

In Barbara Lust, et al (eds.), *Syntactic Theory and first Language Acquisition: Crosslinguistic Perspectives--Volume 1: Phrase Structure*, Lawrence Erlbaum, New Jersey, pp. 15-35, 1994

## CHAPTER ONE

# More on Chinese Word Order and Parametric Theory

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### THE POSTVERBAL STRUCTURE CONSTRAINT

Word order variation is one area of parametric syntax that has been treated with most significant results. On the biological view of grammar, the observed facts of a given language are in part attributed to nature (i.e., Universal Grammar or UG) and in part to nurture (experience). In the typical cases the properties of word order and phrase structure are attributed to principles of X' theory and the parameters associated with them. X' theory provides that all phrases have a categorially endocentric structure, containing a head and possibly certain peripheral elements at all levels of expansion. The linear position of the head with respect to the peripheral elements is left open as a parameter whose value has to be fixed on the basis of experience, the primary linguistic data, for each language.

As is well known, Chinese presents some problems for the simple theory just outlined. The most interesting problem centers around a class of postverbal structures whose distribution complicates an otherwise straightforward description of Chinese word order and phrase structure within the standard X' theory. The essential facts of Chinese phrase structure may be summarized by the following X' schemata:

- (1)  $XP \rightarrow YP X'$
- (2)  $X' \rightarrow YP X'$
- (3)  $X' \rightarrow$  a.  $X^0 YP$  iff  $X=[+v]$   
b.  $YP X^0$  otherwise

That is, with the exception indicated in (3a), Chinese selects the head-final value for all its phrase structures. The exception occurs with the complement rule, when the head is verbal in nature, in which case the head-initial value is selected. This is illustrated by a full array of postverbal complements:

- (4) a. Zhangsan meiyou kanjian Lisi.  
Zhangsan not-have see Lisi  
'Zhangsan did not see Lisi.'
- b. Zhangsan zhu zai Meiguo.  
Zhangsan live at America  
'Zhangsan lives in the U.S.'
- c. Zhangsan zhidao Lisi bu chengshi.  
Zhangsan know Lisi not honest  
'Zhangsan knows that Lisi is not honest.'
- d. Zhangsan song-le Lisi yi-ben shu.  
Zhangsan give-Perf Lisi one-CL book  
'Zhangsan gave Lisi a book.'
- e. Zhangsan fang-le yi-ben shu zai zhuozi-shang.  
Zhangsan put-Perf one-CL book at table-top  
'Zhangsan put a book on the table.'
- f. Zhangsan gaosu wo Lisi bu chengshi.  
Zhangsan tell I Lisi not honest  
'Zhangsan told me that Lisi is not honest.'

The same exceptional expansion also accounts for the existence of prepositional phrases and the structure of clauses (IPs). That IP complementation is head-initial is already illustrated by (4a), with the perfective auxiliary followed by its VP complement. Two examples of PPs are given in (4b) and (4e). Prepositions in Chinese are historically derived from verbs and still retain their verbal features in varying degrees. Hence, prepositions are [+v] in Chinese.

The head-final specifier rule (1) is amply illustrated in (4), with a clause-initial subject in each example, and the head-final adjunct rule (2) is illustrated in (5):

- (5) Zhangsan zuotian zai jiali toutou-de da-le yi-ge dianhua.  
Zhangsan yesterday at home secretly do-Perf one-CL telephone  
'Zhangsan made a telephone call secretly at home yesterday.'

Nonverbal complementation follows the general head-final rule (3b). Thus the internal structures of all noun phrases are strictly head-final. The same rule accounts for the structure of CP, which may be headed by a final particle (as in (7)), or by *de*, which marks a relative clause and other prenominal modifiers.

- (6) yuyanxue de yanjiu.  
linguistics DE research  
'the study of linguistics'
- (7) neixie shu, ni dou kan-guo le ma?  
those book you all read-Exp Perf Q  
'Those books, have you read them all?'
- (8) ni zui xihuan de nei-ben shu mai-wan le.  
you most like DE that-CL book sell-out Perf  
'The book that you like most has been sold out.'

In brief, then, the structure of verbal complementation constitutes an exception to the otherwise general requirement that Chinese is head-final at every level of phrasal expansion. Another complication in this picture is that, besides a full array of postverbal complements, verbs can also be followed by an expression of frequency, duration, result, or manner (henceforth, an FDRM element).<sup>1</sup>

- (9) a. Zhangsan pao-le liang ci.  
Zhangsan run-Perf two time  
'Zhangsan ran twice.'
- b. Zhangsan pao-le liang tian.  
Zhangsan run-Perf two day  
'Zhangsan ran two hours.'
- c. Zhangsan pao-de hen lei.<sup>2</sup>  
Zhangsan run-RM very tired  
'Zhangsan ran and got tired.'
- d. Zhangsan pao-de hen kuai.  
Zhangsan run-RM very fast  
'Zhangsan runs fast.'

These postverbal elements, not being subcategorized for by the verb, are generally considered adjuncts; but unlike standard adjuncts these expressions must occur postverbally, thus complicating the adjunct rule. More interestingly, although a verb can be followed by a complement of the sort illustrated in (4) or by an adjunct of the sort in (9), it cannot be followed by both.

- (10) a. Zhangsan kan-le (\*shu) liang ci.  
Zhangsan read-Perf book two time  
'Zhangsan read (a book) twice.'

<sup>1</sup>Strictly speaking, the so-called frequency expression does not express frequency per given time period, but indicates the number of incidences of a described event. Also, what is termed a postverbal manner phrase is more appropriately a predicative stative expression.

<sup>2</sup>The *de* morpheme preceding a resultative or manner adverbial is glossed simply as RM, to be distinguished from the DE used in prenominal modification.

