Non-Prototypical Patient Object Sentences in Chinese

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This article aims to look into non-prototypical patient object sentences in Chinese in the framework of generative grammar. Based on a full description of the syntactic phenomenon, the article attempts to explain how non-prototypical patient constituents occur as non-prototypical patient objects in dynamic object positions and what syntactic conditions they are subject to. The material object and the instrument object differ from each other due to their different degree of patientiveness and hierarchy of abstractness, which can be testified in the transformation of passive constructions, object extraction, the use of aspect markers, adverbs, and modal particles. As non-prototypical patient objects, however, both the material object and the instrument object must conform to the condition of V`-Reanalysis.

Key words: non-prototypical patient object, representation, null predicate, null argument, generation mechanism

1. Introduction

Non-prototypical patient object sentences refer to those whose objects are undertaken by material, instrument, location, motivation, and manner constituents, as illustrated in (1).

(1) a. *Zhangsan chi shitang*   (location constituent)
    Zhangsan eat canteen
    Zhangsan eats at the canteen.

   b. *Zhangsan jiao shui*   (material constituent)
    Zhangsan sprinkle water
    Zhangsan sprinkles water.

   c. *Zhangsan xie gangbi*   (instrument constituent)
    Zhangsan write pen
    Zhangsan writes with the pen.

   d. *Zhangsan chou jingfei*   (motivation constituent)
    Zhangsan worry funds
    Zhangsan is worrying about funds.

   e. *Zhangsan you ziyouyong*   (manner constituent)
    Zhangsan swim free-style
    Zhangsan swims in the free style.

Compared with prototypical patients, these constituents lack changeability, gradualness, passiveness, static characteristic, and dependence. This type of sentence pattern is identical to prototypical patient object sentences in terms of surface structure, but the non-prototypical patient object constituents in this type of sentence pattern are not assigned by the verb, which shows that the underlying structure of this type of sentence pattern is different from prototypical patient object sentences. Though the noun or noun phrases in the object position has been discussed a lot so far (Zhu 1982; Gao 1986; Yuan 1998, 2003; Ren 2000; Liu & Liu 2003; Feng 2005; Zhang 2004; Yang 2007a, 2007b, 2009), the generation mechanism of this type of sentence pattern has never been probed into. In view of this, we will carry out research into the generation mechanism of non-prototypical patient object sentences, attempting to predict the types of possible non-prototypical patient object sentences and testify the relevant theoretical models.

This paper is organized as follows. Section 2 provides a description of the syntactic features of non-prototypical patient object sentences. Section 3 proposes a theoretical framework for the derivation of non-prototypical patient object sentences. Section 4 discusses the differences between various types of non-prototypical patient object sentences. Section 5 discusses the licensing conditions on non-prototypical patient object sentences. Section 6 is a conclusion.

2. The Syntactic Features of Non-prototypical Patient Object Sentences

It is generally believed that only a transitive verb can be followed by an NP, whereas an intransitive verb cannot be followed by an NP unless the NP is preceded by a preposition. In a non-prototypical patient object sentence, the intransitive verb is followed by an NP, with no preposition preceding it. The NP, however, is not a prototypical object because it is not governed by the verb. Moreover, it preserves its syntactic function and semantic features as a complement. It is a semantic category that denotes the path, location, scope, and goal of the action instead of the theme or object of the action. It receives [+affected] feature via the syntactic structure and semantics of the verb. It can be regarded as a syntactic constituent that is affected by the verb's strong transitivity in the syntactic structure. Thus, if the patient argument occurs, it must remain in the complement position.

It is noteworthy that the NP occupies the object position, but it is not c-commanded by the verb, i.e. it is not the patient of the verb but a pseudo-object in that the verb has no power to assign Case. (cf. Ouhalla 2001; Hornstein et al 2005; Yang 2007b) The NP is not associated with the verb in meaning. It can answer questions beginning with "Where" instead of those beginning with "What". It denotes location, material, instrument, motivation, and manner. That is, we can ask a question "Where shall we eat" about "*chi shitang*", but we cannot ask a question "What shall we eat". Likewise, we can ask a question "Where shall we fly" and answer it with "*fei Beijing*" (lit. fly

Beijing, i.e. fly to Beijing or travel to Beijing by plane). In fact, *fei Beijing* does not report an event but express an idea or volition. Furthermore, the NP occupies the argument position, i.e. the empty position of the complement in the representation. It functions as the object in surface structure but as the complement or adverbial in deep structure. (Yang 2007a) Since the NP functions as the complement or adverbial in deep structure and the verb cannot assign accusative Case to it, the NP cannot move leftward or be used as a topic, nor can it occur in a sentence containing *ba*. For example, *shitang ta chile* (lit. The canteen he ate) and *ta ba shitang chile* (lit. he the canteen ate) are ungrammatical. The NP, which is bare, has [-definite, -specific] features. Hence the NP cannot occur in the subject position. Quantifiers and demonstratives cannot occur in front of the NP. For example, *guang yige meilide gongyuan* (lit. stroll a beautiful park) is ungrammatical. (Yang 2007b).

3. The Generation Framework of Non-prototypical Patient Object Sentences

Non-prototypical patient object sentences are similar to prototypical patient object sentences in terms of surface structure. In both of them the verb is followed by an NP. However, their underlying structure is different. In non-prototypical patient object sentences, material, instrument, location, motivation, and manner constituents are not in the adverbial or complement position but in the object position. And constructions containing these constituents are grammatical. It shows that this type of constituents is characteristic of patientiveness to some degree. As a grammatical construction,

the underlying structure of non-prototypical patient object sentences must satisfy both the requirement of the syntactic system and the requirement of the conceptual (semantic) system. The syntactic system requires that the representation be arranged in accordance with the X-bar, in which each head can have only one specifier (Spec) and one complement (Comp). The conceptual (semantic) system allows a verb to have various numbers of arguments. According to the specification of the conceptual system, each argument of the predicate must have a thematic role, which is undertaken by an argument, and a predicate can have various numbers of thematic roles. Since the NP is not directly assigned by the verb, but it occurs as an argument, we posit that the VP entails a secondary conceptual system, which is not realized syntactically, namely, it takes a null form. This conceptual system is triggered and established by the NP, in which the verb is undertaken by a default preposition. Since the conceptual system allows a verb to have various numbers of arguments, and the X-bar allows each head to have only one specifier and one complement, there must be an empty verb position in the underlying structure for the purpose of realization of symmetry between the syntactic system and the conceptual system, when an agent constituent occurs in a sentence. (cf. Cheng 1999:239-240; Yang 2007a, 2007b, 2009) In this secondary conceptual system, there are external arguments and internal arguments. The external arguments, undertaken by the sentence subject, take the form of a null argument for the purpose of avoiding syntactic redundancy. The internal argument,

undertaken by the NP, receives its thematic role directly from the predicate, for it is in close association with the predicate, and it does not need to be maximally projected. Therefore, in the secondary conceptual system, the occurrence of the arguments is unconditional and obligatory, though it is not phonetically realized. In the major conceptual system, since the NP is in relatively loose association with the V, its thematic role is assigned by the maximal projection of the VP instead of the V itself. The association between the NP and the V needs the medium of predication (i.e. the predication composed of the null argument, the null predicate and the NP in the secondary conceptual system), as a result of which its occurrence is conditional, that is, it must be licensed by the Principle of Full Interpretation. (cf. Halle & Keyser 1991; Chomsky 1992; Cheng 1999; Yang 2007a, 2007b, 2009)

According to Sportiche(1988), Kuroda(1988), and Larson(1988, 1990), the assignment of thematic roles is locally constrained. The predicate must and has to assign thematic roles to the arguments within its projection. Thus the argument can and must occur within the maximal projection of the predicate. The theme 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 constraints, the lexicon of the internal argument adopts the form as shown in (2).

