Theory of Prosodic Grammar and Chinese Linguistics

Shengli Feng
Translated by Ruiqin Shang
Proofread by Michael Opper

Abstract: This paper introduces a comprehensive account of the author's own efforts lasting over ten years in combining linguistic theory and practice of the Chinese language. The author maintains that it would be very hard, even impossible, to solve Chinese prosodic questions without the help of formal linguistic theory; or rather, it would be impossible to identify these questions. This paper reviews previous studies on prosodic morphology, prosodic syntax, historical syntax and prosodic grammar of written Chinese. At the same time, this paper proposes that prosody can not only be taken as a functional category that motivates syntactic operations, but also as a system structured with prosodic connotations.

Key words: theory and practice, prosodic grammar, prosodic connotation

1 Introduction

The editor of Chinese Prosodic Grammar Study (Feng 2005) posed a big question in the book's back cover introduction that is worth considering: how many substantial problems in Chinese prosody is formal linguistic theory able to solve? I think this is a representative question of our time—not just personal idea of the editor in Beijing University Press, nor some separate question on functional linguistic approach to Chinese prosody, but an issue on the general relation between contemporary theory and practice of the Chinese language. Enlightened by such a question, I attempt to discuss my personal understanding of this point. Here first I avoid the reference about the so-called substantial problems, for I am not clear what belongs to the substantial problems in Chinese prosody; I just focus on my opinion and case study.

My opinion is very simple: without the help of formal linguistic theory, it would be not only hard, or almost impossible, to solve Chinese prosodic questions, but also by no means possible to identify these questions. To illustrate my understandings, I divide the partial findings of Chinese prosody from...
The perspective of formal linguistic theory over recent years into the following five special topics: prosodic morphology, prosodic syntax, interdisciplinary research of prosodic morphology and prosodic syntax, linguistic evolution actuated by prosody, and prosodic grammar of written Chinese. Each special topic will be introduced from three aspects: 1) construction of basic theories; 2) findings of Chinese studies; 3) significance in general linguistics. The first aspect is based on formal linguistic theory, and the second aspect is very scarce or non-existent in previous Chinese studies. These two aspects are actually interdependent: without the first aspect, the second aspect cannot exist. In turn, without the second aspect, the first one will lose its own significance. The application of formal linguistic theory to Chinese prosody should not be confined to Chinese only—this is the third aspect. In my opinion, with these three aspects in consideration, studies on the five aforementioned special topics should be considered to be comprehensive. Of course, this is only my personal opinion and its validity should be evaluated by experts and scholars.

2 Chinese prosodic morphology

2.1 Construction of the basic theory—the concept of minimal word and its propositional inference

The basic concept of Chinese prosodic morphology is the minimal word, which is derived from the following fundamental concepts: 1) All-Foot-Left rule, which means all the feet begins from the left; 2) Parse-Syllable rule, 3) Superiority of parse syllable rule over all-foot-left rule. Here are the analyses:

(1) All-Foot-Left rule (ALL-FT-LEFT)

Align (Ft, L, PrWd, L) — “The left of each foot must be aligned with the left of prosodic word”. In summation, this statement means “each foot is the starting point of a prosodic word”.

(2) Parse-Syllable rule (PARSE-SYLL)

Each syllable must belong to a foot.

(3) PARSE-SYLL >> ALL-FT-LEFT

The All-Foot-Left rule requires all the feet begin from the left, while the Parse-Syllable rule prescribes that all the syllables in any form should be included in feet. These two rules will inevitably lead to the following consequence:

(4) Each syllable belongs to a foot, and each foot is the beginning foot.

Based on the prescriptions of the aforementioned rules, the only logical consequence is this: only one structural form can simultaneously satisfy the aforementioned two conditions, namely the “minimal word”. Why? Because the minimal word is made up of one independent foot, whereas all the syllables in that foot must belong to that foot and the starting point of that foot is aligned with the left of
the prosodic word. That is,

\[(5) \text{\footnotesize \{foot\} prosodic word, or \{\text{\sigma\,\sigma}\,\text{foot}\} prosodic word}\]

According to the inference, the minimal word is the most harmonic prosodic word. Under the
general restrictive prosodic rules, in any language without distinction of syllable weight, the most har­monic prosodic word consists of 2 syllables. It can be concluded that the minimal word is the inferring
consequence of rules in prosodic system, and it is the logical requirement. Note that the basic units in
the aforementioned prescriptions are the syllable and the foot; either of which belongs to the category
of metrical phonology. However, the minimal word is the interdisciplinary product of metrical phonol­
ogy and morphology. This point is what we get from the following theoretical mode of prosodic hierar­
chy:

\[(6) \text{Prosodic Hierarchy:}\]

In the following subsections readers can see that with the enlightenment of the basic theory of
prosodic morphology, we not only discover many interesting phenomena in Chinese, but we can also
solve some of the difficult problems that have perplexed scholars for a long time.

