THE FUNCTION AND CATEGORY OF *gei*  
IN MANDARIN DITRANSITIVE CONSTRUCTIONS  

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ABSTRACT  
In this article, we show that the parallelism between Mandarin *gei* ditransitive constructions and their English counterparts is misleading. We argue here that the *gei* that occurs next to a verb is part of a complex predicate, and that the *gei* phrase that occurs after the DO (direct object) is part of a SVC (Serial Verb Construction). The theoretical implications of this account of *gei* and some diachronical ramifications are also given.  

1. INTRODUCTION  
Mandarin has three syntactic permutations for the ditransitive construction (1a-c). The *gei* in example (1b), looks, at first glance, like its English counterpart 'to'. Hence *gei* is often treated as a preposition and the constructions accounted for with variations of dative movements (e.g. Teng 1975, T. Tang 1979, and Li and Thompson 1981). This prepositional account is also extended to a case with no corresponding English construction, where *gei* + IO (indirect object) occurs immediately after the main predicate (1c). Examples of each construction in (1) are given respectively in (2).  

(1)  
(a) verb IO DO [double-object construction]  
(b) verb DO *gei* IO [post-DO *gei*]  
(c) verb *gei* IO DO [postverbal *gei*]
(2)  a. Wo song ta yi ben shu.
    I gave s/he one CL book
    'I gave him/her a book.'

    b. Wo song yi ben shu gei ta.
    I gave one CL book GEI s/he
    'I gave a book to him/her.'

    c. Wo song gei ta yi ben shu.
    I gave GEI s/he one CL book
    'I gave him/her a book.'

The transformation-based approach has the advantage of offering a uniform source for the two surface positions of the indirect object and derivationally relating the two structures (1b) and (1c).

Such an account also has several theoretical consequences. First, the DO-gei-IO (1b) sequence prevents the formation of any precedence rules in terms of the function of the two objects because it contradicts the generalization that indirect objects precede direct objects (cf. (1a) and (1c)). Thus, the prepositional analysis poses a challenge to Immediate Dominance/Linear Precedence accounts of phrase structure rules fashioned after the theory of Generalized Phrase Structure Grammar (Gazdar et al. 1985) because the proposed gei-IO-DO sequence (1c) is an exception to the generalization that NPs precede PPs in a local tree. Second, as observed in Li (1990), the postulation of gei as a preposition poses problematic cases with the adjacency condition on Case assignment in GB theory.

We will show that the prepositional accounts are incorrect and that neither the post-DO (1b) nor the postverbal (1c) gei's are prepositions. We will argue for the long-overlooked grammatical description in Chao (1968) that the V-gei sequences (1c) are compounds, and that the discontinuous structure of (1b) involves a verb series. This position will not only account for the data more felicitously but also resolve the above two theoretical dilemmas.
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2. POSTVERBAL GEI

In this section, we argue that the gei occurring immediately after a verb (as in 1c) is not a preposition and is better analyzed as a verbal affix. We first present three arguments that show that postverbal gei is not a preposition, and then four arguments for treating postverbal gei as a verbal affix.

2.1 Postverbal gei is not a preposition

Postverbal gei is not a preposition because 1) it allows attachment of aspect markers, 2) prepositions cannot occur between a verb and an object in Mandarin, and 3) prepositions cannot be stranded in ellipsis in Mandarin.

2.1.1 Allows attachment of aspect markers

First, the postverbal gei allows the attachment of aspect markers, as in (3a). The attachment of aspect markers is the most reliable test of verb-hood in Mandarin Chinese (Huang and Mangione 1985, C. Tang 1990). Moreover, Mandarin prepositions do not allow attachment of aspect markers (Chao 1968).

(3)  a. Zhangsan ti-gei-(le) Lisi yi-ge qiu
     Zhangsan kick-GEI-PERF Lisi one-CLASS ball
     'Zhangsan kicked a ball to Lisi.'

     b. *Zhangsan ti-(le) Lisi yi-ge qiu
        Zhangsan kick-PERF Lisi one-CLASS ball

Thus, the fact that postverbal gei allows the attachment of aspect markers is a strong argument in favor of it being a verbal affix and not a preposition.

2.1.2 No prepositional phrases can occur between a verb and an object

Second, there is no empirical evidence in Mandarin Chinese for a PP position between a verb and an OBJ. Attested PPs in Chinese either occur after an OBJ in the VP-final position, as the locative PP in (4a), or pre-verbally after the SUBJ, as the GOAL PP in (4b). However, neither of the attested PPs can appear between a verb and its direct object, as in (5).
(4) a. ta fang yi-ben shu zai zhuoshang
    s/he put one-CLASS book ZAI desk-top
    'S/He put a book on the desk,'

b. ta dui Zhangsan shuo ta bu dong
    s/he DUI Zhangsan say s/he NEG understand
    'S/He told Zhangsan that s/he did not understand.'

