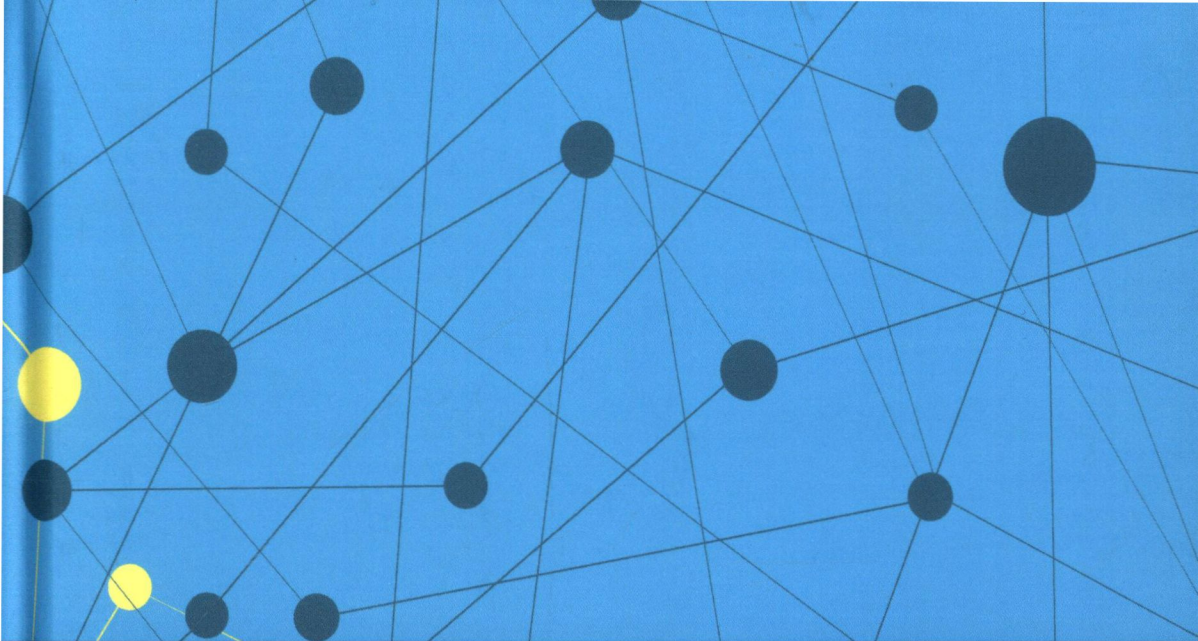




PROSODIC MORPHOLOGY IN MANDARIN CHINESE

Shengli Feng



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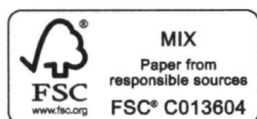
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Prosodic Morphology in Mandarin Chinese

It is not entirely clear if Modern Chinese is a monosyllabic or disyllabic language. Although a disyllabic prosodic unit of some sort has long been considered by many to be at play in Chinese grammar, the intuition is not always rigidly fleshed out theoretically in the area of Chinese morphology. In this book, Shengli Feng applies the theoretical model of prosodic morphology to Chinese morphology to provide the theoretical clarity regarding how and why Mandarin Chinese words are structured in a particular way. All of the facts generated by the system of prosodic morphology in Chinese provide new perspectives for linguistic theory, as well as insights for teaching Chinese and studying of Chinese poetic prosody.

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1 Introduction

This book studies prosodic morphology in Chinese.

Prosodic morphology concerns the shapes and sizes of canonical words, affixation as well as word formation in a language. Although being a new area in general linguistics and especially in Chinese linguistics, many prosodic morphological phenomena have been recognized over the past half-century. The early Republican philologist Huang (1932/1983:99) 黃侃 first pointed out the following fact:¹

In Chinese, the sound (refers to morpheme, by Feng) is monosyllabic while the tone (refers to prosodic unit, by Feng) is disyllabic, and thus monosyllabic words often become disyllabic ones, giving rise to the fact of one meaning with two words: one is a monosyllabic while the other is disyllabic, such as tiān 天 'sky' and huángtiān 皇天 'sky' or hàotiān 昊天 'sky'. The disyllabic words are redundant in plain speech (zhìyán 質言), but useful in literary language. Because of the properties given above, Chinese poems and parallel proses are created accordingly. Other types of versification of the language are also formed by these two features.

