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## Arbitrary Reflexives in Chinese

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As is well known, Chinese has two reflexives. One of them, which is often called the "bare reflexive", has the invariant form ziji and behaves with respect to the Binding Theory much as uninflected reflexives in other languages do, allowing both domain-internal and domain-external antecedents. The other reflexive, often referred to as the "compound reflexive", consists of the formative ziji suffixed to a personal pronoun; this element allows only domain-internal antecedents, as seems to be the case with morphologically complex reflexives in general. The following examples are typical:

- (1)a. Zhangsan renwei Lisi<sub>i</sub> xihuan ziji<sub>i</sub>.  
Zhangsan think Lisi<sub>i</sub> like self<sub>i</sub>.  
'Zhangsan thinks Lisi likes himself.'
- b. Zhangsan<sub>i</sub> renwei Lisi xihuan ziji<sub>i</sub>.  
'Zhangsan<sub>i</sub> thinks Lisi likes him<sub>i</sub>.'
- (2)a. Zhangsan renwei Lisi<sub>i</sub> xihuan taziji<sub>i</sub>.  
Zhangsan think Lisi<sub>i</sub> like himself<sub>i</sub>.  
'Zhangsan thinks Lisi likes himself.'
- b. \*Zhangsan<sub>i</sub> renwei Lisi xihuan taziji<sub>i</sub>.

A number of authors have suggested in the past few years that long distance binding of reflexives is to be attributed to their undergoing LF movement and adjunction or head substitution. For concreteness,

consider the analysis of Huang and Tang (1988), which is typical of these approaches in important respects and offers a convenient framework for the analysis we wish to present. In Huang and Tang's analysis, reflexives are extracted at LF and adjoined to IP. Bare reflexives, it is claimed, differ from inflected ones in that not only their referential index but also their person and number features ("phi features") must be assigned by coindexation with an antecedent under the constraints of Binding Theory. Huang and Tang hypothesize that bare reflexives undergo assignment of their phi features at S Structure, but acquire their referential index only at LF. Because reflexives extract and adjoin to IP at LF on this analysis, the indexation shown in (1b) above is established within the governing category of the extracted reflexive, and the "long distance" binding of bare reflexives is actually local. In addition to the obvious advantage that this analysis renders unnecessary a parametrization of binding domains for phenomena such as these, Huang and Tang show that other rather mysterious distributional properties of ziji follow from it in quite a direct fashion.

In this note, we would like to suggest that an analysis of the general type of Huang and Tang's, in which reflexives undergo LF adjunction, can also explain fairly straightforwardly a surprising distributional property of ziji which has not, to our knowledge, been discussed previously. Consider examples such as the following:

- (3) Zhangsan<sub>i</sub> renwei ziji<sub>i</sub> yingai nuli gongzuo.  
 Zhangsan<sub>i</sub> think self<sub>i</sub> should hard work  
 'Zhangsan<sub>i</sub> thinks that he<sub>i</sub> should work hard.'
- (4) Zhangsan renwei ziji yingai zhaogu  
 John think self should take care of  
 ziji.  
 self

Example (3) is grammatical under an interpretation in which ziji is coindexed with Zhangsan, as shown, and as one would expect. Example (4), however, is ambiguous between the analogous reading in (5) and that in (6), where the subject-position ziji receives an interpretation similar to that of English one or arbitrary PRO.

- (5) Zhangsan<sub>i</sub> thinks that he<sub>i</sub> should take care  
 of himself<sub>i</sub>.
- (6) Zhangsan thinks that one should take care of  
 oneself.

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As far as we can ascertain, this contrast is entirely general; the arbitrary reference interpretation of subject ziji shown in (6) is available always and only in the presence of another ziji. The only structural qualifications on this phenomenon of which we are aware are that the arbitrary ziji must be a subject and must c-command the second ziji. We have no real explanation for these restrictions, but they are presumably to be related to the "subject orientation" which generally characterizes Chinese reflexives.

The examples below illustrate these properties of the arbitrary interpretation. The sentences in (7) involve a subject ziji and a second ziji which is the possessive determiner of a direct or prepositional object; example (8) is one in which the second ziji is in a clause embedded within the clause containing subject ziji. All are ambiguous between an arbitrary and a bound reading, illustrating the structural freedom of the arbitrary interpretation. Examples (9) are ones in which the c-commanding ziji is in object position and the c-commanded one is either the subject or the object of a complement clause, illustrating the structural restrictions concerning subjecthood and c-command noted in the previous paragraph.

