

DOCUMENT RESUME

ED 334 815

FL 018 710

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 TITLE Word Order and Thematic Structure in Mandarin.
 PUB DATE 89
 NOTE 14p.; In: Proceedings of the Annual Meeting of the Eastern States Conference on Linguistics (6th, 1989), p313-325. For related documents, see FL 018 705-709.
 PUB TYPE Reports - Evaluative/Feasibility (142) -- Speeches/Conference Papers (150)
 EDRS PRICE MF01/PC01 Plus Postage.
 DESCRIPTORS *Language Patterns; Language Research; *Linguistic Theory; *Mandarin Chinese; *Phrase Structure; *Syntax

ABSTRACT

Recent proposals concerning the relationship between thematic structure and syntactic structure, including the idea of thematic hierarchy, when used with certain language-specific properties, offer insight into some problems concerning the Mandarin Chinese phrase structure condition (PSC). The PSC is such that the internal structure of XP contains at most one sub-phrase that is head-initial and lexically branching. Proposed originally as a surface structure filter in Mandarin, the PSC has various conceptual and empirical problems. By rethinking the data covered by the PSC with the help of syntactic and thematic structure theory, the new underlying structures for sentences that violate the PSC make the condition largely irrelevant as a surface filter. Independent reasons are sought for the poor formation of a number of sentences and counter-examples to the original PSC. (Contains 20 references.)
 (MSE)

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WORD ORDER AND THEMATIC STRUCTURE IN MANDARIN

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ED 334 815

0. Introduction:

In an approach that posits a strong parallel between initial syntactic structure and thematic structure, an understanding of the principles governing thematic roles and the projection of thematic structure onto syntactic structure takes on a critical importance. In this paper I show that recent proposals concerning the relation between thematic and syntactic structure, including the idea of a thematic hierarchy, when taken together with certain language particular properties, offer an insightful analysis of certain problematic facts surrounding the Mandarin Chinese Phrase Structure Condition (Huang 1982 - PSC hereafter).

1. The domain of PSC:

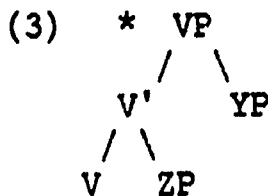
The PSC was proposed in Huang (1982) as a surface structure filter in Mandarin. As such, it provides an account for the traditional observation that the elements that occur postverbally in Mandarin are restricted to a single constituent under certain circumstances. The PSC is given in (1) below.

(1) Phrase Structure Condition:

The internal structure of XP contains at most one sub-phrase Xⁱ such that Xⁱ is head-initial and lexically branching.

The following sentences violate the PSC on the assumptions of Huang (1982 - who in turn follows Mei 1978) since they contain a VP whose structure is as in (3).

- (2)a. *Wo nian-le shu sangge zhongtou (Duration Complement)
I read-LE book three hours
- b. *Wo kai-le che liang ci (Object and Frequency Complement)
I drive-LE car two times
- c. *Wo nian-de renwen hen kuai (Descriptive Complement)
I read-DE paper very fast
- c'. *Wo nian renwen de hen kuai
I read paper DE very fast
- d. *Wo da Zhangsan de bansi (Object and Resultative Complement)
I hit ZS DE half-dead
- e. *Wo buo-le juzi pi (Object and Retained Object)
I peel-LE orange skin



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The VPs of all the above sentences contain a complement direct object ZP (Mei's "inner complement") and an adjunct YP ("outer complement"). The "Retained Object Constructions" of Li and Thompson (1978) in (2e) behave similarly with respect to the PSC, and is therefore classed together with other constructions that fall under it.

These structures can be "saved" if the direct object is "moved away" from postverbal position by some means, leaving a VP which has only one lexically realized constituent following the verb on the surface.

- (4)a. Passive: Che bei wo kai-le liangci
 b. Topicalization: Che, wo kai-le liangci
 c. BA-structure: Wo ba che kai-le liangci
 d. Object before verb: Wo che kai-le liangci

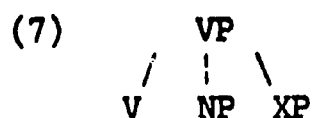
Moving the "outer complement" away does not save the structures, however.

- (5)a. *Bansi, wo da-de Zhangsan
 Half-dead, I hit-DE ZS
 b. *Pi bei wo buo-le juzi
 Skin by I peel-LE orange
 c. *Pi, wo buo-le juzi
 Skin, I peel-LE orange

A fact about the PSC is that subcategorized constituents are not subject to this condition. When a verb subcategorizes for two complements, both occur freely in postverbal position.

