Groups in the Semantics of Reciprocal Verbs*

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1.   Introduction

One recurring question in studies of reciprocalization (the process that creates reciprocal verbs) concerns the difference between verbal reciprocals and their well-studied pronominal counterparts (Faller to appear, Siloni 2001 *et seq.*). In this paper I offer a novel answer to this question. I propose that reciprocal verbs involve collective predication that is absent from other expressions of reciprocity. In particular, I explore Artstein's (1997) hypothesis that the domain of events is similar to the domain of individuals in containing elements which are groups. I propose that reciprocal verbs are predicates of group events and derive their essential properties from this assumption. Reciprocalization under this view reduces to collective event conjunction, an operation that is independently motivated for predicate conjunction in the syntax (Artstein 1997).

2.   Reciprocal Verbs and How They Differ from Reciprocal Pronouns and Related Transitives

I use the term *reciprocal verbs* to refer to intransitive verbs with so-called reflexive morphology as in (1a) and (2a). Reciprocal verbs take plural subjects and express reciprocity without the aid of a reciprocal pronoun. They are compatible with reciprocal pronouns, but do not require them. Typically, a reciprocal verb is morphologically and semantically related to a non-reciprocal transitive predicate, as shown in (1b) and (2b).

(1)   a.   yosi ve-ʤager **hit**χabk-u   (Hebrew)
                Yossi and-Jagger **RCP**.embraced-PL

                'Yossi and Jagger embraced'

    b.   yosi χibek   et   ʤager
           Yossi embraced ACC Jagger

           'Yossi embraced Jagger'

(2)   a.   The drunk and the homeless person embraced.   (English)

        b.   The drunk embraced the homeless person/the lamppost.

A singular subject is possible with a reciprocal verb in the so-called discontinuous construction, where the verb is followed by a 'with' phrase (Hebrew *ʔim*). I introduce and discuss the discontinuous construction at the end of the paper.

The reciprocal verb describes a special kind of joint action in which two participants act on one another with mutual intent, often (but not necessarily) in a particular spatiotemporal location. When the participants are not both capable of such mutual action, a sentence with a reciprocal verb becomes deviant. Compare (2b), which features the transitive verb *embrace*, with the corresponding sentence with a reciprocal verb: *# The drunk and the lamppost embraced* (Dowty (1979, 116); these examples are attributed to Chomsky).

The crucial empirical observation regarding the special joint action described by a reciprocal verb is that it is not equivalent to two, or any number of, non-reciprocal actions of the same kind. If a reciprocal action took place then the existence of non-reciprocal actions is entailed, but not vice versa. This pattern, which I will call *the entailment to the transitive*, is exemplified below with reciprocal and non-reciprocal *kiss*.

(3)   A and B kissed $\Rightarrow$ ($\not\Leftarrow$) A kissed B and B kissed A

Furthermore, augmenting the transitive by a reciprocal pronoun doesn't "promote" it into being reciprocal in the relevant sense. Siloni shows this for Hebrew using cardinality adverbials. In (4a), when 'five times' modifies a reciprocal verb (*hitnaʃku* 'RCP.kissed'), it has to be the case that there were five events of joint action (Siloni follows Dimitriadis (2003) here in characterizing these events as "symmetric"; I remark on this approach in §5). When the same adverbial modifies a verb phrase consisting of the corresponding transitive verb and a reciprocal pronoun (*niʃku eχad et ha-ʃeni* 'kissed one another'), joint action is not entailed. There could have been 10 unilateral kissings, 5 by each person.[1]

(4)   a.   dan ve-ron   hitnaʃku   χameʃ peʔamim
           Dan and-Ron RCP.kissed five   times

          • There were five symmetric kissing events.

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[1]I believe this sentence can also receive a cumulative interpretation in which there were a total of five non-symmetric kisses. For a (de)compositional analysis of the reciprocal pronoun, see Heim et al. (1991).

b. dan ve-ron niʃku eχad et ha-ʃeni χameʃ peʔamim
    Dan and-Ron kissed each ACC the-other five times

- There were five symmetric kissing events.
- There were ten non-symmetric kissing events: five by Dan and five by Ron.

(Siloni to appear, example (40))

Finally, speakers seem to be attuned to the subtle semantic contrasts between these constructions. The following examples figured in the media coverage of a sexual harassment trial of an Israeli Minister and Member of Knesset who was charged with the kissing of a young female secretary against her will. The MK changed his account a few times during the trial. At first he claimed to have taken no active part in the kissing (a transitive verb was used, (5a)). Later on he admitted to having kissed her by using a transitive verb[2] together with a reciprocal pronoun (5b). This change made the front page headline in the newspaper.

