sesquisyllable is a disyllable with an iambic stress pattern. Its unstressed first syllable is called the *minor syllable* or the *presyllable*, and has a reduced phonological inventory and a limited array of possible syllable structures. Its stressed second syllable has the full array of possible contrasts of the language and can have a more complex syllable structure.

Sesquisyllables show variation across and sometimes even within languages. Thomas (1992) argues that there are four types of sesquisyllables. In the first type, a fully predictable

schwa is inserted in some clusters, as in the Khmer word ក្បាល [kəba:l] ‘head’ which is underlyingly /kba:l/. Most authors consider such cases as monosyllables rather than sesquisyllables and treat their schwa as an excrescent vowel (Thomas 1992; Butler 2014). The second type of sesquisyllables consists of iambic disyllables in which the first vowel is a schwa, and where the C°C- sequence contrasts with corresponding CC- clusters. Examples from Jeh, an Austroasiatic language of the Central Vietnamese Highlands, are given in (7).

(7) Jeh sesquisyllables (Gradin 1966)

trah	‘to chop out’	tə'rah	‘to squawk (of chicken)’
khej	‘month’	kə'hej	‘moon’

The third and fourth types of sesquisyllables distinguished by Thomas are qualitatively similar; they consist of sesquisyllables whose minor syllables can only contain a subset of the vowels that can appear in main syllables. Examples from Northern Raglai, an Austronesian language of South-Central Vietnam, are given in (8). While Northern Raglai has six phonemic vowels that contrast in length and nasality, only three are allowed in minor syllables.

(8) Northern Raglai (Nguyễn 2007)

pi'tuk	‘cough’	pa'tih	‘thigh’	bu'maw	‘mushroom’
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Interestingly, the trochaic mirror image of sesquisyllables, namely disyllables with an initially stressed syllable and a reduced second syllable, does not seem attested in MSEA.

Many languages of the area also have a non-sesquisyllabic polysyllabic structure as their canonical word shape. One example is Malay, a language that tends to have disyllabic roots, but can have much longer grammatical words because of affixation or loans from Indic or Western languages. Careful analysis strongly suggests that Peninsular Malay does not have word stress (Mohd Don *et al.* 2008). Many Sino-Tibetan languages can also be shown to be polysyllabic because segmental or tonal processes affect their prosodic words. In Qiang and Shixing, for instance, the lenition of word-medial consonants provides positive evidence for polysyllabic prosodic words (LaPolla and Huang 2003: 31-32, Chirkova 2009: 12-13).

2.2 Tonation

Many Southeast Asian languages employ one or more contrastive laryngeal properties that we term *tonation* (following Bradley 1982). This includes not only the use of pitch but also properties such as vowel quality, voice quality, intensity, and/or duration. The extent to which it is useful to sub-typologize languages according to exactly which property or properties they (canonically) employ remains a matter of some debate (Abramson & Luangthongkum 2009; DiCanio 2009; Enfield 2011; Gruber 2011; Brunelle & Kirby 2016); despite this, we have broadly organized the following sections by phonetic property in order to emphasize the diversity and phonetic variability of the region's word-level prosodic systems.

2.2.1 Inventories

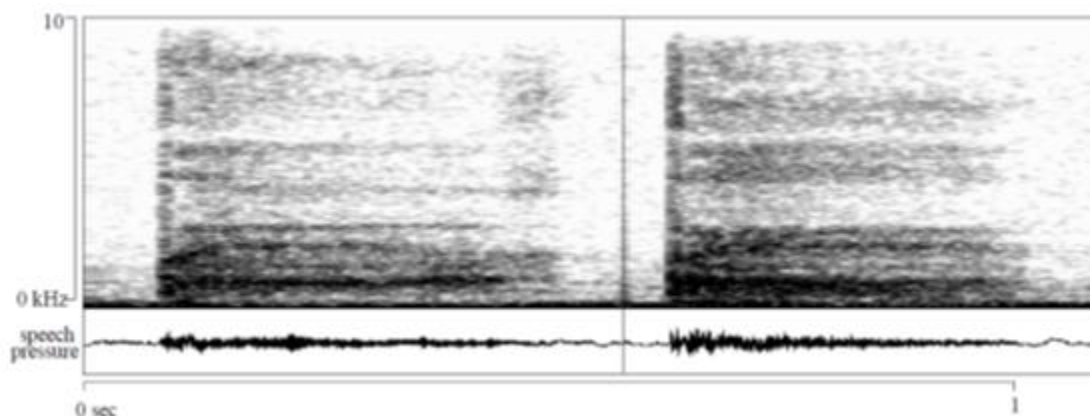
Around 20% of the languages spoken in MSEA are completely atonal (Brunelle & Kirby 2015). These languages are virtually all either of Austronesian or Austroasiatic stock. Diversity is greater in Austroasiatic, while Austronesian languages of MSEA are either atonal or have simple tonation-type properties².

Many languages of the area, especially in the Austroasiatic and Austronesian phyla, have been described as having 'registers'. Henderson (1952) was the first author to employ the term *register* to refer to a 'bundle' of (broadly suprasegmental) features, such as phonation type, pitch, vowel quality, intensity, and vowel duration, leading to the designation of (voice-)register languages in the Southeast Asian linguistic literature (Henderson 1952; Gregerson 1973; Ferlus 1979; Diffloth 1982). Register is normally understood to arise from the neutralization of voicing in onsets and subsequent phonologization of phonetic properties originally associated with voicing.

A hallmark of register systems is redundancy, in the sense that one can identify multiple co-occurring properties. The Austroasiatic language Mon is an example of a canonical register system relying on pitch and phonation, but also on vowel quality and duration (Lee 1983; Diffloth 1985; L-Thongkum 1987; Abramson et al. 2015). Another example is Wa, a Mon-Khmer language spoken in north-eastern Myanmar and in the south-west of Yunnan province in China, that distinguishes two lexical registers termed 'clear' and 'breathy' (Watkins 2002).

