AN LFG ACCOUNT FOR CHINESE BEI SENTENCES

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1. INTRODUCTION

The *bei* construction, which is commonly considered the passive construction in Chinese, is one of the most argued about syntactic topics in Chinese linguistics. The following are some examples of the various types of *bei* sentences which will be discussed in this paper.[1]

1. a. Laoshu bei yao le.   PF = Perfective marker
        mouse *bei* bite PF
        'The mouse was bitten.'

    b. Laoshu bei mao yao le.
        mouse *bei* cat bite PF
        'The mouse was bitten by the cat.'

    c. Laoshu bei mao yaodiao le yiba.
        mouse *bei* cat bite off PF tail
        'The mouse had its tail bitten off by the cat.'

    d. Laoshu bei mao ba yiba yaodiao le.
        mouse *bei* cat *ba* tail bite off PF
        'The mouse had its tail bitten off by the cat.'

    e. Laoshu bei mao ba yiba yaodiao le haoduo mao.
        mouse *bei* cat *ba* tail bite off PF many hair
        'The mouse had many hairs of its tail bitten off by the cat.'

    f. Mao bei laoshu tao le.
        cat *bei* mouse escape PF
        'The cat had the mouse run off on him.'

This paper is yet another attempt to analyze these various sentence types and to provide a unified account for the lexical item *bei*. We shall discuss and compare previous accounts and argue for our analysis that, syntactically, *bei* is

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a verb and that it only occurs in a pivotal construction, following the terminology of Li and Thompson (1981:607). We shall conduct the discussion in relatively theory-independent terms but formulate our preferred analysis of *bei* in LFG, the Lexical Functional Grammar (Bresnan 1982, Kaplan and Zeanan 1987), with some extended features developed at ECS, Executive Communication Systems (Her 1987).

Most commonly *bei* has been considered a function word (e.g., Chao 1968, Chang 1977, Hou 1979, Li and Thompson 1981, Chu 1984, Starosta 1985, and Her 1985-6), in the sense of the traditional distinction between 'function words' vs. 'content words' in Chinese linguistics. However, there has been a radically different line of analysis which has been largely overlooked that treats *bei* as a content word, more specifically a verb with its own predicate argument structure. We illustrate the different existing analyses of *bei* in the following diagram.
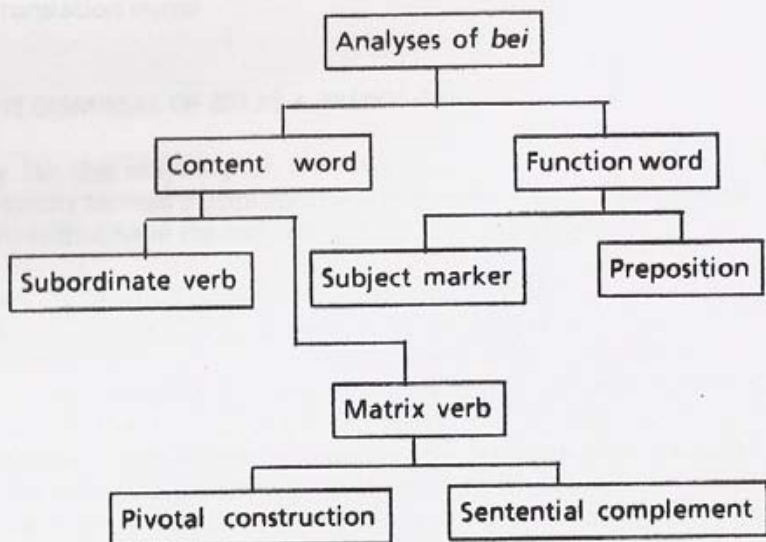
As shown in the diagram, within the analysis that *bei* is a function word, some treat it as a subject marker (e.g., Li and Thompson 1981), and yet some insist that it is a preposition (e.g., Chao 1968, Hou 1979, Chu 1984, Her 1985-6). Her's analysis is formulated in a lexicalist framework, Lexicase, and Hou's in the Relational Grammar. There are also some transformational accounts (e.g., Li 1972, Huang 1966) while other discussions are not conducted in any particular theoretical framework. Different possible accounts also exist regarding what status *bei*, when treated as a verb, has in a sentence and what predicate arguments it is required to take. Ma (1985) proposes that *bei* has a pivotal construction, i.e., it takes a direct object and a verb phrase as arguments and its direct object functionally controls the subject of the predicated verb phrase. Tan (1987) argues that *bei* as a verb only takes a noun phrase as its object and the [*bei* NP] phrase is subordinate to the matrix clause. Both Ma's and Tan's accounts are formulated within LFG. Another logical alternative to their proposals is that *bei* is the matrix verb, as Ma suggests, but what follows it is a sentential complement; thus in LFG terms, *bei* subcategorizes an SCOMP. Whereas Ma proposes that *bei* subcategorizes an OBJ and an XCOMP and *bei* is the matrix verb, Tan analyzes *bei* as subcategorizing an OBJ and the *bei* phrase only functions as an adjunct of the matrix clause.

2. THE DISMISSAL OF *BEI* AS A SUBJECT MAKER

First of all, we would like to dismiss the analysis that *bei* is without lexical meaning and is merely a case marker of the subject. Within this analysis, sentence 1b would have the structure [O *bei* S V] and sentence 1a would have to be considered subjectless. The dilemma is that it is quite peculiar that *bei* as a subject marker would mark nothing in 1a. Also, if sentence 1a is considered an [O V] sentence and 1b an [O S V] sentence, are we to say that the corresponding English sentences, 'The mouse was bitten' and 'The mouse was bitten by the cat' are also of [O V] and [O V S] respectively? Such a position contradicts the morphology of case marking in English and makes the study of word order typology entirely meaningless. Thus, if *laoshu* is to be recognized as the subject in sentences 1a and 1b, *bei* simply cannot be a subject marker. Also, as Chu (1984:140) has demonstrated, the analysis that *bei* is a pure grammatical case maker contradicts the fact that *bei* has the semantic content of 'adversity' and that its presence or absence affects the grammaticality of a sentence.

