ON PSEUDO-POSSESSIVE NPS IN MANDARIN CHINESE

Chu-Ren Huang

Cornell University

Ⅰ. Introduction

Chinese is known to be lacking in case marking. The only undisputed case marker is the genitive de, such as in shao nainai de shanzi (literally 'young-madame 's fan', a Chinese translation for wilde's Lady Windermere's Fan'). But the usage of this simple character is far richer. It does not always indicate possession. For instance, tian shang de niao (literally 'sky-top's bird') refers to 'birds in the sky'. This, however, can be generalized from the narrow sense of 'owning something' to the broader sense of 'having the property of'. The element preceding de ascribes some property to the head noun of the possessive construction, just as another case of modification. Ross (1983) provides the following schema for NPs with de (MOD = Modifier) :

(1) [[X] de NP]
NP MOD

Although this seems to capture the intuitions of native speakers for a large proportion of the occurrences of de, it is not explicit enough to be incorporated in a formal system of grammar

and fails to account for all the variations of possible semantic interpretations.

One particular difficulty such a generalized schema may face, and one such We are interested in solving, involves pseudo-possessive sentences like the following. There is no straight-forward mechanism in this highly generalized schema to account for the grammatical relations in 2.[1]

(2) Yunmen wuji de wu tiao de zhen bang
Cloud-gate dance-ensemble DE dance dance DE relly good
'Cloud-gate ensemble dances splendidly.'

Yunmen wuji is the logical subject in 2, while the noun wu immediately after de is the logical object of the verb tiao. furthermore, Since such sentences do show a two-way ambiguity between a real possessive reading and a pseudo-possessive reading, as exemplified by 3, an adequate formal analysis would have to represent the two readings either syntactically or semantically.

(3) XiaoLi de biandang zuo de hen haochi
XiaoLi DE box-lunch make DE very good-eat
a. 'XiaoLi makes delicious box-lunches.'
b. 'XiaoLi's box-lunch is deliciously made (by somebody).'
Lastly, it has been observed that the sentences with

pseudo-possessive NPs coincide semantically with the corresponding sentences in two other paradigms, namely, SOV sentences (double nominative in Teng (1974), and resultative VP sequence with identical verbs (verb reduplication in J. Huang (1982a)).[2]

(4) a. XiaoLi biandang zuo de hen haochi
XiaoLi box-lunch make DE very delicious
b. XiaoLi zuo biandang zuo de hen haochi
XiaoLi make box-lunch make DE very delicious
'XiaoLi makes delicious box-lunches.' (cf. 3a)

The goal of this paper is to correctly represent the gram-

matical relations of the pseudo-possessive NPs and the related structures, and to account for the identity of semantic meanings among them. We will follow the theoretical framework of lexical-functional grammar (LFG), developed and explained in detail by Kaplan and Bresnan (1982). As suggested by its name, LFG is a formal system of grammatical representations which allows natural languages to be studied in terms of grammatical functions, and generalizations in linguistics to be captured with lexical rules. In this framework, transformations are rendered unnecessary. The syntactic representations in LFG consist of two parts: c(onstituent)-structures and f(unctional)-structures. A c-structure is the counterpart of the constituent tree commonly used in all varieties of generative grammars. It is also constructed from a set of phrase structure rules. The only difference between them is that some rules representing grammatical functions, called f(unctional)-descriptions, are annotated to each node. The f-descriptions map c-structures to f-structures. A f-structure is a formal representation of grammatical functions from which direct mapping to sematics can be achieved. The justification for using f-structures is that there is no one-to-one correspondence between constituent nodes and grammatical functions. The better known cases are that a NP can serve either as a SUBJ (ect), an OBJ (ect), or a COMP (lement), etc., and that a S can also have these functions. The LFG mechanism represents the constituent structure and the grammatical functions Separately and claims that such representations help to describe natural languages better. Finally, $\uparrow$(up), and $\downarrow$(down) are the two symbols used in c-structures, f-descriptions, and f-structures to refer to the immediately dominating node and the current node, respectively. The most important function of the two arrows is to convey grammatical informations such that they can be properly interpreted locally and at the sentence level. For instance, the rule $\uparrow = \downarrow$ requires that the grammatical informations represented on the mother node be merged with the grammatical informations represented on the daughter node. This is how a head is defined in LFG. More explanations of lfg formalism will be given with appropriate examples in this paper.

Ⅱ. A POSSIBLE SOV STRUCTRUE[3]

Before sketching out the structure for the pseudo-possessives, we will take a look at one interesting structure. 5 has the same constituent structure as 4a. They both have overt SOV word order, and both NPs stand in the same logical relation to each other ('logical relation' in a pretheoretical sense).

(5) Ma Yo-Yo datiqin la de hen hao
Yo-Yo Ma cello pull DE very well

A typical transformational approach to this sentence would be to take datiqin as somehow 'preposed' from the base-generated position immediately after the verb. One such possible solution in this framework would be to take advantage of the fact that mutiple topics are allowed in Chinese and postulate that both the subject and the object of 5 are in topic position. one of our arguments against this is based on the analysis of Chao (1968a). Chao argues that pauses are the only reliable indicatiors of topicalization in Chinese. We observer that there is no natural pause after the object datiqin to indicate that it is a topic
(there is also no natural pause after the subject). We may also cite as supporting evidence the way another native speaker punctuates written sentences. In the five groups of related sentences quoted by J. Huang (1982), he consistently puts a comma after the sentence-initial object, which is obviously used to represent the pause after topics in spoken language. On the other hand, no comma was used in any of the SOV sentences quoted.[4]

(6) a. [neizhi ma], ta qi [t] de hen lei
that horse he ride COMP very tired
'That horse, he rode it until he got tired.'
b. ta [neizhi ma] qi [t] de hen lei
he that horse ride COMP very tired
'He rode that horse until very tired.'

