

# Non-Reciprocal Pluraction with *-aw* in Japanese: Context Dependent Pluralization of Individuals and Events

Masahiro Yamada\*

## 1 Introduction

The Japanese verbal suffix *-aw* appears in reciprocal and non-reciprocal pluraction sentences. The syntax of the former instance has been studied in the literature (Ishii, 1989; Nishigauchi, 1992; Nakao, 2003; Bruening, 2004, 2006), while the semantics, especially in the latter use, has not been studied (cf. Yamada, 2009). I present numerous examples of the non-reciprocal pluraction use of *-aw* and argue for a claim that the lexical meaning of *-aw* has a pluralization component over individuals and events and comes with a particular context dependent domain restriction for the event pluralization. Although I cannot discuss it in detail, the present study will easily extend to the reciprocal use of *-aw* by adapting the idea of the generalized pluralization operator  $n^*$  (Sternefeld, 1999). Thus, it enhances the close connection between reciprocal and relational plural (Langendoen, 1978; Sternefeld, 1998; Sauerland, 1998; Beck, 2001 among others). Furthermore, the current study claims that *-aw* is a linguistic expression that gives the context dependent event/situation restriction that Beck (2001) speculates for one of the interpretations of English reciprocal sentences. Thus it also argues for the pragmatic nature of the event pluralization, in addition to the individual counterpart detailed in Schwarzschild (1998).

## 2 Proposal

### 2.1 Overview

The whole proposal will capture the dual use of the verbal suffix *-aw* found in the following pair of sentences in Japanese. Many languages have this phenomenon, namely the same morpheme appears in reciprocal and non-reciprocal pluraction sentences (see Faller, 2007 for Cusco Quechua; Davies, 2000 for Madurese among others). The non-reciprocal pluraction sentence (1b) is not reciprocal in the sense that the putative reciprocal relation (e.g. ‘compete’ in the translation *competing with each other*) is not the main verb *odor-* ‘dance’ itself, which is lexically a syntactic intransitive verb.

- |        |  |                        |                        |                           |
|--------|--|------------------------|------------------------|---------------------------|
| (1) a. | Kodomo-tachi-ga  | oikake- <b>at</b> -ta. | Reciprocal             |                           |
|        | child-PL-NOM   | chase- <i>aw</i> -PAST |                        |                           |
|        | ‘The children chased each other.’                                      |                        |                        |                           |
|        | b.   | Kodomo-tachi-ga        | odori- <b>at</b> -ta.  | Non-reciprocal pluraction |
|        |  | child-PL-NOM           | dance- <i>aw</i> -PAST |                           |
|        | ‘The children danced competing with each other/one after another/etc.’ |                        |                        |                           |

The following ingredients account for the similarities and the differences between the two uses of *-aw*. The core meaning of this morpheme is the generalized pluralization operator  $n^*$  and the event restriction.

- (2) a.  $n^*$ -pluralization  
*-aw* pluralizes the predicates denoted by its sister node (Sternefeld, 1998).

---

\*Benjamin Bruening’s article initiated my research on the reciprocal, Satoshi Tomioka’s seminar on plurality developed my project on plurality, and Yasutada Sudo discussed over the topic with me from the very first idea of this study. I am grateful that these people have always been willing to support me on every occasion. I would also like to thank Roger Schwarzschild for his seminar and comments on the earlier versions of this paper, Satoshi Ito, Ai Matsui, and Narita Hiroki for doing judgment tasks and explanations of them. None of them but the author is responsible for any shortcomings in this paper.

## b. Event restriction

*-aw* provides a context dependent restriction for the event pluralization.

The lexical meaning of *-aw* has the  $n^*$ -component and thus is type-flexible: Its type depends on the type of its sister node in the syntactic structure. This syntagmatic nature of the  $n^*$ -pluralization yields the following partial typology of the relational plural in Japanese. I follow Schwarzschild (1996) in that the pluralization operator comes with the context dependent cover variables in its restriction (also Beck 2001 (61)). The definition of the cover variable that is a part of the meaning of *-aw* is given in (3b). The intransitivization for the reciprocal use is speculated and the function *intr* that is responsible for it is defined in (3c).