In Chinese, the morphemes are monosyllabic while the rhythmic units are disyllabic. It is also recognized that monosyllabic words often become disyllabic ones in literary texts, as pointed out by Huang (1932/1983). In the late 1930s, Guo 郭紹虞 (1938) also pointed out the syllabic flexibility of Chinese vocabularies in terms of elasticity (elastic words 彈性詞), and in the early 1960s, Lü (1963) recognized the morphosyntactic preferences between [2+1] and [1+2] syllabic patterns (namely, forms with [σσ+σ] and [σ+σσ] syllable structure) in Modern Chinese. For example:

- | | | | |
|--------------|--------------------|----------------|--------------------|
| 1. a. 鞋店 | 鞋帽店 | *鞋商店 | 鞋帽商店 |
| xié diàn | xié mào diàn | *xié shāngdiàn | xié mào shāngdiàn |
| shoes shop | shoes hat shop | shoes shop | shoes hat shop |
| 'shoes shop' | 'shoes & hat shop' | 'shoes shop' | 'shoes & hat shop' |

b. 種樹	* 種植樹	種果樹	種植樹木
zhòng shù	*zhòngzhí shù	zhòng guǒshù	zhòngzhí shù mù
plant tree	plant tree	plant fruit tree	plant tree
'to plant trees'	'to plant trees'	'to plant fruit trees'	'to plant trees'

The most recent and important works on prosodic morphology were initiated by Lu and Duanmu in 1991 and Feng in 1995. The former proposed a stress theory which successfully captured the difference between the [2+1] (nominal) and [1+2] (verbal) patterns in Chinese grammar, while the latter introduced the theory of prosodic morphology (McCarthy and Prince 1993) into Chinese linguistics and developed a subsystem of Chinese prosodic morphology.

This book is mainly based on the newly developed theory of prosodic morphology in Chinese and argues that the crucial point in prosodic morphology, as defined by McCarthy and Prince (1993:79–153), is as follows:

“The right/left edge of some grammatical constituent coincides with the corresponding edge of some phonological constituents.”

As we will see in the following chapters, the sizes of Chinese morphological categories, namely, morphemes and words, would coincide with the prosodic categories of mora and foot respectively in the language (Feng 1995, 2009). According to the theory of Alignment: [M] = [σ] (namely, a morpheme coincides with a syllable), the notion of morphosyllabicity, first coined and defined by DeFrancis (1986), is formulated as a prosodic constraint in the following:

2. Morphosyllabic Constraint (MC)

[M] = [σ]

ALIGN: M-Edge, σ-Edge = Left, Right

In (2), “M” stands for morpheme and “σ” for syllable. The operation system of ALIGN (alignment) requires the left and right edges of a morpheme to be coincided with the left and right edges of a syllable respectively. Given the Morphosyllabic Constraint in (2), this book demonstrates that a syllable in Modern Chinese corresponds to a morpheme, which demands that the indigenous morphemes in Chinese are monosyllabic. The MC in (2) successfully captures the essential characteristics of the Chinese languages among the Sino-Tibetan family as what Li 李方桂 (1973:2) has pointed out:

One of the characteristics of this family (Sino-Tibetan) is the tendency toward Monosyllabism. By Monosyllabism we do not mean that all the words in these languages consist of single syllables, but that a single syllable is an important phonological unit and often is a morphemic unit, the structure of which is rigidly determined by the

phonological rules of the language, and serves as the basis for the formation of words, phrases, and sentences.

The correctness of the prediction by (2) is also evidenced by the statistics shown in Shen (2007). Briefly, there is a total of 41,915 words in the Fifth Edition of *Xiàndài Hànyǔ Cídiǎn* 現代漢語詞典 *Modern Chinese Dictionary* (2005), but only 849 (3%) of these words are polysyllabic, which are arguably all non-indigenous in nature in the sense that they are either loan words from other languages, or words passed down from Classical Chinese thousands of years ago. Despite the complexity of the origins of polysyllabic words, they are neither indigenous morphemes, nor root morphemes in the morphology of Mandarin Chinese (see Sproat and Shih 1996, Feng 2009).

