

# Synthetic Compounds in Mandarin \*

Shuang Hong

Department of Chinese and Bilingual Studies, The Hong Kong Polytechnic University,  
Hung Hom, Kowloon, Hong Kong  
cthong@polyu.edu.hk

**Abstract.** This paper takes Chinese five-syllable compounds as examples to re-examine the derivation of Chinese synthetic compounds. With phonological evidences which show that Chinese synthetic compounds are left stressed, the paper proves that Chinese synthetic compounds are derived in the interface of lexicon and syntax, based on argument structures of the root verbs. The paper assumes that Chinese synthetic compounds should have the same derivation process, although some seem to have different argument structures from others.

**Keywords:** synthetic compounds, main stress, argument structure, light verb, movement

## 1 Introduction

In Mandarin Chinese, the construction of synthetic compound is very productive. As for its derivation, the recent literature mainly has two different analyses. One discusses that the compounds are derived on the basis of argument structures of the root verbs and a number of changed argument structures of the root verbs (Gu and Shen, 2001); the other argues that Chinese compounds are not the same as English synthetic compounds so that they should not be analyzed in the same way but can be generated directly without referring to VP structure (Shi, 2003; He, 2004).

This paper takes Chinese five-syllable compounds as examples, and provides some phonological evidences to prove that Chinese synthetic compounds are derived in the interface of lexicon and syntax, based on argument structures of the root verbs.

## 2 Stress in Compounds

Duanmu (1990) claims that ‘in a head-nonhead structure, stress the nonhead’, which he calls ‘non-head stress’ (NHS). For example, in ‘niu nai’ (cow’s milk), ‘niu’ (cow) modifies ‘nai’ (milk), so ‘nai’ is the head and ‘niu’ is the non-head. According to NHS, ‘niu’ obtains the main stress. In the verb phrase ‘chao fan’ (to fry rice), the noun ‘fan’ (rice) is a complement of the verb ‘chao’ (fry), so ‘chao’ is the head and ‘fan’ is the non-head which obtains the main stress.

- (1) 牛 奶  
niu nai  
cow milk  
cow’s milk

---

\* The work reported in this paper was supported by the postdoctoral project of the Hong Kong Polytechnic University-Peking University Research Centre on Chinese Linguistics (4-ZZ86).

- (2) 炒 饭  
 chao fan  
 fry rice  
 to fry rice

According to NHS, Chinese five-syllable compounds should be left-stressed. For example, in ‘qiche-xiuli-gong’ (car repair workers), ‘gong’ (worker) is the head, so the non-head ‘qiche-xiuli’ (car repair) should be stressed. In ‘qiche-xiuli’, ‘xiuli’ (repair) is a verb and ‘qiche’ (car) is a object of the verb, so the main stress should fall on the nonhead ‘qiche’. The whole compound is left-stressed.

- (3) 汽车 修理 工  
 qiche xiuli gong  
 car repair worker  
 car repair workers

Although compound ‘jiaoshi-xiuxi-shi’ (teacher’s resting room) has a different argument structure from ‘qiche-xiuli-gong’, it is also left-stressed. In the whole compound, ‘shi’ (room) is the head, so the non-head ‘jiaoshi-xiuxi’ (teacher resting) has the stress. In ‘jiaoshi-xiuxi’, ‘xiuxi’ (rest) is the main verb, and ‘jiaoshi’ (teacher) is a subject of the verb, so ‘jiaoshi’ is the non-head and obtains the main stress.

- (4) 教师 休息 室  
 jiaoshi xiuxi shi  
 teacher rest room  
 teacher’s resting room

Duanmu (2005) assumes the analysis in (5), and according to it, the stress model of Chinese five-syllable compounds can be expressed as (6). Not only ‘qiche-xiuli-gong’ and ‘jiaoshi-xiuxi-shi’ are left-stressed, but other types of Chinese five-syllable compounds are also left-stressed (please see section 3 for details).