2.2 Discovery of Chinese studies

2.2.1 The existence of natural foot and its property

The most interesting discovery of Chinese prosodic morphology is the existence of the natural
foot in Chinese, e.g., “the foot clusters are not subject to syntactic and semantic influence”. Chinese
foot has been given various definitions. Here we adopt the following approach to reveal the existence
of natural foot and its right aligned property. (Feng 1998)

\[(7) \begin{align*}
\text{a. numbers:} & \quad (5\,5) \quad (5\,5) \quad (5\,5) \quad 5) \\
\text{b. compound words:} & \quad (\text{柴米}) \quad (\text{油盐}) \quad (\text{酱油}) \quad (\text{茶}) \\
& \quad (\text{chai2/mi3}) \quad (\text{you2/yan2}) \quad (\text{jiang4/cu4}) \quad (\text{cha2}) \\
& \quad (\text{firewood/rice}) \quad (\text{cooking oil/salt}) \quad (\text{soy sauce/vinegar}) \quad (\text{tea}) \\
& \quad \text{‘daily necessities’} \\
\text{c. sound-based loanwords:} & \quad (\text{布宜}) \quad (\text{诺斯}) \quad (\text{艾利}) \quad (\text{斯}) \\
& \quad (\text{bu4yi2}) \quad (\text{nuo4si1}) \quad (\text{ai4lid}) \quad (\text{si1}) \\
& \quad (\text{Buenos Aires}) \quad (\text{Bue}) \quad (\text{nos}) \quad (\text{Aire}) \quad (\text{s}) \\
& \quad \text{‘Buenos Aires’} \\
\text{d. natural sequence direction:} & \quad (\rightarrow) \quad (\rightarrow) \quad (\rightarrow) \quad (\rightarrow) \quad (\rightarrow) \quad (\rightarrow) \quad (\rightarrow)
\end{align*}\]
2.2.2 The discovery of the prosodic word and prosodic nature of compound words

The natural foot leads us to the following great discovery: the so-called “compound words” in Chinese are all controlled by prosodic word, “the compound word must first be a prosodic word”. For example, words like 得罪 (VO), 年轻 (SP), 提高 (VR), 电视 (MN), 电视机 (MN), etc, are all formed according to the mode of standard prosodic word or super prosodic word. The prosodic word is the formal mark of Chinese word formation. (Feng 1997)

2.2.3 The size and length of Chinese compounds

On the basis of a compound’s “prosodic morphology”, we can automatically infer the mark of Chinese word size and its internal reasons. In summation, in a Chinese word, the number of syllables is no less than 2 and no more than 3. For instance:

(8) 春节联欢晚会演员休息室 = 春节/联欢/晚会/演员/ [休息/室]

\[\text{chün jiē liǎn huān huàn wǎn yuán xiè yì jī huí jī dì shì} = \text{chün jiē liǎn huān huàn wǎn yuán xiè yì jī dì shì}\]

Spring Festival/Evening Party/artist/ [rest/room]

‘Spring Festival Evening Party artist rest room’

多弹头导弹发射器 = 多弹头 / 导弹 / [发射 / 器]

\[\text{duō dàn tóu dàn diào fā shè qì} = \text{duō dàn tóu dàn diào fā shè qì}\]

multiple warhead / missile / [launch / er]

‘multiple warhead missile launcher’

2.2.4 All separable words in Chinese are prosodic words

Another unexpected finding of prosodic morphology study is that all the separable words in Chinese are prosodic words. The reason is very simple: words which are not prosodic words cannot be combined together. For example:

(9) 你操心： 你操什么心

\[\text{ni}3 \text{ cao1 shèn1 mò0 xīn1} = \text{ni}3 \text{ cao1 shèn1 mò0 xīn1}\]

exercise heart: you exercise what heart

‘worry: What are you worried about?’

负责： 你负什么

\[\text{fu}4 \text{ ze2} = \text{fu}4 \text{ ze2}\]

bear responsibility: you bear what

‘bear responsibility: What do you bear?’

负责： 你负什么责任

\[\text{fu}4 \text{ ze2 rén0} = \text{fu}4 \text{ ze2 rén0}\]

bear responsibility: you bear what responsibility

‘be responsible for: What responsibility do you bear?’

负责： 你负什么责任

\[\text{fu}4 \text{ ze2 rén0} = \text{fu}4 \text{ ze2 rén0}\]

bear responsibility: you bear what responsibility

‘be responsible for: What responsibility do you bear?’

负责： 你负什么责任

\[\text{fu}4 \text{ ze2 rén0} = \text{fu}4 \text{ ze2 rén0}\]

bear responsibility: you bear what responsibility

‘be responsible for: What responsibility do you bear?’

负责： 你负什么责任

\[\text{fu}4 \text{ ze2 rén0} = \text{fu}4 \text{ ze2 rén0}\]

bear responsibility: you bear what responsibility

‘be responsible for: What responsibility do you bear?’

负责： 你负什么责任

\[\text{fu}4 \text{ ze2 rén0} = \text{fu}4 \text{ ze2 rén0}\]

bear responsibility: you bear what responsibility

‘be responsible for: What responsibility do you bear?’