(5) a. ha-mitlonen-et niʃk-a ot-o
         the-complainant-F kissed-F ACC-M.SG
         'The plaintiff kissed him'

     b. hem naʃk-u ze l-zo
         they kissed-PL this.M to-that.F
         'They kissed each other'

("Haaretz" daily newspaper, 12 September 2006)

The corresponding reciprocal verb ***hitnaʃek*** '**RCP**.kissed' was not used. Although the defendant acknowledges that he actively participated in a kissing, he is careful to use a construction that does not imply mutual intent or romance.

So what exactly are reciprocal joint actions? How is a reciprocal verb semantically related to its corresponding transitive? Does this relationship explain the entailment to the transitive in (3)? I propose that these questions all receive natural answers by assuming that reciprocal verbs are predicates of group events — i.e., singular, atomic, events — that are based on the non-reciprocal events described by the corresponding transitive.

3. Motivating Group Events

In a plurality structure containing individual atoms and their sums, groups provide "a certain amount of 'grid' that sums alone are not able to provide" (Landman 2000, 160). They pick out sums that represent substantive, cohesive pluralities (Kratzer forthcoming).[3]

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[2]Both transitive verbs in (5) are based on the root $\sqrt{nʃk}$ put in two different verbal templates. The resulting verbs, *niʃek* and *naʃak*, are both transitive and mean 'kiss'. The latter is of higher register and seems to be reserved for kissings that are accompanied with affection.

[3]Kratzer maintains that groups need not be represented as independent entities in the domain of individuals, but can be distinguished indirectly from sums that represent non-substantive pluralities. For dis-

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Following Link (1983), I assume that the domain of individuals (D) is closed under a sum formation operation ($\sqcup$) and has the structure of a (individual-) join semilattice. Elements in the domain are partially ordered by the part-of relation $\leq$, such that $a \leq b$ if and only if $a \sqcup b = b$, for some $a, b \in D$. The domain of events (E) is endowed with a similar structure (Bach 1986). It contains both singular (atomic) events and plural (sum) events . In both cases the plurality star operator $*$ (Link 1983) takes a 1-place predicate and generates its closure under sum.

(6)	POP-STAR	set of atomic individuals who are pop stars
	*POP-STAR	set of all sums of members of POP-STAR
	KISS	set of atomic (non-reciprocal) kissing events
	*KISS	set of all sums of events in KISS

I assume a group formation operation $\uparrow$ (that has its origins in Link 1984, Landman 1989) that transforms a sum into an atomic individual. Landman (2000, 164) proposes to think of group formation in terms of what an appositive like *as a group* does to the plural NP it restricts. Whereas the plural NP *the boys* can receive a distributive interpretation in the sentence *the boys carried the piano upstairs*, the restricted NP *the boys, as a group* can only receive a collective interpretation in (7a). The boys in this case are referred to as a group, and the claim is about what that group did, not about what each boy did individually.

(7)   a.   The boys, as a group, carried the piano upstairs.

       b.   The boys and the girls meet (but not in the same room).

       (Landman (2000, 164) and Landman (1989, 591), respectively)

In this framework, groups figure in the analysis of collective readings of plural NPs, both when the full NP is interpreted collectively (7a) and in cases of distribution down to collections (7b). Collective readings are characterized by applying a predicate to a group atom, whereas distributive readings involve applying a (plural) predicate to a sum of individuals (Landman 2000, 155). Plural predication is then defined in terms of singular predication to the individual parts of the sum. The basic cases of singular and plural predication are shown in the example below (separated by the horizontal line).

(8)   Mary kissed Sue. m is an agent of a $*$KISS event

       Joe and Mary (as a group) kissed Sue. $\uparrow (j \sqcup m)$ is an agent of a $*$KISS event

       _____

       Joe and Mary (each) kissed Sue. $j \sqcup m$ is a plural agent of a $*$KISS event

3.1   An Analogy to Group Individuals

In the plurality structure built on the domain of individuals, many sums are nothing more than arbitrary collections of individuals. The sum containing my laptop, a cucumber, and the moon is one such random sum. One way of thinking about groups is that they pick out, from all the sums in the semilattice, those sums that correspond to substantive, cohesive pluralities. For example, a team of players is a cohesive plurality. It often even has its own name, a mascot, etc. But it is possible to distinguish substantive groupings of entities from non-substantive groupings even when they are not as well established as a team of players. Consider the following example by Angelika Kratzer:

(9)   My animals look just like your animals.
            (Kratzer forthcoming, Ch. 4, example (47))

        Say I have a donkey and a cat, and you also have a donkey and a cat. When we compare the appearance of our animals, we compare donkey to donkey and cat to cat, so the substantive, cohesive pluralities in this case correspond to groups of animals of the same kind. The sum containing my donkey and your cat (and my cat and your donkey) doesn't have group status: it's just a collection of individuals.

