

HOW THE COMPLEXITY OF  
MANDARIN *ZI-JI* SIMPLIFIES THE  
GRAMMAR

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## 1 Introduction

It is generally assumed that Mandarin Chinese has a complex anaphor *ta ziji*, which is locally bound (Condition A of the canonical binding theory; Chomsky 1981), and another anaphor, *ziji*, which can be locally and nonlocally bound, as in (1).

- (1) [Zhangsan<sub>i</sub> renwei [Lisi<sub>j</sub> zhidao [Wangwu<sub>k</sub> xihuan  
Zhangsan think Lisi know Wangwu like  
ziji<sub>i/j/k</sub>]].  
self  
'Zhangsan thinks that Lisi knows that Wangwu likes him/  
himself.'

*Ziji*'s internal structure is subject to debate. The dominant position is that it is simplex and that this property enables its nonlocal binding (Battistella 1987, 1989, Pica 1987, 1991, Cole, Hermon, and Sung 1990, Huang and Tang 1991, Charnavel et al. 2017). Bergeton (2004), on the other hand, argues that it is complex. Huang and Liu (2001) propose a nonuniform analysis. So does Giblin (2016:171), arguing that *zi-ji* is a SE-anaphor (Reinhart and Reuland 1993), hence simplex, when nonlocally bound, but a SELF-anaphor, hence complex, when locally bound. In these analyses, the representation of *zi-ji*'s dual role lacks independent motivation. However, Chief (1997, 1998) provides the data for an independent argument that *zi-ji* is complex throughout. This is important for understanding the expression of reflexivity in Mandarin, and the syntactic representation of anaphoric dependencies in general.<sup>1</sup>

Our starting point is coargument binding, which leads to a reflexive predicate. Crosslinguistically, expressing reflexivity requires special means, some of which we illustrate here with Sakha and Faroese. The use of reflexive affixes, as in (2a), or simplex reflexives, as in (3a), is restricted or requires additional licensing; see the ill-formedness of the affixal variant in (2b) and of (3b) without *sjálvan*. However, complex reflexive forms as in (2b) and (3b) can generally be used without restrictions (Reinhart and Reuland 1993, Reuland 2011, 2017c, Schadler 2014, Volkova 2014).

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<sup>1</sup> Chief (1998:48) himself does not draw that conclusion, though, and still assumes that *ziji* is monomorphemic.



constituting elements, based on a unified analysis of the role of *zi-* in two different environments.

## 2 *Zi-ji* in a Local Domain

Germanic simplex anaphors like Faroese *seg* (see (5)) or Dutch *zich* allow local binding only with a subclass of agent-theme verbs (e.g., Everaert 1986, Reinhart and Siloni 2005).<sup>3</sup> *Zi-ji* is not subject to this restriction, though; witness the contrast between (5) and (6).

- (5) Jógvani<sub>i</sub> sigur, at Maria<sub>j</sub> elskar seg<sub>i/\*j</sub>.  
 Jógvan says that Maria loves REFL  
 ‘Jógvan says that Maria loves self.’  
 (Strahan 2009:117)
- (6) Zhangsan<sub>i</sub> renwei Lisi<sub>j</sub> xihuan zi-j<sub>i/j</sub>.  
 Zhangsan think Lisi like REFL-self  
 ‘Zhangsan thinks that Lisi likes him/himself.’

Bergeton (2004) notes that *zi-ji* has both sloppy and strict readings in elliptical constructions, unlike its Scandinavian and Dutch counterparts with *sig/seg/zich*, but like their complex counterparts such as *sjálfan sig/seg sjálfvan/zichzelf*. Similarly, *zi-ji* allows statue interpretations (Jackendoff 1992), as noted by Y. Liu (2016), unlike simplex anaphors in Scandinavian or Dutch. In all these respects, locally bound *zi-ji* behaves just like the complex anaphors in these languages, expressed in the gloss ‘REFL-self’.<sup>4</sup> These properties of *zi-ji* will be discussed in detail in section 5.

