Theory of Prosodic Grammar and Chinese Linguistics

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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

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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) [foot] prosodic word, or [(σ σ) 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 phonology and morphology. This point is what we get from the following theoretical mode of prosodic hierarchy:

(6) Prosodic Hierarchy:

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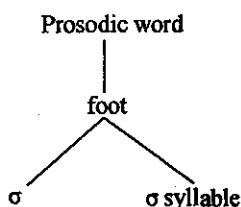
In the following subsections readers can see that with the enlightenment of the basic theory of prosodic morphology, we not only discover many interesting phenomena in Chinese, but we can also solve some of the difficult problems that have perplexed scholars for a long time.

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) a. numbers: (5 5)   (5 5)   (5 5)   5)
     b. compound words: (柴米)   (油盐)   (酱醋)   茶)
                            (chai2/mi3)   (you2/yan2)   (jiang4/cu4)   cha2)
                            (firewood/rice) (cooking oil/salt) (soy sauce/vinegar) tea)
                            ' daily necessities'
     c. sound-based loanwords: (布宜)   (诺斯)   (艾利)   斯)
                            (bu4yi2)   (nuo4si1)   (ai4li4)   si1)
                            (Bue)   (nos)   (Aire)   s)
                            ' Buenos Aires'
     d. natural sequence direction: (→   ) (→   ) (→   )   _)

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］

   chun1jie2lian2huan1wan3hui4yan3yuan2xiu1xi0shi4

   = chun1jie2/lian2huan1/wan3hui4/yan3yuan2/［xiu1xi/shi4］

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

   'Spring Festival Eve Gala Evening greenroom'

多弹头导弹发射器　　　　　＝多弹头/　　　　　导弹/　　　［发射/器］

duo1dan4tou2dao3dan4fa1she4qi4 = duo1dan4tou2/　　dao3dan4/　［fa1she4/qi4］

　　　　　　　　　　　　　　　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) 　操心：　　　　你操什么心　　　　　　操心孩子的婚事

　　　cao1xin1:　　ni3 cao1 shen1mo0 xin1　　cao1xin1　　hai2zi0 de0 hun1shi0

　　　exercise heart: you exercise what heart　　exercise heart children's marital matter

　　　'worry: What are you worried about?　　　I'm worried about children's marriage.'

　　　负责：　　　　你负什么　　　　　　　负责这项工作

　　　fu4ze2:　　　ni3 fu4 shen2mo0　　　fu4ze2　　　　zhe4 xiang4 gong1zuo4

　　　bear responsibility: you bear what　　　bear responsibility this item job

　　　'bear responsibility: What do you bear?　I bear responsibility for this job.'

　　　负责任：　　　你负什么责任　　　　　＊负责任这项工作

　　　fu4ze2ren0:　　ni3 fu4 shen2mo0 ze2ren0　fu4ze2ren0　　zhe4xiang4 gong1zuo4

　　　bear responsibility: you bear what responsibility　bear responsibility this item job

　　　'be responsible for: What responsibility do you bear? I bear responsibility for this job.'

有害:　　　有什么害　　　　　　有害身体

you3ha4i:　you3 shen2mo0 hai4　　*you3hai4　shen1ti0*

have harm:　have what harm　　　have harm body

' be harmful: What are the harms?　It harms body.'

有伤害:　　　有什么伤害　　　　　*有伤害身体

you3shang1hai4: you3 shen2mo0 shang1hai4　　*you3 shang1hai4 shen1ti0*

have hurt harm:　have what　　　hurt harm　　have hurt harm　body

' be harmful: What are the harms?　It harms body.'

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) .
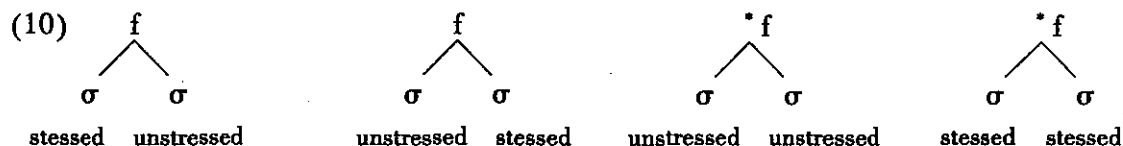
3　Chinese prosodic syntax