        Likewise, we can think of group events as representing meaningful, non-random, collections of events in the plurality structure of E. Reciprocal events then appear to be natural candidates for predicates of group events. A reciprocal kissing event, for example, is a romantic act that we conceptualize as a single event. It corresponds to a natural grouping of kissing events that involve the same two people kissing each other at the same time and location, on corresponding parts of their bodies, and with the same intent and purpose (recall, in comparison, the trial examples in (5)). This is why (10a) can be a true description of a recent development in John and Mary's relationship, while (10b) is a contradiction. We can understand this difference in terms of sums and groups of non-reciprocal kissing events. (10a) may be true if today was the first time in which a sum of kissing events involving these two people qualified as a meaningful chain of events.

(10)   a.   John and Mary had kissed each other several times in the past, but today
                they kissed for the first time.

          b.   #John and Mary had kissed each other several times in the past, but today
                they kissed each other for the first time.

3.2   Artstein (1997) on Collective Event Conjunction

The fact that group formation was motivated only for the domain of individuals is surprising given the similarities in structure between D and E. If groups can be formed of individual sums, we expect them to show up in the domain of events too.

        Artstein (1997) was the first, to the best of my knowledge, to argue for filling this theoretical gap. His evidence came from collective readings of VP conjunction, discussed

by Carlson (1987) for sentences like (11a). The conjoined VP in this sentence seems to be ambiguous between a distributive and a collective reading, as sketched (ignoring internal arguments) in (11b). The first reading is distributive: the subject is claimed to have done two things (go to the hairdresser, buy ice cream). The second reading is the collective reading, where John only did one thing, roughly go 'n' buy ice cream in a salon.

(11)   a.   John went to the hairdresser and bought ice cream.

        b.   i. $\exists e_1.GO(j,e_1) \wedge \exists e_2.BUY(j,e_2)$

             ii. $\exists e.GOnBUY(j,e)$

It is possible to disambiguate for the collective interpretation by extracting a *wh*-phrase from the coordinate structure.[4] So, whereas (12) is ambiguous in the way described above, (13) allows only a collective reading of the conjoined VP. In particular, (12) can describe a situation in which John went to the store and Mary bought the ice cream (or the other way around), but (13) cannot. The interpretation of the coordinated VP in this case is strictly collective (although distribution is possible to members of the plural subject, as shown in (13b)).

(12)   John and Mary went to the store and bought ice cream.

(13)   a.   What did John and Mary go to the store and buy?
            (Artstein 1997, 44)

        b.   i. John and Mary, as a group, did both things

             ii. John did both things and Mary did both things

The single event that includes both actions is analyzed by Artstein as a group event, created by a collectivizing conjunction *and* that takes two predicates of events P and Q (type $\langle s,t \rangle$)[5] and returns a predicate of the same type which describes group events that are based on one atomic P event and one atomic Q event.
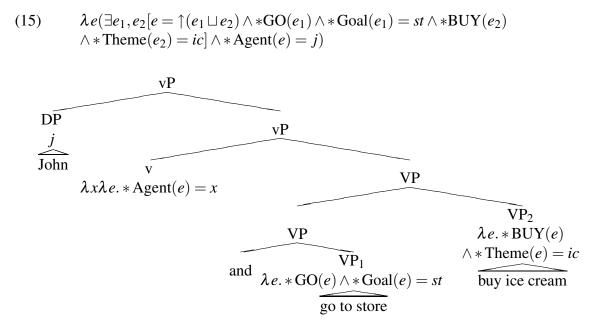
(14)   Collective event conjunction (external argument severed following Kratzer 1996):

$$\lambda P \lambda Q. \lambda e(\exists e_1, e_2 \in E[e = \uparrow(e_1 \sqcup e_2) \wedge P(e_1) \wedge Q(e_2)])$$

The following tree illustrates the semantic derivation of the relevant part of *John went to the store and bought ice cream* under the collective interpretation of the VP. The sentence comes out true if and only if John was the agent of a group event, $\uparrow (e_1 \sqcup e_2)$, which is based on one event of going to the store (e_1) and one event of buying ice cream (e_2). Group formation is introduced when *and* conjoins the verb phrases marked VP_1 and VP_2.