6b illustrates another possible transformational analysis of our SOV sentences; namely, object raising. Two points can be made about this analysis. First, we observe that the proposed under-

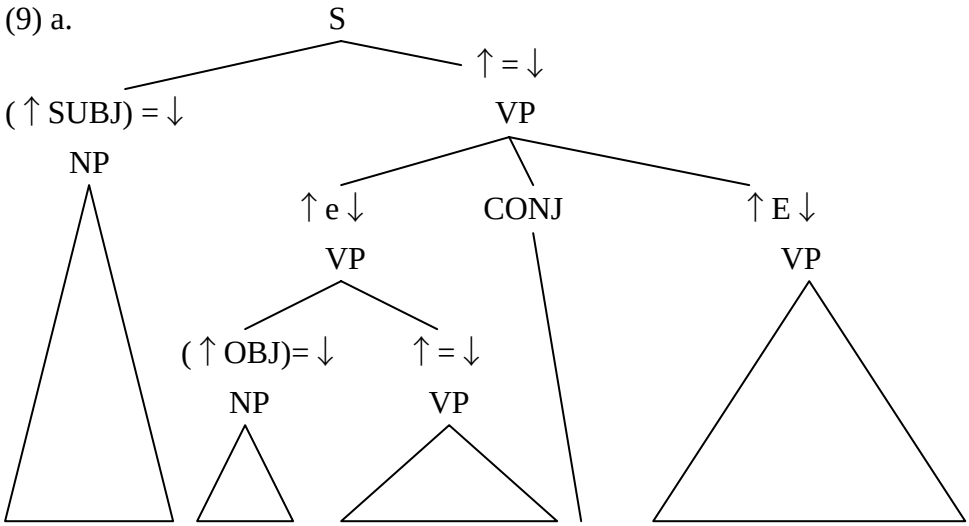
lying structure is ungrammatical and unmotivated elsewhere. Under the structure-preserving constraint, the sentence cannot be generated without brute force. Even if such underlying structures are allowed, we can argue that they are unfalsifiable since no grammatical rules constrain them, An unfalsifiable theory may be powerful, but it is equally uninteresting in that it is not justifiable.

(7) *ta qi neizhi ma de hen lei
he ride that horse DE very tired

Second, we also observe that the so-called ‘preposed’ NP seems to form a VP with the following VP complement rather than standing by itself.

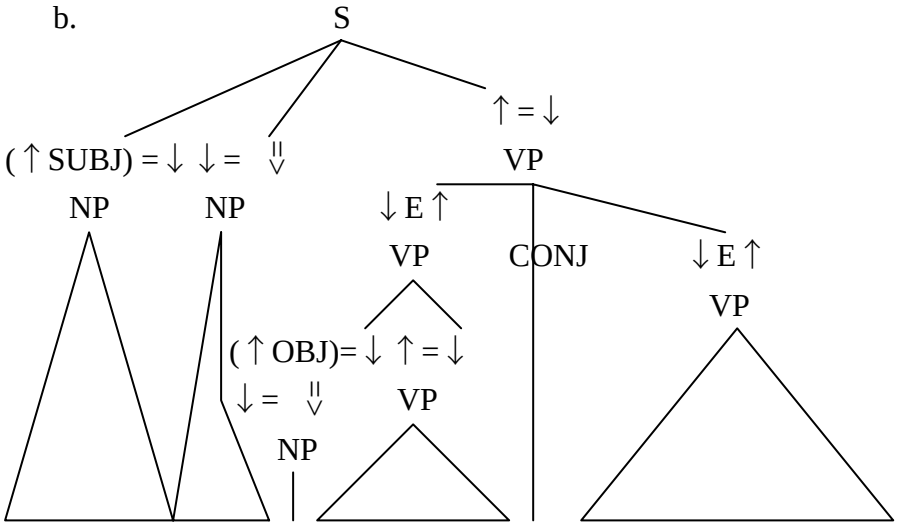
(8) Hong JunZhe lanqiu da de hen hao que bu ai shang
Hong JunZhe basketball hit DE very well but NEG like on
dianshi
TV
‘Hong JunZhe plays basketball well but does not like to be on TV’

(9) a.



Hong JunZhe lanqiu da de hen hao que bu ai shang dianshi
Hong JunZhe basketball hit DE very well but NEG like on TV

b.



Hong JunZhe lanqiu e da de hen hao que bu ai shang dianshi
Hong JunZhe basketball hit DE very well but NEG like on TV

c. *Hong JunZhe lanqiu da de hen hao que ta bu ai
Hong JunZhe baskeball hit DE very well but he NEG like
Shang dianshi
on TV

(10) Hong JunZhe shi lanqiu da de hen hao
Hong JunZhe FM basketball hit DE very well
'Hong JunZhe does play basketball well.'

Three notes can be make on the notations in the c-structures in 9. First, the equation '↑ SUBJ =↓' can be read as 'the subject function of the mother node (S in this case) is this node (the NP where this equation is annotated)'. This is how subject and other

grammatical functions are encoded in LFG. Second, we notice that in 9b, the object function is specified at a very low level, but the equations ↑=↓ and ↓E↑ pass the grammatical information up to the tree top (i.e. the sentence level). Lastly, the symbols ⇓ and ⇑ are used to deal with long-distance dependencies: a ⇓ must be linked with a ⇑ to get a grammatical interpretation. 8 and 9 are coordination structures represented in LFG. 9c is included to show that this cannot be sentential coordination. The equation ↓E↑ reads as 'this node is a member of the set represented by the mother node', and shows that the two coordinated VPs are elements of a set which is the higher VP. The structures show that the object lanqiu 'basketball' has to be part of the lower VP. If it is outside the VP, object will have to distribute to the second VP, and will cause incoherence in the f-structure (i.e., assigning more than one lexical item to the same grammatical function).[5] As for 10, it has been observed and strongly argued for by J. Huang (1982b) that the focus-marker (FM) shi occurs immediately before the constituent it modifies, which must be either a whole predicate or any other maximal category. 10 has two readings, one with contrastive emphasis on lanqiu 'basketball', the other with focus on the whole predicate 'plays basketball well'. The only natural interpretation for the second reading is that shi modifies the whole following string, including the object, as a VP constituent.

