Chapter 40: Information Structure in Asia: Yongning Na (Sino-Tibetan) and Vietnamese (Austroasiatic)

Alexis Michaud & Marc Brunelle

Abstract

Languages of Asia are highly diverse. Rather than attempting a review of the literature about information structure in this huge linguistic area, this chapter provides observations about two languages that differ sharply in terms of how they convey information structure. Yongning Na (Sino-Tibetan) is an example of a language with abundant morphemes expressing information structure, whereas Vietnamese (Austroasiatic) makes little use of such morphemes. Along with key morphosyntactic facts, this chapter presents the role played by intonation in conveying information structure in these two tonal languages.

Keywords: information structure; Yongning Na; Vietnamese; referential density; intonation; discourse particles

40.1 Introduction

The present chapter is intended to be complementary with the overview of information structure (hereafter IS) in Chinese by Chen and Pan (this volume). Neither of the two languages presented in this chapter, Yongning Na and Hanoi Vietnamese, belongs to the small set of 'canonically exotic languages' (Matisoff 1973:xlv), such as Japanese, which are often discussed in the literature, so their inclusion in a textbook can be seen as a modest contribution towards broadening the empirical basis of IS research. Moreover, these two languages differ sharply in the way they convey IS, providing an illustration of the great diversity found among languages of Asia.

'Information structure is a vast topic of research that has been pursued within different theoretical frameworks' (Krifka 2008:244), and with different objectives in view. While we have adhered to the framework set by Krifka (2008), we are keenly aware that cross-linguistic categories can only capture a small part of IS (see Matić and Wedgwood 2013, and the general discussion by Haspelmath 2007); we have accordingly stated our observations in terms that we hope can easily be interpreted by readers working within different theoretical frameworks. Our view of IS is that it is not to be viewed as a separate 'module', but as part and parcel of language as communicative activity. IS 'cannot be described without referring to the strategies used to narrate events or make arguments' (Krifka 2008:272; see also Kohler 2009; Horn, this volume; Karcevskij 1931:191).

Each of the two sections of this chapter deals successively with topics, focus and givenness.

40.2 Yongning Na

Yongning Na is a language of the Naish subgroup of Sino-Tibetan (Jacques and Michaud 2011). It has typologically salient characteristics, many of which are shared with other Sino-Tibetan languages.

40.2.1 Topics

40.2.1.1. Word order

The following generalization about Qiang proposed by Lapolla and Huang (2003) also applies to Yongning Na:

'The structure of the clause is to some extent affected by pragmatic factors, but this only applies to the order of noun phrases in the clause. The utterance-initial position is the unmarked topic position (though secondary topics can follow the primary topic), while the position immediately before the verb is the unmarked focus position, and so the focused element will generally appear there. The verb always appears in final position; there is no possibility for the actor of a clause to appear in postverbal position, even if it is focal. The only exception to this is the occasional afterthought clarification of a noun phrase that was omitted or expressed as a pronoun in the clause.' (LaPolla and Huang 2003:221)

IS in Na has accordingly been described as 'topic-comment', extending an observation made by Chao Yuen-ren about Chinese: 'the grammatical meaning of subject and predicate in a

Chinese sentence is topic and comment, rather than actor and action' (Chao Yuen-ren 1968:69; Shi 2000; LaPolla 2009).

> 'The primary information structure in Na is topic/comment rather than subject/predicate. (...) a topic can be a nominal argument, about which the rest of the sentence will comment upon, but the topic can also be an adverbial, an independent clause, or a dependent clause.' (Lidz 2010:296)

Word order thus plays an important role in the structuring of IS in Na. Example (1) provides an illustration.[1] Sentence (1) is translated with a conditional, illustrating the proximity between topics and conditionals (Haiman 1978).

---

[1] Unless specified otherwise, the examples provided in the chapter have been collected by the authors or coined and double-checked with native speakers. Apart from example (1), all the Yongning Na examples are drawn from a set of 20 narratives; the recordings are available online with time-aligned transcriptions through the Pangloss Collection (Michailovsky et al. 2014). The reference to these texts is provided in the following format: <short title of document> <version number, for narratives that were told several times>.<sentence number>. For instance, Housebuilding.259 refers to sentence 259 of the narrative 'Housebuilding', and Seeds2.67 refers to sentence 67 in the second version of the narrative 'Seeds'. The numbering of sentences is indicated in the online display of the texts. Glossing follows the Leipzig Glossing Rules, with the following additions to the core set of standard abbreviations: ACCOMP for ACCOMPLISHED; ADVB for ADVERBIALIZER; CERTITUDE for an epistemic value of the copula in Yongning Na; and EXIST for EXISTENTIAL verbs.

(1) le˧-dzɯ˥ | bi˧mi˧ go˩²

le˧-	dzɯ˥	bi˧mi˧	go˩
ACCOMP	eat	stomach	ache *(verb)*

'If [you] eat [of it], [your] stomach [will] hurt!' (Field notes, speaker F4. Isolated sentence transcribed on the fly. Context: on the mountain, pointing out a berry that is not edible.)

40.2.1.2. Discourse particles conveying IS

Yongning Na is similar to a number of other Sino-Tibetan languages in possessing a wealth of discourse particles that contribute to the structuring of information. Pinpointing the exact range of uses of particles can be a thorny task, given their various connotations and rich compositional potential. Grammars that address these issues in detail are available for Lahu (Matisoff 1973), Lalo (Björverud 1998), and Qiang (LaPolla and Huang 2003). Particles stand at different points along the path towards use as 'pure' information-structure markers. In Na, a few particles are exclusively used for the marking of IS, such as the topic marker /-dʑo˩/; others are about as commonly used as (bleached) information-structure markers and in another function, such as demonstratives; others still are used secondarily to indicate IS, in particular particles indicating the relationship that a noun phrase bears to a verb (thematic

---

[2] The vertical bar | indicates a juncture between tone groups; about the division of utterances into tone groups in Yongning Na, see §xyz. Tone is indicated by means of International Phonetic Alphabet tone letters placed after the syllable at issue: ˥ for High, ˧ for Mid, ˩ for Low, and the combinations ˩˥ for Low-to-High and ˧˥ for Mid-to-High; for a presentation of the Yongning Na tone system, see Michaud (2013).

relations). In (1), the topic marker /-dʑoɭ/ does not appear; a plausible reason is that in this context (after a verb preceded by the accomplished morpheme /leɬ-/) /-dʑoɭ/ would be interpreted as the progressive, which is homophonous with the topic marker. In the second sentence in (2), on the other hand, the topic marker /-dʑoɭ/ appears as expected:

(2) kʰvɬmæɬ-tʂʰɯɬ-ŋɯɭ, ꞁ hĩɬ-bvɬ, ꞁ əɬtsoɬ doɭ, ꞁ əɬtsoɬ tʂæɬ-ɲiꞁ-zeꞁ! ꞁ qæɬdoɬ doɭ-dʑoɭ, ꞁ qæɬdoɬ qæꞁ!

kʰvɬmæɬ -tʂʰɯꞁ		-ŋɯ	hĩꞁ	-bv	əɬtsoɬ		doɭ	əɬtsoɬ
bandit	TOP(/DEM.PROX)	ABL/A/TOP	person	POSS	INTERROG.what		see	INTERROG.what

tʂæꞁ	ɲiꞁ	-ze	qæɬdoɬ	doɭ	-dʑoɭ	qæɬdoɬ	qæꞁ
rob	CERT_STR(COP)	PFV	lumber	see	TOP	lumber	burn

'Bandits steal people's [belongings]: whatever they spot, they will steal! (=Bandits steal whatever belongings of a person they see.) If they spot lumber, they will burn it!' (Housebuilding.259)

In the first sentence in (2), 'robbers' is strongly brought to the fore through the combination of /-tʂʰɯꞁ/ and /-ŋɯ/. These two particles contribute to indicate that the preceding noun has the status of topic; on the other hand, /-ŋɯ/ and /-tʂʰɯꞁ/ are often associated with the topic marker /-dʑoɭ/, highlighting the fact that they are not yet fully grammaticalized as topic markers. The marker /-tʂʰɯꞁ/ was grammaticalized from a proximal demonstrative, also used as 3rd-person pronoun, with which it remains formally identical. The postposition /-ŋɯ/ is an ablative marker, which has developed into an agent marker (Lidz 2011:53; for observations on similar developments in neighbouring languages: LaPolla 1995; on the use of case markers to convey IS, see also the alternation between ergative and absolutive in Newari: Genetti 1988). A close examination of cases of use of /-ŋɯ/ as an agent marker reveal that it is fairly rare for there to

be true ambiguity as to semantic roles, however (Lidz 2011:55). Cases like (2) are common: the agent marker functions prominently as an IS indication.

From a lexicographic point of view, it is an issue whether to set up a distinct subentry It appears appropriate to set up three subentries for the morpheme /-ʈʂʰɯ˩/, since its uses as proximal demonstrative, as third person pronoun and as topic marker are by now relatively well-differentiated. The three glosses used are DEM.PROX, 3SG and TOP(/DEM.PROX): the latter combines an indication of the particle's IS function (topic marker) with an indication of its origin as a proximal demonstrative. On the other hand, the use of /-ŋɯ/ as IS marker does not currently appear highly grammaticalized; omission of this particle from (2) would not modify IS in any spectacular way, even though it would lend less salience to the topic. It therefore does not appear warranted to set up of a distinct subentry; the three uses of /-ŋɯ/ – as ablative, agent and topic marker – are therefore indicated side by side in the gloss, in the hypothesized order of diachronic development: ABL/A/TOP.

In addition to /-dʑo˩/, /-ʈʂʰɯ˩/ and /-ŋɯ/, there exist three less frequently occurring topic markers, whose origin remains unclear. One is an archaic word, /-læ˦/, appearing only once in the recorded data. The two others are /-no˥/ and /-se/, which can only apply to a noun phrase, whereas the other topic markers can bear on a noun phrase or an entire clause. Examination of the contexts of appearance of /-no˥/ and /-se/ brings out the presence of strong emphasis on the topicalized element in contrast to others: a possible translation is 'as for X/as concerns X'. These two morphemes can be described as contrastive topic markers (Krifka 2008:267).

40.2.2 Focus

Focus in Yongning Na is conveyed by local phenomena of intonational emphasis. The discussion progresses from emphatic stress to less extreme cases of intonational emphasis.

40.2.2.1 Emphatic stress

Emphatic stress is found in Yongning Na. It appears to have essentially the same function as in English and French – calling the attention of the listener to a particular word – hence the choice to use this label (proposed by Coustenoble and Armstrong 1937). In the languages where emphatic stress has been experimentally investigated, it has been found that prototypical realizations involve supplementary activity of the expiratory muscles, resulting in a sudden increase in subglottal pressure during the articulation of a consonant (Benguerel 1973; Carton et al. 1976; Ohala 1978; Fant, Hertegård, and Kruckenberg 1996), hence the term 'force-accent' used by Kohler (2003). Acoustically, this exerts an influence on spectral slope (Rossi 1971:143; Glave and Rietveld 1975; Gobl 1988; Fant and Kruckenberg 1995; Sluijter, Van Heuven, and Pacilly 1997; Heldner 2003).

Emphatic stress has been somewhat neglected in intonation studies, as researchers focused their attention mostly on the acoustic parameter of fundamental frequency. But it is an important component of intonation, in Na as well as in a number of other languages. Its linguistic functions range from the attitudinal and emotional to the pragmatic. It is most often encountered in toned-down versions, physiological effort at a subglottal level being mimicked through such strategies as f0 excursions and consonant lengthening. Like other linguistic phenomena, emphatic stress comprises important language-specific and speech-style-specific dimensions: its frequency of use varies greatly from language to language, from speaker to

speaker, and from style to style; its stylistic effect is inversely proportional to its frequency of use.

An 'up' arrow ↑ to mark intonational emphasis is adopted for the Na data, following Mazaudon (2004). The arrow is placed to the left of the emphasized syllable, as in (3).

(3) tʰiʌ, | ə˥mv˩-ji˥-hĩ˩ | -dʑo˩, | ↑zo˥ ɲi˥-tsɯ˩ | -mv˩.

tʰiʌ	ə˥mv˧	ji˥	hĩ	-dʑo˩
then	older_sibling	do	NMLZ.AGT	TOP

zo˥	ɲi˩	-tsɯ˧	-mv
boy/son	COP	REP	AFFIRM

'The elder [of the two siblings] was a boy.' (Sister.5)

In many contexts, emphatic stress appears on a constituent that can be predicted to receive normal focus prosody. For example, in (3), we would expect the focus to be in the immediate preverbal position – the usual unmarked focus position for verb-final languages. Emphatic stress can be considered an extreme form of focus prosody; it is an extreme along a continuum: there is no hard-and-fast boundary between emphatic stress and milder realizations of focus prosody. When annotating recordings, it is sometimes an issue whether to add an 'up' arrow ↑ or not.