负责： 你负什么责任

\[\text{fu}4 \text{ ze2 rén0} = \text{fu}4 \text{ ze2 rén0}\]

bear responsibility: you bear what responsibility

‘be responsible for: What responsibility do you bear?’

负责： 你负什么责任

\[\text{fu}4 \text{ ze2 rén0} = \text{fu}4 \text{ ze2 rén0}\]

bear responsibility: you bear what responsibility

‘be responsible for: What responsibility do you bear?’

负责： 你负什么责任

\[\text{fu}4 \text{ ze2 rén0} = \text{fu}4 \text{ ze2 rén0}\]

bear responsibility: you bear what responsibility

‘be responsible for: What responsibility do you bear?’

负责： 你负什么责任

\[\text{fu}4 \text{ ze2 rén0} = \text{fu}4 \text{ ze2 rén0}\]

bear responsibility: you bear what responsibility

‘be responsible for: What responsibility do you bear?’

负责： 你负什么责任

\[\text{fu}4 \text{ ze2 rén0} = \text{fu}4 \text{ ze2 rén0}\]

bear responsibility: you bear what responsibility

‘be responsible for: What responsibility do you bear?’

负责： 你负什么责任

\[\text{fu}4 \text{ ze2 rén0} = \text{fu}4 \text{ ze2 rén0}\]

bear responsibility: you bear what responsibility

‘be responsible for: What responsibility do you bear?’

负责： 你负什么责任

\[\text{fu}4 \text{ ze2 rén0} = \text{fu}4 \text{ ze2 rén0}\]

bear responsibility: you bear what responsibility

‘be responsible for: What responsibility do you bear?’

负责： 你负什么责任

\[\text{fu}4 \text{ ze2 rén0} = \text{fu}4 \text{ ze2 rén0}\]

bear responsibility: you bear what responsibility

‘be responsible for: What responsibility do you bear?’

负责： 你负什么责任

\[\text{fu}4 \text{ ze2 rén0} = \text{fu}4 \text{ ze2 rén0}\]

bear responsibility: you bear what responsibility

‘be responsible for: What responsibility do you bear?’

负责： 你负什么责任

\[\text{fu}4 \text{ ze2 rén0} = \text{fu}4 \text{ ze2 rén0}\]

bear responsibility: you bear what responsibility

‘be responsible for: What responsibility do you bear?’

负责： 你负什么责任

\[\text{fu}4 \text{ ze2 rén0} = \text{fu}4 \text{ ze2 rén0}\]

bear responsibility: you bear what responsibility

‘be responsible for: What responsibility do you bear?’
In summary, the concept of Chinese prosodic word helps us find the unit that scholars have long sought-what is between "word" and "expression" (Zhao 1979), and neither "too long" nor "too complex" (Lu 1979).

2.3 Significance in general linguistics

The significance of Chinese prosodic morphology in general linguistics lies in at least three aspects: 1) prosodic words not only determine the form of inflectional morphemes and derivational morphemes, but also determine the size of compounds (just as Chinese word formation demonstrates); 2) the rule of prosodic words not only has binding force for word formation, but also influences expression formation (see the following section); 3) the prosodic word-formation rule is not only effective for word formation and expression formation, but also determining for the expressive functions of different genres (see the following section).

3 Chinese prosodic syntax

Applying formal linguistic theory in Chinese prosody study allows us to discover how syntax is restricted by prosody, and this is prosodic syntax.

3.1 Construction of basic theory

3.1.1 Relative stress principle

Basic theory of prosodic syntax is based on the relative stress principle discovered by Liberman (1975). This principle can be described by the following proposition: the stress systems in all the human languages are of relative combination (as opposed to absolute combination), e.g.:

\[
\begin{align*}
\sigma & \quad \sigma \\
*\sigma & \quad \sigma \\
\end{align*}
\]

stressed unstressed unstressed stressed unstressed stressed

3.1.2 Nuclear stress

Nuclear stress is the core of prosodic syntax. Its description is the following:
(11) Nuclear Stress Rule (for detail see Liberman and Prince 1977):

\[ [X \ Y] c \]

If C is a phrase, Y is relatively stressed.

The stressed and unstressed parts in prosody are inevitably represented by two components in syntactic structures. Therefore, relative stress principle determines that nuclear stress in phrases must be based on syntactic structures; as for what type of syntactic structure nuclear stress realizes itself, languages differ.

3.1.3 Dominant nuclear stress

On the basis of nuclear stress theory of Liberman (1975) and Zubizarreta (1998), following years of experiments and study, we propose Chinese nuclear stress assignment as follows:


Of the two given syntactic fragments C1 and C2, if C1 and C2 have selective relation in a word sequence, then the secondary one that is directly under the government of the select receives the comparatively strong stress.

3.1.4 Government

(13) \( \alpha \) governs \( \beta \) only when:

(a) \( \alpha \) is an \( X_o \) word item;

(b) \( \alpha \) element commands \( \beta \).

