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Exploring the Noun-classifier Continuum in Japanese

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Exploring the Noun-classifier Continuum in Japanese

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Abstract

This paper discusses the syntactic and semantic properties of Japanese numeral classifiers identical to their nominal counterparts, which we call "nouny classifiers (NCs)," and suggests that there exists a gradience between classifiers and nouns by examining various aspects of the NCs compared to typical CLs and nouns.

1. Introduction

This paper discusses the syntactic and semantic properties of the Japanese numeral classifiers identical to their nominal counterparts, and suggests that there exists a gradience between classifiers and nouns.

Japanese has various counters (cf. Aikhenvald, 2000; Downy, 1996; Iida, 1999), called *josuushi* in Japanese, including so-called "numeral classifiers (Aikhenvald, 2000)," and nouns are not directly modified by numerals but must be quantified by counters, as in (1).

(1) a. *ni-{inu/ kuruma} (Japanese)[2]
2-dog/ car
'two dogs/ cars'

b. ni-hiki-no inu/ ni-dai-no kuruma
2-CL-GEN dog/ 2-CL-GEN car
'two dogs/ cars'

The counters are morphemes used together with numerals, and each of them has semantic restrictions on its objects. For example, *-hiki* requires its objects to be animal. Typical numeral classifiers in Japanese are suffixes that must be used with numerals, but there also exist the classifiers that are morphologically identical to their nominal counterparts, which we call "nouny classifiers," as shown in (2).

(2) a. kare-wa mit-tu-no rei-o age-ta. (Noun)
3SG-TO 3-CL-GEN example-ACC give-PST
"He gave three examples."

b. kare-wa san-rei-no syasin-o mise-ta. (Nouny classifier)
3SG-TOP 3-NC(example)-GEN pictures-ACC show-PST

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[2] The abbreviations used in this paper are as follows: ACC = accusative case, CL = classifier, D = dimension, GEN = genitive case, LOC = locative case, NC = nouny classifier, NOM = nominative case, phys = physical objects, PRES = present tense, PST = past tense, TOP = topic marker

"(lit.) He showed the pictures of three examples."

We explore the properties of NCs in this paper, because only few attempts have so far been made at NCs (Narita, 1990; Tojo, 2012) despite their importance. It is hard to distinguish NCs from nouns, because some of the NCs have different meanings from their nominal counterparts, e.g. *-kata* 'shoulder' (a CL for crabs), but others do not. Though several definitions of CLs are suggested in the previous studies (Matsumoto, 1991; Iida, 1999; Kageyama et al., 2011; Mano & Yonezawa, 2013), this paper shows that all the definitions have difficulty distinguishing CLs from nouns because they form a continuum.

2. Previous studies

2.1. Classifiers and measure specifiers

Some categorizations of Japanese counters have been proposed (cf. Matsumoto, 1991, 1993; Iida, 1999; Nishimitsu & Mizuguchi, 2004; Kageyama et al., 2011). This paper adopts Kageyama et al.'s categorization, which divides counters into "numeral classifiers" and "measure specifiers" according to their functions[3]. Numeral classifiers ("classifiers," henceforth) classify and count limited and specific groups of nouns, which means their function is "categorization" of objects. On the other hand, measure specifiers can be used as measures for a wide variety of nouns, and their function is considered to be "individuation" of objects. Examples of both types are shown in (3-4) respectively (the simplified semantic restriction of each classifier is in a square bracket[4]). This study focuses on the classifiers, because they are related more deeply to their base nouns compared to the measure specifiers.

(3) a. Numeral classifiers: *-kai* 回 [events], *-nin* 人 [human], *-hiki* 匹 [animals], *-ko* 個 [3D phys], *-mai* 枚 [2D phys], *-dai* 台 [machines], *-ki* 機[planes], *-ki* 基 [placed artifacts]

b. san-nin-no gakusei
3-CL[human]-GEN student
'three student'

(4) a. Measure specifiers: *-taba* 束 'bundle,' *-hai* 杯 'cup,' *-hako* 箱 'box,' *-kire* 切れ 'slice,' *-kiro* キロ 'kilogram'

b. san-kire-no pan
3-slice-GEN bread
'three slices of bread'

While typical numeral classifiers in Japanese are suffixes that cannot appear without numerals, i.e. bound morphemes, as shown in (5), there are some classifiers that have different meanings from

[3] Bisang (1993) suggests four functions of classifiers: individuation, categorization, referentializaion, and relationalization.
[4] See Matsumoto (1991, 1993), Downing (1996), and Iida (1999), for more information on the semantic restrictions.

their nominal counterparts maintaining the same forms. For example, *-hon* 本 (CL for one dimensional long objects[5]) in (6b) no longer has any meaning related to "book (6a)." This means that *-hon* as a classifier seems to be a bound morpheme.

