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## On Japanese Associative Plurals\*

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### 1. Introduction

The grammatical encoding of plurality varies from language to language. Many languages choose to mark plurality explicitly on nouns. Some of them have rich verbal and/or adjectival agreement that is sensitive to the singular/plural distinction. What is striking about plurality in Japanese is its total lack of obligatory grammatical marking. Japanese bare nouns can be singular or plural, as exemplified in (1a). However, the language is not totally devoid of ways of disambiguating. The suffixes *-tachi*, *-ra*, and *-domo* indicate plurality of [+human] nouns. (Martin 1975).<sup>1</sup> (1b) is an example with *-tachi*: *Otokonoko-tachi* ‘boy-TACHI’ is unambiguously plural.

- (1) a. *Otokonoko-ga asonde-iru*  
       boy-nom play-prog  
       ‘A boy is / boys are playing’
- b. *Otokonoko-tachi-ga asonde-iru*  
       boy-TACHI-nom play-prog  
       ‘Boys are playing’

From this paradigm, one might conclude that Japanese has optional plural marking for some class of nouns. We believe that it is not the case, however. In the next section, we will show that *C(ommon)N(oun)+tachi* has a variety of puzzling properties that would be left unexplained if *-tachi* were simply an optional plural morpheme.

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<sup>1</sup> In this paper, we focus only on *-tachi*, excluding *-ra* and *-domo*. This is because the distribution of *-tachi* is the least restricted and *-tachi* does not evoke any irrelevant pragmatic connotations.

## 2. *-Tachi*: What it Can and Cannot Do

The morphological underspecification of Japanese nouns is not limited to the singular/plural distinction. The language also lacks a systematic marking of (in)definiteness. Thus, the example (1a) is actually four ways ambiguous: 'A boy / the boy / boys / the boys is/are playing.'<sup>2</sup> If *-tachi* is an optional plural marker, then, it is expected to eliminate the singular indefinite and the singular definite reading, but to be oblivious to the definite vs. indefinite distinction. This prediction is not completely borne out. While *-tachi* does exclude the singular readings, it also eliminates many of the interpretations typically associated with indefinite plurals. In particular, *CN+tachi* behaves quite differently from bare plurals in English. In what follows, we will compare *-tachi* plurals with English bare plurals to highlight the unexpected properties of *-tachi*.

### 2.1. Property 1: Generic and Kind

The first difference is the availability of generic interpretations. An English bare plural can be used as the subject of a generic sentence (cf. Carlson 1977), as in (2a). However, as (2c) shows, when *Itariajin-tachi* 'Italian-TACHI' is the subject, the intended generic interpretation is hardly available. It sharply contrasts with (2b), in which the subject is a bare noun and the generic reading is indeed the most salient interpretation.

#### (2) Generic

a. Italians are cheerful.

b. Itariajin-wa yooki-da  
 Italian-top cheerful-cop  
 √ Generic: 'Italians are cheerful'

c. Itariajin-tachi-wa yooki-da  
 Italian-TACHI-top cheerful-cop  
 ??? Generic: 'Italians are cheerful'  
 √ 'Some group of Italians are cheerful'

Similarly, a *-tachi* plural is not, but a bare noun is, compatible with a kind-taking predicate, as in (3b). English bare plurals are fine in such an environment, as in (3a).

#### (3) Kind-Reference

a. Female private detectives are rare.

b. Zyosei-tantei(?\*-tachi)-wa mezurasii  
 female-detective-TACHI-top rare  
 'Female private detectives are rare'

<sup>2</sup> (1a) as a root sentence strongly prefers the indefinite interpretation due to the fact that the subject is marked with *-ga* (nominative), rather than *-wa* (topic). Although the topic marking signals definiteness (cf. Kuno 1973), non-topic marked elements can be considered definite. For instance, if (1a) is embedded, the all four interpretations are available.

## 2.2. Property 2: Possession Verbs

Second, a relational *CN+tachi* cannot be the internal argument of the possession verb *aru/iru* ‘to have, to exist’, unlike English bare plurals.

- (4) a. Mrs. Inoue has children.
- b. Inoue-san-ni-wa kodomo-ga aru/iru  
 Inoue-honor-dat-top child-nom exist  
 ‘Mrs. Inoue has a child/children’ (*It asserts that Mrs. Inoue is a mother*)
- c. \*? Inoue-san-ni-wa kodomo-tachi-ga aru/iru  
 Inoue-honor-dat-top child-TACHI-nom exist

Both the English bare plural *children* and the Japanese bare noun *kodomo* ‘child/children’ can be the internal argument of the possession verb, as shown in (4a) and (4b), respectively. However, *kodomo-tachi* ‘child-TACHI’ cannot, as in (4c).

## 2.3. Property 3: Intensional Verbs

Third, when *CN+tachi* is an argument of an intensional transitive verb, such as *iru* ‘to need’ and *sagasu* ‘to seek’, it cannot take narrow scope. English bare plurals, on the other hand, only take narrow scope (Carlson 1977).