3.1.5 Element-command

(14) \( \alpha \) element-commands \( \beta \) only when each branch joint can dominate both \( \alpha \) and \( \beta \).

\[
\begin{array}{c}
A \\
B \quad Z \\
\downarrow \\
X \quad Y
\end{array}
\]

According to the requirement of the definition that each branch joint should dominates both \( \alpha \) and \( \beta \), in the above tree diagram, X can only element-command Y, and cannot element-command Z, because branch joint B cannot dominate Z. Similarly, since B cannot dominate Z, Z cannot element-command X or Y. In other words, nuclear stress can only be realized within the domain prescribed by element-command rule. In addition to the above-mentioned structural rule, the assignation and operation of nuclear stress is subject to the following prosodic rule:

\[
\begin{array}{c}
\text{\( \alpha \)} \\
\text{\( B \quad C \)} \\
\text{\( D \quad E \)}
\end{array}
\]

\[
\begin{array}{c}
\text{\( \alpha \)} \\
\text{\( B \quad C \)} \\
\text{\( D \quad E \)}
\end{array}
\]

\[
\begin{array}{c}
\text{\( \alpha \)} \\
\text{\( B \quad C \)} \\
\text{\( D \quad E \)}
\end{array}
\]

\[
\begin{array}{c}
\text{\( \alpha \)} \\
\text{\( B \quad C \)} \\
\text{\( D \quad E \)}
\end{array}
\]
In the operation of prosodic rules, anaphoric elements such as pronouns are invisible.

According to the element-command rule, if D of structure a in footnote (1) is an invisible element, then B in structure a can command E. Therefore, whether syntactic elements are invisible or not directly influences the operation of prosodic rules, thus leading to different consequences.

3.2 Discovery of Chinese study

3.2.1 Different types of nuclear stress

The first discovery in prosodic syntax is that the assignation of nuclear stress has typologically different operations. Compare:

(16) a. English: C-NSR: NS is assigned to a element-command element;
     b. German: S-NSR: NS is assigned to a select element;
     c. Chinese: G-NSR: NS is assigned to a dominant element.

Integrating research findings of Zubizarreta (1998) and Feng (1995, 2003), we see that: in English, nuclear stress is carried by an element-command diction; in German, nuclear stress must be carried by the element selected by verbs; in Chinese, the elements that serve as nuclear stress must be the direct dominator of verbs. Hence a distribution diagram of prosodic types in which stress governing domain is endocentric by degrees.

3.2.2 The validity of Prosodic Restriction

Prosodic syntax study also helps us discover reasons why particular sentences and expressions are awkward-sounding: the misplay or failure of nuclear stress assignation is responsible. For example

(17) a. [V N P] D / FP
     看见他三次
     kan4jian0 ta1 san1ci4
     see him three times
     ‘have seen him three times’
     * 打电话三次
     da3 dian4hua4 san1ci4
     make phonecall three times
     ‘have made phonecalls three times’

     b. [V V + N]
     种树、读报
     zhong4shu4, du2bao4
     plant tree read newspaper
     ‘plant trees, read newspapers’
     * 种植树、阅读报
     zhong4zhi2shu4, yue4du2bao4
     grow plant tree go over read newspaper
     ‘plants trees, read newspapers’

     c. [V V + R]
     提高、革新
     ti2gao1, ge2xin1
     improve innovate
     ‘improve, innovate’
     * 提拔高、改革新
     ti2ba2 gao1, gai3ge2 xin1
     lift improve change innovate
     ‘improve, innovate’
d. BA NP + VP

把灯关闭

*把灯关

\textit{ba3 deng1 guan1 bi4}

let light switch off

‘Switch off the light.’

Switch off the light.

e. BEI NP + VP

被老师批评

*被老师批

\textit{bei4 lao3 shi1 pi4 ping2}

by teacher criticize

‘be criticized by the teacher’

be criticized by the teacher.

f. V PP NP

把衣服挂在墙上

*把衣服挂在墙上

\textit{ba3 yi1 fu0 gua4 zi3 shang0}

let clothes hang on wall

‘Hang the clothes on the wall.’

Hang the clothes on the wall.

g. V PP NP

放那儿好几本书

*放两张桌子好几本书

\textit{fang4 na4' er hao3 ji3 ben3 shu1}

put there quite a few books

‘Put quite a few books here.’

Put quite a few books there.

\textit{fang4 liang3 zhang1 zhuo1 zi3 shang0 hao3 ji3 ben3 shu1}

put two desks on quite a few books

Here we just list a few examples to prove the validity of prosodic restriction. Actually, new discoveries continue to be published.

3.3 Significance in general linguistics

Prosodic syntax can exert its influence in at least the following aspects: 1) it directly challenges the supposition of phonology free syntax (Zwicky & Pullum 1986), and undermines the actual foundations of its seemingly reasonable argument; 2) it also challenges the supposition of strict autonomous syntax because if morphology is syntax (syntactions often hold such an idea), and it cannot be denied that prosody commands morphology, then there is no doubt that prosody restricts syntax; if prosody can restrict syntax, then strict autonomous syntax can hardly hold true; 3) it questions the current syntactic model: the prosody filtering model is inadequate in explaining new discoveries in prosodic syntax, and a new model is to be established; 4) it urges the design of a new model of grammar, e.g., an overlapping model of prosody and syntax, or leg-repetition model (Cyclic Spell-Out).

