

# The Structure of Chinese Compounds: The Perspective of Predicative Implicitness

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## Abstract

This paper examines Chinese nominal compounds with respect to their internal structure, thematic relations, generation process, and constraint mechanism from the perspective of predicate implicitness. Findings reveal that constituent functions in these compounds vary based on their structural positions, closely aligning morphological and syntactic structures. Predicate implicitness necessitates hierarchical adjunction, disallowing cross-layered adjunction. Corresponding relations exist between theta-roles, semantic relations, syntactic, and morphological structures. The study delineates differences between agentive and non-agentive compounds and explores how syntactic structure influences morphological structure. It also delves into theta-roles, argument structure, and linear order, arguing that constituent word order adheres to the Prominence and Locality Principles, dictated by their syntactic hierarchy positions.

**Keywords:** compound, predicate implicitness, morphological structure, syntactic structure, theta-role

## Povzetek

Članek obravnava kitajske pridevniške tvorjenke glede na njihovo notranjo strukturo, tematske odnose, proces nastajanja ter mehanizem omejitev z vidika povedkovne implicitnosti. Ugotovitve razkrivajo, da se funkcije komponent v teh tvorjenkah razlikujejo glede na njihove strukturne položaje, tesno se prilagajajo morfološkim in skladijskim strukturam. Implicitnost povedka zahteva hierarhično urejen primik (adunkcijo), križni primiki niso dovoljeni. Obstajajo ujemajoči se odnosi med theta-vlogami, semantičnimi odnosi, skladijsko in morfološko strukturo. Študija razmejuje razlike med udeleženskimi in neudeleženskimi tvorjenkami ter raziskuje, kako skladijska struktura vpliva na morfološko. Prav tako se poglobi v theta-vloge, strukturo argumenta in linearni red ter ugotavlja, da se vrstni red komponent prilagaja načelom izpostavljenosti in lokalnosti, ki jih določajo njihovi položaji v skladijski hierarhiji.

**Ključne besede:** tvorjenka, povedkovna implicitnost, morfološka struktura, skladijska struktura, theta-vloga



## 1 Introduction

The argument structure of Chinese nominal compounds and their way of generation, the constraints involved in their internal structure have recently been hot topics in the circle of Chinese linguistics and especially in the circle of generative grammar (Gu & Shen, 2001; Shi, 2003; He, 2004; Cheng, 2005; He & Wang, 2005; Yang, 2006, 2015, 2016a; Zhou, 2006; Tang, 2008, 2014; Zhuang & Liu, 2011, among others). It is generally believed that the morphological structure of Chinese is closely associated with its syntactic structure and hence both the morphological structure and the syntactic structure of Chinese are basically consistent. In this case, the structure of Chinese nominal compounds can be regarded as a micro syntactic structure (Chao, 1968, p. 189-243; Lu, 1964, p. 2; Ren, 1981, p. 134-135; Zhu, 1982, p. 33; Huang & Liao, 2007, p. 8; Tang, 2008). This approach has a strong power of explanation, for it can account for many language facts. It, however, meets with some issues. When the predicate occurs, the SV compound is often ungrammatical, whereas the VO compound is grammatical. When the predicate does not occur, the compound in which the agent precedes the patient is ungrammatical, whereas the compound in which the patient precedes the agent is grammatical, as illustrated in (1).

- (1) 工人      开采      石油      → a. 石油      开采  
 gongren   kaicai   Shiyou      shiyou      kaicai  
 worker    extract   Petroleum      petroleum   extract  
 'The worker extracts petroleum.'      'petroleum extraction'
- b.\* 工人      石油  
 gongren   shiyou  
 worker   petroleum
- c. 石油      工人  
 shiyou      gongren  
 petroleum   worker  
 'petroleum worker'

If non-agentive theta-roles<sup>1</sup>, such as instrumental, temporal, and local, function as the predicate<sup>2</sup>, two circumstances may arise. When the predicate occurs, the SV compound is ungrammatical, but only the VO compound is grammatical. When the predicate does not occur, the compound in which the patient precedes the non-agent is ungrammatical, however, the compound in which the non-agent precedes the patient is grammatical<sup>3</sup>, as illustrated in (2).

- (2) 红木              制造      家具              → a. 家具              制造  
hongmu            zhizao      Jiaju              jiaju              zhizao  
rosewood          make        Furniture        furniture      make  
'The furniture is made of rosewood.'      'furniture making'
- b. 红木              家具  
hongmu            jiaju  
rosewood          furniture  
'rosewood furniture'
- c.\* 家具              红木  
jiaju              hongmu  
furniture        rosewood

Obviously, the data in (1) and (2) constitute a striking contrast. It seems that there are differences between (1) and (2) in terms of structure and

<sup>1</sup> The terminology used in this article is as follows: *Agent*: the person or thing carrying out the action; *Patient*: the person or thing affected by the action; *Theta-roles*: semantic roles; *Agentive theta-roles*: the theta-roles related to the agent; *Non-agentive theta-roles*: the theta-roles unrelated to the agent; *Instrumental*: a semantic role indicating an instrument used for some purpose; *Local*: a semantic role indicating positions or movements in space; *Temporal*: a semantic role indicating or involving time; *Oblique*: a syntactic element accompanying a verb which is not a subject or object, or the equivalent.

<sup>2</sup> Larson (1988), Baker (1988), and Grimshaw (1990) argue that the theta-roles are arranged hierarchically. Therefore, the assignment of the theta-roles follows the top-to-bottom order.

<sup>3</sup> An anonymous reviewer claims that the two SVs 红木雕刻艺术品 *hongmu diaoke yishupin* or 中国制造艺术品 *zhongguo zhizao yishupin* in an SVO sentence with the O 艺术品 *yishupin* are perfectly acceptable. However, we argue that the two constructions are not counterexamples to our analysis. 红木雕刻艺术品 *hongmu diaoke yishupin* means *yong hongmu diaoke de yishupin*, i.e. artwork that is carved of rosewood. 红木 *hongmu* is an instrumental instead of an agent. Nor is it the agentive subject of the construction. In the same, 中国制造艺术品 *zhongguo zhizao yishupin* means *zai zhongguo zhizao de yishupin*, artwork which is made in China. In this case, 中国 *zhongguo* is a local instead of a patient. Nor is it the agentive subject of the construction. As a matter of fact, neither 红木雕刻艺术品 *hongmu diaoke yishupin* nor 中国制造艺术品 *zhongguo zhizao yishupin* is an SVO sentence.

grammaticality. Moreover, the analysis of the syntactic structure seems to influence the morphological structure. How to account for the theta-roles of the morphological structure of nominal compounds, the argument structure, and the linear ordering of the surface structure in the framework of generative grammar is worthy of further research.<sup>4</sup>

The goal of the paper is to conduct research into the internal structure of nominal compounds and the thematic relations between various constituents in terms of predicate implicitness, the way to generate nominal compounds, and the constraints that they are subject to.