## 3 The Blocking Effect

Locally bound *zi-ji* differs not only from simplex anaphors, but also from nonlocally bound *zi-ji*. Nonlocal binding of *zi-ji* is subject to a *blocking effect* (e.g., Cole, Hermon, and Sung 1990, Huang and Tang 1991, Giblin 2016). That is, binding of *zi-ji* by a 3rd person antecedent is blocked by a 1st or 2nd person pronominal intervening between *zi-ji* and its envisaged antecedent. For instance, if we replace 3rd person *Lisi* by 1st person *wo* ‘I’ in (1), we get (7a), in which *zi-ji* cannot be bound by *Zhangsan*. In a local binding dependency, however, this blocking effect disappears, as illustrated in (7b) (see, e.g., Huang and Liu 2001, Giblin 2016).<sup>5</sup>

<sup>3</sup> See Marelj and Reuland 2016 for an account of why German *sich* and reflexive clitics in Romance and Slavic are able to license reflexivity.

<sup>4</sup> Giblin (2016), citing C.-S. L. Liu (1999), assumes that *zi-ji* does not allow proxy readings. However, C.-S. L. Liu (2003) retracts his earlier observations and shows that across-the-board *zi-ji* always allows proxy readings (in line with Y. Liu 2016 and our own results).

<sup>5</sup> For local binding, the consciousness requirement on *zi-ji*’s antecedent is absent.

- (7) a. [Zhangsan<sub>i</sub> renwei [**wo**<sub>j</sub> zhidao [Wangwu<sub>k</sub> xihuan  
Zhangsan think I know Wangwu like  
zi-ji<sub>\*i/\*j/k</sub>]]]  
REFL-self  
'Zhangsan thinks that I know that Wangwu likes him-  
self.'
- b. Zhangsan<sub>i</sub> xiang **wo/ni** biaobai le zi-ji<sub>i</sub>.  
Zhangsan to me/you unburden ASP REFL-self  
'Zhangsan unburdened himself to me/you.'

This led Huang and Liu (2001) and Giblin (2016) to hypothesize that *zi-ji*'s entry is ambiguous. We show, however, that in fact no such ambiguity is involved: *zi-ji* is uniformly complex, consisting of a reflexivizing element *zi-* and a deficient pronominal *-ji*. The "ambiguity" of *zi-ji* reduces to a timing difference in the way its two components interact with the syntactic environment.

#### 4 The Complexity of *Zi-ji*

The evidence that *zi-ji* is complex comes from the fact that Mandarin has a verbal prefix *zi-*, which marks verbal elements as reflexive, as in (8). When a Mandarin verb has a compound form, *zi-* generally replaces the first component when it reflexivizes; for example, *cansha* 'kill cruelly' reflexivizes as *zi-sha* 'kill oneself'.

- (8) Zhangsan zi-sha le.  
Zhangsan REFL-kill ASP  
'Zhangsan committed suicide.'  
(Chief 1997, 1998)

The second component, *-ji*, originated as a pronominal element in Classical Chinese (Y. Liu 2016).<sup>6</sup> Currently, the *-ji* part can still be used in contexts like (9); see also Bergeton 2004.

- (9) ji-jian 'self's opinion'  
ji-ren 'self's responsibility'  
zhi-ji 'intimate friend/know oneself'  
lyu-ji 'discipline oneself'

Marking by *zi-* is quite productive, yielding entries like these:<sup>7</sup>

- (10) zi-nue 'to torture oneself'  
zi-sha 'to commit suicide'  
etc.  
(Chief 1998:49)

<sup>6</sup> In Classical Chinese (at least before the Donghan dynasty, 15–220 AD), *zi* and *ji* were used as separate anaphoric elements (see Y. Liu 2016): *zi* was always locally bound, while the records indicate that *ji* preferred sentence-internal nonlocal binding.