- (5) a. That hospital is looking for nurses.  
 √ seek > nurses, \* nurses > seek
- b. Sono byooin-wa kangohu-o sagasi-teiru  
 that hospital-top nurse-acc seek-prog  
 √ seek > nurse(s): ‘That hospital is looking for a nurse / nurses (to hire)’  
 ?? nurse(s) > seek: ‘There is a nurse / are nurses that hospital is looking for’
- c. Sono byooin-wa kangohu-tachi-o sagasi-teiru  
 that hospital-top nurse-TACHI-acc seek-prog  
 \*? seek > nurse-TACHI: ‘That hospital is looking for nurses (to hire)’  
 √ nurse-TACHI > seek: ‘There are a group of nurses that hospital is looking for’

In English, as in (5a), the bare plural argument *nurses* remains within the scope of the intensional verb. In Japanese, although the bare noun argument *kangohu* ‘nurse(s)’ prefers the narrow scope reading with respect to the intensional verb *sagasu* ‘to seek’, as in (5b), *kangohu-tachi* ‘nurse-TACHI’ only has the wide scope reading, as in (5c).

The examples in (6) show the same point.

- (6) a. (Hikkoshi-no tetudai-ni) gakusei-ga iru  
 moving-gen help-dat student-nom need  
 √ need > student(s): ‘I need a student / students who can help me move’  
 ?? student(s) > need: ‘There are a group of students such that I need them for

helping me move'

- b. (Hikkoshi-no tetudai-ni)   gakusei-tachi-ga   iru  
 moving-gen help-dat   student-TACHI-nom   need  
 \* need > student-TACHI: 'I need a student / students who can help me move'  
 √ student-TACHI > need: 'There are a group of students such that I need them  
 for helping me move'

As shown in (6a), when the bare noun *gakusei* 'student(s)' is an argument of the intensional verb *iru* 'to need', it prefers to remain within the intensional context created by the verb. When the bare noun is followed by *-tachi*, on the other hand, it only takes wide scope over the intensional verb, as in (6b).

### 3. Definiteness of *-Tachi* Plurals

Although the facts described in the previous section suggest that *-tachi* plurals are quite different from English bare plurals, Chinese has a suffix which is strikingly similar to Japanese *-tachi*. Chinese *CN+men* has all the relevant properties listed above: It can neither be used in a generic sentence (Iljic 1994) nor serve as the argument of the relational possession construction. Furthermore, when it is placed in the argument position of an intensional transitive verb, it only has the wide scope interpretation with respect to the verb. It has been claimed that *CN+men* denotes a collective (or group) entity, whose reference the speaker must have access to (Iljic 1994, Cheng & Sybesma 1999).<sup>3</sup> In a sense, *CN+men* is akin to a definite description. Notice that, if *-tachi* plurals are definite descriptions, all the properties shown above are no longer puzzling. English definite plurals are known to be incapable of being interpreted as generic, as in (7a).<sup>4</sup> Definites, singular or plural, cannot be used in the relational possession construction, as in (7b). They also have a strong tendency to have scope over the intensional transitive verbs, as in (7c).

- (7) a. The Italians are cheerful. (No generic reading)  
 b. Mrs. Inoue has the children. (Does not assert Mrs. Inoue's motherhood)  
 c. The hospital is looking for the nurses. (No narrow scope for *the nurses*)

This is indeed the approach that Kawasaki (1989) endorsed and Kurafuji (2002) elaborates.

As a point in favor of treating *-tachi* on a par with *-men*, Kurafuji provides the following paradigm.

- (8) a. Chinese  
 \* san-ge    haizi-men  
 three-cl    child-MEN  
(Cheng & Sybesma 1999:537)

<sup>3</sup> Iljic (1994) calls *-men* collectivizer. He describes that *CN+men* always refers to a situationally anchored and defined group.

<sup>4</sup> Definite plurals can be construed as generic in some languages, most notably in many Romance languages. See Krifka et al. (1995) and Chierchia (1998) for detailed facts.

## b. Japanese

?? san-nin-no	gakusei-tachi	
three-cl-gen	student-TACHI	(Kurafuji 2002: (46c))

(8ab) are meant to show that both Chinese and Japanese plurals cannot be combined with numerals. Here we do not agree with Kurafuji's judgment. We find (8b) quite acceptable, if it is only slightly unnatural to use the numeral in the prenominal position with the genitive marker *-no*. The Chinese example, on the other hand, seems to be judged unanimously as unacceptable. We also think that even this slight unnaturalness disappears when the number is big and not so exact, as in (9b). Such an amendment does not make significant improvement in Chinese, as in (9a).