The paper is organized as follows. Section 2 addresses the concept of predicate implicitness and its syntactic-semantic representations. Section 3 addresses the interrelation between predicate implicitness, the way of generation of nominal compounds and their types of structure. Section 4 concludes the paper.

## 2 The concept of predicate implicitness and its syntactic-semantic representations

Predicate implicitness means that in the transformation of a sentence into a compound, the predicate must be structurally implicit, thereby giving rise to a covert form of the compound. To put it differently, the predicate is involved in the lexical-semantic representations of nominal compounds but it is covert phonologically, and its occurrence in nominal compounds can be attested or recovered by grammatical evidence. In this case, the predication relation between the nouns is completely preserved through the semantic linking.

Predicate implicitness is a necessary condition on which two nouns in the syntactic structure co-occur in the morphological structure. If the predicate occurs in the morphological structure, then, only VO compounds can be generated. In this case, only the noun which bears the role of an object can occur. Only when the predicate does not occur in the morphological structure, can the compound containing two nouns (viz. agent and patient) be generated. In this case, the semantic relationship between the nouns is characterized by a modifier head. To understand their semantic relationship, we must activate the implicit predicate following the semantic linking. Take the compound *hongmu jiaju* 红木家具 (lit. rosewood furniture, i.e. rosewood

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<sup>4</sup> Yuan (1995) addresses the referential rules of *de* 的 constructions in terms of such semantic roles as agent, experiencer, patient, resultative, instrumental, temporal, local, etc. However, it fails to address Chinese nominal compounds in terms of these semantic roles.

furniture) for example. To understand it, we must activate the implicit predicate *zhizao* 制造 (lit. make), thereby obtaining the semantics of *hongmu zhizao jiaju* 红木制造家具 (lit. rosewood make furniture, i.e. The furniture is made of rosewood). When more than one predicate occurs implicitly, ambiguity may arise. Take the compound *shiyou gongsi* 石油公司 (lit. petroleum company, i.e. petroleum company) for example. It may activate such implicit predicates as *kantan* 勘探 (lit. explore, i.e. explore), *jinglian* 精炼 (lit. refine, i.e. refine), *xiaoshou* 销售 (lit. sell, i.e. sell), etc. How to determine the predicate depends on the specific context. It follows that under this circumstance the specific context and the knowledge background of the addresser and the addressee are vital to the elimination of semantic ambiguity.<sup>5</sup> The implicit predicate functions in the deep semantic structure and the surface syntactic structure. Hence it is crucial to the semantic interpretation and the structural building of compounds (cf. Yuan, 1995).

Predicate implicitness causes the agent to be merged with the patient directly. Then, how to arrange them is an issue that is worth probing. According to the syntactic structure, the agent is supposed to precede the patient, thereby giving rise to a compound in which the agent precedes the patient. Such a compound, however, cannot be found in language reality. In contrast, only a compound in which the patient precedes the agent is allowed in the morphological structure. In this case, the patient functions as the modifier of the agent, as illustrated in (3)-(5).

- (3) 教师      教      英语      → 英语      教师  
 jiaoshi    jiao    yingyu    yingyu    jiaoshi  
 teacher    teach   English    English    teacher  
 'The teacher teaches English.'    'English teacher'
- \* 教师      英语  
 jiaoshi    yingyu  
 teacher    English

<sup>5</sup> The cognitive principle of relevance accounts for the licensing and interpretation mechanisms of implicit predicates and manners of co-composition. A predicate can occur lexically unrealized only if the same contextual effects can be reached using and interpreting them as in the case of overt arguments or predicates but with less processing effort. The cognitive principle of relevance also motivates manners of co-composition in such a way that the meanings of arguments influence the activation of the meaning relevant from the potential meanings of predicates. The interpretation involves lexical-semantic representations and contexts. Therefore, a predicate can be left implicit or an implicit predicate can be recovered in the immediate contexts of utterances containing this predicate according to its grammatical characterization (Németh T. & Bibok, 2010).

- (4) 故事 描写 战争 → 战争 故事  
 gushi miaoxie zhanzheng zhanzheng gushi  
 story describe war War story  
 'The teacher teaches English.' 'war story'
- \* 故事 战争  
 gushi zhanzheng  
 story war

- (5) 工人 开采 石油 → 石油 工人<sup>6</sup>  
 gongren kaicai shiyou shiyou gongren  
 worker extract petroleum petroleum worker  
 'The worker extracts petroleum.' 'petroleum worker'
- \* 工人 石油  
 gongren shiyou  
 worker petroleum

If the noun preceding the predicate is a non-agentive constituent, only the compound in which the non-agentive constituent precedes the patient is allowed in the morphological structure. In this case, the patient serves the function of the noun head, as illustrated in (6)-(8).

- (6) 红木 制造 家具 → 红木 家具  
 hongmu zhizao Jiaju hongmu jiaju  
 rosewood make Furniture rosewood furniture  
 'The furniture is made of rosewood.' 'rosewood furniture'
- \* 家具 红木  
 jiaju hongmu  
 furniture rosewood

- (7) 绍兴 出产 黄酒 → 绍兴 黄酒  
 Shaoxing chuchan Huangjiu Shaoxing huangjiu  
 Shaoxing produce rice-wine Shaoxing rice-wine  
 'Rice wine is produced in Shaoxing.' 'Shaoxing rice-wine'
- \* 黄酒 绍兴  
 huangjiu Shaoxing  
 rice-wine Shaoxing

<sup>6</sup> For the sake of consistency of numbering and convenience of reading, several examples are repeated (e.g. (1) and (5); (2) and (6), etc.) by introducing a new number instead of the previous one.

(8)	今日	出版	报纸	→	今日	报纸
	jinri	chuban	Baozhi		jinri	baozhi
	today	publish	Newspaper		today	newspaper
	'The newspaper was published today.'				'today's newspaper'	
				→*	报纸	今日
					baozhi	jinri
					newspaper today	

Comparing the nouns that occupy the subject position in (6)-(8), we find that the agentive theta-roles in (6) serve the function of the subject of the sentence, whereas the non-agentive theta-roles in (7) and (8) function as the adverbial of the sentence though they occur in the position preceding the predicate. Hence the non-agentive theta-roles can be understood as the noun functioning as the adverbial alone, or it, together with the preposition which occurs covertly, functioning as the adverbial.<sup>7</sup> Then, we have to account for why agentive theta-roles can function only as the noun head instead of the modifier in the morphological structure while non-agentive theta-roles can function only as the modifier instead of the noun head in the morphological structure. We argue that given constituent extraction, all types of theta-roles, including agent, patient, instrumental, temporal, and local, can be extracted. However, if the structure contains the agent, only the noun phrase out of which the agentive theta-role is extracted can be operated further. To put it differently, both the predicate and the phrase marker *de* 的<sup>8</sup> can be implicit, thereby giving rise to a modifier-head compound. In contrast, neither the predicate nor the phrase marker *de* 的 can be implicit concerning the noun phrase out of which a patient is extracted. As a consequence, no

<sup>7</sup> At present, there are two analyses of the preposition implicitness. One analysis argues that it is due to the fact the preposition is compressed by the verb and the subsequent noun and hence it weakens phonologically, thereby giving rise to its disappearance. In this case, it is similar to an empty category in terms of syntax. Another analysis claims that the disappearance of the preposition is not due to deletion or ellipsis. Instead, it results from the incorporation of the preposition and its object (Yang, 2007a, 2007b, 2009).

