Reciprocal scope in Mandarin

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Overview: We argue for a relational treatment of reciprocity and reciprocal scope in Mandarin, following Haug & Dalrymple (2020), over quantificational or operator-based approaches (Dalrymple et al., 1998; Heim et al., 1991). Mandarin has a wider range and distribution of reciprocals than English, including adverbial reciprocals that can appear in either the main or embedded clause of biclausal sentences. Examples (3-4) have both wide and narrow scope readings. The availability of a narrow-scope reading for example (4) is unexpected on an operator-based analysis without lowering. We show that Haug & Dalrymple's approach to reciprocity in English extends unproblematically to Mandarin, including an account of scope ambiguity.

Data: Mandarin has two types of reciprocal expressions, pronominal reciprocals *duìfāng/bǐcǐ* appearing in argument position (1), and adverbial reciprocal *hùxiāng* (2).

(1) *Luómìōu hé Zhūlìyè xǐhuān* **{duìfāng/bǐcǐ}**.
Romeo and Juliet like {DUIFANG/BICI}

(2) *Luómìōu hé Zhūlìyè* **hùxiāng** *xǐhuān.*
Romeo and Juliet HUXIANG like
'Romeo and Juliet like each other.'

In biclausal structures, adverbial reciprocals can appear in the matrix or embedded clause. If they appear in the matrix clause, the embedded clause must contain another (typically pronominal) reciprocal, as shown in (4). Previous work on reciprocal scope in Mandarin is scant, and reports contradictory judgements: while Ping (1996) briefly acknowledges the existence of scope ambiguities, Xu (2008) claims that only narrow scope readings are available (though without providing any examples), and Kobayashi (2020) claims that wide scope readings are available only for pronominal reciprocals. Speakers we consulted thought both narrow and wide scope readings are possible for both (3–4) (the latter being more salient if the subordinate predicate produces a contradiction as with *dǎbài* 'defeat'), although some speakers disprefer the co-occurrence of a reciprocal in the higher clause and one in the lower clause. According to the narrow scope reading, Romeo thinks: We like each other, and Juliet thinks the same; according to the wide scope reading, Romeo thinks that he likes Juliet, and Juliet thinks that she likes Romeo, but neither of them has a belief involving mutual liking.

(3) *Luómìōu hé Zhūlìyè rènwéi tāmen* **hùxiāng** *xǐhuān* **({duìfāng/bǐcǐ})**.
Romeo and Juliet think they HUXIANG like {DUIFANG/BICI}

(4) *Luómìōu hé Zhūlìyè* **hùxiāng** *rènwéi tāmen xǐhuān* **{duìfāng/bǐcǐ}**.
Romeo and Juliet HUXIANG think they like {DUIFANG/BICI}
'Romeo and Juliet think they like each other.'

Our analysis of reciprocal scope ambiguity in Mandarin extends Haug & Dalrymple's (2020) analysis of reciprocity in a Partial Plural Compositional DRT setting, predicting the attested scoping possibilities without requiring additional assumptions or

machinery, or an operation lowering the main-clause reciprocal to the subordinate clause. As shown in (5), the reciprocal behaves like a plural anaphor in requiring cumulative identity between the reciprocal and its antecedent across information states (the arrow represents coreference: $\boxed{\cup u_2 \rightarrow \cup u_1}$), while also imposing a noncoreference requirement within each information state ($\boxed{\partial(u_1 \neq u_2)}$, using Beaver's (1992) presupposition operator ∂).

(5) DRS for (1) and (2)

$[u_1\ u_2 \mid \cup u_1 = \{\text{Romeo, Juliet}\}, \boxed{\cup u_2 \rightarrow \cup u_1}, \boxed{\partial(u_2 \neq u_1)}, \text{like}(u_1, u_2)\ ]$

(6) shows the narrow scope reading of (3): u_1 ranges over the individuals Romeo and Juliet in each information state, and each of Romeo and Juliet bears the *think* relation to some set of belief worlds in which there are two individuals, u_2 and u_3; u_2 ranges over the same individuals as u_1, namely Romeo and Juliet; u_3 ranges over the same individuals as u_2; in each information state, u_3 is different from u_2, and u_2 likes u_3.