## (9) a. Chinese

* chau-guo	200-ge	haizi-men
more than	200-cl	child-MEN
'more than 200 children'		

## b. Japanese

200-nin-izyoo-no	gakusei-tachi
200-cl-or more-gen	student-TACHI
'200 or more students'	

Hence, the parallelism between Chinese and Japanese is not as complete as Kurafuji intended to show.

In addition, the two languages behave differently with respect to the existential sentences. Chinese *CN+men* cannot be used in the existential *you* construction, as in (10a), but *CN+tachi* can appear in the Japanese counterpart, as shown in (10b).

## (10) a. Chinese

* you	ren-men	
have	man-MEN	
'There are some people'		

(Iljic 1994:94)

## b. Japanese

Kooen-ni	kodomo-tachi-ga	ita
Park-loc	child-TACHI-nom	existed
'There were children in the park'		

(10b) is problematic for the *tachi*-as-definite thesis not only because there is a contrast between Chinese and Japanese but also because *kodomo-tachi* 'child-TACHI' is interpreted as indefinite. This sentence can be uttered as a mere description of what the speaker witnessed, and it does not require the presupposition that there are particular children whose existence is known to the speaker and the hearer.

There are more empirical reasons to believe that *-tachi* plurals are not always definite. First, if a *-tachi* plural is definite, it should not enter into a scope relation. In particular, it should not take narrow scope with respect to other scope-bearing elements. However, there are some examples which show that the contrary is true. For instance, in

(11), the salient reading is that *kodomo-tachi* 'child-TACHI' takes narrow scope with respect to the quantificational adverb *itumo* 'always'. In other words, (11) does not refer to children whose existence is presupposed, but rather it merely asserts that there are always some children playing in the park.

- (11) Kono kooen-de-wa itumo kodomo-tachi-ga asonde-iru  
 this park-loc-top always child-TACHI-nom play-prog  
 √ always > child-TACHI: 'In this park, there are always children playing'  
 ??? child-TACHI > always: 'In this park, there are some children who are always playing'

Second, there are some examples in which *CN+tachi* cannot be interpreted as definite, as in (12).

- (12) korekara hue-tuzukeru-dearou nanmin-tachi  
 from now on increase-continue-will refugee-TACHI  
 '(lit.) refugees who will continue to increase from now on' (Yoshi Kitagawa p.c.)

In (12), there shouldn't be any particular group of refugees that *nanmin-tachi* 'refugee-TACHI' refers to. If there were, (12) would mean 'the (group) of refugees whose number will continue to increase'. This is, of course, a nonsensical interpretation.

Finally, a *-tachi* plural can be an antecedent of a sluiced *wh*-phrase. In English, an indefinite, but not a definite, can be an appropriate antecedent for a sluiced *wh*-phrase, as in (13). The diagnosis applies to Japanese, given that an NP with a demonstrative, which is definite, is not an appropriate antecedent for a sluiced *wh*-phrase, as in (14).

- (13) a. John met a student, but Sue doesn't know which one.  
 b. #John met the student, but Sue doesn't know which one.
- (14) # John-no titioya-wa John-ga sono ko to tukiatteiru koto-o shitteiru-kedo,  
 John-gen father-top John-nom that girl with date that-acc know-while  
 John-no hahaoya-wa dare-ka shira-nai.  
 John-gen mother-top who-Q know-neg  
 'John's father knows that John is dating with that girl, but John's mother doesn't know who.'

Thus, if the NP is an appropriate antecedent for a sluiced *wh*-phrase, it is not definite. As shown in (15), *CN+tachi* can be an antecedent for a sluiced *wh*-phrase. It follows that a *-tachi* plural cannot be definite.

- (15) Inoue-sensei-no ie-ni kodomo-tachi-ga atumatta-to-kiita-kedo,  
 Inoue-Prof.-gen house-at child-TACHI-nom gather-comp-heard-while  
 watashi-wa dono kodomo-tachi-ka shira-nai.  
 I-top which child-TACHI-Q know-neg  
 '(I) have heard that children gathered at Prof. Inoue's house, but I don't know which children.'

### 3.3. Property 4: Override Properties 1-3

The data presented in the previous subsection strongly suggest that *-tachi* plurals cannot be uniformly treated as definite. What is more, the very facts that seemingly motivate the *tachi*-as-definite analysis turn out to be much more complicated. The three main properties of *-tachi* plurals can be overridden when (i) *CN+tachi* has a modifier, and/or (ii) there is a clear sense of contrast. Let us first discuss how Property 1 can be overridden. We have shown above that *CN+tachi* is incompatible with generic predicates, as shown in (16a). However, when *CN+tachi* has a modifier, as in (16b), or when there is a sense of contrast, as in (16c), the generic reading can be obtained.<sup>5</sup>

- (16) a. Without a modifier  
 Itariajin-tachi-wa yooki-da  
 Italian-TACHI-top cheerful-cop  
 ??? Generic: 'Italians are cheerful' (=(2c))
- b. With a modifier  
 Nihon-ni yattekuru Itariajin-tachi-wa yooki-da  
 Japan-to come over Italian-TACHI-top cheerful-cop  
 √ Generic: 'Italians who come over to Japan are cheerful.'
- c. With a sense of contrast  
 Kodomo-tachi-wa itumo otona-tachi-no mane-o suru  
 child-TACHI-top always adult-TACHI-gen imitate  
 √ Generic: 'Children always imitate adults.'