- b. Zhangsan kan-le (\*shu) liang-ge zhongtou.  
Zhangsan read-Perf book two-CL hour  
'Zhangsan read (a book) for two hours.'
- c. Zhangsan kan-de (\*shu) hen lei. also: ... kan (\*shu) de ...  
Zhangsan read-RM book very tired read book DE  
'Zhangsan read (a book) and got tired.'
- d. Zhangsan kan-de (\*shu) hen kuai. also: ... kan (\*shu) de ...  
Zhangsan read-RM book very fast  
'Zhangsan read (a book) very fast.'

An FDRM element is obviously not semantically incompatible with an object. In fact, an object can occur with the FDRM element as long as it does not occupy a separate postverbal position. Thus the sentences in (10) become well formed once the object is moved to a preverbal position:

- (11) a. shu, Zhangsan kan-le liang ci.  
book Zhangsan read-perf two time  
'The book, Zhangsan read twice.'
- b. Zhangsan shu kan-le liang ci.  
Zhangsan book read-Perf two time  
'The book, Zhangsan read twice.'
- c. Zhangsan ba shu kan-le liang ci.  
Zhangsan BA book read-perf two time  
'Zhangsan read the book twice.'
- d. shu bei Zhangsan kan-le liang ci.  
book by Zhangsan read-Perf two time  
'The book was read twice by Zhangsan.'

The same sentences are also well formed if the verb is reduplicated between the object and the FDRM expression, so that there is exactly one constituent after each verb:

- (12) a. Zhangsan kan shu kan-de hen lei.  
Zhangsan read book read-RM very tired  
'Zhangsan read some books and got tired.'
- b. Zhangsan kan shu kan-le liang-ge zhongtou.  
Zhangsan read book read-Perf two-CL hour  
'Zhangsan read for two hours.'

They are well formed as well if the F/D expression combines with the object NP to form a single constituent:

- (13) a. Zhangsan kan-le liang ci (de) shu.  
Zhangsan read-Perf two time DE book  
'Zhangsan read twice (lit. read twice of books).'

- b. Zhangsan kan-le liang-ge zhongtou (de) shu.  
Zhangsan read-Perf two-CL hour DE book  
'Zhangsan read for two hours (lit. read two hours of books).'

These facts led C.-T. J. Huang (1982) to propose the Postverbal Structure Constraint (PSC), a descriptive generalization stated in the form of a surface filter, which in effect allows a verb to be followed by its subcategorized complements or by an FDRM expression, but not by both.<sup>3</sup>

In summary, two special properties of Chinese phrase structure are: (a) the existence of a head-initial structure for [+v] categories at the complement level and for the FDRM adjuncts, and (b) the PSC. In other respects, Chinese behaves like a typical head-final language.

### RECENT PARAMETRIC ACCOUNTS

C.-T. J. Huang's (1982) account of these facts was stated in X'-theoretic terms. This account raises a number of important questions. In the first place, that verbal categories have a head-initial complement structure is given directly as an exception to the otherwise more general head-final pattern of the language. Although this does not pose a serious learnability problem (given that the samples of language that would trigger the relevant setting appear to be readily available in the primary linguistic data), it remains a question what makes [+v] categories special in this respect. Second, that the "inner adjuncts" (FDRM) appear postverbally requires another ad hoc setting. Because the difference between the inner adjuncts and the outer (preverbal) adjuncts is not in general deducible from the primary linguistic data, this cannot be considered the result of parameter setting by children. Most importantly, the PSC requires an explanation. Apparently this constraint does not hold in other languages, so it cannot be attributed to UG. Learnability considerations also exclude postulating this peculiar generalization as a parameter of UG. Therefore, to the extent that it is a valid descriptive generalization, the PSC must be derived from something more directly learnable.

An answer to these questions was proposed by Li (1985, 1990), who claimed that these peculiar facts of Chinese are derivable from a parametric account of both X' theory and Case theory. Along with Koopman (1984), Li suggested that, just as the directionality of the head in X' theory is subject to parametrization, so is the directionality of Case assignment. To account for the relevant Chinese facts, Li proposed that (a) Chinese is head-final except as required by Case theory, and (b) Case assignment is from left to right in Chinese.

<sup>3</sup>The relevant phenomenon had been noted in Chao (1968) and Li (1975). A similar constraint was proposed by S. Huang (1984), known as the \*V C1 C2 filter, which prohibits a verb from taking two complements. This filter incorrectly excludes those cases in which a verb is followed by two constituents, both of which are its complements, as in (4d-f).

Li's account provides a partial answer to the first question concerning the exceptional nature of [+v] categories. It is a standard assumption in GB theory that verbs and prepositions are possible Case assigners, but nouns are not. Thus objects of transitive verbs and prepositions must follow their heads in Chinese in order to receive Case. This explains the head-initial pattern of the transitive sentences in (4), and the existence of prepositions (rather than postpositions) in Chinese. The exceptional nature of [+v] categories is attributed to their ability to assign Case. (Recall that prepositions are [+v] in Chinese.) Li also attempted to answer the questions posed by the position of inner adjuncts and by the PSC. She assumed that F/D expressions are noun phrases that also need Case, and therefore they appear in postverbal position. Furthermore, assuming that each verb can assign Case to only one NP, a verb cannot be followed by both an object NP and an F/D expression, as we saw in (10a–b). Hence in these cases the PSC effects derive from the inability of a verb to assign Case to two NPs.