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[4]Using *different* disambiguates for the distributive interpretation, see Carlson (1987).
[5]Artstein's original denotation included the external argument (see his example (17)).

(15) $\lambda e(\exists e_1, e_2[e = \uparrow(e_1 \sqcup e_2) \wedge *GO(e_1) \wedge *Goal(e_1) = st \wedge *BUY(e_2)$
        $\wedge *Theme(e_2) = ic] \wedge *Agent(e) = j)$

vP
├── DP
│   │ *j*
│   └── John
└── vP
    ├── v
    │ $\lambda x \lambda e. *Agent(e) = x$
    └── VP
        ├── VP
        │   ├── and
        │   └── VP₁
        │ $\lambda e. *GO(e) \wedge *Goal(e) = st$
        │   └── go to store
        └── VP₂
            $\lambda e. *BUY(e)$
            $\wedge *Theme(e) = ic$
            └── buy ice cream

Following Landman (2000, 184), thematic roles are only defined for atomic events, and they only take atoms (individuals or groups) as values. A plural (non-thematic) role $*R$ of a plural event is defined as the sum of individuals that fill the role R in every atomic part of that plural event (if it is defined for all of them). Here, John fills a thematic role of an atomic group event: its agent. He is also understood as the agent of both immediate subevents (e_1 and e_2 in (15)) of the group event. As we turn back to reciprocal verbs, we will see that collective event conjunction in general seems to require that the individual that plays a role in the group event is also represented in all the events on which that group is based.

4.   Reciprocalization and the Semantics of Reciprocal Verbs

Now that we have in our toolbox (i) groups in the domain of events, and (ii) a grammatical operation of collective event conjunction, let's return to the semantics of reciprocal verbs. The challenge posed by reciprocals is to understand the connection between the intransitive reciprocal verb and the transitive non-reciprocal verb from which it is derived. This connection is morphologically robust in the languages of the world, and it has also been the subject of considerable syntactic research. What I would like to do here is to flesh out the connection between the two in terms of their semantics, using the insights gained from the discussion of group events.

I suggest that the events that describe reciprocal joint action are in fact group events, and propose that a reciprocal verb is derived when the operation of collective event conjunction, as defined in (14) above, applies to its transitive counterpart. Before collective event conjunction can apply, however, the arity of the transitive must be reduced. I assume that reciprocalization is a valence-changing operation that reduces the internal thematic role of the transitive (as proposed for reflexivization by Dowty 1981, Reinhart 2002, Chierchia

2004, among others, also by Siloni 2001 for reciprocalization[6]). The result is an intransitive unergative verb (see Siloni (to appear)). Semantically, it is a predicate of group events which are based on two events of the kind described by the corresponding transitive. The derivation of reciprocal *kiss* from transitive *kiss* would proceed as follows.

(16)   a. $[\![kiss]\!] = \lambda x \lambda e. * \mathrm{KISS}(e) \wedge * \mathrm{Theme}(e) = x$

        b.   Reduction: $\lambda e. * \mathrm{KISS}(e)$

        c. $[\![RCP.kiss]\!] = [\![(14)]\!] \, (\lambda e. * \mathrm{KISS}(e)) \, (\lambda e. * \mathrm{KISS}(e)) =$
           $\lambda e (\exists e_1, e_2 \in E [e = {\uparrow}(e_1 \sqcup e_2) \wedge * \mathrm{KISS}(e_1) \wedge * \mathrm{KISS}(e_2)])$

(16a) is the denotation of the transitive verb *kiss* (which, following Kratzer (1996), lexically selects only for its internal argument). The verb's internal argument is reduced[7], as in (16b), and the result is fed — twice — into collective event conjunction (16c). This makes sense assuming, as I do here, that reciprocalization is a lexical operation in Hebrew and English, on a par with other valence-changing operations such as reflexivization and unaccusative-formation. Since items in the lexicon are not related to each other by structure when the intransitive verb is created, event conjunction can only apply to one predicate at a time, giving rise to predicates of pair events that group together events of the same kind ($P = Q$ in the term in (14)).

I adopt Landman's (2000, 153) view that the collective/distributive opposition is not something that is predetermined for predicates in the lexicon. Rather, like any other predicate, reciprocal verbs need to be lexically specified for what kinds of things they take in their extension. I assume that they are specified as taking groups in their extension, since this is the kind of thing they distribute down to. For example, the truth of a sentence like *The team members hugged* depends ultimately on whether or not there were pairs of team members that hugged (this would be a case of plural predication in which the reciprocal applies distributively to a plurality of team members).[8] Reciprocals thus have the same lexical specification as, for example, the verbs *meet* and *gather*.

