Chapter 9: Anaphora

Much research in grammatical theory has shown that syntax plays an important role (together with semantics and pragmatics) in governing the possible referential meanings of nominal expressions. Three factors enter into the proper characterization of the syntax of anaphora: (a) the nature of the nominal expression in question (whether it needs a linguistic antecedent or not), (b) the structural relation between the expression and its antecedent if it has one, and (c) the nature of the antecedent itself.

In the generative literature, a distinction is made between three NP-types on the basis of their ability or inability to directly refer: anaphors, pronouns and R-expressions. In Chinese, reflexive expressions like ziji ‘self’ and combinations of pronouns + ziji like taziji ‘himself’, nimenziji ‘yourselves’, etc., are anaphors since they are incapable of directly denoting entities in the outside world, but must each rely on a linguistic antecedent for their reference to be established. Personal pronouns like ta ‘he/she’ or tamen ‘they’ may be deictic (used without antecedents) or anaphoric (requiring antecedents). Other noun phrases (Zhangsan, zhe-ge xiaohai ‘this child’, etc.) are R(eferential)-expressions, which do not require an antecedent for their reference to be established.

The possibility and location of an antecedent for a given expression is governed by structural principles, most prominently represented by the principles of Binding Theory in Chomsky (1981) and its subsequent developments. The ‘classical’ version of Binding Theory includes the following three principles, known as Principles (or Conditions) A, B and C:
(1)  
a. An anaphor is bound in its local domain.  (Principle A)  
b. A pronominal is free in its local domain.  (Principle B)  
c. An R-expression is free.  (Principle C)  

An antecedent for a given noun phrase (whether an anaphor or a pronominal) may be referential, denoting a definite entity (e.g., John, zhe-ben shu ‘this book’), or it may be quantificational, ranging over sets (e.g., mei-ge xiaohai ‘every child’, na-ge xuesheng ‘which student’). Generally, when a pronoun takes a referential antecedent (as in (2)), it is said to be co-referential with that antecedent; when it takes a quantificational antecedent (as in (3)), it is said to be a variable bound by the quantificational antecedent:

(2)  John\textsubscript{i} thinks he\textsubscript{i} is smart.

(3)  Everybody\textsubscript{i} thinks he\textsubscript{i} is smart.

In (3), he is not coreferential with the group of persons in a given context that everybody ranges over, but its reference co-varies with the value of x, x a member of the group.

In 9.1 we will examine the basic facts of Chinese nominal expressions with particular emphasis on the conditions in (1). We will find that while Chinese is basically ‘well behaved’ to some extent with respect to these principles, it also raises important issues that call for a closer look at the theory of anaphora. In Section 9.2 we discuss the problem raised by the long-distance binding of the reflexive ziji ‘self.’ The distinction
between co-reference and variable binding, together with the phenomenon of donkey anaphora, will be taken up in Section 9.3.

9.1. Binding Theory in Chinese

9.1.1. Reflexives and Principle A

In Chinese, a reflexive pronoun may take a ‘bare’ (mono-morphemic) form, zi ji ‘self,’ or a ‘compound’ form which combines zi ji with a pronoun: wo ziji ‘myself’, ni ziji ‘yourself’, ta ziji ‘himself’, ta men ziji ‘themselves’, and so forth. The behavior of the compound reflexive in Chinese is quite similar to its equivalent in English:

(4) Zhangsan, zhidao Lisi lao piping taziji*i/j/*k.

Zhangsan know Lisi incessantly criticize himself
‘Zhangsan knows that Lisi criticizes himself all the time.’

Like its counterpart in English, taziji ‘himself’ must take the local NP Lisi as its antecedent (represented by the fact that Lisi and taziji are coindexed with the subscript j). It cannot take the remote NP Zhangsan as its antecedent (hence *i), nor can it exist without an antecedent (hence *k). This pattern of behavior is predicted by Binding Principle A (BPA) as in (1a): an anaphor is bound in its local domain. The *k construal is unavailable, because BPA requires taziji to be bound (co-indexed with an NP which e-commands it). The
construal with *Lisi* is available but not the construal with *Zhangsan*, because although binding obtains in both of these cases, in only the former does the NP bind the reflexive in its 'local domain.' Here, we shall take the 'local domain' to be the 'governing category (GC)' of Chomsky (1981) as revised in Huang (1983):\(^1\)

(5) \(\alpha\) is the governing category for \(\beta\) iff \(\alpha\) is the minimal category containing \(\beta\), a governor of \(\beta\) and a SUBJECT which, if \(\beta\) an anaphor, is accessible to \(\beta\).

The requirement of an ‘accessible subject’ in the definition of a GC allows for an embedded subject anaphor to be bound by an NP in the immediately higher clause, but not beyond, as illustrated in (6):

(6) 

\[[\text{Zhangsan, zhidaom [Lisi renwei [taziji*\(k\) zui congming]]]}\].

Zhangsan know Lisi think himself most clever

‘Zhangsan knows that Lisi thinks he is the smartest.’

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\(^1\) Chomsky (1986a) reformulated (5) with the notion of a closest CFC (complete functional complex) relative to ‘BT-compatibility.’ This amounts in effect to the following for (1a-b):

a. An anaphor is bound in the smallest CFC in which it can be bound.

b. A pronominal is free in the smallest CFC in which it can be free.
The compound reflexive *taziji* appears to be well behaved. When we turn to the bare reflexive *ziji*, however, the situation is rather different. First, in contrast to (4) and (6), the following sentences are ambiguous, permitting both a local and a long-distance construal of *ziji*:

(7)  Zhangsan_{i} zhidao [Lisi_{j} chang zai bieren mianqian piping *ziji_{ij}]*.  
Zhangsan know Lisi often at others face criticize self  
‘Zhangsan_{i} knows that Lisi_{j} often criticizes him/himself_{ij} in the presence of others.’

(8)  Zhangsan_{i} xiangxin [Lisi_{j} renwei [ziji_{ij} de erzi zui congming]].  
Zhangsan believe Lisi think self-DE son most clever  
‘Zhangsan_{i} believes Lisi_{j} thinks that his_{ij} son is the smartest.’

This presents an important problem for BPA. The fact that *ziji* can be locally bound by *Lisi* suggests that it is an anaphor and not a pronoun, but then the possibility of a long-distance antecedent should be ruled out. It has been noted, however, that although local binding is always possible (provided that a local binder is available), long-distance binding is rather limited. For example, in contrast to (7)-(8) above, the following do not permit long-distance binding:

(9)  Zhangsan_{i} zhidao [wo/ni_{j} chang zai bieren mianqian piping *ziji_{ij}]*.  
Zhangsan knows I/you often at others face criticize self
‘Zhangsan\textsubscript{i} knows that I/you often criticize myself/yourself/*him\textsubscript{i} in the presence of others.’

\begin{equation}
\text{Zhangsan\textsubscript{i}} \text{ xiangxin } [\text{wo/ni j renwei } \text{ziji-i j-de erzi zu}\text{i congming}].
\end{equation}

Zhangsan believe I/you think self-DE son most clever

‘Zhangsan\textsubscript{i} believes I/you think that my/your/*his\textsubscript{i} son is the smartest.’

(9)-(10) differ from (7)-(8) only minimally in form, with the embedded subject \textit{Lisi} having been replaced by \textit{wo/ni} ‘I/you.’ This contrast, first observed by Y.-H. Huang (1984), illustrates what has come to be known as the ‘Blocking Effect:’ in (9)-(10), a first/second-person local NP blocks long-distance binding by a third-person NP in the matrix clause (cf. also Huang et al. 1984, Wang and Stillings 1984, Tang 1989). More generally, the generalization emerged that long-distance binding is possible only if the long-distance antecedent agrees with all local and intermediate potential antecedents in ‘ϕ-features’ (person, number, and gender features), but is blocked otherwise. Thus, the following is also an example of blocking, where the matrix and embedded subjects do not agree in person:

\begin{equation}
\text{ni\textsubscript{i} zhidao } [\text{wo j chang zai bieren } \text{mianqiang piping } \text{ziji-i j}].
\end{equation}

\begin{align*}
\text{you know I often at others face criticize self} \\
\text{‘You know that I often criticize myself/*you in the presence of others.’}
\end{align*}
Another problem presented by the bare reflexive is that it can be *free*, without any linguistic binder at all.

As pointed out by Yu (1992), however, a ‘free’ *ziji* is not freely interpreted, but must be specifically interpreted as referring to the speaker, as the translation above shows.

Thus, the bare *ziji* may be unbound or long-distance bound, in violation of Principle A, but only under specific conditions. This problem has been the topic of much recent research, and will be the subject of our discussion in Section 9.2.

9.1.2. Pronouns and Principle B
Pronouns contrast sharply with reflexives: they have to be free in their governing categories, in accordance with Principle B. Thus, in contrast with (4), replacement of taziji with the pronoun ta gives an opposite pattern of possibilities:

(14) Zhangsan_i zhidaolisi_j lao piping ta_i,j,k.

Zhangsan know Lisi incessantly criticize him

‘Zhangsan knows that Lisi criticizes him all the time.’

In (4), taziji has reference j but not i or k, whereas in (14) ta may have i or k but not j as its possible references. Thus, in the environment illustrated here, pronouns and anaphors are complementary in their interpretations. In some environments, pronouns and reflexives may freely alternate. In the following examples, even though they occur in the same structural position, the pronoun ta is free and the anaphor taziji is bound in its GC:

(15) Zhangsan ji-le [ta/taziji de #haopian] gei wo.

Zhangsan send-LE he/himself DE photo to me

‘Zhangsan sent his/himself’s photos to me.’

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2 This situation arises from the definition of a GC as given in (5): the GC for an anaphor must include an accessible subject but the GC for a pronoun need not. Thus an anaphor’s GC may be larger than a pronoun’s. In the examples (15)-(16), when an anaphor occurs as the subject of an NP or an embedded clause, its GC is the main clause, but when a pronoun occurs in these positions, its GC is the NP or embedded clause itself. Thus, in (15)-(16), the anaphor is bound and the pronoun is free in their respective GCs. See Huang (1983)
(16) Zhangsan zong yiwei [taźi/ta zui liaobuqi].

Zhangsan always think himself/he most great

‘Zhangsan always thinks himself/he is the greatest.’

Principle B expresses the insight (after Lasnik 1976) that a proper syntactic theory of binding need only specify what a pronoun cannot refer to, not what its reference must be. Thus a pronoun need not be bound (having reference represented by k in (14)), or it can be bound outside its GC (i). Furthermore, an antecedent may occur in the pronoun’s GC, as long as it does not c-command or bind it:

(17) Zhangsan₁ de muqin hen guanxin ta₁.

Zhangsan DE mother very caring him

‘Zhangsan’s mother is very concerned about him.’

9.1.3. Principles C and D

Another case of pronominal non-coreference that must be stipulated by grammar is illustrated below:

(18) *ta₁ yiwei [wo bu xihuan Zhangsan₁].

and Chomsky (1986a) for details.
he think I not like Zhangsan

‘*He, thinks that I don’t like Zhangsan.’

Here, although * is free (conforming to Principle B), the R-expression *Zhangsan* is bound, in violation of Principle C. Following Lasnik (1976), it has generally been assumed that (18) and (19) are ruled out in the same way, by Principle C:

(19) ?*Zhangsan, yiwei [ wo bu xihuan Zhangsan].

Zhangsan think I not like Zhangsan

‘?*Zhangsan, thinks that I don’t like Zhangsan.’

However, contrary to this earlier position, Lasnik (1991) presents evidence for a separate condition, which we shall dub Principle D, that applies to (18) but not to (19):

(20) Principle D:

A less referential expression may not bind a more referential one.