(5) a. *ta fang zai zhuoshang yi-ben shu
    s/he put ZAI desk-top one-CLASS book

b. *ta shuo dui Zhangsan ta bu dong
    s/he say DUI Zhangsan s/he NEG understand

Furthermore, there is no independent theoretical motivation for a PP to occur between a verb and an object. For example, (4) and (5) suggest a structural constraint on the co-occurrence between arguments and their governing predicates. The generalization is that a non-oblique PATIENT-like role must appear right-adjacent to the governing predicate in Mandarin. This constraint can be formulated in terms of an adjacency constraint similar to that of the Case Theory of GB or the argument obliqueness hierarchy of HPSG (following a long tradition of argument combination principles in Montague Grammar). Analyzing the postverbal gei as a preposition would either counterexemplify the above generalizations or call for an otherwise unmotivated and abstract account.

2.1.3 Prepositions cannot be stranded in ellipsis

Third, prepositions cannot be stranded in ellipsis in Mandarin Chinese. While non-oblique arguments can be freely left out in context (the so-called pro-drop phenomena), ellipsis cannot involve a prepositional object alone (although it can involve a whole PP). (6) and (7) demonstrates this constrain.
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(6) a. ta fang-le
     s/he put-PERF
     'S/He put (something) down.'

b. shuo-le
     say-PERF
     '(s/he) talked.'

(7) a. *ta fang na-ben shu zai
     s/he put that-CLASS book ZAI

b. *ta dui shuo ta bu dong
     s/he DUI say s/he NEG understand

Ellipsis involving an object following the postverbal gei, however, can leave gei stranded, as in (8). This fact cannot be explained if gei is a preposition.

(8) shunshou jiu di gei yi-er qian yuan de xiaofei
     off-hand then hand-out GEI one-two thousand dollar DE tips
     '(S/he/they) hand out tips of a couple of thousand dollars offhand.'

So far, we have shown that the postverbal gei is unlike a preposition in distribution and ellipsis, and that it has the un-preposition-like property of allowing attachment of verbal affixes. We will next discuss four sets of its properties that show it is like a verbal affix, including some earlier observations made in Huang (1990a).

2.2 Postverbal gei is a verbal affix

In the second half of this section, we will show that postverbal gei is a verbal affix because 1) it selects the grammatical category of its host, 2) no constituents can intervene between the verb and gei, 3) the V-gei combination shows lexical properties such as semantic shift and idiosyncratic gaps, and 4) the affixation of gei is a lexical operation.
2.2.1 *Gei* select the grammatical category of its host

A definitive property of affixes is that they select the grammatical category of their hosts. Postverbal *gei* has this property because it selects a subclass of verbs on which to attach itself, namely transitive and ditransitive verbs, as determined from the appearance of *gei* in the Academia Sinica Corpus of Modern Mandarin Chinese.

Example (9) demonstrates that the combination of *gei* with its host is restricted. Example (9a) shows that *gei* can occur with a transitive verb. Example (9b) shows that *gei* can occur with a ditransitive verb. Example (9c) shows that *gei* cannot be attached to an intransitive verb. There are no exceptions to this fact. Moreover, to further support the generalization that *gei* can only be attached to a transitive verb, (9d) also show that *gei* can be attached to stative as well as active transitive verbs.²

(9)  
a. Zhangsan pao-gei Lisi yi-shu hua  
   Zhangsan toss-GEI Lisi one-CLASS flower  
   'Zhangsan tossed a bouquet to Lisi.'

b. Zhangsan song-gei Lisi yi-shu hua  
   Zhangsan give-GEI Lisi one-CLASS flower  
   'Zhangsan gave a bouquet to Lisi.'

c. *Zhangsan shui-gei (Lisi) (yi-ge xiwu)  
   Zhangsan sleep-GEI Lisi one-CLASS afternoon

d. *[yiyuan].. geng bu-hui meishi guan-gei shenzhuxi assemblymen further NEG-will no-fact cap-GEI province-chair  
   zheme zhong de xingrongci  
   such severe DE adjective  
   Furthermore, [these assemblymen] will not apply such harsh expressions on the governor with no reason.'
In sum, the active/stative bifurcation is not relevant in the restriction on the attachment of *gei*.

2.2.2 No constituents can intervene between V-gei

Secondly, no constituent can intervene between *gei* and the verb, suggesting lexical integrity. Although this fact could possibly be accounted for in terms of some adjacency conditions, the fact that aspect affixation takes verb-*gei* as a whole unit, as in (10), supports the lexical integrity rather than the adjacency account.

(10) a. Zhangsan diu-gei-le Lisi yi-ge qiu
    Zhangsan throw-GEI-PERF Lisi one-CLASS ball
    'Zhangsan threw a ball to Lisi.'

    b. *Zhangsan diu-le-gei Lisi yi-ge qiu
       Zhangsan throw-PERF-GEI Lisi one-CLASS ball

Moreover, the fact that aspect marker -le cannot intervene between the verb and -gei also follows from the fact that it is an affix, regardless of whether the aspect markers are treated as an inflectional affix (Dai 1991), or a clitic (Huang 1987).

