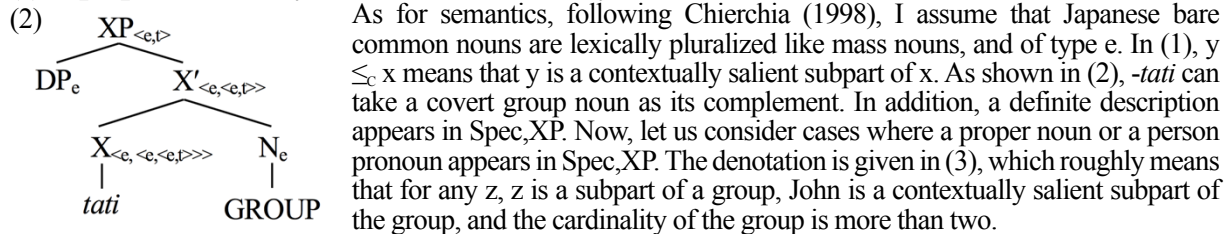


**A Compositional Analysis of Plural Morphemes in Japanese**

**Synopsis:** This paper shows that the Japanese plural morpheme *-tati* is not just a particle attached to a noun. Rather, it heads its own projection and produces a hierarchical structure. The proposed analysis captures both additive and associative interpretation of *-tati*, and accounts for the data which have not previously received much attention. Moreover, the proposed analysis implies that Japanese plural person pronouns have a complex structure (for a similar approach to plural person pronouns, see Corbett and Mithun 1996, Rooryck 1998, Cysouw 2003).

**Proposal:** The structure and semantic denotation of *-tati* is given in (1) and (2).

(1)  $[[PL]]^c = \lambda x \in D_e . \lambda y \in D_e . \lambda z \in D_e . [z \leq x \wedge y \leq_c x \wedge |x| \geq 2]$



(3)  $[[John-tati]]^c = \lambda z \in D_e . [z \leq \text{GROUP} \wedge j \leq_c \text{GROUP} \wedge |\text{GROUP}| \geq 2]$

When a person pronoun appears in Spec,XP, instead of a proper noun, a contextually salient subpart relation is established between the referent of a pronoun and a group. (Although Nakanishi and Ritter 2004 argue that a 3rd person pronoun with *-tati* receives additive interpretation, 3rd person pronouns with *-tati* can allow for exceptions. Consider the example like *kanozyo-tati-no naka-de Taro-dake-ga otoko da*. ‘Among them, only Taro is a male person’.) Let us then consider cases where a common noun appears in Spec,XP. The denotation is given in (4c).

(4) a.  $[[gakusei]]^c = \text{student}'(x)$       b.  $[[\text{def}]]^{\text{sc}} = \lambda P \in D_{\langle e,t \rangle} . \sigma x [P(x)]$   
 c.  $[[gakusei-tati]]^c = \lambda z \in D_e . [z \leq \text{GROUP} \wedge \sigma x [\text{student}'(x)] \leq_c \text{GROUP} \wedge |\text{GROUP}| \geq 2]$

I adopt the definite feature proposed by Kratzer (2009). Before a common noun combines with *-tati*, the definite feature is merged into the common noun, and the resulting element means a largest plurality of individuals who have the property denoted by a common noun. The plural morpheme *-tati* takes this definite description as its argument. (4c) roughly means that for any *z*, *z* is a subpart of a group, a largest plurality of individuals who have the property of being a student is a contextually salient subpart of the group, and the cardinality of the group is more than two. Crucially, when the largest plurality is equal to the group, we obtain an additive interpretation of *-tati*. However, *gakusei-tati* still allows for non-students to be included in a group. This is supported by the example (5) (for a similar argument, see Nakanishi and Tomioka 2004).

(5)  $[[\textit{keikan-ga taiho-sita gakusei-tati}]\textit{-no nakani-wa kaisyain-mo mazat-teita.}]$   
 policeman-NOM arrest-did student-PL-GEN among-TOP office.worker include-ASP  
 ‘Among the students who a policeman arrested, office workers were included.’