If one retreats from this position and claims that *bei* marks the semantic agent instead of the syntactic subject, then in effect one still leaves open the

question of what syntactic category *bei* belongs to. Li and Thompson (1974, 1981), along with many traditional grammarians, fail to distinguish clearly between syntax and semantics. Therefore it is unclear whether they recognize *bei* as a morphological case marker marking the nominative case of subject or as a preposition that has the semantic function of marking the agent. The confusion of syntactic category and semantic function, for example, in this case always taking the semantic agent to be the syntactic subject, is unfortunately common within the study of word order typology of the Greenbergian tradition (Her 1985-6). Even Chu yields spontaneously to this fallacy by including *bei* sentences as [O S V] type (p.139) after first correctly pointing out this confusion (p.137):

> When talking about subject and object, one has to make sure what subject and object are. While it may be easy to define 'semantic subject' and 'semantic object,' it is rather difficult to define 'syntactic subject' and 'syntactic object.' After all, it is the syntactic relation of subject and object that a discussion of word order should be based on! (Translation mine)

3. THE DISMISSAL OF *BEI* AS A PREPOSITION

By far the majority of Chinese linguists consider *bei* a preposition, occasionally termed inappropriately as coverb (e.g., Li 1981, Chang 1977). *Bei* sentences thus have the following constituent struture:

1a-C. [s Laoshu [vp [pp [p bei p] pp] yao vp] le s]
1b-C. [s Laoshu [vp [pp [p bei p] mao pp] yao vp] le s]

The popularity of this analysis is no doubt to some extent due to the likening of the structure of *bei* sentences to that of English passive translations. Such an analysis, unlike the previous one, is basically without flaws at the meta-theoretical level of linguistics; however, it misses some important generalizations in Mandarin Chinese. First, as both Ma and Tan have objected, when *bei* is used in 'agentless' sentences such as 1a it constitutes a violation to the universal characteristics that a preposition always takes an immediately following NP-like element as its object. Furthermore, this analysis poses a problem for analyzing the verb in a *bei* sentence and its *bei*-less counterpart. The solution proposed in Her (1985-6) that treats *bei*-V as a morphologically-derived lexical item, although getting around the first problem, still faces the second problem.

2a)   Laoshu bei yao le.
mouse *bei* bite PF
'The mouse was bitten.'

a')   Laoshu yao le.
mouse bite PF
'The mouse has bitten.'
'The mouse was bitten.'

b)   Ji bei tamen chi le.
chicken *bei* they eat PF
'The chicken was eaten by them.'

b')   Ji chi le.
chicken eat PF
'The chicken was eaten.'
'The chicken ate.'

c)   Laoshu bei mao ba yiba yaodiao le.
mouse *bei* cat *ba* tail bite off PF
'The mouse had its tail bitten off by the cat.'

c')   Laoshu ba yiba yaodiao le.
mouse *ba* tail bite off PF
'The mouse bit off its tail.'

d)   Mao bei laoshu tao le.
cat *bei* mouse escape PF
'The cat had the mouse run off on him.'

d')   Mao tao le.
cat escape PF
'The cat escaped.'

e)   Wo bei tamen ba wo pian le.
I *bei* they *ba* I cheat PF
'I was cheated by them.'

e')   *Wo ba wo pian le.
I *ba* I cheat le
'I cheated myself.'

e'')   Wo ba ziji pian le.
        I *ba* self cheat le
        'I cheated myself.'

Sentences 2a and 2b are unambiguous, as we can see from their translations in English. However, sentences 2a' and 2b', without the *bei* phrase, each have two readings, again as the translations clearly indicate. There are two possible accounts for this ambiguity. One is to say that transitive verbs in Chinese are lexically ambiguous, i.e., they can either be active or passive unless specified by certain elements such as *bei*. Thus, *chi* 'to eat' and *yao* 'to bite' can be both passive and active and therefore the ambiguity in 2a' and 2b', but 2a and 2b with the specification of passive voice by the *bei* phrase have only the passive reading. Within this analysis there are serious difficulties in accounting for sentences 2c' and 2d'. First of all, 2c has only the passive reading due to the presence of the *bei* phrase, but why is 2c' not ambiguous with two readings as this analysis predicts? One might argue that 2c' only has the active reading because of the presence of a *ba* phrase but such a statement is self-contradictory since in 2c both *bei* and *ba* are present at the same level.

Still, sentences 2d and 2d' present a different problem. *Tao* 'to escape' is an intransitive verb in Chinese. The universal characteristic that only transitive verbs may be passivized and examples like 2d has led some linguists to the conclusion that *bei* sentences in Chinese are not of genuine passive construction (e.g., Ma 1985, Tan 1987). Therefore, if 2d is not genuinely passive, this present analysis cannot stand without posing a violation of this universal characteristic of the passive construction. The fact that both 2d and 2d' have only one reading suggests that it is the same verb in both sentences and the different meanings are due to differences in syntactic structure.

We now examine the second possible account for the ambiguous 2a' and 2b'. Some linguists have considered sentences like 2a' of structural ambiguity (e.g., Chu 1984, Sun and Givon 1985), one of SV structure, the other OV. In other words, the active meaning comes from the structure where *laoshu* 'mouse' and *ji* 'chicken' are subjects of the verbs, and the other reading comes from the structure where they are actually objects and the sentences are subjectless. However, this account still leaves open the question of the status of the verb in a *bei* sentence. Are we to say that in 2a *laoshu* is also the object? How about *ji* in 2b? If we consider them objects, then we have to say that either all *bei* sentences are subjectless, although syntactically there is nothing incomplete, or that the *bei* phrase is always the subject; such

another position and claim that the presence of a *bei* phrase indicates the passive voice of the verb and that *laoshu* and *ji* in 2a and 2b are the subjects, we still have the problems of accounting for 2c and 2d. First, we have to say that in 2d *tao* 'to escape' is a passivized intransitive verb and thus constitutes an exception of the universal passive construction. Secondly, we have to say that in 2c, as well as 1c, the verb *yaodiao* 'to bitten off,' although passivized, is still transitive with *yiba* 'tail' as its overt object. Again such behavior is extremely uncharacteristic of verbs already passivized, which universally no longer have their transitivity.