<sup>7</sup> For Chief's (1998) full list, see the online appendix ([https://www.mitpressjournals.org/doi/suppl/10.1162/ling\\_a\\_00355](https://www.mitpressjournals.org/doi/suppl/10.1162/ling_a_00355)).

Wong (2017) discusses 38 more *zi*-prefixed verbs from a corpus search (see the online appendix mentioned in footnote 7).<sup>8</sup> Like affixal reflexives in other languages, they are subject to restrictions (see (2b)). Most of the verbs are agent-theme verbs, but some appear to be object experiencer verbs, such as *zi-yu* ‘to amuse oneself’ (see the appendix for discussion).

Y. Liu (2016) and Wong (in preparation) show that *zi*-reflexivization also obtains with subject experiencer verbs taking a clausal complement, as in *Zhangsan [zi-jue conghui]* ‘Zhangsan considers himself smart’.<sup>9</sup> Such *zi*-verbs also allow full clausal complements with embedded clauses, to be discussed in section 9.<sup>10</sup> *Zi*-prefixation is also highly productive in formations like *zi-yi zhuangzhi* ‘self-moving device’ and similarly in expressions like *zi-jia* ‘self-drive’, *zi-xue* ‘self-learn’, and *zi-ban* ‘self-manage’, which abound on the Internet. Here, *zi-* is comparable to SELF-morphemes in the corresponding forms in languages like English and Dutch.

These facts warrant the conclusion that *zi-ji* is a complex anaphor.<sup>11</sup>

## 5 The Status of *Zi-*

Let’s see, then, precisely how *zi-* contributes to a reflexive interpretation. As noted in section 2, *zi-ji*, like complex anaphors in Dutch and Scandinavian, but unlike simplex reflexives, allows proxy readings (11), strict and sloppy readings in ellipsis (12b), and object comparison (12c) (Zec 1985, Dimitriadis and Everaert 2014). However, as Y. Liu (2016) observes, *zi*-prefixed verbs do not, as the minimal pairs in (11) and (12) show.

- (11) {Upon visiting the wax museum, when it caught fire}:  
 Zhangsan jiu le *zi-ji*. | *zi-jiu* le.  
 Zhangsan rescue ASP REFL-self | REFL-rescue ASP  
 a. Z rescued Z. | only a. Z rescued Z.  
 b. Z rescued Z’s statue.  
 ‘Zhangsan rescued himself.’  
 (Wong 2017)

<sup>8</sup> Wong’s (2017) list contains 46 verbs, 8 of which overlap with Chief’s (1998) list.

<sup>9</sup> Chief 1997, a work that is not in the public domain, also discusses this fact.

<sup>10</sup> For more *zi*-verbs allowing clausal complements, see the online appendix. In response to a reviewer’s question, we note that inanimate subjects are impossible with these verbs, unless personified.

<sup>11</sup> Note that Tang (1989) also proposes that *zi-ji* is complex, with the structure *pro-ziji*, though she does not offer independent arguments. Likewise, Bergeton (2004) stipulates that nonlocal *zi-ji* contains a null pronoun as its head (which he notates as [*ta*] *ziji*), hence the nonlocal binding, while local *zi-ji* contains a null anaphor (notated as [ $\emptyset$ ] *ziji*), subject to Condition A. Thus, for Bergeton the complexity of *zi-ji* plays no role in its binding properties. Moreover, the pronominal head in nonlocal *zi-ji* is hard to reconcile with the blocking effect, which he does not discuss.