- (7)a. Zhangsan renwei ziji yingai zhaogu  
 Zhangsan think self should take care of  
 ziji de muqin.  
 self 's mother  
 'Zhangsan<sub>i</sub> thinks he<sub>i</sub> (one) should take  
 care of his<sub>i</sub> (ones) mother.'
- b. Zhangsan renwei ziji yingai ba  
 Zhangsan think self should (particle)  
 shiwu fangzai ziji de zhuozhi shang.  
 food put self 's table on  
 'Zhangsan<sub>i</sub> thinks he<sub>i</sub> (one) should put his<sub>i</sub>  
 (ones) food on his<sub>i</sub> (ones) table.'
- (8) Zhangsan renwei ziji yingai xuehui  
 Zhangsan think self should learn how  
 panduan bieren shifou dui ziji zhen  
 judge others whether to self really  
 youhao  
 friendly  
 'Zhangsan<sub>i</sub> thinks he<sub>i</sub> (one) should learn to  
 judge whether others are really friendly  
 toward him<sub>i</sub> (one).'

- (9)a. Zhangsan bu duan de an wei ziji Lisi  
 Zhangsan constantly reassure self Lisi  
 yi ding hui lai bangzhu ziji de  
 surely will come help self  
 'Zhangsan<sub>i</sub> constantly reassured himself<sub>i</sub>  
 that Lisi would certainly come to help  
 him<sub>i</sub>.'
- b. Zhangsan jing gao ziji ziji yingai  
 Zhangsan warned self self should  
 gan kuai guanshang men  
 quickly shut door  
 'Zhangsan warned himself<sub>i</sub> that he<sub>i</sub> should  
 shut the door quickly.'

The arbitrary readings of examples (7) and (8) are unavailable in the absence of the second occurrence of ziji, as shown in the parallel examples in (10) and (11). Furthermore, the substitution of the inflected reflexive taziji for ziji in (4), (7) or (8) likewise renders the arbitrary reading unavailable.

- (10)a. Zhangsan renwei ziji yingai zhaogu  
 Zhangsan think self should take care of  
 muqin.  
 mother  
 'Zhangsan<sub>i</sub> thinks that he<sub>i</sub> should take  
 care of (his<sub>i</sub>) mother.'
- b. Zhangsan renwei ziji yingai ba shiwu  
 Zhangsan think self should (prt) food  
 fangzai zhuozi shang.  
 put table on  
 'Zhangsan<sub>i</sub> thinks he<sub>i</sub> should put (his<sub>i</sub>)  
 food on the table.'
- (11)a. Zhangsan renwei pro yingai xuehui  
 Zhangsan think pro should learn how  
 panduan bieren shifou dui ziji zhen  
 judge others whether to self really  
 youhao.  
 friendly  
 'Zhangsan<sub>i</sub> thinks he<sub>i</sub> should learn to  
 judge whether others are really  
 friendly toward him<sub>i</sub>.'
- b. Zhangsan renwei ziji yingai xuehui  
 Zhangsan think self should learn how  
 panduan bieren shifou zhen youhao.  
 judge others whether really friendly  
 'Zhangsan<sub>i</sub> thinks he<sub>i</sub> should learn to  
 judge whether others are really  
 friendly.'

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These facts, we suggest, offer a rather striking confirmation of the adjunction approach to the analysis of bare reflexives. To see why, consider the approximate LF structure given in (12) for the sentence in (4), which in relevant respects is typical of all the examples under discussion.

- (12) Zhangsan renwei [<sub>CP</sub> [<sub>IP</sub> ziji<sub>i</sub> [<sub>IP</sub> ziji<sub>i</sub> [<sub>IP</sub> t<sub>i</sub> yingai zhaogu t<sub>i</sub> ]]]]]

Assuming the definitions of domination and c-command adopted in May (1985) and Chomsky (1986), the two IP-adjoined reflexives in (12) are in a relation of mutual c-command. We may thus assume (ignoring a technical problem to which we return below) that they may be coindexed and bind each other, fulfilling Condition A of the Binding Theory. If this is correct, however, the question immediately arises of how a referential index is to be assigned to these elements, since both are anaphors and thus normally acquire their referential index through coindexation with an antecedent, an option which is not compelled by Binding Theory if each of the reflexives is in effect the antecedent of the other, as will be the case in this configuration. We would suggest that there are two possibilities. Most obviously, the two coindexed ziji's may be coindexed with a c-commanding argument within their governing<sub>1</sub> category, as in (13) below. This is presumably the source for the reading given as (5) above, and for the analogous nonarbitrary readings of examples (7) and (8).