According to (20), (18) is in violation of Principle D because the binder * is less referential than the bindee *Zhangsan*, but (19) is not, because the binder and the bindee are equal in their degree of referentiality. Lasnik bases his argument on the fact that in Thai and

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3 ‘Less referential’ means ‘more anaphoric’. We assume a referentiality hierarchy like this: Proper name > NP with demonstrative > pronoun > anaphor.
Vietnamese, sentences corresponding to (19) are fully acceptable while those corresponding to (18) are ruled out completely. This fact poses a problem for the conception that (18) and (19) are ruled out by the same Principle C. But with the postulation of Principle D, the requisite distinction follows if one assumes that while Principle C does not apply in Thai and Vietnamese, Principle D does, perhaps universally. This argument has some validity for the Chinese examples here as well: for many speakers, (18) sounds worse than (19). This can be attributed to the fact that while both (18) and (19) violate Principle C, (18) additionally violates Principle D: (18) is doubly ill-formed. The following sentences also seem ill-formed at the same level as (18) and considerably worse than (19):

(21) *na-ge xuesheng, yiwei [wo bu xihuan Zhangsan].

that-CL student think I not like Zhangsan

‘*That student thinks that I don’t like Zhangsan.’

(22) *ta, yiwei [wo bu xihuan na-ge xuesheng]

he think I not like that-CL student

‘*He thinks that I don’t like that student.’

An additional argument for Principle D comes from the fact that, for Chinese, such a constraint must be formulated differently from Principle C. Whereas Principle C simply prohibits the binding of an R-expression by a c-commanding NP, a proper formulation of
Principle D for Chinese is needed to exclude more illegal cases. Thus, (23) and (24) are fully well-formed where neither R-expression of each co-indexed pair e-commands the other. This is as predicted by Principle C:

(23)  Zhangsan-de mama conglai dou bu zebei Zhangsan_i.

Zhangsan-DE mother ever all not scold Zhangsan
‘Zhangsan’s mother never scolded Zhangsan.’

(24)  zhe-ge xiaohai_i-de mama yixiang dou tanhu zhe-ge xiaohai_i.

this-CL child-DE mother ever all protect this-CL child
‘This child’s mother always protected this child [e.g. against any blame].’

However, the following continue to be quite bad even in the absence of e-command:

(25)  *ta_i-de mama yixiang dou tanhu Zhangsan_i.

he-DE mother ever all protect Zhangsan
‘(Lit.) His mother always protected Zhangsan.’

(26)  *zhe-ge xiaohai_i-de mama yixiang dou tanhu Zhangsan_i.

this-CL child-DE mother ever all protect Zhangsan
‘(Lit.) This child’s mother always protected Zhangsan.’
(27) *ta-de mama yixiang dou tanhu zhe-ge xiaohai.

he-DE mother ever all protect this-CL child

‘(Lit.) His mother always protected this child.’

The relevant difference responsible for the contrast between (23)-(24) and (25)-(27) is that in the ungrammatical cases, the first member of each coindexed pair is less referential than the second member, whereas in the grammatical cases, the first member is higher than or equal to the second member in its degree of referentiality. The contrast shows that while Principle C as currently formulated is more or less adequate for Chinese, Principle D must be strengthened so as to rule out certain cases where the strict notion of c-command does not obtain. Specifically, the bad cases are those where the less referential NP stands in a somewhat ‘weaker’ relation than strict c-command to the more referential NP. An appropriate version of Principle D for Chinese might be as follows:

(28) Principle D’:

A less referential expression may not bind, or weakly bind, a more referential one.

In (25)-(27), NP₁ weakly binds NP₂ in the sense that, although it does not itself directly bind NP₂, the NP that immediately contains it does bind NP₂.⁴ That Chinese requires the

⁴This definition of ‘weak c-command’ is simplified for the basic cases. The contrast between (23)-(24) and (25)-(27) persists even when the first member of each pair is further embedded under the subject:
notion of ‘weak binding’ in the formulation of Principle D but not Principle C shows that these two principles cannot be collapsed.

In sum, we have seen in this section that the basic facts of anaphora in Chinese fall generally under the principles of Binding Theory supplemented with an appropriate version of Principle D. There is a major problem, however, presented by the bare reflexive ziji, which can be bound by a distant antecedent outside of its GC or simply unbound, under certain circumstances. In the next section we examine the bare reflexive in more detail.

9.2. The Bare Reflexive ziji

The problem presented by the bare reflexive would not be particularly interesting if it were to behave in complete disregard for BPA. If such were the case, the problem would be

(i) Zhangsan-,de jiejie-de pengyou changchang bang Zhangsan, zuo gongke.

Zhangsan-DE sister-DE friend often help Zhangsan do homework

‘Zhangsan’s sister’s friend often helped Zhangsan with his homework.’

(ii) *ta-,de jiejie-de pengyou changchang bang Zhangsan, zuo gongke.

he-DE sister-DE friend often help Zhangsan do homework

‘His sister’s friend often helped Zhangsan with his homework.’

This suggests a recursive definition of ‘weak c-command’: α weakly c-commands β iff α is immediately contained in an NP that c-commands β or weakly c-commands β. See Huang (1982b) and Teng (1985) for related discussion. The latter proposed a modification of the definition of ‘weak c-command’ which obtains iff α is contained in any maximal phrase that c-commands β.
easily solved by simply categorizing it as an item that falls outside the purview of this principle. The problem is interesting because on the one hand, ziji can always be interpreted as being locally bound (hence an anaphor in the sense of BPA) and, on the other hand, non-local binding (or no binding) is possible only under specific circumstances: a long-distance bound ziji is subject to blocking, and a free ziji must refer to the speaker.\(^5\)

These situations occur only with the bare, mono-morphemic ziji but not the compound reflexive. That is, the long-distance reflexive is characterized jointly by the following three properties:\(^6\)

\[(29) \quad \text{Properties of the long-distance (LD) ziji} \]

a. Monomorphemicity

b. Blocking Effect

c. Speaker-orientation

\(^5\) A ‘generic’ use of an unbound ziji has sometimes been noted (e.g., Li and Thompson 1981) for sentences like ziji de guoshi, ziji fuze ‘self’s fault, self take-charge’ (i.e., ‘One should personally be responsible for one’s own fault’). In line with Tang (1989), we take these instances of ziji to be the adverbial ziji ‘by oneself, alone, etc.’ or adjectival ‘own’ modifying a null generic pronoun like ‘one’ or ‘you’.

\(^6\) Henceforth, we shall use the term ‘long-distance reflexive’ to include both cases where it has an antecedent outside of its GC and where it has no antecedent but refers to the speaker.
This raises the interesting question why this cluster of conditions makes a long-distance reflexive (LDR) possible. Let us consider some previous attempts to answer this question.\(^7\),\(^8\)

\(^7\) The discussion that follows in this section is based heavily on Huang and Liu (2001). See also Cole, Hermon and Lee (2001), Pan (2001) and references cited there for related but somewhat different views.

\(^8\) Other interesting properties of Chinese reflexives have been noted. One of them is ‘subject-orientation’, i.e., the antecedent of a given reflexive must be a subject but not an object or indirect object, etc. The other property is that a reflexive may be bound by an antecedent that does not quite c-command, but only ‘sub-command,’ the reflexive (in the terminology of Tang 1989). Subject orientation is illustrated in (i):

(i) Zhangsan, yijing tongzhi Lisi, ziji-de fenshu le.

Zhangsan already inform Lisi self DE grade LE

‘Zhangsan already told Lisi his grade.’

In (i), ziji may only be bound by Zhangsan but not by Lisi (unlike the situation in English John told Bill about himself, which allows both construals).

Tang’s (1989) notion of sub-command is based on sentences like (ii):

(ii) Zhangsan-de jiao’ao hai-le ziji.

Zhangsan-DE arrogance hurt-LE self

‘Zhangsan’s arrogance ended up hurting him.’

The antecedent Zhangsan does not quite c-command the reflexive ziji, but is the subject (Specifier) of a larger NP (i.e., Zhangsan’s arrogance) that does, and binding is possible when the larger NP itself is not a potential binder (ziji in Chinese is inherently animate). (See Tang 1989 and Huang and Tang 1991 for fuller details and
9.2.1. Two Approaches to the Long Distance ziji

Among the various attempts to cope with the problematic behavior of ziji, two different strategies can be distinguished: (a) a syntactic approach that re-analyzes the facts so that they cease to be problems for Binding Theory; (b) a functional/pragmatic approach that appeals to non-syntactic factors. We will see that an adequate account should include a combination of these two strategies.

9.2.1.1. The Formal Syntactic Approach: ziji as an Anaphor

One important attempt employing the syntactic strategy sought to re-analyze apparent LD binding as involving a number of successive steps of local binding, each in full satisfaction of Principle A. This has the result of making both LD ziji and the local ziji anaphors. Tang (1989) developed an early account using this strategy, with the proposal of an LF-reindexing rule. Following an idea of Lebeaux (1983), Chomsky (1986a), Pica (1987),

Kayne 1994, which allows for a simplification of the notion.)

Note also that neither subject-orientation nor sub-command is a specific property of long-distance ziji ((i) and (ii) are themselves examples of local-binding). Also, neither of them is a specific property of the bare ziji; they apply to the compound taziji as well. Therefore, we will not consider these properties in the following discussion.
and Battistella (1989) proposed that the LDR was made possible by *ziji* undergoing LF head-movement across clause boundaries. This line of approach was developed most fully in a number of papers by Cole, Hermon and Sung (see Cole, Hermon, Sung 1990, Cole and Sung 1994, Cole and Wang 1996, inter alia). According to this hypothesis, the monomorphemic *ziji* obligatorily moves in LF to I\(^0\) of the minimal IP containing it, and optionally moves to head a higher IP. Thus the sentence in (30) has the LF structure (31) representing the LD construal of *ziji*:

(30) \[
\begin{array}{ll}
\text{IP} & \text{Zhangsan } [^0 \text{yiwei } \text{Lisi } [^0 \text{piping-le } \text{ziji}]]
\end{array}
\]

\[
\begin{array}{ll}
\text{Zhangsan} & \text{think} \\
\text{Lisi} & \text{criticize-le self}
\end{array}
\]

‘Zhangsan thinks that Lisi criticized himself/him.’

(31) \[
\begin{array}{ll}
\text{IP} & \text{Zhangsan } [^i \text{ziji} ] [\text{VP } \text{yiwei } [\text{VP } \text{Lisi } [^i \text{t’i] } [\text{VP } \text{piping-le } \text{t’i]}]]
\end{array}
\]

According to this hypothesis, binding of *ziji* by *Zhangsan* is possible because the reflexive has moved to the matrix I\(^0\) position, where it is locally bound by the matrix subject. The successive I-to-I movement is itself a strictly local process. Thus what we have is an apparent case of LD binding that actually consists of successive steps, each obeying strict locality principles. In addition to putting away an important apparent counterexample to Principle A, this approach also provides an attractive explanation of some of the properties associated with the LDR. In particular, the requirement of monomorphemicity follows, because only the monomorphemic *ziji* (and not its polymorphemic cousins) is an X\(^0\) category which can undergo head-movement. Hence only the bare *ziji* exhibits apparent LD
binding. The Blocking Effect also follows, under the assumption that $I^0$ agrees with its Specifier in $\phi$-features. Because the Head Movement Constraint (HMC, of Travis 1984) requires $ziji$ to move to the lower $I^0$ before it moves to the higher $I^0$, $ziji$ (and its trace $t'$) must agree with the Specs of their IPs, which means the two Specs themselves must also agree in $\phi$-features.

Using a similar strategy, Huang and Tang (1991) developed an LF adjunction account, whereby $ziji$ may be adjoined to a local IP and be bound by the next local binder outside of IP. Successive IP adjunction then creates other binding possibilities, each a local matter. This account also derives the monomorphemicity and the blocking effect, in a somewhat different fashion. In particular, although both the bare and the compound reflexives are anaphoric in lacking reference, the former is doubly so because it also lacks ‘phi-features’ (person, number and gender features). It is suggested that on the application of BPA in overt syntax the bare reflexive must first have its phi-features fixed on the basis of its local antecedent. This allows for its reference to be fixed at a later point, following (optional) LF movement. Monomorphemicity thus follows, because the latter possibility is excluded for the compound reflexive, which already has its reference fixed when BPA applies in overt syntax. The blocking effect also follows in that the bare reflexive, having acquired its phi-features from the local antecedent prior to its LF movement, can take a higher antecedent only if that antecedent agrees in phi-features with the local antecedent.

Both the head-movement and the XP-adjunction account, then, treat the LD $ziji$ as a special case of local $ziji$. Despite their apparent attractiveness, both the head-movement account and the XP-adjunction account suffer from important empirical problems. One
clear problem is that, although these accounts provide an explanation for the first two properties--monomorphemicity and the blocking effect (29a, b)--neither had anything to say about the third property of the LDR (29c), the fact that it can occur free referring to the speaker, as observed by Yu (1992). Furthermore, several facts have since come to light surrounding the putative blocking effects.