The last piece of the puzzle concerns the thematic roles associated with a reciprocal group event. I propose to formulate the thematic requirements of collective event conjunction as follows.

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[6]In later publications, Siloni proposes that the operation does not reduce any of the two thematic roles of the transitive, but 'bundles' them together. I will assume the simpler view that the subject of an intransitive reciprocal has only one thematic role (Agent), and show how this can be reconciled with the intuition that the participants in a reciprocal action are interpreted as both agents and themes.

[7]It is also possible to conceive of this reduction as existentially closing the internal argument of the transitive (unspecified object deletion, or detransitivization, in Dowty's terms).

[8]There is of course the interesting question of what determines the degree to which a reciprocal distributes down to pairs in a given context — whether strong reciprocity is required, or a weaker notion is enough (see the discussion with respect to reciprocal pronouns in the early work of Langendoen 1978, and Kim and Peters 1998 and Winter 2004 for more recent approaches). I leave this question open here.

(17)   For $e = \uparrow (e_1 \sqcup e_2)$:

    a. $\text{Agent}(e) = \uparrow (\text{Agent}(e_1) \sqcup \text{Agent}(e_2))$.

    b.   Thematic Condition for Group Events:
        Atomic individuals on which a thematic role of e is based each participate in its immediate subevents e_1, e_2.

First, the agent of a group event e is defined as the group of agents in the immediate subevents of e.[9] The second clause places a further condition on these groups. It ensures a thematic affinity between the two non-reciprocal events that come together in e, namely they must involve the same set of participants.

Let's see how these conditions play out in the interpretation of a simple sentence like *John and Mary kissed*. The first row under (18) illustrates a situation in which the sentence is true. If John and Mary kissed, they were the group agent of a singular reciprocal kissing event. In addition, each one was an agent of a related non-reciprocal kissing event of the other (the arrows, $\longrightarrow$, represent non-reciprocal kissings). If John kissed both Mary and Beth, then it can't be that John and Mary kissed. The subject in the second row is a pure atom, not a group, so it is not a possible subject for reciprocal *kiss*. This sentence also doesn't fit a scenario in which John kissed Mary and Beth kissed Mary, and this is ruled out by the Thematic Condition (17b). The fourth row shows that the semantics for reciprocalization correctly rules out reflexive interpretations of the subject. If John kissed himself and Mary kissed herself, it is not the case the John and Mary kissed. Finally, even if the agents of the non-reciprocal events are pairs, this is not enough to guarantee that their group event will describe reciprocal action. The last row shows such a case: the individuals John and Mary do not each participate in both subevents, so again the Thematic Condition rules this case out.[10]

(18)   John and Mary RCP.kissed.

    $j \longrightarrow m,\ m \longrightarrow j$ OK: agent of reciprocal event is $\uparrow (j \sqcup m)$

    $j \longrightarrow m,\ j \longrightarrow b$ ✗: $\uparrow (j \sqcup j) = j$, not a group

    $j \longrightarrow m,\ b \longrightarrow m$ ✗: j, b do not participate in both subevents

    $j \longrightarrow j,\ m \longrightarrow m$ ✗: j, m do not participate in both subevents

    $\uparrow (j \sqcup m) \longrightarrow b,\ \uparrow (j \sqcup m) \longrightarrow k$ ✗: j, m do not participate in both subevents

In fact, the only way the Thematic Condition can be satisfied for reciprocals is if the agents and themes of the two subevents are the same, but the participants play different roles in each subevent. This is precisely the intuition we have about the meaning of a reciprocal, as captured by the crossword puzzle definition in (19). Reciprocal 'kissed' is paraphrased here as 'gave and received kisses'. A reciprocal kisser is understood as someone who is both an agent and a theme of some kissing events.[11]

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[9]Here I depart from Artstein's analysis, although my formulation seems to be applicable to the cases he was concerned with.

[10]In addition, $\uparrow$ was vacuous here and this may be undesirable. Thanks to Irene Heim for pointing out this case to me.

[11]Thanks to Eshel Nir for finding this example.

(19)   [Definition:] natan ve-kibel   neʃikot
                       gave and-received kisses
        [Answer:]   hitnaʃek 'RCP.kissed'

        (13 across, crossword puzzle in the "Israeli" daily newspaper, 19 June 2007)

5.   Results

The proposal opens the way to solving several puzzles in the semantics of reciprocal verbs. First, it explains why reciprocal relations are irreflexive and, relatedly, why a domain of evaluation for reciprocals must contain at least two individuals (this is referred to in the literature as the *distinctness condition*). In the current proposal, a possible subject for a reciprocal verb is drawn from the set of pair individuals — groups based on sums of two. The plurality structure of *D* must include a layer of two-member sums from which pairs can be formed.