² Tsat, a Chamic (Austronesian) language spoken in Hainan, has a full-fledged tone system (Maddieson and Pang 1993, Thurgood *et al.* 2015).

In Wa, vowels in breathy register are characterised principally by their relatively breathier phonation type than the modal phonation of clear register vowels, illustrated in (9). In addition, there are typically differences such that clear register vowels have slightly higher pitch than breathy register vowels. Vowel duration and vowel quality are mostly insignificant with respect to Wa register, though for some speakers there may be contrasts in these quality differences.



(9) Register in Wa. Spectrograms of the clear register word *tɛ* ‘sweet’ (left) and breathy register *tɛʔ* ‘peach’ (right). The clear register is characterised by sharper, more clearly defined formants; the breathy register has relatively more energy at very low frequencies and high frequency noise.

The Wa register contrast applies independently of syllable-final /h/ and /ʔ/, making possible the set of distinct syllables in (10).

(10) vowel register independent of laryngeal consonants in Wa

<i>tɛ</i>	‘sweet’	<i>tɛ</i>	‘peach’
<i>tɛʔ</i>	‘land’	<i>tɛʔ</i>	‘swear’
<i>tɛh</i>	‘reduce’	<i>tɛh</i>	‘turn over’

An outstanding question concerns the stability of register systems, which have frequently been seen to ‘restructure’ (Huffman 1976), or move to realize a contrast by means of a single acoustic property. An apparently recent shift from register to a primarily pitch-based system has been documented for several dialects of Khmu (Suwilai 2004; Svantesson & House 2006; Abramson *et al.* 2007). Restructuring can also lead to the development of a large vowel inventory, as apparently occurred in the history of Khmer (Huffman 1976) or Haroi (Lee 1977;

Mundhenk & Goschnick 1977).

We can contrast registers with tone inventories based on pure pitch. By ‘pure’ pitch, we mean to refer to a system in which pitch is the only phonetic exponent of a suprasegmental tonation contrast. A good example of such a language in MSEA might be Southern Vietnamese (Brunelle 2009b, Gsell 1980, Vũ 1982). However, setting aside restructured register languages such as Khmu, it is not clear if such systems actually exist, and if they do, they may in fact be rather rare: it seems reasonable to assume that there are always at least low level spectral effects present in ‘pure’ pitch systems. In any case, it is probably still possible to differentiate between tone systems where these spectral effects are redundant, and those systems where they are a necessary element of patterns of tone contrasts, as detailed in the following section.

A related issue here concerns the phonological analysis of primarily pitch-based tone systems. The languages of sub-Saharan Africa provide compelling evidence for an analysis based on sequences of level tones (from two, High and Low, to as many as five levels; see Chapter XXX). In Asia, such systems appear to be significantly less common (see Evans 2008 for an overview), though cases do exist such as Pumi (Jacques 2011; Daudey 2014; Ding 2014) and Yongning Na (Michaud 2017: 87-101). Evidence for this type of decompositional analysis comes primarily from morphotonological alternations (see §2.2.2). To our knowledge, these systems are restricted to Sino-Tibetan languages of the Himalayas, on the northern periphery of the area under consideration here. Analyses of other languages of SEA in terms of level tones have also been proposed (e.g. Morén & Zsiga 2006 on Thai), but such proposals are challenging to evaluate in the absence of language-internal (morpho)phonological evidence (Clements *et al.* 2010).

Finally, MSEA is home to a number of languages with complex tonation systems involving multiple phonetic properties. While there may be a certain amount of variation, a hallmark of such systems is the canonical co-occurrence of two or more phonetic properties. For example, three of the six tones in Northern Vietnamese are systematically realized with a laryngealized voice quality in sonorant-final syllables (Vũ 1982; Nguyễn & Edmondson 1997; Michaud 2004), and perceptual research has shown that the strong glottalization of the low glottalized tone is normally sufficient for identification, to the point of largely overriding pitch cues (Brunelle 2009b). Hmong-Mien languages also tend to exhibit systems of this type (Huffman 1987; Andruski & Ratliff 2000; Esposito 2012; Garellek *et al.* 2013; Garellek *et al.* 2014). For

example, Black Miao, a Hmong-Mien language spoken in Guizhou province, China, contrasts five level tones, but three of these tones are also respectively characterized by laryngealized, tense, or breathy phonation, all of which are important cues for accurate native-speaker discrimination (Kuang 2013). Although strictly speaking outside of MSEA proper, a number of Wu languages spoken in China also have mixed phonation/pitch tonation systems (Rose 1989). These languages are perhaps especially notable for employing ‘whisper’ and/or ‘growl’ phonation types, probably involving oscillation of epilaryngeal structures (Edmondson *et al.* 2001).

2.2.2 Tonal phonology, tone sandhi and morphotonology

Tone serves a wide range of functions in the world’s languages: in addition to its phonemic function, it can mark grammatical categories; it can be assigned according to paradigm-specific rules; and it can even constitute the sole phonological form of a morpheme (see Chapter XXX **Word Prosody II: Tone systems**). In MSEA, the vast majority of Austroasiatic, Austronesian and Tai-Kadai tone languages have “inert” tones (tones that are not active in phonology or morphology), whereas productive tonal processes are more commonly found in some Hmong-Mien and Sino-Tibetan languages.

The first type of tone process found in the area is tone sandhi in its narrow sense: a tone turns into another contrastive tone in a specific tonal environment. For instance, White Hmong has seven tones, out of which five undergo the permutations in (11) in most compounds and some phrases. This tone sandhi seems partly fossilized in contemporary White Hmong, but there is little doubt that it was productive at an earlier stage of the language (Ratliff 1987; Mortensen 2004).