## (3) a. Partial typology of relational plural

Spell out	Semantic components	Type	Reading
<b>-aw</b>	intr-***-Cov(e)	<eevt,evt>	Reciprocal
<b>-aw</b>	** -Cov(e)	<evt,evt>	Non-reciprocal pluraction
∅	**	<eet,eet>	Cumulative/Codistributive

(*e, v, t* are the basic semantic types of individuals, events, and truth-conditions respectively.)

## b. Event/situation restriction as a cover

Cov(e)=1 iff e contains two non-overlapping relevant individuals

## c. Intransitivizer component

$\llbracket \text{intr} \rrbracket = \lambda R_{\text{evt}}. \lambda x. \lambda e. R(x)(x)(e)$

## 2.2 Specific Proposal to be Defended in this Paper

In what follows, I will give a detailed description of the non-reciprocal use of *-aw* since it has not been a target of serious formal investigations in the literature. Then necessary formal mechanisms will be introduced and build up the lexical meaning of *-aw* from a quite general idea of the pluralization. I will briefly show how the proposal extends to the reciprocal use of *-aw* in the end. However, this paper focuses on illustrating the data that all argues for the following lexical meaning of *-aw* in (4) which appears in the non-reciprocal pluraction sentences.

$$(4) \llbracket \text{-aw} \rrbracket = \lambda P_{\text{evt}}. \lambda X. \lambda E. \text{**}P(X)(E) \in D_{\langle \text{evt}, \text{evt} \rangle}$$

Cover for E contains two non-overlapping relevant individuals

$$= \lambda P_{\text{evt}}. \lambda X. \lambda E. \forall y(y \leq X \ \& \ \text{Cov}_1(y) \rightarrow \exists e(e \leq E \ \& \ \text{Cov}_3(e) \ \& \ P(y)(e))) \ \& \\ \forall e'(e' \leq E \ \& \ \text{Cov}_3(e') \rightarrow \exists z(z \leq X \ \& \ \text{Cov}_1(z) \ \& \ P(z)(e')))) \in D_{\langle \text{evt}, \text{evt} \rangle}$$

where  $\text{C}_3(e)=1$  iff e contains two non-overlapping relevant individuals

3 Non-Reciprocal Pluraction with *-Aw*

## 3.1 Surface Subject must be Plural

The surface subject must refer to a plural entity in the sentences with *-aw* in both reciprocal and non-reciprocal pluraction interpretations (see the references cited above for the reciprocal sentences). The following examples in (5) show that a plural direct object (a-i), multiplicity of the implicit manners (a-ii) or locations (a-iii), or iterated action (a-iv) do not license *-aw*. Explicit adverbs that indicate iterative actions such as *nandomo* ‘many times’ in (5b) do not save the sentence either. Only the surface subject can license the use of *-aw* as seen in (1) (see Yamada, 2009).

- (5) a. #Hiroki-ga kodomo-tachi-o hihanshi-at-ta  
 Hiroki-NOM child-PL-ACC criticize-*aw*-PAST  
 Intended: ‘Hiroki criticized the children’
- i) ...*child after child.*’  
 ii) ... *in many different ways.*’  
 iii) ... *here and there.*’  
 iv) ... *many times.*’

- b. #Hiroki-ga kodomo-tachi-o **nandomo** hihanshi-**at**-ta  
 Hiroki-NOM child-PL-ACC many.times criticize-*aw*-PAST  
 Intended: ‘Hiroki criticized the children many times.’

### 3.2 Subject Distributivity, and *Something Else*

There are some informal descriptions of the non-reciprocal use of *-aw* found in the literature. In general, this reading results when *-aw* appears with a verb whose arguments are fully realized, while the reciprocal reading is available when one of the internal arguments is absent.<sup>1</sup> Nishigauchi (1992:175), in his article on the syntax of the reciprocal use of *-aw*, mentioned the non-reciprocal use of *-aw*. He gave one example (6) and explained the meaning as follows; “...while John’s and Bill’s invitations of Mary are separate individual events, there is *some sense of collaboration or competition* that results from the activities.”