However, Li's account is incomplete and raises further conceptual and empirical questions. In the first place, Li's account predicts that only those phrases that need to receive Case from their structural Case assigner can appear after their heads. This means that those that do not need Case or do not receive Case from a given verb have no business in postverbal position and must occur preverbally. This prediction is incorrect because, as we saw, all verbal complements, regardless of their categorial status, appear postverbally, including PP and clausal complements to verbs and VP complements to auxiliaries. According to standard assumptions these latter categories either do not or cannot have Case, but they must follow their heads. To account for postverbal clausal complements Li is therefore forced to claim that all clauses need Case, but a new question arises as to how the root clause gets Case at all. To allow for postverbal PPs, it is proposed that in the V-P construction, a process of reanalysis has taken place, turning the V-P sequence into a transitive verb, so that the NP must appear postverbally to receive Case. But the more fundamental question is: What causes the PP to appear in postverbal position in the first place, to trigger the process of reanalysis?<sup>4</sup> To provide for the

<sup>4</sup>One might give a historical account for the postverbal placement of subcategorized PPs, arguing that earlier stages of Chinese were head-initial by default. Then a major word order change took place and Chinese acquired the head-final value as the default word order (cf. Li & Thompson, 1974, *inter alia*). Now all postverbal PPs must undergo reanalysis to remain in postverbal position. This explanation will not help, however. Although it is true that ancient Chinese was richer in postverbal structures than modern Chinese (allowing for postverbal adjuncts), nominal structures have remained strictly head-final through the historical stages. Thus, the problem still remains as to how one can adequately characterize the verbal versus nominal difference with respect to head directionality for a given historical stage of Chinese. That is, there was no historical stage of Chinese where one could say that Chinese was head-initial by default.

postverbal placement of inner adjuncts, it is necessary to stipulate that intransitive verbs as well as transitive verbs are Case assigners. This is necessary because F/D expressions occur quite commonly after intransitive verbs: *Zhangsan ku-le san tian* 'Zhangsan cried for three days'. This accounts for the nominal F/D expressions but raises the question why outer adjuncts like *jintian* 'today' (which also appear in bare-NP form, like the F/D expressions) cannot be Case-marked in postverbal position: *ta jintian lai-le* 'he came today' versus \**ta lai-le jintian*. The point is not that some additional assumptions cannot be made that will answer some or all of these questions. The more fundamental question is why it is precisely in this language (but not, say, in English) that clauses require Case, postverbal prepositions are subject to reanalysis, and intransitives can assign Case just as do transitives. Furthermore, Li resorts to a functional-pragmatic explanation for the postverbal placement of resultative and manner (R/M) expressions and offers no account of the effects of the PSC as they are observed with R/M expressions (see (10c–d)). Finally, although the Case-theoretic proposal rules out (10a–b) because one of the postverbal NPs does not have Case, the following grammatical sentences, each with a postverbal object and an F/D expression, are also incorrectly ruled out:

- (14) a. *ta da-le Zhangsan liang ci.*  
 he hit-Perf Zhangsan two time  
 'He hit Zhangsan twice.'  
 b. *wo chengzan-le ta liang nian.*  
 I praise-Perf he two year  
 'I praised him for two years.'  
 c. *wo piping-le ta san ci/san-ge zhongtou.*  
 I criticize-Perf he 3 time/3-CL hour  
 'I criticized him three times/hours.'

Note that these sentences also present problems for the PSC itself. These sentences differ from (10a–b) in the referential nature of their postverbal objects. In (10a–b) the postverbal object is a bare NP with no referential function. The bare NP appears to complete the meaning of the verb, so the V-O combination *kan shu*, literally 'read books', is more appropriately interpreted as denoting an activity of reading, but not the reading of a specific book. In the cases in (14), the postverbal object must be definite or at least referential. In other words, the PSC does not apply when the verb is followed by a referential object and an F/D expression.

Li's account also fails to admit sentences like the following, with a postverbal object and a purposive or a continuative clause predicated on the object.

- (15) Zhangsan mai-le yi-ben shu gei wo kan.  
Zhangsan buy-Perf one-CL book for me read  
'Zhangsan bought a book for me to read.'
- (16) a. Zhangsan mai-le yi-ben shu hen youqu.  
Zhangsan buy-Perf one-CL book very interesting  
'Zhangsan bought a book, and the book is very interesting.'
- b. Zhangsan jiao-guo yi-ge xuesheng hen congming.  
Zhangsan teach-EXP one-CL student very clever  
'Zhangsan taught a student (and the student is clever).'
- c. zutian zher fasheng-le yi-jian chehuo zhen kepa.  
yesterday here happen-Perf one-CL accident really horrible  
'A traffic accident happened (and it was awful).'

Another parametric account of Chinese word order was offered by Travis (1984) in theta-theoretic terms. Travis claimed that the correct generalization that distinguishes the postverbal structures and preverbal structures has to do with the presence and absence of (direct) theta role assignment. Subcategorized complements are directly theta-marked by the verb, whereas subjects and adjuncts are not. Travis therefore proposed that the default word order of Chinese is head-final, except as required by theta theory, and that theta role assignment is from left to right. (Case assignment is, redundantly, also rightward.)

Travis's theory accounts for the postverbal complements in (4) quite nicely, because these complements are indeed those that are theta-marked whether or not, according to standard assumptions, they need Case. The same theory also predicts correctly that clause-final particles and relative clause markers follow their complements, assuming that the IPs do not receive theta roles from such functional categories. In the case of IP structures, the auxiliary-VP order is predicted if one assumes that VP receives a theta role from the auxiliary, but not if  $I^0$  is assumed in general not to be a theta-assigner. Travis's theory does not account for the structure of NPs, however, where even a complement has to precede the head, as indicated in (6), in which the complement receives its theta role from the head noun. The theory also incorrectly predicts the placement of inner (FDRM) adjuncts, because these expressions do not have theta roles and by her theory should occur in preverbal position. Consequently, the theory also offers no account of the PSC.