The phonetic realization of emphatic stress includes effects on the articulation of vowels and consonants also partakes in the realization of emphatic stress: for instance, the second syllable of the verb /dʑɤ˩↑bv˩/ 'to play' is realized in Caravans.231 with a much stronger trilling of the /b/ than is found in non-emphatic contexts. (About 'articulatory prosodies', see Kohler and Niebuhr 2011; Niebuhr 2009, 2013.) Emphatic stress is phonetically located on one syllable only, but from the point of view of interpretation, there is ambiguity of focus

marking. This phenomenon is extensively studied in the literature on focus projection (e.g. Selkirk 1995); Lambrecht uses the terms 'broad focus' vs. 'narrow focus' (Lambrecht 1994). In its most vehement manifestations, emphatic stress intrudes into a sentence's intonation, wreaking havoc on tonal contrasts. Example (4) is a case in point.

(4) pʰv˩-tɕæ˩ɻæ˩-gv˩-kv˩-ze˩-mæ˩

pʰv˩-tɕæ˩ɻæ˩	gv˩	kv˥	-ze	-mæ
very_white	prepare	ABILITIVE	ACCOMP	AFFIRM

'[after boiling, linen thread] can become really white!' (FoodShortage.73)

The usual pronunciation is /pʰv˩-tɕæ˩ɻæ˩/ 'very white'. In (4), the second syllable is realized phonetically with extremely high fundamental frequency on the syllable /tɕæ˩/, which is considerably lengthened. From a phonetic point of view, its phonetic L tone is conspicuously disregarded. One way of looking at this modification would be to describe it as due to an intonational overlay: functionally, one could consider transcribing as /pʰv˩-↑tɕæ˩ɻæ˩-gv˩/, where the arrow ↑ indicates emphatic stress on the second syllable, and the underlying tonal string is unchanged. The lowering of the syllable string /ɻæ-gv-.../ would then be ascribed to post-focal pitch range compression.

   Another interpretation is that this forcible intonational modification interacts with the phonological tone string of the tone group (on this notion: see section 2.3.2). If the modification of the second syllable in /pʰv˩-tɕæ˩ɻæ˩-gv˩/ only took place on an intonational level, and the underlying tonal string remained unchanged, the third syllable would retain its phonological H tone. Discussions with the consultant who produced this story suggest that the third and fourth syllables in (4) are lowered to L, however, yielding /...ɻæ˩-gv˩/, as expected if the second syllable carried H tone: the lowering of all tones to L after a H tone is an

exceptionless tone rule of Yongning Na. At present, no truly decisive evidence on this issue can be offered; if the speakers could write their language, it would be interesting to see which solution they prefer, but so far there has not yet been any opportunity to work with a consultant who had metalinguistic awareness. This phenomenon is provisionally analyzed as involving a categorical tone change, from a L.L.H sequence, /pʰvɭ-tɕæɭɻæ˥/, to a L.H.L sequence, /pʰvɭ-tɕæ˥ɻæɭ/.

40.2.2.2 Focalization through a dipping contour

In Yongning Na, one means of emphasizing a word within a sentence consists in a rapid dipping contour, as in example (5). Focalization through a dipping contour is compatible with emphatic stress, but formally distinct from it.

(5) hĩɬ-kiɬ ǀ ɖɯɬ-kʰwɤ˥ F ǀ məɬ-pi˥

hĩ˥	ki	ɖɯɬ-kʰwɤ˥	mə	pi˥
person	to	1-CLF_pieces	NEG	say

'(S)he did not say anything to the people present! / (S)he did not greet anyone!' (Field notes, 2009)

The phenomenon marked as 'F', for 'intonational Focalization', is an intonational device to set part of the utterance into relief. It is realized through a dip in fundamental frequency, accompanied by lengthening and formant movement towards a central vowel. The realization of focalization is sufficiently specific – involving a movement in fundamental frequency, and a change in the vowel: a difference in the time course of formant frequencies – to avoid

interference with lexical tone. Emphatic stress is likewise identifiable as such, from cues other than fundamental frequency. This greatly limits the possibility of a misperception of lexical tone caused by these intonational phenomena. (An example is found in Healing.55.)

40.2.3 Givenness

40.2.3.1. Referential density

One of the means for backgrounding information in Yongning Na consists simply in not making any mention of it. This holds true of any language, but is especially salient in Yongning Na. Referential density – the ratio of overt to possible argument NPs (Bickel 2003) – is low in many languages of the Tibeto-Burman area. The active referent, known from the earlier context, serves as given, without being mentioned (Mazaudon 2003 on Tamang). Yongning Na does not require pronouns to stand in place of the pragmatically inferable noun phrases, as illustrated by (1); this can be referred to as a case of 'Pro-Drop' (for Pronoun Dropping; Chomsky 1981), but as pointed out by Launey (1994:45, 93), the perspective could just as well be reversed, considering languages that require overt NP arguments as a special case (widely represented in Western Europe: Haspelmath 2001).

There is a limit to economy in referential density, however. For instance, in example (2), one could be tempted to push referential economy further, and – in addition to ellipsis of the subject argument – to avoid the repetition of the object /qæɬdoɬ/ 'lumber'. However, it is not acceptable to remove the second /qæɬdoɬ/ 'lumber': when this manipulation was attempted, the result, shown in (2'), was rejected by the consultant.

(2') *qæ˧do˧ do˩-dʑo˩, | qæ˩

qæ˧do˧	do˩	-dʑo˩	qæ˩
lumber	see	TOP	burn

Intended meaning: 'If they spot lumber, they will burn it!' (adapted from Housebuilding.259)

This probably has to do with several factors. First, there exist numerous homophonous roots, following monosyllabicization and phonological erosion (Michaud 2012); lexical identification can be difficult for a monosyllabic verb without an object. A second factor that may be at play is rhythm and the overall symmetry of the utterance *(what see, what rob; lumber see, lumber rob)*. A third factor, certainly not the least important, concerns IS: '(they) rob lumber' is the focal information, so it would be inappropriate to give it a less complete representation than other components of the utterance. Cross-linguistically, there is a closer syntactic integration of object and verb, as compared with subject and verb, and objects are more likely than subjects; this goes a long way towards explaining why all languages that allow Object Pro-Drop also allow Subject Pro-Drop, whereas the reverse is not true.