4 Interaction between prosodic morphology and prosodic syntax

Applying formal linguistic theory in the study Chinese prosody also helps us discover the interaction between prosodic morphology and prosodic syntax. The construction of the theory is introduced
4.1 Construction of basic theory

4.1.1 Minimal word condition

From previous discussion it is clear that the concept of minimal word is vital. However, the concept of minimal word can be defined from two directions: the one is being "equal", and the other is being "less than". In reality, linguistic phenomena in both of the two aspects are existent, therefore the two definitions are both valuable in theory and in practice (Feng 2000, Feng 2003). That is,

(18) Minimal Word Condition:
   a. A minimal word is a foot formed by two syllables.
   b. A minimal word is equal or greater than two but less than three syllables.

4.1.2 Category changing condition

In the use and operation of languages, words can be changed into phrases and vice versa, hence the changes in grammatical categories. However, there should be rules in changing process. We discover that only when meeting the requirements of minimal word can a phrase unit have the qualification to change into a word unit. This is what we propose as category changing condition (See Feng 2003):

(19) Category Changing Condition:
   In the system of changing in Chinese grammatical category, only when meeting the requirements of minimal word can a phrase unit have the qualification to change into a word unit.  

4.1.3 Necessary procedures of prosodic operation

The procedures of prosodic and syntactic operations and their participation in projects are closely related to the success of the operations, therefore, the procedures must be exact and definite before the operation begins, that is:

(20) a. it must begin after general syntactic operation finishes;
   b. common stress must be realized between the dominator and dominated under the first branch in the surface structure;
   c. all the invisible elements are excluded.

4.2 Discovery of Chinese study

Study on the interaction between Chinese prosodic morphology and prosodic syntax brings inspiring new discovery: although the dividing line between words and phrases has been hard to identify, the

\[ [X + Y] \to [X + Y]\text{X,/[__]} \text{M in Wd.} \]
newest study tells us that there is general boundary between words and phrases (Feng 2000). That is:

(21) General boundary of Chinese words and phrases:

Prosodic words are not necessarily words, but words must be prosodic words.

(22) Phrase-formation rule of Chinese: rightward word-formation, leftward phrase-formation.

From the tree diagram below we can not only see the syntactic manifestation of the general boundary between words and phrases, but we can also associate many seemingly irrelevant phenomena (e.g., “讲学术中南海 jiang3 xue2shu4 Zhong1nan2hai3, lit. speak academic Zhongnanhai, ‘to give lectures at Zhongnanhai’ / 讲学中南海 jiang3xue2 Zhong1nan2hai3, lit. discuss learning Zhongnanhai, ‘to give lectures at Zhongnanhai’”, “开玩笑 kai1 wan2xiao2 ta1, lit. crack a joke, ‘to make fun of him’ / 跟他开玩笑 gen1 ta1 kai1 wan2xiao4, lit. of him make fun, ‘to make fun of him’”, “写通顺 xie3 tong1shun4 wen2zhang1, lit. write fluent article, ‘write clear and coherent article’ / 把文章写通顺 ba3 wen2zhang1 xie3 tong1shun4, lit. let article write fluent”) with the operation of minimal words formed by less than 3 syllables (e.g., 挺平到 (\[ [\mu [\mu ] v] \sigma + [\mu [\mu ] R] \sigma + [\mu ] P ] NP)人人都满意的程度 bai3 ping2 dao4 ren2 ren2 dou1 man3 yi4 de0 cheng2 du4, lit. place fairness to everybody all satisfaction degree, ‘treat fairly so that everybody is satisfied’) so that they fit into the operation of morpho-syntax.

(23) a. \[ \sigma + \sigma = X_0 \]

b. \[ \sigma + \sigma = X' \]

\[
\begin{array}{c}
V' \\
V_0 \quad \text{VP}_2 \\
V \quad R \quad \text{NP/PP}
\end{array}
\]

a. 负责工作

fu4 ze2 gong1 zuo4

bear responsibility for job

' to bear responsibility for the job'

b. 收徒凌云寺

shou1 tu2 Ling2 yun2 si4

accept disciple Lingyunsi

' to accept disciple at Lingyun Temple'

c. 写通句子

xie3 tong1 ju4zi0

write open sentence

' to write grammatical sentences'

d. 摆平到......程度

bai3 ping2 dao4 cheng2 du4

straighten out to... degree

' treat fairly to... degree'
4.3 Significance in general linguistics

In general linguistics, research on the interaction between prosodic morphology and prosodic syntax is still in its early stage. Since prosodic syntax has not been generally discussed in linguistics and only Zec & Inkelas (1990) mentioned “Prosodically Constrained Syntax”, there is no interaction between prosodic morphology and prosodic syntax. Studies on Chinese prosodic syntax provide new perspective on the interaction between prosodic morphology and prosodic syntax. In addition, such interaction further proves the invalidity of filtering model and supports the prosody-syntax overlapping syntactic model.

5 Linguistic evolution motivated by prosody

Prosodic morphology and prosodic syntax also help us discover phenomena and rules motivated by prosody. First let us begin with the theory.

