The Singular/Plural Contrast in Japanese: Nominal Mapping in Classifier Languages*

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1 Introduction

Japanese noun phrases are not morphologically inflected for singular/plural contrast. However, the language employs several optional plural markers. This paper argues that while Japanese lacks morphological singular/plural distinctions, the distinction is reflected semantically, as plural markers can only attach to count nouns. Additionally, the most productive plural marker, *-tati*, is found to be exclusively associative. This finding supports the nominal mapping hypothesis proposed by Chierchia (1998a, 1998b, 2010), indicating that Japanese does not serve as a counterexample to the framework.

2 Mass/Count Distinction in Japanese

Although Japanese does not exhibit a morphological singular-plural distinction, certain syntactic and semantic cues distinguish mass and count nouns. This contrast is evident in quantifier compatibility (Watanabe 2010, 2017). The adverb *hitotuhitotu* 'one by one' can cooccur with count nouns but not with mass nouns unless a coerced count reading is applied (e.g. 'bottles of water').

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(1) a. John-wa kazu ooku-no hon-o yonda.
John-TOP number many-GEN book-ACC read
'John read a large number of books.'
b. #John-wa kazu ooku-no mizu-o nonda.
John-TOP number many-GEN water-ACC drank
'John drank a large number of water.'
c. John-wa hon-o hitotuhitotu yonda.
John-TOP book-ACC 1CL1CL read
'John read books one by one.'
d. #John-wa mizu-o hitotuhitotu nonda.
John-TOP water-ACC 1CL1CL drank
'John drank water one by one.'

Certain adjectives also differentiate count nouns from mass nouns (Rothstein 2017). The adjectives *ookii* 'big' and *omoi* 'heavy' are compatible with count nouns but not mass nouns.

(2) a. Hon-ga {ookii, omoi}.
book-NOM big, heavy
'The books are {big, heavy}.'
b. #Doro-ga {ookii, omoi}.
mud-NOM big, heavy
'The mud is {big, heavy}.'

It is, then, reasonable to assume that the mass/count distinction can be found in Japanese, at least semantically. The next question to be asked is whether a genuine plural or singular morpheme can be found in Japanese. Japanese is equipped with optional markers of plurality. For some nouns, plural forms by reduplication are possible, as shown in (3a). Several plural morphemes that are attached to animate nouns are possible, as shown in (3b) (Tomioka 2021).

(3) a. yama-yama 'mountain-mountain', hito-bito 'people-people'
b. gakusei-tati 'students', gakusei-domo 'students', gakusei-gata 'students', gakusei-rentyuu 'students'

This paper focuses on the most productive morpheme *-tati*, showing that it is an associative plural (Nakanishi & Tomioka 2004, Tomioka 2021). A consequence of this paper is that Japanese does not have a genuine plural morpheme after all, and that the crosslinguistic diversity of noun phrases means Japanese is distinct from Germanic and Romance languages (Chierchia 1998a, 1998b, 2010).

3 The Optional Nature of *-tati*

The nominal mapping parameter (Chierchia 1998a, 1998b, 2010) suggests that classifier languages do not exhibit a mass/count distinction in morphology, with bare nouns functioning as mass nouns. This predicts a complementary distribution between plural markers and classifiers, because plural

morphemes and classifiers occupy the same syntactic position. Borer (2005) shows that plural markers and classifiers occupy the head of Div(ision) in Armenian, as shown below.

(4) a. Yergu had hovanoc uni-m.
two CL umbrella have-1SG
'I have two umbrellas.
b. Yergu hovanoc-ner uni-m.
two umbrella-PL have-1SG
'I have two umbrellas.'
c. *Yergu had hovanoc-ner uni-m.
two CL umbrella-PL have-1SG
'I have two umbrellas.'

The structure of Korean noun phrases closely resembles that of Japanese in that neither language requires an obligatory plural marker, and both function as classifier languages. Additionally, Korean possesses an optional plural morpheme, *-tul*. Kim and Melchin (2018) demonstrate that *-tul* does not exhibit a complementary distribution with classifiers and can cooccur with them.

