Grammar and tone in Asian languages[1]

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0.   Introduction. When I was working on my dissertation on morphological tone in White Hmong some years ago now, two articles provided me with inspiration, and I found myself referring to them again and again. Both were by British scholars affiliated with SOAS in London, and both were written a distant 25 years ago, in 1967. The first, by Gordon Downer, "Tone change and tone shift in White Miao" is a brilliant piece of detective linguistics based on scant data in which Professor Downer reconstructs the tone sandhi system of West Hmongic (or Miao). His reconstruction is still the best one today -- the analysis of much new data has led to no major revisions in his early view of the situation. The second is an overview of the types of morphological tone found in Southeast Asia by the late Eugénie Henderson. The importance of her article "Grammar and tone in South East Asian languages" was that it was the first to lay out the shape of the Southeast Asian *sprachbund* with regard to this aspect of language. I consider it relevant to the theme of this symposium to review what Professor Henderson wrote there, expand and recast it, and then tie these facts about grammar and tone to my concept of tone language type in which tone function is only one feature in an interdependent network of other tone language features.

Henderson describes and exemplifies the following tonal morphology categories for the languages of Southeast Asia:

- tonal inflection marking verb classes ("indicative", "subjunctive") and noun classes ("direct", "oblique") in Tiddim Chin (and other Chin dialects)
- tonal derivation (Chin, Classical Chinese, Cantonese examples)

-tonal variation and compounding (Vietnamese, Chin, Thai, Songkhla, Bwe Karen examples)
-tonal alternation in reduplicative expressions (Vietnamese, Thai, Chinese, Bwe Karen examples)
-"a special use" of tonal alternation in Southern Vietnamese (to mark the anaphoric reference form of certain pronouns and appelatives)

I would like to suggest that the first two types of tonal morphology are of a fundamentally different sort than than the last three types. The scarcity of examples of inflectional and derivational tonal morphology in Southeast Asia is related, I will argue, to the dominance of a different type of tone language in the Asian area, which is necessarily limited to the type of tonal morphology exemplified by the last three categories Henderson presents.

1. Further evidence of reduplicative expressions and form classes. The last two categories Henderson describes, meaningful tonal alternations in reduplicative expressions and the correlation of a particular tone with certain "form classes" (small, closed word classes) are typical of (South)East Asian languages.

In addition to the examples from Vietnamese, Thai, Chinese and Bwe Karen which Henderson gives, one can add evidence from Biao Min (a Mienic language) and Putian (a Northern Min dialect of Chinese). According to Solnit (1985:186), in Biao Min , ". . . classifers may reduplicate with the meaning 'every, all'; change to tone 7 [54?] adds emphasis, as if 'every single one of X'":

[tau^{21} tau^{21} thuŋ^{44} pun$^{54?}$]   "everyone went"
clf (people) all   go
[tau$^{54?}$ tau$^{54?}$ thuŋ^{44} pun$^{54?}$]   "*every*one went"

In Putian, "A merely reduplicated adjective means 'very adjective' and there is no tone sandhi; in a triplicated form meaning 'very, very adjective', the first syllable becomes [453]   (II); in a triplicated form meaning either 'very positive adjective' or 'very

negative adjective', the first syllable becomes [55]" (Ballard 1988: 166-67 < Chang 1982 and Huang 1962).

Examples of tonally defined form classes, which Henderson exemplifies by the class of Southern Vietnamese anaphoric reference pronouns, are also not uncommon. These word classes are small, closed sets, such as pronouns, demonstratives, locative nouns and numerals. They are formed either by absorption of an affix or function word into a member of the form class (as in Henderson's Vietnamese example, where the absorption of all but the tone of a following demonstrative accounts for the "anaphoric tone" on the pronouns), by analogy, or probably most commonly by a combination of the two. In Hakka (M. Hashimoto 1973:436-37), the singular personal pronouns have reflexes of tone 2 in all Hakka dialects; this form class can thus be reconstructed for Proto-Hakka. In Shimen Hmong (Wang 1982), the "prepositional localizers" all have acquired the reflex of tone 8 [31]:

[vɦai³¹]   "there"
[bɦi³¹]   "on the slope up there"
[ŋɖɦu³¹]   "on the slope down there"
[dɦi³¹]   "opposite there"
[dɦu³¹]   "opposite there (far)"
[ŋɖɦai³¹]   "inside there"