(5) *(ni-)dai-no kuruma-ga hasit-te iru.
2-CL-GEN car-NOM run-CONJ be.PRES
"(Two) cars are running."

(6) a. tukue-no ue-ni hon-ga aru.
desk-GEN up-LOC book-NOM be.PRES
"There is a book on the table."

b. pen-ga *(ni-)hon aru.
pen-NOM 2-CL be.PRES
"There are two pens."

2.2. Nouny classifiers

As shown in 2.1, typical classifiers (CLs) in Japanese are suffixes that cannot appear without numerals. There seem to be, however, some "classifiers" that are morphologically identical to their nominal counterparts, which we call "nouny classifiers (NCs, henceforth)," as shown in (7). They seem to be free morphemes.

(7) *kyoku* 曲 'music' [songs], *rei* 例 'example' [examples], *daigaku* 大学 'university' [universities]

There are only a few attempts on NCs despite their importance, however. Narita (1990) shows the following properties of NCs:

1. Most of NCs are Sino-Japanese.
2. NCs usually quantify the objects in the following structures: numeral-NC-GEN NP, as in (2b).
3. They appear with limited numerals.
4. Most of the base nouns in NCs can be counted only by the general classifier for inanimate objects, *-tsu* つ.

Kim (1995) and Amazaki (2004) point out that NCs ("Type-QNs" in their term) tend to show specific meanings different from the original nouns, e.g. *hito-me* (1-eye) means 'one glance' but not 'one eye.' Tojo (2012) is a corpus study of NCs, which shows that there are two types of NCs: "quasi-CLs 準助数詞" that are countable, and "pseudo-CLs 疑似助数詞" that have a limitation on

[5] *-Hon* is a shape classifier for inanimate one-dimensional physical objects and well known to have several extended meanings, counting other than physical objects: for example, hits (baseball), movies, letters, phone calls, etc. See Lakoff (1987), Matsumoto (1993), and Iida (1999).

numerals. These findings suggest that each NC is on the various stages of its grammaticalization to CL.

2.3. Remaining issues

There are mainly two remaining issues. The first one is concerning the definition of CLs in Japanese; it is difficult to distinguish CLs from nouns in Japanese. One reason is that some CLs have different meanings from their nominal counterparts as seen in (6), but others do not as in (2). Several definitions of CLs have been suggested in the previous studies (Matsumoto, 1991; Iida, 1999; Kageyama et al., 2011; Mano & Yonezawa, 2013), but there is no consensus about the definition. There are five properties suggested to be characteristics of the CLs as summarized in Table 1, three of which will be examined in the following section.

Table 1. Differences between the definitions of Japanese CLs among the previous studies

previous studies / properties	Matsumoto (1991)	Iida (1999)	Kageyama et al. (2011)	Mano & Yone-zawa (2013)
1. Suffixes	✓	✓	✓	—
2. Co-occur with the objects	✓	—	—	✓
3. Attached to numerals	✓	✓	✓	✓
4. Take individuated objects	✓	—	—	—
5. Can be used in "*nan*-CL (WH-CL)?" question, meaning "how many?"	—	—	✓	✓

The second issue is that the properties of NCs have yet to be revealed in the previous studies (See section 2.2). Though most previous studies require CLs to be suffixes (property 1 in Table 1), their examples include some NCs, such as the ones in (8) that are also used as nouns. This is problematic and indicates that the boundary between nouns and CLs remains fuzzy. We believe that the study on NCs will shed a new light on these problems. This paper will suggest that there exists a gradience between classifiers and nouns, which leads to a difficulty distinguishing CLs from nouns in Japanese.

(8) *-tsubu* 粒 'grain (small phys),' *-kyoku* 曲 'music,' *-hako* 箱 'box,' *-rei* 例 'examples'

3. Examiation of NCs

3.1. Data

We search candidates for NCs in BCCWJ[6] with the "*Chuunagon*" search system. The search conditions are shown in (9), wherein the numerals are limited to 3, 4, and 5. (10) is an example of the

[6] BCCWJ is a Balanced Corpus of Contemporary Written Japanese of one hundred million words of contemporary written Japanese, which is accessible on the following website: http://www.ninjal.ac.jp/corpus_center/bccwj/

obtained data from the search. The underlined common noun is considered to be a possible candidate for NC, because it co-occurs with a numeral.

