Selectional restrictions and the meaning of reciprocal alternations

Yoad Winter (*Utrecht University*)

Verbs like *meet, fight* and *talk* (*to*) come in three varieties: a non-reciprocal binary form, a reciprocal intransitive, and a "discontinuous" reciprocal verb+*with*. The semantic differences between these forms often affect their different selectional restrictions (SRs). For example:

(1) a. Adi *fought* the disease. b. #Adi and the disease *fought*. c. ?Adi *fought with* the disease.

The degree of unacceptability in (1a-c) corresponds with the degree in which the disease is anthropomorphized: very much in (1b), somewhat less in (1c), and not at all in (1a).

Similar patterns are found in languages that are richer than English in reciprocal alternations. For instance, consider the following Hebrew examples [2]:

(2) ha-shikor *xibek   et   / nishek et   / laxash l-   / litef   et*   ha-pesel
the-drunk hugged ACC / kissed ACC/ whispered TO / caressed ACC   the-statue
"the drunk hugged/kissed/whispered to/caressed the statue"

(3) #ha-shikor ve-ha-pesel   *hitxabku/ hitnashku / hitlaxshu   / hitlatfu*
the-drunk and-the-statue hugged / kissed   / whispered / exchanged caresses
"the drunk and the statue hugged/kissed/whispered/exchanged caresses"

(4) ?ha-shikor *hitkabek/hitnashek/hitlaxesh/hitlatef*   *im*   ha-pesel
the-drunk hugged/ kissed/whispered/exchanged caresses   WITH   the-statue
Roughly: "the drunk behaved as if he and the statue hug/kiss/whisper/exchange caresses"

Similarly to (1), unacceptability in (2-4) corresponds with anthropomorphization of the statue.

The relative acceptability of discontinuous reciprocals as in (4) has been considered [7] a challenge for theories [3,9] that derive discontinuous reciprocity from intransitive reciprocals like (3). However, weak violations as in (4) should also be contrasted with the full acceptability of (2). This contrast shows that reciprocity plays a role in (4) as well, even if not as strongly as with the intransitive reciprocals in (3).

To address this puzzle, we present a new account of SR violations and reciprocity. We start out from two general principles about SRs and verb alternations:

(P1) SRs are presuppositions of the verb [1,6], and are projected like other presuppositions. For instance, we model the unacceptability of #*Fido drank the meat* as a failure of a '+liquid' presupposition about the object of *drink*. Accordingly, *Fido drank what was left in the bowl* presupposes that what was left in the bowl was liquid. This presupposition is standardly projected with "holes", as in *if Fido drank what was left in the bowl, it got poisoned.*

(P2) When the meaning of a verbal form V is derived using a semantic template T as in [8], the selectional restrictions of V are inherited from T using standard presupposition projection. For example, in *Dan broke __*, the SRs on the object of transitive *break* reflect the SRs of the stative *broken*, which are projected from the template *Dan caused __ to be broken.*

To account for SRs with reciprocal verbs, we rely on these principles and the semantics in [5,10]. We propose that meanings of reciprocal verbs like intransitive *hug* have two components: a disjunctive *core* condition (weak reciprocity), and two *preferential* conditions that strengthen the core into a conjunction (strong reciprocity). For example, to categorize an event e in the denotation of the sentence *A and B hug*, there are three conditions to apply:

Core necessary condition = either A hugs B in e with the intention of e being a collective hug, *or* B hugs A with that intention. This disjunction is a necessary condition for e to be considered a collective hug between A and B.

Preferential condition 1 = each of A and B hugs the other in e.

Preferential condition 2 = each of A and B intends e to be a collective hug.

Such conditions are used in [5] for analyzing experimental results about truth-value judgements. For instance, 100/48/19% of [5]'s participants judged the Dutch version of "the girl and the woman hug" as true in different situations, as depicted in figures 1a/b/c below, respectively. This is explained because figure 1a satisfies the core and both preferential conditions, figure 1b satisfies the core and one preferential condition (cond.2), while figure 1c only satisfies the core condition. This account is formally summarized in the table below, where the treatment of the intransitive reciprocal $\mathbf{hug}_1(a+b)$

is also naturally generalized for discontinuous reciprocals like "A hugs with B", represented as $\mathbf{hug}_w(a,b)$. The formula $I(x,{}^\wedge\mathbf{hug}_1,e)$ is interpreted as "x intends the event e to have the property *be a collective hug*".