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. :

(10)　　f　　　　　　　f　　　　　　　*f　　　　　　*f

　　　　σ　　σ　　　　σ　　σ　　　　σ　　σ　　　　σ　　σ

　　stessed　unstressed　　unstressed　stessed　　unstressed　unstressed　　stessed　stessed

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:

(12) Dominant Chinese nuclear stress assignment G-NSR (Feng 1997, Feng 2003):

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.
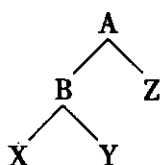
3.1.4 Government

(13) α governs β only when:

(a) α is an X_0 word item;

(b) α element commands β.

3.1.5 Element-command

(14) α element-commands β only when each branch joint can dominate both α and β. [1]

According to the requirement of the definition that each branch joint should dominates both α and β, 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:

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[1]
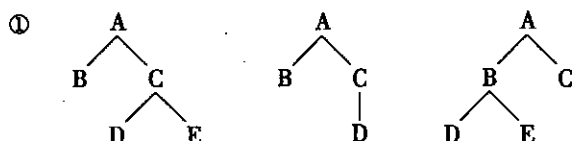
(15) Invisible Condition:

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 expression 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   *打电话三次

        kan4jian0 ta1 san1ci4   *da3 dian4hua4 san1ci4*

        see   him three times   make phonecall three times

        'have seen him three times'   'have made phonecalls three times'

      b. [V V + N]

        种树、读报   *种植树、*阅读报

        zhong4shu4, du2bao4   *zhong4zhi2shu4, yue4du2bao4*

        plant tree   read newspaper   grow plant tree go over read newspaper

        'plant trees, read newspapers'   'plant trees, read newspapers'

      c. [V V + R]

        提高、革新   *提拔高、*改革新

        ti2gao1, ge2xin1   *ti2ba2 gao1,   gai3ge2 xin1*

        improve   innovate   lift improve change innovate

        'improve, innovate'   'improve, innovate'

d. BA NP + VP

把灯关闭   *把灯关

ba3   deng1 guan1 bi4   *ba3 deng1 guan1*

let   light   switch off   let   light   off

' Switch off the light.'   ' Switch off the light.'

e. BEI NP + VP

被老师批评   *被老师批

bei4 lao3shi1 pi1ping2   *bei4 lao3shi1 pi1*

by   teacher   criticize   by   teacher   criticize

' be criticized by the teacher'   ' be criticized by the teacher'

f. V NP PP

把衣服挂在墙上   *挂衣服在墙上

ba3 yi1fu0 gua4zai0 qiang2shang0   *gua4 yi1fu0 zai4 qiang2shang0*

let clothes hang on   wall   hang clothes 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   *放两张桌子上好几本书

fang4 na4'er hao3ji3ben3 shu1   *fang4 liang3zhang1 zhuo1zi0shang0 hao3ji3ben3 shu1*

put there   quite a few   books   put   two   desks on   quite a few books

' Put quite a few books there.'   ' Put quite a few books on the two desks.'

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

below.

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. ①

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

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① Any syntactic organization of the form [X + Y] cannot be an X_o category unless it is a minimal word, e.g., [X + Y]→ [X + Y]X_o/[__] M in Wd.

newest study tells us that there is general boundary between words and phrases (Feng 2000) . That is:
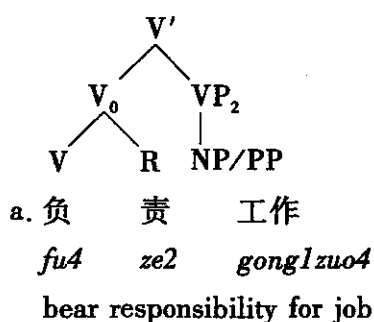
(21) General boundary of Chinese words and phrases:

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 Zhongnankai' ", " *开玩笑他 *kai1wan2xiao3 ta1*, lit. crack a joke him, ' to make fun of him' / 跟他开玩笑 *gen1 ta1 kai1wan2xiao4*, lit. of him make fun, ' to make fun of him' ", " *写通顺文章 *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., 摆平到 ([[μμ] v] σ + [μμ] R] σ + [μ] P]] NP) 人人都满意的程度 *bai3ping2 dao4 ren2ren2dou1 man3yi4 de0 cheng2du4*, 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. $[\sigma + \sigma] = X'$