(11) VP → NP VP
↑=↓ (↑OBJ)=↓ (↑=↓)

Though J. Huang (1982a) was not explicit in how he would formulate the preposing rule, we can show that no matter where the 'preposed' object goes, an SOV account, as exemplified by 11, is superior to a movement account. What 11 tells us is simply that the so-called 'preposed' NP forms a VP constituent with the following VP, and that this NP stands for the object function in the sentence. Since we have discovered that the object forms a VP with the following string, a transformation landing the object outside the VP would be making wrong predictions. On the other hand, keeping the object inside the VP after movement predicts no

empirical differences, but one would be hardpressed to provide evidence to justify the existence of the trace, since this analysis requires a PS rule unmotivated elsewhere. Again, the structure-preserving constraint can be used to argue against proposing such an underlying structure. All things considered, we may as well let the PS rule do the whole job without so much stipulation. 11 will provide adequate explanation for all the phenomena dicussed in this section without encountering the ungrammatical 7.

Ⅲ. VP Sequences

One further structure we have to examine before going to the pseudo-possessive NPs is the VP sequences with identical verbs as exemplified by 4b. C. –R. Huang (1983) dicussed the inadequacy of J. Huang's (1982a) verb reduplication analysis. We will repeat the major argument here with another supporting argument based on 13.[6]

(12) a. ta qi neizhi ma qi de hen lei
he ried that horse ride DE very tired
'That horse, he rode till he was very tired.'
b. *[neizhi ma], ta qi [t] qi de hen lei (asterisk mine)
that horse he ride ried DE very tired
c. ni lao qi, qi de ma lei si le
you always ride ride DE horse tired die ASP
'You ride the horse continuously such that the horse is (almost) tired to death.'

(13) a. ta qi neizhi ma shuai le xia lai
he ride that horse fall ASP down come
'He rode that horse and fell off (it).'
b. *[neizhi ma], ta qi [] shuai le xia lai
that hores he ride fall SAP down come

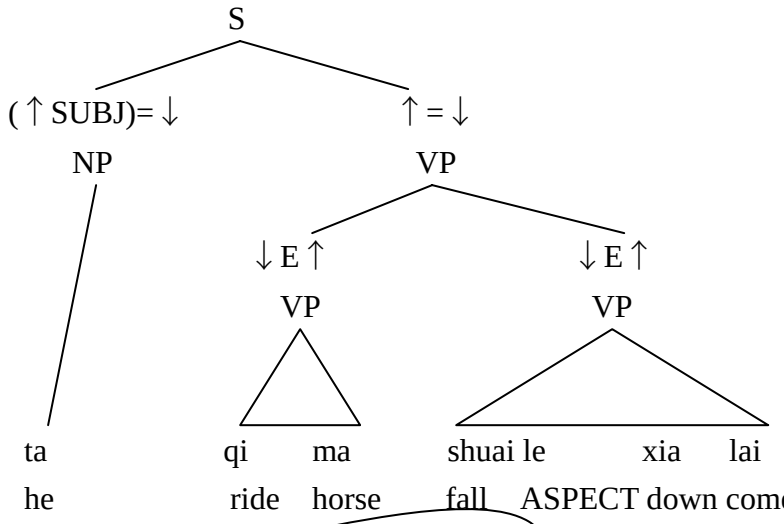
Presupposing his X-bar filter, Which Stipulates that phrase structure rules in Chinese must always be head-final except at the single-bar level, and noticing the ungrammatical sentence in 7, J. Huang (1982a) proposes the structure 12b for the topicalized

sentence. He postulates that the trace here is 'invisible' so that the extra qi can be deleted by haplology, the rule proposed in chao (1968) to delete one of the two phonologically identical morphemes when they are right next to each other. This postulation deprives transformational theorists of the only empirical evidence for proposing traces, since the existence of traces, even though 'invisible' in the surface structure, are supposed to block contractions and thus one can always test the existence of traces by whether contraction is possible. I assume that the mechanism of haplology should not differ from that of contraction since both are phonological deletions. It is also not clear to me at this moment what mechanism in the grammatical theory allows one to distinguish 'visible' and 'invisible' traces as proposed by J. Huang. The haplology rule J. Huang has in mind must apply to all adjacent pars of identical morphemes regardless of the structure, as he puts the two qis in two separate VPs in his analysis. This haplology rule should apply to 12c, but does not. Moreover, with an identical c-structure, we now show that the noun ma in 13a cannot be topicalized. The above arguments imply that 12a and 12b are not derivationally related at all. One proposal to solve the derivational history of 12b was suggested in C.-R. Huang (1983). The basic idea is that 12b is related to the SOV sentence rather than to 12a. We give a simple formulation below.

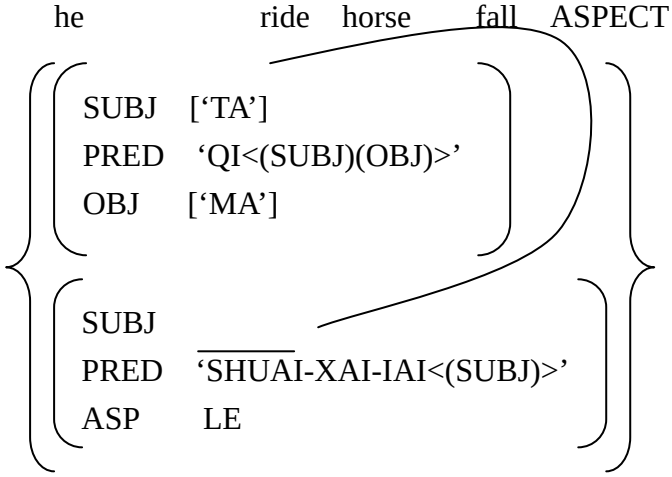
(14) a. ta neizhi ma qi de hen lei
he that horse ride DE very tired
'He rode that horse and was tired from the riding.'
b. [neizhi ma], ta [] qi de hen lei
↓ = ⇓ ↓ = ⇑