40.2.3.2. How prosodic phrasing reflects information structure: the division of the utterance into tone groups

A salient characteristic of Yongning Na is the interaction of IS and morphotonology. Yongning Na possesses abundant tonal morphology, comparable in its extent to the segmental morphology found in the (very distantly related) Kiranti languages (Jacques et al. 2012; Jacques 2012). For instance, the determinative compound /ʐwæ˧zo˧-gv˩dv˩/ 'colt's back' has

a final H tone, whereas the coordinative compound 'father and mother', which has the same input tones, is /əˈdɑˈ-əˈmi#ˈ/, with a floating H tone (a tone which can only associate to a following syllable; it is represented as #ˈ). The floating H tone on 'father and mother' is not by itself a marker of the morphological status of the compound as being coordinative rather than determinative: not all determinative compounds share the same tone pattern, any more than coordinative compounds do. The output tone depends on the input tones, but different rules apply in determinative compounds and in coordinative compounds. The tone rules that apply when combining an object with a verb are likewise different from those that apply when combining a subject with a verb. A systematic study of numeral-plus-classifier determiners brings out no less than nine categories with different tone patterns (Michaud 2013). The tone group is the domain within which these abundant morpho-phonological tone rules apply: each utterance consists of one or more tone groups; tonal computation takes place separately in each tone group. The phenomena that refer to this domain are exclusively tonal: they consist of tone rules, in particular the following seven rules: (i) L tone spreads progressively ('left-to-right') onto syllables that are unspecified for tone, (ii) syllables that remain unspecified for tone after the application of Rule 1 receive M tone, (iii) H and M are neutralized to M in tone-group-initial position, (iv) a syllable following a H-tone syllable receives L tone, (v) all syllables following a HL or ML sequence receive L tone, (vi) LH and LM contours on a tone-group-final syllable are neutralized to LH, and (vii) if a tone group only contains L tones, a post-lexical H tone is added to its last syllable.

As illustrated by the examples below, different divisions into tone groups have different implications in terms of prominence of the various components. Tone groups may be considered as constituting one phonological phrase each; changes in phonological phrasing serve to highlight a certain element, lending it focal prominence. (The term 'tone group' is

nonetheless used here in preference to 'prosodic phrase', as the defining characteristic of this phonological unit is that it serves as the domain of *tonal* processes.)

A tone group boundary is always found after topicalized phrases; but apart from this hard-and-fast rule, speakers generally have several options for dividing the utterance into tone groups. They may choose to integrate large chunks of speech into a single tone group, resulting in a stronger integration; or they may divide the utterance into a number of tone groups, with the stylistic effect of emphasizing these individual components one after the other. The latter option is illustrated by (6):

(6) dzɯɬ-di˦ │ mə˦-dzo˦, │ ʈʰɯɹ-di˦ │ mə˦-dzo˦

dzɯ˥	-di	mə	dzo˦	ʈʰɯɹ_b	-di	mə	dzo˦
eat	NMLZ	NEG	EXIST	drink	NMLZ	NEG	EXIST

'[Before mankind had learnt to grow crops], there was nothing to eat and nothing to drink!' (Seeds2.67)

The noun phrase /dzɯɬ-di˦/ 'food' and the negated existential verb /mə˦-dzo˦/ 'there isn't' can be separated into two tone groups, as in (6). This has the effect of emphasizing the two noun phrases, /dzɯɬ-di˦/ 'food; thing to eat' and /ʈʰɯɹ-di˩/ 'drink; beverage'. The following sentence in the story repeats the statement 'There was no food', continuing the same strategy of bringing out the noun phrase 'food', this time with the topic marker /-dzo˩/: /dzɯɬ-di˦ │ -dzo˩, │ mə˦-dzo˦-ɲi˦-tsɯ˩ │ -mv˩/ 'As for food, it's said that there was none!' (Seeds2.68). Then the narrator recapitulates, and moves on:

(7) dzɯɬ-diɬ məɬ-dʑoˊ | -dʑoˌ | tʰiˈ...

dzɯˋ	-di	mə	dʑoɬ	-dʑoˌ	tʰiˈ
eat	NMLZ	NEG	EXIST	TOP	so/then

'As there was nothing to eat, ...' (the narrative moves on to: 'there were some exceptional, smart people, who stood up and did something about it') (Seeds2.69)

At this juncture, 'there was no food' is integrated into a single tone group, and followed by the topic marker /-dʑoˌ/. This provides an exemplary illustration of the integration of larger chunks of information into a single tone group as this information changes its status from new to old and backgrounded.

Conversely, insertion of a tone-group boundary highlights the word or phrase that precedes. Even function words can be emphasized in this way. Consider (8):

(8) ɬoɬpvˋ-tiˌ-kvˌ | -tsɯˊ | -mvˌ!

ɬoɬpvˋ	tiˌ	kvˊ	-tsɯˊ	-mv
kow-tow	hit	ABILITIVE	REP	AFFIRM

'It is said that [on that occasion, the whole family] will kow-tow!'
(Sister3.138)

A simpler formulation would be /ɬoɬpvˋ-tiˌ-kvˌ-tsɯˌ-mvˌ/, integrating the passage into a single tone group. The formulation in (8) emphasizes the reported-speech particle. This particle is used over and again by the consultant when telling narratives: it is used whenever the speaker only has indirect knowledge of the situation at issue. But in the context of (8), the emphasis laid on this particle is one of the manifestations of the speaker's efforts to adhere to truthfulness and precision: the narrator never witnessed the ritual that she describes. The

particle could be paraphrased, in this context, as: 'at least, that's what they say', or 'but I can't personally vouch for it: this is just hearsay, you know'.

As a final example, consider (9):

(9) kʰvˊⱼmiˋⱼ-ʂeⱮ, ǀ dzɯ˥-mə˥-ɖo˥-pi˥-zo˥!

kʰvˊⱼmiˋⱼ-ʂeⱼ	dzɯ˥	mə˥	ɖo˥	pi˥	zo
dog-meat	eat	NEG	ought_to	say	ADVB

'It is said that one must not eat dog meat! / It is said that dog meat is something one must not eat!' (Dog2.37)

In (9), the noun phrase 'dog meat' is set into relief by constituting a tone group on its own. Despite the absence of a morphemic indication that it is topicalized, it clearly has the status of topic. In this context, tonal integration with a following verb would not be stylistically appropriate.