(2) $[_{VP1}$ NP1 $[_{V'}$V1 (major predicate) $[_{VP2}$ NP2 (empty argument)$[_{V'}$V2 (empty predicate) NP3]]]]

As (2) 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. In the second level lexicon (corresponding to the secondary conceptual system), NP1 is a higher internal argument, whereas NP2 is a lower internal argument. In the first level lexicon (corresponding to the first conceptual system), NP1 is a higher external argument, whereas NP2 is a lower external argument as illustrated in (3).

(3) $[_{VP}$ NP1 $[_{V'}$V1 $[_{VP2}$ NP1 $[_{V'}$V2 NP2]]]]

a. *ta   chi   0[ta]   0[zai]   shitang*
    He   eat   0[he]   0[at]   canteen.
    He eats at the canteen.

b. *ta   pao   0[ta]   0[wei]   zhibiao*
    he   run   0[he]   0[for]   quota
    He runs about the quota.

c. *ta   zou   0[ta]   0[zai]   gangsi*
    he   walk   0[he]   0[at]   wire
    He walks on the wire.

d. *ta   shui   0[ta]   0[zai] yaodong*
    he   sleep   0[he]   0[in]   cave
    dwelling
    He sleeps in the cave dwelling.

e. *ta   xiao   0[ta]   0[yin]   ni*
    he   laugh   0[he]   0[for]   you
    He laughs at you.

There is a null argument and a null predicate in the representation of the external argument because there is asymmetry between the conceptual system and the syntactic system. The conceptual structure cannot correspond to the syntactic structure directly until the former has been conceptualized. First of all, the conceptual system of the VP in (3) is hierarchic. It has two levels. Accordingly, in terms of syntax, NP2 and NP3 are of dual property, and there is a null predicate. In this case, both the hierarchic requirement of the conceptual system and the requirement that in the syntactic system one head have one specifier and one complement can be satisfied. The verbs in (3) are not transitive verbs, and hence they cannot assign thematic roles. The thematic roles must be assigned by the VP. Since there are thematic roles in the conceptual system, the syntactic system must provide a null predicate so as to realize symmetry between the conceptual system and the syntactic system. In addition, since the external argument is not directly assigned a thematic role by the predicate, it must be excluded from the maximal projection of the predicate. In this case, to set a null predicate in the above structure and to assume that VP2 assigns NP2 a

thematic role by means of VP1 can avoid theoretical self-contradiction. In other words, in the structure containing external arguments, the arrangement of the null predicate is the sole option of language satisfying the requirement of the conceptual system and the syntactic system simultaneously. This is Null Predicate Hypothesis. (cf. Cheng 1999:244-245; Yang 2007a, 2007b, 2009)

As (3) shows, the null preposition in Chinese has two functions, i.e. it functions as a verb and a preposition. Thus it is preceded by a link verb to show the features of tense and aspect. In fact, it itself entails tense and aspect features. It follows that the prepositional phrase itself has the capability of functioning as the predicate.

The advantage of the Null Predicate Hypothesis is that it can avoid the Gordian knot: why the internal argument in the object position cannot move, i.e. in non-prototypical patient object sentences the object NP cannot move to the topic position or the subject position, and the verb cannot raise to the position of the head V1; in contrast, in prototypical patient object sentences, the object NP can move freely.

(4) a. $[_{VP}$ *ta*$[_{V'}$ 0 *chile*$_i$ $[_{VP2}$*fan*$[_{V'}$ t$_i$ $]]]]$
       he   eat-ASP rice

b.*$[_{VP}$ *ta*$[_{V'}$ 0 *chile*$_i$ $[_{VP2}$ *shitang* $[_{V'}$ t$_i$]]]]$
      he   eat-ASP restraurant

As (4a) shows, *ta chile fan* is derived from *ta fan chile* by moving the verb. According to (4b), *ta chile shitang* cannot be derived from *ta shitang chile* because *ta shitang chile* is ungrammatical, and *shitang* is not

the internal argument of the verb *chi*. It follows that non-prototypical patient object sentences and prototypical patient object sentences are similar in terms of their surface structure, but

they are different in terms of their underlying structure.

We argue that the Null Predicate Hypothesis is sound, for it can be further testified by Liu (2003). Prepositions such as *yu* in Chinese derive from transitive verbs by means of grammaticalization. On account of the gradualness of grammaticalization, some prepositions, which derive from verbs, still preserve some of their verbal features. (Liu 2003) In fact, the Null Predicate Hypothesis is based on prepositions having the verbal features.

Furthermore, the Null Predicate Hypothesis is better than the light verb analysis. Feng (2003a, 2005) argues that non-prototypical patient object constructions can be analyzed in terms of the light verb movement. The landing site of the verb movement in Chinese is the light verb *v*. The salient feature of *v* is to trigger syntactic movement. Its operation is shown as in (5).

(5)$[_{vP}$ Spec(agent)$[_{v'}$ *v* (DO) $[_{VP}$ (event) NP (object)$[_{V'(action)}$ V NP]]]]

As (5) shows, since the light verb DO is not phonetically realized, it requires the verb with the overt phonetic form to move upward to fill its position. Under this approach, *chi shitang* is interpreted as doing something associated with the canteen. However, what is doing something associated with the canteen? What is involved in this matter? Is it semantically identical with *chi shitang*? In effect, *shitang* (the canteen) is only the location for *chi* (eating), and hence it cannot be *chi* (eaten). The implications of *chi shitang* are as follows: a) do not cook at home; b) have to eat at the canteen because

nobody cooks at home, c) be single, etc. (Yang 2007b) If *chi shitang* could be interpreted as doing something associated with the canteen, *shui yaodong* (lit. sleep the cave dwelling, i.e. sleep in the cave dwelling) would mean doing something associated with the cave dwelling, *fei Beijing* (lit. fly to Beijing, i.e. fly to Beijing or travel to Beijing by plane) would mean doing something associated with Beijing, and *zou gangsi* (lit. walk wire, i.e. walk on the wire) would mean doing something associated with the wire. Such interpretations sound odd. Obviously there are some problems with the light verb analysis. First, it fails to provide an accurate description of the semantic structure of non-prototypical patient object constructions. Second, it fails to determine the specific implications of sentences of this type. Third, it fails to account for the relation between syntactic movement and semantic expression and interpretation. Fourth, there seems to be a circular argument. Feng (2005) argues that the occurrence of DO depends on the fact that the verb c-commanded by DO moves to the position DO and the verb movement depends on the occurrence of DO. It sounds strange. It can be inferred that the light verb DO does not occur unless the verb c-commanded by it moves. In this case, DO licenses itself. Furthermore, a covert constituent licenses another covert constituent, which is not in conformity with the syntactic constraint that covert constituents must be licensed by overt constituents. (Yang 2007b) In contrast, the Null Predicate Hypothesis we have proposed in this paper can provide an accurate description of the conceptual structure and syntactic-semantic relation. Thus the Null Predicate Hypothesis is better.