(5) a. salam(-tul) ney myeng
human-PL four CL
'four people'
b. ai(-tul) sey myeng
child-PL three CL
'three children'

The Japanese plural marker *-tati* can also cooccur with classifiers, indicating that it does not exhibit a complementary distribution with them. Additionally, *-tati* applies exclusively to plural animate nouns.

(6) a. sannin-no kodomo(-tati)
3CL-GEN child(ren)
'three child(ren)'
b. kodomo(-tati)(-o) sannin(-o)
child(ren)(-ACC) 3CL(-ACC)
'three child(ren)'

To analyze the properties of the plural morpheme *-tati*, it is essential to examine number agreement in Japanese. Unlike languages with obligatory determiners, Japanese lacks a required determiner system but includes various demonstratives that frequently indicate grammatical number. The singular demonstrative *kono* functions as a default proximal demonstrative and can be used with both singular and plural nouns. When *kono* accompanies a singular noun, it is interpreted as singular, whereas it marks plurality when used with a plural noun. The demonstrative *kono* has a plural counterpart, *korera*, which is exclusively compatible with plural nouns, though the degree of ungrammaticality for mismatched cases is not always clear. As illustrated in the English translations, number agreement between demonstratives and plural noun forms is generally observed.

(7) a. kono kodomo
this child
'this child'
b. kono kodomo-tati
this child-PL
'(Lit.) this children'
c. ??korera kodomo
these child
'(Lit.) these child'
d. korera kodomo-tati
these child-PL
'(Lit.) these children'

However, number agreement between demonstratives and plural nouns is not consistently observed in Korean (Kim & Melchin 2018). Even the plural demonstratives *i-tul*, *ce-tul*, and *ku-tul* do not necessarily trigger obligatory number agreement in nouns.

(8) a. i/ce/ku sakwa
this/that/the apple
'this/that/the apple'
b. i/ce/ku sakwa-tul
this/that/the apple-PL
'these/those/the apples'
c. i-tul/ce-tul/ku-tul sakwa
this-PL/that-PL/the-PL apple
'these/those/the apples'
d. i-tul/ce-tul/ku-tul sakwa-tul
this-PL/that-PL/the-PL apple-PL
'these/those/the apples'

The Korean *-tul* cannot intervene in complex noun phrases; it needs to be right-adjoined to a whole noun (Kim & Melchin 2018). This indicates that *-tul* is attached to NP, not N.

(9) a. namu-kkun
tree-specialist
'lumberjack(s)'
b. *namu-tul-kkun
tree-PL-specialist
'(Intended) lumberjacks'

Japanese *-tati* is similar in this regard.

(10) a. dansi(*-tati) gakusei(-tati)
male-PL student-PL
'(Intended) male student(s)'
b. otoko(*-tati) oya(-tati)
male-PL parent-PL
'(Intended) father(s)'

Kurafuji (2004) proposes that plural nouns marked by *-tati* receive a definite interpretation. Kim and Melchin (2018) point out that *-tul* tends to be definite, but the definite interpretation is not obligatory. They demonstrate that *tul*-marked nouns can appear in existential constructions, function as predicates, combine with *wh*-phrases, and serve as antecedents for sluiced *wh*-phrases. Tomioka (2021) observes that *-tati* is likewise not necessarily definite, as *-tati* plurals can also function as antecedents for sluicing.

(11) Inoue-sensei-no ie-ni kodomo-tati-ga atumatta-to-kiita-kedo,
Inoue-Prof.-GEN house-at child-PL-NOM gathered-COMP-heard-while
watasi-wa dono kodomo-tati-ka sira-nai.
I-TOP which child-PL-Q know-NEG
'I heard that (some) children gathered at Professor Inoue's, but I don't know which children.'

-tati plurals can take narrow scope (ibid.). This is not expected if *-tati* plurals are definite, because it would be expected to have wider scope, contrary to fact.

(12) a. Kono kooen-de-wa itumo kodomo-tati-ga asonde-iru.
this park-LOC-TOP always child-PL-NOM play-PROG
'This park, there are always (some potentially different) children playing in it.'
b. Yon-sai-zi-tati-no i-nai yootien
four-year.old-child-PL-GEN exist-NEG kindergarten
'a/the kindergarten which has no four-year-old children'
b. Sono-seezika-wa syoogaisya-tati-ni ai-tagatte-iru.
that-politician-TOP disabled.person-PL-DAT meet-want-PROG
'The politician wants to meet citizens with disabilities.'