<sup>8</sup> *De* 的 is a linking marker. It is used to link the preceding constituent with the following constituent. The preceding constituent bears the feature [+N] and functions as the agent, patient, or possessor while the following constituent bears the feature [-V] or [+N]. *De* 的 is used to show the difference between the phrase and the sentence and to mark the symmetry between them. It can be adjoined to the Spec or complement. Given syntactic distribution, it often functions as the adjoined constituent of the Spec. It occurs behind the personal pronoun, proper name, or verb, but it cannot follow the demonstrative pronoun, because the demonstrative pronoun usually functions as the syntactic head and the genitive property of *de* 的 determines its usage as a clitic that follows a personal pronoun or proper name. It cannot occur behind the demonstrative pronoun to denote specificity (Yang, 2014a).

modifier-head compound can be generated. Rather, compounds deriving from such theta-roles are ungrammatical, as shown in (3)-(8). If there is no agent in the structure, then, only the noun phrase out of which the agentive theta-roles are extracted allows the occurrence of the implicit predicate and the non-occurrence of the phrase marker *de* 的, thereby giving rise to a modifier-head compound. In contrast, the noun phrase out of which the adjuncts, including instrumental, temporal, and local, are extracted does not allow the occurrence of the implicit predicate and the non-occurrence of the phrase marker *de* 的, as shown in (9) and (10).

(9) 教师 教 英语  
 jiaoshi Jiao yingyu  
 teacher Teach English  
 'The teacher teaches English.'

→ a. 教师 教 的 英语 →\* 教师 英语  
 jiaoshi jiao de Yingyu jiaoshi yingyu  
 teacher teach AUX English teacher English  
 'English which the teacher teaches'

→ b. 教 英语 的 教师 → 英语 教师  
 jiao yingyu de Jiaoshi yingyu jiaoshi  
 teach English AUX Teacher English teacher  
 'the teacher who teaches English' 'English teacher'

(10) 红木 制造 家具  
 hongmu zhizao Jiaju  
 rosewood make Furniture  
 'The furniture is made of rosewood.'

→ a. 红木 制造 的 家具 → 红木 家具  
 hongmu zhizao de Jiaju hongmu jiaju  
 rosewood make AUX Furniture rosewood furniture  
 'furniture made of rosewood' 'rosewood furniture'

→ b. 制造 家具 的 红木 →\* 家具 红木  
 zhizao Jiaju de hongmu jiaju hongmu  
 make furniture AUX rosewood furniture rosewood  
 'rosewood for making furniture'

According to (9) and (10), the way to generate nominal compounds can be summarized as follows.



- (11) a. NP1 V NP2 → V NP2 *de* NP1 → NP2 NP1 (NP1=agent)  
 b. NP1 V NP2 → NP1 V *de* NP2 → NP1 NP2 (NP1= instrumental, temporal, and local)

Predicate implicitness must cause the two nominal constituents to be merged directly. However, only the morphological structure of the modifier-head compound containing the non-agentive theta-roles conforms with the syntactic structure with respect to the surface order, whereas the morphological structure of the modifier-head compound containing the agentive theta-roles is in contrast to the syntactic structure of the surface order. Then, whether the generation pattern of nominal compounds in (11) can be accounted for in the framework of generative grammar is an issue that we shall address in the following section.

### 3 Predicate implicitness, the generation of nominal compounds and the types of their structure

If we make a further observation of the internal structure of the modifier-head compound, we may find that both the structure of the compound containing the agentive theta-role and the structure of the compound containing the non-agentive theta-role are head-final. The former is headed by the agent, whereas the latter is headed by the patient. The noun that occurs in the predicate position is actually not the head of the structure, but a peripheral constituent, and hence it can be regarded as an adjunct. To put it differently, the argument structure of the compound is quite in conformity with its original syntactic structure.

(12) Syntactic	Morphological	
structure	structure	
N1 + N2	N1 + N2	
head + non-head	*head + non-head	compound with agentive theta-roles
non-head + head	non-head + head	compound with non-agentive theta-roles
subject + object	adverbial + object	

As (12) shows, the syntactic structure is quite consistent with the morphological structure. In the compound with agentive theta-roles, the head precedes the non-head. N1 bears semantic weight, whereas N2 functions as a complement. Therefore, N1 + N2 amounts to N + Complement, viz. NC. In this case, the morphological structure is completely in conformity with the syntactic structure. In the same vein, in the compound with non-agentive theta-roles, the non-head precedes the head. N1 represents

possession, property, state, material, purpose, time, location, etc. N2 bears semantic weight and hence N1 + N2 amounts to Adjective + N, viz. A + N. The semantic weight and the syntactic weight of the two types of compounds are completely consistent. Therefore, the syntactic structure is consistent with the morphological structure. The above conclusions can be summarized as follows.

- (13) a. Syntactic / Morphological structure:  $[_{NP} N1[_{N'} N2]]$   
 Semantic relation: N + C
- b. Syntactic / Morphological structure:  $[_{NP}[_{N'} N1]N2]$   
 Semantic relation: A + N

As shown in (13), N1 asymmetrically c-commands N2 but N2 cannot c-command N1.<sup>9</sup> Therefore, the determiner that is characterized by definiteness is supposed to occur in the highest position of DP. It precedes either the combination NP1 + NP2 or the combination NP2 + NP1. It cannot occur between NP1 and NP2. Nor can it occur between NP2 and NP1. Otherwise, the Lexical Integrity Hypothesis would be violated.<sup>10</sup>

At the syntactic level, NP1 occurs in the subject position and hence it is a dominating constituent. In contrast, NP2 occurs in the object position and hence it is a subordinate constituent. There is a predicate intervening between them. At the phrase level, NP1 which is extracted out of the construction is still a dominating constituent. NP2 is still a subordinate constituent though it precedes NP1. In effect, there still exists a predicate intervening between them. In this case, the predicate cannot be implicit. Otherwise, the syntactic-semantic relation between them would not be clearly expressed. At the morphological level, the predicate is implicit. NP2, which functions as the modifier of NP1, occurs in the position preceding NP1. NP2, however, is still a subordinate constituent, whereas NP1 is still a dominating constituent. It is suggested that if the agent precedes the patient, the predicate must occur at all levels, including the syntactic level, the phrase level, and the morphological level. Otherwise, the construction would be ungrammatical. In contrast, if the patient precedes the agent, the predicate

<sup>9</sup> According to the Linear Correspondence Axiom (Kayne, 1994, p. 33) and the Principle of Category Order (Dai, 2003), if an arbitrary constituent X c-commands another arbitrary constituent Y, then, Y cannot c-command X.