The intuition about the resultative VP sequences is that they should have the same c-structure as 13a, and therefore should have a f-structure very similar, if not identical to 13a as well. The c-structure and the f-structure of 13a are shown below as 15a and 15b. This structure, identical to the structure proposed for coordinate structure in English by Bresnan, Kaplan, and Peterson (forthcoming), will be a very powerful tool in analyzing various VP sequences in Mandarin Chinese. The c-structure works for 12a, but the f-structure does not work convincingly. Fist of all, we are forced to postulate two different predicate argument structures for qi 'ride': 'QI<(SUBJ) (OBJ)>', and 'QI<(SUBJ) (XCOMP)>'. This is far from fully justified. More importantly, the semantic instantiation principle in LFG says that every single instantiation of a lexical item should be different unless there exists a long-distance dependency. or, to put it in other words, each instantiation must be uniquely indexed. The principle is obviously necessary and convenient since we do not want the two instances of the verb lauqh to be interpreted as the same action in are referring to the same action without violating that principle. How can we then read from the f-structure that the ta 'he' in question does not get tired from some other riding action such as riding a mule rather than the horse-riding reported in the first VP? our solution to capture the fact that both VPs refer to the very same action requires only one change in the f-descr- have one f-structure instead of a set of two. We do have to postulate another lexical entry for the verb qi, but this will be taken care of by the redundancy rule required by our discussion of de in the following section. Two consequences follow from this structure. One is that it preserves the structural idemitiy between this particular sentence pattern and the other VP sequences, although the different f-structures placss stronger restrictions on the semantics. The second is that this answers in a non-ad hoc way the long puzzling question of why the identical the problem that the two occurrences are still individually indexed, we may argue that they should e allowed to be interpreted as identical if stipulated in the syntax, since any occurrence of the same verb is carrying exactly the same grammatical information.[8] In this way we can avoid incohenence.

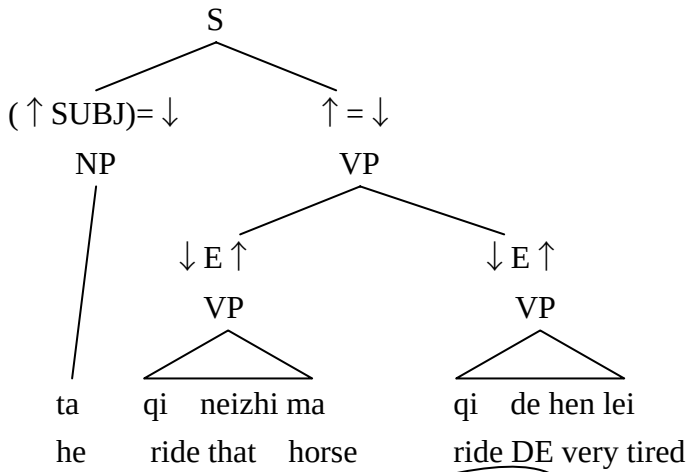
(15) a


S
(↑ SUBJ)=↓
↑=↓
NP
VP
↓E↑
↓E↑
VP
VP
ta
qi ma
shuai le
xia lai
he
ride horse
fall ASPECT down come

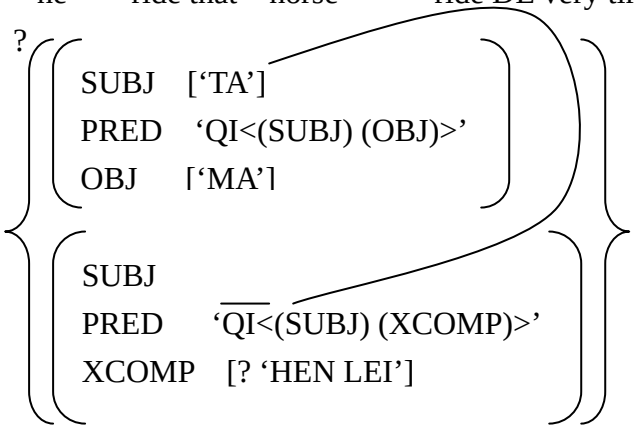
b.


SUBJ ['TA']
PRED 'QI<(SUBJ)(OBJ)>'
OBJ ['MA']
SUBJ
PRED 'SHUAI-XAI-IAI<(SUBJ)>'
ASP LE

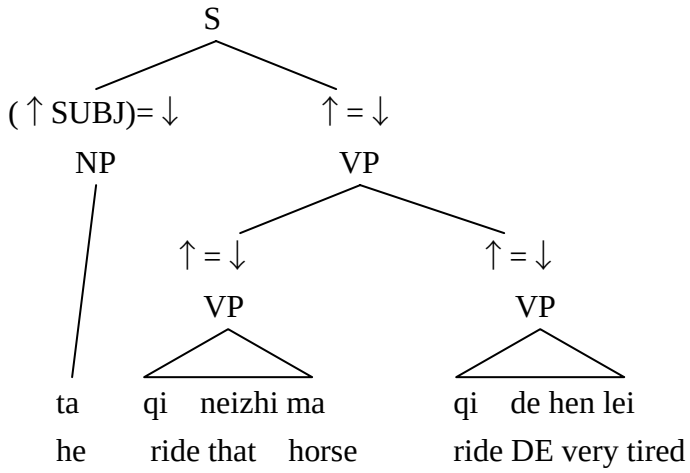
a.


S
(↑ SUBJ)=↓
↑=↓
NP
VP
↓E↑
↓E↑
VP
VP
ta
qi neizhi ma
qi de hen lei
he
ride that horse
ride DE very tired

b, ?


SUBJ ['TA']
PRED 'QI<(SUBJ) (OBJ)>'
OBJ ['MA']
SUBJ
PRED 'QI<(SUBJ) (XCOMP)>'
XCOMP [? 'HEN LEI']

(17) a.



b.

SUBJ	['TA']
PRED	'QI<(SUBJ)(OBJ)(XCOMP)>'
OBJ	['MA']
XCOMP	[? 'HEN LEI']

Ⅳ. On de and Complementation

The last cornerstone we have to lay is an explicit formulation of open complements (which are represented as XCOMP in our previous examples) with de. J. Huang (1982a) glosses de as 'COMP' and treats it as if it directly corresponds to 'that' in english.[9] He assigns the following structure to 12a.

(18) [ta [= [_qi neizhi ma][_ qi [_ [de][hen lei]]]]]
S V V V S COMP S

We have good reason to believe that this is not the correct structure. Our arguments will show that de hen lei doesnot form a constituent.