Phonologically, a well-known phenomenon in Chinese is the fact that there is no resyllabification process in the language. For example, the process of CVC|VC → *(CV (CVC) *lín-ān* 林庵 → **lí-nán* 黎楠 is not allowed. The lack of a resyllabification process in Chinese phonology is arguably a consequence of the Morphosyllabic Constraint, that is, the morpheme-final consonant or vowel must occupy the final position in the corresponding syllable, and the morpheme-initial consonant or vowel must occupy the initial position in that syllable. Consequently, a “morpheme mid-syllable/consonant” will not de-align a morpheme (see McCarthy and Prince 1993:38). This may be the reason why there is no such ‘de-alignment’ operation (resyllabification) in Mandarin Chinese.

As we will see in Chapter 3, the Morphosyllabic Constraint in (2) also leads to a phonological reduction when lexical morphemes become functional ones. Kratochvil (1977) has observed: “under some conditions it (i.e., “the leftward movement of stress” in a disyllabic word – Feng, 1995:107) causes atonicity, reduction in the segmental structure, and ultimately the loss of syllable status of B altogether, and the fusion of B with A (in an [A+B] construction)” and thus, “Modern Peking Dialect shows signs of a process involving syllable fusion as its ultimate result” (Kratochvil 1977:26–27). Note that this process exclusively happens to functional elements and no root morphemes have undergone a phonological reduction in the language. This shows a great possibility that the phonological reduction of the second syllable in disyllabic words may be a result of the Morphosyllabic Constraint. That is, all root morphemes follow the MC in (2) and only (semi-)functional elements (root morphemes that have lost their lexical meaning in a disyllabic form) are exceptional. For example,

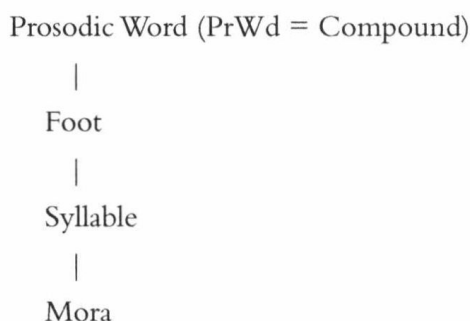
3. Monosyllabic Word	Disyllabic Word	Monosyllabic Word
600 AD	11th century AD	Mandarin Chinese
孩	孩-兒	孩兒
<i>hái</i>	<i>hái-ér</i>	<i>háir</i>

Hái-ér 孩兒 ‘child-son’ is a disyllabic word formed by *hái* 孩 ‘child’ plus a monomorphemic nominal suffix *-ér* 兒 which etymologically means ‘son’ or ‘child’ in Classical Chinese and begins to be used as a diminutive suffix around

the Tang Dynasty (618–907 AD) (Norman 1988:114). However, the syllable *ér* in almost all nouns of Mandarin Chinese has been reduced to a /r/ feature only, and fused with the proceeding syllable, thus yielding what Kratochvil (1977) called a fusion syllable.

Are there disyllabic or polysyllabic words in Chinese? The answer is yes, but they are overwhelmingly formed by a compounding of monomorphemes in prosodic morphology. While the morphemes in Chinese coincide with syllables, the combination of morphemes coincides with a prosodic category bigger than the syllable in the Prosodic Hierarchy given below:

4. Prosodic Hierarchy



According to the Prosodic Hierarchy proposed in McCarthy and Prince (1993), the next hierarchical category above the syllable is the foot, and again the next prosodic category above the foot is the Prosodic Word (PrWd, for short). In fact, a PrWd is realized by (or mapped from, in technical terms) a foot. As a result, the foot is essential in determining the morphological category PrWd.

What is a foot in Chinese? In the first place, what is a foot cross-linguistically? Foot is known as a kind of rhythmic unit. What is rhythm then? In English, rhythm has long been recognized by scholars like Lanier, who argues in his *The Science of English Verse* (1880) that if equal or proportionate intervals of time are marked off to any of our senses by recurrent stresses of similar events, we may be said to perceive a primary rhythm through that sense. In other words, regular recurrence of all kinds of objects perceived by our physical sensors from hearing, seeing, moving and so on. What is important for rhythm is the fact that we can never perceive rhythm without the fundamental alternation between strong and weak elements, and this is what Liberman (1975) has discovered and defined, namely, the Relative Prominence Principle, for all rhythm-related prosodic phenomena, which brings forward the concept that a minimal rhythmic unit is a binary formed by two elements, that is, a stronger one with a weaker one, because there would have been no stronger elements without others being weaker. The relative prominence principle is well-tested by our perception of the following fact:

A clock which ticks seconds may be said to set up a primary rhythm for the ear which hears each recurrent tick. These ticks are exactly alike: they fulfill the definition of

primary rhythm, which describes it as a conception resulting from a similar event recurring at equal (or simply-proportionate) periods of time. But everyone who has been in a room alone with a ticking clock must have observed that every other tick seems to be different, somehow, from its fellow, as if it said, "Tick-tack, tick-tack . . ."; and the effect of this difference is to arrange the whole series into groups, of two ticks in each group.