- (6) [John to Bill]-ga Mary-o shootai-shi-**at**-ta  
 [John and Bill]-NOM Mary-ACC invite-do-*aw*-PAST  
 ‘John and Bill invited Mary alternately.’ (Nishigauchi, 1992 (51))

Nakao (2003:26) also makes similar observations: “[ (7)a ] means that Taro and Jiro showed joy *at the same time*. [ (7)b ] means that Taro and Jiro played stereos *competitively, or in collaboration*. The readings of the gap-less *V-aw* construction are classified into: (i) a simultaneous reading, (ii) a collaborative reading, and (iii) a competitive reading.”

- (7) a. [Taro to Jiro]-ga yorokobi-**at**-ta.  
 [Taro and Jiro]-NOM be.pleased-*aw*-PAST  
 ‘Taro and Jiro showed the joy together.’  
 b. [Taro to Jiro]-ga ookina oto-de sutereo-o kake-**at**-ta.  
 [Taro and Jiro]-NOM loud sound-in stereo-ACC play-*aw*-PAST  
 ‘Taro and Jiro competitively/collaboratively played stereos at a high volume.’  
 (Nakao, 2003:13)

Competition and collaboration seem to be one of the most natural readings associated with the non-reciprocal pluraction sentences with *-aw*. However, there are numerous cases like the following that do not necessarily have any sense of competition or collaboration. The observations so far suggest that the non-reciprocal pluraction sentences involve the subject distributivity and *something else*. In the next section I will illustrate context dependent nature of this additional meaning.

- (8) a. Kodomo-tachi-ga (achikochi-de) tobihane-**at**-teiru.  
 children-PL-NOM here.and.there-at jump-*aw*-PROG  
 ‘The children are jumping here and there.’  
 b. Kodomo-tachi-ga (junbanni) minouebanashi-o katari-**at**-ta.  
 child-PL-NOM (alternately) life.story-ACC talk-*aw*-PAST  
 ‘The children talked about their life story one by one’

### 3.3 Context Dependency

The following examples clearly show that the subject distributivity is not the only meaning that *-aw* gives. They are odd without appropriate contexts even though the verbs are easily interpreted distributively.

<sup>1</sup>This is not an obligatory condition. Even when the internal argument of the verb that *-aw* attaches is missing, the non-reciprocal pluraction reading obtains if that internal argument is contextually salient. I assume the missing internal argument is *pro* that is coreferential with a contextually salient individual as in (i).

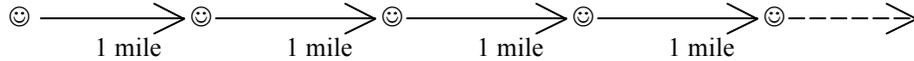
- i) Yasu<sub>1</sub>-ga kurasu-dehappyooshi-te, kodomo-tachi-ga *pro*<sub>1</sub> hihanshi-**at**-ta  
 Yasu -NOM class-in present-and children-PL-NOM criticize-*aw*-PAST  
 ‘Yasu gave a presentation in the class, and the children criticized him alternately/one after another.’

- (9) a. #Kodomo-tachi-ga umi-de oyogi-**at**-ta.  
 children-PL-NOM sea-at swim-**aw**-PAST  
 ‘The children swam in the sea alternately.’  
 b. #Kodomo-tachi-ga aruki-**at**-ta.  
 children-NOM walk-**aw**-PAST  
 ‘The children walked alternately.’

These examples are, however, perfectly fine in appropriate contexts such as the following.

- (10) a. A local regulation says that there must be at least one watch on the beach while people are swimming in the sea. All the kids wanted to swim so they decided that each one does the watch for 15 minutes, one by one.  
 b. Kodomo-tachi-ga (junban’ni) umi-de oyogi-**at**-ta.  
 children-NOM (take.turn) sea-at swim-**aw**-PAST  
 ‘The children swam in the sea alternately.’