Second, the property of symmetry that has been argued to distinguish verbal reciprocals from reciprocals formed in the syntax (Dimitriadis 2003, Siloni 2002 *et seq.*) follows from the event structure proposed. The reciprocal group events I have defined come out as symmetric: they are based on two non-reciprocal events in which two individuals perform the same action on one another. Group events provide a natural interpretation of what it means to be a symmetric event, and symmetry need not be introduced as a primitive notion.

Third, the idea that reciprocal events exist in addition to the non-reciprocal events on which they are based is key to understanding why, despite being merely intransitive predicates, reciprocals seem to involve two agents and two themes (as seen in (19)).

A corollary of event conjunction is the entailment relation between a reciprocal and the transitive it is based on (repeated here in (20)). A verbal reciprocal entails the existence of two non-reciprocal events with the relevant participants. However, the existence of two non-reciprocal events (e_1, e_2) entails only the existence of a sum event $(e_1 \sqcup e_2)$, not a group event corresponding to the sum. As far as I can tell, the prediction of entailment in both directions is the Achilles' heel of analyses that reduce verbal reciprocity to event plurality.

(20)   A and B $V_{\text{RECIP}} \Rightarrow (\not\Leftarrow)$ A V_{NONRECIP} B and B V_{NONRECIP} A

Finally, the proposal makes interesting predictions regarding the set of transitive verbs that may have a reciprocal counterpart. Inputs to collective event conjunction must be 2-place verbs whose internal argument can naturally be interpreted as playing the same role as their external argument (*RCP.eat, for example, would be out because people are not usually objects of 'eat'). In addition, there should be a natural way to interpret mutual actions of the kind denoted by the input verb as one cohesive event.[12] The transitive-reciprocal Hebrew verb pairs below demonstrate. A reciprocal 'seeing' event is interpreted

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[12]It should be noted that not all reciprocal verbs derive from transitive verbs. Some, such as *hitʔales* 'make love', are only diachronically related to a verbal entry (*ʔiles* 'to gladden', Hebrew of the Middle Ages, Even-Shoshan 1997, 1332). Others, like *hityaded* 'become friends' and *histaχseχ* 'quarrel' are related to nominals ('friend' and 'dispute, quarrel', respectively). Ultimately reciprocalization should be understood as an operation that may apply to concepts, at a level of representation that is unspecified for part-of-speech.

as *meet* (not 'look at each other'), a reciprocal 'writing' is a correspondence (which is more than 'writing to one another'), and a series of unilateral 'winning' events between two people is interpreted as an argument.

(21)

hitra?a	hitkatev	hitnatseaχ
RCP.see	RCP.write	RCP.win
'meet'	'correspond (on topic)'	'argue'

6.   Extending the Analysis to the Discontinuous Construction

Discontinuous reciprocals are the one configuration in which a reciprocal verb may take a subject that does not provide a plurality of participants. In this construction (which is quite limited in English for some reason), one reciprocating party is expressed as the subject and the other is expressed as an object PP.

(22)   a.   ʤager **hitχabek**   **?im** yosi   (Hebrew)
              Jagger **RCP**.embraced **with** Yossi

              'Yossi and Jagger embraced'

        b.   The drunk corresponded with the homeless person.   (English)

In the simplest cases, continuous and discontinuous reciprocals seem to be equivalent (B V_{RECIP} with A ⇔ A V_{RECIP} with B ⇔ A and B V_{RECIP}), but there are also two important ways in which the constructions differ semantically. Both are related to how the additional reciprocating party (specified in the PP) is interpreted in the discontinuous construction.
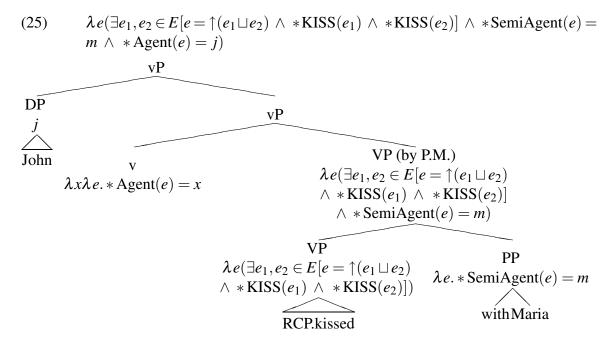
(23)   Discontinuous reciprocals — the challenge:

        i. Reciprocating pairs are made up of subject-object participants (only?), not within-subject or within-object pairs.

        ii. Thematic asymmetry: only the subject is targeted by Agent-oriented adverbs, the object is also intuitively less agentive.