In languages where the singular-plural contrast is obligatorily marked, plural morphemes are generally not attached to proper nouns, except in limited cases (e.g. *Smiths* to indicate 'the Smith family'). However, the Japanese plural marker *-tati* can be attached to a proper noun, yielding either an additive reading ('Taro and other Taros') or an associative reading ('a group represented by Taro').

(13) Taro-tati-ga asondeiru.
Taro-PL-NOM be.playing
'Some people whose names are Taro are playing / A group represented by Taro is playing.'

To summarize, the plural marker *-tati* selects an animate count noun. Since it selects a noun, it cannot be a pure adjunct. If it were an adjunct, it could be left-adjoined to a host noun, contrary to fact, because Japanese is a head final language. It also selects a whole NP, not a head noun. Hence, it is expected that it occupies an (optional) functional head.

4 Proposal

It has been established that *-tati* receives an associative reading; however, it is also important to note that *-tati* can yield an additive plural interpretation. Japanese, as a classifier language, allows classifier phrases to relate to a host noun in multiple ways (Watanabe 2006). First, the numeral classifier precedes a host noun by incorporating the linker *-no*, as demonstrated in (14a). Second, the numeral classifier can follow a host noun, as in (14b–c). A case particle may either attach to a host noun or to a numeral classifier. The interpretation varies depending on word order. The additive plural interpretation is available in (14a), where there are three students and three individuals named 'John'; however, the associative plural interpretation does not seem to exist. Thus, it is not possible to assume that a group of three is being represented by a single student or John. The morpheme *-tati* remains optional in this context. Both additive and associative readings are possible in (14b). Omitting *-tati* eliminates the associative reading, as illustrated in (14c), and removing it from *John* is not grammatically viable.

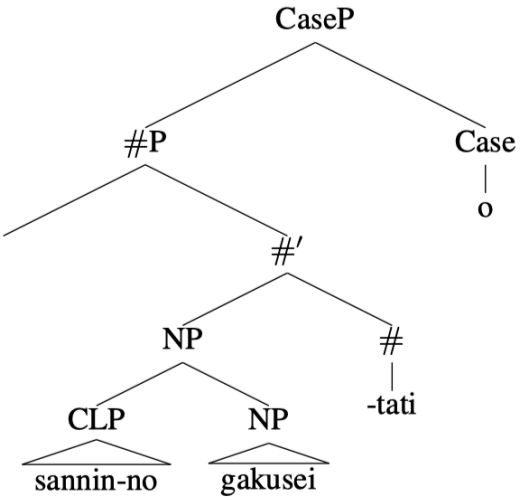
(14) a. sannin-no gakusei(-tati), sannin-no John(-tati)
3CL-GEN student-PL 3CL-GEN John-PL
'three students, three Johns (three persons named John)' (#associative, √additive)

b. gakusei-tati(-o) sannin(-o), John-tati(-o) sannin(-o)
student-PL-ACC 3CL-ACC John-PL-ACC 3CL-ACC
'three students/students and some other(s), three Johns/John and the other two'
(√associative, √additive)

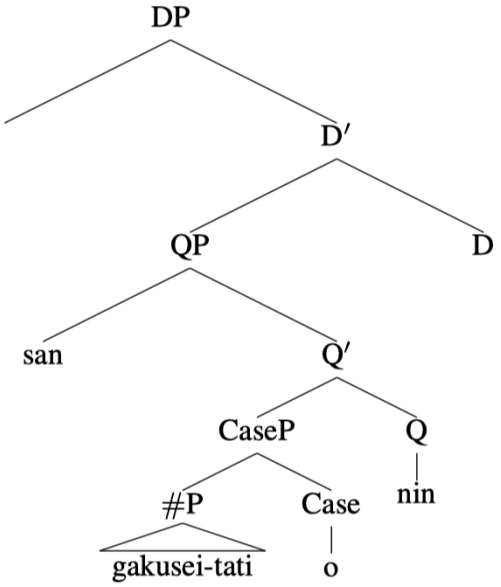
c. gakusei(-o) sannin, #John-o sannin
student-NOM 3CL John-ACC 3CL
'three students, (intended) three Johns' (#associative, √additive)