- (11) a. A school project is assigned to the children. Their task is to measure a long distance by walking. Each child can measure a mile, but not longer than that because they get tired. The actual length that they were supposed to measure was 10 miles. So, they walked like this:



- b. Juu-nin-no kodomo-tachi-ga aruki-**at**-te, juu-mairu-o hakat-ta.  
 10-CL<sub>person</sub>-GEN child-PL-NOM walk-**aw**-and, 10-mile-ACC measure-PAST  
 ‘10 children walked alternately and measured 10 miles.’

Though it is clear that a context dependent part is involved in the meaning of *-aw*, it is difficult to nail down what exactly it is. Below I will propose a minimal approach to this issue making use of the pluralization over events, in addition to the pluralization over individuals that gives the subject distributive reading.

#### 4 Formal Account

In describing the truth condition of the non-reciprocal pluraction sentences with *-aw*, I claim that those sentences are true with a group of individuals  $X$  and a relevant event  $E$  if and only if each member of  $X$  has the property described by the verb phrase, and each subpart of  $E$  consists of two non-overlapping members of  $X$ . Assuming that (tenseless) sentences denote a set of events, or an event type, the sentence in (1b), repeated here as (12a) denotes the event type in (12b) under this view. I ignore the tense and modal throughout the paper.

- (12) a. Kodomo-tachi-ga odori-**at**-ta.  
 child-PL-NOM dance-**aw**-PAST  
 ‘The children danced competing with each other/one after another/etc.’  
 b.  $\lambda E. \forall y(y \leq \text{kids} \ \& \ \text{Cov}_1(y) \rightarrow \exists e(e \leq E \ \& \ \text{Cov}_3(e) \ \& \ \text{dance}(y)(e))) \ \& \\
 \forall e'(e' \leq E \ \& \ \text{Cov}_3(e') \rightarrow \exists z(z \leq \text{kids} \ \& \ \text{Cov}_1(z) \ \& \ P(z)(e')))$   
 where  $\text{Cov}_1(x)=1$  iff  $x$  is one of the children<sup>2</sup>  
 $\text{Cov}_3(e)=1$  iff  $e$  contains two non-overlapping relevant children

The event type in (12b) is *collaborative*, using term in Nishigauchi (1992) and Nakao (2003), in the sense that it is divided into subevents each of which has the same property. (12b) is derived with the lexical meaning of *-aw* in (13); *-aw* takes an eventive intransitive verb  $P$  of type  $\langle e, vt \rangle$

<sup>2</sup> I will ignore the values of the cover variable for individuals and focus on those for the events hereafter.





- (22) a.  $**R(X)(Y)=1$  iff  $\forall x \in X \exists y \in Y R(x)(y) \ \& \ \forall y \in Y \exists x \in X R(x)(y)$   
 b.  $\llbracket ** \rrbracket = \lambda R. \lambda X. \lambda Y. **R(X)(Y)$   
 $= \lambda R. \lambda X. \lambda Y. \forall x[x \leq X \ \& \ Cov(x) \rightarrow \exists y[y \leq Y \ \& \ Cov(y) \ \& \ R(x)(y)]] \ \&$   
 $\forall y[y \leq Y \ \& \ Cov(y) \rightarrow \exists x[x \leq X \ \& \ Cov(x) \ \& \ R(x)(y)]]$
- (23)  $\llbracket ** \rrbracket = \lambda P_{\text{evt}}. \lambda X. \lambda E. **P(X)(E) \in D_{\langle \text{evt}, \text{evt} \rangle}$   
 $= \lambda P. \lambda X. \lambda E. \forall y[y \leq X \ \& \ Cov(y) \rightarrow \exists e[e \leq E \ \& \ Cov(e) \ \& \ P(y)(e)]] \ \&$   
 $\forall e'[e' \leq E \ \& \ Cov(e') \rightarrow \exists z[z \leq X \ \& \ Cov(z) \ \& \ P(z)(e')]]$

Building the *\*\**-pluralization component in the denotation of *-aw* accounts for the distributivity of individuals and events, as well as the fact that the subject NP must refer to a plural entity. The final piece of the observations that needs to be accounted for is the context dependency of the interpretation. In the next section, I will show that the cover variable for the distributed event takes care of this.