The similarity between discontinuous reciprocals and *comitative phrases* has been pointed out repeatedly in the literature on reciprocals, and indeed it would be very exciting if we could use nothing more than a syntactic mechanism for introducing arguments to meet the challenge of the reciprocal discontinuous construction. Can this be done within the approach I have advocated here? Let's assume that what 'with' does is introduce an argument bearing a thematic role called "semi agent".

(24) $[\![with]\!] = \lambda z \lambda e. * \text{SemiAgent}(e) = z$

What is important about this role is that it be distinct from Agent, but compatible with it. It is useful to think of it is as an underspecified version of an Agent role (e.g.

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Sentient in Reinhart 2002, PARTNER in Rákosi 2003).[13] A derivation of a sentence like 'John RCP.kissed with Maria' (which is perfectly grammatical in Hebrew), would proceed as follows.

(25) $\lambda e(\exists e_1, e_2 \in E[e = \uparrow(e_1 \sqcup e_2) \wedge *\text{KISS}(e_1) \wedge *\text{KISS}(e_2)] \wedge *\text{SemiAgent}(e) = m \wedge *\text{Agent}(e) = j)$

vP

DP
j

John

v
$\lambda x \lambda e. *\text{Agent}(e) = x$

vP

VP (by P.M.)
$\lambda e(\exists e_1, e_2 \in E[e = \uparrow(e_1 \sqcup e_2)$
$\wedge *\text{KISS}(e_1) \wedge *\text{KISS}(e_2)]$
$\wedge *\text{SemiAgent}(e) = m)$

VP
$\lambda e(\exists e_1, e_2 \in E[e = \uparrow(e_1 \sqcup e_2)$
$\wedge *\text{KISS}(e_1) \wedge *\text{KISS}(e_2)])$

RCP.kissed

PP
$\lambda e. *\text{SemiAgent}(e) = m$

with Maria

Obviously, the reciprocal event e has an illicit, pure atom, as agent here. If this were the continuous construction, the derivation would crash. Suppose, then, that there is a repair strategy that allows pair formation between Agent and SemiAgent because they are highly compatible with each other. Then, by the Thematic Condition, the individuals in these two roles are required to participate in both non-reciprocal subevents. But, strictly speaking, the second party is not an agent of the reciprocal event. It may play a less-than-agentive role in it (as it does, famously, in sentences like *Maria argued with John*: John can be perceived as more passive than Maria in the argument).

This approach only merits further consideration if there is hope that it can account for the first challenge in (23). Let's see what happens when the subject denotes a plurality and is understood distributively, as in (the Hebrew translation of) 'John and Bill RCP.kissed with Maria'. The reading we are interested in is the one in which John and Maria kissed and also Bill and Maria kissed. The subject in this case is a plural individual that fills a non-thematic Agent role of a pluralized reciprocal predicate. Plural predication is defined in terms of singular predication, so there should be parts of the sum individual that are thematic agents of (different) singular reciprocal kissings. For each of these singular reciprocal events, we will have a singular Agent and similarly, a singular SemiAgent (here, Maria). So we have reduced the problem to the basic case of (25), while necessarily forming subject-object pairs, as required.

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[13]Landman (2000, 81) refers to the object θ-role in similar examples (*Fred wrote a paper with Nirit*) as an adjunct-agent and shows that agent oriented adverbs tell agents and adjunct-agents apart. I prefer the term semi agent which doesn't make a claim about the argumental status of the PP.

7.   Conclusion

I have argued that collectivity, analyzed as predication to group events and group individuals, plays a crucial role in the semantics of lexically derived reciprocal verbs in languages like Hebrew and English. Once the domain of events is enriched with group structure, reciprocal verbs find a natural interpretation as predicates of group events which are based on non-reciprocal events of a related transitive.

Reciprocalization reduces under this view to group-forming event conjunction, an operation that has been independently motivated for predicate conjunction in the syntax by Artstein (1997). Reciprocalization has been characterized here as a valence-changing operation that reduces an internal argument and outputs an intransitive verb, which is a predicate of group events. In addition to explaining the relationship — and differences – between reciprocal verbs and their corresponding transitives, the proposal also holds I believe prospects for a unified analysis of continuous and discontinuous reciprocals, along the lines sketched in the previous section.

Taking a closer look at the semantics of reciprocal verbs has uncovered an important role for group events in the grammar. Groups provide the glue that makes reciprocal events what they are: events that equal more than the sum of their parts.