4. The Differences between Non-prototypical Patient Object Sentences

In this section we mainly discuss the derivation of material and instrument object sentences in Chinese.

4.1   Derivation of Material Object Sentences

According to Lin & Wang (1994), a material constituent functions as an object, with the prepositions *yong, na, you,* and the particle *ba* as its Case markers. The whole phrase functions as an adverbial. If there is no Case marker, the phrase functions as a subject or object, as shown in (6).

(6) a. *baba yong nongyao pen guoshu le*
father with pesticide spray fruit-tree ASP

b. *baba ba guoshu pen nongyao le*
father *BA* fruit-tree spray pesticide ASP

c. *guoshu bei baba pen nongyao le*
fruit-tree BEI father spray pesticide ASP

d. *guoshu baba pen nongyao le*
fruit-tree father spray pesticide ASP

e. ?*nongyao bei baba pen guoshu le*
pesticide BEI father spray-fruit tree ASP
Father sprayed the pesticide on the fruit tree.

According to (2), the underlying structure of the sentences in (6) should be as follows.

(7) a. [$_{VP}$*baba*[$_{V'}$*yong*[$_{VP}$*nongyao*[$_{V'}$*pen guoshu le*]]]]

b. [$_{VP}$*baba*[$_{V'}$*ba* [$_{VP}$*guoshu* [$_{V'}$*pen nongyao le*]]]]

c. [$_{VP}$*guoshu*[$_{V'}$*bei*[$_{VP}$*baba*[$_{V'}$*pen nongyao le*]]]]

d. [$_{VP}$*guoshu*[$_{V'}$ [$_{VP}$*baba*[$_{V'}$*pen nongyao le*]]]]

e. ?[$_{VP}$*nongyao*[$_{V'}$*bei*[$_{VP}$*baba*[$_{V'}$*pen guoshu le*]]]]

In (7a), the non-prototypical patient NP *nongyao* is introduced by the preposition *yong*. It merges with *yong* and functions as an adverbial. In (7b) and (7c), there is no Case marker in front of the non-prototypical patient NP *nongyao*, and it functions as an object. It is noteworthy that in (7b-d), the non-prototypical patient NP *nongyao* is situated in the NP3 position. In the second level conceptual system, it is an internal argument while in the first level conceptual system it is an external argument, for it is not governed by the verb *pen*. As (7b) and (7c) show, the adverbial and the object are interchangeable. Furthermore, (7b) and (7c) are derived from (7a), i.e. the non-prototypical patient NP *nongyao* moves from NP2 to NP3, and *guoshu* moves from NP3 to NP2. In this process, the semantic Case marker *yong* is deleted, and the prototypical patient marker *ba* is used to take its place to show that *guoshu* is a patient object. *Guoshu* moves from NP2 to

NP1 and the semantic Case marker is deleted to give rise to (7c). As for (7d), V1 is a null predicate, which indicates that NP3 cannot move to NP1. In other words, it predicts that (7e) is ungrammatical. In (7d), *guoshu*, as the patient object of V2, can move to the position NP1 while in (7e) *nongyao* in the position NP3 implicates a preposition, which constrains the movement of *nongyao*, for the preposition cannot be stranded. Whether the preposition occurs as *yong*, *ba*, or *bei*, the construction is ungrammatical. (7d) also predicts that (8) is ungrammatical, for *nongyao* in the position NP3, as a non-prototypical patient, cannot function as the object of the particle *ba*.

(8) ?[$_{VP}$ *baba*[$_{V'}$ *ba*[$_{VP}$ *nongyao*[$_{V'}$ *pen guoshu le*]]]]

A material constituent can occupy the position of the null argument and the position of the internal argument. When it occupies the position of the internal argument, the structure implicates a null argument and a null predicate, as shown in (9). The underlying structure of (9a) and (9b) is identical. NP2 and V2 in (9a) correspond to NP3 and V1 in (9b) respectively.

(9) a. *yong xiaomi zhu zhou*
   with millet cook
   cook porridge with millet

[$_{VP}$ [$_{V'}$ *yong* [$_{VP}$ *xiaomi*[$_{V'}$ *zhuzhou*]]]]

   b. *zhu xiaomi*
   cook millet cook with millet

[$_{VP}$ [$_{V'}$ *zhu*$_i$ [$_{VP}$ *xiaomi* [$_{V'}$ t$_i$]]]]

Since the verbs in material constituent object sentences are characteristic of concrete action, they have strong temporal features. As far as the temporal features are concerned, the material object is identical to the prototypical patient object. Thus the verb can be preceded and followed by tense and aspect markers.

(10) *mama zhengzai zhuzhe xiaomi ne*
   mother right-now cook-ASP millet
   MOD
   Mother is cooking millet right now.

[$_{VP}$ *mama*[$_{V'}$ *zhengzai zhuzhe*$_i$ [$_{VP}$ *xiaomi* [$_{V'}$ t$_i$ *ne*]]]]

(11) *qiangshang shuaguo baihui le*
   wall   daub-ASP lime ASP
   The wall has been whitewashed.

[$_{VP}$ [$_{V'}$ *qiangshang shuaguo*$_i$ [$_{VP}$ *baihui* [$_{V'}$ t$_i$ *le*]]]]

(12) *Zhangsan zhengzai wang gangbanshang maozhe dingzi ne*
   Zhangsan right-now to steel-plate rivet-ASP nail MOD
   Zhangsan is whitewashing the wall with lime right now.

[$_{VP}$ *Zhangsan*[$_{V'}$ *zhengzai*[$_{V'}$ *wanggangbangshang maozhe*$_i$ [$_{VP}$ *dingzi* [$_{V'}$ t$_i$ *ne*]]]]]

Zhe, *le*, and *guo* are aspect markers. They can adjoin to various kinds of predicates in accordance with their semantic features. In general, verbs to which all kinds of aspect markers are adjoined have strong temporal features. In (10) the aspect

marker *zhe* and the modal particle *ne* bind the verb *zhu* together. In (11) the aspect markers *guo* and *le* bind the verb *shua* together. And in (12) the temporal adverbial *zhengzai* and the modal particle *ne* bind the verb *mao*. Since the verbs in the sentences are bound by aspect markers, the sentences are grammatical. The modal particle *ne* in (12), however, is optional. It follows that the binding power of aspect markers are stronger than that of modal particles.