### 4.3 Context Dependency for the Distributed Event

I propose that the pluralization operator in *-aw* comes with a type of the context dependent cover variables for the event  $Cov(e)$ . It requires each subevent to contain two non-overlapping relevant individuals, as in (24). To illustrate, take a concrete event of the type described by (25) and name it  $E$  (26a) with three children *Stan*, *Eric*, and *Kenny* dancing yesterday in Colorado.  $E$  has three subevents (26b) that stand in the individual part-whole relation with  $E$ . In other words, the subevents (26b) are still the events of *kids-dance-aw* and these are the ones that the pluralization operator quantifies over. In contrast,  $E$  also has three (and more) subevents in (26c) that do not stand in the individual part-whole relation with  $E$ . They are material parts of  $E$  in the sense that they are not the events of *kids-dance-aw* and hence disregarded for the universal quantification due to the domain restriction as a cover in (24). In this sense,  $V+aw$  is analogous to a predicate *be couple*; *Eric and Butters*, *Stan and Wendy are couples*, then *Stan and Wendy are a couple* but *#Stan is a couple*, *#Wendy is a couple*.

- (24)  $Cov(e)=1$  iff  $e$  contains two non-overlapping relevant individuals

- (25) Kodomo-tachi-ga odori-at-ta.  
 child-PL-NOM dance-aw-PAST  
 ‘The children danced competing with each other/one after another/etc.’

- (26) a.  $E$  Stan, Eric, and Kenny danced-aw  
 b.  $e_1$  Stan and Eric danced-aw  $\leq_i$  Individual part-whole relation  
 $e_2$  Eric and Kenny danced-aw  
 $e_3$  Kenny and Stan danced-aw  
 c.  $\varepsilon_1$  Stan danced.  $\leq_m$  Material part-whole relation  
 $\varepsilon_2$  Eric danced.  
 $\varepsilon_3$  Kenny danced.

Note that *competing with each other* or *one after another* parts in the translations of (25) are not a part of the logical formula, even after the value of the  $Cov(e)$  is assigned. In other words, as long as each relevant subevent, which has a child dancing, has another child in it, the actual interpretation of what this additional child is doing there is up to the pragmatic inference available in the utterance context. This is ideal because there are no-fixed meanings such as *competition* or *collaboration* as seen in the previous section. Thus, the common denominator for those readings observed in the section 3 is the restriction on the subevents of the form (24). The lexical meaning of *-aw* in (27) fully captures the observed facts.

---

the analysis of the pluraction adverbs that makes use of *\*\**-pluralization for individuals and events.

- (27)  $[[\text{-aw}]] = \lambda P_{\text{evt}}.\lambda X.\lambda E. \text{**}P(X)(E) \in D_{\langle \text{evt}, \text{evt} \rangle}$   
 Cover for E contains two non-overlapping relevant individuals  
 $= \lambda P_{\text{evt}}.\lambda X.\lambda E. \forall y(y \leq X \ \& \ \text{Cov}_1(y) \rightarrow \exists e(e \leq E \ \& \ \text{Cov}_3(e) \ \& \ P(y)(e))) \ \&$   
 $\forall e'(e' \leq E \ \& \ \text{Cov}_3(e') \rightarrow \exists z(z \leq X \ \& \ \text{Cov}_1(z) \ \& \ P(z)(e')))$   
 where  $\text{Cov}_3(e)=1$  iff e contains two non-overlapping relevant individuals