Thus, in spite of their initial attractiveness, neither Koopman and Li's Case-theoretic account nor Travis's theta-theoretic account offers an adequate explanation of the word order facts presented so far. The questions still remain (a) what makes [+v] categories special at the level of the complement rule; (b) why certain adjuncts can appear postverbally, whereas

others cannot; (c) why the PSC effects occur; and (d) why the exceptions to the PSC occur, as indicated in (14)–(16).

### EXPLAINING THE PSC

Because the exceptional nature of the verbal complement rule in (3a) cannot be derived from a parameter of either Case or theta theory, I assume that it directly reflects a parameter of X' theory itself. That is, at the level of the complement rule, [+v] categories pick a different value from non-verbal categories. This lack of cross-categorial generalization does not seem to pose a problem for the child acquiring the language, because the input needed to trigger the setting is apparently available in the primary linguistic data.<sup>5</sup>

Consider now the postverbal placement of the FDRM expressions. Because these expressions are not strictly subcategorized for by any verb, it has been generally assumed (e.g., C.-T. J. Huang, 1982; Mei, 1978) that they should be represented as inner adjuncts or outer complements occurring in a position higher than that of subcategorized complements. However, there is also good reason to treat them as the innermost participants in the compositional structure of a sentence. McConnell-Ginet (1982) argued that certain adverbs, specifically manner adverbs of the kind we have been considering, should be distinguished from others. These adverbs are "ad-verbs" in that they have only the verb in their scope, whereas other adverbs are "ad-VPs" because they have scope over VPs. Larson (1988) also argued that certain adverbial expressions, although they do not exhibit the properties of true arguments (referentiality, possession of theta roles, etc.), may nevertheless enter into semantic composition before prominent arguments like subjects or objects. This sort of viewpoint has also long been adopted in Montague grammar (cf., e.g., Bach, 1979). In C.-T. J. Huang (1992a), it was shown that resultative and manner expressions are best treated as parts of complex predicates. Each is a secondary predicate that combines with the main verb or primary predicate to form a complex

<sup>5</sup>On the basis of evidence from the position of specifiers and adjuncts the child should be able to pick the head-final value as the default. The existence of SVO sentences, prepositional phrases, and aux-VP order will in turn lead the child to pick the head-initial value for [+v] categories at the complement level. This assumption does not necessarily predict that there is a period during which a child will incorrectly use the SOV or postpositional order. In fact, Lust and Chien (1984) showed that, very early on, children already show their mastery of VO order. This can be attributed simply to the fact that positive evidence for the VO, aux-VP, and P-NP order is available (in abundance) right from the beginning.

predicate.<sup>6</sup> The same analysis may apply to frequency and duration expressions.

Because the FDRM secondary predicates must combine first with the main verbs to form complex predicates, the postverbal placement of FDRM expressions simply follows from the head-initial rule (3a). Now, suppose we also make the desirable assumption that all branching structures are binary (cf. Kayne, 1984, for arguments). Then it follows that a verb cannot be followed by both a subcategorized complement and an FDRM expression, as illustrated in (10). An object co-occurring with an FDRM expression must surface in a preverbal position, as illustrated in (11). Or the verb must be reduplicated, as in (12), so that one instance of the verb is followed by the object and the other is followed by an FDRM element. The PSC does not exist as a particularly exotic condition on Chinese phrase structure but is simply a statement of effects of the head-initial rule (3a) and the binary branching hypothesis.

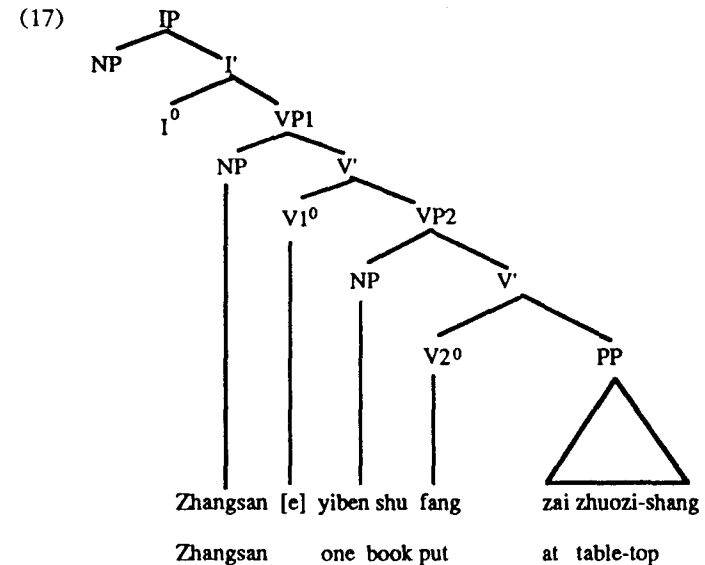
This explanation of the PSC is still incomplete as it stands, however, because it also predicts that the verb cannot be followed by two subcategorized complements. Yet, as we saw in (4d-f), the complement structures V NP NP, V NP PP, and V NP CP are all acceptable. Here I follow Larson (1988) and assume that each such surface form is derived from a complex VP structure and a process of V movement.<sup>7</sup> The D-structure of (4e), for example, is schematized as follows:

<sup>6</sup>Another reason for treating the resultative or manner expression as the innermost participant of the verb is its obligatory occurrence. It is true that a resultative or manner expression is not required by a verb like *pao* 'run' or *kan* 'read'. However, in sentences like (9c-d), repeated here as (ia-b) where the particle *de* is attached to the verb, the R/M expression is obligatory:

- (i) a. Zhangsan pao-de hen lei.  
Zhangsan run-DE very tired  
'Zhangsan ran and got tired.'  
b. Zhangsan pao-de hen kuai.  
Zhangsan run-DE very fast  
'Zhangsan runs fast.'