First, as pointed out by Xue, Pollard, and Sag (1994), blocking effects may be induced by non-subjects. Since non-subjects do not enter into agreement with $I^0$, blocking is unexpected under the head-movement account.

\[(32)\quad \text{Zhangsan}_i \text{gaosu woj Lisi}_k \text{hen ziji}_{*i/j/k}.\]

Zhangsan tell me Lisi hate self

‘Zhangsan told me that Lisi hated self$^*_{i/j/k}$.’

Secondly, a number asymmetry exists in the observed blocking effects: a plural local NP does not block a singular LD antecedent, though a singular local NP does block a plural LD antecedent (Tang 1989):

\[(33)\quad \text{a. } \text{Zhangsan}_i \text{juede tamen}_j \text{lao piping ziji}_{i/j}.\]

Zhangsan feel they incessantly criticize self

‘Zhangsan felt that they criticized themselves/him all the time.’

\[\text{b. } \text{tamen}_i \text{juede Zhangsan}_j \text{lao piping ziji}^*_{i/j}.\]

they feel Zhangsan incessantly criticize self
‘They felt that Zhangsan criticized himself/*them all the time.’

This raises a problem for any account that derives the Blocking Effect from the requirement of $\varphi$-feature agreement. Why should person agreement matter, but not number agreement?

Thirdly, a person asymmetry also exists between first/second and third person NPs with respect to their ability to induce blocking effects. As noted in Xu (1993) (cf. also Pan 1997), it appears that although a local first/second-person NP may block a remote third-person NP from being a LD antecedent, a local third-person NP does not fully block a remote first/second-person NP from being a LD antecedent.

(34) a. Zhangsan$_i$ danxin wo/ni$_j$ hui piping ziji$_i$/$j$.

Zhangsan worry I/you will criticize self

‘Zhangsan is worried that I/you might criticize myself/yourself/*him.’

b. wo$_i$ danxin Zhangsan$_j$ hui piping ziji$_i$/$j$.

I worry Zhangsan will criticize self

‘I am worried that Zhangsan will criticize himself/me.’

c. ni$_j$ danxin Zhangsan$_j$ hui piping ziji$_i$/$j$ ma?

you worry Zhangsan will criticize self Q

‘Are you worried that Zhangsan will criticize himself/you?’

Finally, under some circumstances, even a third-person NP may induce blocking. One such circumstance, reported in Huang and Liu (2001), is when the local third-person
subject is presented deictically, as in (35), where the pointing finger indicates that the speaker points to someone in the audience as he utters the sentence.

(35) Zhangsan shuo ta qipian-le ziji.

Zhangsan say he/she cheat-LE self

‘Zhangsan said that he/she cheated himself/herself.’

Another situation where a third-person NP may induce blocking is when multiple occurrences of ziji are involved. The relevance of the following example was first pointed out by Pan (1997), who attributed it to C. L. Baker. The available readings are summarized in (36a-i):

(36) [Zhangsan renwei [Lisi zhidaow [Wangwu ba ziji1-de shu song-gei-le

Zhangsan think Lisi know Wangwu BA self-DE book give-to-LE

ziji2-de pengyou]].

self-DE friend

‘Zhangsan thinks that Lisi knows that Wangwu gave self’s books to self’s friends.’

a. ziji$_1$ = ziji$_2$ = Wangwu

b. ziji$_1$ = ziji$_2$ = Lisi

c. ziji$_1$ = ziji$_2$ = Zhangsan

d. ziji$_1$ = Wangwu, ziji$_2$ = Lisi

e. ziji$_1$ = Wangwu, ziji$_2$ = Zhangsan
f. \(ziji_1 = \text{Zhangsan}, \ ziji_2 = \text{Wangwu}\)

g. \(ziji_1 = \text{Lisi}, \ ziji_2 = \text{Wangwu}\)

h. \(^*ziji_1 = \text{Zhangsan}, \ ziji_2 = \text{Lisi}\)

i. \(^*ziji_1 = \text{Lisi}, \ ziji_2 = \text{Zhangsan}\)

In this sentence, there are two occurrences of \(ziji\) and three c-commanding subjects. As indicated above, the two occurrences of \(ziji\) may refer to the same antecedent, in which case any of the c-commanding subjects can be the antecedent (a, b, c). The two occurrences of \(ziji\) may also refer separately, so long as one of them is locally bound by \(\text{Wangwu}\) (d, e, f, g). Crucially, if both occurrences of \(ziji\) are to be LD bound, then they must be bound by the same LD antecedent (as in (b, c)), but not separately bound, as in (h, i). This range of possibilities indicates that a third-person NP does not induce blocking when it is itself a non-binder or local binder of \(ziji\), but does so when it is itself an LD binder of \(ziji\). In the illicit cases (h, i), the intermediate subject \(\text{Lisi}\) is the LD binder of one occurrence of \(ziji\), and it prevents the other \(ziji\) from being bound by the matrix subject \(\text{Zhangsan}\).

All of these complications are unexpected under the formal accounts discussed here. In fact, they call into serious question the very existence of a generalization concerning blocking effects in terms of feature agreement, and also to all accounts designed to derive this putative generalization.
9.2.1.2. The Discourse-Functional Approach: ziji as a Logophor

Although the formal approach came into vogue after the relevant facts were introduced by Y.-H. Huang (1984), the first account proposed in Huang et al. (1984) was, in effect, a functional one. Essentially, the proposal was that the Chinese LD reflexives are not true anaphors in the sense of Binding Theory, but a special kind of anaphoric expression referring to the matrix subject as the ‘speaker’ of the embedded clause, following Kuno’s (1972) “direct discourse complementation” analysis of certain pronouns in English. According to Kuno, under one co-referential reading the sentence (37a) is a direct report of the matrix subject’s inner feelings, and under this reading it should be analyzed as having been directly derived from (37b) as its underlying structure:

(37)  a. John said that he saw Bill.

               b. John said, “I saw Bill.”

In the terms of earlier generative studies, the claim is that the transformational process that forms an indirect complement structure from its direct discourse underlying source converts the first-person pronoun I in (37b) directly into the third-person pronoun he in (37a), without going through the intermediate step (38):

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9 There is another reading according to which John need not have consciously ascribed the experience of having seen Bill to himself using the first-person pronoun. This was not the reading under discussion by Kuno.
(38) John said that John saw Bill.

In other words, the pronoun *he* is not a result of pronominalizing *John* but one of direct conversion from *I* in the speech of its antecedent, i.e., the matrix subject and ‘speaker’ of the complement clause. The matrix subject may be the actual speaker of the direct discourse complement as in (37b), or a ‘virtual speaker’ (e.g., thinker, feeler, fearer, knower, experiencer, etc.) in situations like (39):

(39) a. John was afraid that he might lose her.
    b. John feared in his mind: “I might lose her.”

The use of a pronoun that originates from the first-person *I* in Kuno’s system has now come to be known as the *logophoric* use, after Clements (1975) and Hagège (1974). Huang et al. (1984) suggested, following Kuno (1972), that the reflexive *ziji* in its LD construal was permitted when it corresponds to *wo ‘I’* in the direct discourse representation of a sentence in which it occurs. Thus, in its LD construal in (40a), the bare reflexive *ziji* is a logophor.

(40) a. Zhangsan manyuan Lisi chang piping ziji.  
    Zhangsan complain Lisi often criticize self
    ‘Zhangsan complained that Lisi often criticized him.’
    b. Zhangsan manyuan, “Lisi chang piping wo.”
Zhangsan complained, “Lisi often criticized me.”

The logophoric reflexive is not the result of reflexivizing Zhangsan on identity with its own matrix subject, but the result of converting from the speaker-referring wo ‘me’ in the underlying direct discourse.

Huang et al. (1984) argued that this analysis offers a natural explanation for the Blocking Effect. Recall that in a sentence like (40a), an embedded subject wo/ni ‘I/you’ in place of the third-person Lisi would block LD construal of ziji (see also (7)-(12) above). The direct-discourse underlying source would be either (41a) or (41b):

(41)  a.  Zhangsan manyuan, “wo chang piping wo.”
      Zhangsan complain I often criticize me
      ‘Zhangsan complained, “I often criticize me.”’

b.  Zhangsan manyuan, “ni chang piping wo.”
      Zhangsan complain you often criticize me
      ‘Zhangsan complained, “you often criticize me.”’

In (41a), there are two instances of wo, the first one referring to the speaker of the entire discourse, and the second one referring to the matrix subject, the speaker of the complement clause. This perspective conflict makes communication very difficult if not impossible. The same explanation applies to (41b), where the embedded subject ni ‘you’ is an addressee from the perspective of the (external) speaker but the object wo is the
‘speaker’ from the perspective of the matrix subject. In other words, the blocking effect occurs as a perceptual strategy to avoid conflicting references to speech act participants at different levels.

Although the discourse/functional logophoric account provided a rather natural explanation of the blocking effect, for various reasons the idea was put aside as researchers turned their attention to a syntactic anaphoric account postulating LF operations. As the various problems for the anaphoric analysis have come to light, it now appears that the LD ziji lends itself more comfortably to a logophoric analysis. A reconsideration of those problems will make this clear.

First, we noted earlier that the LF movement theories failed to explain the property of speaker orientation when ziji is without any binder (see (13)). This is, without any further explanation, exactly what is expected from the logophoric account.

Secondly, the functional account explains the phenomenon of blocking much more precisely than the formal, LF-movement account. We noted the following five problems for the LF-movement accounts:

(42) a. Non-subjects may induce blocking (see (32)).

b. A number asymmetry exists with respect to blocking: a plural does not block a singular LD antecedent, but a singular blocks a plural antecedent (see (33)).

c. A person asymmetry also exists: a first/second-person NP blocks a third-person LD antecedent, but not vice versa (see (34)).

d. Deictic third-person NPs also induce blocking (see (35)).
e. Multiple occurrences of LD *ziji* may cause blocking (see (36)).

Consider (42c) first. The explanation provided by Huang et al (1984) for the blocking effect is that the occurrence of *wo* ‘I’ or *ni* ‘you’ in a sentence necessarily ‘anchors’ the sentence to the perspective of the speaker, and this prevents a distinct NP from being a LD antecedent of *ziji* because it would require a distinct perspective from which to refer to *ziji* in the first person. Blocking thus arises from a strategy to avoid conflicts in perspectives. However, in the event that the LD antecedent in question is itself *wo* ‘I’ or *ni* ‘you,’ the perspective of the speaker and that of the LD antecedent are one and the same. There is no conflict, hence no blocking. Furthermore, a third-person NP elsewhere in the sentence is normally neutral, as it remains in the third person whether viewed from the external speaker’s or from the LD antecedent’s perspective. Therefore, although a first- or second-person NP blocks a third-person LD antecedent, a third-person NP does not block *wo* or *ni*—or indeed any other NP—from being an LD antecedent.

An exception to the above occurs, however, if a third-person NP is presented in a fixed, non-neutral perspective. This is what happens when it is deictically presented as in (42d). The speaker’s pointing finger necessarily anchors a given utterance to the current time-space in the speaker’s presence, and blocking ensues as in (35).

The situation (42e) describes another situation where a third-person NP induces blocking: when multiple occurrences of *ziji* are involved with distinct LD antecedents. The generalization from (36) is that a long-distance antecedent-*ziji* relation precludes the possibility of other such LD relations, because each distinct LD relation implies a speech
act with one distinct perspective. In Huang et al.’s (1984) terms, the unavailable readings of (36) are those for which the underlying representation would be something like the following: *Zhangsan thinks, ‘Lisi knows, ‘Wangwu gave my book to my friend,’’* where one occurrence of *my* refers to Zhangsan, and the other occurrence refers to Lisi, a very hard situation to sort out indeed.

Furthermore, note that nothing in the logophoric account requires a first- or second-person NP to be a subject in order for an utterance to be anchored to the external speaker’s perspective. Thus, while (42a) presents a serious problem for the agreement-based LF-movement theory, it presents no problem for the logophoric theory at all.