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        V'                          V'
       /  \                        /  \
     V₀    VP₂                   V'    VP₂
    /  \    |                   /  \    |
   V    R  NP/PP               V    C  *NP/*PP
```

a.	负	责	工作	负	责任	工作	[VO] + NP

a. 负　责　工作 / 负　责任　工作　　　[VO] + NP
fu4　ze2　gong1zuo4 / *fu4　ze2ren4　gong1zuo4*
bear responsibility for job / bear responsibility job
' to bear responsibility for the job'

b. 收　徒　凌云寺 / 收　徒弟　凌云寺　　　[VP] + PP
shou1　tu2　Ling2yun2si4 / *shou1　tu2di0　Ling2yun2si4*
accept disciple Lingyunsi / accept disciple Lingyunsi
' to accept disciple at Lingyun Temple'

c. 写　通　句子 / 写　通顺　句子　　　[VR] + NP
xie3　tong1　ju4zi0 / *xie3　tong1shun4　ju4zi0*
write open sentence / write logical sentence
' to write grammatical sentences'

d. 摆　平　到……程度 / 摆　公平　到……程度　　　[VR] + PP
bai3　ping2　dao4. . .cheng2du4 / *bai3　gong1ping2　dao4. . .cheng2du4*
straighten out to. . . degree / place fairness to. . . degree
' treat fairly to. . . . degree'

e. 放　那儿　很多画　　　　　放　　两张　　　　桌子上　　很多画　[V + PP] + NP

　fang4 na4'er0 hen3duo1 hua4　　fang4　liang3zhang1　zhuo1zi0shang4　hen3duo1 hua4

put there many paintings　　　　put two desks on many paintings

'put many paintings there　　　　put many paintings on the two desks'

Minimal word

Nuclear stress　　　　　　　　　Nuclear stress
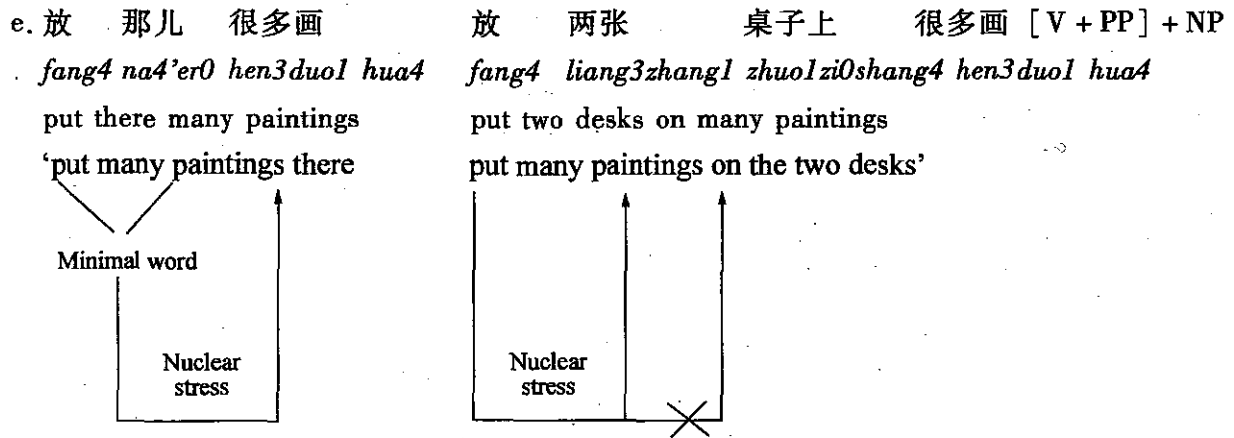
4.3　Significance in general linguistics

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 PrimevalChinese 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 disyllablic 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 disyllablic feet) , the transition of syllable structures in turn results in the appearance of the disyllablic 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)

        guo2jia1 (= guo2 he2 jia1) chun1qiu1 shi2qi1)

       nation (= state and family) Spring and Autumn Period)

  b. disylllabic root prosodic words (e.g., 蒺藜 (= 茨) 春秋战国)

        ji2li2 (=ji2) chun1qiu1zhan4guo2)

       caltrop (= ji) Spring and Autumn Period and War-

       ring state period)

  c. compound prosodic word (e.g., 国家 (= 国) 战国时期)