Second, the verb in material object sentences can be preceded by the words describing the detailed conditions of actions.

(13) *Zhangsan manyouyoude wangqiangshang shuazhe baihui*
    Zhangsan slowly   to wall daub-ASP lime
    Zhangsan is whitewashing the wall with lime slowly.

[$_{VP}$ *Zhangsan*[$_{V'}$ *mangyouyoude*[$_{V'}$ *wangqiangshang shuazhe*$_i$ [$_{VP}$ *baihui* [$_{V'}$ t$_i$]]]]]

The adverbial modifier *manyouyoude* and the verb *shua* do not merge because there is a prepositional phrase *wangqiangshang* between them, which functions as a blocking island[13]. If there is no prepositional phrase *wangqiangshang* functioning as a blocking island, the sentence is ungrammatical, as shown in (14).

(14)*Zhangsan manyouyoude shuazhe baihui*

However, sentences with instrument constituents functioning as objects do not have such syntactic features. Hence the sentences in (15) and (16) are ungrammatical.

(15)*Zhangsan yibiyibide xiezhe maobi*
    Zhangsan one-stroke-one-stroke-AUX write-ASP Chinese-brush
    Zhangsan is writing with Chinese brush carefully.

(16)*Zhangsan yishaoyishaode chizhe dawan*
    Zhangsan one-spoon-one-spoon-AUX eat-ASP big-bowl
    Zhangsan is eating with a big bowl.

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[13] We argue that this may be related to the thematic roles and their hierarchy. Prepositional phrases denote manner, path, goal, and location of actions and behavior. Hence they belong to the category of thematic roles, and they are arranged hierarchically. They are more closely related to the verb than the descriptive adverb, or rather, they are closer to the core of the verb than the descriptive adverb, which are in the outer ring of verbs. Hence in terms of syntactic linear order, a prepositional phrase is adjacent to the verb, and the descriptive adverb adjoins to VP, which is composed of a prepositional phrase and a verb. In terms of syntactic segmentation, the extraction of the prepositional phrase and the verb is prior to the extraction of the descriptive adverb and the verb. In this case, the prepositional phrase will become a blocking island between the descriptive adverb and the verb, and consequently the descriptive adverb and the verb will fail to merge. This syntactic operation is called Prepositional PhraseBlocking Effect.(Yang 2007b, 2009)

The reason why (15) and (16) are ungrammatical is that the verbs in the sentences denote abstract actions instead of concrete actions in particular situations. Yang (2007b, 2009) points out that there is a logical level between the non-prototypical patient NP and the verb, i.e. logical default. The NP denotes abstract concept or characteristics instead of individuality. Furthermore, the NP, together with the verb, denotes non-frequent or abstract actions or behavior instead of frequent or concrete actions or behavior. He summarizes the syntactic property of the NP as syntactic object property. The NP, as a syntactic object, is used to satisfy the requirement of the conceptual system and the requirement of the syntactic system so as to realize symmetry between them to give rise to grammatical sentences. Hence it differs from a semantic object, which is used to fill the semantic empty position. The syntactic object is governed by the syntactic rules while the semantic object is governed by the syntactic rules and the semantic rules. In terms of structure, the ungrammaticality of (15) and (16) is due to their underlying structure, i.e. the verbs in the two sentences are preceded by adverbial modifiers, which tend to merge with the verbs prior to other syntactic operations.

(17) *[$_{VP}$*Zhangsan*[$_{V'}$ *yibiyibide xiezhe*$_i$ [$_{VP}$*maobi* [$_{V'}$ t$_i$]]]]

(18)*[$_{VP}$*Zhangsan*[$_{V'}$ *yishaoyishaode chizhe*$_i$ [$_{VP}$*dawan* [$_{V'}$ t$_i$]]]]

The adverbial modifiers merge with the verbs, as a result of which the instrument constituents *maobi* and *dawan* move to the internal argument position. However, they are not directly governed by the verbs *xie* and *chi*. Thus the sentences are ungrammatical. On the other hand, such movement may result in preposition stranding, which gives rise to ungrammatical sentences. If we transform the above sentences into prototypical patient object sentences, the difference will be more distinct.

(19) *Zhangsan manyouyoude (yong baihui) shuazhe qiang*
Zhangsan slowly (with lime) daub-ASP wall

a. [$_{VP}$ *Zhangsan*[$_{V'}$ *manyouyoude yong*[$_{VP}$ *baihui*[$_{V'}$ *shuazhe qiang*]]]]

b. [$_{VP}$ *Zhangsan*[$_{V'}$ *manyouyoude* [$_{VP}$ [$_{V'}$ *shuazhe qiang*]]]]

(20) *Zhangsan yibiyide (yong maobi) xiezhe zi*
Zhangsan one-stroke-one-stroke (with Chinese-brush) write-ASP character

a. [$_{VP}$*Zhangsan*[$_{V'}$ *yibiyibide yong*[$_{VP}$ *maobi*[$_{V'}$ *xiezhe zi*]]]]

b. [$_{VP}$*Zhangsan*[$_{V'}$ *yibiyibide* [$_{VP}$ [$_{V'}$ *xiezhe zi*]]]]

(21) *Zhangsan yishaoyishaode (yongdawan) chizhe fan*
Zhangsan one-spoon-one-spoon (with big-bowl) eat-ASP rice

a. [$_{VP}$ *Zhangsan*[$_{V'}$ *yishaoyishaode yong*[$_{VP}$ *dawan*[$_{V'}$ *chizhe fan*]]]]

b. [$_{VP}$ *Zhangsan*[$_{V'}$ *yishaoyishaode* [$_{VP}$ [$_{V'}$ *chizhe fan*]]]]

In other words, if the adverbial modifier and the verb are separated from each other, as a result of which they cannot merge, the sentences are grammatical, because the prepositional phrase tends to merge with the verb to form a VP, which then merges with the adverbial modifier. This is PP Merger Priority Effect. Why prepositions have this effect is that the syntactic constituents denoted by prepositions are thematic roles while adverbial phrases are adjuncts. The higher they are in the thematic hierarchy, the higher their degree of being activated is. In other words, there is correspondence between the thematic hierarchy and the Merger Priority Effect. Is there any connection between the thematic hierarchy and the extractability? Does a high position in the thematic hierarchy implicate a high extractability of the subject? Yang (2007b, 2009) points out that the NP in prototypical patient object sentences has no thematic role, and it is not part of the argument structure of the predicate, but it occupies the argument position, which is the null complement position in the syntactic representation. The NP is an object in surface structure but a logical complement or an adverbial in underlying structure. Thus the V cannot assign it an accusative Case in surface structure. It can neither move leftward nor function as a topic. Similarly, it cannot occur in sentences containing the particle *ba*. Furthermore, it has features [-definite, -specific], or rather, it is indefinite and unspecific in surface structure, but in underlying structure it is definite and specific. Hence in surface structure it cannot be in the subject position. However, we argue that this conclusion is true of location, motivation, and manner objects instead

of material objects. In other words, material object sentences can be transformed into sentences containing the particles *ba* and *bei*, or rather, the material constituent can function as the subject of a sentence. It follows that the material constituent is similar to a prototypical patient object in terms of structural features while other non-prototypical patient objects have few features similar to the prototypical patient object. Why can only material object sentences contain *ba* and *bei*? We argue that this may be concerned with the hierarchy of abstractness of non-prototypical patient objects. See section 3.2 for a detailed discussion.