References

Artstein, Ron. 1997. Group events as means for representing collectivity. In *MIT Working Papers in Linguistics(31): Proceedings of the Eighth Student Conference in Linguistics*, ed. Benjamin Bruening, 41–51. Massachusetts Institute of Technology.

Bach, Emmon. 1986. The algebra of events. *Linguistics and Philosophy* 9:5–16.

Carlson, Gregory N. 1987. Same and different: some consequences for syntax and semantics. *Linguistics and Philosophy* 10:531–565.

Chierchia, Gennaro. 2004. A semantics for unaccusatives and its syntactic consequences. In *The unaccusativity puzzle: Explorations of the syntax-lexicon interface*, ed. Artemis Alexiadou, Elena Anagnostopoulou, and Martin Evereart, 22–59. Oxford: Oxford University Press.

Dimitriadis, Alexis. 2003. Discontinuous reciprocals. Handout from the 6th international conference on Greek linguistics.

Dowty, David R. 1979. *Word meaning and Montague grammar*. Dordrecht, The Netherlands: Kluwer Academic Publishers.

Dowty, David R. 1981. Quantification and the lexicon: A reply to Fodor and Fodor. In *The scope of lexical rules*, ed. Michael Moortgat, Harry van der Hulst, and Teun Hoekstra, 79–106. Foris Publications.

Even-Shoshan, Avraham. 1997. *ha-milon he-hadash: otsar shalem shel ha-lashon ha-'Ivrit ha-sifrutit, ha-mada'it veha-meduberet, nivim va-amarot 'Ivriyim va-Aramiyim, munahim benle'umiyim*. Jerusalem: Kiryat-Sefer.

Aynat Rubinstein

Faller, Martina. to appear. The ingredients of reciprocity in Cuzco Quechua. *Journal of Semantics* .

Heim, Irene, Howard Lasnik, and Robert May. 1991. Reciprocity and plurality. *Linguistic Inquiry* 22:63–102.

Kim, Yookyung, and Stanley Peters. 1998. Semantic and pragmatic context-dependence: The case of reciprocals. In *Is the best good enough?*, ed. Pilar Barbosa, Danny Fox, Paul Hagstrom, Martha McGinnis, and David Pesetsky, 221–248. Cambridge, Massachusetts: MIT Press.

Kratzer, Angelika. 1996. Severing the external argument from its verb. In *Phrase structure and the lexicon*, ed. Johan Rooryck and Laurie Zaring, 109–137. Dordrecht, The Netherlands: Kluwer Academic Publishers.

Kratzer, Angelika. forthcoming. *The event argument and the semantics of verbs*. URL `http://semanticsarchive.net/Archive/GU1NWM4Z/`.

Landman, Fred. 1989. Groups, I. *Linguistics and Philosophy* 12.

Landman, Fred. 2000. *Events and plurality: The Jerusalem lectures*. Kluwer Academic Publishers.

Langendoen, D. Terence. 1978. The logic of reciprocity. *Linguistic Inquiry* 9:177–197.

Link, Godehard. 1983. The logical analysis of plurals and mass terms: A lattice-theoretical approach. In *Meaning, use and interpretation of language*, ed. R. Baeuerle, C. Schwarze, and Arnim von Stechow. DeGruyter.

Link, Godehard. 1984. Hydras: On the logic of relative clause constructions with multiple heads. In *Varieties of formal semantics*, ed. Fred Landman and Frank Veltman. Foris Publications.

Rákosi, György. 2003. Comitative arguments in Hungarian. Ms.

Reinhart, Tanya. 2002. The theta system: an overview. *Theoretical Linguistics* 28:229–290.

Schwarzschild, Roger. 1991. On the meaning of definite plural noun phrases. Doctoral Dissertation, University of Massachusetts-Amherst.

Schwarzschild, Roger. 1996. *Pluralities*. Dordrecht; Boston: Kluwer Academic.

Siloni, Tal. 2001. Reciprocal verbs. In *The Israel Association for Theoretical Lingusitics 17*.

Siloni, Tal. 2002. Active lexicon. *Theoretical Linguistics* 28:383–400.

Siloni, Tal. to appear. The syntax of reciprocal verbs: an overview. In *Reciprocals and reflexives: Cross-linguistic and theoretical explorations*, ed. Ekkehard König and Volker Gast, Trends in Linguistics. Mouton de Gruyter.

Winter, Yoad. 2004. Reciprocals, semantic restrictions, and the strongest meaning hypothesis. Handout, November 2004.

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