        guo2jia1 (= guo2) zhan4guo2 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" *er2li4 zhi1 nian2*, lit. being independent of age, ' the year in life at which a person should be independent' " "三十而立" *san1shi2 '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" (*bei4wei2yu2zhao4*, be besieged in State of Zhao) . Interestingly, disyllablization not only resulted in changes such as "谤→毁谤 (*bang4→hui3bang4*; slander→vilify and slander) , 戮→刑戮 (*lu4→xing2lu4*, execute→punish corporally and execute) , 害→累害 (*hai4→lei4hai4*, harm→encumber) , 祸→祸害 (*huo4→huo4hai4*, ruin→ruin) , 辱→侮辱 (*ru3→wu3ru3*, insult→insult) " but also in the late Western Han Dynasty new forms such as "被毁谤 (*be4 ihui3bang4*, be slandered) , 被刑戮 (*bei4 xing2lu4*, be punished corporally and executed) , 被累害 (*bei4 lei4hai4*, be encumbered) , 被祸害 (*bei4 huo4hai4*, be ruined) , 被侮辱 (*bei4 wu3ru3*, be insulted)" also emerged. In this way, trisyllablic structures "被 + VV" (BEI + VV) stretch into phrases, hence the appearance of "被" (BEI) sentence pattern such as "臣被尚书召问" (*chen2bei4 shang4shu1 zhao4wen4*, 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 *qi2wang2 gu3*, Emperor Qi drummed;《左传》*Zuo3zhuan4*, Chronicle of Zuo) to light verbs (处处打鼓 *chu4chu4 da3gu3*, everywhere people beat drums;《佛本行集经》*Fo2ben3 xing2ji2jing1*, Abhiniskramanasutra) : from "鼓" (*gu3*, drum) to "打鼓" (da3gu3, beat drums) , from "渔" (*yu2*, fish) to "打鱼" (*da3yu2*, catch fish) , from "拱" (*gong3*, solute with hands folded) to "拱手" (*gong3shou3*, solute by cupping one hand in the other before one's chest) , from "漱" (*shu4*, rinse) to "漱口" (*shu4kou3*, 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:
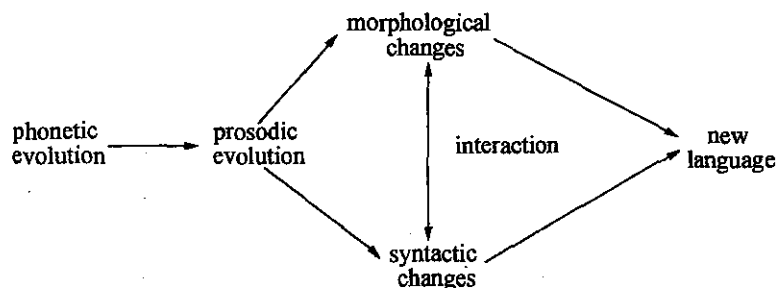
If Ancient Chinese was a synthetic language and then evolved into a kind of analytic language, the process, by the reasons and the marks of such evolution, can also be reasonably explained via the theory and analysis revealed by historical prosodic syntax.

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 disyllablic 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

知道/知:　　　他知 (*道) 今天没课。