(5) Syllabic foot formation in Chinese:

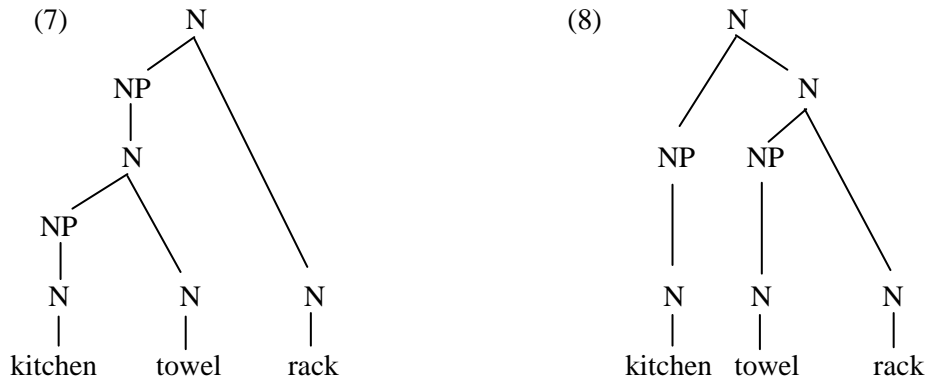
In compounds and phrases, assign Nonhead Stress.

A foot has at least two syllables, with stress on the first syllable.

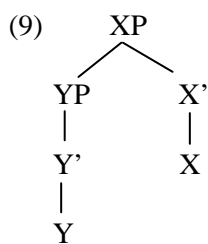
For free syllables and flat structures, build binary feet from left to right.

- (6)
- 
- |         |     |         |    |        |   |
|---------|-----|---------|----|--------|---|
| s       | w   | s       | w  | s      | w |
| 汽       | 车   | 修       | 理  | 工      | Ø |
| qi      | che | xiu     | li | gong   | Ø |
| car     |     | repaire |    | worker |   |
| 教       | 师   | 休       | 息  | 室      | Ø |
| jiao    | shi | xiu     | xi | shi    | Ø |
| teacher |     | rest    |    | room   |   |

Cinque (1993) illuminates the relation between main stress and compound structure and concludes that the most embedded constituent in a structure should obtain the main stress. In English, ‘kitchen towel rack’ is an ambiguous compound which has two meanings. One is ‘a rack for kitchen towel’, and the structure is [[[kitchen] [towel]] [rack]], the main stress falling on ‘kitchen’. The other is ‘a towel rack in kitchen’, and the structure is [[kitchen] [[towel] [rack]]], the main stress falling on ‘towel’. The different dendrogram structures of the two meanings are shown below.



In (7), the dendrogram structure of [[[kitchen] [towel]] [rack]], ‘kitchen’ is dominated by five nodes (N, NP, N, NP and N), and ‘towel’ is dominated by four nodes (N, N, NP and N), and ‘rack’ is dominated by two nodes (N and N). Obviously, ‘kitchen’ is the most embedded constituent in the structure. In (8), the dendrogram structure of [[kitchen] [[towel] [rack]]], ‘kitchen’ is dominated by three nodes (N, NP and N), and ‘towel’ is dominated by four nodes (N, NP, N and N), and ‘rack’ is dominated by three nodes (N, N and N). Obviously, ‘towel’ is the most embedded constituent in the structure. In [[[kitchen] [towel]] [rack]], the main stress falls on ‘kitchen’ which is the most embedded constituent in the structure; and in [[kitchen] [[towel] [rack]]], the main stress falls on ‘towel’ which is also the most embedded constituent in the structure. That is to say, the main stress falls on the most embedded constituent in the structure and the most embedded constituent obtains the main stress. The principle can be shown as the following structure.



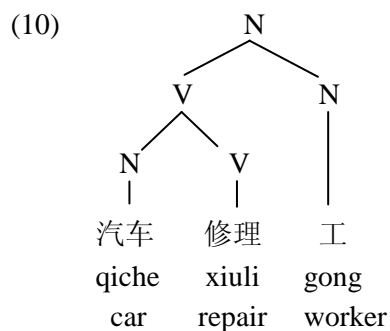
In (9), there are three nodes (Y', YP and XP) above Y, but two nodes (X' and XP) above X, so Y is the most embedded constituent in the structure of XP and should be stressed.

According to Cinque (1993)'s principle, because of obtaining the main stress, ‘qiche’ should be the most embedded constituent in the structure of ‘qiche-xiuli-gong’. That is to say, if ‘qiche’ need to be stressed, it has to be the most embedded constituent in the whole compound structure. Then, how can ‘qiche’ be? To explore it is this paper’s main purpose.