## 5 Concluding Remarks

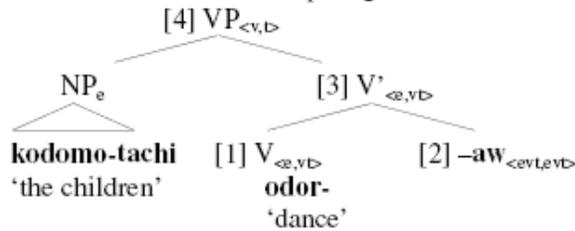
The lexical meaning of *-aw* in (27) is built up with the **\*\***-pluralization operator and a particular domain restriction as a context dependent cover for events. It accounts for the observations made in Section 3; the distributivity of the subject NP and the event, and the context dependency of the actual interpretation. In this last section, I will demonstrate the compositional calculation of a non-reciprocal pluraction sentence with *-aw*. Moreover, I will briefly show how the proposed lexical meaning of *-aw* is extended to yield the reciprocal interpretation. Needless to say, a detailed discussion of this point has to be done in another occasion due to the space limitation.

### 5.1 Compositionality

Assuming the VP internal subject hypothesis, the non-reciprocal pluraction sentence in (28a) is generated with the syntactic structure (28b). The semantic interpretations of each syntactic node is shown in (29). Once the value for the cover is assigned as in (30a), the non-reciprocal pluraction interpretation (30b) is obtained.

- (28) a. *Kodomo-tachi-ga odori-at-ta.*  
 child-PL-NOM dance-*aw*-PAST  
 ‘The children danced competing with each other/one after another/etc.’

b.



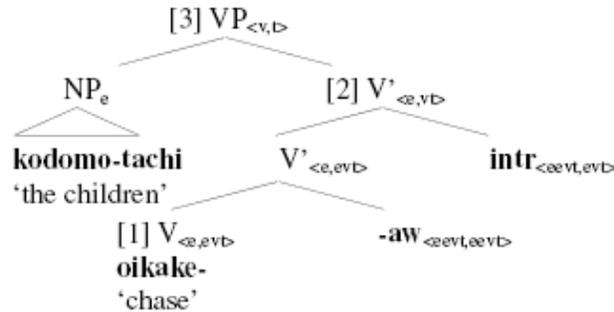
- (29) [1]  $\lambda x.\lambda e. x \text{ danced in } e = \lambda x.\lambda e. \text{dance}(x)(e)$   
 [2]  $\lambda P_{\text{evt}}.\lambda X.\lambda E. \text{**}P(X)(E)$   
 $= \lambda P.\lambda X.\lambda E. \forall y(y \leq X \ \& \ \text{Cov}_1(y) \rightarrow \exists e(e \leq E \ \& \ \text{Cov}_3(e) \ \& \ P(y)(e))) \ \&$   
 $\forall e(e \leq E \ \& \ \text{Cov}_3(e) \rightarrow \exists z(z \leq X \ \& \ \text{Cov}_1(z) \ \& \ P(z)(e)))$   
 [3]  $\lambda X.\lambda E. \text{**dance}(X)(E)$   
 $= \lambda X.\lambda E. \forall y(y \leq X \ \& \ \text{Cov}_1(y) \rightarrow \exists e(e \leq E \ \& \ \text{Cov}_3(e) \ \& \ \text{dance}(y)(e))) \ \&$   
 $\forall e(e \leq E \ \& \ \text{Cov}_3(e) \rightarrow \exists z(z \leq X \ \& \ \text{Cov}_1(z) \ \& \ \text{dance}(z)(e)))$   
 [4]  $\lambda E. \text{**dance}(\text{kids})(E)$   
 $= \lambda E. \forall y(y \leq \text{kids} \ \& \ \text{Cov}_1(y) \rightarrow \exists e(e \leq E \ \& \ \text{Cov}_3(e) \ \& \ \text{dance}(y)(e))) \ \&$   
 $\forall e(e \leq E \ \& \ \text{Cov}_3(e) \rightarrow \exists z(z \leq \text{kids} \ \& \ \text{Cov}_1(z) \ \& \ \text{dance}(z)(e)))$
- (30) a.  $[[\text{Cov}_3(e)]]^{\text{g}} = [\text{g}(3)](e) = 1$  iff e contains two non-overlapping relevant kids  
 b. Every child danced, and the relevant event consists of sub-events in which  
 [some parts of the children]<sub>i</sub> dancing and [some other parts of the children]<sub>j \neq i</sub>.