- (6)a. Zhangsan bi [Lisi] [PRO chang ge]
 ZS forced Lisi PRO sing song
 b. Zhangsan fang-le [yiben shu] [zai zuozhi-shang]
 ZS put-LE one book at table-top
 c. Zhangsan gei-le [Lisi] [yiben shu]
 ZS give-LE Lisi one book

Huang's answer to this discrepancy between complements and adjuncts is to allow ternary branching within the VP when complements are present, thereby bypassing the PSC.



2. Some questions about the PSC:

In this section, I present various conceptual and empirical problems that have been raised since the PSC was proposed in Huang (1982).

2.1. The Postverbal Position of Adjuncts:

The facts of word order in Mandarin VPs as described by the PSC raise a conceptual question. On the assumptions of Huang (82), the structures that violate it can be "saved" by moving the direct object away from its base-generated postverbal position. This makes it look as if; (i) the adjuncts themselves need Case, and (ii) they are "closer" to the verb than the direct object in some sense, since normally the direct object occupies the immediate postverbal position. Supposing that the functional role of the PSC is to reduce the number of postverbal complements to one, it is strange that of the two, a subcategorized direct object is the one that suffers.

Audrey Li (85) tried to make sense of this by proposing that adjuncts need Case. This attempt is not entirely successful since not all of the postverbal adjuncts need Case. Her proposals work when the adjuncts have NP status, but is not plausible when the adjunct is an AP or AdvP, since it is doubtful that these need Case.

2.2. Exceptions to the PSC:

Since the PSC was proposed, people have noted that there are systematic exceptions to the PSC, some of which were noted by Huang himself.

(i) Huang (1982) and Liu (1987) note that, with Duration/Frequency complements, the PSC is systematically violated as long as the direct object is referential, specific and/or animate:

- (8)a. ta pian-le wo san nian
he cheated I three years
b. ta da-le Zhangsan liangci
he hit ZS twice
c. wo nian-le neiben shu sangge zhongtou
I read that book three hours

(ii) While (2d) with a Resultative complement is unacceptable, when the particle DE is cliticized to the verb, the sentence becomes acceptable although it appears to violate the PSC as much as (2d) does.

- (9) Wo qi-de ma hen lei
I ride-DE horse very tired
Wo ku-de Zhangsan hen shangxin
I cry-DE ZS very sad
cf;
*Wo ku Zhangsan de hen shangxin
I cry ZS DE very sad

However, the following sentence with a resultative complement is out regardless of whether DE is cliticized to the verb or not.

- (10) *Wo chi-de fan hen bao
I eat-DE rice very full

cf.

*Wo chi fan de hen bao

(iii) A VP containing a Descriptive complement seems to always obey the PSC regardless of the position of the particle DE and/or the referentiality of the direct object.

(11)a. *Wo nian (neiben) shu de hen kuai
I read (that) book DE very quick

b. *Wo nian-de (neiben) shu hen kuai
I read-DE (that) book very quick

(iv) Certain kinds of "retained object"-like structures (typically with idiomatic meaning) seemingly allow violation of the PSC for some speakers.

(12) Wo bang-le Zhangsan (yi) piao
I tie-LE ZS (one) ticket
= I kidnapped ZS

2.3. Ternary vs. Binary Branching:

Huang's answer to the difference between arguments and adjuncts vis a vis the PSC is less than ideal. Ideally, we would like to have a situation where conditions on branching are the same for arguments as they are for adjuncts.

I propose in the next section an account of PSC and the facts observed above, utilizing recent ideas on the relation between thematic and syntactic structure proposed in Larson (88).

3. An Account:

3.1. On the positioning of "inner" and "outer" complements;

I begin this section with a discussion of the conceptual problem. The fact was that what Huang and Mei took to be adverbial expressions exhibit a closer tie to the verb than the direct object.

3.1.1. Resultative Complements:

In order to forestall misunderstanding, let me make it clear first that not all of the "outer complements" raise this problem. This is obvious in the case of Resultative Complements. Two things should be noted about Resultative complements. One, it is not adverbial in function like some of the other "outer complements". Resultative complements are predicative and hence adjectival, much like secondary predicates like "raw" in the English sentence below.