2.2.3 V-gei has lexical properties

Thirdly, the V-gei combination shows such lexical properties as semantic shift and idiosyncratic gaps. The semantic shift fact can be exemplified by (11). While the bare verb guan has the very restrictive meaning of 'to adopt (a family name)', guan-gei has a different meaning of 'to use/apply (certain expressions/names on someone)'.

(11) a. ta guan fu-xin
    she cap husband-family+name
    'She adopts her husband's family name (on top of her maiden name).'
b. ta guan-gei Zhangsan yi-ge humming
   s/he cap-GEI Zhangsan one-CLASS nickname
   'S/he imposed a nickname on Zhangsan.'

The lexical idiosyncracy fact can be best exemplified by a synonymous pair pan and panchu, both mean 'to judge, to sentence' and share identical subcategorization frames, as shown by the following two sentences from our corpus (12).

(12) a. fayuan panchu Li Feng-Zhou si-xing
court sentence Li Feng-Zhou death-penalty
'The court sentences Li Feng-Zhou to the death penalty.'

   zhong-gong pan ta si-xing
Chinese-communist sentence him/her death-penalty
'The Chinese communists sentenced him/her to the death penalty.'

However, only pan-gei is an allowed compound, as in (13).³

(13) buoying-quan yi pan-gei huashi
broadcast-right already judge-GEI CTS
'The broadcast right has already been given to CTS.'

2.2.4 Affixation of -gei is a lexical operation

Last but not the least, we can show that the affixation of -gei is accompanied by the lexical operation of inserting an additional GOAL role to the argument structure. This is demonstrated in (14) below.

(14) a. Zhangsan ti-(le) yi-ge qiu
   Zhangsan kick-PERF one-CLASS ball
   'Zhangsan kicked a ball.'
b. Zhangsan ti-gei-(le) Lisi yi-ge qiu
   Zhangsan kick-GEI-PERF Lisi one-CLASS ball
   'Zhangsan kicked a ball to Lisi.'

c. *Zhangsan ti-(le) Lisi yi-ge qiu
   Zhangsan kick-PERF Lisi one-CLASS ball

In (14) ti 'to kick' is a typical transitive verb that allows -gei affixation. It is strictly mono-transitive as shown in (14a) and (14c). However, the verb becomes ditransitive when it is affixed with -gei, as in (14b). Other typical mono-transitive verbs that allow the affixation of -gei to add on a GOAL role include reng 'to toss', tui 'to push', na 'to take', yao 'to scoop', jua 'to grasp' etc.

A more dramatic example of the productivity of this morpho-lexical rule is the possibility of attaching -gei to a non-Chinese loan word in informal speech, as in (15).

(15) Meiguotexx-gei women yibi dingdan
    USA telex-gei we one-CLASS order
    'The US (company) telexed us a batch of orders.'
    (comp. * Meiguotexx women yibi dingdan)

The fact that native speakers apply the affixation of -gei to mark the addition of a GOAL role offers one of the strongest supports to the position that -gei is a derivational affix (Huang 1990a). This also refutes the view that Mandarin is a language that lacks morphological complexity and instead supports the view that Mandarin has a rich verbal morphology in terms of argument-changing (Huang 1991) and that argument-changing rules should be encoded on affixes (Alex Alsina p.c.).

We have demonstrated in this section that the postverbal -gei is an affix and the V-gei sequence is a compound. This resolves the linear precedence dilemma posed by the prepositional account. Since the NP after a postverbal -gei is an object of the compound verb instead of the alleged preposition, the Linear Precedence generalization that NP's precede PP's in a local tree is
preserved. Similarly, many complications in a GB account of Mandarin caused by a purported (non-Case-receiving) PP in a Case assignment position are superfluous. This account also supports the position that Mandarin Chinese does have active word-formation rules.

3.0 POST-DO GEI AND THE SERIAL VERB CONSTRUCTION

In this section, we will argue that post-DO gei is not a preposition either, but is instead part of a serial verb construction.

First, we must point out that unlike post-verbal gei, post-DO gei does not have any affix-like properties since it is not concatenated to any verb (16).

(16) Zhangsan ti yi-ge qiu gei Lisi
     Zhangsan kick one-CLASS ball GEI Lisi
     'Zhangsan kicked a ball to Lisi.'

Second, we acknowledge the post-DO gei does have some preposition-like properties, such as not allowing attachment of aspectual markers (17a,b), and not being able to be stranded (17c).

(17) a. *Zhangsan ti-le yi-ge qiu gei-le Lisi
     Zhangsan kick-PERF one-CLASS ball GEI-PERF Lisi

b. *Zhangsan ti yi-ge qiu gei-le Lisi
   Zhangsan kick one-CLASS ball GEI-PERF Lisi

c. *Zhangsan ti yi-ge qiu gei
   Zhangsan kick one-CLASS ball GEI

However, we will show below 1) that all of the above facts in (17) can be attributed to characteristics of a serial verb construction (SVC) (Section 3.1), 2) that there are additional data involving post-DO gei that are incompatible with a prepositional account (Section 3.2), and 3) that an SVC account is necessary to achieve the best generalization for the entire range of data (Section 3.3). In the
final subsection (Section 3.4) we will offer arguments against a mixed prepositional/SVC account.