(6) Narrow scope reading of (3)

$[u_1 \mid \cup u_1 = \{\text{Romeo, Juliet}\},$
$\text{think}(u_1, [u_2\ u_3 \mid \cup u_2 \rightarrow \cup u_1, \boxed{\cup u_3 \rightarrow \cup u_2}, \boxed{\partial(u_3 \neq u_2)}, \text{like}(u_2, u_3)\ ]\ )\ ]$

The corresponding wide scope reading of (3) is obtained by lifting the reciprocal meaning to the main clause, as for the corresponding English wide-scope examples (Haug & Dalrymple, 2020). In (7), u_1 ranges over the individuals Romeo and Juliet in each information state; in each information state, u_2 is coreferent with u_1; u_3 ranges over the same individuals as u_2; in each information state, u_3 is noncoreferent with u_2; in each information state, u_1 has a belief that u_2 likes u_3. Since u_2 is coreferent with u_1 in each information state, this means that u_1 has this belief about him/herself. (Similarly, lifting the reciprocal meaning in (4) gives the wide scope reading.)

(7) Wide scope reading of (3) and (4)

$[u_1\ u_2\ u_3 \mid \cup u_1 = \{\text{Romeo, Juliet}\}, u_2 \rightarrow u_1, \boxed{\cup u_3 \rightarrow \cup u_2}, \boxed{\partial(u_3 \neq u_2)},$
$\text{think}(u_1, [\ \mid \text{like}(u_2, u_3)\ ]\ )\ ]$

In (8), the reciprocal material contributed by the pronominal reciprocal in the lower DRS effectively gives rise to a narrow scope reading (modulo intensionality).

(8) "Narrow" scope reading of (4)

$[u_1\ u_2\ u_3 \mid \cup u_1 = \{\text{Romeo, Juliet}\}, \cup u_2 \rightarrow \cup u_1, \boxed{\cup u_3 \rightarrow \cup u_2}, \boxed{\partial(u_3 \neq u_2)},$
$\text{think}(u_1, [\ \mid \boxed{\cup u_3 \rightarrow \cup u_2}, \boxed{\partial(u_3 \neq u_2)}, \text{like}(u_2, u_3)]\ )\ ]$

The duplication of coreference and noncoreference requirements in both DRS crucially does not give rise to a wide scope reading; $\cup u_3 \rightarrow \cup u_2$ in the lower DRS ensures that u_2 and u_3 ranges over the same individuals in *each belief world*, which means that u_2 denotes a plurality and cannot be bound by u_1, unlike in (7).

Implications: Mandarin is among a group of languages that has a strategy for the expression of reciprocity in the form of an adverbial, in contrast to the more well-studied languages like English, where reciprocity is expressed with a pronoun. The above discussion shows that the Partial Plural CDRT analysis within the relational view can similarly be successful in capturing reciprocal scope facts in a language with a different strategy for expressing reciprocity.

References: • Beaver, D. 1992. The Kinematics of Presupposition. *Proceedings of the 8th Amsterdam Colloquium*. • Dalrymple, M., M. Kanazawa, Y. Kim, S. Mchombo & S. Peters. 1998. Reciprocal expressions and the concept of reciprocity. *Linguistics &*

Philosophy 21. • Haug, D. & M. Dalrymple. 2020. Reciprocity: Anaphora, scope, and quantification. Semantics Archive. • Heim, I., H. Lasnik & R. May. 1991. Reciprocity and plurality. *Linguistic Inquiry* 22(1). • Kobayashi, F. H. 2020. Two ways of building reciprocity: a study of Mandarin Chinese reciprocals. Slides presented at WCCFL 38. • Ping, J.-K. 1996. Distributivity in Chinese reciprocal constructions. *Working Papers of the Linguistics Circle* 13. • Xu, J. 2008. Two types of pre-verbal anaphors in Chinese. *Journal of Chinese Language and Computing* 18(1).