5.1 Construction of basic theory

5.1.1 Historical development of prosodic structure

It is my understanding that, the prosodic structure of Chinese has undergone significant typological changes from ancient times (Xia, Shang, Zhou Dynasty) to Qin and Han Dynasty, and such historical development can be seen in the following theoretic inference.

(24) Theoretic Premise: phonetic changes inevitably influence, even result in changes in prosodic structures;
Factual Premise I: primeval Chinese was a non-tone language, and tones later emerged;
Factual Premise II: the maximum structure of Primeval Chinese syllables was CCMVCC,
and changed to CV (C) in ancient times;
Conclusion: the changes of the two types of phonetic sounds will unavoidably lead to corresponding changes in the prosodic structure of the language.
The premises of the aforementioned inferences are based on previous researchers' findings. My knowledge of Ancient Chinese is mostly from what Mr. Yingmin (art-name: Lu Zongda) taught about the school of Zhanghuang. Here I establish my argument based on my teacher's theory and also consult the ideas of other scholars. The following is what I have learned from my teacher and directly relates to my argument of this paper.

5.1.2 The statement that there is no rising tone in primeval Chinese

Mr. Jigang (Huang Kan) holds that there is no rising tone in Primeval Chinese (Huang Kan's Essays on Learning), and Duan Yucai holds that there was no falling tone in primeval Chinese. Therefore, it can be inferred that there were just a level tone and an entering tone in Primeval Chinese. Neither entering tone nor single level-tone can be considered tones; hence, it is definitely true that "primeval Chinese has no tones at all". Based on my teacher's lessons and other scholars' research (see Li Fanggui, Pu Liben, Ding Bangxin, Mei Zulin, Takashima Ken-ichi; Laurent Sagart, Zhengzhang Shangfang, Pan Wuyun, etc.) along with the logical necessity of phonetic evolution, I form an operational system that can be tested and predicted. As for its credibility, we must see the results of its application and ability to make predictions.

5.2 Discovery of the study on the history of Chinese

According to the aforementioned theory, we have discovered some interesting phenomena and their explanations. First, we discovered the evolution from some bimoraic feet to disyllabic feet, and on the basis of this point, we infer that "disyllabification did not originate in ancient times"; instead, it is a natural consequence of historical development of Chinese prosody.

Undoubtedly, this conclusion may promote an in-depth study on reconstructing the prosodic system of Ancient Chinese. The changes of prosodic structures result in transition of syllable structures (from bimoraic feet to disyllabic feet), the transition of syllable structures in turn results in the appearance of the disyllabic prosodic word. This presupposes a series of changes on the prosodic system from the Spring and Autumn Period to the Warring States Period and even up to later times. The facts are as follows:

(25) Development Consequences on the Prosodic Word:

a. phrase prosodic word (e.g., 国家 (= 国和家) 春秋时期)
   guo2jial (= guo2 he2 jial1 chunl qial1 shi2ql1)
   nation (= state and family) Spring and Autumn Period

b. disyllabic root prosodic words (e.g., 落蒙 (= 落) 春秋战国)
   ji2li2 (= ji2) chunl qial1 zhan4 guo2
   caltrop (= ji) Spring and Autumn Period and Warring state period

c. compound prosodic word (e.g., 国家 (= 国) 战国时期)
   guo2jial (= guo2 zhan4 guo2 shi2qi1)
   nation (= state) Warring State Period
d. prosodic parsing word (e.g., “而立之年” derives from “三十而立”)

“而立之年” er2 li4 shi1 nian2, lit. being independent of age, ‘the year in life at which a person should be independent’

“三十而立” san1 shi2 er2 li4, lit. being thirty and independent, ‘A man should be independent at the age of thirty’.

More importantly, the development of prosodic words leads into the gradual expansion of disyllabic module from morphology to syntax: first “V” then “V→VV”, and then “VV→VR”, this is the immediate consequence of the expansion of prosodic words into morphological syntax. Other prosodic words are formed from “被 N” (BEI N) to “被 V” (BEI V), and after being established and lexicalized, a consequence is the form “被围于赵” (bei4 wei2 yu2 zha04, be besieged in State of Zhao). Interestingly, disyllabization not only resulted in changes such as “谤→毁谤 (bang4→hui3 bang4; slander→vilify and slander), 羁→刑寗 (lu4→xing2 lu4, execute→punish corporally and execute), 害→累害 (hai4→lei4 hai4, harm→encumber), 厥→祸害 (huo4→huo4 hai4, ruin→ruin), 倾→侮辱 (ru3→wu3 ru3, insult→insult)” but also in the late Western Han Dynasty new forms such as “被毁谤 (bei4 hui3 bang4, be slandered), 被刑寗 (bei4 xing2 lu4, be punished corporally and executed), 被累害 (bei4 lei4 hai4, be encumbered), 被祸害 (bei4 huo4 hai4, be ruined), 被侮辱 (bei4 wu3 ru3, be insulted)” also emerged. In this way, trisyllabic structures “被 + VV” (BEI + VV) stretch into phrases, hence the appearance of “被” (BEI) sentence pattern such as “臣被尚书召问” (chen2 bei4 shang4 shu1 zha04 wen4, I was summoned and inquired by the minister) in the Eastern Han Dynasty.