And finally, in White Hmong (Ratliff 1992) the first five numerals all have the reflex of tone 1 [55]:

[i⁵⁵] "1" [ɔ⁵⁵] "2" [pe⁵⁵] "3" [plau⁵⁵] "4" [ʦi⁵⁵] "5"

2. Two new categories: attitude tone and tonal morphology in expressive phrases. In addition to meaningful tone patterns in reduplicative phrases and tonally defined form classes, there are at least two other categories of tonal morphology that are characteristic of (South)East Asian languages. The first is the non-idiosyncratic use of a particular tone to indicate the speaker's attitude toward the referent. I use "non-idiosyncratic" to underscore the fact that the tonal morpheme that is used this way in a particular language is not one controlled by certain individual speakers and not by others as a matter of style or

intonation, but is rather a part of the grammar that all speakers control.

For example, according to Thurgood (1981), in Burmese the "induced creaky tone" serves to emphasize, and indicates a brusque, imperative attitude:

[kwa] appended appelative (level tone: gentle)
[kwa'] appended appelative (creaky tone: brusque)

In White Hmong (Ratliff 1992) the breathy-falling tone can be used to indicate negative judgment:

[nia?^{21}] "mother"   >   [nia^F] "old woman; hag"

And finally, the well-known Cantonese "changed tones" perform the same type of function. According to O.Y. Hashimoto (1972) the high rising tone, for example, indicates familiarity:

[ïɐn^{21}] "person"   >   [ïɐn^{35}] "fellow, guy"

Part of the description of these "attitude tones" must include a description of the words or classes of words that are subject to the tonal alternations. These tonal morphemes are only secondarily tones of attitude; primarily they are lexical tones. An interesting psychological experiment would involve forcing these alternations on words not normally altered in this way to see if speakers could identify the working of an independent meaningful tone on the base.

Tonal morphology is also found in expressive (ideophonic) phrases involving non-prosaic morphemes. This type of tonal morphology should be contrasted with tonal alternations in reduplicative phrases mentioned in section 1 above since both the words involved and the morphological rules governing the formation of the phrases are specialized to the expression of aesthetic word-painting (see Diffloth 1972 and Ratliff 1992 for further discussion). For example, in Vietnamese (Vu 1992) the addition of an expressive morpheme consisting of (1) a copy of the initial consonant; (2) rime replacement: -e; (3) bound tones: "hỏi" or "ngã"; (4) tone harmony: "hỏi" with series 1; "ngã" with series 2 -- produces an expressive with positive intensification:

gon "neat, tidy" > gon ghẽ "pleasingly tidy"

mới "new" > mới mẻ "very new"

vui "pleased, glad" > vui vẻ "very glad, joyful"

rành "know well" > rành rẽ "know very well"

In White Hmong (Ratliff 1992), the falling-rising pattern over a two-syllable expressive is identified with the semantic notion of back-and-forth, or of two contradictory states existing simultaneously:

[ʔdhu^{52} ʔdhe^{24}] "to almost remember, then forget again"

[nthu^{52} ntha^{24}] "the sound of weaving on a loom"

[nyu^{52} nya^{24}] "the bittersweet feeling of missing someone"

And in Kaili Hmu (Ts'ao 1972), another Hmongic language, the level-level pattern over a two-syllable expressive is identified with the semantic notion of continuity or expanse:

[tsɛ^{44} tsɛ^{44}] "with continuous exertion of strength"

[tjeu^{11} jeu^{11}] "descriptive of spaciousness"

3. On the redefinition of "tonal variation and compounding". I would argue that one of Henderson's categories of tonal morphology should be redefined: what she labels "tonal variation and compounding" I would call "syntactically defined tone sandhi". One example she gives (p. 175) comes from Bwe Karen, where from **ni** "to obtain" and **mɛ́** "wife", without compounding, we have: [**ni mɛ́**] "to obtain a wife"; [**jə ni jə mɛ́ thó**] "He's already got (taken) a wife"; but with compounding, we have: [**nī mɛ́**] "to marry"; [**jə nī mɛ́ thó**] "He's married already".