4.2 Derivation of Instrument Object Sentences

An instrument constituent cannot preserve its semantic role of instrument unless it is in the adverbial position. The instrument constituent in the object position is characteristic of patientiveness. It is adjacent to the agent. According to the merge principle of semantic roles in the syntactic structure, the topicalization or subjectivization of instrument constituents are relatively free. In contrast, their objectivization is much constrained.

(22) a. *Zhangsan yong shuibeng choushui*
Zhangsan with pump pump-water
Zhangsan pumps water.

b.*Zhangsan choushuibeng*
Zhangsan pump-pump

(23) a. *nongmin yong kazhe yun liangshi*
farmer with truck carry grain
The farmers carry grain with a truck.

b.*nongmin yun kazhe*
farmer carry truck

(22a) and (23a) are canonical patterns. Instrument constituents function as the objects of the prepositions. (22b) and (23b) are not canonical patterns. Instrument constituents function as the objects of the verbs, which gives rise to ungrammatical sentences. Semantically, this is due to the mismatch between the verbs and the instrument constituents. Syntactically, this is due to the underlying structure, as shown in (24).

(24) a. *$[_{VP}$ *Zhangsan* $[_{V'}$ *chou*$_i$ $[_{VP}$ *shuibeng*$[_{V'}$ t$_i]]]]$

b.*$[_{VP}$ *nongmin* $[_{V'}$ *yun*$_i$ $[_{VP}$ *kache* $[_{V'}$ t$_i]]]]$

In (24a) the verb *chou* cannot move to the position preceding the NP *shuibeng* though there is an empty predicate position. In (24b) the verb *yun* cannot move to the position preceding the NP *kache*. Similarly, instrument constituents cannot be in the subject position.

(25) a. * $[_{VP}[_{V'}$ $[_{VP}$ *kache* $[_{V'}$ *yunliangshi*]]]]$

b.* $[_{VP}$ *kache*$_i[_{V'}$ *yun* $[_{VP}$ t$_i$ $[_{V'}$ *liangshi*]]]]$

In (25a) the instrument constituent *kache* should be the object of the preposition *yong*. However, the preposition is null, and there is no reason for *kache* to occur. It follows that instrument constituents cannot occur without being licensed by prepositions. Furthermore, instrument constituents cannot occupy the position of the external argument, either, because they cannot be base-generated within the VP as illustrated in (25b).

As (22)-(25) show, instrument constituent objects functioning as the subject and the object is subject to strict syntactic constraints. What conditions must instrument constituents satisfy? We argue that besides the Principle of Full Interpretation instrument constituents functioning as the subject and the object must satisfy the condition of V`-Reanalysis.

(26) The Condition of V`-Reanalysis

Suppose α is a phrase [V`…], and the phrase has only one lexical category, α can be reanalyzed as [V…].

This condition allows any predicate with only one lexical category (NP, VP, AP, PP) to be interpreted as a X^o category, and hence it can operate like a simple category. The V` which has been reanalyzed, can move to the empty predicate position in the higher layer like a verb head. (cf. Larson 1988:348-349; Cheng 1999:249)

(27) a. *Zhangsan xizangle liangshui*
Zhangsan wash-dirty-ASP cold water
Zhangsan washed in cold water and it became dirty.

b. *Zhangsan xiehuaile gangbi*
Zhangsan write-break-ASP pen
Zhangsan wrote with the pen and it broke down.

The derivation of (27a) and (27b) is shown as (28a) and (28b).

(28) a. [$_{VP}$ *Zhangsan*[$_{V`}$ *xizangle*$_i$ [$_{VP}$ *liangshui*[$_{V`}$ t$_i$]]]]

b. [$_{VP}$ *Zhangsan*[$_{V`}$ *xiehuaile*$_i$ [$_{VP}$ *gangbi* [$_{V`}$ t$_i$]]]]

In (28a), the most embedded V` is composed of the verb *xi* and the AP *zangle*. This is in accordance with the condition of V`-Reanalysis. In this case, *xizangle* moves to the position of the predicate in a higher layer as a head. In (28b), the most embedded V` is composed of *xie* and *huaile*. Hence this is in accordance with the condition of V`-Reanalysis. The verb x*ie* and its complement *huaile* can be analyzed as a category. It moves to the V position in the higher layer to give rise to *Zhangsan xiehuaile gangbi*. It follows that V`-Reanalysis can also account for the generation of sentences containing the particles *ba* and *bei* and predict the grammaticality of such constructions. In other words, the generation of sentences containing the particles *ba* and *bei* must satisfy the condition of V`-Reanalysis.

Instrument object sentences cannot be preceded by adverbials describing specific conditions of actions and behavior, but they can have adverbials undertaken by frequency and negation adverbs.

(29) a. *Zhangsan yizhi ting erji, pa yingxiang bieren xiuxi*
Zhangsan always listen earphone fear disturb others rest
Zhangsan has been listening to music with the earphones so as not to disturb others.

b. *Zhangsan mei xie maobi, xie gangbi*
Zhangsan not write Chinese-brush write pen
Zhangsan did not write with Chinese brush but with pen.

c. *Zhangsan jingchang da diannao*
Zhangsan often play computer
Zhangsan often plays games on the computer.

The underlying structure of the above sentences is as follows.

(30) a. [$_{VP}$ *Zhangsan*[$_{V`}$ *yizhi ting*$_i$ [$_{VP}$ *erji* [$_{V`}$ t$_i$]]]]

b. [$_{VP}$ *Zhangsan*[$_{V`}$ *mei xie*$_i$ [$_{VP}$ *maobi*[$_{V`}$ t$_i$]]]]

c. [$_{VP}$ Zhangsan[$_{V`}$ *jingchang da*$_i$ [$_{VP}$ *diannao*[$_{V`}$ t$_i$]]]]]

In (30a) there are two null constituents, and they are licensed by the overt constituents, because the subsequent clause in (29) indicates that

Zhangsan has been listening to music or songs with the earphones. In (30b) the subsequent clause indicates that it is Chinese brush, not pen, that *Zhangsan* wrote with. There is a null predicate *yong* and a null argument *zi*, which are licensed by the overt constituents. (30c) is similar to (30a) and (30b).