(13)a. John ate the meat raw

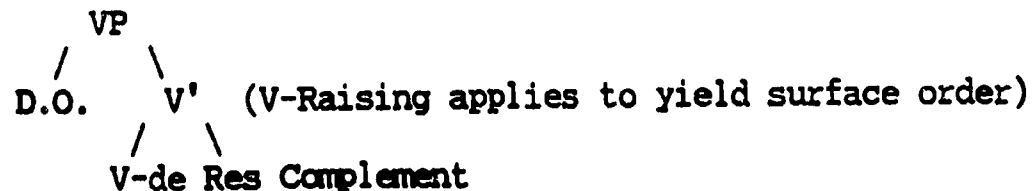
b. John ate raw the meat he had stashed away for two weeks

Two, these need not always be adjacent to the verb, as seen in (9) above. The same situation holds in English. In (13), "raw" can, but need not, be adjacent to the verb. Thus, they do not exhibit a

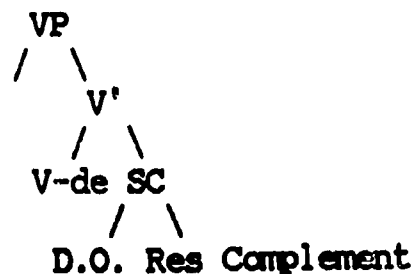
particularly close tie with the verb. However, one still needs to explain the ill-formedness of (2d) and (10). I will take this up in section 3.3.

The correct analysis of secondary predicates (object oriented) does not seem relevant to the issue at hand. Any of the two alternatives schematized below would be adequate for our purposes.

(14) Complex Predicate Analysis (Huang 89; Larson 88):



(15) Small Clause Analysis (Chomsky 81; Stowell 83):



3.1.2. Descriptive Complement:

Descriptive complements are adverbial and yet they occupy an immediately postverbal position without exception, forcing the direct object to "move away". Therefore, the conceptual problem noted above exists in this case. I will venture the following as an account of why this may be so.

First, let us suppose following C. Ross (1984) that the scope of modification of postverbal adjuncts, including a postverbal descriptive complement, is the predicate. I want to propose (16) as the D-structure of VP containing a predicate-level modifier like a Descriptive Complement. In this structure, the predicate modifier takes up the Complement position, while the direct object occurs in Spec of VP position, further away from the verb. If this is the correct structure, we have an answer to the conceptual problem. The adjunct acts like an inner complement because it IS the inner complement according to this structure.



According to the theory of adverbs proposed in McConnell-Ginet (1982) and utilized in Larson (1988), certain adverbs are the

innermost "arguments" of the verb. These are the predicate-modifying adverbs, or Ad-verbs. This runs against the common wisdom of GB theory that takes all adverbs to be adjuncts but seem to be well-supported by the argument-like behavior of adjuncts under certain circumstances (cf. Grimshaw (1988), among others). Larson has incorporated this observation into a version of GB theory by proposing that Ad-verbs occupy a position in the Thematic Hierarchy that is lower than typical arguments like Theme or Goal.

(17) Thematic hierarchy: Agent > Goal > Theme > ... > Obliques

This hierarchy is mapped onto syntactic structure by the following principle which dictates that the lowest role on the hierarchy maps onto the position structurally closest to the predicate and so on.

(18) Argument Realization:

If P is the lowest argument on the thematic hierarchy it is committed to the lowest structural position. The next lowest argument is committed to the next structural position, so on.

In this view, since the descriptive complement is an Ad-verb, it will occupy the position structurally closest to the verb, while the direct object would be in the Spec of VP. Notice that unlike Li (1985)'s account, this analysis need not assume that adverbs need Case and yet accounts for their closer tie to the verb.

3.1.3. Duration/Frequency Complements:

The designation "adverbial" is also appropriate for Duration and Frequency complements and yet these also behave as if they are closer to the verb, thus raising the conceptual problem.

The interpretive differences between preverbal and postverbal D/F phrases provide an answer to this problem.

- (19)a. ta liangci dou lai-le
 he two time all come-LE
 b. ta kan-le neiben shu liangci
 he read-LE that book two time

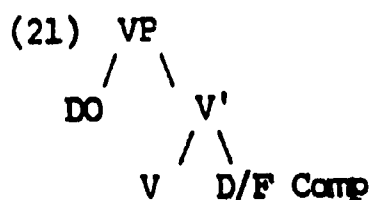
When a D/F phrase like "liangci" occurs preverbally, it has a definite interpretation and means something like "on those two (specific) occasions", while postverbally it means "twice". It is quite common for other adverbials to exhibit similar interpretive differences.