Utterances like *Zhangsan pao-de* or *Zhangsan kan-de* are completely unacceptable. *De*, which is historically derived from the verb *de* 'to obtain, reach', is often analyzed as a complementizer introducing the resultative or manner expression. Given clear phonological evidence, it has also been assumed that the complementizer obligatorily cliticizes to the preceding verb (e.g., C.-T. J. Huang, 1982). There is a simpler treatment of the particle, however, first suggested by Zhu (1982), according to which *de* is a suffix of an action verb. (An alternative is to treat *de* as the second member of a V-V compound, as suggested in Y. Li, 1990.) Suppose now that the suffixation of *de* to V, or its compounding with V, results in a V with the selectional requirement of [+result] or [+state], so that the new verb means "V and obtain the result of ..." or "V and reach the state of being ...," respectively. This directly accounts for the adjacency of V and *de* without an ad hoc rule of cliticization. Furthermore, it automatically explains the obligatory occurrence of a resultative or predicative complement after *V-de*.

<sup>7</sup>See also Tang (1990) for a similar treatment of this and related facts.



The arrangement of items in the structure follows from a version of the Thematic Hierarchy (cf. Carrier-Duncan, 1985; Jackendoff, 1972; Larson, 1988; among others) and a principle of argument projection that preserves the hierarchy. Following Larson, the arguments of a verb form a hierarchy of relative prominence of the form {Agent > Experiencer > ... > Theme > ... > Obliques}. Location phrases, for example, belong to the Obliques category and rank lower than a Theme, which in turn ranks lower than an Agent in the Thematic Hierarchy. This ranking in argument structure is directly preserved in D-structure. Thus, in the D-structure representation the locative PP occurs as the complement of the embedded VP, the theme NP as the SPEC of that VP, and the Agent as the SPEC of the higher "VP shell" headed by the empty V1. The surface verb *fang* 'put' originates in V2 in the lower VP and raises into the position of V1<sup>0</sup>. The surface word order of (4e) is derived after verb movement, with the verb followed by both the theme NP and the locative PP. This process of verb movement may be viewed as an instance of verb incorporation of the kind discussed in Baker (1988), or of the predicate raising of McCawley (1968). The empty head of the VP shell may be considered a light verb or an eventuality predicate (DO, CAUSE, etc.), so the surface verb *fang* 'put' is treated as the result of semantic composition following adjunction of V2 to V1.

Given the Larsonian VP shell and verb movement, then, a complement structure of the form V NP XP is admitted as long as it can be analyzed as V NP <sub>*t<sub>v</sub>*</sub> XP, where *t<sub>v</sub>* is the trace of V and XP is lower on the thematic

hierarchy than NP. A question arises at this point, however, concerning the PSC itself: Why can't an FDRM expression co-occur with a postverbal object in the form V NP *to* FDRM, in a similar Larsonian structure? I have assumed that the FDRM expressions belong to the Obliques category by virtue of the fact that they are not associated with prominent theta roles and are used as secondary predicates.<sup>8</sup> They therefore originate as the complement of the lower VP, but that still leaves the SPEC of the lower VP available for the object. Why are the sentences in (10) ungrammatical with the object *shu* present, but grammatical once the object is deleted?

My answer is that in these sentences the object cannot occupy the [SPEC, VP] position because it is completely nonreferential and is used as part of a complex predicate but not as a true argument. To see this, consider a sentence like (18).

- (18) Zhangsan kan-le shu le.  
Zhangsan read-Perf book Asp  
a. 'Zhangsan read a/the/some book(s).'  
b. 'Zhangsan read (i.e., he was engaged in some activity of book reading).'

As indicated, the sentence is ambiguous between a referential reading and an activity reading. In a stative context like the one in (19), only the activity reading is available:

- (19) ta zai kan shu.  
he at read book  
'He is reading.'

Although the verb is followed by the object *shu* in these sentences, under the activity reading the V-O combination is more appropriately translated by the intransitive *read* in English. The object in this case serves to complete the meaning of a predicate and corresponds to part of a complex predicate denoting the activity of book reading, rather than functioning as an argument of the transitive predicate *read*. The status of *shu*, in other words, is more like that of *advantage* in the idiom *take advantage of*, which does not have the full status of an argument. Like the FDRM expressions, it must also be the first to enter into semantic composition with the verb. The PSC effects illustrated in (10) therefore fall out, because in these sentences an object and an FDRM expression are competing to be the first to combine with the verb under the

<sup>8</sup>Other adverbials, such as temporal phrases, (outer) locatives, and preverbal manner adverbs, are not secondary predicates and must occur preverbally as true adjuncts. See Tang (1990) for this point, and for some discussion of Larson's view on these matters.

head-initial complement rule, but there is only one such "first" position per sentence. On the other hand, the sentences become grammatical if the object is used referentially as a true argument and appears preverbally in a position higher than V'. This has been shown in (11), repeated here:

- (11) a. shu, Zhangsan kan-le liang ci.  
book Zhangsan read-perf two time  
'The book, Zhangsan read twice.'  
b. Zhangsan shu kan-le liang ci.  
Zhangsan book read-Perf two time  
'The book, Zhangsan read twice.'  
c. Zhangsan ba shu kan-le liang ci.  
Zhangsan BA book read-perf two time  
'Zhangsan read the book twice.'  
d. shu bei Zhangsan kan-le liang ci.  
book by Zhangsan read-Perf two time  
'The book was read twice by Zhangsan.'