Finally, since the logophoric account concerns the (actual or virtual) speaker’s perspective, it is natural that only person features seem to matter in producing blocking effects, but number features do not. (42b) does not pose a problem for the logophoric account as it does for the agreement-based LF movement account.\(^{10}\)

In this section we have seen that a syntactic anaphoric account that treats both LD and local *ziji* as instances of an anaphor faces important problems. Under the logophoric account of the LD *ziji*, these problems do not arise, and the relevant facts receive a natural explanation. This seems to be a strong argument in favor of treating the LD *ziji* as a logophor. Note that this conclusion entails an extra cost, since we must now recognize two

\(^{10}\) As for the source of the number asymmetry itself, see Huang (2002) for the proposal that attributes it to the inherent distributivity of logophoric antecedents.
different morphemes having the same form ziji—the LD reflexive ziji as a logophor and the local ziji as an anaphor. We shall see below that this extra cost is indeed justified.\(^{11}\)

### 9.2.2. Logophoricity and Anaphoricity

#### 9.2.2.1. The Dual Status of ziji

As indicated above, Kuno (1972) demonstrated the importance of what has now come to be known as logophoricity for analyzing one salient reading of (37a), repeated below, as a direct report of the matrix subject’s inner feelings:

\[(43) \text{ John said that he saw Bill.}\]

Under this reading, the sentence may be seen as the speaker’s report on an event in which John literally said, “I saw Bill.” But that is not the only scenario that makes (43) true with intended co-reference between John and he. Suppose that while watching an old video, John remarked, “The little boy saw Bill” without realizing that the little boy in the video was actually John himself. On the other hand, the speaker (who filmed the video 20 years

\(^{11}\)The logophoric account explains both the Blocking Effect and the property of speaker-orientation, but does not by itself explain the property of monomorphemicity. We shall suggest below that the logophor is an operator in the semantics of logohoricity, and that while the bare reflexive is an operator, the compound reflexive is not. See also note 13 below.
ago) does know that the little boy is indeed John, and therefore may report that John did in effect say that he saw Bill. Such a report is not a report on the matrix subject’s direct feeling, but the speaker’s own knowledge of the relevant event or state of affairs.

Although in English the same pronoun is used in reports of both ‘the speaker’s own knowledge’ and ‘the subject’s direct feeling,’ Hagège (1974) and Clements (1975) report on some West African languages where the distinction is grammaticalized. In these languages a distinct set of logophoric pronouns exist for the sole purpose of referring to an antecedent “whose speech, thoughts, feelings or general state of consciousness are reported.” Another case where this distinction is grammaticalized is provided by the Italian possessive reflexive proprio, in contrast to the pronoun suoi, as illustrated by the pair below (from Chierchia 1989, p. 24):

(44) a. Pavarotti crede che i proprio pantaloni siano in fiamme.

‘Pavarotti believes that self’s pants are on fire.’

b. Pavarotti crede che i suoi pantaloni siano in fiamme.

‘Pavarotti believes that his pants are on fire.’

Chierchia (1989) explains the difference between (44a) and (44b) by employing Lewis’ (1979) distinction between de se and de re beliefs, which roughly corresponds to Kuno’s distinction between ‘the matrix subject’s direct feeling’ and ‘the speaker’s knowledge.’ Both (44a) and (44b) assert the co-reference of Pavarotti with the man whose pants are on fire, but while (44a) with proprio expresses a de se belief by Pavarotti (being disposed to
say, ‘My pants are on fire!’ and run for the extinguisher, for example), (44b) with *suoi* expresses a *de re* belief where the co-reference relation, known to the speaker, may or may not be part of Pavarotti’s own belief. In other words, while *suoi* is a normal anaphoric pronoun, *proprio* is a logophor.

The existence of logophoric pronouns in addition to normal co-referential pronouns in such languages raises the question of why logophors don’t seem to exist in others (e.g., Chinese). This question is answered if we say that Chinese does have a logophor in the form of LD *ziji*, but it is homophonous with the local anaphor *ziji*. In other words, the ‘extra cost’ of recognizing two uses of *ziji* is not *a priori* unjustified.\(^\text{12}\)

### 9.2.2.2. Logophoric *ziji*: Source, Self and Pivot

Sells (1987) provided a useful taxonomy of logophoric phenomena in terms of three primitive roles of the antecedent of a logophor.

\[(45) \quad \begin{align*}
    \text{a. Source:} & \quad \text{the one who is the intentional agent of the communication} \\
    \text{b. Self:} & \quad \text{the one whose mental state or attitude the proposition describes} \\
    \text{c. Pivot:} & \quad \text{the one with respect to whose (time-space) location the content of the} \\
\end{align*}\]

\(^{12}\) Languages that have a distinct set of logophors in addition to pronouns may also possess a distinct set of (local) anaphors. In Italian, local anaphors come in two forms: the clitic form *si* and the full form *se stesso*, which is inflected with appropriate phi-features.
In other words, a logophor refers to a person whose (a) speech or thought, (b) attitude or state of consciousness, and/or (c) point of view (perspective) is being reported. This person may be the speaker (the external Source, Self, or Pivot) or an internal protagonist denoted by an argument of the sentence. For some Chinese speakers, all three types of logophoricity are available as illustrated in (46), though for others the case of a (pure) Pivot antecedent is considerably more difficult to obtain:

\[(46)\]

a. Zhangsan shuo [pashou tou-le ziji-de pibao].
   Zhangsan shuo [pickpocket steal-LE self-DE purse]
   ‘Zhangsan said that the pickpocket stole his purse.’

b. [Ziji-de xiaohai mei de jiang] de xiaoxi shi Lisi hen shiwang.
   self-DE child not get prize DE news make Lisi very disappointed
   ‘The news that his child didn’t win the prize made Lisi very disappointed.’

c. ??[Zhangsan lai kan ziji] de shihou, Lisi zheng zai kan shu.
   Zhangsan come see self DE moment Lisi now at read book
   ‘Lisi was reading when Zhangsan came to visit him.’

In (46a), Zhangsan may be understood as the Source antecedent of ziji. In (46b), Lisi is the internal Self whose mental state is being reported. (46c) may be understood as reporting an event from the perspective of Lisi, the Pivot. Sells (1987) notes that there is an
implicational relation among these three types of logophoric antecedent: if a sentence is interpreted as reporting on the speech or thought of an internal Source antecedent, the same antecedent must also be a Self whose mental state is described and a Pivot from whose perspective the report is made or perceived. Similarly if a sentence simply reports on the mental state or consciousness of its antecedent (Self), it must also be the case that the sentence is evaluated from the viewpoint of the antecedent (Pivot). The reverse does not hold, however. Thus in (46c) the speaker simply empathizes with Lisi but does not purport to be reporting on his mental state (as in (46b)) or his speech or belief (as in (46a)). Sells suggests that these roles characterize certain cross-linguistic variations, and shows that languages differ as to whether they permit one, two, or all three kinds of logophoric antecedents. Following Huang and Liu (2001), we assume that these three labels express a progressive degree of liberation in the linguistic expression of logophoricity, Source being the ‘core’, Self being the ‘extended core’ (i.e., the ‘virtual Source’), and Pivot yet further extended (i.e., the ‘virtual Self’). Thus some languages may permit logophoric reference to the Source only, others allow either Source or Self, and still others allow all three roles; but we do not expect to find languages allowing Pivot as a logophoric antecedent but specifically excluding antecedents that denote the Source. As indicated above, while some Chinese speakers find (46c) difficult to accept, no one—so far as we know—finds (46c) acceptable and (46a) or (46b) unacceptable.

There is evidence that LD binding of ziji by a Source or Self is binding in the context of ‘attitudes de se.’ Suppose that Zhangsan saw a pick-pocket running away with his purse without realizing that it was his own purse. He might kindly report it to the police but
would not be disposed to say, “A pick-pocket stole my purse.” In this case, (46a) would not be an appropriate description of Zhangsan’s deed. An appropriate description would need to replace the reflexive with a pronoun, as in (47):

(47) Zhangsan shuo [pashou tou-le ta-de pibao]
    Zhangsan shuo pickpocket steal-le his purse
    ‘Zhangsan said that the pickpocket stole his purse.’

The LD *ziji*, then, is like Italian *proprio* in being limited to logophoric uses, here a case of logophoric *ziji* referring to the internal Source.

Example (46b) is a case of binding by an internal Self. That this is the case can be appreciated by comparing it with the unacceptable (48):

(48) *[Lisi-de xiaohai mei de jiang] de xiaoxi shi ziji hen shiwang.
    Lisi-de child not get prize DE news make self very disappointed
    ‘The news that Lisi’s child didn’t win the prize made him very disappointed.’

The contrast between (46b) and (48) shows that backward reflexivization is acceptable but forward reflexivization is not, which is somewhat surprising from what we know in general about anaphora. For example, pronominalization in the same context can be in either direction:
(49) a. [Lisi-de xiaohai mei de jiang] de xiaoxi shi taji hen shiwang.

Lisi-DE child not get prize DE news make him very disappointed

‘The news that Lisi’s child didn’t win the prize made him very disappointed.’

b. [tai-de xiaohai mei de jiang] de xiaoxi shi Lisi hen shiwang.

his child not get prize DE news make self very disappointed

‘The news that his child didn’t win the prize made Lisi very disappointed.’

The reason is that LD zijī requires its antecedent to be disposed to describe the relevant event or proposition referring to himself by wo ‘I/me.’ (46b) is well formed, because the antecedent Lisi is an Experiencer disposed to say or think, “My child did not win the prize . . .” But in (48) the antecedent Lisi is not an Experiencer, and the sentence does not purport him to be so disposed to describe the event in these terms.

Because a de se reading presupposes consciousness on the part of the protagonist denoted by the antecedent, the following contrast is expected:

(50) a. Zhangsanzi kuajiang-le [[changchang piping zijī de] naxie renj].

Zhangsan praise-LE often criticize self DE those person

‘Zhangsan praised those people who criticize him a lot.’

b. ??Zhangsanzi kuajiang-le [[houlai sha si zijī de] naxie renj].

Zhangsan praised-LE later kill die self DE those person

‘Zhangsan praised those persons who later killed him.’
In (50a) the relative clause describes an event that Zhanmsan could be aware of at the time he praised his critics. His praise might even have been based on the fact that he had knowingly benefited from the criticism. In (50b) the relative clause is assumed to describe an event known only to the speaker, not to Zhanmsan.

As indicated above in connection with (46c), some speakers allow for an LD ziji to be bound by a Pivot antecedent denoting a protagonist from whose point of view a given sentence is presented. For these speakers, binding is possible as long as the speaker takes the antecedent’s point of view, even though the Pivot may not have a de se attitude about the reported proposition or event. We submit that Pivot binding is an extension of Self binding, in the sense that it acquires ‘virtual consciousness’ in virtue of the speaker’s empathy with the Pivot. The fact that it is not the core, but the extended, case of logophoricity explains why (46c) is not as readily acceptable as (46a-b).

9.2.2.3. Anaphoric ziji: Locally Bound

Our logophoric analysis of the LD ziji implies that the locally bound ziji is mostly not a logophor. This must be the case because the local reflexive does not meet the de se requirement of a logophor. Consider the following examples of local ziji: In (51) ziji is bound by a co-argument, and in (52) ziji is contained in an NP and bound by a co-argument of that NP. In both cases, ziji is bound in its GC as defined in (5).
(51) a. Zhangsan piping-le ziji.
Zhangsan criticize-LE self
‘Zhangsan criticized himself.’
Zhangsan with self pass-not-go
‘Zhangsan gave himself a hard time.’
c. Zhangsan ji-le yi-ben shu gei ziji.
Zhangsan send-LE one-CL book to self
‘Zhangsan sent a book to himself.’