(11) White Hmong tone sandhi (Ratliff 1987)

52, 22, 31?	→	4̣2	
24	→	33	/ 55, 53 _____
33	→	22	

Tone sandhi must be distinguished from tonal coarticulation, which could be characterized as phonetic accommodation between adjacent tones. Studies of tonal coarticulation in Central Thai and Vietnamese suggest that progressive coarticulation is much stronger than regressive, and that assimilatory effect are more common than dissimilatory ones in these languages (Han & Kim 1974; Gandour *et al.* 1992b; 1992a; 1994; Brunelle 2009a). Tone sandhi could develop from the misinterpretation of some forms of tone coarticulation, but this seems to require more than simple phonologization (Brunelle *et al.* 2016).

The most complex sandhi-like processes in the region are doubtless found in the Kuki-Chin languages of Burma, Mizoram and Nagaland. In these languages, combinations of tone spreading and positional tone sandhis sensitive to the boundaries of prosodic domains are commonplace (Hyman and VanBik 2002; 2004; Watkins 2013). In the Tibeto-Burman southern Chin language Sumtu, of which the Myebon dialect is described by Watkins (2013), a morpheme may have lexically high or low tone. Functional morphemes attached to a noun or verb stem may have no lexically specified tone, in which case their tone is derived by a process whereby high and low tones alternate such that adjacent highs or lows are avoided where possible, i.e. unless a lexically specified tone makes adjacent highs or lows inevitable. Examples of sentences with a lexically high tone verb stem [pék] ‘give’ and a low tone verb [hɲà] ‘borrow’ are given in (12). To the right a string of verbal auxiliaries and particles are attached, and to the left of the stem a subject/object prefix is attached. Only the verb stem has lexical tone: the attached morphemes are assigned alternating high and low tones so no adjacent tones are the same.

(12) a. ʔə-m-pék-bà-láʔ-hní L-H-L-H-L

3-TR-give-again-must-PRF

‘He has had to give back.’

b. ʔə-m-pék-làʔ-hní L-H-L-H

3-TR-give-must-PRF

‘He has had to give.’

c. ʔə-hɲà-láʔ-hní H-L-H-L

3-borrow-must-PRF

‘He has had to borrow.’

In Sumtu, the dual number in verb paradigms is indicated by tone, as shown in (13). The lexically low tone verb [sìʔ] ‘go’ has minor-syllable pronominal prefixes attached. In the singular and the plural forms, these prefixes have a high tone: having lexically assigned tone, they assume the tone which is the polar opposite of the stem to which they are attached. However, the dual number is indicated by a tone change in the pronoun prefix; the low tone dual pronominal prefix provokes a dissimilatory tone change in the verb stem, so that in the dual forms the verb stem has a high tone.

(13) Tone change in Myebon Sumtu dual number verb forms

	SINGULAR		DUAL	PLURAL
1	kʰ-sìʔ	INCL	mʰ-síʔ	mʰ-sìʔ
		EXCL	kʰn-síʔ	kʰn-sìʔ
2	nʰ-sìʔ		nʰn-síʔ	nʰn-sìʔ
3	ʔʰ-sìʔ		ʔʰn-síʔ	ʔʰn-sìʔ

A second type of tone alternation is *tone spreading*, a process observed in some level-tone systems: for instance, in Yongning Na (Sino-Tibetan) L tone spreads progressively (“left-to-right”) onto syllables that are unspecified for tone (Michaud 2017: 324). *Spreading* of level tones is a process of phonological copying; this needs to be distinguished from cases where the domain of phonetic realization of a lexical tone category is the entire phonological word, as in Tamang (Sino-Tibetan). The four tones of Tamang *unfold* over an entire phonological word: non-initial syllables of words, whether they be a suffix or part of a single morpheme, never carry their own tone, so that their f_0 curve can be considered an expression of the tone lexically carried by the initial lexeme, which is allowed to unfold over the available space -- the entire phonological word (Mazaudon & Michaud 2008). This can usefully be distinguished from *tonal coarticulation* on toneless syllables, as illustrated by Northern Mandarin, where the phonetic realization of a toneless suffix is heavily influenced by the tone of the preceding syllable but where the latter can still be considered to be realized phonetically on the syllable to which it is lexically associated

(Chen and Xu 2006).

Tone can also be used for marking morphological alternations. In MSEA, this is relatively rare, except in Sino-Tibetan, where morphological alternations involving tone are most abundant in Kuki-Chin (see Ozerov in preparation for an overview and a case study of Anal) and in Na-Qiangic (Evans 2008; Jacques & Michaud 2011; Daudey 2014). Cases of morphology conveyed solely by tone (i.e. tonal morphology proper) are much rarer than cases of conditioning of tone assignment by morphosyntax (i.e. morphotonology). In Anal (Ozerov in preparation), omission of grammatical suffixes leads to a grammatical distinction being marked only by tonal alternations on the last syllable of the stem. Interestingly, traces of the reduced suffix can consist of (i) changed tone, (ii) vowel lengthening, or (iii) both tone change and vowel lengthening. Another example is the Burmese creaky tone, which can express possession on a restricted number of lexemes (pronouns, kinship terms and a few more) in place of the full possessive marker, also carrying creaky tone (Okell & Allott 2001: 273). Naxi (Sino-Tibetan) has cases of reduction of H-tone grammatical words to a floating H tone, whereas M- and L-tone syllables that become coalescent are reported to retain a vowel target of their own, i.e. the reduction process stops short of complete segmental ellipsis (Michaud & He 2007).