This is parallel to prosodic grouping in English: the phrase 'the Massachusetts Institute of Technology' contains three lexical stresses, but someone who is familiar with the place is likely to pronounce it (when not using the acronym 'MIT') as one single prosodic phrase, integrating the three stressed words and two grammatical words into a single fundamental frequency contour. (On similar phenomena in French, see, among other descriptions, Vaissière 1975; Rossi 1999; Vaissière and Michaud 2006; Martin 2009.)

40.3 Vietnamese

40.3.1 Topics

Like Yongning Na, Vietnamese tends to favour a topic+comment order (Thompson 1965, chapter 10; note that what the author calls 'focal elements' corresponds to Krifka's 'topic'; see also: Cao 1992; Clark 1992, 1996). The relevance of word order for topic marking can be illustrated by a variety of passive-like structures. As these structures are described in more detail elsewhere (Simpson and Hồ 2013), a single example is given in (10). While in (10a) *police* is the topic, in (10b) it is *Hoa* that is topicalized.

(10) a. *Cảnh sát giao thông bắt Hoa gần cầu Long Biên.*

cảnh sát	*giao thông*	*bắt*	*Hoa*	*gần*	*cầu*	*Long Biên*
police	transportation	catch	Hoa	near	bridge	Long Biên

'The traffic police caught Hoa near Long Biên bridge.'

b. *Hoa bị cảnh sát giao thông bắt gần cầu Long Biên.*

Hoa	*bị*	*cảnh sát*	*giao thông*	*bắt*	*gần*	*cầu*	*Long Biên*
Hoa	NEG.EXP	police	transportation	catch	near	bridge	Long Biên

'Hoa was caught by the traffic police near Long Biên bridge.'

Another frequent topicalization strategy is pause insertion, as in (11). This strategy is not necessarily associated with a special focus, although such an interpretation is not ruled out if focus is marked intonationally (see §3.2). A sentence such as (11) could not be expressed in Na without using information-structure morphemes:

(11) *Măng cụt, ai cũng thích.*

măng cụt		*ai*	*cũng*	*thích*
mangosteen	TOP	who	also	like

‘Everybody likes mangosteens’.

A strategy very similar to pause insertion, if more rare, is the use of the equative copula *là* to mark a neutral type of topic in sentences like (12). Here, the fact that everybody likes mangosteens is merely indexed under the entry *mangosteen* in the common ground, without any special emphasis. Once again, focus could be intonationally assigned to the topic, but this is not a common strategy.

(12) *Măng cụt là ai cũng thích.*

măng cụt	*là*	*ai*	*cũng*	*thích*
mangosteen	TOP(COP)	who	also	like

‘Everybody likes mangosteens’.

More interestingly, Vietnamese has a contrastive topic marker, *thì*, which, as in (13), serves a role comparable to the topic marker /-ʣoɺ/ in Na. This topic marker has the effect of contrasting the topic with its alternatives, which Clark (1992) analyzed as an attributive meaning.

(13) *Măng cụt thì ai cũng thích.*

măng cụt	*thì*	*ai*	*cũng*	*thích*
mangosteen	TOP	who	also	like

‘Everybody likes mangosteens (as opposed to other fruits)’.

Thì can also be used after an entire sentence, but in that case, it does not clearly serve to rule out alternative interpretations. In (14), for instance, *thì* is used to set an information as a common ground explaining the following clause (and is glossed as 'so'). As pointed out by Cao (1992:141), there does not appear to be a clear cut off point between the contrastive and non-contrastive uses of *thì*.

(14)   *Hôm qua Phương đi chợ thì hôm nay ở nhà.*

hôm qua	*Phương*	*đi*	*chợ*	*thì*	*hôm nay*	*ở*	*nhà*
yesterday	Phương	go	market	so	today	stay	home

'Yesterday, Phương went to the market, so today she stays at home'.

When the topic is co-referential with the subject, the use of an anaphoric pronoun in the subject position can also be used to focus it. This is illustrated in (15):

(15)   *Tây, nó không biết dỗ con.*

tây	*nó*	*không*	*biết*	*dỗ*	*con*
West	3	NEG	know	soothe	child

'Westerners don't know how to soothe their children' (as opposed to the Vietnamese).

Other markers can be used for contrastive topicalization in Vietnamese, such as *còn* 'as for, and *lại* 'on the other hand'. As their English equivalents, these two expressions are only possible if alternatives have explicitly been set into the common ground in previous clauses.

Vietnamese sentences can have multiple topics as in (16). While we would not analyse *là* as a topic/theme marker, but rather as an equative/identification copula (contrary to Cao 1992, but following Clark 1996), the first two constituents are nonetheless both topicalized.

(16) *Ở Tokyo thì máy này mỗi cái là năm ngàn.*

ở	*Tokyo*	*thì*	*máy*	*này*	___	*mỗi*	*cái*	*là*	*năm*	*ngàn*
In	Tokyo	TOP	machine	this	TOP	each	CLF	COP	five	thousand

'In Tokyo (as opposed to other places), these machines are five thousand each'.

(Modified from Cao 1992:147).

40.3.2 Focus

Experimental work on the phonetic realization of information structure in Vietnamese is limited to the realization of pragmatic focus (Jannedy 2007) or corrective focus (Michaud and Vu-Ngoc 2004; Michaud 2005). These studies reveal that these two forms of in-situ focus are realized by most, but not all, speakers as an f0 increase on the target constituent (Michaud 2005; Jannedy 2007) and a hyperarticulation of voice quality (Michaud 2005). Duration and intensity are even more speaker-specific. From this, we can conclude that Vietnamese does not have a single grammaticalized means of marking contrastive focus, but that speakers pick and choose from a pool of hyperarticulation strategies. Jannedy (2007) also shows that although listeners can identify focused constituents, their performance is generally poor, and even more so for broad scope focus (entirely VP or entire sentence).

The only other explicit proposal for a phonetic marking of IS in Vietnamese is Thompson (1965). In section 12.5, Thompson describes a three-way stress system in which:

'By far the great majority of syllables are accompanied by medium stress; it is deviation from this in either direction which marks a particular form as conveying an especial heavy or light load in conveying information. In general, weak stress signals information already known or obvious in the context; heavy stress signals new or contrastive information.' (Thompson 1965:287)

More details are given in Thompson's following subsections (12.51 and 12.52), but he does not explicitly address the issue of the phonetic nature of stress in Vietnamese, and many (if not most) of his examples of stress notation fail to coincide with native speaker's intuitions (regardless of the dialect). In the end, a close look at Thompson's examples suggest that he is conflating several types of prominence:

(i) Grammatical words seem to have reduced phonetic prominence, while lexical words do not.