- (20)a. ta tiao-le zai zhouzi-shang
 he jump-LE at table-top
 b. ta zai zhouzi-shang tiao-le
 he at table-top jump-LE

The former means, "he jumped onto the table", while the latter means

"he was jumping on top of the table". Let us, again following Ross (1984), take this to be a matter of scope, with the preverbal adverb having VP or wider scope and the postverbal one having predicate-level scope.

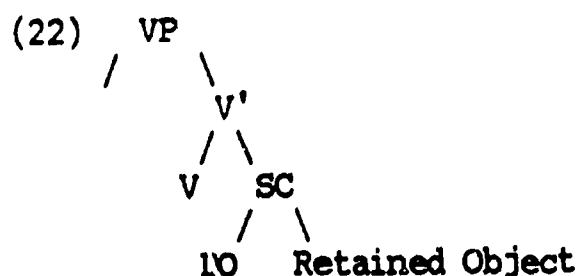
This scopal difference provides the answer to the conceptual problem. As an Ad-verb, the D/F phrase is the innermost argument of the verb and there takes up the complement position.



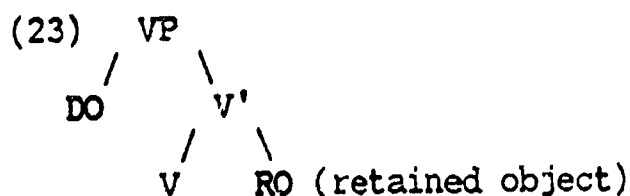
3.1.4. Retained Object Complements:

Retained objects do not raise the conceptual problem because the postverbal NP is an argument of the verb in pretty much the standard sense. What remains to be explained then is the particular order in which the two nominals occur and the difference in their behavior with respect to extraction and other syntactic processes.

With regard to the first issue, Cheng and Ritter (1988) have recently proposed that the retained object is the predicate of a Small Clause whose subject is the direct object.



A problem with taking ROs to be a predicate is that it does not make much semantic sense to take "skin" to be a predicate of "orange" in (2e). I have elsewhere (Yoon 1989b) analyzed ROCs as Inalienable Possession Constructions. The essence of my proposal is that the RO is the argument of V while the other NP is the argument of V'. If this is correct, we would expect the RO to follow the verb, since normally verbal objects do.



3.2. PSC: Derived or Underived Structure?

Note that if the D-structures I have proposed above are correct, it must be the case that the original PSC is stated upon mistaken premises, since what were considered "outer complements"

are in fact the innermost complements and the direct object is the outer complement, occurring in the Spec of VP position.

This realization leads us to fundamentally reconsider the reasons for the ill-formedness of sentences in (2). Now we see that they must all be derived structures, while on earlier assumptions they are D-structures that violate a surface filter if they surface unaltered. That is, while PSC was conceived of as a filter preventing certain unaltered D-structures from surfacing, we must now find reasons why certain structures cannot be derived, over and above whatever condition(s) there may be that restrict(s) certain D-structures from surfacing unaltered.

In light of this, let us concentrate on the direct object. When one looks at the proposed D-structures, the direct object in the Spec of V is potentially Case-less. This is due to the fact that while Structural Case is assigned rightward in Chinese (A. Li 1985; Yoon 1989), the direct object is to the left of the V. Therefore, even if the verb had a Case to assign, it could not. The various "strategies" that were taken to "save" potential PSC violations in (4) all make Case available to the direct object, as observed by Huang (1988). Passivization is movement to a Case position. Topic position is also a potential Case position in Chinese because there exist non-gap topics like (24) below. Since the topic is not in a chain with a clause-internal position, it must have received its Case in its base-generated position.

- (24) Shang, bizi chang
elephant, nose long

Likewise, all analyses of BA agree that it has a Case-assigning function. The object-before-verb structures may either be analyzed as double topicalization (in which case there would again be Case available for the direct object) or covert incorporation, which, following Baker (1988), also has a Case-assigning function.

Another way in which the direct object could be Case-marked is if the V raised to a higher V slot (Huang 1988), so that it can canonically govern the direct object, thus giving it Case. However, notice that V-Raising would derive structures which systematically violate the PSC on earlier assumptions, since it produces a surface string with V<Object<Adjunct order.