(Martin 2012:125)²

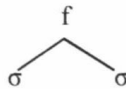
The "tick-tack" seems to be universal, but the stronger-weaker rhythm does not seem to be the same among all languages, because the phonological systems of these languages are different from one another. What would the foot unit in Chinese then?

The foot formation in Chinese can be successfully tested by using nonsense syllable strings (onomatopoeic words, sound translation of foreign names, etc.) or syntactically non-structured words (a string of identical numbers) or syntactically equal-structured words (coordination of monosyllabic words), examples of which are listed as follows (' () ' represents a rhythmic group):

5. a. (hong long), (hong long), (hong long) . . . (the sound of a thunderstorm)
(guangdang, guangdang), (guangdang, guangdang) . . . (the sound of a train)
(GAda gada GAda gada) (GAda gada GAda gada) . . . (the sound of a horse running)
- b. 柴 米 油 鹽 醬 醋 茶
(chái mǐ) (yóu yán) ((jiàng cù) chá)
firewood rice oil salt sauce vinegar tea
- c. 加 利 弗 尼 亞
(jiā lì) ((fú ní) yà)
California
- d. (99) (99) ((99)9)

The rhythmic groups in (5) are rightwardedly organized into disyllabic units (foot) with the stray syllable being attached to the last foot when the syllable string contains an odd number. This is called Natural Foot Formation (Feng 1998), which is formulated as follows:

6.



Natural Foot Formation (NFF)

A natural foot in Mandarin Chinese is grouped by two syllables from left to right and the stray syllable is attached to the neighboring foot when the number of syllables is odd.

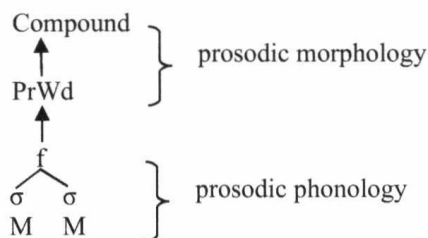
The generalization of NFF has a number of implications in Chinese prosodic morphology.

First, as seen in the Prosodic Hierarchy stated in (4), the prosodic foot will interact with (to impose on) the morphological category, resulting in what is called the Prosodic Word (PrWd for short) in a language. If a standard foot in Chinese is disyllabic, the standard PrWd in Chinese will also be disyllabic, which directly dominates the morphological processes of the language, as will be seen in Chapter 4.

A remarkable effect of PrWd's constraint on Chinese morphology is shown in the reduplication process of the language. For example, the outcome of noun reduplication (meaning 'every noun') in Chinese must be a PrWd, and thus, *jiā-jiā* 家家 'family-family, every family', *nián-nián* 年年 'year-year, every year' are acceptable but **xīngqī-xīngqī* 星期-星期 'week-week, every week' is not, because the latter is bigger than the size of a PrWd.

The theory of prosodic word explains properly what Chinese compounds come about, as first proposed in Feng (1997) (where 'M' stands for morpheme, 'σ' for syllable):

7.



According to (7), "a compound in Chinese must first be a prosodic word, though a prosodic word is not, by necessity, a compound." This generalization captures the facts that (i) word formation in Chinese is overwhelmingly (if not exclusively) a compound formation, that is, a process of combining a monosyllabic morpheme/word with another monosyllabic morpheme/word, and thus, (ii) the majority of Chinese compounds are disyllabic. That is to say, new words, rather than the old and most commonly used ones like *shǒu* 手 'hand', *tóu* 頭 'head', *niú* 牛 'cow', *yáng* 羊 'sheep', etc., that were passed down from Classical Chinese thousands of years ago and are thus exceptional to the modern prosodic constraint (that is, applications of prosodic morphological rules are sensitive to different classes of morphemes and morphological (sub-)categories), are formed almost exclusively by no fewer than two syllables in Mandarin Chinese. Thus the standard size of all new (compound) words is overwhelmingly disyllabic, which is borne out as predicated by the following statistics (Zhang 1997): disyllabic words make up 49,641 (70.6%) of the total 70,343 words in Mandarin Chinese.