- (13) Zhangsan<sub>i</sub> renwei [<sub>CP</sub> [<sub>IP</sub> ziji<sub>i</sub> [<sub>IP</sub> ziji<sub>i</sub> [<sub>IP</sub> t<sub>i</sub> yingai zhaogu t<sub>i</sub> ]]]]]

Another possibility might be that the reflexives assume an index distinct from those of any potential antecedent arguments, as in (14).

- (14) Zhangsan<sub>i</sub> renwei [<sub>CP</sub> [<sub>IP</sub> ziji<sub>j</sub> [<sub>IP</sub> ziji<sub>j</sub> [<sub>IP</sub> t<sub>j</sub> yingai zhaogu t<sub>j</sub> ]]]]]

If this occurs, one might plausibly imagine that a default reference assignment mechanism comes into play, assigning arbitrary reference to the coindexed reflexives. This mechanism might reasonably be identified with that which assigns arbitrary reference to PRO (and pro in Chinese, if the analysis of Huang (1984) is correct) in the absence of an appropriate controller.

Looking at things in this fashion essentially amounts to claiming that the assumption of arbitrary reference by an anaphor depends upon the presence of a second anaphor in a relation of mutual c-command with it. At S Structure, of course, such a configuration is not to be found, since arguments do not normally mutually c-command one another. LF extraction and adjunction provides exactly this possibility, however, yielding the interpretation of ziji illustrated in (14). Thus, we predict that this interpretation should be available only when more than one reflexive is adjoined to the same IP at LF and only for uninflected reflexives, since it is just these elements which undergo referential index assignment at LF, on Huang and Tang's analysis. This seems to fit the facts exactly.

It is appropriate to close this note by mentioning several points of somewhat greater generality.

First, this analysis, if correct, implies that Binding Theory is a structural condition on syntactic indexation, not a theory of reference assignment, although indexation and reference are related in obvious ways. Note in particular that the factor that gives rise to the arbitrary reference interpretation of sentences like (4) is the indexation in (14), which satisfies the Binding Theory, but is unable to mediate the assignment of reference to ziji. This point about the nature of Binding Theory is scarcely new, but it bears repeating, as it is often disputed or misunderstood.

Second, we should say something about the question of the application of Binding Theory to elements in A' position at LF, the technical problem alluded to earlier. The familiar sorts of elements that occupy A' positions at LF (e.g. quantifiers and WH forms) are operators, and fall under none of the categories of elements (pronominals, anaphors, and R-expressions) over which the principles of Binding Theory are defined. It seems clear, however, that whatever one is to say about the nature of LF adjoined reflexives, they must retain their character as anaphors sufficiently to be subject to Principle A; otherwise the entire basis of an analysis such as that of Huang and Tang collapses. The additional problem posed by our analysis of arbitrary ziji is that it is necessary to say that Principle A can be satisfied for these elements by A' binding, as well as A binding; otherwise the two reflexives in a structure such as (14) will not bind each other, and the explanation of the arbitrary reading

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will collapse.

Finally, we would like to draw attention to an implication of contrasts such as those between (7a) and (10a) and between (8) and (11a). In its most natural interpretation, (10a) is identical in meaning to the nonarbitrary sense of (7a); that is to say, an argument coreferential with Zhangsan is inferentially supplied as the possessive argument of mugin. However, exactly because this element is inferential, rather than represented syntactically as a reflexive at LF, the arbitrary reading is unavailable. Similarly, the controlled pro in (11a) is indexed identically with ziji in the nonarbitrary sense of (8), yet the arbitrary interpretation is impossible, since this interpretation depends on the particular LF behavior of reflexives. Such phenomena affirm that LF is a level of syntactic analysis whose elements and structures have particular syntactic properties that effect interpretation in different ways than do implicit arguments and inference.

## Notes

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<sup>1</sup> Or one. Huang and Tang's analysis requires that the LF extraction of reflexives be optional. If this is the case, the reading in question could also be derived by means of a structure in which the object position reflexive remains in situ at LF.

<sup>2</sup> We ignore the problem of double object constructions, noting only that an analysis in which double objects are sister (i.e. mutually c-commanding) elements provides rather daunting difficulties for Case Theory and Theta Theory, as well as for the analysis proposed here.

<sup>3</sup> One should note that this configuration can arise even for examples such as (8) in which the two ziji's are in separate clauses at S Structure, since reflexive extraction can occur in a successive cyclic fashion in Huang and Tang's theory.



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