<sup>10</sup> According to the Lexical Integrity Hypothesis, syntactic operations and semantic interpretations cannot influence the subcomponent of a word (Jackendoff, 1972; Selkirk, 1984).

must occur only at the syntactic level and the phrase level, whereas at the morphological level, it must be implicit.

(14) a. Syntactic level: \*agent + patient (without a predicate)

e.g.\* 去年 工人 石油  
 qunian gongren shiyou  
 last year Worker petroleum

b. Phrase level: \*agent + patient (without a predicate)

e.g.\* 工人 的 石油  
 gongren De shiyou  
 worker AUX petroleum

c. Morphological level: \*agent + patient (without a predicate)

e.g.\* 工人 石油  
 gongren shiyou  
 worker petroleum

(15) a. Syntactic level: \*patient + agent (without a predicate)

e.g.\* 去年 石油 工人  
 qunian shiyou gongren  
 last year petroleum worker

b. Phrase level: \*patient + agent (without a predicate)

e.g.\* 石油 的 工人  
 shiyou De gongren  
 petroleum AUX worker

c. Morphological level: patient + agent (without a predicate)

e.g.\* 石油 工人  
 shiyou gongren  
 petroleum worker

The representations of the theta-roles such as instrumental, temporal, and local are similar to the theta-role of an agent at the syntactic level, the phrase level, and the morphological level. Hence it is unnecessary to go into details. The predicate must occur at the syntactic level and the phrase level, whereas it must be implicit at the morphological level.

- |  |                       |
|--|-----------------------|
| (16) Syntactic level                           | Morphological level   |
| a. agent + predicate + <i>de</i> + patient     | →*agent + patient     |
| b. non-agent + predicate + <i>de</i> + patient | → non-agent + patient |
| c. predicate + patient + <i>de</i> + agent     | → patient + agent     |
| d. predicate + patient + <i>de</i> + non-agent | →*patient + non-agent |

At the phrase level, the construction is grammatical regardless of whether the extracted constituent is a patient, agent, or non-agent. At the morphological level, however, the agent can only occur behind the patient and the non-agent must precede the patient. Moreover, linear order cannot be reversed, as illustrated in (17) and (18).

- |         |                                     |           |     |           |    |                      |           |
|---------|-------------------------------------|-----------|-----|-----------|----|----------------------|-----------|
| (17) a. | 工人                                  | 开采        | 的   | 石油        | →* | 工人                   | 石油        |
|         | gongren                             | kaicai    | de  | shiyou    |    | gongren              | shiyou    |
|         | worker                              | extract   | AUX | petroleum |    | worker               | petroleum |
|         | 'petroleum extracted by the worker' |           |     |           |    |                      |           |
| b.      | 红木                                  | 制造        | 的   | 家具        | →  | 红木                   | 家具        |
|         | hongmu                              | zhizao    | de  | jjaju     |    | hongmu               | jjaju     |
|         | rosewood                            | make      | AUX | furniture |    | rosewood             | furniture |
|         | 'furniture made of rosewood'        |           |     |           |    | 'rosewood furniture' |           |
| (18) a. | 开采                                  | 石油        | 的   | 工人        | →  | 石油                   | 工人        |
|         | kaici                               | shiyou    | de  | gongren   |    | Shiyou               | gongren   |
|         | extract                             | petroleum | AUX | worker    |    | petroleum            | worker    |
|         | 'worker who extracts petroleum'     |           |     |           |    | 'petroleum worker'   |           |
| b.      | 制造                                  | 家具        | 的   | 红木        | →* | 家具                   | 红木        |
|         | zhizao                              | jjaju     | de  | furniture |    | Jiaju                | hongmu    |
|         | make                                | furniture | AUX | rosewood  |    | furniture            | rosewood  |
|         | 'rosewood for making furniture'     |           |     |           |    |                      |           |

The patient can function as the modifier of the agent only, but it cannot function as the modifier of the non-agent. The agent cannot function as the modifier of the patient, but the non-agent can function as the modifier of the patient. However, there remain some questions. We have to account for why the agent can function as a noun head instead of a modifier at the morphological level while the non-agent can function as a modifier instead of a noun head. We argue that the reason lies in the morphological structure of compounds. According to Sportiche (1988), Kuroda (1988), Larson (1988, 1990), Cheng (1999, p. 239-245), and Yang (2007a, 2011, 2012, 2014b, 2016a, 2016b), the assignment of theta-roles is locally constrained. The predicate must assign theta-roles to the arguments within its projection. Therefore, the argument must occur within the maximal projection of the predicate. The

theta-role of the external argument is not assigned by the predicate but by the maximal projection of the predicate. According to the X-bar theory, a maximal projection can have only one specifier and one complement. In order to satisfy these conditions, the lexical representation of compounds with the external argument adopts the form, as shown below.

(19)  $[_{VP1} NP1[_V \cdot V1[_{VP2} NP2[_V \cdot V2 NP3]]]]$

As (19) shows, when an external argument occurs, there will be a null predicate in the representation. Its complement is the maximal projection of the subject, namely, the structural representation with various internal arguments. NP1 is an external argument and NP3 is an internal argument. They are assigned theta-roles by VP and V, respectively. V1 is a null predicate while V2 is a major predicate. The representation of the external argument entails an empty argument position (i.e. NP2) and an empty predicate position (i.e. V1), for there is some asymmetry between the conceptual system and the syntactic system. The conceptual system cannot correspond to the syntactic structure until it has been conceptualized.<sup>11</sup> It follows that the null predicate is set to satisfy the requirement of the conceptual system and the syntactic system simultaneously.<sup>12</sup> Therefore, the structure of the constructions *gongren kaicai shiyou* 工人开采石油 and *hongmu zhizao jiaju* 红木制造家具 should be analyzed as follows.

(20)  $[_{VP1} \text{工人}[_V \cdot V1[_{VP2} \text{开采 石油}]]]]$   
           gongren                      kaicai shiyou  
           worker                      extract petroleum

$\rightarrow [_{VP1} \text{工人}[_V \cdot V1[_{VP2} \text{石油}[_V \cdot \phi t_i]]]]$   
           gongren      shiyou  
           worker      petroleum

<sup>11</sup> Jackendoff (1990) argues that the conceptual structure corresponds to the syntactic structure. Based on this argument, Tai (2002) claims that semantics which the syntactic structure can express is abstract and simplified after having been conceptualized instead of rich semantics containing the conceptual system.

<sup>12</sup> When an external argument occurs, there will be a null predicate in the representation. Its complement is the maximal projection of the subject, namely, the structural representation with various internal arguments. Since there are theta-roles in the conceptual system, the syntactic system must provide a null predicate to realize symmetry between the conceptual system and the syntactic system.