In (16b), the subject *Itariajin-tachi* 'Italian-TACHI' has a modifier *nihon-ni yattekuru* 'come over to Japan'. This sentence can be a generalization of Italians who come over to Japan. However, without a modifier, as in (16a), the sentence cannot be a generalization of Italians. The example in (16c) can be a generalization of *kodomo-tachi* 'child-TACHI', since there is a contrast between children and adults.

Property 2 can be overridden in the same way. We have shown that *CN+tachi* cannot be an argument of possession verbs, as shown in (17a). However, with a modifier, it can, as shown in (17b).

- (17) a. Without a modifier  
 \*? Inoue-san-ni-wa kodomo-tachi-ga iru  
 Inoue-honor-dat-top child-TACHI-nom exist  
 'Mrs. Inoue has children' (=(4c))

<sup>5</sup> We will discuss on the incompatibility with kind-taking predicates in section 7 below.



## b. With a modifier

- (?) Inoue-san-ni-wa muzukashii tosigoro-no kodomo-tachi-ga iru<sup>6</sup>  
 Inoue-honor-dat-top difficult age-gen child-TACHI-nom exist  
 'Mrs. Inoue has teenage kids.'

Finally, Property 3, which is the unavailability of narrow scope with respect to intensional verbs, can be also amended.

## (18) a. Without a modifier

- Sono byooin-wa kangohu-tachi-o sagashi-teiru  
 that hospital-top nurse-TACHI-acc seek-prog  
 \*? seek > nurse-TACHI: 'That hospital is looking for nurses (to hire)' (=5c)

## b. With a modifier

- Sono byooin-wa kodomo-no atukai-ni nareta kangohu-tachi-o sagashite-iru  
 that hospital-top kid-gen handling-dat be used nurse-TACHI-acc seek-prog  
 √ seek > nurse-TACHI: 'That hospital is looking for nurses (to hire) who are used to dealing with kids.'

In (18a), without a modifier, *kangohu-tachi* 'nurse-TACHI' cannot remain within the intensional context created by the verb *sagasu* 'to seek'. However, with a modifier, as in (18b), the relevant reading is available.

### 3.4. Summary

We have shown that *CN+tachi* has the following four properties.

- (19) Property 1: It does not have a generic or a kind-referent reading.  
 Property 2: It cannot be an internal argument of the possession verb.  
 Property 3: It cannot take narrow scope with respect to intensional verbs.  
 Property 4: Properties 1-3 can be overridden with modification and/or contrast.

The first three properties seem to support the claim that *CN+tachi* is definite, and it may be the case that it is indeed the right way to analyze *-men* in Chinese. However, we have shown that there are many cases in which *-tachi* plurals cannot be treated as definite descriptions, contrary to Kurafuji (2002) and Kawasaki (1989). Property 4 is another challenge for the *tachi*-as-definite thesis.

## 4. *-Tachi* as a Non-uniform Pluralizer

### 4.1. Property 5: Proper Names

Up until now, we have been suppressing another important property of *-tachi*, which we

<sup>6</sup> We find the combination of *CN+tachi* and *aru* 'to exist' is still not acceptable even with a modifier. Tsujioka (2001) argues that when *aru* selects an animate argument, it is implicitly 'de-animatized'. This property of *aru* may be incompatible with the [+human] requirement that *-tachi* imposes on the common noun it attaches to.

believe holds an important key for the proper analysis of *-tachi* plurals. *-Tachi* can be attached to an individual-denoting expression, as in (20).

- (20) Taro-tachi-wa moo kae-tta  
 Taro-TACHI-wa already go home-past  
 ‘The group of people represented by Taro went home already.’

As the English translation indicates, the NP *Taro-tachi* refers to a group of people who are somehow represented by Taro. In other words, in picking out a plural entity, one may pick out one particular person as the representative of that entity and form a *-tachi* plural. Naturally, the other people in the extension of *Taro-tachi* are assumed to have some association with Taro. This use of *-tachi* reminisces the morpheme *-hulle* in Afrikaans, discussed in den Besten (1996), and, following den Besten’s terminology, let us call this type of plural NPs associative plurals. We propose the denotation of *-tachi* of this type to be (21).<sup>7</sup>

- (21)  $\llbracket \text{tachi} \rrbracket \in D_{\langle e, \langle e, t \rangle \rangle} = \lambda x_e. \lambda Y_e. x \leq_i Y \ \& \ |Y| \geq 2 \ \& \ x \text{ represents } Y$