(19) tx X(=shi) qi neizhi ma X qi * de X den lei
he (FM) ride that horse ride DE very tired

(20) a. hua kai de [you mei you xiang]
flower bloom DE CONJ beautiful CONJ fragrant
'Flowers bloom beautifully and fragrantly.'
b. hua [kai de you mei kai de you xiang]
flower boloom DE CONJ beautiful bloom DE CONJ fragrant
c. *hua kai [de you mei de you xiang]
flower bloom DE CONJ beautiful DE CONJ fragrant

(21) haizimen [chang de tiao de] dou hen hao
children sing DE dancr DE all very well
'Children sang and danced very well.'

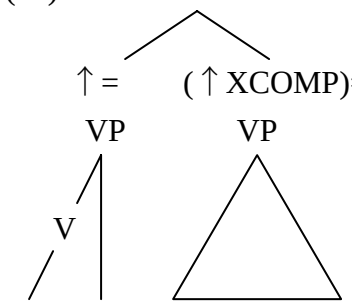
19 applies the test of constituency of maximal categories by the focus-marker shi again. The symbol X marks the positions where shi can occur, while * indicates where the occurrence of shi leads to ungrammaticality. The distribution shows that de hen lei cannot be a maximal category (which we assume S-bar to be). 20 offers more evidence to support our doubts, since it is assumed that random sequences of words not forming constituents cannot be coordinated. In contrast with 20a and 20b, 20c strongly suggests that de hen lei is not a constituent. 21 suggests that de may form a constituent with the preceding verb.

The problem, then, is to characterize the structure [[V de] X] and to determine what role is to be assigned to the constituent x. The observation is that it is a control relation and that the subject in X is always the controlled element. This suggests that it has to be an instance of functional control. Secondly, the fact that there is no possible ambiguous interpretation of controllers and that X cannot be omitted (i.e., it is subcategory-ized) indicates that X should be an open complement (XCOMP).[10]

(22) *ta qi neizhi ma qi de [t]
he ride that horse ried DE

It follows from LFG control theory, elaborated on in Bresnan (1982a), that the control information about XCOMP SHOULD be lexically induced. It is also observed that every verb in Chinese can take a complement when de occurs, and it is exactly the existence of de that tells us the verb is being complemented; we may as well stipulate that the control rule is carried is that the lexical entry of de . One point we must not neglect is that the complement after de can sometimes be closed, as demonstrated by 24. If we take COMP as a generalized term (or as a variable) over open and closed complements, we can then represent the behavior of complements in one lexical rule, 23b.[11]

(23)



qi de hen lei
ride DE very tired

b.

qi : verb
(↑ PRED)='QI<(SUBJ)(OBJ)>'
or (↑ PRED)='QI<(SUBJ)(OBJ)

de : particle
(↑ G)= (↑ COMP SUBJ)

(24) ni jiao de wo xin huang
you call DE I heart fluster
'your calling makes me nervous.'

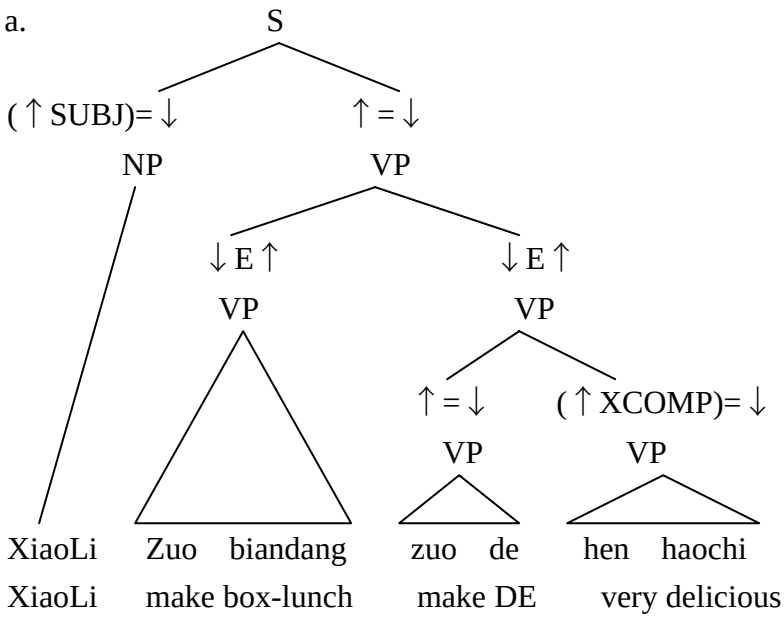
The G here is a variable standing for a controller (in the XCOMP case), or redundantly the subject of the closed complement itself (in the closed complement case).

One of the desirable consequences derived from 23b is that now we have a formal account for why de hen lei cannot be a constituent. It would be natural to assume that the rule (↑ XCOMP) = ↓is attached to the node dominating de hen lei. In this case, the control information induced by de can never be passed up to the matrix sentence. The reason is that all functional equations must be locally defined in LFG. In other words, the grammatical information can only be passed up to the immediately dominating node step by step. In this case, there are no function equations such as ↑ = ↓attached to the de hen lei node to pass the information up.

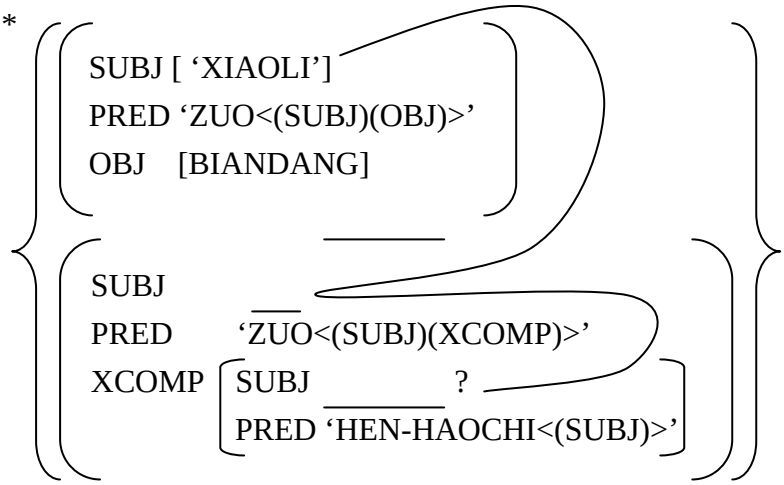
Another consequence is a supporting argument for choosing ↑ = ↓over ↓ E ↑ for the resultative VP sequences with identical verbs. Assuming that we have the proper rule to decide the f-structure. 26b is the desired f-structure of 4b. On the other hand, 25b, as the f-structure derived from the set reading, fails to fill in the SUBJ position of the XCOMP. The only way that position can be filled is by being distributed from the matrix subject. This gives the wrong interpretation. It is the box

lunch which is delicious rather than the cook. There is no way to get the right controller from the other f-structure of the set.