- (21) [<sub>VP1</sub> NP1 [<sub>V</sub> V1 [<sub>VP2</sub> 红木 [<sub>V</sub> 制造 家具]]]]  
 hongmu zhizao Jiaju  
 rosewood make furniture
- [<sub>VP1</sub> NP1 [<sub>V</sub> V1 [<sub>VP2</sub> 红木 家具 [<sub>V</sub>  $\phi$  t]]]]  
 hongmu Jiaju  
 rosewood Furniture

As (20) and (21) show, there are so many nodes between *gongren* 工人 and *shiyou* 石油 that they cannot form a close combination. In contrast, between *hongmu* 红木 and *jiaju* 家具 there is only one implicit node, which gives rise to a syntactic empty category as a result of the implicitness of the predicate. Therefore, *hongmu* 红木 and *jiaju* 家具 can be merged directly because a modifier must be externally merged with the category which it modifies. It is noteworthy that the agent and the patient cannot be merged directly to form a compound, whereas the non-agent and the patient can be merged directly to form a compound. The patient *jiaju* 家具 moves leftward to the position [<sub>NP2</sub> <sub>VP2</sub>] and is merged with the non-agent *hongmu* 红木 which occupies the position NP2, thereby giving rise to the compound *hongmu jiaju* 红木家具. Though the patient *shiyou* 石油 can move leftward to occupy the empty position, it cannot be merged with the agent *gongren* 工人, thereby giving no rise to the compound *gongren shiyou* 工人石油. Following Gruber (2001), we argue that *shiyou gongren* 石油工人 can be regarded as the result of leftward movement of the patient object *shiyou* 石油, as shown in (22). *Shiyou* 石油 moves leftward from the position [O N`] and crosses over *gongren* 工人 that occupies the position [S NP], thereby giving rise to the modification of *gongren* 工人. If the construction contains a non-agent, the circumstances will be different. Since the non-agent occupies the position [N N`], the surface order can be generated without resorting to movement, as shown in (23).

- (22) [<sub>DP</sub> D [<sub>NP</sub> 工人 [<sub>N</sub> 石油]]]  
 gongren shiyou  
 worker petroleum
- [<sub>DP</sub> 石油 [<sub>NP</sub> 工人 [<sub>N</sub> N t]]]  
 shiyou gongren  
 petroleum worker

- (23) [<sub>DP</sub> D [<sub>NP</sub> S [<sub>N</sub> 红木 家具]]]  
 hongmu jiaju  
 rosewood furniture

If there is a demonstrative in the construction and it occupies position D, then, *shiyou* 石油 moves from its base-generation position to the position [A AP], as illustrated in (24). In the same vein, the non-agent *hongmu* 红木 in the non-agentive compound moves from its base-generation position to the position [A AP], as illustrated in (25). Such movement operations are N-to-A movement, which is a category of head movement. The motivation of movement is that the noun head is modified by the demonstrative. The noun head moves to assign the genitive case to the agent noun that functions as the subject. (cf. Bernstein, 2001)

- (24) [<sub>DP</sub> 那些<sub>[AP]</sub> A [<sub>NP</sub> 工人<sub>[N]</sub> 石油]]  
 naxie        gongren shiyou  
 those        worker    petroleum  
 → [<sub>DP</sub> 那些<sub>[AP]</sub> 石油<sub>i</sub> [<sub>NP</sub> 工人<sub>[N]</sub> N t<sub>i</sub>]]  
 naxie    shiyou      gongren  
 those    petroleum    worker

- (25) [<sub>DP</sub> 那件<sub>[AP]</sub> A [<sub>NP</sub> S [<sub>N</sub> 红木        家具]]]  
 najian            hongmu    jiaju  
 that-Cl            rosewood furniture  
 → [<sub>DP</sub> 那件<sub>[AP]</sub> 红木<sub>i</sub> [<sub>NP</sub> S [<sub>N</sub> t<sub>i</sub> 家具]]]  
 najian hongmu      jiaju  
 that-Cl rosewood    furniture

As (24) and (25) show, the movement of the agent and the non-agent takes place to save the morphological structure so that it may not crash. It is suggested that the construction that is grammatical at the syntactic level and the phrase level can be ungrammatical at the morphological level. To put it differently, a grammatical syntactic structure can generate a grammatical phrase structure, but it is not sure to generate a grammatical morphological structure. Then, we have to account for what causes the situation. Though the constituents preceding and following the predicate can be extracted out of the syntactic structure containing the agentive theta-roles and generate a grammatical phrase structure, only at the morphological structure the phrase structure out of which the agent is extracted is grammatical, as shown in (26).

- |      |                 |                      |                                       |
|------|-----------------|----------------------|---------------------------------------|
| (26) | Syntactic level | Phrase level         | Morphological level                   |
|      | NP1 + V + NP2   | → NP1 + V + de + NP2 | → *NP1 + NP2 (NP1=agent, NP2=patient) |
|      |                 | → V + NP2 + de + NP1 | → NP2 + NP1 (NP1=agent, NP2=patient)  |

In contrast, both the non-agent and the patient can be extracted out of the syntactic structure containing the agentive theta-roles to generate a grammatical phrase structure. However, only the phrase structure out of which the patient is extracted can generate a grammatical morphological structure, as shown in (27).

(27) Syntactic level	Phrase level	Morphological level
NP1 + V + NP2	→ NP1 + V + de + NP2	→ NP1 + NP2 (NP1= instrumental, temporal, local, etc., NP2=patient)
	→ V + NP2 + de + NP1	→ *NP2 + NP1 (NP1= instrumental, temporal, local, etc., NP2=patient)

If we simplify (26) and (27) further and ignore the differences between the theta-roles, we will have the structure, as shown in (28) below.

(28) Syntactic level	Morphological level
NP1 + V + NP2	→ *NP2 + V + NP1 (NP1=agent)
NP1 + V + NP2	→ *NP2 + V + NP1 (NP1= instrumental, temporal, local, etc.)

Based on the observation of (28), we argue that though the predicate V can dominate the patient NP2, it cannot modify the agent NP1 and the non-agent NP1, thereby giving rise to an ungrammatical construction. Interdependent semantic features and high conventionality are reflected in the domain of government of the verb, i.e. the verb's command over the preceding noun and its modification of the subsequent noun. According to the Verb-Governing Rule (VGR), V governs N1 and modifies N2. If and only if V governs N1 and modifies N2, an OV compound can be grammatical (Yang, 2006). According to Fu (2004), the pattern V + N refers to an event, which is formed by extracting the constituent N out of the framework of V in order to qualify the connotation of V and to make the event V abstract. The constituent N, which has been extracted, is mainly an object. Rather, when people need to make a certain verb abstract and to reclassify it, they tend to qualify its connotation by means of an object and choose the pattern N + V to express it, the premise of which is that V can govern the object. Only those that have a strong power of government over their objects may give rise to the pattern N + V, i.e. NP1 + V + NP2 in the present paper. The construction process of the meaning of N + V is associated with the structure of the narration concept in people's minds, i.e. the general framework of the event V. The framework includes various roles related to event V in the outside world and people's knowledge of event V and its effect upon it. The verb governs its own event framework, in which the theta-role of V and the non-



argument role are occupied by nominal constituents. And the theta-role and the non-argument role are both part of the framework. N + V is the result of reference by means of the event framework. To put it differently, in the event framework of V, some constituents are extracted or projected and merged with V in accordance with a certain pattern so as to express a certain meaning and to refer to a certain object. It shows that N + V is often used to denote the argument relation, especially the object relation. Different semantic relations have their own optimal options. Object relations tend to choose N + V, but seldom choose V + N. Non-argument relations are just the opposite. It is suggested that different argument relations often select different structural forms (Yang, 2006). Consider the following data.