3.1 Characteristics of a Serial Verb Construction

First, a verb series in a SVC can have only one tense/aspect (e.g. Sebba 1987, Mo et al. 1991). Thus, an SVC account of post-DO gei predicts the ungrammaticality of (17a). As for the ungrammatical (17b), the explanation is that in Mandarin only the first verb can be marked with aspect when the SVC has the subordinating structure described in Mo et al. (1991) and exemplified by (18a).

(18) a. Lisi mai-(le) san ben shu song*-(le) xuesheng  
     Lisi buy-PERF three CLS book give-PERF student  
     'Lisi bought three books to give/and gave them to students.'

b. Lisi zhong jiang mai-(le) yi-dong xin fangzi  
     Lisi win prize buy-PERF one-CLASS new house  
     'Lisi won lottery and bought a new house.'

While a Mandarin SVC allows aspect to be attached to either verb, attachment to the second verb is limited to the 'concatenating' type described in Mo et al. (1991), as shown in (18b). In the SVC with post-DO gei, the gei phrase is an adjunct and an aspect marker can only be attached to the superordinating verb. C. Tang's (1990) CP adjunct account of Mandarin SVCs also makes the same prediction. The structures proposed in Mo et al. (1991) and C. Tang (1990) are given in (19a) and (19b) respectively.

(19) a. \[[\boxed{\text{NP-SUBJ}} [\boxed{V} \boxed{\text{NP-OBJ}} [\boxed{V...}]_{\text{VP}} \boxed{\text{ADJUNCT}}_{\text{VP}}] \]

b. \[[\boxed{\text{NP}} [\boxed{\text{VP}} [\boxed{\text{NP}} \boxed{\text{CP}}]_{\text{VP}}] \]

On the other hand, the fact that post-DO gei cannot be stranded is due to the fact that Mandarin does not allow indirect object gaps in general (Huang 1992), as shown in (20). The post-DO gei in (21) has identical distribution with
the verbal *gei in (20). Thus, no additional stipulation is needed if *gei in (21) is simply a verb in a SVC construction.

(20) a. *Lisi, ta gei-le yi-ben shu
    Lisi s/he give-PERF one-CLASS book

    b. *[ta gei-le yi-ben shu de ren]np
        s/he give-PERF one-CLASS book DE (relative clause marker) person

    c. nei-ben shu, ta gei-le Lisi
        that-CLASS book s/he give-PERF Lisi
        'That book, s/he gave Lisi.'

(21) a. *Lisi, ta ji-gei-le yi-ben shu
    Lisi s/he send-GEI-PERF one-CLASS book

    b. *[ta ji-gei-le yi-ben shu de ren]np
        s/he send-GEI-PERF one-CLASS book DE (relative clause marker) person

    c. nei-ben shu, ta ji-gei-le Lisi
        that-CLASS book s/he send-GEI-PERF Lisi
        'That book, s/he sent to Lisi.'

Thus, we have shown that the preposition-like properties of post-DO *gei are also compatible with a SVC account. We will show below that the SVC hypothesis is needed to account for additional data involving *gei.

3.2 Data calling for a SVC account: Prepositional objects cannot be controllers

First, the object of post-DO *gei controls the subject of a following verb, as in (22a). In contrast, the same NP cannot be a controller when it is not governed by *gei, as in (22b).
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(22) a. Lisi song-le yi ben shu gei Zhangsan (kan)
   Lisi give-PERF one CLASS book GEI Zhangsan read
   (Lit.) Lisi sent a book to give Zhangsan the book to read.

   b. *Lisi song-le Zhangsan yi ben shu kan

The above facts cannot be accounted for under a prepositional account of post-
DO gei since it would predict that the control relation in (22) is impossible. It
can be easily demonstrated that prepositional objects are not eligible controllers
in Mandarin Chinese, in spite of the fact that they may occur as the first NP
preceding the controlee. In (23), even though the semantic selection of the
predicate youni 'be greasy' allows both zhuo-shang 'table-top' and wan 'bowl' as
its argument, (23a) is the only possible reading.

(23) ta fang-le [yi-ge wan] [zai zhuo-shang], hen youni
   s/he put-PERF one-CLASS bowl at table-top very greasy

   a. 'S/he put a greasy bowl on the table.'
   b. *'S/he put a bowl on the greasy table.'

The lack of ambiguity in (23) is predicted by a theory of universal controller
hierarchy based on grammatical functions. Adopting Bresnan's (1982) theory,
Mandarin data show that only the two highest grammatical functions, SUBJ and
OBJ, can be controllers in Mandarin. However, since (22a) clearly shows that
the object of post-DO gei can be a controller, we are faced with the following
dilemma. If the post-DO gei is a preposition, then Mandarin poses a serious
challenge to universal controller hierarchy that is supported by many typological
studies. This analysis would seem to predict that some, but not all, OBL objects
could be controllers in Mandarin.