3.3. Explaining the PSC:

One obvious way to account for the ungrammaticality of sentences in (2) given our revised D-structures would be to constrain the rule of V-Raising from applying to the D-structures underlying these sentences. This could be done, for example, by attaching certain conditions on the rule of V-Raising in the manner of early TG. But this is conceptually undesirable. The desirable alternative is to let V-Raising apply in a maximally general manner and find an independent reason for the ill-formedness of sentences in (2). In this way, we avoid having to introduce construction-

specific constraints. This is what I propose to do next.

3.3.1. Duration/Frequency Complements:

Liu (1987) has provided what I believe to be a principled reason for why (2a) and (2b) are bad whereas the sentences in (8) are o.k. and I basically adopt his analysis. The reason for their ill-formedness is that the D-structures are ill-formed if they surface unaltered.

His story runs as follows. D/F complements and indefinite objects NPs are both quantificational. In Chinese, as has been repeatedly proposed, there is a constraint such that a QP A which has scope over QP B must precede and command it (i.e., the Isomorphic Principle of Lee 86. cf. also Huang 82). Liu suggests that the lack of referentiality entails (obligatory) narrow scope, so that in these structures, the D/F phrase has scope over the indefinite NP. However, the indefinite precedes and commands the D/F phrase in violation of the Isomorphic Principle. Therefore, the D-structures are ruled out. On the other hand, a referential NP (those in 8) always has scope wider than the D/F phrase. It correctly precedes and commands the D/F phrase. Since the D-structure is well-formed except for the fact that that the (referential) direct object lacks Case in its base-generated position, if Case is made available to the direct object - be it through passivization, topicalization, BA-insertion, or V-Raising - the sentence is ruled in. Of course, when V-Raising applies, the structure would violate the PSC on earlier assumptions.

There is some evidence showing that a D-structure with an indefinite NP direct object preceding and commanding a D/F phrase cannot surface as a legitimate S-structure even if Case is made available to the direct object by means other than V-Raising (which therefore makes the structures conform to the PSC). This is because a bare NP that is topicalized, passivized, or markeded by BA, is always interpreted as definite, which means that it was definite to begin with.

- (25)a. Shu, wo nian-le sangge zhongtou
 (specific) book, I read-LE three hours
 b. Wo BA shu nian-le sangge zhongtou
 I BA a (specific) book read-LE three hours
 c. Shu bei wo kan-le sangge zhongtou
 (specific) book, by me read-LE three hours

3.3.2. Resultative Complements:

According to Ernst (1986), there is a simple reason why (2d) is out. They are out because DE is not properly cliticized to a verb. Indeed, some structures become acceptable once DE is cliticized to the main verb as in (9). However, the story is a bit more complicated than this, since for certain Resultatives, even with DE properly cliticized to the preceding verb, the sentences are out (cf. 10).

The reason for the ill-formedness of (10) appears to be this. Postverbal secondary predicates in Mandarin can only be object-oriented. But when "hen bao" is predicated of the object, it is nonsensical, since the sentence must mean "I ate till the rice became full". Therefore, the sentence is rejected.

3.3.3. Descriptive Complements:

Let us turn now to Descriptive complements. There is again a trivial explanation for (2c') which relies on failure of cliticization, but the ill-formedness of (2c) and (11) cannot be explained in this way. The only acceptable forms are ones in which the verb does not precede the direct object.

- (26)a. ?Wo BA neiben shu niande hen kuai
 I BA that book read-DE very quick
 = I read that book quickly
 b. Neiben shu, wo niande hen kuai
 That book, I read-DE very quick
 c. Neiben shu bei wo niande hen kuai
 That book BE I read-DE very quick
 d. *Wo niande neiben shu hen kuai
 I read-DE that book very quick

It is very difficult to explain the ill-formedness of (29d) if we assume it is derived through V-Raising from the same structure that underlies (a - c) sentences. Since the referentiality of the object does not make a difference, it is impossible to blame the ill-formedness on the Isomorphic Principle. The only remaining candidate is the rule of V-Raising itself. But then the question arises why V-raising should render it bad.

The reason speakers reject (29d) is because they can only interpret it in a nonsensical manner like "I read the book till the book became fast". That is, they are necessarily interpreting the Descriptive complement predicatively in (d), while in the (a - c) forms, they are interpreting it as a modifier. I do not have the slightest idea why this is so, but given that they do, we can see why interpreting "hen kuai" predicatively would make the sentence ill-formed. The reason is that the sentence would make sense only if it could be construed as subject-oriented, a possibility nonexistent in the grammar of the majority of Mandarin speakers.