As (29)-(30) show, instrument constituents functioning as objects are strictly constrained and much contextually dependent. If the temporal features of the verb are not strong, the use of aspect markers *zhe*, *le*, and *guo* depends much on context. According to Yang (2007b, 2009), non-prototypical patient object sentences denote non-frequent or abstract actions or behavior. Thus, this pattern must be in accordance with the Generalized Anchoring Principle proposed by Tang & Lee (2000), i.e. events refer to implicit speaking time and anchor. Both the verb and the non-prototypical patient NP must refer to the whole speaking background and have implicit information. They take some conventional knowledge as implicit antithesis. In other words, if a speaker uses the non-prototypical patient object sentence, we can infer that he intends to express some implication and highlight an implicit contrast, as shown in (29) and (30) as well as (31). As (31) shows, the speaker highlights the non-prototypical patient NP by means of the construction, i.e. since *dawan* has been used by *Zhangsan*, the speaker I cannot use it. However, this sentence is grammatical on condition that there must be a subsequent clause or context, as shown in (31b). If we compare (31a) with (31b), we may find the difference between them. In (31a) the object is a prototypical patient and the whole construction lays stress on

the aspect features implied by the verb, showing that the actions and behavior are concrete. In contrast, the object in (31b) is a non-prototypical patient, i.e. instrument constituent. The whole construction stresses the unconventional implication of the event. However, the covert null syntactic constituents cannot be licensed without context or subsequent clauses. It is true of (32a) and (32b).

(31) a. *Zhangsan chizhe fan ne*
Zhangsan eat-ASP rice MOD
Zhangsan is eating rice.

b. **Zhangsan chizhe dawan ne*
Zhangsan eat-ASP big-bowl MOD
Zhangsan is eating a big bowl.

(32) a. *Zhangsan chiguo fan jiu zou le*
Zhangsan eat-ASP rice as-soon-as walk ASP
Zhangsan left as soon as he finished his meal.

b. **Zhangsan chiguo dawan jiu zou le*
Zhangsan eat-ASP big bowl as-soon-as walk ASP
Zhangsan left as soon as he finished his big bowl.

(33) a. *Zhangsan chizhe dawan ne, zenme haijiao wo yong dawan cheng*
Zhangsan eat-ASP big-bowl MOD how still call me with big-bowl contain
Zhangsan is eating with a big bowl. Why should you tell me to have rice with it?

b.*Zhangsan chiguo dawan, mei chiguo xiaowan*
Zhangsan eat-ASP big-bowl not eat-ASP small-bowl
Zhangsan ate with a big bowl, but he has never eaten with a small bowl.

c.*Zhangsan chi dawan, Lisi chi xiaowan*
Zhangsan eat big-bowl Lisi eat small-bowl
Zhangsan eats with a big bowl and Lisi eats with a small bowl.

(33a) and (33b) are grammatical because there are subsequent clauses showing contrast and the covert syntactic constituents are hence licensed. As (33c) shows, the aspect marker has no influence on the grammaticality of the sentence. In other words, instrument constituent or all non-prototypical patient object sentences are grammatical on condition that there is contrastive context instead of aspect markers. Furthermore, it is the hierarchy of abstractness of actions and behavior that determines the grammaticality of non-prototypical patient object sentences. Since non-prototypical patient objects include material objects, instrument objects, motivation objects, location objects, and manner objects, and these subcategories differ from one another in terms of the hierarchy of abstractness of actions and behavior, their grammaticality and acceptability differ from one another when aspect markers occur in the sentences. In other words, the hierarchy of abstractness of non-

prototypical patient objects is related to aspect markers. For the sake of conciseness, we call adverbial modifiers, numeral classifiers, passive markers, and the particle *ba* syntactic markers. The relevance between the hierarchy of abstractness and the use of syntactic markers can be shown as (34).

(34) Relevance Pattern of the Hierarchy of Abstractness and the Use of Syntactic Markers

a. The Hierarchy of Abstractness
   motivation object>location object>instrument object>manner object>material object

b. The Tendency to Use Syntactic Markers
   [-aspect marker]   <<
   [+aspect marker]
     [-adverbial modifier]   <<
   [+adverbial modifier]
     [-numeral classifier]   <<
   [+numeral classifier]
     [-determiner]   <<
   [+determiner]
     [-passive marker]   <<
   [+passive marker]
     [-*ba*]   <<
   [+*ba*]

As (34) shows, the more leftward a constituent is, the more abstract it is, and vice versa. The more abstract a constituent is, the more constraints it receives, and vice versa. Hence aspect markers cannot occur in motivation and location object sentences. The use of aspect markers in instrument object sentences depends a lot on context, i.e. context determines the grammaticality

of the sentences. Aspect markers can be used in manner and material object sentences. In a word, there is counter-mapping between the hierarchy of abstractness and the use of aspect markers. If we make a comprehensive analysis of adverbial modifiers, numeral classifiers, passive markers, the particle *ba*, and the hierarchy of abstractness, we may find that there is correlation between them. In other words, the higher the hierarchy of abstractness of a non-prototypical patient constituent is, the more constraints it receives, and the less possible adverbial modifiers, numeral classifiers, passive markers, and *ba* are to be used, and vice versa.

According to (34), the material object, which lies on the right side of the hierarchy of abstractness, corresponds to [+aspect marker], [+adverbial modifier], [+numeral classifier], [+determiner], [+passive marker], and [+*ba*]. This shows that the material object receives the least constraint and hence satisfies the above conditions. In contrast, the instrument object is higher than the material object in terms of the hierarchy of abstractness, which implies that it receives the most syntactic constraints and hence it is the least possible to use syntactic markers. It follows that the non-prototypical patient NP cannot project as a DP, and it cannot be preceded by numeral classifiers. On the contrary, the prototypical patient NP is a necessary argument of the verb, and it can be preceded by complex modifiers. And hence the NP can project as a DP. (Yang 2007b, 2009)

(35) a. *[_{VP} *Zhangsan*[_{V'} [_{VP} [_{V'} *chile yige dawan*]]]]
Zhangsan   eat-ASP one big-bowl
Zhangsan has eaten a big bowl.

  b. [_{VP} *Zhangsan*[_{V'} *chile yiwanfan*]]
Zhangsan eat-ASP one-bowl-rice
Zhangsan has eaten a bowl of rice.

  c. [_{VP} [_{V'} *Zhemianqiang* [_{VP} [_{V'} *shuale yidadai baihui*]]]]
this wall daub one-big-bag lime
This wall has been painted with a big bag of lime.