### 3 Derivation of Compounds

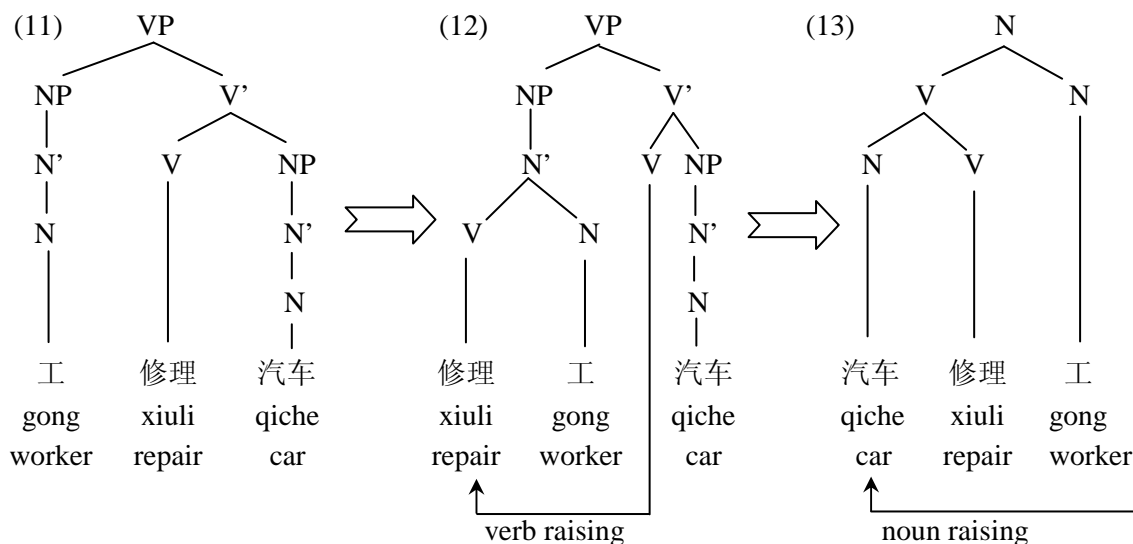
Shi (2003) and He (2004) believe that the generation of Chinese compounds takes place in the surface structure. It is about composition of the constituents, but not derivation from argument

structure. The difference of the two is about the steps of the composition. Shi (2003) claims that ‘xiuli’ and ‘gong’ compose of ‘xiuli-gong’ first, and then ‘qiche’ adjoins to ‘xiuli’ to make the whole compound ‘qiche-xiuli-gong’. He (2004) argues that ‘qiche’ and ‘xiuli’ compose of ‘qiche-xiuli’ first, and then ‘qiche-xiuli’ and ‘gong’ compose of the whole compound ‘qiche-xiuli-gong’. No matter which constituent adjoins to which one first, the structures of the compound ‘qiche-xiuli-gong’ in Shi (2003) and He (2004) are the same, shown as (10).



In (10), ‘qiche’ and ‘xiuli’ are both dominated by three nodes, so one can not tell which constituent will obtain the main stress from the structure.

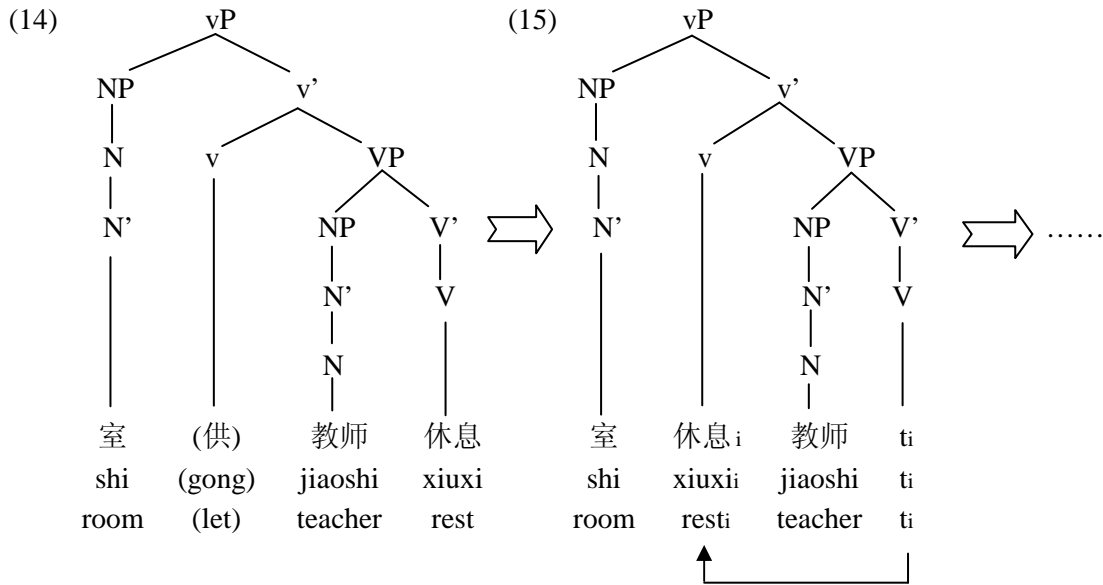
Gu and Shen (2001) discusses that the derivation of Chinese compounds is from the argument structures of the root verbs. (11), (12) and (13) show the derivation steps of the compound ‘qiche-xiuli-gong’. (11) is the argument structure of ‘qiche-xiuli-gong’, and ‘qiche’ is the most embedded constituent in the structure. (12) shows that the verb ‘xiuli’ raises to N position and merges with ‘gong’ to get nominal feature. In the last step, (13), ‘qiche’ raises to V and merges with ‘xiuli’.