3.3.4. Retained Objects:

The contrast between (27) and (28) shows that V-Raising is possible at least for some speakers with idiomatic RO-like structures while it is ruled out in ROCs expressing inalienable possession.

- (27)a. *Wo huo-le neige juzi pi
 I peel-LE that orange skin
 b. *Wo xi-le Zhangsan shou

- I wash-LE ZS hand
 (28)a. Wo bang-le Lisi piao
 I tie-LE LS ticket
 I kidnapped LS
 b. Wo kai Lisi dao
 I open LS knife
 I operated on LS

Let us consider why V Raising is ruled out in (27). One might be tempted to appeal to the Isomorphic Principle since the retained object is a bare NP, but there is a reason to think that the quantificational account is irrelevant since making the direct object referential does not improve the acceptability of the sentence, as it did with D/F phrases.

I suggest that in IAC type ROCs, the retained object requires Case (because it is theta-marked by the verb), while in the idiomatic sentences, the postverbal expression does not require Case because it doesn't have a theta role and is not required to have Case, by the Visibility Condition. When the retained object needs Case, V-Raising will be unable to save the direct object in the Spec of VP Case-theoretically. This is because the verb has already assigned its one Case to the RC. Therefore, other strategies, such as BA, passive and topicalization are required. On the other hand, if the postverbal noun does not require Case, V-Raising will make Case available to the direct object.

3.3.6. Why only the Direct Object can move:

There is one remaining fact to be accounted for. This has to do with the status of the sentences in (5) which, on earlier assumptions, showed that moving the "outer complements" away did nothing to save a potential PSC violation. The original PSC did not provide an answer to this, since moving either outer or the inner complement reduces lexically branching head initial sub-trees of VP to one. Here again, different constructions ban such preposing for different reasons.

A preverbal D/F phrase is possible but they are not regarded as derived from postverbal position because of different scope. We may suppose that something like the Isomorphic Principle blocks a preverbal adjunct that has predicate-level scope. A "preposed" Resultative complement is out for the same reason that preposing object-oriented secondary adjuncts are out in English (cf. 29), presumably due to the failure of mutual command between the predicate and its "subject".

- (29) *Raw, he ate the meat
 vs.
 Nude, he ate the meat

The reason why the preposing of the retained object is out in IAC type ROCs may be due to their status as non-maximal projections,

if the proposal in Yoon (1989b) is correct. Adopting Cheng and Ritter (1988)'s assumptions would also explain the facts since the RO is a predicate on their analysis and the account for resultatives could be carried over to these. For idiomatic RO-like constructions, the preposing of postverbal NPs may be ruled out for the same reason that noncompositional parts of idioms cannot be syntactically moved in English.

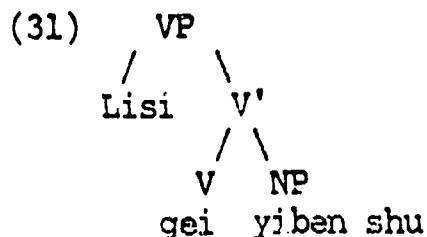
(30)a. *Piao, wo bang-le Zhangsan
Ticket, I tied ZS

cf.

b. *The bucket, I kicked (idiomatic sense intended)

3.3.6. Ternary vs. Binary Branching:

Finally, a brief note about branching. Unlike Huang (1982), we do not need to assume that sentences in (6) involve ternary branching. We could adopt binary branching plus V-Raising to account for these. Thus, the D-structure for (6c) would be as follows.



To this, V-Raising (to a higher V slot) would apply and derive the surface order. As with other sentences, if there are additional constraints on the structure, V-Raising appears to be blocked. Thus, (32) is out.

(32)*Wo gei-le ren yiben shu
I give-LE men one book

The sentence is out because it violates the Isomorphic Principle, as an indefinite with narrow scope precedes and commands a definite NP.

4. Summary and Conclusion:

In this paper, I have shown that by adopting recent ideas on the relation between syntactic and thematic structure, we are led to a rethinking of the data covered by the PSC. The new underlying structures for the sentences that violate the PSC make the condition largely irrelevant as a surface filter. I have therefore sought independent reasons for the ill-formedness of the sentences in (2) and the "counterexamples" to the original PSC.

FOOTNOTES:

* I would like to thank the following people for suggestions and/or verifications of data. David ("Wei") Wible, Xu Debao, and Zhou Xinping. Tom Ernst provided useful comments after the oral

presentation of the paper at ESCOL. Unfortunately, I have not been able to incorporate his remarks in the present version of the paper.

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