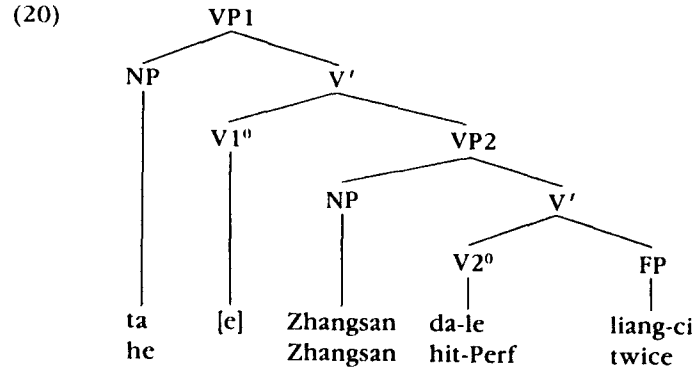
In these sentences the object *shu* 'book' has a definite reference. As a true referential argument, it does not need to occur in the innermost complement position, allowing an FDRM expression to take the postverbal position.<sup>9</sup>

<sup>9</sup>Actually, in addition to the referential reading, (10a-b) (but not 10c-d) also have an activity reading, meaning "As for book reading, Zhangsan did twice." This reading arises, not because the nonargument *shu* can be topicalized, but because a gerundive NP containing *shu* and a trace has been preposed. In particular, I assume that action sentences in Chinese may have an underlying structure with an empty light verb taking a gerundive phrase as its complement. This accounts for a number of syntax-semantics mismatches long observed in Chinese that heretofore have received only ad hoc explanations. This view is presented and defended in detail in C.-T. J. Huang (1992b) and C.-T. J. Huang (1993), where it is also shown that this analysis provides a syntactic root for the event place in the influential Davidsonian treatment of action sentences. The reader is invited to see these for details, but for our present purposes, I simply point out that a sentence like (i) is assumed to have the underlying structure (ii):

- (i) pianyi, wo bu zhan.  
advantage I not take  
'Take advantage (of others), I don't.'  
(Lit. Advantage, I don't take.)  
(ii) wo bu [e] [gerund] zhan pianyi.  
I not take advantage

That is, the VP *zhan pianyi* 'take advantage (of someone)' is embedded as a gerund under the empty light verb [e] (with the meaning of DO). Verb movement occurs and moves *zhan* to the light verb position, leaving a trace in the gerund. Topicalization of the gerund phrase will then give rise to the surface string in (i). That is, (i) involves the topicalization not of the nonreferential NP *pianyi* (because topics must be referential), but of the action-denoting gerund *taking advantage (of others)*, which is itself a referring expression (referring to the action). That (i) is a case of VP topicalization is also confirmed by the fact that the sentence is much less natural if the sentence is not given in the negative form:

Our theory allows an object to occur in the SPEC of the lower VP as long as the object is a true argument capable of referentiality. An example with such a structure is (20):



After verb movement, the verb is followed by both the SPEC of VP2 and the frequency phrase, as in (21):

- (21) ta da-le Zhangsan liang ci.  
 he hit-Perf Zhangsan two time  
 'He hit Zhangsan twice.'

Note that this is one of the examples cited in (14) as problematic for both the PSC and Li's Case-theoretic account. The other sentences in (14) are repeated here:

- (22) wo chengzan-le ta liang nian.  
 I praise-Perf he two year  
 'I praised him for two years.'

- (iii) ??pianyi, wo zhan  
 advantage I take

It is well known that VP preposing, in languages that allow it, requires a rather heavy context of focus. NP topicalization, on the other hand, is not subject to such a requirement, so sentences (iv) and (v) are both perfectly natural:

- (iv) na-ben shu, wo kan-guo le.  
 that-CL book I read-Exp Perf  
 'That book, I have read before.'  
 (v) na-ben shu, wo mei kan-guo.  
 that-CL book I not read-Exp  
 'That book, I haven't read before.'

- (23) wo piping-le ta san ci/san-ge zhongtou.  
 I criticize-Perf he 3 time/3-CL hour  
 'I criticized him three times/hours.'

The crucial difference between these grammatical sentences and the ungrammatical ones in (10) lies in the referentiality of the postverbal object NP. This observation was made by Li and Thompson (1981), though they did not provide an explanation for it. In our account, the difference follows from a general theory of phrase structure, verb movement, argumenthood, and the Thematic Hierarchy. More examples of the referentiality effects are given in (24):

- (24) a. wo kanjian-le ta liang ci. 'I saw him twice.'  
 b. wo kanjian-le Zhangsan liang ci. 'I saw Zhangsan twice.'  
 c. who kanjian-le nei-ge ren liang ci. 'I saw that person twice.'  
 d. ?wo kanjian-le yi-ge ren liang ci. 'I saw a person twice.'  
 e. ?wo kan-le nei-ben shu liang ci. 'I read that book twice.'  
 f. ?wo kan-le yi-ben shu liang ci. 'I read a book twice.'  
 g. \*wo kanjian-le ren liang ci. 'I saw people twice.'  
 h. \*wo kan-le shu liang ci. 'I read books twice.'

That the relative referentiality of an object noun phrase corresponds to its relative prominence in the argument structure and syntactic structure of a sentence has also been observed in other languages. For example, in Hungarian, a sentence with a nonreferential object displays an SOV order, but the neutral order for a sentence with a referential object is SVO.

- (25) a. a fiu levelet ir  
 the boy letter-ACC writes (SOV)  
 'The boy is writing a letter.'  
 (More specifically: The boy is busy letter-writing.)  
 b. a fiu ir egy levelet.  
 'The boy is writing a [specific] letter.' (SVO)  
 c. a fiu irja a levelet  
 the boy writes-Agr, the letter-ACC  
 'The boy is writing the letter.' (SVO)

Following Maracz (1989) and others, we may assume that the underlying word order in Hungarian is SOV. The SVO order arises, however, when the verb raises leftward into a functional category. More specifically, assume that lexical categories like VP are head-final, whereas the functional categories I<sup>0</sup> and C<sup>0</sup> precede the VP, as in English. A referential object occurs



as the SPEC of VP, to the left of the verb. The verb raises to the left, perhaps to assign Case to the object, and the SVO order results. On the other hand, a nonreferential object occurs as a sister to V and forms a complex predicate with the latter, denoting an activity. In such a position the quasi-argument object is directly Case-marked by the verb under local government, verb movement does not apply, and SOV order is preserved.