(29) 工人 开采 石油  
gongren kaicai shiyou  
worker extract petroleum  
N1 + V + N2

→ 工人 石油 开采  
gongren shiyou kaicai  
worker petroleum extract  
N1 + N2 + V

→ 石油 工人 开采  
shiyou gongren kaicai  
petroleum worker extract  
N2 + N1 + V

→ 石油 工人  
shiyou gongren  
petroleum worker  
N2 + N1

(30) 故事 描写 战争  
gushi miaoxie zhanzheng  
story describe war  
N1 + V + N2

→ 故事 战争 描写  
gushi zhanzheng miaoxie  
story war describe  
N1 + N2 + V

→ 战争 故事 描写  
 zhanzheng gushi miaoxie  
 war story describe  
 N2 + N1 + V

→ 战争 故事  
 zhanzheng gushi  
 war story  
 N2 + N1

(31) 红木 制造 家具  
 hongmu zhizao Jiaju  
 rosewood make furniture  
 N1 + V + N2

→ 红木 家具  
 hongmu jiaju  
 rosewood furniture  
 N1 + N2

(32) 今日 出版 报纸  
 jinri chuban Baozhi  
 today publish newspaper  
 N1 + V + N2

→ 今日 报纸  
 jinri baozhi  
 today newspaper  
 N1 + N2

As the data in (29)-(32) show, the generation of agentive compounds undergoes the process of the object being preposed or shifted. It first moves to the left edge of VP, viz. the specifier position of VP. Then it continues to move to the left edge of NP to give rise to the surface order NP2 + NP1 + V. V drops off to give rise to the compound NP2 + NP1. In contrast, the generation of non-agentive compounds does not undergo the process of the object being preposed. It can give rise to the compound NP1 + NP2 by means of predicate implicitness. The transformation of NP1 + V + NP2 into NP2 + NP1 suggests that the semantic relation between NP1 and NP2 has changed from predication into modification. Due to predicate implicitness, NP2 which functions as the object cannot be assigned an accusative case, and hence it must move. Since the object NP2 cannot be assigned an accusative case by the predicate V, it has to move from the object position to the specifier

position preceding the subject NP1 and functions as the modifier of NP1 in order to avoid violation of the syntactic constraints. The patient noun functions as the object in the syntactic structure, but it functions as the modifier in the morphological structure. It follows that the function of every constituent is determined by its position in the structure. Furthermore, the linear positions of the constituents in the surface structure are determined by the positions of the constituents in the underlying structure. Rather, they are determined by the relationship of the c-command arising from the merger. The asymmetrical c-command relationship deriving from merger determines the order of the constituents in compounds (cf. [Dai, 2003](#), p. 93-94).

In terms of linear order, the order of every constituent in the morphological structure is just opposite to its order in the syntactic structure, as shown below.

- (33) Syntactic order: agent > patient > instrumental/local/temporal, etc.  
 Morphological order: patient > instrumental/local/temporal, etc. > patient > agent

- (34) 工人 开采 石油  
 gongren kaicai Shiyou  
 worker extract petroleum  
 (agent) (patient)

→ 石油 工人  
 shiyou gongren  
 petroleum Worker  
 (patient) (agent)

- (35) 制造 家具 用 红木  
 zhizao Jiaju yong hongmu  
 make furniture with rosewood  
 (patient) (oblique)

→ 用 红木 制造 家具  
 yong hongmu zhizao jiaju  
 with rosewood make furniture  
 (oblique) (patient)

红木 家具  
 hongmu jiaju  
 rosewood furniture  
 (oblique) (patient)

The oblique case is base-generated in the position behind the patient. It moves to the position preceding the predicate V to give rise to the surface syntactic structure. The patient and the oblique case move to the position preceding the agent, respectively. The marker of the oblique case drops off or incorporates with the object of the preposition, thereby giving rise to a compound. The patient and the oblique case move because predicate implicitness results in semantic indefiniteness. Another explanation is that the marker of the oblique case restrains the oblique constituent and obstructs the patient from moving to the position preceding the oblique case. As a result, it has to stay in situ, thereby giving no rise to such an ungrammatical construction as *jiaju hongmu zhizao* 家具红木制造. The marker of the oblique case (i.e. preposition) incorporates with the oblique constituent to form NP. NP obstructs the patient from moving leftward alone. But NP can move with the patient to the position preceding the agent in a pied-piping way.

- (36) 红木        家具        制造        厂  
 hongmu    Jiaju        zhizao      chang  
 rosewood furniture make        factory  
 (oblique) (patient) (predicate) (agent)  
 'rosewood furniture making factory'

When the agent or the oblique case does not occur, the predicate can be merged with the patient to form VO compounds, such as *jiaju zhizao* 家具制造 and *shiyou kaicai* 石油开采. If the agent occurs, the predicate must be implicit. In this case, the agent and the patient can enter into morphology to give rise to nominal compounds. Since the agent is base-generated in the specifier position of the light verb projection, it is suggested that only when the structure contains a light verb, can the agent occur and be licensed (cf. Chomsky, 1995, pp. 219-394). Neither the structure of VO compounds nor the structure of SV compounds contains the light verb.<sup>13</sup> Therefore, the agent cannot occur. This is why the compounds, such as *gongren shiyou* 工人石油 and *gushi zhanzheng* 故事战争, are ungrammatical. Then, we have to account for the grammaticality of such compounds as *shiyou kaicai* 石油开采, *zhanzheng miaoxie* 战争描写 and *jiaju zhizao* 家具制造. In effect, these compounds are identical regarding their morphological structure. Specifically, they are all modifier-head compounds instead of SV compounds. The noun modifies the verb which has gerundized. To put it differently, the

<sup>13</sup> The light verb can occur only at the syntactic level and cannot enter into the internal structure of a word. Otherwise, the Lexical Integrity Hypothesis would be violated (Lin, 2001; Huang, 2005; Tang, 2008).

verb has undergone nominalization. As a consequence, it is characterized by nouns.

- (37) [<sub>N</sub> N            V]]  
       (object)        (verb)
- a. [<sub>N</sub> 石油        开采]]  
       Shiyou        kaicai  
       petroleum    extract  
       ‘petroleum extraction’
- b. [<sub>N</sub> 战争        描写]]  
       zhanzheng    miaoxie  
       War            describe  
       ‘war description’
- c. [<sub>N</sub> 家具        制造]]  
       Jiaju           zhizao  
       furniture      make  
       ‘furniture making’

As (37) shows, N is adjoined to V to give rise to adjunction. N is an object. It is noteworthy that both *zhizao* 制造 and *miaoxie* 描写 have the feature [-V] because it has gerundized, and hence it can be modified by a noun or pronoun. This shows that the head determines the form of the complement. If the head is D, the complement can only be NP or VP with the feature [-V]. If the VP occupies the Spec position, the construction is generally ungrammatical unless the VP has the feature [-V] (cf. [Yang, 2010](#)). The whole construction bears the nominal feature because the verb has lost some verbal features. In the same vein, if N1 is merged with N2, a nominal construction will be generated, as shown below.