- |                                       |                |  |                                     |
|---------------------------------------|----------------|--|-------------------------------------|
| (12) Zhangsán nvedai zi-ji            | duoguo Lisi.   |  | zi-nve                              |
| Zhangsan abuse REFL-self              | more.than Lisi |  | REFL-abuse                          |
| duoguo Lisi.                          |                |  |                                     |
| more.than Lisi                        |                |  |                                     |
| a. ‘Z abuses Z more than L abuses L.’ |                |  | ‘Z abuses Z more than L abuses L.’  |
| b. ‘Z abuses Z more than L abuses Z.’ |                |  | ‘*Z abuses Z more than L abuses Z.’ |
| c. ‘Z abuses Z more than Z abuses L.’ |                |  | ‘*Z abuses Z more than Z abuses L.’ |

In this respect, *zi*-prefixed verbs behave like verbs with simplex reflexives in Scandinavian and Dutch and verbs with reflexive affixes in languages as different as Indonesian (*diri*) and Sakha (*-n*). Unlike what one sees with Romance clitics, *zi*- occurs only in reflexives and object experiencers. Its role in *zi-jia* ‘self-drive’, *zi-xue* ‘self-learn’, and the like, indicates that it is a reflexivizer semantically, but is not itself an argument.<sup>12</sup>

We propose that *zi*- acts as an operator on argument structure, identifying two argument positions (for details, see footnotes 17, 18, 21). Since in cases like (8) no object argument is projected syntactically in the coargument domain, this identification results in *reduction* of an argument and bundling of the two  $\theta$ -roles, as in (4b). In section 9, we extend this analysis to clausal complements of *zi*-verbs (see Chief 1997 for an analysis in terms of Lexical-Functional Grammar).

## 6 Complexity and Nonlocal Binding

In contrast to what the dominant position presupposes (e.g., Pica 1987, 1991), nonlocal binding does not necessarily require monomorphemic anaphors. Crosslinguistically, we find a class of complex anaphoric expressions that allow both local binding (insensitive to verb class) and nonlocal, nonlogophoric binding. Such anaphors are morphologically complex elements that license reflexivity (4c) but do not enforce it (Reuland 2011). Volkova and Reuland (2014) refer to these elements as *semireflexives*.

This class comprises elements from languages as diverse as Meadow Mari (*škenže*; Uralic, Volkova 2014), Avar (*žiwgo*; Nakh-Daghestanian, Rudnev 2017), Bahasa Indonesia and Javanese (*dirinya* and *awake dee*; Malayo-Polynesian, Kartono 2013, Schadler 2014),<sup>13</sup> and many others. These anaphors all consist of a nominal head and a possessive pronominal element. In addition, these languages all have

<sup>12</sup> This allows Mandarin to realize the equivalents of \**He self-protects*, \**He self-washes*, which are not possible in English. It would be interesting to see how *zi*- fits into the typology of reflexivizers proposed by Déchaine and Wiltschko (2017).

<sup>13</sup> See also Cole et al. 2008, Cole, Hermon, and Yanti 2015, and Reuland 2017a.

a locally bound anaphor, containing an additional element (a “super-complex” anaphor).<sup>14</sup> Mandarin fits into this type of system, having a semireflexive, *zi-ji*, and a yet more complex local anaphor, *ta zi-ji* (which enforces reflexivity).

That being monomorphemic is not a prerequisite for nonlocal binding follows from the fact that not only Move but also Agree expresses dependencies in syntax. Agree allows the encoding of an interpretive dependency by feature sharing (Reuland 2001, 2011, 2017c, Pesetsky and Torrego 2007, Kratzer 2009; see also Giblin 2016).<sup>15</sup> Under standard assumptions (e.g., Chomsky 2008), the mediating elements on the path between binder and bindee are  $X^0$ s, but neither binder nor bindee must be an  $X^0$  itself. The same holds for analyses of nonlocal binding using Multiple Agree (Hiraiwa 2005), as in Giblin 2016 or Zubkov 2018, illustrated in the following section. Hence, there is no reason for nonlocally bound *zi-ji* to be analyzed as monomorphemic.