Two distinct interpretations of *-tati* have been proposed (Hirose 2004, Munakata 2012, Ueda 2014). According to these studies, the plural *-tati* occupies the Number head, while the associative *-tati* is positioned in the D head. However, there is no compelling reason for *-tati* to occupy D, as definiteness is not a required feature of *-tati*. This paper argues that there is only a single instance of *-tati*, which occupies the head of #. Since *-tati* is a member of #, it carries a number feature that selects count nouns. The selectional restriction leads to the mass/count distinction in Japanese noun phrases. Following Watanabe (2006), I assume multiple functional projections, and in line with Saito et al. (2008) and Ueda (2014), I propose that a numeral and a classifier form a constituent that is adjoined to NP in (15a). The plural morpheme *-tati* takes the NP *sannin-no gakusei* as its complement. The structure represented in (15a) corresponds to the examples in (14a). The CaseP *gakusei-tati o* in (15b) will move to the Spec position of DP, deriving the examples in (14b), where the case particle *-o* follows the noun. In (15c), #P *gakusei-tati* will move to Spec of CaseP, deriving the examples in (14b), where the case particle follows the numeral classifier.

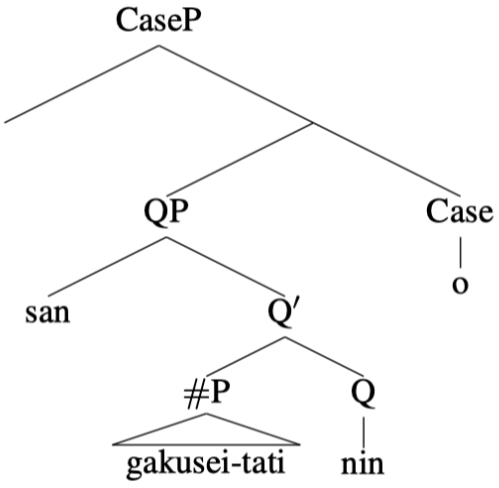
(15) a.


CaseP
#P
Case
o
#′
NP
#
-tati
CLP
NP
sannin-no
gakusei

b.


DP
D′
QP
D
san
Q′
CaseP
Q
nin
#P
Case
gakusei-tati
o

c.


CaseP
QP
Case
o
san
Q′
#P
Q
gakusei-tati
nin

Following Nakanishi and Tomioka (2004) and Tomioka (2021), I argue that *-tati* is exclusively associative. Therefore, additive readings are a special case of associative readings and do not require separate treatment. I further claim that the additive-like interpretations in (14a) are derived by *-tati* that takes the NP including the CLP *sannin-no* as its complement. Unlike Kratzer (2009), whose proposal is adopted by Tatsumi (2017) and Nakanishi (2020), I do not assume a group feature, as distributive readings are readily available for *-tati* plurals, as illustrated in (16a). The idiomatic phrase *hitorihitori* obligatorily generates a distributive reading.

The morpheme *-tati* can apply to either an individual in (16b–c) or a property of individuals in (16d–e) to yield a plural property of individuals. Through type shifting, noun phrases followed by *-tati* denote a plural individual. I assume that in (16f), the proper noun can be a property of individuals (Izumi 2016). When a numeral and a classifier phrase serve as (part of) the complement of *-tati* (16f–h), the result is an additive plural reading, as exemplified in (14a). This is because the group of students in (14a) is represented by three students and the group of Johns is represented by three Johns respectively. Otherwise, associative readings emerge. The so-called additive plural reading in (14b) is simply a special case of associative readings, in which the associated entities happen to all be students or individuals named John (pseudo-additive readings are possible for third person pronouns and common nouns, as noted by Nakanishi 2020). Consequently, Y in (16i) may include non-John elements, and Y in (16j) may include non-students, hence the ambiguity represented in (14b). This analysis provides an explanation for the semantics of *-tati* plurals. Since *-tati* is inherently associative, only the additive reading is possible in *gakusei(-o) sannin* in (14c). A proper name like *John* without *-tati* is semantically anomalous in (14c), because the numeral classifier *sannin* is normally incompatible with the proper name. For some people, *John-o sannin* 'three Johns' sounds acceptable because of the coercion from a proper name to a property of individuals for *John*.