Gu and Shen (2001)’s analysis can clearly illuminate how ‘qiche’ gets the main stress in compound ‘qiche-xiuli-gong’.

However, as Shi (2003) points out, Gu and Shen (2001)’s analysis can not explain how the compound ‘jiaoshi-xiuxi-shi’ is derived. This paper claims that the argument structure of ‘jiaoshi-xiuxi-shi’ is ‘shi gong/rang jiaoshi xiuxi’ (the room lets teachers have a rest) which has a light verb ‘gong/rang’ (means ‘let’), as shown in (14). (15) shows that the verb ‘xiuxi’ moves into the light verb’s position when the light verb (‘gong/rang’) is covert. The other steps are the same as those of ‘qiche-xiuli-gong’. Finally, the compound ‘jiaoshi-xiuxi-shi’ is derived; and

obviously, ‘jiaoshi’ is the most embedded constituent in the argument structure (14) so that it can obtain the main stress.



Actually, the types of Chinese compounds are not only OVS-type (qiche-xiuli-gong) and SVL-type (jiaoshi-xiuxi-shi)<sup>1</sup>. There are other types, shown as the following.

(16) OVL-type

期刊 阅览 室  
 qikan yuelan shi  
 journal read room  
 a room for journal reading

(17) OVI-type<sup>2</sup>

食品 包装 袋  
 shipin baozhuang dai  
 food pack bag  
 a bag for food packing

(18) OVT-type<sup>3</sup>

结婚 纪念 日  
 jiehun jinian ri  
 marriage remember date  
 wedding anniversary

(19) SVT-type

商场 促销 日  
 shangchang cuxiao ri  
 store promote date  
 a date on which stores make promotion

<sup>1</sup> ‘OVS’ means ‘Object (qiche) + Verb (xiuli) + Subject (gong)’. ‘SVL’ means ‘Subject (jiaoshi) + Verb (xiuxi) + Location (shi)’.

<sup>2</sup> ‘OVI’ means ‘Object (shipin) + Verb (baozhuang) + Instrument (dai)’.

<sup>3</sup> ‘OVT’ means ‘Object (jiehun) + Verb (jinian) + Time (ri)’.

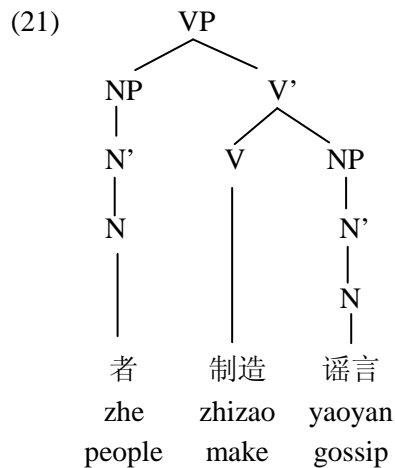
The argument structure of ‘qikan-yuelan-shi’ (a room for journal reading) is ‘shi (gong) yuelan qikan’ (the room let people read journals). The same as ‘jiaoshi-xiuxi-shi’, with verb (yuelan/read) raising and noun (qikan/journal) raising, the whole compound ‘qikan-yuelan-shi’ can be derived. ‘Qikan’ is the most embedded constituent in the structure, so it obtains the main stress. The other types of compounds, shown as (17), (18) and (19), can be analyzed in the same way. The argument structure of ‘shipin-baozhuang-dai’ (a bag for food packing) is ‘dai (gong) baozhuang shipin’ (the bag let people pack food). The argument structure of ‘jiehun-jinian-ri’ (wedding anniversary) is ‘ri (gong) jinian jiehun’ (the date let couples remember their marriages). The argument structure of ‘shangchang-cuxiao-ri’ (a date on which stores make promotions) is ‘ri (gong) shangchang cuxiao’ (the date let stores make promotions). The main stress falls on the first nominal constituent which is the most embedded one in the structure.