3 Phrasal prosody

The phrasal prosody of MSEA languages has attracted far less systematic attention than their word-level prosody. In this section, we first review research on prosodic domains (§3.1). We then go over descriptions of intonational patterns and their interaction with final particles (§3.2) and explore the role of information structure in the languages of the area (§3.3).

3.1 Prosodic phrasing

The study of prosodic phrasing in MSEA has developed steadily in the past decade. Research has focused on the difficulty of applying the standard Prosodic Hierarchy (Selkirk 1984; Nespor & Vogel 1986) to the languages of the region. While some languages, like Boro, faithfully conform to the Hierarchy (Das 2017), a number of researchers question the very existence of a universal hierarchy, especially in the Sino-Tibetan domain, and argue for emergent domains (Hildebrandt 2007: 353-376; Bickel *et al.* 2009; Post 2009; Schiering *et al.* 2010; Michaud 2017).

Most studies adopt a narrower scope and focus on evidence (or lack thereof) for specific prosodic domains (Phạm 2008; Chirkova & Michaud 2009; Karlsson *et al.* 2012; Brunelle 2016). For instance, the absence of segmental or suprasegmental processes in grammatical words argues against the existence of a prosodic word in Vietnamese (Schiering *et al.* 2010; Brunelle 2017; but Phạm 2008). The lack of phonetic difference between homophonous compounds and phrases, like *hoa hồng* [hwa⁴⁴ hoŋm²¹] (flower + pink) ‘rose’ or ‘pink flower’, reinforces this conclusion (Ingram & Nguyễn 2006).

To our knowledge, the issue of prosodic recursion, the embedding of a prosodic constituent within a constituent of the same type, has not yet been explored systematically in MSEA. A notable exception is Boro, a language in which a tone spreading process suggests that enclitics are parsed into a recursive prosodic word that also encompasses the prosodic word formed around its host (Das & Mahanta 2016; Das 2017).

3.2 Intonation

The study of intonation, and more specifically that of the interaction between tone and intonation, has been studied in a number of MSEA languages. Although it is still too early to reach strong conclusions, it seems that boundary tones³ can play an important role in the intonational phonology of languages with small tone inventories (Blood 1977; House *et al.* 2009; Karlsson *et al.* 2010; Karlsson *et al.* 2012; Phạm & Brunelle 2014). In Northern Khmu, a two-way tone contrast does not prevent the realization of a phrasal H tone on the rightmost edge of every prosodic phrase; the tone curves are adjusted accordingly (Karlsson *et al.* 2012). A simpler example is Eastern Cham, a language in which sentence-final boundary tones concatenate with register on the final syllable, as illustrated in (14).

(14) Final boundary tones realized on the final in Eastern Cham (Phạm and Brunelle 2014): registers are autosegmentally represented as H/L for convenience.

a.	$\begin{array}{ccccccc} \text{L} & \text{H} & \text{H} & \text{L} & \text{L} & \text{L}\% \\ & & & & & \\ \text{ç} & \text{a} & \text{k} & \text{a} & \text{n} & \text{a} \\ \text{w} & \text{p} & \text{a} & \text{j} & \text{ç} & \text{x} \\ & & & & & / \end{array}$	b.	$\begin{array}{ccccccc} \text{L} & \text{H} & \text{H} & \text{L} & \text{L} & \text{H}\% \\ & & & & & \\ \text{ç} & \text{a} & \text{k} & \text{a} & \text{n} & \text{a} \\ \text{w} & \text{p} & \text{a} & \text{j} & \text{ç} & \text{x} \\ & & & & & / \end{array}$
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³ The term *boundary tone* is used as a convenient label for intonational effects that are mostly realized at the edge of intonational domains. The authors recognize a divergent range of views on whether these effects should be formalized as tones or as a different type of primitive (on this topic, see Rialland *to appear*).

boy *name* go study already
 ‘Ka has gone to school.’

boy *name* go study already
 ‘Has Ka gone to school?’

The effect of boundary tones can also be seen in languages with large tone inventories. The clearest cases are languages in which the pitch contour of toneless particles can be predicted based on intonation, such as Thai (Pittayaporn 2007), or in which an intonational contour overrides the lexical tone of discourse markers, like backchannels and repair utterances in Northern Vietnamese (Hà 2010; 2012). However, the typical scenario in such languages is that intonational effects are realized through a combination of various cues, such as the global pitch height and slope of the utterance, phrase-final pitch contour and duration (Trần 1967; Đỗ *et al.* 1998; Luksaneeyanawin 1998; Nguyễn & Boulakia 1999; Michaud 2005; Vũ *et al.* 2006; Brunelle *et al.* 2012; Mạc 2012). It is unclear if these intonational cues, which show great speaker variability, can be analyzed as categorical boundary tones in the autosegmental-metrical sense (Michaud 2005; Brunelle *et al.* 2012; Brunelle 2016).

The lack of categorical realization of intonation in languages with large tone inventories could be facilitated by sentence-final particles, which are a pervasive feature of most MSEA languages. These often have the same function as intonation, arguably making it redundant. In fact, Hyman and Monaka (2011) have proposed to treat such particles as a part of the intonational system. However, the existence of final particles alone does not imply that intonation is not employed, either redundantly or primarily (e.g. Dryer 2013); much more work in this area is needed.

3.3 Information structure

In many MSEA languages, information structure is primarily marked by means of syntactic restructuring and overt morphological markers. The reader is referred to Michaud and Brunelle (2016) for an overview of such markers in Yongning Na and Vietnamese. More relevant to this chapter is the prosodic marking of information structure. Although these structures have not received much attention in the languages of the area, they seem to mainly include prosodic phrasing and overt focus.

A Yongning Na example of information structure realized through prosodic phrasing is given in (15). In this example, ‘dog meat’ is topicalized and thus forms a tone group separate

from the rest of the sentence, a phrasing that is marked by the bolded tone changes (see Michaud 2017: 324-327 for detailed tone rules).