(52) a. Zhangsan piping-le ziji-de pengyou.
Zhangsan criticize-LE self-DE friend
‘Zhangsan criticized his own friend.’
b. Zhangsan gen ziji-de didi guo-bu-qu.
Zhangsan with self-DE brother pass-not-go
‘Zhangsan gave his own brother a hard time.’
c. Zhangsan ji-le yi-ben shu gei ziji de erzi.
Zhangsan send-LE one-CL book to self-DE son
‘Zhangsan sent a book to his own son.’
In these sentences, binding is possible even when no logophoric conditions hold. In each case, the local binder is not, or need not be, a Source, Self, or Pivot. For example, since these sentences are reports on an action performed by Zhangsan but not of his speech or thought, the notion Source is irrelevant. Secondly, these sentences do not require the speaker or hearer to take the empathy focus of Zhangsan, but can be uttered entirely from the speaker's own viewpoint. Thirdly, consciousness, which we saw as a common property of logophoricity, clearly also does not obtain. Thus (51a) and (52a) are entirely licit even though Zhangsan may not be aware that the person he was criticizing was actually himself or his own friend. It is also easy to imagine a scenario in which the following holds true with Zhangsan, even at the time of his death, still not knowing who he was victimized by:

(53) Zhangsanbei ziji (de pengyou) hai-si-le.

Zhangsan by self DE friend wrong-death-LE

‘Zhangsan was wronged to death by himself / his own friend.’

In other words, ziji may be locally bound in non-logophoric contexts and therefore cannot be treated as a logophor. From here, we can expect that local ziji also should not exhibit any blocking effects. This expectation is borne out in full. In the following examples, the intervening first- and second-person pronouns do not induce blocking:

(54) Zhangsan gaosu wo ziji-de fenshu.

Zhangsan tell me self-DE grade
‘Zhangsan told me about his own grade.’

(55)  \text{xiaoni tidao ziji-de quedian le ma?}

he to you mention self-DE shortcoming LE Q

‘Did he mention his own shortcoming to you?’

(56)  ta zheng-tian dui-zhe wo chuipeng ziji.

he whole-day to-ZHE me boast self

‘He boasted about himself in front of me all day long.’

(57)  Zhangsan ba wo dai-hui ziji-de jiali.

Zhangsan BA me bring-back self-DE home

‘Zhangsan brought me back to his own home.’

We therefore conclude that it is important to distinguish between the anaphoric and the logophoric uses of ziji, each with its distinct properties. The LD ziji whose antecedent falls outside of its governing category is a logophor, and as a logophor it exhibits logophoric effects: de se attitudes, consciousness, perspectivity and blocking. The local ziji does not exhibit any logophoric effects, but is subject to local binding in accordance with Principle A.\[13\]

\[13\] When occurring as the subject (or contained in the subject) of an embedded clause, ziji may be treated either as a logophor or an anaphor:
9.2.3. Logophoricity: Syntax and Semantics

Although Kuno’s (1972, 1987) early observations and discussion of the discourse/pragmatic effects of anaphora provide valuable insights into the nature of logophoricity in an intuitively satisfactory way, his account in terms of direct-discourse representations did not mesh with a sophisticated theory of semantics and of the syntax-semantics interface. Sells (1987) treats logophoricity in terms of three primitive roles (Source, Self and Pivot) within Discourse Representation Theory, while Chierchia (1989) argues that logophoricity can be integrated into an interpretive theory by independently needed notions without recourse to such newly postulated primitives.

(i) Zhangsan yiwei [ziji zui congming].

Zhangsan think self most clever

‘Zhangsan thinks that he is the smartest.’

This sentence may describe a situation where Zhangsan says mentally, “I am the smartest,” so ziji can be analyzed as a logophor. On the other hand, since Zhangsan occurs within the GC of ziji, (i) may be a case of anaphor binding as well.

See Huang and Liu (2001) for further discussion showing that local binding of ziji should be defined in terms of the GC, rather than as a matter of predicate reflexivity (as proposed in Reinhart and Reuland 1993), or as a relation between co-arguments (as in Pollard and Xue 1998).
Chierchia adopts Lewis’ (1979) distinction between *de re* and *de se* beliefs and capitalizes on his insight that, while the *de re* readings of attitudinal sentences express a relation between a believer and a proposition, the *de se* readings express a relation between a believer and a property. In the former, a believer holds a certain proposition to be true; in the latter, a believer (knowingly) ascribes a property to himself/herself. Chierchia proposes that this distinction can be captured in semantic representation by treating the complement clause either as a propositional argument (the *de re* reading), or as a secondary predicate (the *de se* reading). Thus the *de re* and *de se* readings of (58) are respectively as in (59):

(58)  Pavarotti believes that his pants are on fire.

(59)  a.  \((\lambda x \text{ believe (} x, x \text{’s pants are on fire)})\) (P)

       b.  \text{believe (P, } \lambda x \text{ (} x \text{’s pants are on fire)})

The structure of secondary predication in (59b) is appropriate for the *de se* reading, given that certain other known structures of secondary predication also permit only *de se* interpretations. These include structures of obligatory control. Note that a *de se* reading is obligatory in (60a) but not in (60b):

(60)  a.  John claims [PRO to be innocent].

       b.  John claims that he is innocent.
Taking obligatory control to be (secondary) predication (as in Williams 1980, Chierchia 1984, etc.), (60a) has the following representation:

(61) claims (John, λx (innocent (x)))

How would a semantic representation like (59b) or (61) be related to, or derived from, the syntactic structure of a logophoric sentence? It seems to us that a possible answer is readily available from Huang and Tang’s (1991) original LF-adjunction analysis of the LD ziji. According to H&T, an LD ziji is adjoined to an IP immediately below its antecedent. This gives rise to an LF representation like (62):

(62) \[ [IP Zhangsan yiwei [IP ziji_i [IP Lisi changchang piping ti_i]]]]

Zhangsan think self Lisi often criticize

In other words, ziji is treated as an operator binding its own trace as a variable. This process is thus on a par with the (overt) null operator movement we postulated for the long passive (see Chapter 4, Section 4.1.2.). The structure (62) is parallel to the semantic representation that would be appropriate under Chierchia’s system, either (63a) or the somewhat more fancy (63b):

14 A head-movement analysis is also possible, if additional assumptions are made about the nature of an operator and general movement constraints on head-movement.
The IP-adjoined ziji in (62) corresponds to the lambda operator in the semantic representations in (63). The status of the LF-adjoined ziji is thus on a par with a null operator, an anaphoric operator in this case. As is commonly assumed in the literature, a null operator is the syntactic correlate of a lambda operator. Thus we can see the LF-adjunction of ziji as a process of creating an operator-variable construction out of a complement clause—in semantic terms, of creating a predicate out of an argument, for direct translation into its semantic representation. In LF, just as a null operator, the IP-adjoined ziji needs to be locally bound by Zhangsan in (62). This is the process of ‘strong binding’ or predication in the sense of Chomsky (1982, 1986a). In semantics, each (secondary) λ-predicate must be predicated on its subject, a result easily obtained from strong binding. Thus, LF IP-adjunction of ziji provides a convenient syntax-semantics interface for the interpretation of logophoric sentences.

In fact, we can also think of the IP-adjunction process as creating a structure to directly represent Sells’ concept of a Source, Self or Pivot at the interface between discourse and syntax. In light of important recent works on the ‘cartography of the left periphery’ (Cinque 1999, 2002, Rizzi 1997, 2002, etc.), it is plausible to assume that a functional category exists which provides a ‘gate’ from which discourse factors are processed. In particular, we may assume that the ziji-adjoined structure is in fact a Source
Phrase (or Self or Pivot Phrase as the case may be). Assuming this to be the structure for (62), with ziji in Spec of SourceP, we have:

(64) $\left[ \text{IP} \text{Zhangsan yiwei} \left[ \text{SourceP} \text{ziji} \right] \text{[IP Lisi chang piping t}_i \right] \right]$

Zhangsan think self Lisi often criticize

Coindexing ziji with Zhangsan fulfills the requirement of strong binding or predication, and the resulting representation can be read as “Zhangsan thinks of himself as the Source (the ‘me’) such that Lisi often criticizes that Source.”

If this hypothesis proves to be on the right track, we now have a new conclusion about the LF-movement hypothesis. Although we have seen that LF movement cannot be the right mechanism for capturing the Blocking Effect, it provides a natural representation at the syntax-semantics interface and the interface between grammar and discourse. Furthermore, despite the appearance of long-distance binding, a local relation still holds between the operator ziji and its logophoric antecedent.

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15 A similar proposal making use of a POV (Point-of-View) Phrase has been made by Nishigauchi (1999).

16 As indicated above in footnote 9, although the logophoric account explains (a) the blocking effects of LD binding and (b) speaker-orientation of the free ziji, it does not, by itself, explain the property of monomorphemicity. One possible answer we suggest here is that the bare ziji is an operator, and as an operator it is subject to LF-movement (like quantificational NPs and null operators). On the other hand, the compound reflexive with a pronominal prefix is a variable on a par with normal bound pronouns that do not undergo movement. It is important to remember that bare ziji is an XP category exhaustively dominating an $X^0$ category. As an operator it undergoes XP movement. There is also evidence that it may move as an $X^0$.
9.3. Bound Anaphora and Donkey Anaphora

At the beginning of this chapter, we noted that the proper characterization of nominal anaphora depends on three ingredients: (a) the nature of the nominal expression in question, (b) the structural relation between the expression and its antecedent if it has one, and (c) the nature of the antecedent itself. We saw that (a) matters, as evidenced by the need to distinguish among anaphors, pronominals and R-expressions. The second ingredient (b) also matters, as we saw, in that the various nominal expressions need to obey the appropriate principles of Binding Theory. As for the third ingredient, binding possibilities vary with respect to the nature of an antecedent involved, specifically whether it is referential or quantificational.

9.3.1. Pronouns in Co-reference or as Bound Variables

The distinction between referential and quantificational NPs plays an important role in both the syntax and the semantics of natural languages. The former include proper names and definite or specific descriptions (e.g., John, the boy, a certain guy), and the latter are made

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category. Huang (2002), argues that this happens with the local ziji: the $X^0$ ziji adjoins to the local governing verb and forms a reflexive predicate with it (cf. self-criticizing, self-inflicting, etc.), thus giving rise to the property of distributivity that is not observed with sentences with the compound reflexive.
up of quantified NPs—universal (e.g., everyone, both men) or existential (e.g., somebody, two girls, a few of the apples, and wh-phrases like who, which dog, etc.). Unlike a referential NP, which directly denotes an individual or individuals, a quantificational NP ranges over a set or sets of individuals but does not denote any specific member of the set.

With respect to anaphora, this distinction amounts to a difference between co-reference and variable binding. In both (65a) and (65b) the pronoun his refers to what its antecedent refers to, i.e., the individual whose name is John or the boy whose reference has been established in context:

(65)  
   a. John, loves his, mother.
   b. The boy, loves his, mother.

In both cases, we have a pronoun in co-reference. In each sentence in (66), however, the antecedent does not refer to any particular individual, but specifies a set \{x\}, such that x is a person:

(66)  
   a. Everyone, loves his, mother.
   b. Someone, loves his, mother.
   c. Who, loves his, mother?

In the Principles and Parameters framework, while referential NPs are treated as arguments of sentences, quantificational NPs (QNPs) are treated as operators each binding a variable
in argument position. Such an operator-variable configuration is created when the QNP is A’-moved to Spec of CP (under wh-movement as in (66c) for English wh-questions) or adjoined to IP (under Quantifier Raising (QR) of May 1977) at the level of Logical Form (LF). The sentences in (66) have the following LF representations:

(67)  
a. [Everyone, [ti loves his, mother]]

b. [Someone, [ti loves his, mother]]

c. [Who, [ti loves his, mother]]

These representations are then each interpreted through a restrictive quantification formula, having the following informal forms:

(68)  
a. For all x: x a person, x loves x’s mother.

b. For some x: x a person, x loves x’s mother.

c. For which x: x a person, x loves x’s mother.

Notice that in each of (67), the pronoun his has the trace ti as its antecedent. Since the antecedent is itself a variable, the referential value of the pronoun co-varies with the value assigned to its antecedent, as shown in (68). In each case, the pronoun is used as a bound variable.

**9.3.2. Variable Binding: Scope, Accessibility and Disjointness**
The distinction between co-reference and variable binding is an area that has not been addressed by Binding Theory. Although all pronouns are governed by Principles B and D, there are additional restrictions on the use of bound variable pronouns that do not hold of co-referential ones. We can see this by comparing (69) with a referential antecedent Zhangsan, with (70) with a quantificational antecedent mei-ge ren ‘everyone’. As shown in (69), a pronoun may take a c-commanding antecedent outside its local domain (see (a-b)), or a non-c-commanding antecedent occurring either locally (i.e., (c)), or at a distance (as in (d-e)).