(16) a. Gakusei-tati-ga {sannin, hitorihitori} zikosyookai sita.
student-PL-NOM 3CL, 1CL1CL self.introduction did
'(Three) students introduced themselves (one by one).'

b. $[\![\text{-}tati]\!]^{c,w} = \in \#<e,<et>> = \lambda x_e.\lambda Y_e.$ x < Y ∧ x represents Y ι: < e, t> → < e> λP ιP(x)

c. $[\![John\text{-}tati]\!]^{c,w} = \lambda Y_e.$ John < Y ∧ John represents Y < e, t>
$\iota Y_e.$ John < Y ∧ John represents Y < e>

d. $[\![\text{-}tati]\!]c,w \in \#<<e,t>,<e,t>> = \lambda P<e,t>.\lambda Ye.\exists x[P(x) \wedge x < Y \wedge P$ represents Y]

e. $[\![gakusei\text{-}tati]\!]^{c,w} = \lambda Y_e.\exists x[$student(x) ∧ x < Y ∧ student′ represents Y] < e, t>, by applying the iota operator, $\iota Y_e.\exists x[$student(x) ∧ x < Y ∧ student′ represents Y] <e>
Alternatively, by applying the ∃-operator < e, t>→ $GQ_{<<e,t>,t>}$
∃X = λP∃y[X(y) ∧ P(y)] λP.∃Y[P(Y) < Y ∧ student′ represents Y] <<e, t>,t>

f. $[\![sannin\text{-}no\text{-}John\text{+}\text{-}tati]\!]^{c,w} = \iota Y_e.\exists x[$John′(x) ∧ #(x) = 3 ∧ x < Y ∧ John′ represents Y]

g. $[\![sannin\text{-}no\text{-}gakusei\text{+}\text{-}tati]\!]^{c,w} = \iota Y_e.\exists x[$student(x) ∧ #(x) = 3 ∧ x < Y ∧ student′ represents Y]

h. $[\![sannin\text{-}no\text{-}gakusei]\!]^{c,w} = \exists x[$student(x) ∧ #(x) = 3]

i. $[\![John\text{-}tati(\text{-}o)\ sannin(\text{-}o)]\!]^{c,w} = [\![John\text{-}tati]\!]^{c,w}[\![sannin]\!]^{c,w} = \iota Y_e.\exists x[$John(x) ∧ x < Y ∧ John′ represents Y] ∧ #(Y) = 3]

j. $[[\textit{gakusei-tati}(\textit{-o})\ \textit{sannin}(\textit{-o})]]^{c,w} = [[\textit{gakusei-tati}]]^{c,w}\ [[\textit{sannin}]]^{c,w}$
$= \iota Y_e.\exists x[\text{student}(x) \wedge x < Y \wedge \text{student}' \text{ represents } Y] \wedge \#(Y) = 3]$

k. $[[\textit{gakusei}(\textit{-o})\ \textit{sannin}(\textit{-o})]]^{c,w} = [[\textit{gakusei}]]^{c,w}\ [[\textit{sannin}]]^{c,w}$
$= \exists x[\text{student}(x) \wedge \#(x) = 3]$

5 Conclusion

This study supports the claim that Japanese does not possess a genuine plural morpheme and that *-tati* is best analyzed as an associative marker. This finding aligns with the nominal mapping hypothesis (Chierchia 1998a, 1998b, 2010), as Japanese, like other classifier languages, does not rely on a morphological singular/plural contrast. However, it is necessary to grant the semantic mass/count distinction. Future research should explore the implications of this analysis for reduplicative plural forms, and crosslinguistic comparisons with other classifier languages, such as Korean, Vietnamese, and Indonesian (Chung 2000).

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