The analysis that an OBL object can be a controller poses an even greater
problem to the universal hierarchy considering the fact that a higher grammatical
function, i.e. OBJ2 (second object, exemplified by 22b), can never be a
controller. On the other hand, if the observed generalization involving control in
Mandarin and the universal hierarchy of controllers argued by Bresnan (1982) are to be maintained, then an alternative to the prepositional account must be proposed. The SVC account is such an alternative. The object following the post-DO gei in (22) is simply an OBJ of the verb gei in this account and as such the fact that it is a controller follows without further stipulation.

3.3 An SVC account predicts the generalization of all constructions involving gei

Our next argument for the SVC account involves the theory-neutral consideration of achieving the best generalization for all the constructions involving gei. Hence in what follows we will review all the constructions (in terms of strings of categories) involving gei and the possible generalizations among these constructions. We have argued in the last section that the postverbal gei should be accounted for as an (applicative) verbal suffix marking the addition of a GOAL role. Thus the superficial four-way structural contrast of Mandarin ditransitive constructions is reduced to three in (24), with the verb V in (24b) being realized as either a simplex ditransitive verb or a complex ditransitive verb V-gei. Sentences corresponding to the structural contrasts in (24) are given in (24') as illustration. Note that SUBJECT and OBJECT functions are aligned in these examples for easy comparison.

(24) a. NP gei NP V NP
b. NP V NP NP
c. NP V NP gei NP

(24') a. Zhangsan gei Lisi song-le yi ben shu
Zhangsan GEI Lisi give-PERF one CLS book

b. Zhangsan song(-gei) Lisi yi ben shu
Zhangsan give Lisi one CLS book

c. Zhangsan song-le yi ben shu gei Lisi
Zhangsan give-PERF one CLS book GEI Lisi
Zhangsan gave Lisi a book.
Conceptually, one of the strongest ways to motivate an account of (24c) is to argue that it would lead to best generalizations of the three contructions in (24). Several arguments can be constructed in favor of the most economical and elegant account of (24c) with the three-way structural contrast laid out in (24). First, a prepositional account of (24c) has the possible advantage of being derivationally related to (24a) and (24b) through transformation. This would indeed be a strong conceptual argument if (24) included all the possible constructions. However, our discussion of the facts concerning control reminds us that an account of the construction will not be complete unless it also accounts for the controlled clauses after the post-DO gei (i.e. 25d). When this larger context is considered, there is a 4-way set of structural correspondences. The possible constructions are schematized in (25) and exemplified in (25').

(25)  
\[
\begin{align*}
&\text{a.} & \text{NP gei NP V NP} \\
&\text{b.} & \text{NP V NP NP} \\
&\text{c.} & \text{NP V NP gei NP} \\
&\text{d.} & \text{NP V NP gei NP VP}
\end{align*}
\]

(25')  
\[
\begin{align*}
&\text{a.} & \text{Zhangsan gei Lisi hua-le yi-fu hua} \\
& & \text{Zhangsan GEI Lisi paint-LE one-CLASS painting} \\
& & \text{'Zhangsan painted a painting for Lisi.'} \\
&\text{b.} & \text{Zhangsan hua-le Lisi yi-fu hua} \\
& & \text{Zhangsan paint-LE Lisi one-CLASS painting} \\
& & \text{'Zhangsan painted a painting for Lisi.'} \\
&\text{c.} & \text{Zhangsan hua-le yi-fu hua gei Lisi} \\
& & \text{Zhangsan paint-LE one-CLASS painting GEI Lisi} \\
& & \text{'Zhangsan painted a painting and gave it to Lisi.'} \\
&\text{d.} & \text{Zhangsan hua-le yi-fu hua gei Lisi gua zai jiali} \\
& & \text{Zhangsan paint-LE one-CLASS painting GEI Lisi hang AT home} \\
& & \text{'Zhangsan painted a painting and gave it to Lisi to hang at home.'}
\end{align*}
\]
Given the schematized structural contrasts in (24) and (25), it can be shown that the prepositional account and the SVC account lead to different generalizations. The prepositional account suggests that (25a) and (25c) are variants with the PP being allowed to occur preverbally or post-verbally, illustrated in (26a&b). The SVC account, on the other hand, suggests that (25c) and (25d) are related with the last VP being optional, illustrated in (26c).

(26)  
a.  NP PP₁[V NP] (comp. 24a)  
b.  NP [V NP PP₁] (comp. 24c)  
c.  NP [V NP [V(=gei) NP (VP)]] (comp. 25b&c)

One set of data involving the ambiguous verb jie 'to borrow from/to lend to' suggests that the SVC account of (26c) is correct.

jie is ambiguous in the direction of the borrow/lend event. The ambiguity is resolved with contextual information. Sentence (27) involves a pre-VP gei phrase, and sentence (28) involves post-DO gei.