(69)  a. Zhangsan_i xiwang women hui xihuan ta_i.

Zhangsan hope we will like him
‘Zhangsan hopes that we will like him.’

b. Zhangsan_i hen danxin ta_i-de muqin.

\[17\] In fact, nothing in Binding Theory requires a pronoun to have an antecedent at all. The following may be said of a pickpocket caught in action by an in-circuit camera:

(i) ni kan-kan, ta na-le shoubiao, jiu zheme zou-le chuqu!

you look-look, s/he take-LE watch, then thus walk-LE out
‘Look! S/he took the watch and walked out just like that!’

And such a deictic use of a pronoun is also grammatical in each of the examples in (69), though in the absence of a larger context, each sentence in isolation tends to favor the co-referential reading.
Zhangsan very worried his mother

‘Zhangsan is very worried about his mother.’

c. Zhangsan-de muqin hen danxin ta.

Zhangsan-DE mother very worried him

‘Zhangsan’s mother is very worried about him.’

d. wo kandao Zhangsan de shihou, ta zheng zai chi fan.

I see Zhangsan DE time he right at eat rice

‘When I saw Zhangsan, he was having dinner.’

e. wo kandao ta de shihou, Zhangsan zheng zai eat rice.

I see him DE time Zhangsan right at eat rice

‘When I saw him, Zhangsan was having dinner.’

In (70), whereas quantificational binding is possible where the antecedent mei-ge ren
‘everyone’ c-commands the pronoun (as in (a-b)), the indexings shown in (70c-d) are out:

(70) a. mei-ge ren dou xiwang women hui xihuan ta.

everyone all hope we will like him/her.

‘Everyone hopes that we will like him/her.’

b. mei-ge ren dou hen danxin ta-de muqin.

everyone all very worried his/her mother

‘Everyone is worried about his/her mother.’

c. ??mei-ge ren-de muqin dou hen danxin ta.
everyone-DE mother all very worried him/her

‘Everyone’s mother is worried about him/her.’

d. *wo kandao mei-ge ren,-de shihou, ta,- de shihou, mei-ge ren, dou zheng zai chi fan.

I see everyone-DE time s/he right at eat rice

‘*When I saw everyone, s/he was having dinner.’

e. *wo kandao ta,- de shihou, mei-ge ren, dou zheng zai chi fan.

I see him/her DE time everyone all right at eat rice

‘*When I saw him/her, everyone was having dinner.’

The question we want to address is what makes quantificational binding impossible in (70c-e). What we have seen in (69) and (70) suggests the generalization that a pronoun may take a quantificational antecedent only under c-command by the antecedent, though the c-command requirement does not hold of a non-quantificational antecedent.18 There is evidence, however, that this requirement is too strong. The following examples clearly permit a bound variable reading for the pronoun ta, showing that c-command per se is not a necessary condition for quantificational binding:

18 Cf. Reinhart (1976) for the c-command requirement on quantificational binding in English; also Reinhart (1983), who maintains a distinction between variable binding and co-reference for definite NP antecedents as well. Thus (69a-b) are treated as cases of variable binding on a par with (70a-b), but (69c-e) are treated as cases of co-reference. In the latter cases, the pronouns are not seen as depending for their reference on the antecedents.
(71)  a. mei-ge ren_{i} shou-dao de xin shangmian dou xie-zhe ta_{i} jia  
    everyone receive DE letter on all write-ZHE his/her home de dizhi.  
    DE address  
    ‘For all x, the letter that x received has x’s home address written on it.’

b. mei-ge ren_{i} xihuan de xiaoshuo dou rang ta_{i} xiang-qi-le  
    everyone like DE novel all cause him think-up-LE tongnian wangshi.  
    childhood old-event  
    ‘For all x, the novel that x likes causes x to remember x’s childhood.’

In both (71a) and (71b), the antecedent mei-ge ren ‘everyone’ occurs within a relative clause modifying the subject, hence failing to c-command the pronoun in the main clause, but the pronoun can have a bound variable reading.¹⁹

If c-command is not a necessary condition, then what explains the ill-formedness of (70c-e)? We would like to suggest that these examples illustrate the need for three

¹⁹In English, there is also evidence that quantificational binding does not require strict c-command. In the following examples, the pronouns are clearly used as bound variables:

(i) The election of no president will please any of his opponents.

(ii) Applications from every student must each be accompanied by his or her parents’ signatures.
requirements that make the binding of a pronoun by a QNP possible, drawing on works by Chomsky (1976), Higginbotham (1980a, b), and Aoun and Li (1990):

(72) Conditions on Bound Variable Pronouns:

A pronoun may have a QNP as its antecedent only if

a. The QNP is interpreted as having scope over the pronoun,

b. The QNP is accessible to the pronoun, and

c. The pronoun is locally A’-free (as well as A-free).

Consider first the scope requirement, (72a). The relevance of this requirement can be seen by comparing (71) with (73):

(73) a. *mei-ge ren, dou shou-dao de xin shangmian xie-zhe
everyone all receive DE letter on write-ZHE
tai jia de dizhi.
his/her home DE address

‘*The letter that everyone received has his/her home address written on it.’

b. *mei-ge ren, dou xihuan de xiaoshuo rang tai xiang-qí-le
everyone all like DE novel cause him/her think-up-LE
tongnian wangshi.

childhood old-event
‘The novel that everyone likes causes him/her to remember his/her childhood.’

The examples in (71) and (73) are identical with respect to the structural relations between mei-ge-ren ‘everyone’ and the pronoun ta: the quantifier is a constituent of a relative clause modifying the subject, whereas the pronoun occurs in the main clause. The crucial difference lies in the position of the adverbial dou, which serves as a licenser and scope marker for a universal quantifier to its left. In each of (71) dou occurs in the matrix clause and mei-ge ren has scope over the entire sentence. The universal QNP is interpreted distributively in each case, as indicated in the translation, so that each person may be understood as having received a separate letter or having his/her own favorite novel. The bound variable reading is available. In each of (73) on the other hand, dou occurs within the subject relative clause and the QNP mei-ge ren has scope internal to the relative clause. The QNP is interpreted collectively in these cases, so that everybody is understood to have received the same letter, or have the same favorite novel. The bound variable reading is unavailable in these examples.

Assuming that QNPs are adjoined to their scope position in LF under QR, note that the scope requirement (72a) amounts to the claim that a QNP must A’-bind the pronoun at LF. For illustration, the LF representations of (71a) and (73a) are as in (74) and (75) respectively, after mei-ge ren has been raised to its appropriate scope positions:

(74) \[ [IP mei-ge ren_i [IP [NP t_i shou-dao de xin] . . . dou xie-zhe ta_i jia de dizhi]]. \]
everyone receive DE letter all written his home DE address

‘Everyone is such that each letter s/he received has his/her home address on it.’

(75) *[IP [DP [IP mei-ge ren_i [IP t_i dou shou-dao]] de xin] . . . xie-zhe ta_i jia de dizhi].

everyone all receive DE letter written his home DE address

‘*The letter that everyone received has his/her home address on it.’

That is, although the c-command requirement is too strong as a requirement of Overt Syntax, c-command at LF is indeed a necessary condition that quantificational binding must meet. In addition to the contrasts between (71) and (73), this requirement also correctly rules out the indexing in (70d). As indicated in the English translation, mei-ge ren in (70d) has scope internal to the clause within the time adjunct. The relevant LF representation is as in (76):

(76) *[[IP mei-ge ren_i [IP wo kandao t_i ] de shihou], ta_i zheng zai chi fan.

everyone I see DE time s/he right at eat rice

‘*When I saw everyone, s/he was having dinner.’

The bound variable reading of the pronoun is ruled out. (76) differs from (71)-(73) in that the universal QNP mei-ge ren occurs in an object position, and this somehow prevents it from taking scope over the matrix clause. In subject position, matrix scope is possible, as seen in (77) with its LF representation in (78):
(77) mei-ge reni jingguo zheli de shihou, wo dou gen ta, da zhaohu.

everyone pass here DE time, I all with him do greeting

‘Everyone is such that when s/he passes by here, I always say hello to him/her.’

(78) \[[\text{CP} \text{mei-ge ren}\text{i}[\text{CP}[t_{i} jingguo zheli de shihou], [\text{IP} wo dou gen ta, da zhaohu]]].

Everyone pass here DE time, I all with him do greeting

In other words, in Chinese relative clauses seem to be scope islands for a universal QNP in object position, though not for a subject universal QNP. In contrast, conditional clauses seem to be absolute islands for a universal QNP even in subject position:

(79) *ruguo mei-ge reni jingguo zheli, wo dou hui gen ta, da zhaohu.

if everyone pass here I all will with him/her do greeting

‘*If everyone passes by here, I will always greet him/her.’

(80) *bixu mei-ge reni jingguo zheli, wo cai dou hui gen ta, da zhaohu.

must everyone pass here I then all will with him/her do greeting

‘*Only if everyone passes by here, I will always greet him/her.’

This account of the impossible indexing in (70d) also provides us with an account of a difference between the universal and interrogative QNPs. For example, replacement of

mei-ge ren in (70d) with shei ‘who’ yields an acceptable bound reading:

\[\text{mei-ge ren}\]
(81) ni kandao shei de shihou, ta zheng zai chi fan ne?
you see who DE time s/he right at eat rice Q
‘Who is the person x such that when you saw x, x was having dinner?’

In the same manner, substituting a wh-phrase for mei-ge ren in the conditionals in (79) and (80) yields acceptable indexings.

(82) ruguo shei jingguo zheli, ni jiu hui gen ta da zhaohu ne?
if who pass here you then will with him/her do greeting Q
‘Who is the person x such that if x passes by here, you will greet x?’

(83) bixu shenme-ren jingguo zheli, ni cai hui gen ta da zhaohu ne?
must what-person pass here you then will with him/her do greeting Q
‘Who is the person x such that only if x passes here will you greet x?’

In short, a bound variable reading for a pronoun is possible only if the quantificational antecedent has scope over the pronoun. (80)-(83) permit a bound variable reading because the wh-phrase has matrix-scope (these sentences are direct questions), but (70d) and (79)-(78) do not permit such a reading because mei-ge ren is incapable of having matrix scope.
We have seen that the ill-formedness of (70d) follows from the scope requirement (72a). Let us now consider (70e), repeated below:

(70e) *wo kandao ta \_i de shihou, mei-ge ren \_i dou zheng zai chi fan.
    I see him/her DE time everyone all right at eat rice
    ‘*When I saw him/her, everyone was having dinner.’

(70e) differs from (70d) in that the pronoun and the intended antecedent have swapped their positions. The pronoun occurs now within the temporal adjunct and the QNP occurs as the main clause subject. As the main clause subject, the QNP can have scope over the entire sentence. The indexing indicated in (70e) therefore satisfies the scope requirement (72a). However, binding is not possible in (70e) any more than it is in (70d). Similar problems arise from sentences with existential and interrogative QNPs:

(84) *wo kandao ta \_i de shihou, (you) yige-ren \_i zheng zai chi fan.
    I see him DE time (have) someone right at eat rice
    ‘*When I saw him, someone was having dinner.’

(85) *ni kandao ta \_i de shihou, shei zheng zai chi fan ne?
    you see him DE time who right at eat rice Q
    ‘*When you saw him, who was having dinner?’
These examples illustrate the relevance of the accessibility requirement, (72b). The term *accessibility* is first due to Higginbotham (1980b), but the classical version of this requirement is the so-called “Leftness Condition” of Chomsky (1976):

(86) The Leftness Condition

A variable cannot be the antecedent of a pronoun to its left.