Finally, regardless of how we analyze the main verb in a *bei* sentence, if *bei* is considered a preposition and thus the *bei* phrase a prepositional phrase, there is no accounting for the fact that, while 2e' is unacceptable, 2e is perfectly good. Since 2e, just like 2e', is mono-clausal, the second pronoun *wo* 'I,' which has the subject *wo* as its antecedent, should have to be reflexive for the sentence to be acceptable, as is the case in the acceptable 2e''. Therefore, within this *bei*-preposition analysis 2e would be wrongfully predicted to be unacceptable.

The more perceptive reader could probably have detected that this last argument against the *bei*-preposition analysis leads most convincingly to the hypothesis that the difference in acceptability between 2e and 2e' is that, while 2e' is mono-clausal and therefore a pronoun with its antecedent in the same clause has to be reflexive, 2e is not mono-clausal and actually contains two clauses. The second pronoun *wo* in 2e thus does not have to be reflexive because it does not have an antecedent in the same clause. Such a hypothesis necessarily entails the interpretation that *bei* is a verb in its own right.

Before we proceed to discuss and compare the possible analyses where *bei* is treated as a verb, it is important to point out that our discussion so far has also strongly supported the position that *bei* sentences should not be considered passive sentences and *bei* cannot be considered a passive marker. To be more specific, *bei* sentences are not passive in the sense that they cannot be accommodated by any of the universal generalizations proposed by Chomsky (1957), Chomsky (1981, 1982), or Bresnan (1982). Two reasons are crucial here: 1) *bei* sentences may contain intransitive verbs which are non-passivizable (e.g., 1f); 2) *bei* sentences may contain verbs still transitive with overt objects (e.g., 1c-e). Thus, the denotation of Chinese *bei* sentences in fact includes more than just the passive voice; they are rather similar to the Japanese indirect passive (Siewierska 1984). We shall use the term 'affective voice' to distinguish from passive voice.

4. BĒI AS A VERB

4.1. Problems with the Subordinate Status of bei (Tan 1987)

We will now first examine Tan's proposal that bei(-NP) is a modifying subordinate clause. In more formal LFG terms she proposes that (1) bei has the following complement structure:

bei   V 'bei < (SUBJ), (OBJ) / (SCOMP) >'

(where / indicates a disjunction) and (2) the bei clause is ALWAYS an adjunct of the matrix clause and (3) thus bei never functions as the matrix verb. A typical bei sentence such as 1b will therefore have the following C-structure and F-structure:

1b-C1.   [$_S$ Laoshu [$_{VP}$ [$_S$ [$_{VP}$ [$_V$ bei $_V$] mao $_{VP}$] $_S$] yao $_{VP}$] le $_S$]

1b-F1.
$$
\begin{bmatrix}
\text{SUBJ} & [\text{PRED} \quad \text{'laoshu'}] \\
\text{ADJ} & \begin{bmatrix} \text{SUBJ} & [\ -- \ ] \\ \text{OBJ} & [\text{PRED} \ \text{'mao'}] \\ \text{PRED} & \text{'bei} <(\text{SUBJ}) (\text{OBJ})>' \end{bmatrix} \\
\text{ASP} & \text{PERFECT} \\
\text{PRED} & \text{'yao} < (\text{SUBJ}) >'
\end{bmatrix}
$$

Tan's proposal is to a certain degree in reaction to Ma (1985) where bei is treated as the main verb that has a pivotal construction. We shall answer Tan's objections to Ma (1985) in the next section. The only piece of direct evidence that Tan provides to support her position is the dispensibility of bei phrases as adjuncts (Tan 1987:7):

> The meaning of the sentence with the adjunct entails its counterpart without the adjunct. This is true of Chinese bei sentences: the bei phrase disambiguates the corresponding sentences without this adjunct, which usually have both the active and non-active readings.

Sentences 1d-1e, 1f, and 2e-2e'' however provide three types of counter-examples to her argument. First of all, in the bei-less corresponding sentences of 1d and 1e, there is no ambiguity, be it structural

or lexical, and the meaning of 2d or 2e is certainly not 'the intersection of the matrix predicate meaning and the adjunct meaning' (Tan 1987:7). The *bei*-less corresponding sentence of 1f provides similar evidence against her position. Moreover, if we follow Tan's proposal, then we have to also impose a lexical ambiguity on intransitive verbs such as *tao* 'to escape.' Thus, we have to increase the complexity of the analysis of such verbs. Therefore, an account for sentences like 1f without such a complication, as we will demonstrate in the next section, should be preferred. Furthermore, Tan's account will also make the wrong prediction about the acceptability of sentence 2e. According to her analysis, the second *wo* 'I' still has its antecedent in the same minimal clause since the *bei* phrase is merely an adjunct; therefore, the second *wo* will have to be reflexive for the sentence to be acceptable. In 2e the second *wo* is not reflexive; thus Tan's account wrongfully predicts that 2e is unacceptable while it is perfectly good.

The most ad hoc aspect of Tan's analysis is that *bei* clause functions ALWAYS as an adjunct, never as the matrix clause. I am not aware of any such behavior of any other verb in Chinese, or any other language. Tan did not provide us with examples from other verbs in Chinese or other languages. Granted that any account for *bei* will most definitely contain peculiarities since *bei* is certainly a peculiar element that generates much discussion. However, a more generalized analysis will have to be preferred over one that resorts to such ad hoc features. Note also that Tan does not give an account for *bei* sentences that are 'agentless' such as 1a. It is therefore unclear how this type of sentence is accounted for within her analysis.