As (35a) shows, *yige dawan* projects as a DP, which violates the rule that external arguments cannot project. Thus the sentence is ungrammatical. In contrast, (35b) and (35c) are grammatical. In (35b), the object, as a prototypical patient, receives the least syntactic constraints. Hence it can project as a DP. In (35c), the material object is in the lowest position in the hierarchy of abstractness, which satisfies the conditions on the use of tendency to use syntactic markers. Hence the NP can project as a DP.

As far instrument object sentences are concerned, they cannot contain the particle *ba* and passive markers, even if the verb is followed by aspect markers.

(36) a.*Zhangsan xiele maobi
      Zhangsan write-ASP Chinese-brush
      [_{VP} *Zhangsan*[_{V'} *xiele*_i [_{VP} *maobi* [_{V'} t_i]]]]

b.*_Zhangsan ba maobi xiele_
Zhangsan BA Chinese-brush
write-ASP
[$_{VP}$ _Zhangsan_[$_{V'}$ _ba_[$_{VP}$ _maobi_[$_{V'}$ _xiele_]]]]

(36a) is ungrammatical because the sentence contains the aspect marker _le_, which binds the verb _xie_. The verb phrase _xiele_ further binds the object _maobi_, which is c-commanded by the VP. As a consequence, the reference of _maobi_ is determined, and hence the NP projects as a DP. This violates the completeness conditions of non-prototypical patient object sentences. (Yang 2007b, 2009) In (36b) _maobi_ is not assigned by the verb, and hence it cannot move to the position NP. However, if the verb is followed by a result-denoting complement, both _ba_ and _le_ can occur in instrument object sentences. This seems to be in contradiction to our argumentation. In fact, it is not the case. _le_ is not a aspect marker. It merges with the verb or adjective to form a complement, denoting result or state. And this type of pattern must satisfy the condition of V`-Reanalysis.

(37) [$_{VP}$ _Zhangsan_[$_{V'}$ _xiehuaile_ $_i$[$_{VP}$ _maobi_[$_{V'}$ t_i]]]]

As (37) shows, the embedded V` is composed of _xie_ and _huaile_, which satisfies the condition of V`-Reanalysis. Hence it can be analyzed as a category. It moves to the main predicate position V to generate _Zhangsan xiehuaile maobi_. Furthermore, the grammaticality of instrument object sentences contain _ba_ on condition that base-generated sentences must be grammatical and can receive syntactic operations similar to prototypical patient object sentences. A non-prototypical patient object sentence has structural features similar to prototypical patient object sentences if _ba_ can be filled in to the null position V1. Similarly, if the sentence in (37) is expressed in passive voice, i.e. _maobi bei Zhangsan xiehuaile_, it is also grammatical. This proves that the condition of V`-Reanalysis can not only explain but also predict the grammaticality of non-prototypical patient object sentences containing _ba_ and passive markers.

5. The Licensing Conditions on Non-prototypical Patient Object Sentences

In this section we discuss the licensing conditions on non-prototypical patient object sentences. Since material constituents and instrument constituents are not prototypical patients of the verb, they are subject to more constraints when they occur in non-prototypical patient object sentences. As mentioned above, the grammaticality of non-prototypical patient object sentences is associated with modal verbs, aspect operators, and universal quantifiers. These operators can bind the free variables entailed by the NP. Yang (2007b, 2009) points out that one of the important properties of the NP as a syntactic object is to satisfy the grammaticality conditions of sentences, i.e. syntactic completeness condition. In other words, the NP is arranged to realize symmetry between the syntactical system and the conceptual system and to satisfy the syntactic conditions of the verb. In this case, non-prototypical patient object sentences represent a kind of behavior instead of a certain specific event or

action. Hence the NP cannot project as a DP. Syntactically, the NP cannot be preceded by demonstratives or determiners. Nor can modal verbs, auxiliary verbs, and universal quantifiers be used in non-prototypical patient object sentences. In other words, the NP cannot be bound when it occurs as a non-prototypical patient object. We will discuss the licensing conditions below.

5.1 Modal Verbs

Modal verbs denote the speaker's ability, responsibility, obligation, intension, and desire. Since they can occur in prototypical patient object sentences or bind the main predicate verb, they can be regarded as the major features of prototypical patient object sentences. Can they bind the main predicate verb in non-prototypical patient object sentences? Look at the examples below.

(38) a.*Zhangsan neng xie maobi*
　　　Zhangsan can write Chinese-brush
　　b.*Zhangsan hui xie maobi*
　　　Zhangsan can write Chinese-brush
　　c.*Zhangsan bixu xie maobi*
　　　Zhangsan must write Chinese-brush
　　d.*Zhangsan xiang xie maobi*
　　　Zhangsan would-like-to write Chinese-brush
　　e.*Zhangsan yao xie maobi*
　　　Zhangsan will write Chinese-brush

(39) a*mama neng zhu xiaomi*
　　　mother can cook millet
　　b.*mama hui zhu xiaomi*
　　　mother can cook millet
　　c.?*mama bixu zhu xiaomi*
　　　mother must cook millet

　　d.?*mama xiang zhu xiaomi*
　　　mother would-like-to cook millet
　　e.?*mama yao zhu xiaomi*[14]
　　　mother will cook millet

The sentences in (38) and (39) are not grammatical or acceptable because they contain modal verbs and volition verbs. In this case the operators are bound, and accordingly the free variables which the operators c-command are bound. The objects are bound by the verbs, and hence the free variables entailed by them are bound. The ungrammaticality (or unacceptability) of (38) and (39) shows that the grammaticality (or acceptability) conditions of non-prototypical patient object sentences are that the NP cannot project as a DP while the grammaticality (or unacceptability) conditions of non-prototypical patient object sentences are that the NP must project as a DP.

(40) a. *Zhangsan neng xiezi*
　　　Zhangsan can write-character
　　b. *Zhangsan hui xiezi*
　　　Zhangsan can write-character
　　c. *Zhangsan bixu xiezi*
　　　Zhangsan must write-character

---

[14] The sentences in (39) depend a lot on context. Compare:
(i) *mama　xiang / yao zhu xiaomi, yinwei ta yijing you henchangshijian mei chi xiaomi le* mother would-like-to/will cook millet because she already have long-time　not eat millet MOD
　Mother would like to cook millet because she hasn't eaten it for a long time.
(ii) *mama neng/hui zhu xiaomi, er baba bu neng/hui*
　　mother can　cook millet but father not can
　　Mother can　cook millet but Father cannot.

d. *Zhangsan xiang xiezi*
   Zhangsan would-like-to write-character

e. *Zhangsan yao xiezi*
   Zhangsan will write-character

(41) a. *mama neng zhufan*
   mother can cook-rice

b. *mama hui zhufan*
   mother can cook-rice

c. *mama bixu zhufan*
   mother must cook-rice

d. *mama xiang zhufan*
   mother would-like-to cook-rice

e. *mama yao zhufan*
   mother will cook-rice

The above examples show that modal verbs, as functional constituents, can occur overtly between the C (Complement) and aspect markers. They have IP operator features. Hence they can function as syntactic completeness constituents.