**Data:** The proposed analysis can capture the data which to the best of my knowledge, have not receive much attention in the literature. For example, it can account for some significant properties of plural person pronouns. First, similarly to English, only plural person pronouns can be used as a determiner in the sense that they can immediately precede a common noun, as shown in (6a). Singular person pronouns cannot appear in this position, as in (6b). The same contrast is observed with a proper noun with *-tati*.

(6) a. *Yamada sensei-wa* [*{watasi/anata/kanozyo/John}*]-*tati* *gakusei*]-*o* *kiratteiru*.  
 Yamada teacher-TOP I/you/she/John-PL student-ACC hate  
 ‘lit. Prof. Yamada hates {we/you/she+PL} students.’  
 b. \**Yamada sensei-wa* [*{watasi/anata/kanozyo/John}*]-*gakusei*]-*o* *kiratteiru*.  
 Yamada teacher-TOP I/you/she/John student-ACC hate  
 ‘lit. Prof. Yamada hates {me/you/her} student.’

Second, as shown in (7a), Japanese plural person pronouns do not cause a Binding Condition C violation when they are used as a binder. This behavior is not observed with a singular person pronoun, as in (7b).

(7) a. *kare-ra*<sub>{3,α}</sub>-*wa* *John*<sub>3</sub>-*ni* *toohyoo-sita*.      b. \**kare*<sub>3</sub>-*wa* *John*<sub>3</sub>-*ni* *toohyoo-sita*  
 he-PL-TOP John-DAT vote.for-did      he-TOP John-DAT vote.for-did  
 ‘They<sub>{3,α}</sub> voted for John<sub>3</sub>.’      ‘He<sub>3</sub> voted for John<sub>3</sub>.’

Notice that in English, plural person pronouns are sensitive to Binding Condition C, as pointed out by Lasnik (1991); \**They*<sub>{3,α}</sub> *told John*<sub>3</sub> *to leave*. Therefore, we have to account for the contrast between English and Japanese. The third property is concerned with the c-command requirement of bound variable interpretation. It is argued that in addition to 3rd person pronouns, 1st and 2nd person pronouns can receive bound variable interpretation (see Partee 1989, Rullmann 2004, Kratzer 2009). Bound variable interpretation of person pronouns is attested in Japanese as well, as in (8), although previous studies claimed that 3rd person pronouns in Japanese cannot receive bound variable interpretation (see, for example, Hoji 1991 and references therein).

(8) a. *watasi-dake-ga* [*watasi-no ronbun*]-*o* *inyoo-sita*.      [1st]  
 I-only-NOM I-GEN paper-ACC cite-did  
 ‘lit. Only I cited my paper.’ ‘I was the only *x* such that *x* cited *x*’s paper.’

- b. *anata-dake-ga* [ *anata-no ronbun*]-o *inyoo-sita.* [2nd]  
 you-only-NOM you-GEN paper-ACC cite-did  
 'lit. Only you cited your paper.' 'You were the only x such that x cited x's paper.'
- c. *John-dake-ga* [ *kare-no ronbun*]-o *inyoo-sita.* [3rd.male]  
 John-only-NOM he-GEN paper-ACC cite-did  
 'lit. Only John cited his paper.' 'John was the only x such that x cited x's paper.'

Under the bound variable reading, the examples in (8) imply that nobody else cited his or her paper. Importantly, this kind of bound variable interpretation is subject to the c-command requirement; only when the binder c-commands a bound pronoun, the resulting sentence receive bound variable interpretation. For instance, if the antecedent pronoun is embedded in a larger noun phrase, the bound variable interpretation becomes unavailable as in (9), though the coreferential reading is still possible.

- (9) a. [ *watasi-no sensei*]-*dake-ga* [ *watasi-no ronbun*]-o *inyoo-sita.* [1st]  
 I-GEN teacher-only-NOM I-GEN paper-ACC cite-did  
 'lit. Only my teacher cited my paper.' '\*I was the only x such that x's teacher cited x's paper.'
- b. [ *anata-no sensei*]-*dake-ga* [ *anata-no ronbun*]-o *inyoo-sita.* [2st]  
 you-GEN teacher-only-NOM you-GEN paper-ACC cite-did  
 'lit. Only your teacher cited your paper.' '\*You were the only x such that x's teacher cited x's paper.'
- c. [ *John-no sensei*]-*dake-ga* [ *kare-no ronbun*]-o *inyoo-sita.* [3rd.male]  
 John-GEN teacher-only-NOM he-GEN paper-ACC cite-did  
 'lit. Only John's teacher cited his paper.' '\*John was the only x such that x's teacher cited x's paper.'