The difference in description can be traced to a difference in our understanding of what counts as "tone sandhi". For Henderson, tone sandhi can never be used morphologically: "A distinction must be drawn here between 'tone sandhi', which is phonetically determined, and the tonal behaviour under discussion here, which is grammatically determined" (p. 171). Henderson's compounding by means of tone variation, on the other hand, refers to situations in which ". . . certain grammatical constructions are regularly correlated with particular realizations of tones" (p. 174).

However, the tone sandhi in most Wu and some Min dialects of Chinese (Ballard 1988, see section 7 below) and in Zhuang, a Tai language, (Edmondson, p.c.) need to be described in terms of both phonology (what tones change to what tones in the presence of what tones) and syntax (within what kinds of phrases).[2] In Hmongic, some languages, such as White Hmong, make use of phonologically conditioned tone sandhi (which involves replacement of the reflex of one historical tone category by another following certain tones, also historically defined), while other languages, such as Meizhu Bunu (Meng 1983), make use of phonetically conditioned tone sandhi (which involves regular distortions of the underlying lexical tone). But both types of languages have tone sandhi rules which must refer, in part, to syntactic environment. As Downer (1967) convincingly shows, in West Hmongic the tone sandhi systems limited to certain syntactic collocations in the daughter dialects evolved from a system of purely phonological alternations that worked across whole utterances in the parent language.

Moreover, in some languages, the *very tone changes* which are merely phonological in most instances will produce meaning change in certain collocations unpredictably. Since the same substitutions are *involved, it seems reasonable* to treat these two types of changes as different outcomes of essentially the same process. I do not have enough information about Henderson's Bwe Karen examples to know whether or not the grammatically significant tone changes there are merely phonological in some other cases. But in White Hmong (Ratliff 1992), the absence or presence of the same tone sandhi process that is usually *not* semantically significant makes a difference in the meaning of the collocation of the certain pairs of words, e.g.:

[pɔŋ^{55} de^{52}]   "fall" + "water" =   "fall (into) water"
[pɔŋ^{55}-de^{F}]   "fall" + "water" =   "drown"

The same is true of tone sandhi in Shanghai (Ballard 1988:42):

[sã^{53} dɛ^{13}]   "life" + "egg" =   "lay an egg"
[sã^{55}-dɛ^{31}]   "life" + "egg" =   said of a cooked egg

For these cases, it is reasonable to say that tone sandhi is being used as a morphological device.

4. The exceptional nature of Tibeto-Burman tonal morphology. In her discussion of inflectional and derivational tonal morphology in Chin, Henderson writes,

> What one may call the morphological use of tone in Chin as a mark of grammatical categories of 'mood' and 'case' in verbs and nouns respectively is on the whole exceptional in the S. E. Asian and E. Asian areas (p. 174).

Interestingly, she calls this kind of morphological tone the "most straightforward" (p. 171), one assumes because it does what we consider it normal for affixal morphology to do: mark inflection and derivation. Her observation that this use of tone is exceptional is explained by the fact that both historically and synchronically, Tibeto-Burman languages have made use of affixal morphology, unlike the Sinospheric languages. They are therefore of a different type from the languages of the other major families of (South)East Asia (see Ratliff 1991b). A number of studies of other Tibeto-Burman languages which display "alternation" morphology (whether tonal or segmental), historically derived from affixal morphology, have appeared since Henderson's paper: on Jingpho (Maran 1973), Mpi (Matisoff 1978), Maru (Okell 1988), Nosu (Bradley 1990), and Ugong (Bradley to appear). It is therefore not the case that Chin constitutes an exception; it is rather that the Tibeto-Burman family has long possessed characteristics importantly different from those of neighboring families.

5. A tone language typology. In this section, I will briefly sketch the important structural differences between the tone languages of the Hmong-Mien family, the Tai-Kadai family, Mandarin Chinese, and Vietnamese on the one hand, and the Tibeto-Burman languages (and certain dialects of Chinese) on the other hand. I claim that these two groups of languages exemplify two tone language types. The two major tone language types are characterized by the following sets of features:

TYPE A	TYPE B
I. TONE FUNCTION lexical and minor morphological use of tone	all type A functions and and the following major morphological use of tone

1) lexical
2) emotional; attitudinal
3) expressive (ideophonic)
4) meaningful tone patterns in
   reduplicative phrases
5) syntactically defined
   tone sandhi compounds
 	