He (2004) points out that there is a special type of compounds in Mandarin, which is VOS-type, like ‘zhizao-yaoyan-zhe’ (people who make gossip), shown as (20).

(20) VOS-type

制造	谣言	者
zhizao	yaoyan	zhe
make	gossip	people
people who make gossip		

If (21) is the argument structure of the compound ‘zhizhao-yaoyan-zhe’, ‘yaoyan’ (gossip) will be the most embedded constituent in the structure and will obtain the main stress. The whole compound will be middle-stressed. However, as Hong (2009) points out, ‘zhe zhizao yaoyan’ (people make gossip) is not the argument structure of the compound ‘zhizao-yaoyan-zhe’. Actually, it is a phrase but not a compound. ‘Zhizao-yaoyan-zhe’ comes from ‘zhizao yaoyan de ren’ (make-gossip-that-people). ‘Zhe’ comes from ‘de ren’ (that-people), which is well-known in Ancient Chinese studies.

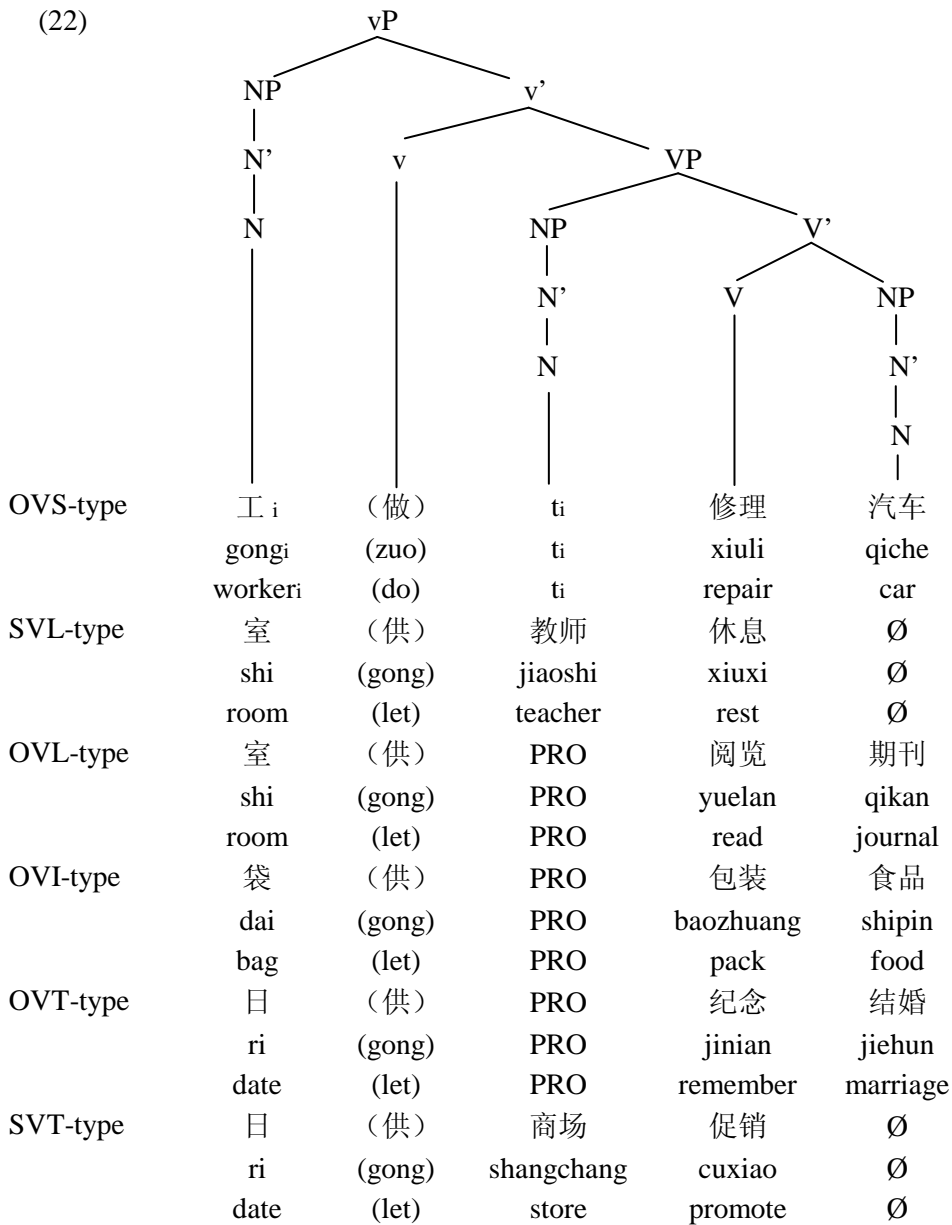


#### 4 Conclusion

According to Non-head Stress, Chinese five-syllable compounds are left-stressed. That is to say, the first nominal constituent of a compound obtains the main stress. According to Cinque (1993)'s theory, the most embedded constituent in a structure will get the main stress. Therefore, the first nominal constituent in a Chinese five-syllable compound should be the most embedded constituent in the whole compound structure. This paper concludes that Chinese five-syllable compounds do have argument structures in which the first nominal constituents of

compounds are the most embedded ones so that they can get the main stresses. The whole compounds are derived from those argument structures, which can explain why Chinese five-syllable compounds are left-stressed and how they are derived.

Furthermore, this paper makes a hypothesis that Chinese five-syllable compounds have a similar argument structure, shown as (22). Chinese five-syllable compounds can be derived from this structure.



**References**

Cinque, G. 1993. A null theory of phrase and compound stress. *Linguistic Inquiry*, 24, 239-297.  
 Duanmu, S. 1990. *A Formal Study of Syllable, Tone, Stress and Domain in Chinese Languages*.  
 Ph.D. thesis, Massachusetts Institute of Technology.  
 Duanmu, S. 2005. The tone-syntax interface in Chinese: some recent controversies.  