- (15) /k^hvɿmiɿ-**ʂeɿ** **dzɯ**ɿ məɿ ɗoɿ piɿ zo/
 dog-meat eat NEG ought_to say ADVB
 k^hvɿmiɿ-**ʂeɿ**, **dzɯ**ɿ-məɿ-ɗoɿ-piɿ-zoɿ
 ‘It is said that one must not eat dog meat! / It is said that dog meat is something one must not eat!’ (Michaud and Brunelle 2016)

Vietnamese is the MSEA language in which overt focus has been studied the most systematically. Studies have been conducted on corrective focus (Michaud 2005; Vũ *et al.* 2005; Brunelle 2017) and pragmatic focus (Jannedy 2007). Results reveal that speakers can realize focus through a number of correlates of vocal effort, such as raised f_0 and intensity, increased duration, and a fuller realization of tone contours and phonation types associated to tones. However, speakers do not need to use all these cues simultaneously, and they exhibit significant individual variation. In spontaneous speech, prosodic focus is normally accompanied by morphosyntactic focus-marking strategies.

4 Conclusion

In this short chapter, we have attempted to give an overview of the diverse prosodic systems of MSEA. We have argued that it is difficult to characterize the languages of the region in terms of a few stereotypical prosodic properties. The chapter also reflects the state of our current knowledge on the prosodic structures of MSEA: while their word-level prosody is well-understood, it is imperative that more work be conducted on their phrasal prosody, which is still ill-understood.

5. References

- Abramson, A. S., M. K. Tiede & T. Luangthongkum. 2015. Voice Register in Mon: Acoustics and Electroglottography. *Phonetica* 72.237-56.
 Abramson, Arthur S & Theraphan Luangthongkum. 2009. A fuzzy boundary between tone languages and voice-register languages. *Frontiers in Phonetics and Speech Science*.149-55.

- Abramson, Arthur S, Patrick W Nye & Therapan Luangthongkum. 2007. Voice register in Khmu': Experiments in production and perception. *Phonetica* 64.80-104.
- Alieva, Natalia F. 1984. A Language-Union in Indo-China. *Asian and African Studies* XX.11-22.
- Andruski, Jean E. & Martha Ratliff. 2000. Phonation types in production of phonological tone: the case of Green Mong. *Journal of the International Phonetic Association* 30.37-61.
- Bickel, Balthasar, Kristine A. Hildebrandt & René Schiering. 2009. The distribution of phonological word domains: A probabilistic typology. *Phonological Domains: Universals and Deviations*, ed. by J. Grijzenhout & B. Kabak, 47-78. Berlin, New York: Mouton de Gruyter.
- Blood, Doris W. 1977. Clause and Sentence Final Particles in Cham. *Papers in Southeast Asian Linguistics* no.4: Chamic Studies, ed. by D.D. Thomas, E.W. Lee & N.Đ. Liêm, 39-51: Pacific Linguistics Series A.
- Bradley, David. 1982. *Tonation*. Canberra: Pacific Linguistics.
- Brunelle, Marc. 2005. Register in Eastern Cham: Phonological, Phonetic and Sociolinguistic approaches. Ithaca: Cornell Ph.D.
- . 2009a. Northern and Southern Vietnamese Tone Coarticulation: A Comparative Case Study. *Journal of Southeast Asian Linguistics* 1.49-62.
- . 2009b. Tone perception in Northern and Southern Vietnamese. *Journal of Phonetics* 37.79-96.
- . 2016. Intonational phrase marking in Southern Vietnamese. *Proceedings of Tonal Aspects of Languages*.60-64.
- . 2017. Stress and phrasal prominence in tone languages: The case of Southern Vietnamese. *Journal of the International Phonetic Association*.
- Brunelle, Marc, Kiều Phương Hạ & Martine Grice. 2012. Intonation in Northern Vietnamese. *The Linguistic Review* 29.3-36.
- . 2016. Inconspicuous coarticulation: A complex path to sound change in the tone system of Hanoi Vietnamese *Journal of Phonetics*.23-39.
- Brunelle, Marc & James Kirby. 2015. Re-assessing tonal diversity and geographical convergence in Mainland Southeast Asia. *Mainland Southeast Asian Languages - the State of the Art*, ed. by N. Enfield & B. Comrie, 82-110. Boston: De Gruyter/Mouton.
- . 2016. Tone and phonation in Southeast Asian languages. *Language and Linguistics Compass* 10.191-207.
- Butler, Becky Ann. 2014. *Deconstructing the Southeast Asian sesquisyllable: A gestural account*, PhD thesis, Linguistics, Cornell University.
- Chen, Yiya & Yi Xu (2006). "Production of Weak Elements in Speech—Evidence from F₀ Patterns of Neutral Tone in Standard Chinese." *Phonetica* 63(1): 47-75.
- Chirkova, Katia. 2009. Shixing, a Sino-Tibetan language of South-West China: A grammatical sketch with two appended texts. *Linguistics of the Tibeto-Burman Area* 32(1). 1-90.
- Chirkova, Ekaterina & Alexis Michaud. 2009. Approaching the prosodic system of Shixing. *Language and Linguistics* 10.539-68.
- Clements, G.N., Alexis Michaud & Cédric Patin. 2010. Do we need tone features? In Elizabeth Hume, John Goldsmith & W. Leo Wetzels (eds.), *Tones and Features*, 3–24. Berlin: De Gruyter Mouton.
- Das, Kalyan. 2017. Tone and Intonation in Boro. Paper presented at the Chulalongkorn International Symposium on Southeast Asian Linguistics 2017, Bangkok.
- Das, Kalyan & Shakuntala Mahanta. 2016. Tonal Alignment and Prosodic Word domains in