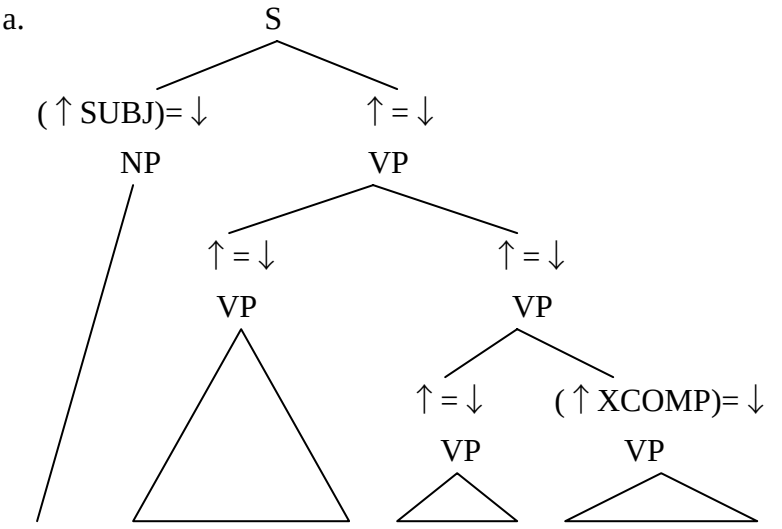
(25) a.



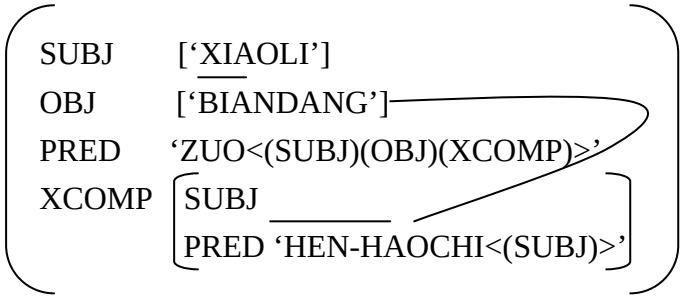
b. *



(26) a.



b



Ⅴ. Pseudo-Possessive Structures

In this section, we first refute the long asserted rule of de-insertion, either as a 'shallow' transformation in Teng (1974) or as a process analogous to English of-insertion in PF proposed by J. Huang (1982a)

(27) a. (=4a) XiaoLi biandang zuo de hen haochi
XiaoLi box-lunch make DE very delicious

b. (=3) XiaoLi de biandang zuo de hen haochi
Xiaoli DE box-lunch make DE very delicious

c. Biandang XiaoLi zuo de hen haochi
box-lunch XiaoLi make DE very delicious
'XiaoLi makes delicious box-lunches.'

d. *Biandang de XiaoLi zuo de hen haochi
box-lunch DE XiaoLi make DE very delicious

(28) NP1 + NP2 => NP1 de NP2

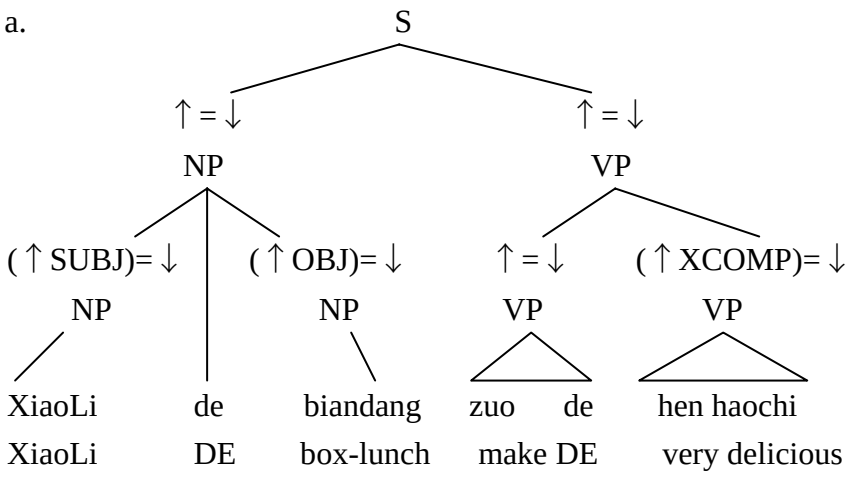
(29) a. XP N => [XP N]
NP

b. [XP N] => 1 de 2 J. Huang (1982a)
NP 1 2

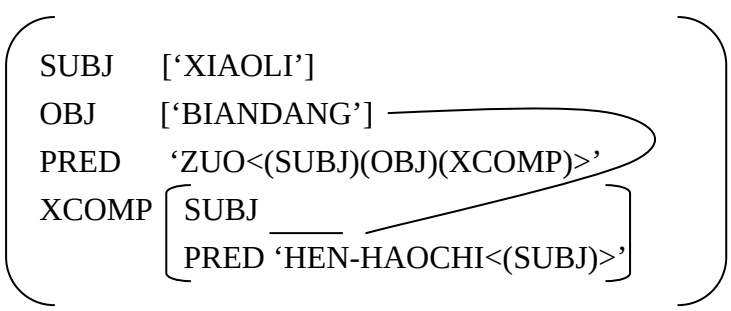
J. Huang's rule is a restructuring of two adjacent nominals, regardless of the constituency, to form a possessive NP with the internal structure of [NP de N]. It should be clear that neither formulation can block the generation of the ungrammatical 27d.