## 5.2 Extending to Reciprocal Interpretation

The lexical meaning of *-aw* stays the same across the two readings. The pluralization operator component of *-aw* is taken to be the generalized pluralization operator  $n^*$  of Sternefeld (1998). Since *-aw* in the reciprocal use combines with a transitive verb of type  $\langle e, \text{evt} \rangle$ , the pluralization operator is instantiated as  $***$  for three-place predicates of type  $\langle \text{evt}, \text{eevt} \rangle$  (cf. ‘situation based cumulation’ in Beck, 2001). The resulting logical form is basically that of the weak reciprocal, which is considered to be the core meaning of the eventive reciprocal sentences (Langendoen, 1978; Bruening 2004, 2006; cf. Beck, 2001). An additional silent material *intr*(*ansitivizer*) (32a) is speculated. Below is a reciprocal sentence with its syntactic structure and the semantic computation that results in the weak reciprocal logical form with distributive events.

- (31) a. Kodomo-tachi-ga oikake-at-ta.  
 child-PL-NOM chase-*aw*-PAST  
 ‘The children chased each other.’

b.



- (32) a.  $\llbracket \text{intr} \rrbracket = \lambda R_{\langle \text{eevt}, \text{evt} \rangle} . \lambda x . \lambda e . R(x)(x)(e) \in D_{\langle \text{eevt}, \text{evt} \rangle}$   
 b.  $\llbracket \llbracket \text{intr} \rrbracket \rrbracket ( \llbracket \llbracket -aw \rrbracket \rrbracket ( \llbracket \llbracket V \rrbracket \rrbracket ) )$   
 $= \llbracket \lambda R . \lambda x . \lambda e . R(x)(x)(e) \rrbracket ( \llbracket \lambda R_{\langle \text{eevt}, \text{evt} \rangle} . \lambda X . \lambda Y . \lambda E . ***R(X)(Y)(E) \rrbracket ( \llbracket \llbracket V \rrbracket \rrbracket ) )$   
 $= \lambda X . \lambda E . *** \llbracket \llbracket V \rrbracket \rrbracket (X)(X)(E) = [2]$

- (33) [1]  $\lambda x . \lambda y . \lambda e . y \text{ chased } x \text{ in } e = \lambda x . \lambda y . \lambda e . \text{chase}(x)(y)(e)$   
 [2]  $\lambda X . \lambda E . ***\text{chase}(X)(X)(E)$   
 [3]  $\lambda E . ***\text{chase}(\text{kids})(\text{kids})(E)$   
 $= \lambda E . \forall x(x \leq \text{kids} \ \& \ C_1(x) \rightarrow \exists y \exists e(y \leq \text{kids} \ \& \ C_2(y) \ \& \ e \leq E \ \& \ C_3(e) \ \& \ \text{chase}(x)(y)(e))) \ \&$   
 $\forall y(y \leq \text{kids} \ \& \ C_2(y) \rightarrow \exists x \exists e(x \leq \text{kids} \ \& \ C_1(x) \ \& \ e \leq E \ \& \ C_3(e) \ \& \ \text{chase}(x)(y)(e))) \ \&$   
 $\forall e(e \leq E \ \& \ C_3(e) \rightarrow \exists x \exists y(x \leq \text{kids} \ \& \ C_1(x) \ \& \ y \leq X \ \& \ C_2(y) \ \& \ \text{chase}(x)(y)(e)))$

- (34) a.  $\llbracket \llbracket C_3(e) \rrbracket \rrbracket^{\text{g}} = \llbracket \llbracket g(3) \rrbracket \rrbracket (e) = 1$  iff  $e$  contains non-overlapping relevant kids  
 b. Every child chased some children, every child was chased by some children, and the relevant event consists of sub-events in which [some parts of the children] $_i$  chased [some parts of the children] $_j$  and [some non-overlapping parts of the children] $_k \neq i$ .