- Boro. Proceedings of Tonal Aspects of Languages 2016.111-15.
- Daudey, Henriette. 2014. A grammar of Wadu Pumi. Melbourne: La Trobe University PhD dissertation.
- DiCanio, Christian. 2009. The Phonetics of Register in Takhian Thong Chong. *Journal of the International Phonetic Association* 39.162-88.
- Diffloth, Gérard. 1982. Registres, Dévoisement, Timbres Vocaliques: leur Histoire en Katouïque. *Mon-Khmer Studies*.47-82.
- . 1985. The registers of Mon vs. the spectrographist's tones. *UCLA Working Papers in Phonetics* 60.55-58.
- Ding, Picus Sizhi. 2014. A Grammar of Prinmi: Based on the central dialect of Northwest Yunnan, China: Brill.
- Đỗ, Thế Dũng, Thiên Hương Trần & Georges Boulakia. 1998. Intonation in Vietnamese. Intonation systems: A Survey of Twenty Languages, ed. by D. Hirst & A.D. Cristo, 395-416. Cambridge: Cambridge University Press.
- Dryer, Matthew S. 2013. Polar Questions. In: Dryer, Matthew S. & Haspelmath, Martin (eds.) *The World Atlas of Language Structures Online*. Leipzig: Max Planck Institute for Evolutionary Anthropology. (Available online at <http://wals.info/chapter/116>, Accessed on 2017-06-17.)
- Edmondson, Jerold A., Lama Ziwo, John H. Esling, Jimmy G. Harris & Li Shaoni. 2001. The aryepiglottic folds and voice quality in the Yi and Bai languages: laryngoscopic case studies. *Mon-Khmer Studies* 31.83-100.
- Enfield, Nicholas J. 2011. Linguistic diversity in mainland Southeast Asia. *Dynamics of human diversity: The case of mainland Southeast Asia*, ed. by N.J. Enfield, 63-80. Canberra: Pacific Linguistics.
- Enfield, Nick J. 2003. *Linguistic epidemiology : semantics and grammar of language contact in Mainland Southeast Asia* London: Routledge/Curzon.
- . 2005. Areal Linguistics and Mainland Southeast Asia. *Annual Review of Anthropology* 34.181-206.
- Esposito, Cristina M. 2012. An acoustic and electroglottographic study of White Hmong tone and phonation. *Journal of Phonetics* 40.466-76.
- Evans, Jonathan. 2008. African tone in the Sinosphere. *Language and Linguistics* 9.463-90.
- Ferlus, Michel. 1979. Formation des Registres et Mutations Consonantiques dans les Langues Mon-Khmer. *Mon Khmer Studies* VIII.1-76.
- Gandour, Jackson, Siripong Potisuk & Sumalee Dechongkit. 1992a. Anticipatory tonal coarticulation in Thai noun compounds. *Linguistics of the Tibeto-Burman Area* 15.
- . 1992b. Tonal coarticulation in Thai disyllabic utterances: A preliminary study. *Linguistics of the Tibeto-Burman Area* 15.93-110.
- . 1994. Tonal Coarticulation in Thai. *Journal of Phonetics* 22.477-92.
- Garellek, Marc, Patricia Keating & Christina M Esposito. 2014. Relative importance of phonation cues in White Hmong tone perception. *Proceedings of the 38th Annual Meeting of the Berkely Linguistic Society*.179-89.
- Garellek, Marc, Patricia Keating, Christina M Esposito & Jody Kreiman. 2013. Voice quality and tone identification in White Hmong. *The Journal of the Acoustical Society of America* 133.1078-89.
- Gradin, Dwight. 1966. Consonantal tone in Jeh phonemics. *Mon Khmer Studies* 2.41-53.
- Green, Anthony Dubach. 2005. Word, foot, and syllable structure in Burmese. *Studies in*

- Burmese linguistics, ed. by J. Watkins, 1–25. Canberra: Canberra: Pacific Linguistics.
- Gregerson, Kenneth. 1973. Tongue-root and Register in Mon-Khmer. *Austroasiatic Studies*, ed. by P.N. Jenner, L. Thompson & S. Starosta, 323-69. Honolulu: University Press of Hawaii.
- Gruber, James. 2011. *An Acoustic, Articulatory, and Auditory Study of Burmese Tone*: Georgetown PhD dissertation.
- Gsell, René 1980. Remarques sur la structure de l'espace tonal en Vietnamien du sud (parler de Saigon). *Cahiers d'études vietnamiennes* 4: 1-26.
- Hạ, Kiều Phương. 2010. Prosody of Vietnamese from an interactional perspective: ở, ù and vâng in backchannels and requests for information. *Journal of the Southeast Asian Linguistics Society* 3.56-76.
- . 2012. *Prosody in Vietnamese: Intonational Form and Function of Short Utterances in Conversation*. Cologne: University of Cologne.
- Han, Mieko & Kong-On Kim. 1974. Phonetic variation of Vietnamese tones in disyllabic utterances. *Journal of Phonetics* 2.223-32.
- Henderson, Eugenie. 1952. The main features of Cambodian pronunciation. *Bulletin of the School of Oriental and African Studies* 14.453-76.
- Henderson, Eugénie. 1965. The Topography of Certain Phonetic and Morphological Features of Southeast Asian Languages. *Lingua* 15.400-34.
- Hildebrandt, Kritine A. 2007. Prosodic and Grammatical Domains in Limbu. *Himalayan Linguistics* 8.1-34.
- House, David, Anastasia Karlsson, Jan-Olof Svantesson & Damrong Tayanin. 2009. The phrase-final accent in kammu: effects of tone, focus and engagement. Paper presented to the INTERSPEECH, 2009.
- Huffman, Franklin. 1976. The register problem in fifteen Mon-Khmer languages. *Oceanic Linguistics special publication Austroasiatic Studies*, part 1.575-89.
- Huffman, Marie K. 1987. Measures of phonation type in Hmong. *Journal of the Acoustical Society of America* 81.495-504.
- Hyman, Larry M & Kemmony C Monaka. 2011. Tonal and non-tonal intonation in Shekgalagari. *Prosodic categories: production, perception and comprehension*, ed. by S. Frota, G. Elordieta & P. Prieto, 267-89: Springer.
- Hyman, Larry & Kenneth VanBik. 2002. Tone and syllable structure in Hakha-Lai. Paper presented to the Annual Meeting of the Berkeley Linguistics Society, 2002
- Hyman, Larry & Kenneth VanBik. 2004. Directional rule application and output problems in Hakha Lai tone. *Language and Linguistics* 5.821-61.
- Ingram, John & Thị Anh Thu Nguyễn. 2006. Stress, tone and word prosody in Vietnamese compounds. *Proceedings of the 11th Australian International Conference on Speech Science & Technology*, ed. by P. Warren & C.I. Watson., 193-98. Auckland: University of Auckland.
- Jacques, Guillaume. 2011. Tonal alternations in the Pumi verbal system. *Language and Linguistics* 12.359-92.
- Jacques, Guillaume & Alexis Michaud. 2011. Approaching the historical phonology of three highly eroded Sino-Tibetan languages: Naxi, Na and Laze. *Diachronica* 28.468-98.
- Jannedy, Stefanie. 2007. Prosodic Focus in Vietnamese. *Interdisciplinary Studies on Information Structure*, ed. by S. Ishihara, S. Jannedy & A. Schwarz, 209-30. Potsdam: Universitätsverlag Potsdam.