(27)  Zhangsan gei Lisi jie-le yi-bai kuai  
      Zhangsan give Lisi borrow-ASP 100 dollars  
      'Zhangsan let Lisi borrow 100 dollars (from him = (Zhangsan)).'

(28)  Zhangsan jie-le yi-bai kuai gei Lisi (mai shu).  
      Zhangsan lend-ASP 100 dollars give Lisi buy books  
      'Zhangsan lent Lisi 100 dollars (to buy books).

The fact that jie was given different meanings in these two contexts suggests that the contextual information is different, since the only contrast between the two sentences is the position of the gei phrase. This fact is evidence that the two gei phrases should be given different grammatical status, contrary to what the (movement-based) prepositional account of post-DO gei proposes.

In addition, the SVC account allows us to predict that the object of the gei purposive clause in (29b) can be a controller. In the SVC account, the
syntactic and semantic parallisms between (b) and (c) sentences in (26), (27) and (29) are accounted for as the same SVC with an optional third VP.

(29) a. baba gei Lisi yi-baiwan mai fangzi
    father give Lisi one-million buy house
    'Father gave Lisi a million to buy a house.'

b. baba song yi-baiwan gei Lisi mai fangzi
    father give one-Million GEI Lisi buy house
    'Father gave Lisi one million to buy a house.'

c. baba song yi-baiwan gei Lisi
    father give one-Million GEI Lisi
    'Father gave Lisi one million.'

3.4 Against a mixed prepositional/SVC account

Given the above facts, one could restrict the prepositional account to the gei NP sequence without an ensuing VP (e.g. 29c) (c.f. C. Tang (1990), Her (1997)). However, even if one does so, sentences like (29a) are still an instance of a SVC. This is what we call a mixed prepositional/SVC account.

For Tang, gei in (29a) is a verbal head of a PredP, and gei in (29c) is a preposition, like zai in (25). Her postulation aims to account for cases where matrix verbs do not allow the last VP to be elided, as exemplified in (30). One possible explanation is that ditransitive verb song subcategorizes for a GOAL PP and therefore (29c) is grammatical. The verb fang 'to play (a movie, a tape, etc.)' does not, and therefore (30b) is ungrammatical.

(30) a. Zhangsan fang-le yi-bu dianying gei dajia kan
    Zhangsan play-PERF one-CLASS movie GEI everyone watch
    'Zhangsan played a movie for everyone to watch.'

b. *Zhangsan fang-le yi-bu dianying gei dajia
    Zhangsan play-PERF one-CLASS movie GEI everyone
This mixed prepositional/SVC account of *gei*, however, is still problematic. First, even though verbs like *fang* 'to put on' do not subcategorize for a GOAL complement, they do occur as the first verb in a similar SVC, as in (31).

(31) Zhangsan fang-le yi-bu dianying qing dajia (xinshang)
    Zhangsan play-PERF one-CLASS movie treat everyone (enjoy)
    'Zhangsan played a movie to treat everyone (to enjoy).'

The only difference between (30) and (31) is the pre-GOAL "verb". The contrast suggests that it is the choice of the second verb rather than the subcategorization of the first verb that accounts for the contrast. Given a mixed account, such as Tang (1990), there is also no motivation for stipulating that the post-DO *gei* in (30a) is a preposition, and not a verb. In other words, a mixed account would predict a categorical ambiguity here of which there is no other evidence. Thus a unified SVC account is more elegant and explanatory.

Second, the mixed prepositional/SVC account will not be able to account for obvious cases of SVC when the first verb is not ditransitive. Recall that the mixed prepositional/SVC account relies crucially on the fact that the alleged *gei*-PP represents a GOAL argument selected by the matrix ditransitive verb (e.g. 29a). However, the two sentences extracted from corpus show that the leading verb preceding a post-DO *gei* phrase need not be a ditransitive verb (32).

(32) a. gankuai dao bei shui gei puopuo (he)
    hurry pour cup water GEI grandma drink
    'Hurry, pour a cup of water for grandma (to drink).'

b. fuyin-le 'shoubiao-xin huijiaoqi' de xinzhuang gei jiankou
    Xerox-PERF wrist-watch-type beeper DE shape GEI monitor-
    renyuan (cankao)
    test staff reference
    '[They] xeroxed pictures of 'watch-shaped beepers' and gave [the
    copies] to test proctors (to refer to).'
Neither dao 'to pour' in (32a), nor fuyin 'to xerox' in (32b), subcategorizes for a second object, thus the post-DO gei phrase cannot be a PP argument. Furthermore, the optional sentence-final verb suggests that gei itself may lead serial verb constructions. Hence the prepositional account of post-DO gei does not offer any explanation for the contrast in the optionality of the sentence-final verb. It would also wrongly rule out both sentences in (32). In sum, any account that includes a prepositional analysis of post DO-gei not only does not offer a unified explanation of the structural similarity between (25c) and (25d), it also fails to account for the contrast between (30) and (31).