What is the semantics of *-tachi* when it is attached to a common noun? We propose that, apart from the difference in semantic types, the meaning of *-tachi* is essentially the same as (21), as shown in (22).<sup>8</sup>

- (22)  $\llbracket \text{tachi} \rrbracket \in D_{\langle \langle e, t \rangle, \langle e, t \rangle \rangle} = \lambda P_{\langle e, t \rangle}. \lambda Y_e. |Y| \geq 2 \ \& \ P \text{ represents } Y$

The tricky part is how to define ‘represent’ as a relation between a property and a plurality. In most cases, a property represents a plural entity if the majority of the plural entity has that property. So, let us informally define ‘represent’ in (22) as (23).

- (23) For any  $Q \in D_{\langle e, t \rangle}$  and plural entity  $X$ ,  $Q$  represents  $X$  iff the number of non- $Q$  in  $X$  is negligible.

Notice that *-tachi* is indeed a pluralizer but is rather different from the ordinary one. For instance, in the extension of *students*, there must not be any entity that is not a student.

<sup>7</sup> Notice that, unlike the proposal by den Besten (1996) for Afrikaans, the *name-tachi* combination is treated as a function (i.e. type  $\langle e, t \rangle$ ), not an individual. Why, then, is it always definite/specific? As we showed earlier, not all instances of *-tachi* plurals are definite. Therefore, instead of incorporating definiteness into the meaning of *-tachi*, we choose to let pragmatics play a role. If a group is represented by a particular individual, for instance, it is most likely to be interpreted as definite (or at least it cannot be considered as a weak indefinite). The definite reading is assigned via the iota type-shifting rule (cf. Partee 1987), which we assume to be available in Japanese.

<sup>8</sup> As far as we can see, our definition also works if the basic denotation of a Japanese common noun is a kind. In such a case, (22) would change to:

- (i)  $\llbracket \text{tachi} \rrbracket \in D_{\langle e, \langle e, D \rangle \rangle} = \lambda K_e. \lambda Y_e. x \leq_i Y \ \& \ |Y| \geq 2 \ \& \ K \text{ represents } Y$

Our informal definition of ‘represent’ also changes.

- (ii) For any kind  $K$  and plural entity  $X$ ,  $K$  represents  $X$  iff the number of those in  $X$  that are not instantiations of  $K$  is negligible.



- (26) a. Italians are cheerful.  
 b. Cab drivers drive fast.  
 c. Linguists are promiscuous.

Now, imagine that we are trying to make a generalization about linguists. In Japanese, the bare noun *gengogakusya* ‘linguist’ serves perfectly for this purpose. Either a Japanese bare common noun denotes a kind and can be shifted to a property for the domain of generic quantification, or Japanese works like English with a hidden pluralizer. Whichever analysis turns out to be correct, we need not worry that some non-linguists may be included in the domain of the generic operator. However, this is precisely the risk we take if we choose to use *gengogakusya-tachi* ‘linguist-TACHI’. The more exceptions the domain contains, the less precise our generalization becomes. For this reason, a *-tachi* plural is not a good choice for a generic sentence.

## 5.2. On Property 2: Why No Narrow Scope with Intensional Verbs?

To account for the wide-scope tendency of a *-tachi* plural with an intensional transitive verb, we adopt Zimmermann’s (1993) analysis, in which the internal arguments of those verbs are property-denoting.<sup>9</sup> Under Zimmermann’s semantics, the meaning of *sagasu* ‘to seek’ and *iru* ‘to need’ are represented as in (27ab), respectively.<sup>10</sup>

- (27) a.  $[[\text{sagasu}]] = \lambda P. \lambda x. \lambda w.$  for all  $w'$  such that it is compatible with what  $x$  wants/needs in  $w$ , for some  $y$  such that  $P(y)(w')=1$ ,  $x$  finds  $y$  in  $w'$ .  
 b.  $[[\text{iru}]] = \lambda P. \lambda x. \lambda w.$  for all  $w'$  such that it is compatible with what  $x$  needs in  $w$ , for some  $y$  such that  $P(y)(w')=1$ ,  $x$  has  $y$  in  $w'$ .

With (27a), the meaning of the problematic example (5c) would be (28).

- (5) c. Sono byooin-wa kangohu-tachi-o sagashite-iru  
 that hospital-top nurse-TACHI-acc seek-prog  
 \*? seek > nurse-TACHI: ‘That hospital is looking for nurses (to hire).’  
 $\checkmark$  nurse-TACHI > seek: ‘There are a group of nurses that hospital is looking for.’  
 (28)  $\lambda w.$  for all  $w'$  such that it is compatible with what that hospital wants/needs in  $w$ , for some  $Y$  such that  $Y$  consists mostly of nurses and possibly of some negligible number of non-nurses in  $w'$ , that hospital finds  $Y$  in  $w'$ .