4.2. Advantages of *bei* as the Matrix Verb (Ma 1985)

Ma (1985) proposes that *bei* be the matrix verb and that its object control the subject of its open VP complement, and therefore the lexical form for *bei* is the following:

bei V   'bei <(SUBJ) (OBJ) (XCOMP)>'
          (↑XCOMP SUBJ) = (↑OBJ)

Within such an analysis, a typical *bei* sentence such as 1b will have the following C-structure and F-structure:

1b-C2.   [$_S$ Laoshu [$_{VP}$ [$_V$ bei $_V$] [$_{NP}$ mao $_{NP}$] [$_{VP}$ yao $_{VP}$] $_{VP}$] le $_S$]

```
1a-F2    ⎡ SUBJ      [PRED      'laoshu' ]                                        ⎤
         ⎢ OBJ       [PRED      'mao'  ⎞                                          ⎥
         ⎢                            ⎞                                          ⎥
         ⎢ XCOMP     ⎡ SUBJ      [ -- ⎞                              ⎤           ⎥
         ⎢           ⎢ OBJ       [ PRED      'PRO']                  ⎥           ⎥
         ⎢           ⎢ ASP       PERFECT                             ⎥           ⎥
         ⎢           ⎣ PRED      'yao < (SUBJ) (OBJ) >'              ⎦           ⎥
         ⎢                                                                       ⎥
         ⎣ PRED      'bei       < (SUBJ) (OBJ) (XCOMP) >'                        ⎦
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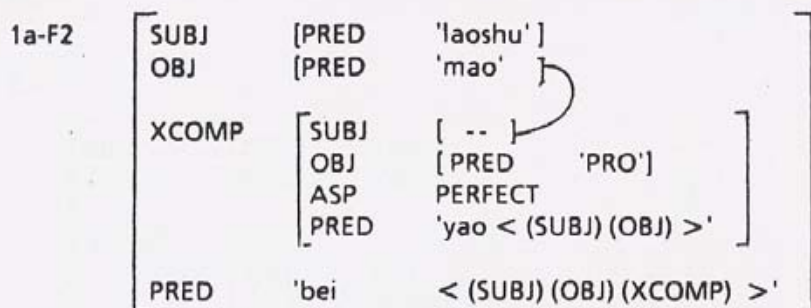
We will now show that such an account for *bei* sentences avoids all the above-mentioned problems. The first advantage of this analysis is that it posits a unified account for verbs, namely that all verbs in *bei* sentences are the same as those in their *bei*-less corresponding sentences and therefore does not resort to the solution that in Chinese transitive verbs are ambiguous in their active and non-active voices. Thus, in 1b *yao* 'to bite' is still active with *mao* 'cat' as its subject; similarly in 1f *tao* 'to escape' is still active with *laoshu* as its subject. The affectiv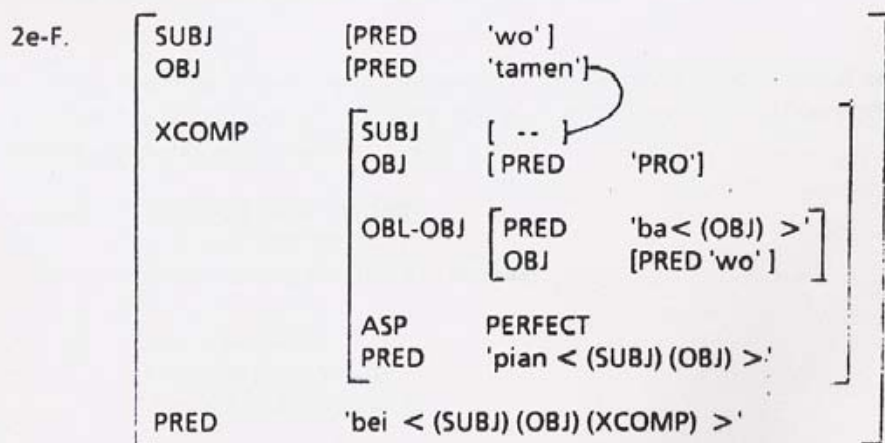e voice of the entire sentence is due to the presence of the matrix verb *bei*; however, within the clause of the XCOMP the voice is active. This is most evident if we compare 2d-2e and their *bei*-less counterparts which do not allow any non-active interpretation.

Secondly, this analysis correctly predicts the acceptability of 2e which has the following F-structure:

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2e-F.    ⎡ SUBJ      [PRED      'wo' ]                                           ⎤
         ⎢ OBJ       [PRED      'tamen'⎞                                         ⎥
         ⎢                            ⎞                                          ⎥
         ⎢ XCOMP     ⎡ SUBJ      [ -- ⎞                              ⎤           ⎥
         ⎢           ⎢ OBJ       [ PRED      'PRO']                  ⎥           ⎥
         ⎢           ⎢                                              ⎥           ⎥
         ⎢           ⎢ OBL-OBJ   ⎡ PRED      'ba< (OBJ) >'⎤          ⎥           ⎥
         ⎢           ⎢           ⎣ OBJ       [PRED 'wo' ]  ⎦         ⎥           ⎥
         ⎢           ⎢                                              ⎥           ⎥
         ⎢           ⎢ ASP       PERFECT                             ⎥           ⎥
         ⎢           ⎣ PRED      'pian < (SUBJ) (OBJ) >'            ⎦           ⎥
         ⎢                                                                       ⎥
         ⎣ PRED      'bei < (SUBJ) (OBJ) (XCOMP) >'                             ⎦
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Clearly, the *wo* in the *ba* phrase and its antecedent are in two separate clauses and therefore the second *wo* does not have to be reflexive. We thus

correctly predict the acceptability of this sentence. Furthermore, one may refer to Ma (1985) for evidence from adverbial modification and other types of relexive binding supporting this analysis.

4.3. A Complete, Unified Account for *bei*

Yet, Ma's account for *bei* sentences does not seem to be complete: first, it does not account for 'agentless' *bei* sentences such as 1a, and second, it does not account for the fact that when the verb in XCOMP is transitive its OBJ, when not overt, is controlled by the matrix SUBJ. We therefore supplement her analysis with extra functional expressions on *bei*'s lexical form:

bei   V   'bei <(SUBJ) (OBJ) (XCOMP)>'
              (OBJ PRED) $\approx$ GENERIC
              ($\uparrow$ XCOMP SUBJ) = ($\uparrow$ OBJ)
              ($\uparrow$ XCOMP OBJ) $\approx$ ($\uparrow$ SUBJ)

While = indicates unification, $\approx$ indicates extension, sometimes called overwriting or unification by default inheritance (Shieber 1986:59-61, Her 1987). It is very important to note that when unified by default inheritance, if there is a conflict in terms of the value of a certain feature, unification will NOT fail; rather, the value specified in the functional structure on the left overwrites the conflicting value of the functional structure on the right.[2] If the OBJ of *bei* is overt, then the value of its PRED overwrites the default GENERIC; when its OBJ is not overt, then the value GENERIC will be assigned to its PRED attribute. Similarly, when the verb in *bei*'s XCOMP is transitive, if its OBJ is overt then all its attribute-value pairs will be preserved, but if this OBJ is not overt then the matrix SUBJ controls it. Sentences 1a, 1b, and 1c thus will have the following F-structures respectively:

1a-F.

$$
\begin{bmatrix}
\text{SUBJ} & [\text{PRED} & \text{'laoshu'}] \\
\text{OBJ} & [\text{PRED} & \text{GENERIC}] \\
\\
\text{XCOMP} & \begin{bmatrix} \text{SUBJ} & [\ --\ ] \\ \text{OBJ} & [\ --\ ] \\ \text{ASP} & \text{PERFECT} \\ \text{PRED} & \text{'yao <(SUBJ) (OBJ)>'} \end{bmatrix} \\
\\
\text{PRED} & \text{'bei <(SUBJ) (OBJ) (XCOMP)>'}
\end{bmatrix}
$$

1 b - F.

$$
\begin{bmatrix}
\text{SUBJ} & [\,\text{PRED} & \text{'laoshu'}] \\
\text{OBJ} & [\,\text{PRED} & \text{'mao'}] \\
\\
\text{XCOMP} & \begin{bmatrix} \text{SUBJ} & [\; -- \;] \\ \text{OBJ} & [\; -- \;] \\ \text{ASP} & \text{PERFECT} \\ \text{PRED} & \text{'yao} <(\text{SUBJ})(\text{OBJ})>' \end{bmatrix} \\
\\
\text{PRED} & \text{'bei} <(\text{SUBJ})(\text{OBJ})(\text{XCOMP})>'
\end{bmatrix}
$$

1 c - F.

$$
\begin{bmatrix}
\text{SUBJ} & [\,\text{PRED} & \text{'laoshu'}] \\
\text{OBJ} & [\,\text{PRED} & \text{'mao'}] \\
\\
\text{XCOMP} & \begin{bmatrix} \text{SUBJ} & [\; -- \;] \\ \text{OBJ} & [\text{PRED 'yiba'}] \\ \text{ASP} & \text{PERFECT} \\ \text{PRED} & \text{'yao} <(\text{SUBJ})(\text{OBJ})>' \end{bmatrix} \\
\\
\text{PRED} & \text{'bei} <(\text{SUBJ})(\text{OBJ})(\text{XCOMP})>'
\end{bmatrix}
$$

First, we should point out that such a complement structure and control relations are not unique to *bei*; they apply also to verbs such as *shou* and *ai* 'to receive,' *gui*, *gai*, and *lundao* 'to take turns.'

- 3a)   Wo shou laoshi jiadao.
     I receive teacher teach
     'I receive the teacher's teaching.'

- b)   Wo ai papa ma.
     I receive papa scold
     'I was scolded by papa.'

- c)   Panzi gui/gai/lundao ni xi.
     dish take-turns you wash
     'It's your turn to wash the dishes.'

4.4. Answers to Tan's Objections to *bei*'s Matrix Status

Within this improved unified account for all *bei* sentences, we now answer each of the objections that Tan (1987) raised against Ma (1985). Tan's line of argument is that *bei* as a verb does not parallel other verbs with the same complement structure. What I am trying to argue here is exactly the opposite: *bei* does parallel other verbs with the same complement structure. I will show Tan's conclusion is reached due to inappropriate analyses of the example sentences she uses or over-generalizations she makes. The first objection she makes is that a *bei* sentence does not have the characteristic of preposing its OBJ as other similar type of verbs do, such as *rang* 'to let.' The examples she gives are the following:

4a)   Ta rang xiaohair jin wu. (Tan (1987) (16)a.)
        he let child enter house
        'He let children enter his house.'

a')   Xiaohair, ta rang jin wu. ((16)b.)
        Child he let enter house
        'Children, he let them enter his house.'

a'')   Ta ba xiaohair rang jin wu. ((16)c.)
        he *ba* children let enter house
        'He let children enter his house.'

b)   Ta rang meigeren jin wu. ((17)a.)
        he let everybody enter house
        'He let everybody enter his house.'

c)   Ta shui dou rang jin wu. ((17)b.)
        he WHO all let enter house
        'He let everybody enter his house.'

c')   Ta dou rang shui jin wu? ((17) b'.)
        he all let who enter house
        'Who all did he let enter his house?'

c'')   Shui, ta dou rang jin wu. ((17)c.)
        WHO he all let enter house
        'He let everybody enter his house.'

Tan is certainly correct in her observation that the OBJ of *bei* can not be preposed in the same manner as that of *rang* as the following examples show:

5a)   Laoshu bei mao yao le.
        mouse *bei* cat bite PF
        'The mouse was bitten by the cat.'

a')   *Mao, laoshu bei yao le.
        'The mouse was bitten by the cat.'

a'')   *Laoshu ba mao bei yao le.
        'The mouse was bitten by the cat.'

b)   Laoshu bei meizhimao yao le.
        mouse *bei* every cat bite PF
        'The mouse was bitten by every cat.'

c)   *Laoshu shui dou bei yao le.
        mouse WHO all *bei* bite PF
        'The mouse was bitten by everyone.'

c')   Laoshu dou bei shui yao le?
        mouse all *bei* who bite PF
        'By whom was the mouse bitten?'

c'')   *Shui, laoshu dou bei yao le.
        WHO mouse all *bei* bite PF
        'The mouse was bitten by everybody.'

However, Tan rushed hastily to the conclusion that therefore *bei* cannot have the same complement structure as *rang*, without further examining verbs, such as *yao* 'to want,' that are typically considered as having this <(SUBJ) (OBJ) (XCOMP)> complement structure and whose OBJ controls the SUBJ of its XCOMP.

6a)   Baba yao xiaohair kanshu.
        papa want children read
        'Papa wants the children to read.'

a')   *Xiaohair, baba yao kanshu.
   children papa want read
   'Papa wants the children to read.'

a'')   *Baba ba xiaohair yao kanshu.
   papa *ba* children want read
   'Papa wants the children to red.'

b)   Baba yao meigeren kanshu.
   papa want everybody read