- (38) a. [<sub>N</sub> N1        N2]]                    b. [<sub>N</sub> N1        N2]]  
       (object) (subject)                    (oblique) (object)

In terms of (38a), the object N1 is adjoined to the subject N2 to give rise to adjunction. In terms of (38b), the oblique N1 is adjoined to the object N2 to give rise to adjunction. Such a morphological structure is quite consistent with its original syntactic structure, as illustrated below.

- (39) a. [<sub>VP</sub> 教师 [V· 教 英语]]  
 jiaoshi jiao Yingyu  
 Teacher teach English  
 (subject) (object)  
 'teacher who teaches English'
- b. [<sub>N</sub> 英语 教师]]  
 yingyu jiaoshi  
 English teacher  
 (object) (subject)  
 'English teacher'
- (40) a. [<sub>VP</sub> 教师 [V· 教 [<sub>VP</sub> 英语 [V· 在 大学]]]  
 jiaoshi jiao yingyu zai Daxue  
 teacher teach English at University  
 (subject) (object) (oblique)  
 'teacher teaches English at university'
- b. [<sub>N</sub> 大学 [N 英语 教师]]  
 Daxue yingyu jiaoshi  
 university English teacher  
 (oblique) (object) (subject)  
 'university English teacher'
- (41) a. [<sub>VP</sub> 工厂 [V· 制造 [<sub>VP</sub> 家具 [V· 用 红木]]]  
 gongchang zhizao jiaju yong hongmu  
 Factory make furniture with rosewood  
 (subject) (object) (oblique)  
 'factory makes furniture with rosewood'
- b. [<sub>N</sub> 红木 [N 家具 工厂]]  
 Hongmu jiaju gongchang  
 rosewood furniture factory  
 (oblique) (object) (subject)  
 'rosewood furniture factory'

(39)-(41) show the process of derivation from the syntactic structure to the morphological structure. They quite explicitly account for why the object can be adjacent to the subject and modify it, whereas the oblique can only modify the morphological object composed of the object and the subject. It follows that the morphological structure is a mirror image of the syntactic structure. The syntactic consequences of predicate implicitness are that it triggers the occurrence of adjunction. The constituent which is at the lower level of the thematic hierarchy is adjoined to the constituent which is at the

higher level of the thematic hierarchy and functions as the modifier of the latter. Constituent adjunction must take place following the order of hierarchy and hence no cross-level adjunction is allowed. To put it differently, the constituent which is at the lower level of the thematic hierarchy cannot cross the constituent at the intermediate level to be adjoined to the constituent at the highest level of the thematic hierarchy. Accordingly, the order of adjunction of the constituents in the morphological structure can be summarized as follows.

(42) oblique < object < subject

According to (42), the object is first adjoined to the subject, for they are core constituents, whereas the oblique case is a peripheral constituent. Therefore, the adjunction of the object and the subject proceeds the adjunction of the oblique and the morphological object composed of the object and the subject, thereby giving rise to a new morphological complex, viz. [oblique[object subject]].

There is corresponding relation between the thematic hierarchy and linear order. As far as head-initial languages are concerned, the constituent at the highest level of the thematic hierarchy occurs in the left position of the syntactic structure, that is, the subject position that dominates, whereas it occurs in the right position of the morphological structure, that is, the noun head position. In contrast, the constituent that is at the lower level of the thematic hierarchy often occurs in the right position of the syntactic structure, that is, the position that is dominated, whereas it occurs in the left position of the morphological structure, that is, the modifier position. In this case, the position of a constituent in the syntactic structure and the morphological structure is determined by the position of the thematic hierarchy. The constituent which is at the higher level of the thematic hierarchy functions as the syntactic head or the morphological head, whereas the constituent which is at the lower level of the thematic hierarchy functions as the syntactic complement or the morphological modifier. It follows that the thematic hierarchy is consistent with linear order. In the same vein, the theta-roles, the syntactic constituents, and the morphological constituents are symmetrically distributed. The head constituent is an agent in the syntactic structure, while in the morphological structure, it is a noun head characterized by subjectivity. The oblique constituent functions as the adjunct of the verb in the syntactic structure, while in the morphological structure it functions as the adjunct of the noun head. The subject/agent is a head, the object/patient is an internal

modifier, and the oblique constituent is an external modifier.<sup>14</sup> According to property, the object/patient functions as a connotative attributive, whereas the oblique constituent functions as an extensional attributive.<sup>15</sup> Hence the oblique constituent, which functions as the external modifier, precedes the object/patient, which functions as the internal modifier, which precedes the subject/agent, which functions as the head.

Since the structure of Chinese nominal compounds is head-final (i.e. the noun on the right determines the basic semantics of the word), the noun which is characterized by subjectivity functions as the noun head. In this case, it corresponds to the agentive subject of the syntactic structure and the theta-role at the highest level of the thematic hierarchy. The oblique and the patient function as the modifiers of the agentive noun which functions as the head, respectively. The oblique is at the most external layer of the noun construction, whereas the patient is adjacent to the noun head. Such a linear order corresponds to the object and the adverbial of the syntactic structure as well as the lower and the lowest theta-roles in the thematic hierarchy. Based on the above argument, we came to the following conclusion.

(43) Theta-roles:	agent	>	patient	>	instrumental/temporal/local, etc.
	⇕		⇕		⇕
Semantic relations:	subject	>	object	>	oblique
	⇕		⇕		⇕
Syntactic structure:	subject	>	object	>	adverbial
	⇕		⇕		⇕
Morphological structure:	head	>	connotative attributive	>	extensional attributive

Constituents are generally arranged hierarchically and only those constituents that are adjacent in the thematic hierarchy can be merged. If the constituents that are not adjacent to the thematic hierarchy are merged, there will be ungrammatical constructions. It seems that hierarchical subadjacency is a constraint on the merger of constituents. On the other hand, there is an asymmetrical c-command between constituents. A constituent cannot be merged with another constituent unless the former c-commands the latter. Rather, merged constituents must be close mates in the thematic

<sup>14</sup> When two modifiers precede the noun, the first takes scope over the second and is attached higher in terms of hierarchy.

<sup>15</sup> The connotative attributive is an attributive that adds lexical-semantic elements to the noun. It often occurs in the form of a substantive or open category. The extensional attributive is used to assign the property of reference or quantity to the noun. It often occurs in the form of a reference or quantifier constituent (Liu, 2008).



hierarchy. In a word, no merger can cross over more than one bounding node in a step. Based on the above discussion, we propose the constraints on the merger of constituents.