The object narrow scope reading of (5c) only makes sense when we can make a reasonable connection between the hospital’s need and finding people who satisfy the need. For instance, (5c) describes the situation well in which several nurses resigned suddenly, and the hospital is in acute need for their replacements. What goes wrong with

<sup>9</sup> The main advantage of Zimmermann’s analysis is that it accounts for the fact the traditional Montagovian meaning-postulate analysis cannot: The narrow scope of an NP in a intentional transitive verb, such as *seek*, is not possible when the NP is genuinely quantificational.

<sup>10</sup> We use a version of Cresswell’s (1973) intensional language with explicit quantification over possible worlds.

the meaning shown in (28) is the possible existence of non-nurses. In the situation described above, we cannot easily make a reasonable connection between the hospital's needs caused by the nurses' resignation and finding nurses (possibly) along with non-nurses whose association with the nurses is unspecified. In other words, the non-uniformity of *kangohu-tachi* 'nurse-TACHI' leads to an almost nonsensical interpretation under the intended narrow scope reading. Of course, the object wide scope reading is compatible with the semantics of *-tachi*. (5c) can be truthfully uttered when there are a group of five people missing who consist of four nurses and one janitor one of the nurses is dating, and the hospital is anxious to know their whereabouts.

### 5.3. Property 3: Why Not with Possessive Verbs?

In Partee (1999), who elaborates the idea presented in Landman and Partee (1987), it is argued that a weak relational NP in the *have* construction is of the type of an unsaturated relational generalized quantifier (i.e., type  $\langle\langle e, st \rangle, \langle e, st \rangle\rangle$ ), and that the meaning of *have* is a function from unsaturated generalized quantifiers to propositions  $\langle\langle\langle e, st \rangle, \langle e, st \rangle\rangle, st \rangle$ . The following is an example to show how Partee's system works.

(29) Joey has a sister.

(30) a.  $\llbracket \mathbf{a\ sister} \rrbracket = \lambda P_{\langle e, st \rangle}. \lambda y_e. \lambda w_s. \exists x [x \text{ is a sister of } y \text{ in } w \ \& \ P(x)(w)=1]$

b.  $\llbracket \mathbf{have} \rrbracket = \lambda R_{\langle\langle e, st \rangle, \langle e, st \rangle\rangle}. \lambda w_s. [R(\text{exist})(w)=1]$  where *exist* is a 'dummy' predicate;  $\lambda z[z=z]$   
(analogous to Barwise & Cooper's (1981) analysis of the *there* sentences)

c.  $\llbracket \mathbf{Joey\ has\ a\ sister} \rrbracket = \lambda w_s. \exists x [x \text{ is a sister of Joey in } w \ \& \ \text{exist}(x)(w)=1]$   
 $= \lambda w_s. \exists x. x \text{ is a sister of Joey in } w$

Let us apply this analysis to a *-tachi* plural with a possessive verb.

(4) c. \*?Inoue-san-ni-wa kodomo-tachi-ga aru/iru.  
Inoue-honor-dat-top child-TACHI-nom exist  
'Mrs. Inoue has children.' (It asserts that Mrs. Inoue is a mother.)

(31) a.  $\llbracket \mathbf{kodomo} \rrbracket = \lambda x_e. \lambda y_e. \lambda w_s. x \text{ is a child of } y \text{ in } w.$

b.  $\llbracket \mathbf{kodomo-tachi} \rrbracket = \lambda X_e. \lambda y_e. \lambda w_s. |X| \geq 2 \ \& \ \text{the property of being a child of } y \text{ represents } X \text{ in } w.$ <sup>11</sup>

<sup>11</sup> To allow *-tachi* to combine with a relational noun, we assume that *-tachi* can be of type  $\langle\langle e, \langle e, st \rangle \rangle, \langle e, \langle e, st \rangle \rangle\rangle$ . The semantics of *-tachi* of this type is:

(i)  $\llbracket \mathbf{tachi} \rrbracket = \lambda R_{\langle e, \langle e, st \rangle \rangle}. \lambda X_e. \lambda y_e. |X| \geq 2 \ \& \ \text{the property } \lambda z_e. R(z)(y) \text{ represents } X.$