However, the modal particle *ne* cannot occur in non-prototypical patient object sentences.

(42) a.*Zhangsan neng xie maobi ne*
   Zhangsan can write Chinese-brush MOD

b.* *Zhangsan xiezhe maobi ne*
   Zhangsan write-ASP Chinese-brush MOD

c. ?*Zhangsan zhengzai xie maobi ne*
   Zhangsan right-now write Chinese-brush MOD

d. ?*Zhangsan zhengzai xiezhe maobi ne*
   Zhangsan right-now write-ASP Chinese-brush MOD

(43) a.*mama zhu xiaomi ne*
   mother cook millet MOD

b.*mama zhuzhe xiaomi ne*
   mother cook-ASP millet MOD

c. ?*mama zhengzai zhuzhe xiaomi ne*
   mother right-now cook-ASP millet MOD

d. ?*mama zhengzai zhuzhe xiaomi ne*
   mother right-now cook-ASP millet MOD

The modal particle *ne* is in a high position in syntactic hierarchy. It can bind event / state variables entailed by the verb and license the IP structure. And it can license the null head D by binding the nominal variables in the NP c-commanded by the IP. Since the null heads *maobi* in (42) and *xiaomi* in (43) are licensed, (42a-b) and (43a-b) are ungrammatical, and (42c-d) and (43c-d) are acceptable to some degree. In fact, the ungrammaticality of (42a-b) and (43a-b) are relevant to the hierarchy of abstractness. According to (34), the material object is the lowest in the hierarchy of abstractness, and hence it has syntactic features similar to prototypical patient objects. Thus the NP can project as a DP.

5.2 Aspect Markers

Aspect markers include auxiliaries *le*, *zhe*, and *guo*. In general, they cannot occur in non-prototypical patient object sentences.

(44) a.*Zhangsan xieguo maobi*
   Zhangsan write-ASP Chinese-brush

b.*Zhangsan xieguo maobi le*
   Zhangsan write-ASP Chinese-brush MOD

c.*_Zhangsan xiezhe maobi_
   Zhangsan write-ASP Chinese-brush

(45) a.*_mama zhuguo xiaomi_
   mother cook-ASP millet

b.*_mama zhu xiaomi le_
   mother cook millet MOD

c.*_mama zhuzhe xiaomi_
   mother cook-ASP millet

(46) a.*_Zhangsan xiele maobi le_
   Zhangsan write-ASP Chinese-brush MOD

b.*_mama zhule xiaomi le_
   mother cook-ASP millet MOD

The sentences in (44), (45) and (46) are all ungrammatical because the construction V-_le_ and the free variable in its object are bound. The head D of _maobi_ and _xiaomi_, as a syntactic object, is not null. On the contrary, they occur as overt DPs with specific reference. Hence they are not grammatical. _le_ at the end of a sentence is an operator at the IP level. It can bind the free variables it c-commands. The D of the bare N is licensed by _le_ at the end of the sentence and projects as a DP, which results in ungrammaticality of the sentence. It is noteworthy that V-_le_ and V-_guo_ differ from V…_le_ because they are not operators at the IP level, and hence they can affect only the V. Though they can bind the event / state variables in the V, they cannot bind the other variables outside their scope. On the contrary, _le_ at the end of the sentence is an operator at the IP level, and it can bind the variables within its scope. Since the object is within its scope, when the bare N functions as the object, the free variables in the object NP can be bound. The D of the bare N is licensed by _le_ and projects as a referential DP. As a result, the sentence is ungrammatical. (cf. Hu & Shi 2005) However, the adverb _tiantian_ can occur in non-prototypical patient object sentences.

(47) a. _Zhangsan tiantian chi dawan_
   Zhangsan every-day eat big-bowl
   Zhangsan eats with a big bowl every day.

b. _mama tiantian zhu xiaomi_
   mother every-day cook millet
   Mother cooks millet every day.

The sentences in (47) are grammatical because the temporal adverbial and the VP constitute an anchoring point for the events they represent, which provides conditions for the projection VP and restrains the NP from projecting as a DP. On the other hand, there is no operator to bind the free variables in the bare nouns. Hence the reference of the bare nouns _dawan_ and _xiaomi_ remain unspecific, and the relevant null D fails to be licensed. _dawan_ and _xiaomi_ have features [-specific] and [-definite]. Thus the sentences are grammatical.

5.3 Universal Quantifiers
   Universal quantifiers include determiners, such as _meige_, _suoyou_, _meiyige_, which modify the head noun, and adverbs, such as _quan_, _dou_, and _jie_, which modify the verb. Generally speaking, universal quantifiers cannot occur in non-prototypical patient object sentences.

(48) a.*meigeren dou chi dawan
        everybody all eat big-bowl
     b.*suoyouren dou chi dawan
        all-people all eat big-bowl

(49) a.*meigeren dou zhu xiaomi
        everybody all cook millet
     b.*suoyouren dou zhu xiaomi
        all-people all cook millet

The sentences in (48) and (49) are ungrammatical because universal quantifiers are operators which adjoin to the IP in the LF. Hence they can bind the free variables within their c-command scope.

In brief, the NP cannot project as a DP but as a PP (prepositional phrase) and the NP cannot be bound. In the LF the NP is equal to the PP. Logical operators such as adverbial modifiers, modal particles and aspect markers may make the events denoted by the verb concrete, which violates the requirement of concept (semantic) and syntax of non-prototypical patient object sentences. According to the Null Predicate Hypothesis, non-prototypical patient object sentences are generated to satisfy the requirement of correspondence between semantic and syntax. And this type of structure denotes abstract ideas instead of specific events. Similarly, since modal verbs, aspect markers, and universal quantifiers can bind the free variables contained by NPs, the concept of NPs becomes specific. This violates the requirement of syntax and semantics. Thus they cannot occur in non-prototypical patient object sentences.

6. Conclusion
Based on a full description of the data of non-prototypical patient objects, this paper, in the framework of generative grammar, discusses how non-prototypical patient constituents occur as non-patient objects in dynamic object positions and what syntactic conditions they are subject to. Since the material object and the instrument object differ from each other in terms of the degree of patientiveness and the hierarchy of abstractness, they differ from each other in terms of transformation of passive construction, object extraction, aspect markers, and state adverbs. There is correlation between the hierarchy of abstractness and aspect markers, adverbial modifiers, numeral classifiers, determiners, passive markers, and the particle *ba*. The relevance pattern can be summarized as follows: the higher a constituent's hierarchy of abstractness is, the more possible it is to be bound by logical operators, the less possible aspect markers, adverbial modifiers, numeral classifiers, determiners, passive markers and the particle *ba* are to occur, and the less possible the constituent is to function as a non-prototypical patient object. As non-prototypical patient objects, material and instrument objects must conform to the condition of V`-Reanalysis.

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