- Karlsson, Anastasia, David House & J-O Svantesson. 2012. Intonation adapts to lexical tone: the case of Kammu. *Phonetica* 69.28-47.
- Karlsson, Anastasia, David House, Jan-Olof Svantesson & Damrong Tayanin. 2010. Influence of lexical tones on intonation in Kammu. Paper presented to the INTERSPEECH, 2010.
- Kirby, James 2011. Vietnamese (Hanoi Vietnamese). *Journal of the International Phonetic Association* 41(3): 381-392.
- Kirby, James and Marc Brunelle 2017. Southeast Asian tone in areal perspective. *The Cambridge handbook of areal linguistics*. Ed. By Raymond Hickey, Cambridge University Press: 703-731.
- Kuang, Jianjing. 2013. The tonal space of contrastive five level tones. *Phonetica* 70.1-23.
- L-Thongkum, Therapan. 1987. Another Look at the Register Distinction in Mon. *UCLA Working Papers in Phonetics* 67.29-48.
- LaPolla, Randy and Chenglong Huang. 2003. *A Grammar of Qiang with annotated texts and glossary*. Berlin: Mouton de Gruyter.
- Lee, Ernest W. 1977. Devoicing, Aspiration, and Vowel Split in Haroi: Evidence for Register (Contrastive Tongue-Root Position). *Papers in Southeast Asian Linguistics* no.4, ed. by D.D. Thomas, E.W. Lee & N.Đ. Liêm, 87-104. Canberra: Australian National University.
- Lee, Thomas. 1983. An acoustical study of the register distinction in Mon. *UCLA Working Papers in Phonetics* 57.79-96.
- Luangthongkum, Theraphan. 1977. *Rhythm in standard Thai*: University of Edinburgh.
- Luksaneeyanawin, Sudaporn 1998. Intonation in Thai. *Intonation Systems*, ed. by D. Hirst & A.D. Cristo, 376-94. Cambridge: Cambridge University Press.
- Mạc, Đăng Khoa. 2012. *Génération de parole expressive dans le cas des langues à tons*. Grenoble Grenoble INP.
- Maddieson, I. and K.-F. Pang 1993. Tone in Utsat. *Tonality in Austronesian Languages*. Ed. By J. Edmondson and K. Gregerson. Honolulu, U of Hawaii Press: 75-89.
- Matisoff, James. 1973. Tonogenesis in Southeast Asia. *Consonant Types and Tone*, ed. by L. Hyman, 71-96. Los Angeles: USC.
- Mazaudon, Martine & Alexis Michaud. 2008. Tonal Contrasts and Initial Consonants: A Case Study of Tamang, a 'Missing Link' in Tonogenesis. *Phonetica* 65.231-56.
- Michaud, Alexis. 2004. *Final Consonants and Glottalization: New Perspectives from Hanoi Vietnamese*. *Phonetica* 61.119-46.
- . 2005. *Prosodie de langues à tons (naxi et vietnamien), prosodie de l'anglais : éclairages croisés*. Paris: Paris 3 - Sorbonne Nouvelle PhD dissertation.
- . 2017. *Tone in Yongning Na: Lexical tones and morphotonology*. Berlin: Language Science Press (Studies in Diversity Linguistics 13).
- Michaud, Alexis & Marc Brunelle. 2016. Information Structure in Asia: Yongning Na (Sino-Tibetan) and Vietnamese (Austroasiatic). *The Oxford Handbook of Information Structure*, ed. by C. Féry & S. Ishihara, 774-89. Oxford: Oxford University Press.
- Michaud, Alexis & He Xueguang. 2007. Reassociated tones and coalescent syllables in Naxi (Tibeto-Burman). *Journal of the International Phonetic Association* 37.237-55.
- Mohd Don, Zuraidah, Janet Yong & Gerry Knowles. 2008. How words can be misleading: a study of syllable timing and "stress" in Malay. *Linguistics Journal* 3.
- Morén, Bruce & Elizabeth Zsiga. 2006. The Lexical and Postlexical Phonology of Thai Tones. *Natural Language and Linguistic Theory* 24.113-78.
- Mortensen, David. 2004. *The Development of Tone Sandhi in Western Hmongic: A New*