### 7 The Contrast between Local and Nonlocal Binding of *Zi-ji*

We cannot do justice here to the extensive literature on binding of *zi-ji*. For the sake of concreteness, we refer to Giblin (2016) for an Agree-based account of nonlocal *zi-ji*. Very briefly, Giblin argues that *zi-ji* is  $\phi$ -feature-deficient and is syntactically bound through the agreement system. The binding relation is mediated by functional heads ( $C^0$  and  $T^0$ ) above the antecedent and the anaphor, and, crucially,  $C^0$  bears an unvalued person ([+participant]) feature, which it seeks to value, in accordance with Contiguous Agree (Nevins 2007). It probes for a value and finds it in the local (subject) DP, and in a nesting of embedded TPs the  $\phi$ -features on  $C^0$  are shared with all lower (anaphoric)  $T^0$ s, as well as with *zi-ji*, as illustrated in (13).

$$(13) [C^0_{u\phi} [DP_{val\phi} [T^0_{u\phi} \dots [T^0_{u\phi} \dots zi-ji_{u\phi} \dots ]]]] \rightarrow [C^0_{val\phi} [DP_{val\phi} [T^0_{val\phi} \dots [T^0_{val\phi} \dots zi-ji_{val\phi} \dots ]]]]$$

The blocking effect emerges when an intervening argument with a nonmatching person value disrupts the agreement chain that effects the binding relationship between the anaphor and its potential antecedent.<sup>16</sup>

### 8 The Interpretation of Mandarin *Zi-*

We now derive the difference between local and nonlocal *zi-ji*, given that *zi-ji* is uniformly complex. In this analysis, *-ji* acts as the (defec-

<sup>14</sup> For the basic patterns in Meadow Mari, Avar, and Indonesian, see the online appendix.

<sup>15</sup> Based on the theory of feature chains presented in Pesetsky and Torrego 2007.

<sup>16</sup> Giblin (2016) also shows that *zi-ji* in a subject position cannot enter a chain, hence is exempt in the sense of Reuland (2011), and accordingly much freer in the interpretation it may receive than *zi-ji* in other positions.

tive) pronominal head of the expression and is the relevant goal for Agree in (13). *Zi-*, a reflexivizing element, identifies two argument variables of an expression it applies to.<sup>17</sup>

Our analysis of *zi-ji* is modeled on Reuland and Winter's (2009) analysis of English *himself*, accounting for the availability of proxy readings. Note, first of all, that it is a standard property of pronouns that they allow a proxy interpretation (Safir 2004, Reuland and Winter 2009). In Reuland and Winter's analysis, modifying a proposal by Jacobson (1999), nonreflexive pronouns, instead of simply denoting the identity function on entities, are taken to denote a function from entities to entities that takes a relation (such as the 'stands for' relation) as a parameter (a Skolem function). Reuland and Winter provide a decompositional semantics of  $\langle pron \rangle self$ , in which the *self* relation replaces the contextually given proxy relation of the bare pronoun. SELF reflexivizes the verb by covert movement (incorporation; Reinhart and Reuland 1991, Reuland 2011).<sup>18</sup> When *self* does not move onto the verb (in "exempt positions"), English *himself* allows another option: namely, *self* can directly compose with *him*, leading to the nonlocal, "pronominal" interpretation of *himself*.

We propose that this analysis carries over to Mandarin *zi-ji*, where *zi-* = *self* and *-ji* = *him*, with the proviso that *-ji*, unlike *him*, is feature-deficient. Thus, one option is for *zi-ji* to reflexivize a predicate as follows: the *zi*-component composes with the predicate by covert movement, yielding local binding, as in (14a), represented more abstractly as in (14b).