*Proceedings of the Symposium "Cross-Linguistic Studies of Tonal Phenomena, Historical*

- Development, Tone-Syntax Interface, and Descriptive Studies*”, December 16-17, 2004, ed. Shigeki Kaji. Research Institute for Languages and Cultures of Asia and Africa (ILCAA), Tokyo University of Foreign Studies, pp. 231-264.
- Emond, J.E. 1976. *A Transformational Approach to English Syntax: Root, Structure-Preserving, and Local Transformations*. New York, NY: Academic Press.
- Feng, S. 1997. *Interactions between Morphology Syntax and Prosody in Chinese*. Beijing: Peking University Press.
- Feng, S. 2004. Verb-object inversion and prosodic morphology. *Linguistic Sciences (语言科学)*, 3, 12-20.
- Feng, S. 2005. *Studies on Chinese Prosodic Grammar*. Beijing: Peking University Press.
- Gu, Y. and Y. Shen. 2001. The Derivation of Synthetic Compounds in Chinese. *Studies of The Chinese Language (中国语文)*, 2, 122-133.
- He, Y. 2004. The loop theory in Chinese morphology. *Contemporary Linguistics (当代语言学)*, 6(3), 223-235.
- Hong, S. 2004. Study on the meaning of sentence pattern and derived process of “NP<sub>o</sub> + V+ NP<sub>l</sub>”. *Journal of Yancheng Institute of Technology (Social Science) (盐城工学院学报)*, 3, 60-63.
- Hong, S. 2009. Structure of circular-type compounds. *Journal of Wuhan University of Science and Technology (Social Science Edition) (武汉科技大学学报)*, 11(4), 106-108.
- Hong, S. 2009. Symmetry and asymmetry of “VP-de”. *Chinese Linguistics (汉语学报)*, 4, 31-36.
- Huang, C.-T. J. 1984. Phrase structure, lexical integrity, and Chinese compounds. *Journal of the Chinese Language Teachers Association*, 19, 53-78.
- Huang, C.-T. J., Y.-H. A. Li and Y. Li. 2008. *The syntax of Chinese*. Cambridge: Cambridge University Press.
- Rizzi, L. 1997. The fine structure of the left periphery. In L. Haegeman, ed., *Elements of Grammar: Handbook of Generative Syntax*, pp.281-337. Dordrecht: Kluwer Academic Publishers.
- Shi, D. 2003. Chinese attributive V-N compounds. *Studies of The Chinese Language (中国语文)*, 6, 483-495.
- Shi, D. 2010. *Noun and Nominal Structure*. Beijing: Peking University Press.
- Wang, H. 2001. The relations between the number of syllable, the tonal range of pitch and the grammatical structure in Chinese. *Contemporary Linguistics (当代语言学)*, 4, 241-252.