- c.  $\exists + \llbracket \text{kodomo-tachi} \rrbracket = \lambda P_{\langle e, st \rangle} . \lambda y_e . \lambda w_s . \exists X . |X| \geq 2$  & the property of being a child of  $y$  represents  $X$  in  $w$  &  $P(X)(w)=1$
- d.  $\llbracket \text{aru/iru} \rrbracket = \lambda R_{\langle \langle e, st \rangle, \langle e, st \rangle \rangle} . \lambda w_s . [R(\text{exist})(w)=1]$
- e.  $\llbracket \text{kodomo-tai-ga aru/iru} \rrbracket = \lambda y_e . \lambda w_s . \exists X . |X| \geq 2$  & the property of being a child of  $y$  represents  $X$  in  $w$  &  $\text{exist}(X)(w)=1$   
 $= \lambda y_e . \lambda w_s . \exists X . |X| \geq 2$  & the property of being a child of  $y$  represents  $X$  in  $w$ .
- f.  $\llbracket \text{Inoue-san-niwa kodomo-tai-ga aru/iru} \rrbracket$   
 $= \lambda w_s . \exists X . |X| \geq 2$  & the property of being a child of Mrs. Inoue represents  $X$  in  $w$   
 $= \lambda w_s .$  there is a plural entity  $X$  in  $w$  such that the number of the entities in  $X$  that are not children of Mrs. Inoue in  $w$  is negligible.

The result is very odd. In the ordinary *have+relational NP* structure, Mrs. Inoue's motherhood is asserted by asserting the existence of her child/children. However, the *have+CN+tachi* asserts that there is a plural entity which can contain someone who is not Mrs. Inoue's child. This is why *CN+tachi* is not suited for the *have* construction.

## 6. On Property 4: Modification and Contrast

We have so far argued that the non-uniform nature of Japanese associative plurals provides an account for the absence of the interpretations that are typically associated with English bare plurals. The core of the idea is the potential presence of exceptions in the extension of a *-tachi* plural. In this section, we will discuss the puzzling fact that those ordinarily impossible readings seem to be made available by a modifier and contrast. Our basic strategy is to find a way to connect modification and contrast with the disappearance of exceptions in the meaning of associative plurals.

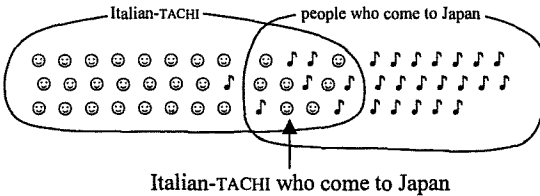
### 6.1. Why Does Modification Help?

What a typical nominal modifier does is to 'narrow down' the meaning of the noun it modifies. For instance, the extension of *teachers* cannot be smaller than that of *incompetent teachers* in any give possible world. Notice that this narrowing down function becomes less effective if the common noun has exceptions. Here is some example.

- (16) b. Nihon-ni yattekuru Italiajin-tachi-wa yooki-da  
 Japan-to come over Italian-TACHI-top cheerful-cop  
 $\vee$  Generic: 'Italians who come over to Japan are cheerful.'

For the ease of exposition, let us take the most simplistic view of modification; set-intersection. The extension of *nihon-ni yattekuru Italiajin-tachi* 'italian-tachi who come over to Japan' is the intersection of the *Italian-tachi* set and the set of the people who come over to Japan. Imagine now that in some world, the break down of the two sets is the one illustrated below.

- (32) ☺ = Italians  
 ♪ = non-Italians



Among the set of Italian-TACHI, there are 30 Italians and 7 non-Italians (with some association with the Italians). Since Italians are the overwhelming majority in this set, we can easily consider this to be an appropriate extension of *Itariajin-tachi*. Among those, 13 of them come over to Japan. It so happens that 6 among the 13 members of this set are non-Italians. In other words, Italians are no longer the clear majority of this intersected set. In general, when we use a modifier with a *CN+tachi*, we always take a risk of making the resulting set be not the extension of the *CN+tachi*. We suggest that there is a pragmatic condition for modifying a *-tachi* plural to avoid this risk. It provides that in order to modify a *CN+tachi*, the number of non-CNs must be minimized. In this sense, the meaning of an associative plural becomes closer to that of a (covertly pluralized) bare noun.

## 6.2. Why Does Contrast Help?

We believe that the role of contrast in improving associative plurals in the otherwise inappropriate environments is essentially the same: It evokes the minimization of exceptions. Consider (16c) again.

- (16) c. *Kodomo-tachi-wa itumo otona-tachi-no mane-o suru*  
 child-TACHI-top always adult-TACHI-gen imitate  
 √ Generic: 'Children always imitate adults.'

In this example, there is a sense of 'children' vs. 'adults' contrast. If *kodomo-tachi* 'child-TACHI' had some non-children (i.e., adults) and *otona-tachi* 'adult-TACHI' had some non-adults (i.e., children), this sense of contrast would become a lot weaker. This line of explanation predicts that contrast works best when the domain is partitioned into two parts which correspond to the contrasted material (e.g., children vs. adults). If not, the effect of contrast is expected to be not very strong. This prediction is borne out.

- (33) *Ongakuka-no uti-de-wa, huruutisuto(??-tachi)-ga baiorinisuto(??-tachi)-to*  
 musicians-gen among-top flutists-TACHI-nom violinists-TACHI-with  
 naka-ga warui.  
 relation-nom bad  
 'Among musicians, flutists don't get along with violinists.'