zhi1 dao4/zhi1:　*Ta1 zhi1 (* dao4) jin1 tian1 mei2 ke4.*

know/know:　　he　know　　　　today　　　no class

他早知今天没课。

Ta1 zao3 zhi1　　　　jin1 tian1 mei2 ke4.

he　beforehand know today　　no class

'He has known that there is no class today.'

应该/宜:　　　病人应该 (*宜) 多吃素食。

ying1 gai1/yi2　*Bing4 ren2 ying1 gai1 (* yi2) duo1 chi1 su4 shi2.*

should/should:　patient　　should　　　　　more eat vegetarian diet

'Patients should follow a vegetarian diet.'

病人不宜多吃生食。

Bing4 ren2 bu4 yi2　　duo1 chi1 sheng1 shi2.

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 digged 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*)

a. 遍: 遍查、遍找、遍问、*遍查找、*遍检查、*遍查问、*普遍找、*普遍查

bian4:　*bian3 cha2, bian4 zhao3, bian4 wen4, * bian4 cha2 zhao3, * bian4 jian3 cha2, * bian4 cha2 wen4, * pu3 bian4 zhao1, * pu3 bian4 cha2*

everywhere: everywhere examine, everywhere search, everybody question, everywhere search, * everywhere examine, * everybody question, * widespread search, widespread examine

' everywhere: examine thoroughly, search everywhere, question everyboday, search everywhere, examine thoroughly, question everybody, search all around, examine all around'

b. 饱: 饱经、饱读、饱看、*饱经历、*饱阅读、*饱观看

bao3: *bao3 jing1, bao3 du2, bao3 kan4, * bao3 jing1 li4, * bao3 yue4 du2, * bao3 guan1 kan4*

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'

c. 错: 错用、错捕、错赔、*错使用、*错逮捕、*错赔偿

cuo4: *cuo4 yong4, cuo4 bu3, cuo4 pei4, * cuo4 shi3 yong4, * cuo4 dai4 bu3, * cuo4 pei2 chang2*

> mistaken: mistaken use, mistake arrest, mistaken compensation, mistaken use, mistake arrest, mistaken compensation,
>
> ' mistake: misuse, erroneous arrest miscompensate, misuse, erroneous arrest, miscompensate '

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

(29)
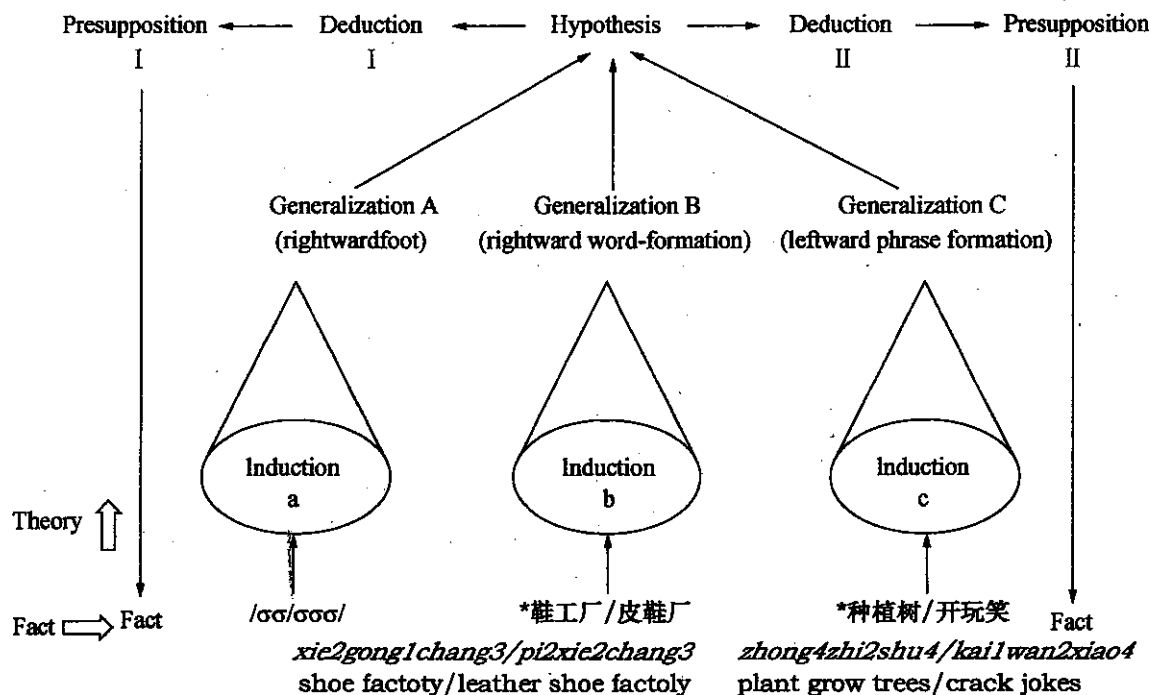
researchers to discover new problems and phenomena. Therefore, in my opinion, without the help of formal linguistic theory, it would be not only very difficult to solve Chinese prosodic questions, but also by no means possible to identify these new phenomena and questions in Chinese prosody.

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