(ii) As discussed above, contrastive focus seems to be marked by means of increased prominence. The existence of a prosodically-marked new information focus (phonetically identical or distinct from contrastive focus) is less clear.

(iii) Like many languages (Beckman and Edwards 1990; Turk and Shattuck-Hufnagel 2000), Vietnamese shows phrase-final lengthening. The nature of the phrasal domains that condition this lengthening is still unclear, as is the exact amount of phonetic lengthening involved. In any case, it is likely that this final-lengthening effect provides cues to prosodic phrasing, which in turn play a role in conveying of IS (see our examples of pause insertion in §3.1).

A systematic description of the intonational marking of focus thus remains to be undertaken. However, besides in-situ intonational focus, two other strategies are used to mark pragmatic focus. The first one is the use of contrastive topicalization (with marker *thì* or of a topic followed by a resumptive pronoun), already described in §3.1. The second is the use of *cái* as

a focus marker (Nguyễn 2004, 2013; Simpson and Hồ 2013). Although *cái* is normally used as a classifier, it also serves as a focus marker, and as such, always precedes a classifier or a mensural noun. Although *cái* usually conveys the idea of a negative emphasis, as in (17), Nguyễn (2004) also gives examples devoid of this negative connotation.

(17) *Cái con chó của hàng xóm sủa suốt đêm thì cả nhà mất ngủ.*

cái	con	chó	của	hàng xóm	sủa	suốt	đêm	thì	cả	nhà	mất	ngủ
TOP	CLF	dog	PASS	neighbour	bark	entire	night	so	all	house	lose	sleep

'The neighbour's damn dog barked all night so the whole family lost sleep'.

Vietnamese also has focus-sensitive particles like *thậm chí/đến* 'even', *cả* 'also' and *chỉ/mỗi* 'only' that indicate semantic focus (Hole 2013). Each of these focus-sensitive particles is associated to another particle introducing information that is already part of the common ground. In the case of *thậm chí, đến* 'even' and *cả* 'also', the *cũng* particle is mandatory, as in (18). In the case of *chỉ* 'only', the particle *mới* is optional, as in (19). A full discussion of these focus-sensitive particles can be found in Hole (2013), from which we take up the notion of *background particle,* which we label BG. Another focus-sensitive particle with a more limited scope is sentence-final *không* 'only' (Brunelle, Hạ, and Grice 2012).

(18) *Cả Hàn Quốc cũng ăn thịt chó.*

cả	Hàn Quốc	cũng	ăn	thịt	chó
FOC_EVEN	Korean	BG_EVEN/ALSO	eat	meat	dog

'Even Koreans eat dog meat.'

(19) *Mỗi người Việt (mới) ăn thịt nhím.*

mỗi	*người*	*Việt*	*mới*	*ăn*	*thịt*	*nhím*
FOC_ONLY	CLF	VietnameseBG_ONLY		eat	meat	hedgehog

'Only the Vietnamese eat hedgehog.'

40.3.3 Givenness

Like Yongning Na, Vietnamese allows frequent ellipsis of arguments; corpus studies will be necessary to quantify its referential density relative to a broad sample of other languages. Illustrative examples of subject and object pro-drop are given in (20) and (21). As in Yongning Na, the active referent is usually inferred from previous sentences, but it is not uncommon to find sentences in which the referent is inferred from common situational knowledge. For instance, in (20) the subject could be interpreted as 'we' or 'I', depending on context. Argument ellipsis is often used as a strategy for avoiding an overt argument, especially in contexts where the proper use of pronouns is difficult to assess – for instance when the relative age or hierarchical status of interlocutors is unclear. Inversely, it tends to be avoided in formal situations, especially in the case of pronouns or address terms.

(20) *Chưa thấy bà nội đâu cả.*

chưa	*thấy*	*bà*	*nội*	*đâu*	*cả*
not.yet	see	grandmother	paternal	where	all

'[I] haven't seen you (grandmother) anywhere yet'. (Hạ 2012:63; excerpt from telephone conversations)

(21) *Thằng trộm chạy thoát à?   Không, công an bắt rồi.*

thằng	*trộm*	*chạy*	*thoát*	*à*	*không*	*công an*	*bắt*	*rồi*
guy	rob	run	escape	Q	NEG	police	catch	already

'The burglar escaped? No, the police caught him already.'

As in Yongning Na, leaving out an argument is a way of backgrounding it; probably for the same reasons as in Yongning Na, object ellipsis seems rarer than subject ellipsis.

40.4 General conclusion

The above overview offers elements of answer to the question of the relative roles of morphosyntax and intonation in conveying IS. In Na, which has a host of particles conveying IS, intonation plays a lesser role in conveying IS, even though Na has emphatic stress as well as a specific intonational device for focalization. In Vietnamese, intonation seems to play a more important role, although experimental findings reported so far in the literature are largely limited to focus, and cover a relatively narrow range of speaking styles. The nature of the language's tone system also appears to play a role. The multiplicity of phonetic cues to tone in Vietnamese allows for greater malleability: for instance, a tone that has final glottalization can have its overall F0 register raised to convey intonational information (Michaud and Vu-Ngoc 2004; Hạ and Grice 2010) without a major threat to lexical identification, so long as the phonation-type characteristics that are part of the definition of this tone are present. On the other hand, in a language where tones are specified solely in terms of pitch levels, such as Yongning Na, intonational modification of the F0 curve is more difficult for the hearer to tease apart from the effect of the tones themselves. On a

methodological note, the findings reported above suggest that it is useful to maintain a clear functional distinction between lexical tone, on the one hand, and intonational modifications (reflecting boundaries/junctures and IS), on the other. A full-fledged study of the respective contributions of the various components of prosody (lexical tone; phrasing; prominence; speaker attitude...) in shaping F0 curves remains a task for the future. Research of this type has been attempted for Qiang, a Sino-Tibetan language (Evans et al. 2010); general proposals have been put forward for languages with lexical stress (Mishra, Van Santen, and Klabbers 2006).

Acknowledgments

References

Beckman, Mary, and Edwards, J (1990). 'Lengthening and shortening and the nature of prosodic constituency.' *Laboratory Phonology I*, ed. by John Kingston and Mary Beckman, 152–178. Cambridge: Cambridge University Press.