- (44) The constraints on constituent merger
- a.  $\alpha$  can be merged with  $\beta$  if and only if  $\alpha$  c-commands  $\beta$ .
  - b. Merger takes place leftward.
  - c. Merger takes place between close mates.

In terms of linear order, constituents cannot be merged unless there is an asymmetrical c-command between them. Hence the order of constituents cannot be reversed. In other words, various types of constituents follow the linearity principle. If constituents are merged rightward, the combinations will be illicit, as shown in (45) and (46).

- (45) a.\*subject + object  
 b.\*subject + oblique  
 c.\*object + oblique

- (46) a.\* 工人 石油  
 gongren shiyou  
 worker petroleum
- b.\* 教师 大学  
 jiaoshi daxue  
 teacher university
- c.\* 家具 红木  
 jiaju hongmu  
 furniture rosewood

Based on (45) and (46), we argue that modification is a relation of asymmetrical c-command. In effect, the c-command which is base-generated determines the relation between the modifier and the modified. Furthermore, c-command has different representations at the syntactic level and the morphological level. In terms of the syntactic level, if X asymmetrically c-commands Y, then, X precedes Y. In terms of the morphological level, if X asymmetrically c-commands Y, then, X functions as the head while Y functions as the modifier. Furthermore, an argument of a predicate must c-command the predicate and the determiner must c-command the theta-bearer. Nominal modification is always mediated by syntactic sisterhood. The relationship between a modifier and a modified is thematic and hence it is subject to the same restrictions as theta-marking. It

follows that the two elements involved in a thematic relation are in a local relation at LF. To put it differently, nominal modification involves a kind of thematic relation (cf. [Reeve & Hicks, 2017](#)).

However, there is a crucial question we have not answered yet. We have to account for what syntactic constraints the word order of the various constituents in compounds is subject to. We argue that it is subject to the double constraints of the Locality Principle and the Prominence Principle, which coordinate and constrain the operation of the grammatical system. According to [Hu \(2002, 2010\)](#) and [Yang \(2013\)](#), the grammatical system prefers to select and process or compute the constituent which is most local (i.e. Locality Principle), whereas it prefers to select and process or compute the constituent which is most prominent (i.e. Prominence Principle). What is the most optimal is that the most local constituent corresponds to the most prominent constituent. However, the most local constituent is not necessarily the most prominent constituent. Similarly, the most prominent constituent is not necessarily the most local constituent. Nevertheless, prominence corresponds to headedness, and locality corresponds to modifiability. The more prominent a constituent is, the more likely it is to occur as a head. Accordingly, the more local a constituent is, the more likely it is to occur as a modifier. Following [Bresnan \(2001\)](#), we argue that prominence is determined by the following factors: 1) the linear order determined by the constituent structure (c-structure); 2) the syntactic hierarchy determined by the function structure (f-structure); 3) the thematic hierarchy; 4) the grammatical function. It is noteworthy that the thematic hierarchy is represented with the feature [ $\pm$ agent], whereas the grammatical function is represented with the feature [ $\pm$ subject]. The value of the feature [ $\pm$ subject] and the feature [ $\pm$ agent] is determined by the thematic hierarchy and the grammatical function, respectively.

(47) The thematic hierarchy  
[+agent]>[-agent]

(48) The hierarchy of the grammatical function  
[+subject]>[-subject]

The interaction between the feature [ $\pm$ subject] and the feature [ $\pm$ agent] gives rise to (49).

(49) a. [+subject, +agent]>[-subject, +agent]  
b. [+subject, -agent]>[-subject, -agent]

Locality is determined by the complexity of the structure. As far as the various constituents in compounds are concerned, we argue that the more peripheral they are, the more local they are, and the more likely they are to function as modifiers. Conversely, the less peripheral they are, the more prominent they are, and the more likely they are to function as heads. Obviously, there is an asymmetry between locality and prominence. The locality and prominence of the various constituents in compounds are determined by their positions in the syntactic hierarchy. The higher they are in the syntactic hierarchy, the more likely they are to function as heads. In contrast, the lower they are in the syntactic hierarchy, the more likely they are to function as modifiers. The positions in which the various constituents in compounds enter the syntactic structure effect the interpretation.

#### 4 Conclusion

The argument structure, generation, and constraints of Chinese nominal compounds have been topics in the circle of Chinese linguistics, especially in the circle of generative grammar. This paper conducts research into Chinese nominal compounds with regard to the internal structure and the thematic relations between various constituents as well as the way of generation and constraints from the perspective of predicate implicitness. It is found that in the case of predicate implicitness, SV compounds can hardly be grammatical, whereas only VO compounds can be grammatical. Furthermore, agent-patient compounds cannot be grammatical, whereas only patient-agent compounds can be grammatical. If the preserved predicate is preceded by constituents, such as instrumental, temporal, and local, SV compounds cannot be grammatical, whereas only VO compounds can be grammatical. If the predicate does not occur, patient-agent compounds cannot be grammatical, whereas non-agent-patient compounds can be grammatical. The patient can function as the modifier of the agent only, but it cannot function as the modifier of the non-agentive constituent. The agent cannot function as the modifier of the patient, but the non-agentive constituent can function as the modifier of the modifier of the patient. The reason lies in the morphological structure of compounds. The function of every constituent is determined by the position of the structure. The positions in which it enters the syntactic structure have an effect on the interpretation. There is no light verb in both VO compounds and SV compounds. Therefore, the agent cannot occur. This gives a reasonable account of the grammaticality of such compounds as *shiyou gongren* 石油工人 and *zhanzheng gushi* 战争故事 and the ungrammaticality of such compounds as *gongren shiyou* 工人石油 and *gushi zhanzheng* 故事战争. As for *shiyou kaicai* 石油开采, *zhanzheng miaoxie* 战争描

写, and *jiaju zhizao* 家具制造, they are all modifier-head compounds instead of SV compounds. The morphological structure is quite consistent with its original syntactic structure. It follows that the morphological structure is a mirror image of the syntactic structure. As a consequence, predicate implicitness syntactically triggers the occurrence of an adjunction. Constituent adjunction must take place in accordance with the hierarchy and hence no cross-level adjunction is allowed. There is a corresponding relation with thematic relations, semantic relations, syntactic structure, and morphological structure. We argue that the word order of the various constituents in compounds is subject to the double constraints of the Prominence Principle and the Locality Principle. Prominence corresponds to headedness, and locality corresponds to modifiability. Obviously, there is certain asymmetry between locality and prominence. The prominence and locality of the various constituents in compounds are determined by their positions in the syntactic hierarchy.

## Abbreviations

$\phi$	null
A	adjective
AP	Adjective phrase
AUX	auxiliary
Cl	classifier
D	determiner
DP	determiner phrase
LF	Logical form
N	noun
N`	the intermediate projection of the noun
NP	noun
O	object
OV	object-verb
S	subject
Spec	specifier
SV	subject-verb
t	trace
V	verb
V`	the intermediate projection of the verb
VO	verb-object
VP	verb phrase

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