In fact, the catalytic function of prosody is more clearly shown in the typological evolution from empty verbs (齐王鼓 qi2 wang2 gu3, Emperor Qi drummed; 《左传》Zuo3 zhu1, Chronicle of Zuo) to light verbs (处处打鼓 chu4 chu4 da3 gu3, everywhere people beat drums; 《佛本行集经》Fo2 ben3 xing2 ji2 jing1, Abhiniskramanasutra): from “鼓” (gu3, drum) to “打鼓” (da3 gu3, beat drums), from “渔” (yu2, fish) to “打鱼” (da3 yu2, catch fish), from “拱” (gong3, solute with hands folded) to “拱手” (gong3 shou3, solute by cupping one hand in the other before one’s chest), from “漱” (shu4, rinse) to “漱口” (shu4 kou3, rinse the mouth), syntactically and semantically there is no necessity to have double characters; the only reason for such phenomena is prosody. Similar examples are too numerous to mention one by one (e.g., metrical reason for the development of BA constructions).

5.3 Significance in general linguistics

There is no doubt that the linguistic significance of historical prosodic syntax lies in revealing the prosodic motive and condition of lexicalization and grammaticalization (Feng 1994). In addition to this, we can also infer a new model of human language evolution:
6 Formation of written Chinese prosodic grammar

Finally, applying formal linguistic theory in Chinese prosody also helps us discover some important grammatical features of formal styles of written Chinese. Among these features, the most remarkable is disyllabic template (Monosyllabic words which can only be used after being embedded in disyllabic template) which is confined prosodically and free syntactically. Let’s first discuss relevant theory.

6.1 Construction of the basic theory

In the study of written Chinese, we propose the following two points based on the communicative function of human language and connotative function of a language’s prosody.

6.1.1 In human language communication, the function of formal style is indispensable

On these grounds, the formal style of written Chinese is an indispensable means in Chinese language communication. This is not surprising, but what needs our attention is that the May 4th Movement abolished classical Chinese writing (original formal style), which means that the formal style of Chinese has been abolished. Although the advocates of vernacular Chinese had proposed to “express [themselves] orally by [their] pen[s]”, colloquial language is too informal; consequently, it is impossible for vernacular Chinese to replace formal style of classical Chinese entirely as formal style is indispensable. It is imperative to develop vernacular Chinese into a formal style which differs from both colloquial language and classical Chinese. The formal style of written Chinese is a new style which has just developed over one century and is close to maturity (Feng 2003, 2005). This is the first point of my argument. The second point is about the significance of prosody itself. We think that prosody is a necessary means to realize grand and elegant style.

6.1.2 Prosody is a necessary means to realize grand and elegant style

That is to say, prosody itself has prosodic connotation. In other words, prosody itself is a kind of language, a phonetic means to express mood (Feng 1997, 2006), so prosody has the prosodic connotation of symbolism and style expression. With necessity of formal style (a language is inseparable from formal style) and the representative property of prosody itself, together with the interaction between the two aspects, we dig out many interesting phenomena which have not received any attention before.

6.2 Discovery of written Chinese study

As we all know, contemporary Chinese in formal style has borrowed a great number of Classical Chinese elements. Although these ancient elements can be used in contemporary times, there are
strict restrictive conditions; particularly, there is a syntactic requirement that they should not be used until they are paired. Based on this observation we get the following rule:

(27) Ancient dictions must be paired and then used

古汉语中，古代语言必须是成对的，然后才能使用。

zhil dao4/zhil: Ta1 zhi1 (* dao4) jin1tian1 mei2ke4.
know/know: he know today no class
他早知今天没课。

zhil dao4/zhil: Ta1 zao3zhil jin1tian1 mei2ke4.
he beforehand know today no class
‘He has known that there is no class today.’

ying1gail/yi2 Bing4ren2 ying1gail(* yi2) duol chil suAshi2.
should/should: patient should more eat vegetarian diet
‘Patients should follow a vegetarian diet.’

ying1gail/yi2 Bing4ren2 buAyi2 duol chil shengl shil.
patient not should more eat uncooked food
‘Patients should not eat a lot of uncooked food.’