The Leftness Condition is a condition applied to LF representations, and it rules out configurations that result from raising a QNP (under QR) across a non-c-commanding pronoun (i.e., ‘weak crossover’ configurations). The indexings indicated in (70e) and (84)-(85) are ruled out, because their LF representations (such as (87) for (70e)) are in violation of the Leftness Conditions:

(87) *[mei-ge ren, wo kandao ta, de shihou, t, dou zheng zai chi fan]]

   everyone   I see    him DE time all right at eat rice

Higginbotham argues that the Leftness Condition should be abandoned in favor of a non-linear notion of Accessibility that refers crucially to the notion c-command. To simplify our discussion, a QNP is accessible to a pronoun iff the QNP (a) c-commands the pronoun or (b) is contained in an NP that is itself accessible to the pronoun.20 A pronoun

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20 Some important details are left out here. For a review of the various accounts to remedy the Leftness Condition, see Huang (1994).
can be bound by a QNP only if the QNP is accessible to the pronoun. We shall adopt Higginbotham’s version for its descriptive superiority, and note that, as far as our examples are concerned, the condition of Accessibility obtains the correct results. Take the contrasting pair (81) and (85) for example. In (81), the wh-phrase shei does not c-command the pronoun, but it is contained in an NP (headed by shihou ‘time’) that does, so it is accessible to the pronoun. In (85), the wh-phrase neither c-commands the pronoun nor is contained in an NP that does, so it is not accessible to bind the pronoun as a variable. This applies to the universal mei-ge ren and the existential yi-ge ren in (70e) and (84) as well.

We have now accounted for the ungrammatical status of (70d) and (70e) by attributing them to the scope requirement and the accessibility requirement respectively. This leaves us with (70c), repeated below:

(70c) ??mei-ge reni-de muqin dou hen danxin taı.

everyone-DE mother all very worried him/her

‘Everyone’s mother is worried about him/her.’

Similar sentences with existential or interrogative QNPs have the same status:

(88) ??shei-de muqin zui danxin taı.

who-DE mother most worried him/her

‘Whose mother is most worried about him/her?’
(89)  ??you-ge ren_i-de muqin hen danxin ta_i.
        someone-DE mother very worried him/her
        ‘Someone_i’s mother is worried about him/her_i.’

These sentences are problematic because they all meet the scope and accessibility requirements, but binding is rather hard to obtain for some speakers (though others have no problem with such a reading). In this connection we find that the sentences improve somewhat when the pronoun is further embedded.

(90)  mei-ge ren_i-de muqin dou hen guanxin ta_i de gongke.
        everyone-DE mother all very concerned s/he DE schoolwork
        ‘Everyone_i’s mother is concerned about his/her_i schoolwork.’

(91)  shei_i-de muqin shuo-guo ta de-le jiang le?
        who-DE mother say-Exp s/he get-LE prize LE
        ‘Whose mother said that s/he had won a prize?’

Earlier we showed that examples like (71a) permit quantificational binding:

(71a)  mei-ge ren_i shou-dao de xin shangmian dou xie-zhe
        everyone receive DE letter on all write-ZHE
        ta_i jia de dizhi.
        his/her home DE address
'For all x, the letter that x received has x’s home address written on it.'

Here the pronoun is fairly deeply embedded. If the pronoun occurs as the object of the main clause, the bound reading becomes somewhat degraded too:

(92) ??mei-ge ren shou-dao de xin dou piping ta.

   everyone receive de letter all criticize him/her

‘For all x, the letter that x received criticizes x.’

These contrasts, if they are real, suggest that the problem with (70c) and (88)-(89) lies not with the QNP, but with the pronoun occurring ‘too close’ to the quantificational antecedent. This reminds us of similar observations made in Aoun and Li (1989) concerning some speakers, and the generalization they drew: a quantificationally bound pronoun, besides being A-free in its governing category (Principle B), also must be locally A’-free—free from any A’-binder within the minimal potential domain of A’-binding (i.e., an A’ disjointness requirement). Suppose that DP and IP each constitute a potential A’-binding domain. The unacceptability of (70c) and (88)-(89) then follows because in each case the QNP is required to have the matrix IP as its scope, but the object pronoun must be A’-free from any QNP in the same domain, which poses a contradiction. On the other hand, in the acceptable (90) and (91), the pronoun ta is A’-free in its local A’-binding domain (the DP ‘his schoolwork’ in (90), and the embedded IP in (91)). This makes it possible for the pronoun to be quantificationally bound in the matrix IP.
To summarize, we have seen in this section that for a pronoun to be used as a bound variable, its quantificational antecedent must have scope over the pronoun and be accessible to it and, possibly, the pronoun itself must be locally A’-free (in addition to being A-free in accordance with Binding Theory). Most of these conditions (especially with respect to scope and accessibility) have been shown to obtain in English and other languages that are typologically quite different from Chinese, so their relevance in Chinese lends support to the idea that these principles reflect properties of Universal Grammar. Indeed, given the highly subtle and abstract nature of the interpretive matters that concern us, which are mostly unavailable in the primary data that trigger early language growth, it would be surprising if the conditions governing the bound variable use of the pronoun in Chinese were fundamentally different from those employed for other languages.

9.3.3. Indefinites and Donkey Anaphora

The conditions on quantificational binding—scope, accessibility and possibly minimal disjointness—are expected to apply to all QNP types, including universal, existential and interrogative QNPs. While they do work generally for the examples we have encountered, a problem remains with certain sentences containing existential QNPs, as illustrated below:

(93) wo kandao yi-ge ren de shihou, tai zheng zai chi fan.
    I see someone DE time s/he right at eat rice
    ‘When I saw someone, he was having dinner.’
This is to be compared with (70c), repeated below as (94):

(94)  *wo kandao mei-ge ren de shihou, ta zheng zai chi fan.
      I see everyone de time s/he right at eat rice
      ‘*When I saw everyone, s/he was having dinner.’

Recall that the indexing in (94) was ruled out because it fails the scope requirement, as mei-ge ren ‘everyone’ has scope internal to the when-clause. A problem arises, however, under the same internal-scope interpretation of yi-ge ren ‘someone.’ The sentence can be read (as can its English translation) as saying that when there was some person x such that I saw x, x was just having dinner. Under such a reading (93) clearly also fails the scope requirement, but in this case coindexing ta with yi-ge ren is allowed.21

The available indexing in (93) indicates that Chinese also has its own version of a ‘donkey pronoun’ and the problems associated with it. ‘Donkey sentences’ are illustrated by examples like (95), attributed originally to P. Geach:

(95)  a. If a farmer owns a donkey, he beats it.

       b. Every farmer who owns a donkey beats it.

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21 (93) also allows a reading according to which yi-ge ren has wide scope, extending over the entire matrix sentence, i.e., Someone x was such that when I saw x, x was having dinner. This parallels the direct question reading of (81). Under this reading, the scope principle is fully satisfied.
The problem these sentences raise is that, under the traditional treatment (following B. Russell) of an indefinite NP as an existential quantifier, the scope of a donkey is limited within the first subordinate or relative clause that contains it (as in (95)). Yet apparent binding of the pronoun outside its scope is possible. This is exactly the problem we saw with (93). More examples are given below. These include not only normal indefinites as in (96)-(97), but also *wh*-indefinites as in (98) (see Chapter 7 and A. Li 1992b), and *wh*-interrogatives as in (99). The crucial fact to observe is that in each case, the indefinite antecedent of a pronoun does not have scope over the pronoun, but the pronoun is apparently bound by it.

(96) ruguo ni zhaodao yi-ge xin pengyou, qing ba ta jieshao gei wo.  
if you find one-CL new friend, please BA him/her introduce to me  
‘If you find a new friend, please introduce him/her to me.’

(97) shi nian qian wo jiao-guo yi-ge hao xuesheng. zuijin ta lai  
10 year ago I teach-GUO one-CL good student recently s/he come  
zhao-le wo.  
seek-LE me  
‘10 years ago I taught a very good student. Recently s/he came to see me.’

(98) yaoshi shei xihuan zhe-ben shu, wo jiu mai yi-ben song-gei ta.
if someone like this-cl book I then buy one-cl give-to him/her

‘If anyone likes this book, I will buy a copy for him/her.’

(99) buguan shei lai zhao wo, dou bie rang ta jinlai.

regardless who come seek me, all don’t let him/her enter

‘No matter who comes to look for me, don’t let him/her come in.’

9.3.3.1. Two Approaches to Donkey Anaphora

The paradox raised by donkey sentences has been a topic of great interest and controversy in the recent past. Two prominent approaches to the paradox have been influential: the “E-type strategy” of Evans (1980), and the discourse representational theory (DRT) of Heim (1982) and Kamp (1981).

Evans (1980) adopted the traditional Russelian view of the indefinite as an existential quantifier and denied the bound-variable status of the pronoun. According to Evans (1980), the pronoun belongs to a new type (called the “E-type”) which refers “to the object(s), if any, which verify the antecedent quantifier-containing clause” (1980: 340). According to this analysis, the antecedent of it in (95) is not the indefinite a donkey, but something akin to a definite description, like the donkey that he (the farmer) owns. Thus (95) can be paraphrased as: If a farmer owns a donkey, he beats the donkey that he owns. The E-type pronoun constitutes a 4th type of pronoun, distinct from (a) the deictic, (b) the
co-referential, and (c) the bound-variable pronouns.\textsuperscript{22} Because such a pronoun is not a bound variable, it does not have to occur in the scope of the indefinite quantifier to which it is related.\textsuperscript{23}

In the DRT analysis of Kamp (1981) and Heim (1982), on the other hand, an indefinite NP like \textit{a donkey} or \textit{a farmer} is treated not as a quantifier, but as a variable, akin to the pronoun associated with it. A central observation that has been taken to motivate such a view is the fact that an indefinite NP does not seem to have inherent quantificational force, but exhibits quantificational variability under various adverbs of quantification (Lewis 1975). Thus the indefinites in (95a) may have the quantificational force of \textit{all}, \textit{most} or \textit{some} depending on the type of adverbs they occur with:

\begin{itemize}
  \item \textbf{a.}  Always, if a farmer owns a donkey, he beats it.
    \begin{enumerate}
      \item \textit{All} farmers (x) and donkeys (y) are such that if x owns y, then x beats y.
    \end{enumerate}
  \item \textbf{b.}  Usually, if a farmer owns a donkey, he beats it.
    \begin{enumerate}
      \item \textit{Most} farmers (x) and donkeys (y) are such that if x owns y, then x beats y.
    \end{enumerate}
  \item \textbf{c.}  Sometimes, if a farmer owns a donkey, he beats it.
\end{itemize}

\begin{itemize}
\item \textbf{22} In a sense, one might regard the E-type pronoun as a ‘virtual’ deictic pronoun. A normal deictic pronoun directly refers to an individual that may be identified with a pointing finger, while a donkey pronoun refers to an individual identified by a definite description inferred from, but not expressed in, the text.
\item \textbf{23} In fact, a donkey pronoun cannot be c-commanded by its indefinite antecedent. A sentence like \textit{Someone believes he’s innocent} does not have an E-type interpretation of the pronoun. This may follow from Binding Principle C and the assumption that the E-type pronoun is a definite description, hence an R-expression in the sense of Principle C.
\end{itemize}
= Some farmers (x) and donkeys (y) are such that if x owns y, then x beats y.

These variations are captured by treating each indefinite NP and any pronoun associated with it as a variable bound by the adverb of quantification. In the following representation, the operator ‘unselectively’ binds the variables a farmer, a donkey, he and it.

(101) Always, if a farmer, owns a donkey, he, beats it.

Given the universal force of always, (101) represents the interpretation indicated in (102):

(102) ∀x ∀y ((x is a farmer & y is a donkey & x owns y) → (x beats y))

In the absence of an overt adverb of quantification, an implicit necessity operator (i.e., necessarily) is assumed in a conditional like (95), again giving rise to a universal interpretation of the sentence.

The unselective binding analysis of the DRT treats not only the donkey pronouns, but also the indefinites, as variables occurring in the scope of (adverbial) binders. For the E-type analysis, an indefinite is a normal quantifier and a new category is recognized for the donkey pronoun. For the DRT, a donkey pronoun is a normal bound variable but, in addition to a normal bound variable, a new kind of bound variable is posited in the form of an indefinite NP.
The facts about donkey sentences in English largely carry over to Chinese, and so the controversy over the two approaches applies as well. In the rest of this chapter, we will make two points. First, on grounds of generality, the E-type strategy should be preferred for the donkey sentences we have discussed so far. Secondly, the unselective binding strategy is nevertheless independently needed, for an account of certain donkey sentences in Chinese.