A similar case seems to obtain in Hindi. Mahajan (1990) observed that in a Hindi sentence with a definite object NP, the verb agrees with the object, whereas in a sentence with an indefinite or nonreferential object, the verb agrees with the subject:

- (26) a. raam-ne kitab paRhi  
 raam-erg(m) book read-perf-f-sg  
 'Ram read the book.'  
 b. raam ek kitab paRhega  
 raam-(m) a book read-fut-m-sg  
 'Ram will read a book.'

Mahajan took this to indicate that a definite object occurs in the SPEC position of an object-Agr phrase, but that an indefinite or nonreferential object must occur within VP as a sister of V. The agreement pattern thus follows, given that agreement occurs only with an NP in the SPEC position of an AGR category.<sup>10</sup>

The theory proposed so far accounts equally well for the other problems posed by purposives and by sentences with postverbal continuative clauses predicated on the object, as illustrated in (15)–(16). In each case I assume that the purposive or continuative phrase XP is a secondary predicate forming a complex predicate V' with the main V<sup>0</sup>, to the exclusion of the object NP, which as a true argument occurs in SPEC of VP. The correct V NP XP order results after the verb raises; so the structures of (15) and (16a), for example, are as follows:

- (27) Zhangsan mai-le, [<sub>VP</sub> yi-ben shu [<sub>V</sub> t<sub>i</sub> gei wo kan]].  
 Zhangsan buy-Perf one-CL book for me read  
 'Zhangsan bought a book for me to read.'  
 (28) Zhangsan mai-le, [<sub>VP</sub> yi-ben shu [<sub>V</sub> t<sub>i</sub> hen youqu]].  
 Zhangsan buy-Perf one-CL book very interesting  
 'Zhangsan bought a book, and the book is very interesting.'

<sup>10</sup>The distinction Mahajan draws, however, is that definites, on the one hand, and indefinites (including specifics and nonreferential elements), on the other, whereas the relevant distinction in Hungarian is between referential and nonreferential terms. In Chinese, the distinction is primarily between referential and nonreferential objects, though there is also a subtle difference between definites and specifics, as shown in (24d–f).

The same analysis also accounts for sentences like (29), as pointed out in Tang (1992) with the structure given in (30):

- (29) ta mai-le bi san zhi.  
 he buy-Perf pen three-CL  
 'He bought three pens.'  
 (30) ta mai-le, [<sub>VP</sub> bi [<sub>V</sub> t<sub>i</sub> san zhi]].  
 he buy-Perf pen three-CL

In addition to the explanation it provides for the V NP XP order of those postverbal structures that do not exhibit PSC effects, my analysis receives important support from the following two facts. On the one hand, the NP-XP sequence in these structures behaves like a constituent under the standard test of coordination:

- (31) wo ma-le Zhangsan liang-ci, Lisi san-ci.  
 I scold-Perf Zhangsan two-time Lisi three-time  
 'I scolded Zhangsan twice and Lisi three times.'  
 (32) Zhangsan mai-le yi-ben shu gei wo kan,  
 Zhangsan buy-Perf one-CL book for me read  
 liang-zhi bi gei ta xie.  
 two-CL pen for him write  
 'Zhangsan bought a book for me to read and two pens for him to write with.'  
 (33) wo pengjian-le yi-ge nüren hen piaoliang,  
 I meet-Perf one-CL woman very pretty  
 liang-ge nanren hen chou.  
 two-CL men very ugly  
 'I met one pretty woman and two ugly men.'  
 (34) ta mai-le bi san zhi, shu wu-ben.  
 he buy-Perf pen three-CL book five-CL  
 'He bought three pens and five books.'

On the other hand, such sequences clearly cannot be preposed or otherwise occur as a unit in a preverbal argument position:

- (35) \*ta ba Zhangsan liang-ci ma-le.  
 he BA Zhangsan two-time scolded-perf  
 cf. ta ba Zhangsan ma-le liang-ci.  
 'He scolded Zhangsan twice.'  
 (36) \*ta lian yi-ge nüren hen piaoliang dou mei pengjian-guo.  
 he even one-CL woman very pretty all not meet-Exp  
 cf. ta lian yi-ge hen piaoliang de nüren dou mei pengjian-guo.  
 'He has not even met a single pretty woman before.'

- (37) \**ta ba bi san-zhi dou mai-le.*  
 he BA pen three-CL all buy-Perf  
 cf. *ta ba san-zhi bi dou mai-le.*  
 'He bought all three pens.'