Benguerel, André-Pierre (1973). 'Corrélats physiologiques de l'accent en français.' *Phonetica* 27.21–35.

Bickel, Balthasar (2003). 'Referential density in discourse and syntactic typology.' *Language* 79.708–736.

Björverud, Susanna (1998). *A Grammar of Lalo*. Lund: Lund University.

Brunelle, Marc, Hạ, Kiều Phương and Grice, Martine (2012). 'Intonation in Northern Vietnamese.' *The Linguistic Review* 29.3–36.

Cao, Xuân Hạo (1992). 'Some preliminaries to the syntactic analysis of the Vietnamese sentence.' *Mon-Khmer Studies* 20.137–151.

Carton, Fernand, Hirst, Daniel Marchal, Alain and Séguinot, André (1976). *L'accent d'insistance*. Studia Phonetica n°12. Montréal: Didier.

Chao, Yuen-ren (1968). *A Grammar of Spoken Chinese*. Berkeley/Los Angeles: University of California Press.

Chen, Yiya, and Pan, Haihua (2015). 'Information Structure in Chinese.' This volume, Chapter 38.

Chomsky, Noam (1981). *Lectures on government and binding*. Dordrecht: Foris Publications.

Clark, Marybeth (1992). 'Conjunction as topicalizer in Vietnamese.' *Mon-Khmer Studies* 20.91–110.

Clark, Marybeth (1996). 'Conjunction as copula in Vietnamese.' *Mon-Khmer Studies* 26.319–331.

Coustenoble, Hélène, and Armstrong, Lilias (1937). *Studies in French intonation*. Cambridge: Heffer.

Evans, Jonathan, Chu, Man-ni, Aston, John and Su, Chao-yu (2010). 'Linguistic and human effects on F0 in a tonal dialect of Qiang.' *Phonetica* 67.82–99.

Fant, Gunnar, Hertegård, S. and Kruckenberg, A. (1996). 'Focal accent and subglottal pressure.' *TMH-QPSR* 2.29–32.

Fant, Gunnar, and Kruckenberg, A. (1995). 'The voice source in prosody.' *International Congress of Phonetic Sciences*, 622–625. Stockholm.

Genetti, Carol (1988). 'A syntactic correlate of topicality in Newari narrative.' *Clause combining in grammar and discourse*, ed. by John Haiman and S.A. Thompson, 29–48. Typological studies in language 18. Amsterdam & Philadelphia: Benjamins.

Glave, R.D., and Rietveld, Toni (1975). 'Is the effort dependence of speech loudness explicable on the basis of acoustic cues?' *Journal of the Acoustical Society of America* 58.875–879.

Gobl, C. (1988). 'Voice source dynamics in connected speech.' *STL-QPSR* 1.123–159.

Hạ, Kiều Phương (2012). *Prosody in Vietnamese: intonational form and function of short utterances in conversation*. Köln: University of Cologne ph.d.

Hạ, Kiều Phương, and Grice, Martine (2010). 'Modelling the interaction of intonation and lexical tone in Vietnamese.' *Proceedings of Speech Prosody 2010*. Chicago.

Haiman, John (1978). 'Conditionals are topics.' *Language and Speech* 54.564–589.

Haspelmath, Martin (2001). 'The European linguistic area: Standard Average European.' *Language typology and language universals: An international handbook*, ed. by Martin Haspelmath, Ekkehard König, Wulf Oesterreicher, and Wolfgang Raible, 2:1492–1510. Berlin: de Gruyter.

Haspelmath, Martin (2007). 'Pre-established categories don't exist: consequences for language description and typology.' *Linguistic Typology* 11.119–132.

Heldner, M. (2003). 'On the reliability of overall intensity and spectral emphasis as acoustic correlates of focal accents in Swedish.' *Journal of Phonetics* 31.39–62.

Hole, Daniel (2013). 'Focus particles and related entities in Vietnamese.' *Linguistics of Vietnamese: an international survey*, ed. by Daniel Hole and E. Löbel, 265–304. Berlin: De Gruyter Mouton.

Horn, Larry (2015). 'Implicature and (non-)at-issue meaning.' This volume, Chapter 6.

Jacques, Guillaume (2012). 'Agreement morphology: the case of Rgyalrongic and Kiranti.' *Language and Linguistics* 13.83–116.

Jacques, Guillaume, Lahaussois, Aimée, Michailovsky, Boyd, and Rai, Dhan Bahadur (2012). 'An overview of Khaling verbal morphology.' *Language and Linguistics* 13.1095–1170.

Jacques, Guillaume, and Michaud, Alexis (2011). 'Approaching the historical phonology of three highly eroded Sino-Tibetan languages: Naxi, Na and Laze.' *Diachronica* 28.468–498.

Jannedy, Stefanie (2007). 'Prosodic focus in Vietnamese.' *Interdisciplinary Studies on Information Structure*, ed. by Shinichiro Ishihara, Stephanie Jannedy, and Anne Schwarz, 209–230. Potsdam: Universitätsverlag Potsdam.

Karcevskij, Serge (1931). 'Sur la phonologie de la phrase.' *Travaux du Cercle linguistique de Prague* 4.188–226.

Kohler, Klaus J. (2003). 'Neglected Categories in the Modelling of Prosody: Pitch Timing and Non-Pitch Accents.' *15th International Congress of Phonetic Sciences*, 2925–2928. Barcelona.

Kohler, Klaus J. (2009). 'Patterns of prosody in the expression of the speaker and the appeal to the listener.' *Frontiers in phonetics and speech science*, ed. by Gunnar Fant, Hiroya Fujisaki, and J. Shen, 287–302. Beijing: Commercial Press.

Kohler, Klaus J., and Niebuhr, Oliver (2011). 'On the role of articulatory prosodies in German message decoding.' *Phonetica* 68.1–31.

Krifka, Manfred (2008). 'Basic notions of information structure.' *Acta Linguistica Hungarica* 55.243–276.

Lambrecht, K. (1994). *Information structure and sentence form*. Cambridge: Cambridge University Press.

LaPolla, Randy (1995). '"Ergative" marking in Tibeto-Burman.' *New horizons in Tibeto-Burman morphosyntax*, ed. by Yoshio Nishi, James A. Matisoff, and Yasuhiko Nagano, 189–228. Osaka: National Museum of Ethnology.