   'Papa wants everybody to read.'

c)   *Baba shui dou yao kanshu.
   papa WHO all want read
   'Papa wants everybody to read.'

c')   Baba dou yao shui kanshu?
   papa all want who read
   'Who does papa want to read?'

c'')   *Shui, baba dou yao kanshu.
   WHO papa all want read
   'Papa wants everybody to read.'

We find exactly the same pattern between *bei* and *yao* 'to want;' this convincingly establishes the fact that the properties of preposing the object are lexically determined and are not general to this pivotal construction. To reject *bei* as having the pivotal construction based on its inability for its OBJ to be rearranged is also to reject *yao* 'to want.' We therefore dismiss Tan's first objection. Tan's second objection comes from the observation of how verbs of the pivotal construction interact with resultative clause. We cite her examples first and will then dispute her analysis.

7a)   Wo ting ta ku de shangxin. (Ma 1987 (19)a.)
   I hear he cry *de* sad
   'I heard that he was crying sadly.'

a')   Wo bei ta ku de shangxin. ((19)b.)
   I *bei* he cry *de* sad
   'I, affected by his crying, am sad.'

b) Xuesheng kan laoshi jiang de keshui le. ((20)a.)
    student see teacher lecture *de* sleepy PF
    'The students saw that the teacher was lecturing sleepily.'

b'') Xuesheng bei laoshi jiang de keshui le. ((20)b.)
    student *bei* teacher lecture *de* sleepy PF
    'The students, affected by the teacher's lecturing, were sleepy.'

Tan argues that in 7a and 7b, the objects, *ta* 'he' and *laoshi* 'teacher' control 'sad' and 'sleepy,' but in the *bei* sentences the subjects, *wo* 'I' and *xuesheng* 'student' do instead. Therefore, she concludes that *bei* cannot have *ting*'s and *kan*'s complement structure which she assumes to be <(SUBJ) (OBJ) (XCOMP)>. We challenge her assumption that *ting* and *kan* have such a complement structure; instead we propose that they have the complement structure of verbs like *shuo* 'to say' and *faxian* 'to find:' <(SUBJ) (SCOMP)>.[3] Several pieces of evidence support our position. First, in a pivotal construction, the second verb, i.e., the verb in the XCOMP, can never be of progressive aspect, which can only be attached to the first verb. However, such a restriction does not apply to verbs of perception like *ting*.

8a) *Wo yao ta zai lai.
     I want he PROG come   PROG = Progressive Aspect
     ' I wanted him to be coming.'

b) *Wo rang ta zai lai.
    I let he PROG come
    ' I let him be coming.'

c) *Wo qiangpo ta zai lai.
    I force he PROG come
    'I forced him to be coming.'

d) *Wo qing ta zai lai.
    I invite he PROG come
    'I invited him to be coming.'

e) Wo ting ta zai ku.
    I hear he PROG cry
    'I heard him crying.'

f) Wo kan ta zai ku.
    I see he PROG cry
    'I saw him crying.'

Another piece of evidence is that verbs of the pivotal construction typically cannot take a resultative complement such as *dao*, but *ting* and *kan* most often do.
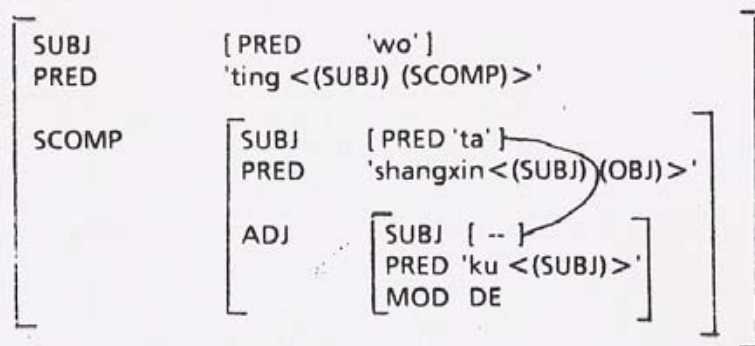
9a) *Wo yao-dao ta lai.
     I want-RC he come   RC = Resultative complement
     'I wanted him to come.'

b) *Wo rang-dao ta lai.
    I let RC he come
    'I let him come.'

c) *Wo qiangpo-dao ta lai.
    I force RC he come
    'I forced him to come.'

d) *Wo qing-dao ta lai.
    I invite RC he come
    'I invited him to come.'

e) Wo ting-dao ta ku.
    I hear RC he cry
    'I heard him cry.'

f) Wo kan-dao ta ku.
    I see RC he cry
    'I saw him cry.'

Finally, as Tan has observed herself, the sentential complement in a <(SUBJ) (SCOMP)> structure can be topicalized. This applies to verbs like *ting* 'to hear' and *kan* 'to see,' but not verbs like *yao* 'to want,' *qing* 'to invite,' and *qiangpo* 'force.' Note that it is precisely due to this observation that we totally agree with Tan that *bei* as a verb does not have the complement structure of <(SUBJ) (SCOMP)>. The following examples clearly illustrate the points made here.
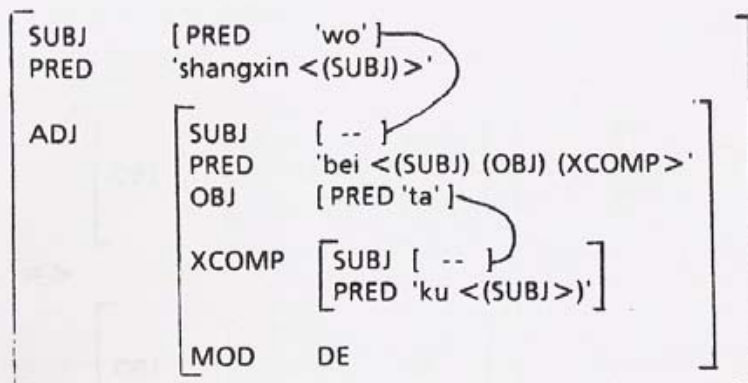
10a) *Ta lai, wo yao.
      he come I want
      'I wanted him to come.'

b)   *ta lai, wo rang
      he come I let
      'I let him come.'

c)   *Ta lai, wo qiangpo.
      he come I force
      'I forced him to come.'

d)   *Ta lai, wo qing
      he come I invite
      'I invited him to come.'

e)   Ta ku, wo ting-dao.
      he cry I hear RC
      'I heard him cry.'

f)   Ta ku, wo kan-dao.
      he cry I see RC
      'I saw him cry.'

g)   *Mao yao, laoshu bei.
      cat bite mouse *bei*
      'The mouse was bitten by the cat.'

Based upon all the evidence we conclude that verbs like *ting* and *kan* do not have the complement structure of the pivotal construction; rather they have the structure of <(SUBJ) (SCOMP)>. In addition, we postulate the analysis that *de* is a complementizer which indicates that the constituent preceding it is a modifying element and the constituent following it is the head. Therefore, in the sentence *Ta ku de hen shangxin* 'He is crying sadly,' *shangxin* 'sad' is the matrix verb and *ku* 'to cry' is an adjunctive subordinate clause. We thus propose that 7a and 7a' have the following F-structures respectively:

7a-F.