- (14) Zhangsan xiang ni biaobai le zi-ji.  
 Zhangsan to you unburden ASP REFL-self  
 'Zhangsan unburdened himself to you.'  
 a. Zhangsan xiang ni [(zi<sub>i</sub>)[biaobai]] zi<sub>i</sub>-ji  
 b. [V [xiang ni] zi-ji] =  $\lambda x. (\lambda y. (V_{\theta_{ext}, \theta_{int}}(x, [xiang\ ni]_{\theta_{goal}}, zi-y)))$   
 $\rightarrow \lambda x (zi-(V_{\theta_{ext}, \theta_{int}}(x, \dots, f_{zi}(x))))$

<sup>17</sup> That is, we may assume that *zi-* acts as an operator like REFL in (i), applying to a two-place predicate R (= a relation between atomic entities) and generating a one-place predicate over sets A of atomic entities (see Keenan 1988).

(i) REFL :=  $\lambda R. \lambda A. \forall x \in A [R(x, x)]$

<sup>18</sup> Formally, Reuland and Winter (2009) account for the proxy interpretation of English *himself* by a derivation in which *self* contributes a proxy relation to the nonreflexive element *him* through Jacobson's (1999) Z function in its "proxied" form in (i), yielding (ii).

(i)  $Z^{PR} = \lambda R. \lambda f. \lambda x. R(x, f_{PR}(x))$

(ii)  $Z^{SELF}(\text{Verb})(\text{him}) = Z^{SELF}(\text{Verb})(f) = \lambda x. \text{Verb}(x, f_{SELF}(x))$   
 $= \lambda x.x \text{ Verb-ed one of } x\text{'s SELF-proxies}$   
 (by definition of f as a Skolem function)

Note that (ii) achieves the same as (i) in footnote 17: it reflexivizes a predicate it applies to. This formalization makes the proxy interpretation more transparent.

*Zi-* introduces a blind process identifying two variables in the predicate—here, those corresponding to the internal and external  $\theta$ -roles—which does not “see” the arguments, hence the absence of consciousness effects (for the sake of concreteness, (14) shows how the process applies after the goal role has been saturated). Thus, the local anaphoric dependency in (14) is not mediated through Agree and therefore is also insensitive to  $\phi$ -features and blocking. Since the process leaves *zi-ji* as a syntactic and semantic argument, object comparison will be possible just like with English *himself*.

When the alternative of directly composing  $\langle pron \rangle$  with  $\langle self \rangle$  is applied to Mandarin *zi-ji*—that is, composing *zi-* with *-ji*—the result is a pronoun-type interpretation, allowing a proxy reading. Under this option, *zi-ji* is interpreted as in (15).

- (15) *zi-ji* =  $f_{zi-}$  = a function mapping every entity  $x$  to one of its proxies in *zi*-( $x$ )

Clearly, *zi-ji* as it results from (15) is not a reflexivizer. Since *-ji* is  $\phi$ -feature-defective and heads the expression, its defectiveness will be inherited by *zi-ji* as a whole. *Zi-ji* will therefore be visible for probing and chain formation along the lines discussed by Giblin (2016), and will also be sensitive to blocking. Given (14) and (15), *zi-* has the same semantics in both the local and the nonlocal case, obviating the ambiguity approach of Huang and Liu (2001) and Giblin (2016). The difference resides in what element the instruction associated with its semantics applies to.

The binding properties of *zi-ji* follow from the interaction of *zi-ji*'s components with other grammatical mechanisms. That is, both ways of interpreting *zi-ji* involve elements and operations within the computational system. Neither leads to the local satisfaction of all interpretive requirements, and there is no economy preference between the two options (see Reuland 2001, 2011 for the notion that economy privileges syntactic processes over accessing the interpretation system). In this, *zi-ji* differs from *himself*: for *himself*, only the option with *self*-movement (see (14)) involves syntax, which therefore takes precedence, and exemption effects are observed.