In contrast, the SVC account straightforwardly explains the parallel structures of (25c) and (25d). The account also allows an explanation of why a third verb is sometimes obligatory and sometimes optional in a SVC with gei as the second verb (examples 30-32). Contrary to Paul's (1987) generalization that a SVC always ends with a gei phrase unless its object is abstract and cannot be transferred, there are many exceptions, such as (33).

(33)  
  a. Zhangsan zhu tang gei ta he  
       Zhangsan cook soup GEI s/he drink  
       'Zhangsan cooked soup for him/her to drink.'

  b. *Zhangsan zhu tang gei ta  
       Zhangsan cook soup GEI s/he

In (33), a third verb is obligatory after gei even though the object of gei (i.e. ta) is non-abstract and clearly transferrable. With the contrast of (32a) and (33a), we also show that the obligatoriness is not dependent on the third verb.5

Last but not least, as observed in Li (1990) and Chao-fen Sun (p.c.), the prepositional preverbal gei marks both the GOAL and BENEFICIARY arguments and no longer has the full predicative meaning. The post-DO gei, on the other hand, has the full predicative meaning involving the act of giving. In other words, the post-DO gei has yet to be reduced to an argument marking
device and still has a lexical predicative meaning. This is another strong argument against analyzing the post-DO gei as a preposition.

To sum up, there are arguments clearly in favor of a verbal account of post-DO gei. First, the control facts suggest that a SVC account is supported by descriptive evidence. Second, a SVC account is also supported by theoretical assumptions concerning the universal hierarchy of controllers. Third, the SVC analysis allows a more elegant account of the typology of all of the structures involving gei, and not just a subset. Lastly, we showed that a PP account limited to a gei phrase without an ensuing verb (i.e. the mixed prepositional/SVC account) is superfluous because the optionality of the verb following the post-DO gei phrase cannot be predicted by the transitivity of the leading verb alone. In sum, in this section we have shown with theory-neutral motivation that all instances of post-DO gei are best accounted for as verbs in serial verb constructions.

4.0 HISTORICAL RAMIFICATIONS

The last argument supporting our account comes from studies of the historical changes of the ditransitive constructions of Mandarin Chinese. The data reported here is based on Peyraube (1986), C. F. Sun (p.c.), and our studies of the historical corpus at Academia Sinica.

According to Peyraube (1986), the critical period of structural changes for Chinese ditransitive constructions occurred between the first and tenth century A. D. Of the three structures discussed in this paper, (34a) and (34b) are attested in documents from the Warring States period (roughly 4th to 2nd century B. C.). The third and fourth, i.e. (35a) and (35b), are innovations studied by Peyraube. Between the tenth century and modern Chinese, the most crucial change is the lexical replacement of the ancient form yu3 'to give' with the modern form gei in spoken Chinese in the structures in (35). This occurred during the fifteenth century. This position is supported by Sun's recent study of the history of Chinese prepositions and our corpus.

(34) a. V IO DO
b. V DO yu2 IO (yu2 'to')
(35) a. V1 DO V2 IO
b. V1-V2 IO DO

The reason for listing (34b) and (35a) separately is because the first historical change that took place between the first and tenth century was that a group of verbs (V2 in 35a) replaced the preposition *yu2* (in 34b). These verbs were ditransitive verbs which had the neutral meaning of the action of the source giving a theme to the goal, without specifying other attributes of the action. The meaning of V2 was later bleached and *yu3* became the only verb allowed in this position.

A later innovation, starting from roughly the third century A.D., is the emergence of the structure (35b). Similarly, the original group of verbs occurring in the V2 position (in 35b) gradually narrowed to *yu3* until it became the only lexical item allowed in this position. Both structures are preserved in Modern Mandarin with the lexical replacement of *yu3* by *gei*, which by all accounts, occurred in the fifteenth century.

Note the (surface) structural parallelism between (34a), (34b)/(35a), and (35b), and the structures studied here, (1a), (1b), and (1c) (given again below). It is not surprising that our affixation account of the post-verbal *gei* and the SVC account of the post-DO *gei* are supported by their historical counterparts. Recall that *yu3* is the lexical item replaced by *gei*.

(1) a. verb IO DO [double-object construction]
b. verb DO *gei* IO [post-DO *gei*]
c. verb *gei* IO DO [postverbal *gei*]

In addition, there are also occurrences of post-DO *yu3* which suggest a SVC analysis.

For example in (36), we see clearly that *yu3*, the historical predecessor of *gei*, occurs as the second verb of a verb series (*zhong* DO *yu3*).
(36) bixia shouming buguo bai-nian,
majesty life no+more+then hundred-year

yu zhong ci tao yu3 sheiren shi zhi
want plant this peach give who-person eat 3rd-pers
'The life of your majesty is no more than one hundred years, and which is
the person that you want to plant this peach for [so as to bear fruit] to
give him/her to eat?'
(Dunhuang bianwen [Vernaculars], ca. 10th century A.D.)