6) minor (closed) word classes
   marked by tone
	
	7) tonal derivation
	
	8) tonal inflection
	
	9) major (open) word
	classes characterized by
	different tone inven-
	tories or alternation
	patterns

II. SEGMENTAL MORPHOLOGY little to no segmental morphology	derivational and inflec- tional segmental morphology (either affixal or ablaut)
III. ROOT STRUCTURE predominantly monosyllabic roots	polysyllabic roots(or predominantly mono- syllabic roots if an ablaut-morphology language)
IV. PHONOLOGICAL WORD-BUILDING RESOURCES (NON-TONAL) number of possible syllables as determined by non-tonal contrasts comparatively low	number of possible syl- lables X syllable posi- tions within the word comparatively high
V. NUMBER OF TONES number of tones 3 or more	number of tones 2 or 3
VI. TONE SANDHI replacement (paradigmatic)	spreading (syntagmatic)

It should be clear that most Asian tone languages
are type A according to this scheme. Henderson's Chin
data are exceptional in that they have type B features,
features which happen to be more commonly found in
African and Central American tone languages.

These features are found together in interdependent webs "A" or "B" in most tone languages regardless of the geographic location of their speakers. I claim that the reason these feature sets hold together is functional.

In those languages without morphology, the type A languages, the internal resources of each language without tone are not sufficiently great to derive all *necessary lexical contrasts. In order to increase the word pool, tone is limited primarily to a lexical function.* Major tonal alternations of the B type are absent in such languages, since they would obscure non-redundant lexical tone. The primacy of the discrimination function in type A languages can also help explain why these languages have more phonemic *tones and why their tone sandhi rules involve* predictable replacement of one tone for another rather than spreading of a tone on to neighboring syllables. In type B languages, word identification is not dependent on tone to as great an extent due to greater internal resources for word-building. Word-building resources include not only derivational morphology and the trivially related feature of word length, but also the number of phonemic contrasts a language has in combination with phonotactic rules licensing their appearance in various positions in the syllable. Tone can be squandered in these languages: it can redundantly mark category distinctions made by segmental morphology, and will be left to mark some of these distinctions exclusively when and if the segmental markers disappear. Thus, tone function in a language can be predicted on the basis of other non-tonal, structural properties of the language. Features other than tone function either favor or disfavor, require or obviate the occurrence of specific tone functions.

6. Tone language change as measured by changes in tonal morphology. To demonstrate the contention that the features listed for each type are necessarily linked to each other, cases of historical change in tone languages should be examined. If the features are indeed linked, a change in one (preciptated by any one of a variety of forces, language internal or external) should result in a change in some of the others. This prediction is borne out in Shimen Hmong. The development of a contrast between nominal and non-nominal tones (a type B tone function) in three historical tone categories of this language which is both historically type A and is surrounded by type A languages in

Northwest Guizhou province in China can be traced to the prior development of prefixation in the language.

tone	nominal	non-nominal
category	(derived tones)	(basic tones)

B2: no^{33} "fly "(insect) no^{11} "fine" (adjective)

ndzie^{33} "hair braid" ndzie^{11} "to braid"

vu^{33} "urine" vu^{11} "to urinate"

C2: ndlo^{53} "interior" ndlo^{31} "to rest on"

ŋɖau^{53} "young man" ŋɖau^{31} "to pick" (Wang1979)

A full treatment of this historical change with an explanation of how it demonstrates the interdependence of the features of type B tone languages is given in Ratliff 1991a, based on the data given in Wang 1985. The particular linked features in this tone language type change are:

TONE FUNCTION A>B
    9) major (open) word classes characterized by
    different tone inventories
SEGMENTAL MORPHOLOGY A>B
    free (nouns) > bound morphemes (nominal prefixes)
ROOT STRUCTURE A>B(>A)
    monosyllabic word >
    disyllabic word (upon development of prefixes) >
    monosyllabic word (upon absorption of the prefix
    tone into the root resulting in a grammatically
    conditioned tone split)

7. A typological puzzle within Chinese.   It is typical in the Northern Wu dialects of Chinese[3] that of two primary tone sandhi patterns, one tone sandhi pattern is left dominant (with reduction or neutralization of the tone of the second morpheme) while another tone sandhi pattern is right dominant (with reduction or neutralization of the tone of the first morpheme), patterns traditionally identified as "broad" and "narrow", respectively. These "different direction" tone sandhi processes are sometimes used to mark major syntactic collocations. This is exemplified in the data from Tang Xi and Suzhou below[4]:

Tang Xi (Tangsic) (Kennedy 1953)
a. "broad" or left-dominant: *Attribute-Head*

tzōng(33)"middle" + nyin(24)"man"
= tzōng-nyīn(3--3) "middleman"
syào(51)"small" + nyin(24)"man"
= syào-nyìn (5--1) "children"

b. "narrow" or right-dominant: *Verb-Object*

má(24) "sell" + mie (24) "noodles"
= mā-mie (3324) "sell noodles"
mà(51) "buy" + mie (24) "noodles"
= mā-mie (3324) "buy noodles"

Suzhou (Ballard 1988 < Qian and Shi 1983)
One collocation with two different tone sandhi patterns,
and two resultant meanings:

[tsəu^{412}] "do" + [hæ^{52}] "good"

a. "broad" or left-dominant
= [tsəu-hæ$^{55-21}$] "finished"
b. "narrow" or right-dominant
= [tsəu-hæ$^{53-52}$] "done well"

The syntactically defined tone sandhi pattern
serve to "characterize major (open) word [here
'phrase'] classes by different tone inventories o
alternation patterns" (type B, function 9) and can b
linked to the role of compounding in these dialects
The particular linked Type B characteristics are a
follows:

TONE FUNCTION
9) major (open) word classes characterized by
different tone inventories
ROOT STRUCTURE
polysyllabic: "It is at least possible that th
tone sandhi groups are being treated as words, an
thus receive a tone envelope that is equivalent t
some single syllable tone value" (Ballard, p. 210)

WORD BUILDING RESOURCES
The possibility of positioning syllables at th
beginning or end of a disyllabic word increases th
number of possible words exponentially.

NUMBER OF TONES
    Of Shanghai, another Northern Wu dialect, Ballard
    reports from Sherard (1972, 1980): ". . . tone is
    becoming nondisinctive in Shanghai.   Shanghai's
    isolation values are the fewest of any Wu dialect
    [3 tones with 2 checked tones for category D]. . .
    . a lot of polysyllabic words must be learned as
    units 'with a particular overall contour'"(Ballard
    p. 44).
TONE SANDHI
    spreading (syntagmatic)

    It is both interesting and a great mystery that
Chinese, the dominant language of the area whose type A
characteristics have been imported to so many unrelated
neighboring languages, should harbour dialects which
have type B characteristics. Ballard attributes the type
of sandhi exemplified in these dialects to the nature of
archaic Han, to a substratum influence or to a
combination of both: in any case to a feature of the
language that has been present for a long time.
Although perhaps an example of type characteristic
retention rather than an example of incipient type
change, the Northern Wu case supports the idea that tone
function is never unassociated from other features of a
tone language. These necessary connections, I claim, are
due to the universal communicative requirements which
underlie the two networks of tone language features I
have traced in this paper.

8. Conclusion. In her ground-breaking 1967 paper,
Henderson notes that one language, Tiddim Chin, displays
an exhuberant use of morphological tone, atypical for
the Southeast Asian area. She proceeds to describe what
is typical for the area, encountered in language after
language, across family lines. We have seen that this
difference can be attributed to the fact that there are
representatives of two major tone language types in the
Southeast Asian area, and that these types, defined in
the first instance by tone function, can be shown to be
related to linked sets of other tone language features,
both tonal and segmental, both phonological and
morphological.   The existence of these linkages,
finally, can be demonstrated by observing that when one
type-defining feature in a tone language changes,
certain other features in the set will change as well.

¹The title of this paper is clearly (and deliberately) based on that of Henderson's.
²As Ballard maintains, ". . . it is clear that sandhi must be under morphological, syntactic and semantic controls at times--even though it is clearly a phonological process" (1988: 209).
³I am grateful to Laurent Sagart for calling these Chinese dialects to my attention.
⁴Syntactically governed leftwards and rightwards tone sandhi can also be found together in Chongming, Shanghai, and Suzhou, all Northern Wu dialects, and in a few Min dialects such as Chaoyang and Pingyang, and according to Sagart, p.c., the dialect Yongxin found much further west, in the hills between Jiangxi and Hunan.

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