This touches on the general issue of optionality in anaphoric dependencies. In the case of pronominal binding, optionality seems unavoidable, but it is theoretically unproblematic, since it is nonsyntactic and postcyclic.<sup>19</sup> For *zi-ji*, choice of antecedent appears to be optional as well (see Giblin 2016), although this dependency is syntactic. The challenge, then, is whether *prima facie* optionality in anaphoric binding

<sup>19</sup> It is easy to see that variable binding is not sensitive to phasehood. In *Every politician hoped that the balloting would show how much the voters trusted him*, the pronominal *him* can be bound by *every politician* regardless of the fact that they are separated by a number of phase boundaries (see, e.g., Reuland 2018).

can be reduced to structural differences (e.g., the numeration; see Reuland 2017b for Scandinavian). For more detailed discussion, see Reuland 2017b.

The issue of local vs. nonlocal binding can in principle be resolved by locating the source of the optionality in the C-T system (Giblin 2016). As explained above, given the structure [V *zi-ji*], the next step can be either (a) *zi-* composes with *-ji* (see (15)) or (b) *zi-* composes with V (see (14)). Since (a) involves composing with a sister, it may be initially preferred over (b); however, the result of (a) will be interpretable only if it is in the domain of a suitable probe: a derivation in which *zi-* applies to *-ji* only converges if *-ji* is covalued with the local  $T^0$  under Agree. If the local  $T^0$  does not match (by not carrying a suitable [+participant] feature), the alternative whereby *zi-* applies to the verb remains, yielding local binding.<sup>20</sup>

### 9 Clausal Complements of *Zi-Verbs*

As noted in section 4, a class of *zi-*verbs takes a clausal complement (Y. Liu 2016). As observed by Wong (in preparation) and Chief (1997) independently, not only may such complements contain a subject—[*zi-*V [<sub>SC</sub> NP Pred]]—but further embeddings are in fact possible. These are subject to an important restriction. If the complement of a *zi-*prefixed verb contains an occurrence of *zi-ji* or the pronominal *ta*, this element is obligatorily bound by the subject of the *zi-*prefixed verb, but not by a higher or a more local subject if present. Whereas in (1) *zi-ji* can take any of the c-commanding subjects as an antecedent, in (16) the local subject of the *zi-*verb is the only option.

- (16) Zhangsan<sub>i</sub> *zi-yiwei* [Lisi<sub>j</sub> zhidao [Wangwu<sub>k</sub> xinren  
Zhangsan REFL-think Lisi know Wangwu trust  
*zi-ji*<sub>i/\*j/\*k</sub> | *ta*<sub>i/\*j/\*k/\*i</sub>]].  
REFL-self | him/her/it  
'Zhangsan thinks that Lisi knows that Wangwu trusts him.'

Interestingly, as observed earlier, nonlocal binding of *zi-ji* is subject to the blocking effect. If we replace *Lisi* in (16) by *wo* 'I', *Zhangsan* is not available as a binder, and instead *Wangwu* is chosen. However, binding of *ta* 'he/she/it' is not affected.

This pattern can be explained as follows. Let's take as a starting point the case in (16) where *ta* or *zi-ji* is free in the complement, before *zi-* is merged to the verb. This yields (17) as the logical syntax representation of the whole vP, after the subject undergoes Quantifier Raising and *zi-ji* is rendered by a variable.

- (17)  $\lambda x. \lambda y. (\text{think } (x, [\text{Lisi know Wangwu trust } y]))$

<sup>20</sup> We leave open whether local binding always goes with a nonmatching  $T^0$ . If so, we would have an exemption effect that is the inverse of what we have in English.

Merging *zi-* yields (18), since it identifies the argument variables.<sup>21</sup>

(18)  $\lambda x. (zi\text{-think } (x, [Lisi \text{ know Wangwu trust } x]))$

Nondistinctness does not come into play (nor do restrictions on bundling), since the complement structure itself yields complexity (see (4c)), and the reflexive representation is licensed. This derives the fact that *Zhangsan* is the binder.