Second, the NFF also entails that monosyllabic forms cannot stand alone where an independent prosodic unit is required. This is evidenced by the following example:

8. A: 你幾歲?
 nǐ jǐ suì?
 2SG how many year
 ‘How old are you?’
 B: 十五。
 shíwǔ
 Ten five, fifteen
 ‘I am fifteen years old.’
 C:a. *五
 **wǔ*
 five
 ‘I am five years old.’
 C:b. 五歲。
 wǔ suì
 five year
 ‘I am five years old.’

In Chinese you may answer this question about the age by mentioning any polysyllabic number, but if you want to specify a monosyllabic number, you have to add the syllable *suì* 歲 ‘year old’ for otherwise the sentence is unacceptable. The same is true for monosyllabic place names and dates in Chinese, as generally observed (see also examples given in Chapter 2).

Given the unacceptable monosyllabic forms in prosodic parsing, it follows that trisyllabic units should be allowed by the grammar even if they are highly conditioned. In other words, when a monosyllabic morpheme or a word is used, it must attach to a neighboring foot in order not to be ruled out by the NFF. This has in fact resulted in what is called a Super Foot Formation (SFF for short), which has given rise to trisyllabic compounds in the language.

Given the NFF and the SFF, the sizes of Chinese wordhood produced in morphology will be at minimum two and at maximum three syllables long under the prosodic morphological system outlined above. With the exception of loan words and phrasalized expressions, the $[2 \leftarrow \text{wordhood} \rightarrow 3]$ generalization for word size is true for 82.4% of compound words produced by the prosodic word formation (Zhang 1997, Zhou 1998).

The third important implication of the NFF is the grammatical function of the foot directionality: left-footing (i.e., 1+2, thereafter) is preferred by word formation while right-footing (i.e., 2+1, thereafter) is favored by phrasal prosody in Chinese prosodic morphology. Compare:

- | | | |
|--------|-----|-----|
| 9. 2+2 | 1+2 | 2+1 |
| 進口商品 | 進商品 | 進口商 |

jìnkǒu shāngpǐn
enter mouth
economic goods
'imported product'
'to import product'

jìn shāngpǐn
enter economic goods

'to import product'
'*imported product'

jìnkǒu shāng
enter mouth
economic
'importer'

複印文件
fùyìn wénjiàn
copy document
'a copied document'
'to copy document'

印文件
yìn wénjiàn
copy document
'*a copied document'
'to copy document'

複印件
fùyìn jiàn
copy document
'a copied document'
'*to copy document'

Fùyìn wénjiàn 複印文件 'to copy document or a copied document' is a [2+2] syllable pattern and hence the footing directions make no difference whether it is leftwarded (i.e., [2+2]) or rightwarded (also [2+2]) and as result, the outcome of the [2+2] word strings can be either a word or a phrase:

10. 兩份複印文件

liǎng fēn fùyìn-wénjiàn
two CL. copied-document
'two copied documents'
複印了兩份文件
fùyìn le liǎng fēn wénjiàn.
copy Asp. two CL. document
'to have copied two documents.'

However, the double-directional property of [2+2] will not be shared by the [1+2] and [2+1] rhythmic structures, because [1+2] is rightwarded and [2+1] is leftwarded. As a result, the [1+2] and [2+1] rhythmic structures cannot have the dual properties (i.e., being either a phrasal or a word category) as the [2+2] forms do, which is shown by the following facts.

- | | | | | |
|---------------|--------------|------------------|-------------|-----------|
| 11. 皮鞋工廠 | 皮廠 | 皮工 | 鞋工 | 鞋廠 |
| pí-xié | pí chǎng | pí gōng | xié gōng | xié chǎng |
| gōng-chǎng | | | | |
| leather-shoe | leather mill | leather worker | shoe worker | shoe mill |
| worker-mill | | | | |
| 'leather shoe | 'leather | 'leather worker' | 'shoemaker' | 'shoe- |
| factory' | factory' | | | factory' |

皮鞋工
pí-xié gōng

皮鞋廠
pí-xié chǎng

*鞋工廠
*xié gōng-chǎng

*皮工廠
*pí gōng-chǎng