Only the difference between (8) and (9) is whether a bound pronoun is c-commanded by its antecedent. Crucially, when a plural person pronoun is used as an antecedent, the resulting sentences behave like (9), as shown in (10).

- (10) a. *watasi-tati*<sub>{1, a}</sub>-*dake-ga* [ *watasi<sub>1</sub>-no ronbun*]-o *inyoo-sita.* [1st]  
 I-PL-only-NOM I-GEN paper-ACC cite-did  
 'lit. Only we cited my paper.' '\*I was the only x such that x and someone cited x's paper.'
- b. *anata-tati*<sub>{2, a}</sub>-*dake-ga* [ *anata<sub>2</sub>-no ronbun*]-o *inyoo-sita.* [2nd]  
 you-PL-only-NOM you-GEN paper-ACC cite-did  
 'lit. Only you cited your paper.' '\*You were the only x such that x and someone cited x's paper.'
- c. *John-tati*<sub>{3, a}</sub>-*dake-ga* [ *kare<sub>3</sub>-no ronbun*]-o *inyoo-sita.* [3rd.male]  
 John-PL-only-NOM he-GEN paper-ACC cite-did  
 'lit. Only John+PL cited his paper.' '\*John was the only x such that x and someone cited x's paper.'

**Analysis:** As shown in (2), I assume that the plural morpheme *-tati* provides a position for a covert group noun. Suppose that an overt plural noun also can appear in the complement of *-tati*. The contrast in (6) can be accounted for. Since there is a position for a plural noun only when we have the plural morpheme, a singular person pronoun and a bare proper noun cannot precede a common noun. Moreover, since the plural morpheme requires a plural noun in its complement position, the proposed analysis correctly predicts that singular nouns cannot follow the plural morpheme. The contrast in (7) also can be accounted for under the proposed analysis. As shown in (2), a noun followed by the plural morpheme is trapped within the functional projection headed by *-tati*. Since an element in Spec,XP cannot c-command anything outside of the XP, the violation of Binding Condition C is not observed in (7a), in contrast to (7b). The availability of bound variable interpretation also can be explained based on the violation of the c-command requirement of bound variable interpretation. Since an element in Spec,XP is trapped within the XP, they cannot bind a bound pronoun. Therefore, the examples in (10) cannot receive bound variable interpretation.

**Support:** The proposed analysis requires that an element in Spec,XP be of type e. Importantly, when adjectives and relative clauses modify a plural person pronoun, the property denoted by the modifier must be distributed to each member of a group, as in (11). (Notice that Japanese pronouns in general can be modified by adjectives and relative clauses (Kuroda 1965).) (11a) roughly means 'the group of young people represented by the speaker', and (11b) means 'the group of ignorant people represented by him'. Of importance here is that (11a) does not allow for exceptions, just like additive interpretation of the plural morpheme. All members of a given group, including the speaker, must be young. Similarly, each member of a group denoted by (11b) must be ignorant.

- (11) a. [ *wakai watasi-tati* ]      b. [[ *nanimo sira-nai* ] *kare-ra* ]  
 young I-PL                              anything know-NGE he-PL

This data can be captured under the proposed analysis. Suppose that an attributive modifier in (11) is of type <e,t> and modifies a noun via Predicate Modification (Heim and Kratzer 1998). Since a noun followed by *-tati* must be of type e, it cannot be combined with an attributive modifier via Predicate Modification. Thus, (11a), for example, cannot receive the interpretation like 'a group represented by the speaker, who is young'. However, the whole XP is of type <e,t> under the proposed analysis, and an attributive modifier can be combined with the XP. The property denoted by an attributive modifier is distributed to each member of a group, as a result of Predicate Modification. A similar story holds for cases where *-tati* follows a common noun.

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