

Two Types of Reciprocals in Mandarin Chinese

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Overview Two reciprocal constructions found in Mandarin Chinese are investigated: adverbial *huxiang* and argumental *bici*. Despite their apparent synonymy, three contrasts are presented, which I argue to be all due to the differences in the source of distributivity in these constructions.

'Huxiang' & 'bici' Sentences (1-2) illustrate two grammatical strategies of expressing reciprocity in Mandarin: sentences in which the adverb *huxiang* modifies a transitive verb without an overt object, and sentences in which *bici* is in an argument position. In (1-2) *huxiang* and *bici* seem to give rise to equivalent truth conditions, but we'll see three cases in which this is not the case.

(1) Zhangsan he Lisi **huxiang** xihuan. (2) Zhangsan he Lisi xihuan **bici**.

Zhangsan and Lisi HUXIANG like Zhangsan and Lisi like BICI

'Zhangsan and Lisi like each other.' 'Zhangsan and Lisi like each other.'

Contrast #1: Negation The two reciprocals differ with respect to their interpretation under negation. In (3a), the sentence with *huxiang*, is weaker than its counterpart (3b), with *bici*: while the former is interpreted as negating the *mutual* liking between Zhangsan and Lisi, the latter negates the existence of any liking between them. This is corroborated by the (un)acceptability of the continuations in (3a-b).

(3) a. Zhangsan he Lisi bu **huxiang** xihuan. Zhiyou Zhangsan xihuan Lisi.

Zhangsan and Lisi NEG HUXIANG like only Zhangsan likes Lisi

b. Zhangsan he Lisi bu xihuan **bici**. #Zhiyou Zhangsan xihuan Lisi.

Zhangsan and Lisi NEG like BICI only Zhangsan likes Lisi

'Zhangsan and Lisi don't like each other. Only Zhangsan likes Lisi.'

Contrast #2: Interaction with other quantificational items *Huxiang* and *bici* also differ with respect to the range of readings available in sentences containing other quantificational items.

(4) explores the interaction between reciprocals and verbal classifiers. The context makes salient at least three ways of counting kicking events: [i] one kicking per child pair; [ii] two kickings per kicker; and [iii] six kickings overall. In (4a-b), we see that although both *huxiang* and *bici* sentences are compatible with counting kickings in the smallest and the largest events ([a]&[c]), only *bici* gets access to the intermediate event ([b]).

(4) **Context:** There are three children. Each child kicked the other two children one time each.

a. Haizi-men **huxiang** ti-da-le yi-xia^{TRUE} / liang-xia^{TRUE} / liu-xia^{TRUE}.
child-PL HUXIANG kick-hit-PFV one-CL two-CL six-CL

b. Haizi-men ti-da-le **bici** yi-xia^{TRUE} / liang-xia^{FALSE} / liu-xia^{TRUE}.
child-PL kick-hit-PFV BICI one-CL two-CL six-CL

'The children kicked each other one time/two times/six times.'

Contrast #3: Association with 'only' *Bici*, but not *huxiang*, can associate with *zhi* 'only':

(5) a. *Tamen zhi **huxiang**_F xihuan. b. Tamen zhi xihuan **bici**_F.

they only HUXIANG like they only like BICI

Intended: 'They only like [each other]_F.' 'They only like [each other]_F.'

Proposal Following Heim et al. (1991), I'll take reciprocity to be decomposed into two different operations: distributivity (6a) and reciprocation (6b). I assign a meaning to **REC** that gives rise to Dalrymple et al.'s (1998) *One Way Weak Reciprocity*, but this is a simplification (see op. cit.).

(6) a. **Distributivity:** $\text{DIST}(X_e)(P_{et}) \leftrightarrow \forall x[x \in X \rightarrow P(x)]$

b. **Reciprocation:** $\text{REC}(x_e)(X_e)(P_{et}) \leftrightarrow \exists y[y \in X \& y \neq x \& P(y)]$

I propose that the differences between *huxiang* and *bici* are due to the source of distributivity in these sentences: while *huxiang* performs the two operations in (6), *bici* is only a reciprocator, with distributivity being originated from the covert distributive operator (Link 1987).

