The Japanese Verbal Reciprocal *–aw* Indicates Pluralization over Individuals and Events

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We provide a number of novel data of the Japanese verbal suffix *–aw*, often analyzed as a verbal reciprocal (Ishii 1989, Nishigauchi 1992, Bruening 2006). The data argues for the claims that: i) the verbal suffix *–aw* indicates the cumulative/co-distributive operator ** over Individuals and events (Beck & von Stechow 2007), ii) it is a pluraction markers (in the sense of Lasersohn 1995) that derives event plurality strictly from the structurally highest argument in its scope. It will be demonstrated that *-aw* is different from the pluraction markers discussed in the literature (Lasersoh 1996, Beck & von Stechow 2007, Faller 2007 among others). Unlike *–aw*, the pluraction markers allow spatio-temporal non-overlapping entities or non-subject plural arguments to contribute to the pluractionality. As a consequence, the present study of *-aw* provides strong evidence that argues for the grammatical theory that is equipped with the generalized pluralization operations (**n* in Sternefeld 1998) which are present in syntax.

The sentence in (1) is a canonical example of the pluraction sentence marked by the verbal suffix *-aw*. Its interpretation can optionally be fixed by adverbials such as *kisotte* 'competing' or *tsugi-tsugini* 'next'. The data in (2) shows that any attempts to derive a pluraction fail with plural direct objects (i), contextually salient plural instruments (ii), or spatio-temporal multiplicity (iii-iv). Adding adverbials such as *taku-san-no juu-de* 'many guns', *achi-kochi-de* 'here and there', or *nandomo* 'many times' does not save the intended readings either.

We propose a detailed semantics for these types of examples in the framework of (neo-Davidsonian) event semantics, along with the denotation of *–aw* defined in (3)-(4) (*e, v* and *t* for the types of individuals, events, and truth-values respectively). For simplicity, we assume a complex expression view of *–aw* in (3), but to keep the generality of the pluralization operators, we propose (4) as the full fledged proposal in which *–aw* and the PL(ural) operator are present in the syntactic tree as in (4)c. This is an ontologically fair enough denotation since, as Nishigauchi (1992) and dictionary meanings suggest, it has some sense of *the other (pair)*. Following Beck & Sauerland's (2000) definition of **-operator and Schwarzschild's (1996) context-sensitive Cover, the event type specified by the sentence in (1) is (5) (*A, B, E* for the variables over events); (5)b is the one with the ** unfolded version. It says all (subsets of the) children must be paired with a distinct (subset of) child(ren) and participate in a target-shooting event, and all the relevant events must have a pair of (subsets of) children shooting the target therein. This is a pluraction derived by the plurality of the children, as desired. We treat the various readings in (1) as pragmatically derived in a given utterance context.

The proposed analysis is also supported by a morpho-syntactic discussion (see Bruening 2006 for a discussion of the verbal reciprocals based on the same methodology). Compositional semantics would require the syntactic tree for (1) to be (6)a, in which the PL-aw component in (4) adjoins to Voice' level. Type-driven predictions are borne out for other complex verbal predicates such as causatives or (indirect) passives. Japanese verbal complexes are transparent because they have designated verbal morphemes that interact with *–aw* in their relative order. For example, (6)b is a syntactic tree for a causative construction with the denotation of a bi-eventive *Cause* head in (6)c. *Cause* head is pronounced as *-ase*. The predictions made based on the tree and the Cause head above are i) in the *aw-ase* '*aw*-Cause' order (i.e. a causative of pluraction), the dative marked causee must be a plural entity, while ii) in the *ase-aw* 'Cause-*aw*' order (i.e. a pluractional causative), the nominative marked causer must be a plural entity. The pairs in (7) and (8) respectively show these predictions are borne out.

We conclude that the semantic and the morpho-syntax analysis of the Japanese verbal suffix *–aw* support the syntactic pluralization of a function from individuals to event properties of type <e,<v,t>>.

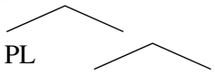
The evidence for this is fairly striking because *-aw* indicates the distribution of the individuals over events and imposes the pluractionality on the sentence's interpretation.

(1) Kodomo-tachi-ga mato-o (kisotte / tsugi-tsugini) uchi-**at**-ta
child-P_L-N_{OM} target-A_{CC} (competing / next-next) shoot-*aw*-P_{ST}
'The children shot the target *competing with each other / alternately / one after another*.'