	Core	Preference 1	Preference 2
Intransitive reciprocal: $e \in \mathbf{hug}_1(a+b)$	$(\mathbf{hug}_2(e,a,b) \wedge I(a,{}^\wedge\mathbf{hug}_1,e)) \vee$ $(\mathbf{hug}_2(e,b,a) \wedge I(b,{}^\wedge\mathbf{hug}_1,e))$	$\mathbf{hug}_2(e,a,b) \wedge$ $\mathbf{hug}_2(e,b,a)$	$I(a,{}^\wedge\mathbf{hug}_1,e) \wedge$ $I(b,{}^\wedge\mathbf{hug}_1,e)$
Discontinuous reciprocal: $e \in \mathbf{hug}_w(a,b)$	$\mathbf{hug}_2(e,a,b) \wedge I(a,{}^\wedge\mathbf{hug}_1,e)$	$\mathbf{hug}_2(e,b,a)$	$I(b,{}^\wedge\mathbf{hug}_1,e)$

The analysis of discontinuous reciprocal sentences like *A mitxabek im B* (Hebrew: "A hugs with B") is based on the same semantic elements as in *A ve-B mitxabkim* "A and B hug". However, in the discontinuous reciprocal, the distinction between two arguments (agent vs. 'partner' [7]) leads to a different alignment of the semantic elements of reciprocity. In the intransitive reciprocal, the agent is an unordered sum $a+b$, and the disjunctive core meaning allows either A or B to be active and volitional. However, in the discontinuous reciprocal, the core meaning requires the single agent A to be active and volitional, while for the 'partner' argument B, activity and volition are only preferential. Thus, while figures 1b and 1c are in the core of both "the girl and the woman hug" and "the woman and the girl hug", these figures are in the core of "the girl hugs with the woman" but outside the core of "the woman hugs with the girl". Figure 1a equally satisfies all conditions of these four sentences.

Back to SRs. This semantics, together with principles P1 and P2, explains the contrasts in (1) and (2-4). For instance, the disjunction in the core of "A and B hug" requires that A hugs B or B hugs A. Due to the SRs of transitive *hug,* the first disjunct presupposes that A is sentient and has arms, and the second disjunct requires the same for B. Both presuppositions are projected as presuppositions of "A and B hug". This projection works precisely as in other disjunctions, like *Dan has stopped smoking or drives less carelessly than before* (presupposition: Dan used to smoke *and* to drive carelessly). By contrast, in "A hugs with B", only A's volition and activity are in the core, hence the only strong presupposition is that A is sentient and has arms. The parallel presuppositions for B are weak, since they are projected from the preferential conditions "B hugged A" and "B intended the hug to be collective". We propose that this is the origin for the weakness of the SR violations in (1c) and (4).

Reciprocal meanings without an intentional element. Reciprocal verbs like "collide" require movability of the subject rather than sentience. Constructions like Hebrew *hitnagesh b-/im* (collide in/with) or Dutch *botsen tegen/met* (collide against/with) have meanings that are similar to "hit/collide with", respectively. These forms show the same pattern of SRs as in (1-4), but with respect to movability rather than sentience. Crucially, the '+movable' SR on the complement of *im* or *met* ('with') is weak, like the object-orientated '+sentient' SR on the discontinuous reciprocals in (4): in contexts where a non-moving object like "the ground" is seen as moving from the perspective of the subject entity, we get examples like *ha-matos hitnagesh im ha-karka* (Hebrew: "the plane collided with the ground") as acceptable, and minimally distinguished from *hitnagesh b-ha-karka* ("hit the ground"). By contrast, the intransitive reciprocal #*ha-matos ve-ha-karka hitnagshu* ("the plane and the ground collided") is still infelicitous, with a strong SR violation. Our proposal naturally extends to these cases.

References

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Figure 1
symmetric and asymmetric hugs