Our strategy will be togenerate the whole sequence directly with phrase structure rules. One straightforward way to do this is to have the c-structure and f-description as represented by 30. The concept of having the possessor as the 'subject' of the inclusive NP is not totally new. It 'governs' the nead NP in government and biding theory. X-bar theory treats the possessive NP as a 'subject'. Bresnan's (1982a) analysis of English gerunds preceded by genitive NPs is even closer in spirit to our analysis here. Bresnan proposes to treat the genitive NP in a phrase (represented by a Snode in the c-structure) like John's walking slowly as the SUBJ function of the S, and the gerund as the PRED function. Our stipulation here does something very similar. Namely, the rules are carrying the information about the grammatical functions of the pseudo-possessive NPs in the sentence and have no direct correspondence with their case or other morphological marking.[12]

(30) a.



b.



We now assume that our stipulation of the lexical rule for de in the previous section applies here. In this case, the control information is stated twice in the f-description, and the required existence of the XCOMP is also stated twice. This neatly explains why the [NP de NP] structure interpreted as containing a subject ard an object occurs only when the sentence is complemented. If this were not the case, the XCOMP place-holder predicted by the control lexical rule would not be filled, and the f-structure would be ill-formed.[13]

(31) wo de tou teng
I DE head ache
'My head aches.'

If we look back to the ambiguous 3 again, we can easily resolve the ambiguity by giving the two required lexical entries for de. One is the COMP marker that we formulated earlier, the other will de the genitive marker. The ambiguity is then a lexical ambiguity. The ambiguity occurs when the conditions of 'inalienable possession' (Teng (1974)) or 'conceptual wholeness' (Chu (1976)) are met. This will be supported by the behavior of wh-questions. We cannot question the pseudo-possessive NP with a single wh-word, while questioning the real possessive NP with a single wh-word is perfectly acceptable. 31 is an acceptable answer to32. But 33 cannot be asked in expectation of answers like 5.

(32) a nail teng
where ache

b. shenme teng
what ache
'What aches?'

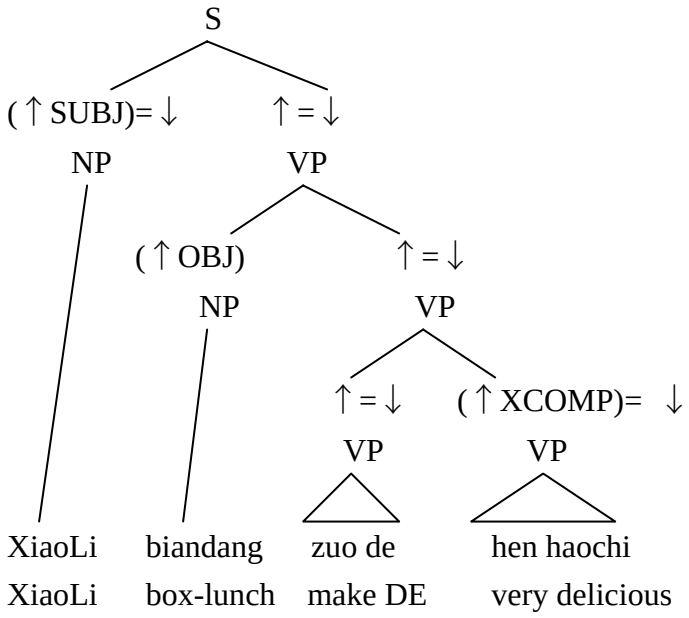
(33). shenme la de hen hao
what pull DE very well
'What pulls well?'

32 is straightforward, 32a questions the SUBJ function (or subject, to use a more traditional grammatical terminology) of the sentence, and we get the answer with a specified SUBJ in 32b In 5, the NP carries information about both the grammatical functions SUBJ and OBJ. That is, we have to read from the phrase Ma Yo-Yo de datiqin that Ma Yo-Yo is the subject of the sentence and that datiqin is the object of the sentence. Intuitively, it is impossible to question two elements with one question word. In LFG theory, this can be explained by noting that the PRED of the verb in 5 takes two arguments, which is inconsistent with 33. 33 requires some PRED that takes one argument only.

VI. Concluding Remarks

It follows from the preceding study that the three groups of sentences in question, namely the pseudo-possessive, the SOV, and the identical verb VP sequence, are structurally different but have identical f-structures fo corresponding sentences. We have shown the f-structures of 3 and 4b as 30b and 26b, repectively. The f-structure of 4a will be diagrammed as 34 below. It is obvious that the three f-structures are identical.

(34)



One feature stands out in our solution. Some of the information is doubly encoded. Examples are the two ↑ = ↓ rules in the f-description of identical verb VP sequences, and the two des carrying the same control information in the pseudo-possessive. Studies in information theory discovered that redundancies are necessary in any communication system.[14] Redundancies in human languages have often been noted at the pragmatic or the phonological level. If our solution turns out to be the optimal one, then we can perhaps do more study on rules containing redundancies, which may turn out to be not at all inefficient.[15]

FOOTNOTES

*I am indebted to Joan Bresnan and Ron Kaplan for teaching me the theories and formalisms of LFG, to Joan Bresnan especially for the discussions that led to this paper, to Carol Rosen for making detailed corrections on my stylistic errors and reading two versions of the draft, and to Wayne Harbert, Louie Mangione, Annie Zaenen, and an anonymous reader for comments. I alone am responsible for any possible mistakes. The first draft of this paper was written during my two-quarter study at Stanford University through the Exchange Scholar Program sponsored by Cornell University.

[1] The second occurrence of de will be dicussed later in this paper.

[2] The fact that an analysis failing to account for this is inadequate was pointed out to me by Ying-Yu Sheu (personal communication).

[3] The dispute over the emergence of SOV word order in Chinese has been going on for years. What we would like to show here is simply that the SOV word order might be the best formulation for this particular group of sentences. It also has to be pointed out that the PS rule generating the SOV order has to be constrained,

since not all types of VPs can take this structure.

i) *maque qiuyin chi
sparrow earthworm eat
'Sparrows eat earthworms.' (The topicalization reading of 'Earthworms eat sparrow' is available though semantically anomalous.)

[4] See J. Huang (1982a: 53) for the other sentences not cited here for contrast.

[5] See Bresnan, Kaplan, and Peterson (forthcoming) for the distribution of information in the coordinate structure.