(7) a. $[[huxiang]](R_{et})(X_e) \leftrightarrow \mathbf{DIST}(X)(\lambda x.\mathbf{REC}(x)(X)(\lambda y.R(y)(x)))$ b. $[[bici]] = \mathbf{REC}$

Accounting for Contrast #1 The different behavior of *huxiang* and *bici* under negation will now follow from the fact that distributivity in *bici* sentences originates from the covert distributivity operator. (8a-b) show that, while an overt distributor like *both* is still interpreted as a universal quantifier below negation, the covert distributivity operator seems to be interpreted as an existential one. Based on such facts, Schwarzschild (1993) proposed that this operator comes with a *homogeneity presupposition*, as shown in (9).

(8) a. John and Mary aren't Italian. #Only John is Italian.

b. John and Mary aren't both Italian. Only John is Italian.

(9) $[[\mathbf{CovDIST}]] = \lambda P\lambda A: (\forall x[x \in A \rightarrow P(x)]) \vee (\forall x[x \in A \rightarrow \sim P(x)]). \forall x[x \in A \rightarrow P(x)]$

The meanings of (3a-b) are thus mapped to (10-11). As can be seen, while their assertion is exactly the same, (3b) with *bici* comes with homogeneity presupposition, which, when conjoined with the assertion of the sentence, entails that neither Zhangsan or Lisi likes the other.

(10) $\lambda w. \sim \forall x[x \in \{z,l\} \rightarrow \exists y\exists e[y \in \{z,l\} \& y \neq x \& \mathbf{like}_w(x)(y)(e)]]$

(11) $\lambda w. (\forall x[x \in \{z,l\} \rightarrow \exists y\exists e[y \in \{z,l\} \& y \neq x \& \mathbf{like}_w(x)(y)(e)]]] \vee (\forall x[x \in \{z,l\} \rightarrow \sim \exists y\exists e[y \in \{z,l\} \& y \neq x \& \mathbf{like}_w(x)(y)(e)]]).$

Accounting for Contrasts #2 & #3 Contrasts #2 and #3 follow from the different syntax of *huxiang* and *bici* sentences. More specifically, only the latter allows other operators to take scope between the operations of distributivity and reciprocation - *huxiang* doesn't have this option because both operations are performed by a single lexical item. I thus argue that the intermediate reading of (4) is achieved when the verbal classifier takes scope between *bici* and the covert distributivity operator, as shown in the LF and truth conditions in (12).

(12) a. Zhangsan and Lisi $\lambda X z \mathbf{CovDIST} \lambda x [\text{two-times } \lambda e [\mathbf{bici}(x)(X) \lambda y [x \text{ kick}(e) y]]]$

b. $\lambda w. \forall x[x \in \{z,l\} \rightarrow \{e : \exists y[y \in \{z,l\} \& y \neq x \& \mathbf{kick}_w(x)(y)(e)]\} = 2]$

Likewise, in sentence (5b), *zhi* 'only' must (i) take scope between the distributor and the reciprocator, and (ii) associate with the latter, as shown in (13).

(13) a. $[[\mathbf{only}]](A_{et})(B_{et}) \leftrightarrow B \subseteq A$

b. Zhangsan and Lisi $\lambda X z \mathbf{CovDIST} \lambda x [\mathbf{only}(\mathbf{IDENT}(\mathbf{bici}(x)(X)) \lambda y \exists \lambda e [x \text{ like}(e) y])]$

c. $\lambda w. \forall x[x \in \{z,l\} \rightarrow \{y : \exists e[\mathbf{like}_w(x)(y)(e)]\} \subseteq \{y : y \in \{z,l\} \& y \neq x\}]$

Significance The above discussion has argued for a new dimension in which reciprocal constructions might diverge from each other, namely, the source of distributivity in such sentences. This does not necessarily contradict Dalrymple et al.'s (1998) hypothesis reciprocity is universally mapped to the same meanings, however. Bruening (2007) already argued that, though there is indeed a dedicated universal semantic category for reciprocity, reciprocal meanings are still to be decomposed into the aforementioned operations. Such category would be expressed by **REC**. The present work has also presented a set of tests that may be applied to languages other than Mandarin Chinese. For example, I'll show that, while English argumental reciprocals seem to pattern with *bici*, Bengali argumental reciprocal seem to pattern with *huxiang*. Thus, this work also contributes to the uncovering of new typological differences between reciprocal construction both intra- and cross-linguistically.

Selected Bibliography Bruening, B. 2007 "There is a dedicated reciprocal semantics cross-linguistically." Handout. Dalrymple M., Kanazawa, M., Kim, Y., Mchombo, S., & Peters, S. 1998. "Reciprocal expressions and the concept of reciprocity." *L&P*. Heim, I., Lasnik, H. & May, R. 1991. "Reciprocity and Plurality." *LI*.