In the domain of musicians, non-flutists are not necessarily violinists, and non-violinists can be clarinetists or cellists. Therefore, contrasting flutists with violinists does not get rid of exceptions as effectively as in the previous case. That is why (33) remains awkward.

## 7. Notes on Kind-Reference

In section 2, we showed that a *-tachi* plural is not suitable for the argument of a kind-taking predicate, such as *mezurashii* 'rare'. The example is repeated below.

- (3b) Zyosei-tantei(?\*-tachi)-wa mezurashii  
 female-detective-TACHI-top rare  
 'Female private detectives are rare.'

Under our proposal, this fact itself is not surprising. A kind itself is an individual, and the question of whether it includes exceptions doesn't even arise. What is surprising is, however, that neither modification nor contrast seems to help much to elicit the kind reading of a *tachi* plural, as illustrated in (34).

- (34) a. Modification  
 Satujin-jiken-o tyoosa-suru zyosei-tantei(??-tachi)-wa mezurashii  
 murder-case-acc investigate female-detective-TACHI-top rare  
 'Female private detectives who investigate murder cases are rare.'
- b. Contrast  
 Dansei-tantei(??-tachi)-ni kurabete zyosei-tantei(??-tachi)-wa mezurashii  
 male-detectives-TACHI-dat compare female-detective-TACHI-top rare  
 'Compared to their male counterparts, female private detectives are rare.'

(34ab) show that the minimization of exceptions that worked in the generic, the possession and the intensional transitive verb constructions is not good enough for kind-reference. The relationship between a kind and a property can be considered isomorphic: For any property  $P$  and its corresponding kind  $K$ ,  $\iota x.PL(P)(x) \equiv K$  (i.e., the totality of entities that satisfy  $P$  in  $w \equiv$  The extension of  $K$  in  $w$ ). This presupposes that  $P$  is uniform. We speculate that a kind-reference requires that there be absolutely no exceptions. Even when the chance of containing exceptions becomes remote with modification and/or contrast, it is not good enough for *CN+tachi* to refer to a kind.

Alternatively, it may be possible to provide an economy-based account, assuming Chierchia's (1998) Nominal Mapping Hypothesis. Providing a full-fledged analysis along this line is beyond the scope of this paper, but the basic idea is the following. In Chierchia's theory (and also in Krifka 1995 for Chinese), a noun in the Chinese/Japanese type languages is kind-denoting as its basic type. The non-kind readings of a bare noun are derived via a finite set of semantic operations. In the example above, *zyosei-tantei* 'female detective' starts out as the kind FEMALE DETECTIVE. With *-tachi*, it becomes a function from pluralities to propositions, namely:  $\lambda Y_e. x \leq Y \ \& \ |Y| \geq 2 \ \& \ \text{FEMALE DETECTIVES}$  represents  $Y$  (see footnote 8). Let us assume that with the modifier 'who investigate murder cases', the number of exceptions is minimized, and that it practically



means the same as a property of being female detectives who investigate murder cases. To make a kind out of this property, we need to apply Chierchia's 'Down' operation (the semantic operation analogous to the denotation of a definite determiner in Romance languages). Perhaps, some economy principle bans a series of operations of this type in which what started out as a kind is brought back to a kind after those operations. We are not certain whether this idea is tenable, but it is certainly a possibility.

## 8. Closing Remarks

In this paper, we proposed that the Japanese plural morpheme *-tachi* creates a plural whose extension is non-uniform. It can include individuals who do not have the properties denoted by the common noun *-tachi* is suffixed to. The un-bare-plural-like behaviors of *-tachi* plurals come about not because they are inherently definite but rather because their non-uniformity often leads to nonsensical interpretations or interpretations weaker than those obtained by using bare nouns. A modifying expression or contrast can minimize the number of exceptions in the extension of a *-tachi* plural and make their meaning close to uniformity. That is why their presence can evoke the interpretations that are otherwise unavailable.

Our analysis also has some theoretical implications. The non-uniformity thesis is compatible with the Chierchia/Krifka hypothesis that Japanese bare nouns denote kinds, as well as with the ordinary semantics of common nouns as properties. It also presupposes that the notion of plurality exists in Japanese although it is not identical to that of the majority of languages where all plurals are uniform. One interesting consequence is that it defies the strong correlation of mass denotation and the obligatory presence of a classifier. In Chierchia (1998), it is suggested that bare nouns in the Chinese/Japanese type languages are mass-like, and that they require classifiers in order to be counted, just as English mass nouns do. Associative plurals in Japanese are, however strange their denotations might look, plurals after all. Nonetheless, it is still impossible to combine a numeral directly with a *-tachi* plural. This conclusion is in accordance with the suggestion Chung (2000) made based on Indonesian plurals. It also calls for the distinction between the syntactic and the semantic countability, as argued in Doetjens (1997) and Cheng and Sybesma (1999).

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