[6] 12b is constructed according to the claims made in J. Huan (1983: 52-5, 98-9 footnote 19). He does not give explicit formulations here.

C.-R. Huang (1983) now seems to be an inadequate analysis to me. The ps rule postulated in that paper depends crucially on the terminal symbol [+VN].

i) VP → VP VP
[+VN] [COMP]

However, there are sentences not covered by this rule. The VP with the complex NP ziji de qi does not fit into the string terminal symbol [+VN] which requires the node to be expandea as two simple lexical words, a verb and a noun.

ii) ta shen ziji de qi sheng le bantian
he bear self DE anger bear ASP half-day
'He was angry at himself for a half-day (=for a long time).'

[7] The exact interpretation of these sentences may have to be the burden of pragmatics. Syntactically they may well be VP coordinations without overt conjunctions, which is very common in Mandarin Chinese. But the logical relation between the two coordinated parts varies too widely to be easily captured.

[8] It is not clear at this moment what mechanism is available to get around the problem caused by the different indexes of the same verb in separate instantiations. One possible way is to stipulate that when the function rule calls for the two f-struc- there might be a mechanism to interpret the two indexes as the same under this condition.

[9] See J. Huang (1982a: chapter 2) for details.

[10] For the theory of control, see Bresnan (1982a).

[11] It is still not clear how the controller should be stipulated in this rule. Though the rule (↑SUBJ) = (↑COMP SUBJ) seems to account for the unmarked cases, we do get the following contrasts:

ia) zhe jia niurou chao de hen man
this house (classifier) beef stir-fry DE very slow
'This (restaurant) is very slow in stir-frying beef.'
b) zhe jia niurou chao de hen la
this house (classifier) beef stir-fry DE very spicy
'This (restaurant) makes very spicy stir-fried beef.'

iia) Wang laoban gei zhiyuan xinshui gei de hen gao
Wang boss give employee salary give DE very high
'Boss Wang gives high salaries to employees.'
b) Wang laoban gei zhiyuan xinshui gei de hen kangkai
Wang boss give employee salary give DE very generous
'Boss Wang give salaries generously to employees.'

The interpretation seems to depend on the subcategorization of the stative verb which functions as PRED of the XCOMP. For example, kanqkai is subcategorized to take animate arguments. Xinshui hen kanqkai is ungrammatical. It is conceivable that we could leave the controller in the function description rules unspecified, and let the lexicon filter out the ungrammatical interpretations. So the control ule encoded here will be something like (↑ G) = (↑ XCOMP SUBJ), where G varies over the set (SUBJ, OBJ) since we do not get the SUBJ interpretations in sentences like iia and iib.

[12]Another possible solution, as pointed out to me by Joan

Bresnan, is to encode the information about the function arguments in the lexical entry of the verb. The verb li 'cut' will have the following rule in the lexicom.

i) (↑ PRED) = 'LI<(OBJ POSS)(OBJ)(XCOMP)>'
ii) ta de toufa li de hen hao
he DE hair cut DE very well
a. 'His hair was well cut.'
b. 'He cuts hair very well.'

As the ambiguity in li suggests, we do get the possessive reading from this structure. One potential problem I may run into is that we have to justify postulating two radically different predicate argument structures which apply to an identical structure. But more crucial is the fact that the interpretation of this sentence requires that the head NP in the pseudo-possessive construction alone be the object. The rule in I takes the whole NP and therefore gives wrong reading of *He cuts his own hair very well.' No mechanism seems to be available to solve this problem at this moment. But this alternative remains in our consideration.

[13]We are leaving open the question of whether open complements are available with sentences without de in the VP. conceivably, if the control information is encoded in the NP with de we should be able to get XCOMP without de. This should be further evidence to support the stipulation of the complement equation in

the lexical entry of de. The information is adequately represented by the NP. The following sentence may support our argument.

i) ta de lanqiu da shu wo
he DE basketball hit lose
'He plays basketball worse than I.'

[14]For a comprehensive introduction to these theories, see Chao (1968b).

[15]One more recent study of the de-construction is C.-R. Huang and L. Mangione (1985). The analysis in this paper is based on the observation that it is the verb after de rather than the one before that behaves like a matrix predicate. This paper seems to have solved the few difficulties we are facing here. Readers are referred to this paper for details.

REFERENCES

Bresnan, Joan (1982a). ‘Control and Complementation,’ in J. Bresnan (ed.), The mental Representation of Grammatical Relations. Cambridge: MIT Press.

-----(1982b). ‘Polyadicity,’ In J. Bresnan (ed.), The Mental Representation of Grammatical Relations. Cambridge: MIT Press.

Bresnan, Joan, Ronald Kaplan, and P. Peterson (forthcoming). ‘Coordination and the Flow of Information through Phrase Structure.’

Chao, Yuen-Ren (1968a). A Grammar of Spoken Chinese. Berkeley:

-----(1968b). Ianguage and Symbolic Systems. Berkeley: University of California Press.

Chu, Chauncey C. (1976). “’Conceptual Wholeness’ and the ‘Retained object,’” Journal of Chinese Linguistics 4.1.

Huang, Chu-Ren, and (1983). ‘Reduplication Reanalyzed.’ Manuscript, LSA Summer Institute.

Huang, Chu-Ren, and Louis Mangione (1985). ‘A Reanalysis of de: Adjuncts and Subordinate Clauses.’ To be presented at the Fourth West Coast Conference on Formal Linguistics at UCLA.

Huang, C.-T. James (1982a). Logical Relation in Chinese and the Theory of Grammar. Ph.D. Dissertation, MIT.

-----(1982b). ‘Move wh in a Language without wh –movement.’ Linguistic Review 1.4.

Kaplan, Ronald, and Joan Bresnan (1982). ‘ Lexical-Functional Grammar: A Formal System for Grammatical Representations.’ In J. Bresnan (ed.), The Mental Representation of Grammatical Relations. Cambridge: MIT Press.

Ross, Claudia (1983). ‘On the Function of Mandarin DE.’ Journal of Chinese Linguistics 11.2.

Teng, Shou-Hsin (1974). ‘DoubleNominatives in Chinese. ‘ Language 50.3.