```
┌                                                                    ┐
│ SUBJ      [ PRED      'wo' ]                                        │
│ PRED      'ting <(SUBJ) (SCOMP)>'                                   │
│                                                                    │
│ SCOMP      ┌ SUBJ    [ PRED 'ta' ]─                            ┐    │
│            │ PRED    'shangxin<(SUBJ)(OBJ)>'                   │    │
│            │                                                  │    │
│            │ ADJ       ┌ SUBJ  [ -- ]                  ┐      │    │
│            │           │ PRED 'ku <(SUBJ)>'            │      │    │
│            │           └ MOD   DE                      ┘      │    │
│            └                                                  ┘    │
└                                                                    ┘
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7a'-F.

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┌                                                                    ┐
│ SUBJ      [ PRED      'wo' ]─                                       │
│ PRED      'shangxin <(SUBJ)>'                                      │
│                                                                    │
│ ADJ        ┌ SUBJ    [ -- ]                               ┐        │
│            │ PRED    'bei <(SUBJ) (OBJ) (XCOMP>'          │        │
│            │ OBJ     [ PRED 'ta' ]─                       │        │
│            │                                              │        │
│            │ XCOMP     ┌ SUBJ  [ -- ]              ┐      │        │
│            │           │ PRED 'ku <(SUBJ>)'        │      │        │
│            │           └                           ┘      │        │
│            │                                              │        │
│            │ MOD       DE                                 │        │
│            └                                              ┘        │
└                                                                    ┘
```

We have successfully dismissed all the objections that Tan raised against our account for *bei*, and our analysis does not have any of the difficulties we pointed out that her account for *bei* has. Lastly, one may object to the verb status of *bei* because of its inability to appear with perfective aspect, *le*. Our answer to this is that this is not unique to *bei*: the same restriction applies to some other verbs of the same complement structure such as *yao* 'to want' and *qiangpo* 'to force.'

11a)   *Laoshu bei le mao yao.
       mouse *bei* PF cat bite
       'The mouse has been bitten by the cat.'

b)   *Wo yao le ta lai.
     I want PF he come
     'I have wanted him to come.'

c)   *Wo qiangpo le ta lai.
     I force PF he come
     'I have forced him to come.'

In summary, we first dismissed the analyses where *bei* is a function word, either as a subject marker or a preposition, and established the verb status of *bei*. Further, we rejected Tan's account for *bei* as having a subordinate status due to several difficulties and the ad hoc nature of her analysis. Finally, we argued for the advantages for Ma's account that *bei* has the complement structure of <(SUBJ) (OBJ) (XCOMP)> and supplemented her account to make it complete. Within this complete and unified account for *bei*, we finally successfully rebutted all the objections Tan raised to Ma's account.

NOTES

1. In order to illustrate precisely the relevent points, in this paper we have selected example setences that contain only the minimum necessary elements. The judgment on the grammaticality or acceptability is primarily the writer's, a native speaker of Mandarin, with confirmation from the majority of his four native informants. Most of these sentences comport with examples cited in other works in Chinese linguistics (e.g., Chao 1968, Li and Thompson 1981, Ma 1985, and Tan 1987). However, this by no means garantees that all native speakers would judge these sentences acceptable uniformly.

2. The operation of unification of default inheritance is utilized in HPSG (Shieber 1986) and also implemented in the ECS formalism of LFG (Her 1987). We will compare ordinary unification and default inheritance. Again = indicates unification, ⤳ indicates default inheritance, and => indicates the results of operation.

1. Unification
A.

$$\left[\text{OBJ} \begin{bmatrix} \text{PRED} & \text{'you'} \\ \text{NUMBER} & \text{SG} \end{bmatrix} \right] = \left[\text{OBJ} \begin{bmatrix} \text{CASE} & \text{ACC} \end{bmatrix} \right]$$