- Hypothesis. Berkeley.
- Mundhenk, Alice Tegenfeldt & Hella Goschnick. 1977. Haroi Phonemes. Papers in Southeast Asian Linguistics no. 4, ed. by D.D. Thomas, E.W. Lee & N.Đ. Liêm, 1-15. Canberra: Australian National University.
- Nespor, Marina & Irene. Vogel. 1986. Prosodic Phonology Dordrecht/Riverton: Foris Publications.
- Nguyễn, Thị Thanh Hương & Georges Boulakia. 1999. Another look at Vietnamese intonation. Proceedings of the XIVth International Congress of Phonetic Sciences.2399-402.
- Nguyễn, Van Huệ 2007. The direction of monosyllabicity in Raglai. SEALS VIII Papers from the 8th Annual Meeting of the Southeast Asian Linguistics Society 1998, ed. by M. Alves, P. Sidwell & D. Gill, 121-23. Canberra: Pacific Linguistics, Research School of Pacific and Asian Studies, The Australian National University.
- Nguyễn, Văn Lợi & Jerold Edmondson. 1997. Tones and voice quality in modern northern Vietnamese: Instrumental case studies. Mon-Khmer Studies 28.1-18.
- Okell, John & Anna Allott. 2001. Burmese/Myanmar dictionary of grammatical forms: Psychology Press.
- Phạm, Andrea Hoà. 2008. Is there a prosodic word in Vietnamese? Toronto Working Papers in Linguistics 29.1-23.
- Phạm, Thị Thu Hà & Marc Brunelle. 2014. Ngữ điệu và các tiểu từ cuối câu trong tiếng Cham Phan Rang (Intonation and sentence-final particles in Phan Rang Cham). Ngôn Ngữ 6.57-69.
- Pittayaporn, Pittayawat. 2007. Prosody of Final Particles in Thai: Interaction between Lexical Tones and Boundary Tones. Paper presented to the International Workshop on "Intonation Phonology: Understudied or Fieldwork Languages", Saarbrücken, 2007.
- Post, Mark W. 2009. The phonology and grammar of Galo "words": A case study in benign disunity. Studies in Language 33.934-74.
- Potisuk, Siripong, Jackson Gandour & Mary Harper. 1996. Acoustic correlates of stress in Thai. Phonetica 53.200-20.
- Potisuk, Siripong, Jackson Gandour & Mary Harper. 1994. F0 correlates of stress in Thai. Linguistics of the Tibeto-Burman Area 17.1-27.
- Ratliff, Martha. 1987. Tone sandhi compounding in White Hmong. Linguistics of the Tibeto-Burman Area 10.71-105.
- Rialland, Annie. *To appear*. "Intonation in Bantu languages". In *The Oxford Guide to the Bantu languages*. Oxford, U.K.: Oxford University Press.
- Rose, Phillip. 1989. On the non-equivalence of fundamental frequency and linguistic tone. Prosodic Analysis and Asian Linguistics: to honour R.K. Sprigg, ed. by D. Bradley, E. Henderson & M. Mazaudon, 55-82. Canberra: Pacific Linguistics.
- Schiering, René, Balthasar Bickel & Kristine A. Hildebrandt. 2010. The prosodic word is not universal, but emergent. Journal of Linguistics 46.657-709.
- Selkirk, Elizabeth. 1984. Phonology and Syntax: The Relation between Sound and Structure Cambridge: MIT Press.
- Suwilai, Premsrirat. 2004. Register complex and tonogenesis in Khmu dialects. Mon-Khmer Studies 34.1-17.
- Svantesson, Jan-Olof. 1983. Kammu Phonology and Morphology Malmö: CWK Gleerup.
- Svantesson, Jan-Olof & David House. 2006. Tone production, tone perception and Kammu tonogenesis. Phonology 23.309-33.

- Thomas, David. 1992. On sesquisyllabic structure. *Mon-Khmer Studies* 21.207-10.
- Thurgood, Graham, Ela & Li Fengxiang 2015. A Grammatical Sketch of Hainan Cham: History, Contact, and Phonology. Berlin-Boston: Mouton De Gruyter
- Trần, Hương Mai. 1967. Tones and Intonation in South Vietnamese. Series A - Occasional Papers #9, *Papers in Southeast Asian Linguistics* No.1, ed. by Đ.L. Nguyễn, H.M. Trần & D. Dellinger, 19-34. Canberra: Linguistics Circle of Canberra.
- Trần, Thị Thúy Hiền & Nathalie Vallée. 2009. An acoustic study of interword consonant sequences in Vietnamese. *Journal of the Southeast Asian Linguistics Society*.231-49.
- Vũ, Minh Quang, Đỗ Đạt Trần & Éric Castelli. 2006. Intonation des phrases interrogatives et affirmatives en langue vietnamienne. *Journées d'Étude de la Parole*.4.
- Vũ, Ngọc Tuấn, Christophe d'Alessandro & Alexis Michaud. 2005. Using open quotient for the characterization of Vietnamese glottalized tones. *Proceedings of Interspeech*, Lisbon, 2005, 2885-2889.
- Vũ, Thanh Phương. 1982. Phonetic Properties of Vietnamese Tones across dialects. *Papers in Southeast Asian Linguistics*, ed. by D. Bradley, 55-75. Sydney: Australian National University.
- Watkins, Justin. 2002. The Phonetics of Wa. *Experimental Phonetics, Phonology, Orthography and Sociolinguistics*. Canberra: Pacific Linguistics, The Australian National University.
- Watkins, Justin. 2013. A first account of tone in Myebon Sumtu Chin. *Linguistics of the Tibeto-Burman Area* 36.97-127.