Thus, although (31)–(34) show that the NP-XP sequence is a constituent, (35)–(37) suggest that it is not. There is only a near contradiction, though, under the well-founded assumption that, whereas all constituents can be conjoined, only maximal phrases can occur as arguments or move to phrasal positions. That is, the NP-XP sequence must be a constituent, but not a maximal constituent, in particular not a maximal NP. This means that the V-NP-XP sequence does not have any of the following structures:

- (38) a. [<sub>VP</sub> [<sub>V</sub> V NP] XP]]  
 b. [<sub>VP</sub> [<sub>V</sub> V [<sub>NP</sub> NP XP]]]  
 c. [<sub>VP</sub> [<sub>V</sub> V [<sub>XP</sub> NP XP]]]

The structure (38a) is ruled out because it does not represent NP-XP as a constituent. The structure (38b), with NP-XP represented as an NP, leaves the ill-formedness of (35)–(37) unexplained. (38c) is out, with NP-XP represented as a clausal category (maximal or not) headed by the XP predicate, because verbs like *mai* 'buy', *ma* 'scold', and *pengjian* 'meet' do not c-select clauses or s-select propositions as their complements. Under the analysis adopted here, however, the "near-contradiction" observed in (31)–(38) follows from the fact that the V-NP-XP sequence has the structure (39):

- (39) [<sub>VP1</sub> ... [<sub>V</sub> V<sup>0</sup> [<sub>VP2</sub> NP [<sub>V</sub> t<sub>v</sub> XP]]]]

That is, the NP-XP sequence constitutes a VP, VP<sub>2</sub>, containing the trace of V. In a Larsonian structure like (39), only the higher VP counts as the maximal projection of the verb, because the verb is a two-part complex consisting of the nontrivial chain (V<sup>0</sup>, t<sub>v</sub>).<sup>11</sup> The ill-formedness of (35)–(37) follows because the NP-t<sub>v</sub>-XP sequence is not a maximal phrase. The well-formedness of (31)–(34) also follows, because the sequence constitutes a (nonmaximal) VP and nonmaximal phrases can be conjoined. Extending Larson's (1988) treatment, I take these sentences to be derived from an across-the-board application of verb movement:

<sup>11</sup>According to Chomsky (1992), the domain of a nontrivial chain C=(α<sub>1</sub>, α<sub>2</sub>) is the set of nodes contained in the lowest maximal projection containing α<sub>1</sub> that do not contain α<sub>2</sub> (or any α<sub>i</sub>, i > 1, in general). So in (39), the lowest true maximal VP containing the verb trace (as an integral part of a chain) is the higher VP.

- (40) *ta mai-le<sub>i</sub> [<sub>VP</sub> [<sub>VP</sub> bi [<sub>V</sub> t<sub>i</sub> san zhi], [<sub>VP</sub> shu [<sub>V</sub> t<sub>i</sub> wu-ben]]].*  
 he buy-Perf pen three-CL book five-CL

We have now seen a whole range of sentences that do not exhibit PSC effects. Surface sentences with two postverbal constituents are found not only where these constituents are subcategorized for by the verb, but also where they involve frequency and duration expressions, purposive clauses, or continuative clauses predicated on the postverbal object. This shows that there is little independent ground for the PSC to exist even as a descriptive generalization. Consider, finally, sentences with resultative and manner phrases. As the following sentences show, postverbal objects are excluded even when they are used referentially. Thus in (41)–(42), the (b) sentences are as unacceptable as the (a) sentences (which have a nonreferential object):

- (41) a. \**Zhangsan kan-de shu hen lei.*  
 Zhangsan read-RM book very tired  
 'Zhangsan read (a book) and got tired.'  
 b. \**Zhangsan kan-de nei-ben shu hen lei.*  
 Zhangsan read-RM that-CL book very tired  
 'Zhangsan read (a book) and got tired.'
- (42) a. \**Zhangsan kan-de shu hen kuai.*  
 Zhangsan read-RM book very fast  
 'Zhangsan read (a book) very fast.'  
 b. \**Zhangsan kan-de nei-ben shu hen kuai.*  
 Zhangsan read-RM that-CL book very fast  
 'Zhangsan read (a book) very fast.'

The ungrammatical (b) sentences might then be taken to constitute evidence for some residue of the PSC. However, these sentences can be ruled out independently, by the theory of control. Note that both the resultative and the manner expressions *very tired* and *very fast* are predicates that must be related to a subject. The choice of a subject in predication structures is essentially governed by the same principles that govern controller choice in control structures. (In Williams, 1980, control and predication are identified as the same phenomenon.) One such principle is the Principle of Minimal Distance (Rosenbaum, 1970; Chomsky, 1980). According to this principle, PRO is controlled by the closest potential antecedent c-commanding it. This has the consequence that PRO is controlled by the matrix object if the matrix clause has an object; otherwise it is controlled by the matrix subject. Applied to (41b) and (42b), this means that the resultative and manner phrases must be controlled by, or predicated on, the object *nei-ben shu* 'that book'. But this interpretation is absurd, so the sentences are ruled out independently

of the PSC. If no absurd interpretation is forced on it, a sentence of the form in (41b) and (42b) is in fact fully acceptable:

- (43) Zhangsan qi-de ma lei-si le.  
 Zhangsan ride-DE horse tired-dead Asp  
 'Zhangsan rode (so much as to) make the horse tired to death.'

As argued in detail in C.-T. J. Huang (1992a), according to one interpretation of the sentence, the NP *ma* 'horse' is the patient of the complex predicate *qi-de Pro lei-si-le*, which forms a *V'* to the exclusion of the object. The object occurs in SPEC of VP, from where it controls the resultative predicate, in accordance with the Minimal Distance Principle. The surface string results when the verb raises to the left of the SPEC of VP, as in all other cases of the V NP XP structure we have examined.

Summarizing, then, it has been shown in this paper that the facts of Chinese word order fit into the very simple description indicated in (1)–(3), with no need for a constraint like the PSC and no need for a directionality parameter in Case theory or theta theory. Under my analysis, the only cases where the PSC obtains are those in which the postverbal object competes with a secondary predicate or oblique expression for the first position to form a complex predicate with the verb. These cases are ruled out because Chinese chooses the head-initial structure only at the complement level and, given the universal principle of binary branching, there is at most one complement phrase that can occur as a sister to  $V^0$ . If the analysis is on the right track, then we have untied the knot that has been the topic of much research since 1982.

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