## References

- Beck, Sigrid. 2001. Reciprocals are Definites. *Natural Language Semantics* 9:69–138.  
 Beck, Sigrid, and Arnim von Stechow. 2007. Pluractional Adverbials. *Journal of Semantics* 24:215–254.  
 Beck, Sigrid, and Uli Sauerland. 2000. Cumulation is Needed: A Reply to Winter (2000). *Natural Language Semantics* 8:349–371.  
 Solveig Bosse, Benjamin Bruening, and Masahiro Yamada. 2009. Affected Experiencers. Ms. University of Delaware (under review, very condensed earlier version available as Bosse et al. 2008 at [ [http://hnk.ffzg.hr/fassbl2008/FASSBL6\\_2008\\_proceedings.pdf](http://hnk.ffzg.hr/fassbl2008/FASSBL6_2008_proceedings.pdf) ] )  
 Brisson, Christine. 2003. Plurals, *All*, and the Nonuniformity of Collective Predication. *Linguistics and Philosophy* 26:129–184.

- Bruening, Benjamin. 2004. Verbal Reciprocals. In *Demoting the Agent: Proceedings of the Oslo Workshop on Passive and Other Voice-Related Phenomena*, eds. T. Solstad, B. Lyngfelt, and M. F. Krave, 3–12. Oslo: University of Oslo.
- Bruening, Benjamin. 2006. The Morphosyntax and Semantics of Verbal Reciprocals. Ms. University of Delaware. [ <http://www.ling.udel.edu/bruening/home/Reciprocals5.pdf> ]
- Davies, William. 2000. Events in Madurese Reciprocals. *Oceanic Linguistics* 39;1:123–143.
- Faller, Martina. 2007. The Ingredients of Reciprocity in Cusco Quechua. *Journal of Semantics* 24:255–288.
- Ishii, Yasuo. 1989. Reciprocal Predicates in Japanese. In *Proceedings of ESCOL '89*, 150–161. University of Delaware.
- Keenan, Edward L. and Jean-Paulin Razafimamonjy. 2004. Reciprocals in Malagasy. *Oceanic Linguistics* 43;1:177–207.
- Lasersohn, Peter. 1995. *Plurality, Conjunction and Events*. Kluwer Academic Publishers. Boston.
- Link, Godehard. 1983. The Logical Analysis of Plurals and Mass Terms: A Lattice-theoretic Approach. In *Meaning, Use, and Interpretation of Language*, eds. R. Bauerle, C. Schwarze, and A. von Stechow, 302–323.
- Nakao, Chizuru. 2003. Japanese Reciprocal Constructions and Binding Theory. In *Linguistic Research* 19, 17–43. University of Tokyo, Tokyo.  
[ [http://www.ling.umd.edu/~cnakao/LR19\\_nakao.pdf](http://www.ling.umd.edu/~cnakao/LR19_nakao.pdf) ]
- Nishigauchi, Taisuke. 1992. Syntax of Reciprocals in Japanese. *Journal of East Asian Linguistics* 1:157–196.
- Sauerland, Uli. 1998. Plurals, Derived Predicates and Reciprocals. In *The Interpretive Tract*. MITWPL 25, eds. Uli Sauerland and O. Percus, 177–204.
- Schwarzschild, Roger. 1996. *Pluralities*. Kluwer, Dordrecht.
- Sternefeld, Wolfgang. 1998. Reciprocity and Cumulative Predication. *Natural Language Semantics* 6:3:303–337.
- Yamada, Masahiro. 2009. Dance and Dance, Competing with Each Other: The Japanese Verbal Reciprocal *Aw*. In *Japanese/Korean Linguistics 17*, eds. Shoichi Iwasaki, Hajime Hoji, Patricia M. Clancy, and Sung-Ock Sohn.

Department of Linguistics and Cognitive Science  
 46 East Delaware Ave  
 University of Delaware  
 Newark, DE 19716  
 myamada@udel.edu