LaPolla, Randy (2009). 'Chinese as a Topic-Comment (not Topic-Prominent and not SVO) language.' *Studies of Chinese Linguistics: Functional Approaches*, ed. by Janet Xing, 9–22. Hong Kong: Hong Kong University Press.

LaPolla, Randy, and Huang, Chenglong (2003). *A grammar of Qiang with annotated texts and glossary*. Mouton de Gruyter.

Launey, Michel (1994). *Une grammaire omniprédicative: essai sur la morphosyntaxe du nahuatl classique*. (Ed.) Sylvain Auroux. Sciences du Langage. Paris: CNRS Editions.

Lidz, Liberty (2010). 'A descriptive grammar of Yongning Na (Mosuo). Austin: University of Texas, Department of linguistics.'
https://repositories.lib.utexas.edu/bitstream/handle/2152/ETD-UT-2010-12-2643/LIDZ-DISSERTATION.pdf.

Lidz, Liberty (2011). 'Agentive marking in Yongning Na (Mosuo).' *Linguistics of the Tibeto-Burman Area* 34.49–72.

Martin, Philippe (2009). *Intonation du français*. Paris: Armand Colin.

Matić, Dejan, and Wedgwood, Daniel (2013). 'The meanings of focus: the significance of an interpretation-based category in cross-linguistic analysis.' *Journal of Linguistics* 49.127–163. doi:http://dx.doi.org/10.1017/S0022226712000345.

Matisoff, James A. (1973). *The Grammar of Lahu*. Linguistics 75. Berkeley/ Los Angeles/ London: University of California Publications.

Mazaudon, Martine (2003). 'Discourse to grammar in Tamang: topic, focus, intensifiers and subordination.' *Language Variation: Papers on variation and change in the Sinosphere and in the Indosphere in honour of James A. Matisoff*, ed. by David Bradley, Randy LaPolla, Boyd Michailovsky, and Graham Thurgood, 145–157. Pacific Linguistics. Canberra: A.N.U.

Mazaudon, Martine (2004). Tamang corpus of texts with synchronized recordings. http://lacito.vjf.cnrs.fr/archivage/languages/Tamang_en.htm.

Michailovsky, Boyd, Mazaudon, Martine, Michaud, Alexis, Guillaume, Séverine, François, Alexandre, and Adamou, Evangelia (2014). Documenting and researching endangered languages: the Pangloss Collection. *Language Documentation and Conservation.*

Michaud, Alexis (2005). *Prosodie de langues à tons (naxi et vietnamien), prosodie de l'anglais : éclairages croisés.* Paris: Université Paris 3-Sorbonne Nouvelle, département de Sciences du langage.

Michaud, Alexis (2012). 'Monosyllabicization: patterns of evolution in Asian languages.' *Monosyllables: from phonology to typology*, ed. by Nicole Nau, Thomas Stolz, and Cornelia Stroh, 115–130. Berlin: Akademie Verlag. http://halshs.archives-ouvertes.fr/halshs-00436432/.

Michaud, Alexis (2013). 'The tone patterns of numeral-plus-classifier phrases in Yongning Na: a synchronic description and analysis.' *Transhimalayan Linguistics*, ed. by Nathan Hill and Tom Owen-Smith, 275–311. Berlin: De Gruyter Mouton.

Michaud, Alexis, and Vu-Ngoc, Tuân (2004). 'Glottalized and Nonglottalized Tones under Emphasis: Open Quotient Curves Remain Stable, F0 Curve is Modified.' *Proceedings*

of Speech Prosody 2004, ed. by Bernard Bel and Isabelle Marlien, 745–748. Nara, Japan.

Mishra, Taniya, Van Santen, Jan, and Klabbers, Esther (2006). 'Decomposition of pitch curves in the general superpositional intonation model.' *Proceedings of Speech Prosody 2006*. Dresden.

Nguyễn, Tương Hung (2004). *The structure of the Vietnamese noun phrase.* Boston University ph.d.

Nguyễn, Tương Hung (2013). 'The Vietnamese noun phrase.' *Linguistics of Vietnamese: an international survey*, ed. by Daniel Hole and E. Löbel, 57–86. Berlin: De Gruyter Mouton.

Niebuhr, Oliver (2009). 'Intonation segments and segmental intonations.' *Proceedings of the 10th Interspeech conference*, 2435–2438. Brighton, UK.

Niebuhr, Oliver (2013). 'On the acoustic complexity of intonation.' *Nordic Prosody XI*, 1–14. Frankfurt: Peter Lang.

Ohala, John (1978). 'The Production of Tone.' *Tone: a linguistic survey*, ed. by Victoria A. Fromkin, 5–39. New York/San Francisco/London: Academic Press.

Rossi, Mario (1971). 'L'intensité spécifique des voyelles.' *Phonetica* 24.129–161.

Rossi, Mario (1999). *L'intonation, le système du français: description et modélisation*. Gap/Paris: Ophrys.

Selkirk, Elisabeth (1995). 'Sentence prosody: Intonation, stress and phrasing.' *The Handbook of Phonological theory*, ed. by John Goldsmith, 550–569. Cambridge, MA.: Blackwell.

Shi, Dingxu (2000). 'Topic and topic-comment constructions in Mandarin Chinese.' *Language* 76.383–408.

Simpson, Andrew, and Hồ, Hảo Tâm (2013). 'The Vietnamese noun phrase.' *Linguistics of Vietnamese: an international survey*, ed. by D. Hole and E. Löbel, 155–184. Berlin: De Gruyter Mouton.

Sluijter, A., Van Heuven, V.J., and Pacilly, J.J.A. (1997). 'Spectral balance as a cue in the perception of linguistic stress.' *Journal of the Acoustical Society of America* 101.503–513.

Thompson, Laurence C. (1965). *A Vietnamese Reference Grammar*. Vol. [1991 edition]. Washington: University of Washington Press.

Turk, Alice E., and Shattuck-Hufnagel, Stefanie (2000). 'Word-boundary-related duration patterns in English.' *Journal of Phonetics* 28.397–440.

Vaissière, Jacqueline (1975). 'Further note on French prosody.' *Research Laboratory of Electronics, MIT, Quarterly Progress Report* 115.251–262.

Vaissière, Jacqueline, and Michaud, Alexis (2006). 'Prosodic constituents in French: a data-driven approach.' *Prosody and syntax: Cross-linguistic perspectives*, ed. by Ivan Fónagy, Yuji Kawaguchi, and Tsunekazu Moriguchi, 47–64. Usage-based linguistic informatics. Amsterdam: John Benjamins.