(2) *Sean-ga mato-o uchi-**at**-ta
Sean-N_{OM} target-A_{CC} shoot-*aw*-P_{ST}
Intended: 'Sean shot the target i) …*target after target*.' ii) ... *using multiple guns*.'
iii) … *here and there*.' iv) … *many times*.'

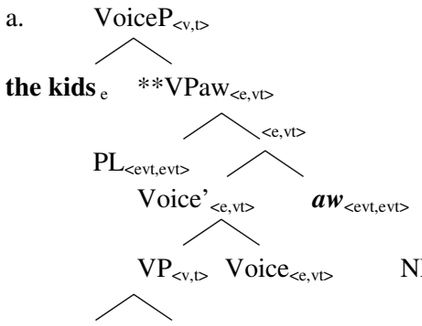
(3) $[\![**\textbf{\textit{aw}}]\!] = \lambda R_{<e,vt>}.\lambda X.\lambda E.\ **[\exists y,z \in X(R(y)(E) \ \&\ R(z)(E) \ \&\ y \neq z] \quad \in D_{<evt,evt>}$

(4) a. $[\![\textbf{\textit{aw}}]\!] = \lambda R_{<e,vt>}.\lambda X.\lambda E.\ \exists y,z \in X(R(y)(e) \ \&\ R(z)(e) \ \&\ y \neq z) \quad \in D_{<evt,evt>}$
b. $[\![PL]\!] = \lambda R_{<e,vt>}.\lambda X.\lambda E.\ **R(X)(E) \quad \in D_{<evt,evt>}$
c.

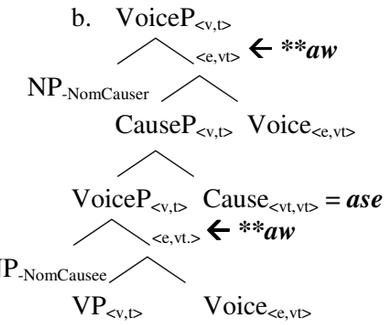


(5) a. $\lambda E.**[\exists y,z \in \text{the kids}(\text{shot.the.target}(y)(E) \ \&\ \text{shot.the.target}(z)(E) \ \&\ y \neq z)]$
b. $\lambda E.\forall X \subseteq \text{Cov[the kids]} \exists A \subseteq \text{Cov[E]}(\exists y,z \in X(\text{shot.the.target}(y)(A) \ \&\ \text{shot.the.target}(z)(A) \ \&\ y \neq z) \ \&$
$\forall B \subseteq \text{Cov[E]} \exists Y \subseteq \text{Cov[the kids]}(\exists m,n \in Y(\text{shot.the.target}(m)(B) \ \&\ \text{shot.the.target}(n)(B) \ \&\ m \neq n)$

(6) a.



b.



c. $[\![\text{Cause}]\!] = \lambda P_{vt}.\lambda e.\ \exists e'[P(e') \ \&\ e \text{ causes } e']$ (Pylkkänen 2002 (145))

(7) a. Sean-ga **kodomo-tachi**-ni Karthik-o naguri-**aw**-ase-ta
Sean-N_{OM} child-P_L-D_{AT} Karthik-A_{CC} hit-*aw*-C_{AS}-P_{ST}
'Sean made the children pluractionally hit Karthik.'
b.* kodomo-tachi-ga **Sean**-ni Karthik-o naguri-**aw**-ase-ta
child-P_L-N_{OM} Sean-D_{AT} Karthik-A_{CC} hit-*aw*-C_{AS}-P_{ST}
(Int.) 'The children made Sean pluractionally hit Karthik.'

(8) a.* **Sean**-ga kodomo-tachi-ni Karthik-o nagur-ase-**aw**-ta
Sean-N_{OM} child-P_L-D_{AT} Karthik-A_{CC} hit-C_{AS}-*aw* -P_{ST}
(Int.)'Sean pluractionally made the children hit Karthik.'
b. **kodomo-tachi**-ga Sean-ni Karthik-o nagur-ase-**aw**-ta
child-P_L-N_{OM} Sean-D_{AT} Karthik-A_{CC} hit-C_{AS}-*aw*-P_{ST}
'The children pluractionally made Sean hit Karthik.'

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