In addition to the general requirement for ancient dictions, we have duged out about 300 disyllabic templates which are confined prosodically and free syntactically. For example,

(28) Examples of disyllabic templates (for details see Preliminary Collection of Written Chinese Dictions)

   bian4: bian3cha2, bian4zhao3, bian4wen4, * bian4jian3cha2, * bian4cha2zhao3, * bian4jian3cha2,
   everywhere: everywhere examine, everywhere search, everybody question, everywhere
   search, * everywhere examine, * everybody question, * widespread search,
   widespread examine
   ‘everywhere: examine thoroughly, search everywhere, question everybody, search everywhere,
   search, * everywhere examine, * everybody question, * widespread search,
   widespread examine
   all around’

   bao3: bao3jing1, bao3du2, bao3kan4, * bao3jing1li1, * bao3yue4du2, * bao3guan1kan4
   full: fully endure, extensively read, fully see, fully endure, extensively read, fully see
   ‘fully: endure all (hardships), read extensively, look at to one's heart's content, endure
   all (hardships), read extensively, look at to one's heart's content’

e. 错: 错用, 错捕, 错赠, * 错使用, * 错逮捕, * 错赔偿
These words used to be considered bound morphemes. It is just partly true since by nature they are “confined prosodically and free syntactically” (Feng 2003). Of course, it should be all right to call them “partly free” morphemes. The question is: why are these “syntactically free and prosodically confined” forms mostly occurring and used in formal style? Our study shows that the reason why they must be bound and cannot be absolutely free is the same as the reason why single ancient morphemes cannot be used independently: without prosodic guarantee they cannot be independent. And the reason why they must have the protection of prosody is: 1) the need of prosodic connotation by prosody—an elegant effect cannot be achieved without adequate feet; 2) the requirement of prosodic grammar—grammatical independence cannot be achieved without forming any feet.

6.3 Significance in general linguistics

Study on Prosodic grammar of written Chinese provides general linguistics a vivid case in which language function (communicative need of formal style) motivates the development of a newborn language (formal style of written Chinese). Human languages mostly derive from everyday colloquial languages, but in contemporary Chinese pursuit of formal and elegant result in creation of a new written language. Such case in human language history is indeed rare. The proposition and establishment of formal style of written Chinese presents a newborn language case for human language evolution study. Meanwhile, this research also reveals that although communicative function is able to motivate the development of a new language, the form of this new language must abide by rules. Obviously, here “the rules” refer to prosodic grammar. This further presupposes another important conclusion: prosody itself is a grammatical means, a kind of morphology and parameter. Just since it plays such a role, prosody is able to both motivate (see the above-mentioned Section 5) and integrate (to embed ancient words in contemporary language, and integrate literary style with informal style).

7 Theory on which new theory can be constructed

So far we are still not hasty to answer the question, “how many substantial problems in Chinese prosody formal linguistic theory is able to solve?” Instead, we want to point out that so-called formal syntactic theory is nothing but a sequence of scientific method including induction and deduction. It can be expressed as:

If it can be said that I have achieved something in my prosodic grammar study, I owe my achievement to this method. Of course, language study is not necessarily approached just from Chomsky’s formal syntax. However, without form (logic) what kind of “substantial” problems can linguistics solve? In fact, if we want to express clearly our understanding on academic study, we must
transform it into watertight logic equation. Otherwise, there is no way to prove whether it is right or wrong. What we should be more alert to is that "the development of pseudo-scholarship is due to ignorance of rectification of name" (Liu Shipei, Ills of Neo-Confucianism Scholars' Ignorance of Rectification of Name). On the other hand, formalized logical inference can not only help us "pursue truth through following due procedures" (Zhang Taiyan, Xuegu), but also enlighten and even force the researchers to discover new problems and phenomena. Therefore, in my opinion, without the help of formal linguistic theory, it would be not only very difficult to solve Chinese prosodic questions, but also by no means possible to identify these new phenomena and questions in Chinese prosody.

References


The Chinese paper was published in *Linguistics Sciences*, 2007, issue 2.
CONTENTS

Foreword Jiaxuan Shen 1

PHONOLOGY AND PROSODY

Lexical Phonology and a Study of Reduplications in Mandarin Chinese
Hongming Zhang, Hui Yu 5
On Sound Pattern Feng Shi, Qibin Ran, Ping Wang 18
The Relationship Between the Number of Syllable, Tonal Range of Pitch, and Grammatical Structure in Chinese
Hongjun Wang 38
Theory of Prosodic Grammar and Chinese Linguistics Shengli Feng 56
The Cognitive Processing of Prosodic Boundaries in Quatrain and Related Neurological Effects Weijun Li, Yufang Yang 74

SYNTAX AND SEMANTICS

On the Semantic Harmony Principle Jianming Lu 95
Typological Features of Nominal Phrases in Chinese Danqing Liu 116
Distance-Marking Correspondence as a Language Universal Bingfu Lu 156
The Discourse Function of “好 hao3” and Its Evolutional Trace Jingmin Shao, Xiaoya Zhu 177
Some Typological Features of the Grammaticalization Changes of Chinese Fuxiang Wu 197

LANGUAGE CHANGE

A Theoretical Discussion about Typological Distance in Language Contact and Language Qualitative Change Xiaoyu Zeng 219
Issues in Sino-Tibetan Historical Typology Hongkai Sun 233
Stress of Mongolian Words Harmud Huhe 248
Off-the-Chart Vowel Changes in Chinese Xiaoong Zhu 262

LEXICOLOGY, SLA, AND LANGUAGE POLICY

The Polysemous Words: Meaning • Length • Frequency Hui Wang 285
A Simulation Study of the L2 Learner’s Acquisition Mechanism of Chinese Characters Jianqin Wang 303
Some Thoughts on Enhancing the National Linguistic Competence Yuming Li 312