Unlike the preverbal preposition which is ambiguous between a beneficiary and a
goal marker, the yu3 here has the clear meaning of 'to give' and its object (sheiren)
controls the subject of the following verb shi 'to eat'. In addition, the verb
zhong 'to plant' also does not subcategorize for a GOAL argument. Thus, it
likely that (36) is an instance of SVC with yu3 as the second verb.

5.0 CONCLUSION

We have shown that the postverbal gei that is concatenated to a verb is
actually an affix, which means that the V-gei sequence is a complex predicate.
We first demonstrated that gei is not a preposition by showing that it allows the
attachment of aspect markers, that it can occur between a verb and an object, that
it can be stranded in ellipsis -- all things that a preposition cannot do. In addition,
we demonstrated that gei is a verbal affix because it selects the grammatical
category of its host, because no constituents can intervene between it and the
verb, because the V-gei combination shows lexical properties such as semantic
shift and idiosyncratic gaps, and because its affixation is a lexical operation. Our
account of post-verbal gei also finds historical correspondences.

In addition, three alternative accounts of the post-DO were given: the
prepositional account, the SVC account and the mixed prepositional/SVC
account. The prepositional account is ruled out because prepositional objects
cannot be controllers. The mixed account is ruled out because it predicts a
categorical ambiguity for which there is no evidence and because it cannot
account for SVCs when the first verb is ditransitive. The SVC account, however,
predicts the generalization in the control relationship, and also offers a more
elegant explanation of all constructions involving gei, as well as being able to
deal with SVCs where the first verb is ditransitive. Thus, both theoretical and
language internal argument shows that the SVC account is superior. Historical precedents are also found for this account. Even though we are making no claim that the historical constructions and the gei constructions studied in this paper share identical structures, we think a synchronical account is strengthened if it is found to be compatible with its historical developments.

Lastly, our account entails that, except for locative PPs, all PPs in Chinese are pre-verbal. This account has many potentially interesting implications. One of them is that the SVO/SOV word order change debate can be considered in the new perspective of the shift of the post-verbal PP position to a predominantly pre-verbal position.

ACKNOWLEDGEMENTS

Research of this paper, including the construction and use of a Modern Chinese corpus, was partly supported by a grant (#RG014-90) from the Chiang Ching-kuo Foundation for Scholarly Exchanges. Earlier drafts of this paper were written when the first author was visiting CSLI, Stanford (Fall 1991) and UC San Diego (Spring 1992). The first author thanks the National Science Council of ROC and CSLI for funding the visit, and CSLI and UCSD for their technical support. An earlier version of this paper was presented at the 18th Berkeley Linguistics Society in 1992 and appeared in the proceedings with Ruo Ping Mo as the second author. Subsequent revisions have been made that are both substantive and fundamental. We appreciate the comments of the following people on various versions of this paper: Mark Baker, John X.-L. Dai, Alain Peyraube, Stanley Starosta, and Chao-fen Sun. The responsibility for any errors or omissions is ours alone.

NOTES

1. The modern Mandarin Chinese sentences in (8), (9a) (11), (12), (13), and (32) are from the Academia Sinica modern Chinese corpus. The other example sentences are constructed based on corpus examples.
2. In Huang and Mo (1992) we argued that post-verbal gei attached to path verbs. However, this generalization is perhaps too restricted (see Ahrens 1995
for further discussion). The lexical semantic function of gei is relevant area for future study.

3. Alert readers may suspect that syllabicity plays a role here, as it well might. However, syllabicity is a phonological feature and as such interface constraints can only be done lexically. The syllabicity account serves to reinforce our lexical analysis.


5. What we observe in the sentences requiring a third verb is that the objects have the role of an incremental theme. This is true for both dianying 'movie' in (30) and tang 'soup' in (33). On the other hand, the shape of a beeper (32b), water (32a), or a million dollars (29) are not created by the predicates and are not incremental themes. This observation holds for all the cases we studied. The nature of the lexico-semantic constraint that governs this distribution, however, is still unclear to us at this moment.

REFERENCES


汉文双及物句式中「的」的词类与功能
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本文证明汉语带「的」的双及物句式与英语的双宾句式仅是表面雷同。我们主张动词后的「的」是复合动词的一部分，而在直接宾语后由「的」领导的词组则是序列动词结构（SVC, Serial Verb Construction)的一部分。除了论据外，我们也提出了这个分析在理论上的重要性和历史语法中可能的佐证。
Liu (2006) provides a classification of Mandarin verbs into categories and argues that the verb classes have intrinsic restrictions on which of the three dative constructions the verb can occur in. Chinese dative constructions involve gei, meaning "give/to". The gei-OD construction in (16a) is the equivalent of the English oblique dative form in which the dative prepositional phrase is [PP.DATIVE gei object]. The Mandarin DOC construction in (16b) parallels the English double object construction. In addition, Mandarin has the V+gei DOC in (16c). Mandarin gei object construction (gel