9.3.3.2. Two Types of Donkey Sentences

Our first point is that although unselective binding nicely captures the phenomenon of quantificational variability, the strategy lacks generality as a solution to the problem posed by pronouns that are related to quantificational antecedents but lie outside their scopes. Compare (98) and (99) above for example. In (98) we have the wh-indefinite shei ‘someone’ and a related donkey pronoun ta. The sentence may be analyzed in terms of binding under an implicit necessity operator, as in (103) representing the meaning of (104):

\[(103) \quad \text{NEC}_i \quad [[	ext{yaoshi} \ldots \text{shei} \ldots]], \quad [\text{wo jiu} \ldots \text{ta} \ldots]]
\]

\[
\quad \text{if someone I then him/her}
\]

\[(104) \quad \forall x \ ((x \text{ likes this book}) \rightarrow (\text{I will buy a copy for x}))
\]
However, in (99) the donkey pronoun \( ta \) is related to an interrogative \( shei \). The strategy of treating the interrogative and the pronoun as variables unselectively bound by a wide-scope adverb of quantification is not available. The reason is that the interrogative interpretation requires \( shei \) (qua variable in the spirit of DRT) to be bound by a question operator having embedded scope under \( buguan \) ‘regardless of’, which selects an embedded question as its complement.

(105) \[ buguan \ [ [Q, [ shei, lai zhao wo]], dou bie rang ta, jinlai]. \]

regardless who come seek me, all don’t let him/her enter

‘No matter who comes to look for me, don’t let him/her come in.’

The binder Q of the variable \( shei \) still does not have the pronoun \( ta \) in its scope, and so the scope requirement is still not satisfied. The problem also remains when universal QNPs and plural indefinites are involved:

(106) \[ ruguo mei-ge ren dou dao-qi-le, jiu jiao tamen yiqi jinlai \]

if everyone all arrive-LE then tell them together enter

‘If everyone has arrived, tell them to come in together.’

(107) \[ yaoshi tai shao ren lai, jiu qing tamen xian hui jia denghou tongzhi. \]

if too few person come then ask them first go home wait notice

‘If too few people arrive, then ask them to go home to wait for further notice.’
In (106) the position of *dou* ‘all’ shows that *mei-ge ren* has scope within the *if*-clause. Similarly *tai shao ren* ‘too few people’ in (107) is naturally interpreted as a narrow scope existential. Unlike singular indefinites which exhibit quantificational variability under frequency adverbs, plural indefinites such as *few people, many students*, etc., and universals do not, and binding under a wide-scope adverb of quantification does not yield the right semantics. To account for the pronouns in (105)-(107) an E-type strategy would presumably be needed. In each case, the pronoun may be paraphrased as a definite description on the basis of the clause that contains its antecedent: *the one who comes to see me, all those who have arrived, and the few who have come*. In other words, the strategy of unselective binding lacks general applicability and, on grounds of theoretical parsimony, should be dispensed with, all else being equal.24

However, all else is not equal, and thus our second point is that the unselective binding strategy is necessary after all. We show that the strategy is independently motivated, not for the sentence types we have examined, but for a type of conditional sentence illustrated below.

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24 The argument from quantificational variability is also not fully compelling for the unselective binding analysis of singular indefinites. While unselective binding obtains variability by directly manipulating the quantificational force of the indefinite noun phrase, in the E-type analysis the variability can be derived, indirectly, by having the adverb quantify over (minimal) situations described by the clauses containing the indefinites.
The existence of sentences of this type has been noted for several decades. Cheng and Huang (1996) first noted their theoretical relevance to the current debate. These sentences have the syntax and semantics of conditionals, as evidenced in part by the fact that the element *jiu* ‘then’ may optionally occur in the consequent clause:

(110) shei xian lai, shei jiu xian chi.
who first come, who then first eat
Same as (108)
These conditionals differ in form from normal *if ... then* conditionals like (106)-(107)) in that they do not have an overt leading element such as *ruguo* or *yaoshi* ‘if’ in the antecedent clause. These ‘bare conditionals’ have several important properties that distinguish them from normal *if*-conditionals. First, each sentence contains two identical occurrences of a *wh*-word, one in the antecedent clause and one in the consequent clause. These two occurrences are identical both in form and in reference. Secondly, the *wh*-word in the consequent clause cannot be replaced by a pronoun or a definite description (see (112a-b)), or be completely missing from the consequent clause (see (112c)):

(112) a. *shei xian jinlai, ta xian chi.*
    who first enter s/he first teach

    b. *shei xian jinlai, zhe-ge ren xian chi.*
    who first enter this-CL person first eat

    c. *shei xian jinlai, wo hui hen gaoxing.*
    who first enter, I will very happy

A bare conditional may contain more than one *wh*-word in the antecedent clause, but for each such word in the antecedent clause, an identical *wh*-word is found in the consequent. As a result, each bare conditional may contain 2, or 4, or 6 *wh*-words, etc.

(113) a. shei yan shei, shei xiang shei.
who act who who resemble who

‘If [actor] x plays [character] y, x resembles y.’

b. shei xihuan shenme, shei jiu mai shenme.

who like what who then buy what

‘If x likes y, then x buys y.’

These properties distinguish the bare conditionals from normal if-conditionals. A normal if-conditional does not require the existence of an anaphoric element in the consequent clause (114c), and if one does exist in the consequent clause, it may take the form of a pronoun or a definite description (114a-b):

(114) a. ruguo shei xian jinlai, ta jiu xian chi.

if who first enter s/he then first eat

‘If someone comes in first, then s/he will eat first.’

b. yaoshi shei xian jinlai, nei-ge ren jiu xian chi.

if who first enter that-CL person then first eat

‘If someone comes first, then that person will eat first.’

c. yaoshi shei xian jinlai, wo hui hen gaoxing.

if who first enter I will very happy

‘If someone comes in first, I will be very happy.’

74
In this respect, the normal *if*-conditionals behave on a par with the following sentences with *dou* (the ‘*dou*-conditionals’):

(115)  

a. (buguan) shei xian jinlai, ta dou keyi xian chi.  
regardless who first enter s/he all can first eat  
‘No matter who comes in first, s/he will get to eat first.’

b. (buguan) shei xian jinlai, nei-ge ren dou keyi xian chi.  
regardless who first enter, that-CL person all can first eat  
‘No matter who comes in first, that person will get to eat first.’

c. (buguan) shei xian jinlai, wo dou hui hen gaoxing.  
regardless who first enter I all will very happy  
‘No matter who comes in first, I will be very happy.’

Neither the normal *if*-conditionals nor the *dou*-conditionals go well with a *wh*-word in the consequent clause:

(116) ??ruguo shei xian jinlai, jiu rang shei xian chi.  

25 The strength of the grammaticality judgment with the *if*-conditionals varies somewhat among speakers. If the antecedent clause does not contain *ruguo ‘if’ but the consequent clause does contain *jiu ‘then,’ many speakers allow a free alternation between a pronoun and a *wh*-phrase:

(i) shei xian jinlai, wo jiu xian da shei/ta.
if who first enter then let who first eat

(117) *(buguan) shei xian jinlai, wo dou rang shei xian chi.

regardless who first enter I all let who first eat

Following Cheng and Huang (1996), we take the systematic contrasts between bare conditionals and if- and dou-conditionals to indicate that while the if- and dou-conditionals are best treated via the E-type strategy, the bare conditionals exemplify unselective binding par excellence. According to Heim’s (1982) schema, unselective binding involves a tripartite structure consisting of an operator, a restriction and a nucleus. In a conditional sentence, an adverb of quantification serves as the operator, the antecedent clause maps into the restrictive clause, and the consequent maps into the nuclear clause. The operator binds a variable in both the restriction and the nucleus. Under the tripartite schema, (109) would be appropriately represented as in (118):

who first enter I then first hit who/him/her

We shall consider such ‘half-bare’ conditionals to have the status of either if-conditionals (when they take a pronoun in the consequent clause) or bare conditional (when they take a wh word). The conditions under which the alternation is possible are somewhat complicated, depending in part on where the anaphoric pronoun or wh-word is. See Cheng and Huang (1996) and Lin (1996) for additional discussion. Details aside, what is important here is that if a particular sentence type allows an anaphoric pronoun, then it also allows a definite description in the consequent clause; and if an anaphoric pronoun is prohibited, so is a definite description.
(118) \[ \text{NEC}_i \text{ she}_i \text{ xian jinlai, } \text{ wo xian da she}_i \]

who first enter I fist hit who

\[ \text{OP}_i \text{ (Restriction) (Nucleus)} \]

(113) would be represented by multiple unselective binding as in (119):

(119) \[ \text{NEC}_{ij} \text{ she}_i \text{ yan she}_j, \text{ she}_i \text{ xiang she}_j \]

who act who who resemble who

\[ \text{OP}_{ij} \text{ (Restriction) (Nucleus)} \]

Note that in both (118) and (119), the operator directly and locally binds both the \(wh\)-variable(s) in the antecedent clause and those in the consequent clause—since neither of the \(wh\)-variables c-commands the other. The two occurrences of shei ‘who’ in (118), in other words, are of equal status, with neither construed as being anaphoric to the other. This explains why both occurrences of the same variable take the form of identical \(wh\)-phrases. The \(wh\)-phrase in the consequent clause cannot be replaced by an anaphoric pronoun or a definite description (implying ‘familiarity’), because its status is equal to that in the antecedent clause, not anaphoric to it. The tripartite representation also explains why a \(wh\)-variable must occur in both the antecedent and the consequent clause. Assuming that natural language quantification is both restrictive and non-vacuous, the following bare
conditionals are ungrammatical because neither of these requirements has been satisfied. These sentences are as ‘strange’ as their English translations sound:

(120) a. *shei xian jinlai, wo xian da Lisi.
    who first enter I first hit Lisi
    (*For all x such that x comes in first, I shall hit Lisi first.)

b. *Lisi xian jinlai, wo xian da shei.
    Lisi first enter I first hit who
    (*For all x such that Lisi comes in first, I hit x first.)

Our explanation of the properties of bare conditionals in terms of unselective binding also means that the if- and dou-conditionals are not examples of unselective binding, but are more appropriately treated using the E-type strategy. Because the E-type strategy treats the indefinite wh-phrase as an existential or interrogative quantifier having scope internal to the antecedent clause, no variable is needed (or tolerated) in the main or consequent clause. This explains the grammaticality of (114c) and (115c). If a reference is to be made from the main clause to the bound variable within the antecedent clause, such a reference will necessarily be anaphoric in nature, referring to whatever value the antecedent variable is assigned. It depends on the variable as its antecedent, and hence takes the form of an anaphoric pronoun or definite description, as in (114a-b) and (115a-b). Note that pronouns and definite descriptions are distributed in the same way: they are both allowed in if- and dou-conditionals, but both disallowed in bare conditionals. This provides an
additional argument for Evans’ treatment of the donkey pronoun as being on a par with a definite description.

In summary, there are two types of donkey sentences in Chinese: bare conditionals and if- and dou-conditionals. The bare conditionals provide strong evidence for the unselective binding mechanism as proposed in the DRT. Although the DRT account was first developed on the basis of ‘normal’ conditional sentences involving donkey pronouns, our argument from bare conditionals serves, ironically, to re-affirm the appropriateness of an E-type strategy for the treatment of such donkey pronouns.

9.4. Summary and Conclusion

This chapter has examined an important area of Chinese syntax as it relates to semantic interpretation, concerning the reference of nominal expressions. We have seen that while the general patterns of NP reference in Chinese conform to general principles of binding, a number of phenomena specific to Chinese contribute to our understanding of the formal nature of the syntax-semantics interface and the interface between grammar and discourse, as part of human linguistic competence. Among these, the pattern of pronominal non-coreference helps to establish the need for an independent Principle D. The dual status of the bare reflexive ziji argues for the need to distinguish an anaphor governed by syntactic principles and a logophor governed by a combination of syntactic and functional principles operating at the grammar-discourse interface. The differential behaviors of definite and quantificational NP anaphora demonstrate the relevance of scope, accessibility and locality.
for a theory of variable binding. The patterns of various conditional sentences show that both the E-type strategy and the unselective binding strategy are necessary for a proper theory of donkey anaphora in natural language.

The fact that the matters concerning us seem in large part to conform to general principles should not be surprising. Given the abstract nature of these matters from the point of view of the language learner, it is natural that they reflect the inner workings of the mind and part of the device that the child brings to the task of language acquisition. On the other hand, it is also clear that our understanding of these inner workings will not be complete without the in-depth examination and analysis of individual languages.