However, we should also derive that the closer binder *Lisi* is not available for *ta*, and that neither *Lisi* nor *Wangwu* is a possible binder for *zi-ji*. Crucially, variable binding will not apply at this stage given its postcyclic nature. During the syntactic derivation, variables stay free, unless morphosyntax interferes. The economy principle mentioned above ensures that morphosyntactic encoding (as in the case of *zi-*) takes precedence over coreference assignment and variable binding.<sup>22</sup> Thus, at the point where *zi-* merges, the relevant variable is free, and *zi-*'s operation (see 18)) identifies it with the external argument variable of the verb.

The blocking effect in these complements follows from Giblin's (2016) approach to blocking together with our analysis of binding. As Giblin shows, blocking follows from a morphosyntactic mismatch in [+participant] features, causing a violation of Contiguous Agree. Hence, blocking will bleed *zi-*'s operation. The effect of blocking is that the variable is not free for binding beyond the position where blocking obtains. Consequently, when either *Lisi* or *Wangwu* is replaced by *wo* 'I', the configuration in (17) is not derived, and *zi-* cannot apply to it.<sup>23</sup>

The result is a complement to the *zi-*verb without a free variable. Such cases are indeed observed, with an interesting interpretive effect, as illustrated in (19).

(19) Zhangsan<sub>i</sub> *zi-yiwei* [wo<sub>j</sub> zhidao [Wangwu<sub>k</sub> xinren  
Zhangsan REFL-think I know Wangwu trust  
zi-ji<sub>i/\*j/k</sub>]].  
REFL-self  
'Zhangsan thinks that I know that Wangwu trusts himself.'

<sup>21</sup> That is, it is enough to assume, in line with footnote 17, that *zi-* acts as an operator applying to any expression denoting a two-place relation R (= a relation between atomic entities) and then generates a one-place relation over sets A of atomic entities.

(i) REFL :=  $\lambda R. \lambda A. \forall x \in A [R(x, x)]$

<sup>22</sup> Note that the cases discussed in Reuland 2001 involve a morphosyntactic effect intervening on the path between bindee and binder. In the present case, the morphosyntactic factor acts as a general filter on the interpretive options.

<sup>23</sup> For some speakers of Mandarin, the restrictions on binding in clausal complements discussed in this section do not obtain. This follows if these speakers do not allow *zi-* to detach from the verb and scope over the two variables as in the derivation of (17)–(18).

In such cases, *zi-* may express counterfactuality of the complement. This reflects reflexivization in a different vein: Zhangsan's thinking is shared only by himself.

## 10 Conclusion

We have shown that the anaphor *zi-ji* is complex, consisting of a reflexivizing prefix *zi-* and a pronominal stem *-ji*. This considerably simplifies the grammar of binding in Mandarin and eliminates a challenge to Reuland's (2011) approach. The local and nonlocal binding properties of *zi-ji* result from *zi-* either reflexivizing the verb of which *zi-ji* is an argument or taking *-ji* as an argument, inheriting the visibility of *-ji* for probing. This leads to nonlocal binding. We discussed curious binding patterns involving clausal complements of *zi-*verbs and showed that these follow from an economy principle in which morpho-syntax acts as a filter on variable binding relations.

*Zi-ji* fills the bill for being a semireflexive in the sense of Volkova (2014)—that is, a morphologically complex element that licenses reflexivity but does not enforce it. Thus, Mandarin has a verbal reflexivizing affix *zi-*, a (complex) semireflexive *zi-ji*, and a supercomplex local anaphor *ta zi-ji*. Therefore, the system of Mandarin fits into a crosslinguistically well-established pattern of anaphoric systems.

## Sources

Searches were carried out on the Xiandai Hanyu Cixi–Xiandai Hanyu Dongci Cidian (Modern Mandarin Chinese Dictionaries–Modern Mandarin Chinese Verbs Dictionary) (Beijing). In addition, data were collected from the Modern Mandarin Chinese Corpus (<http://asbc.iis.sinica.edu.tw>) and the Xiandai Hanyu Cidian (Modern Mandarin Chinese Dictionary) (Beijing). Where no reference is provided, the reported facts were collected by the second author.

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