$\Rightarrow$

$$\left[\text{OBJ} \begin{bmatrix} \text{PRED} & \text{'you'} \\ \text{NUMBER} & \text{SG} \\ \text{PERSON} & \text{2ND} \\ \text{CASE} & \text{ACC} \end{bmatrix} \right]$$

B.

$$\left[\text{OBJ} \begin{bmatrix} \text{PRED} & \text{'you'} \\ \text{NUMBER} & \text{SG} \\ \text{PERSON} & \text{2ND} \end{bmatrix} \right] = \left[\text{OBJ} \begin{bmatrix} \text{NUMBER} & \text{PL} \end{bmatrix} \right]$$

$\Rightarrow$ fails, no unification

2. Extension

A.
$$\left[\text{OBJ} \begin{bmatrix} \text{PRED} & \text{'you'} \\ \text{NUMBER} & \text{SG} \\ \text{PERSON} & \text{2ND} \end{bmatrix} \right] \lessapprox \left[\text{OBJ} \begin{bmatrix} \text{CASE} & \text{ACC} \end{bmatrix} \right]$$

$\Rightarrow$

$$\left[\text{OBJ} \begin{bmatrix} \text{PRED} & \text{'you'} \\ \text{NUMBER} & \text{SG} \\ \text{PERSON} & \text{2ND} \\ \text{CASE} & \text{ACC} \end{bmatrix} \right]$$

B.
$$\left[\text{OBJ} \begin{bmatrix} \text{PRED} & \text{'you'} \\ \text{NUMBER} & \text{SG} \\ \text{PERSON} & \text{2ND} \end{bmatrix} \right] \lessapprox \left[\text{OBJ} \begin{bmatrix} \text{NUMBER} & \text{PL} \end{bmatrix} \right]$$

$\Rightarrow$

$$\left[\text{OBJ} \begin{bmatrix} \text{PRED} & \text{'you'} \\ \text{NUMBER} & \text{SG} \\ \text{PERSON} & \text{2ND} \end{bmatrix} \right]$$

3. The typology of the complementation of verbs of perception is an interesting topic in itself. While in English such verbs may have both <(SUBJ) (SCOMP)> and <(SUBJ) (OBJ) (XCOMP)>, in Chinese, as I am trying to argue here, they can only take the former complement structure.

REFERENCES

Bresnan, J. (Ed.). 1982. *The Mental Representation of Grammatical Relations.* Cambridge, Mass.: MIT Press.

Bresnan, J. 1987. (Ed.). 'Lexical-Functional Grammar.' Course Material for LI229, 1987 Linguistic Institute, Stanford University.

Chang, R. 1977. *Coverbs in Spoken Chinese.* Ph.D. Dissertation. University of Florida.

Chao, Y. 1968. *A Grammar of Spoken Chinese.* Berkeley and Los Angeles: University of California Press.

Chu, C. 1984. 'Chinese Word Order and Its Change.' *Yuyan Yanjiu* 1:115-127.

Her, O. 1985-6. 'To Dispense with OV Word Order in Mandarin Chinese: A Lexicase Analysis.' *Papers in East Asian Languages* 3:17-47.

Her, O. 1987. 'Machine Translation and the ECS System.' Ms., University of Hawaii and ECS, Inc., Provo, Utah.

Huang, S. 1966. 'Subject and Object in Mandarin.' *POLA* 13:25-103.

Kaplan, R. and J. Bresnan. 1982. 'Lexical-Functional Grammar: A Formal System for Grammatical Representation.' In J. Bresnan (Ed.), *The Mental Representation of Grammatical Relations.* Cambridge, Mass.: MIT Press. pp.173-281.

Kaplan R. and A. Zaenan. 1987. 'Functional Uncertainty.' *CSLI Monthly* January 1987.

Li, C. and S. Thompson. 1974. 'An Explanation of Word Order Change SVO->SOV.' *Foundations of Language.* 12:201-214.

Li, C. and S. Thompson. 1981. *Mandarin Chinese: A Functional Grammar.* Berkeley:University of California Press.

Li, Y. 1972. 'Problems of Subject, Object , etc., in Chinese.' in C. Tang et al (Eds.) *Papers in Linguistics in Honor of A. A. Hill.* pp109-132.

Li, Y. 1980. 'The Historical Development of the Coverb and the Coverbial Phrase in Chinese.' *Journal of Chinese Linguistics* 8.1:273-293

Ma, L. 1985. 'The Classical Notion of Passive and the Mandarin *bei.* Ms., Department of Linguistics, Stanford University.

Mohanan, K. 1983. 'Functional and Anaphoric Control.' *Linguistic Inquiry* 14(4):641-674.

Sells, P. 1985. *Lectures on Contemporary Syntactic Theories.* Stanford, CA: CSLI, Stanford University.

Sun, C. and T. Givon. 1985. 'On the So-called SOV Word Order in Mandarin Chinese.' *Language* 61:329-351.

Shieber, S. 1986. *Introduction to Unification-based Approaches to Grammar.* Stanford, CA: CSLI, Stanford University.

Starosta, S. and H. Nomura. 1986. 'Lexicase Parsing: A Lexicon-driven Approach to Syntactic Analysis.' In M. Nagao (Ed.). *Proceedings of the Eleventh International Conference on Computational Linguistics* (COLING '86), Bonn: University of Bonn. pp. 127-132.

Tan, F. 1987. 'The Predicate Argument Structure of Bei.' Ms., Department of Linguistics, Stanford University.

Wescoat, M. 1987. 'Practical Instructions for Working with the Formalism of Lexical Functional Grammar.' In J. Bresnan (Ed.). *Lexical-Functional Grammar.* Course Material for LI229, 1987 Linguistic Institute, Stanford University.