(9) Numerals (3, 4, 5) + Common nouns + *-no*(GEN) + Nouns

(10) san-tubu-no rakkyoo (BCCWJ)
3-NC(grain)-GEN rakkyo
'three rakkyos'

Then, the common nouns that follow numerals are examined whether they satisfy the following two requisite conditions for CLs shown in (11). These requirements are suggested to be the characteristics of CLs in more than one previous study, as shown in Table 1. As a result, the data was limited to the nouns that follow a numeral and co-occur with modifying object noun.

(11) a. Co-occur with the object nouns (=2 in Table 1)
b. Attached to numerals (=3)

(12) shows possible NCs that satisfy those requirements. These NCs will be examined their morpho-syntactic and semantic properties in the following sections.

(12) *kyoku* 曲 'music,' *rei* 例 'example,' *daigaku* 大学 'university,' *tubu* 粒 'grain,' *geemu* ゲーム 'game,' *anda* 安打 'hit,' *moji* 文字 'letter,' *eki* 駅 'station,'…

3.2. Semantic relations

The first property is modifications relation between numerals and NCs. It should be noted that several types of semantic relations were observed between them as shown below, while CLs do not show such variations, i.e. they are limited to the 1st type.

(A) Semantic relations between the numeral and the NC

1. number of object nouns: e.g. *san-daigaku* 三大学 (3-university) 'three universities'
   cf. *san-mai* 三枚 (3-CL [2D phys]) 'three sheets'
2. ordinal number: e.g. *san-gai* 三階 (3-floor) 'the 3rd floor'
3. number of arguments (limited to event nominals): e.g. *san-rendou* 三連動 (3-continuous.movement) 'three things moving continuously'
4. number of resultants (limited to event nominals): *san-bunretu* 三分裂 (3-division) 'divided into three'

We argue that this deeply relates to the referetiality of NCs based on the fact that usual noun-noun compounds show various modification relations between them. Some NCs allow these variations, because they still have functions and meanings of the base nouns.

3.3. Countability

Then, we will examine the countability of NCs through the following phenomena.

(B) **"*Nan*-NC?" (what-NC)**: Does "*Nan*+NC?" mean a question asking the number of the object, i.e. "How many?"? (cf. Mano & Yonezawa 2013)

(C) **Limitation of numerals**: Can they co-occur with any numerals?

(D) **Counting up**: Can they be counted up?

(E) **Indefinite numbers**: Can they be modified by indefinite numbers, like "two or three?"

First, with regard to (B), it should be noted that Japanese has two phonological forms for the morpheme, 何 meaning "what": *nan-* and *nani-*. *Nan-* combined with a CL is used to make a question asking the number of the object, as in (13a), while *nani-* modifies nouns, meaning "What (nouns)?" as seen in (13b) (cf. Kageyama et al., 2011). It is interesting that some NCs can make a question when combined with *nan-* as in (14a), but others cannot, as seen in (14b).

(13) a. Nan-/*Nani-mai? (CL)
WH-CL[2D phys]
"(lit.) How many/*what sheet(s)?"

b. Nani-/*Nan-sensei? (Noun)
WH-teacher
"(lit.) What/*How many teacher(s)?"

(14) a. Nan-/ Nani-daigaku? (NC)
WH-university
"How many/What university(es)?"

b. Nani-/??Nan-gakkoo? (NC)
WH-school
"What/??How many school(s)?"

Secondly, we examine a (C) limitation of numerals that co-occur with NCs. Most CLs can be used with any numerals[7] in Japanese, but this is not always true to NCs, as shown in (15).

(15) a. *san-eki* (3-station), *hyaku-eki* (100-station) (NC)
b. *san-giin* (3-assembly.member), **hyaku-giin* (100-assembly.member) (NC)

Their differences in counting function are also observed in other syntactic behaviors, as in (16-17). Some NCs, as well as CLs (18), can be counted up and co-occur with indefinite numbers as in (16-17a), but others cannot (16-17b).

(16) a. iti-rei, ni-rei, san-rei, ... (NC)
1-example 2-example 3-example
"One example, two examples, three examples, …"

b. *iti-giin, ni-giin, san-giin , ... (NC)
1-assembly.member 2-a.m. 3-a.m.
"One assembly member, two assembly members, three assembly members, …"

[7] Some CLs require limited numerals of Japanese reading. See Iida (1999).

(17) a. ni-, san-rei (NC)
2- 3-example
'two or three examples'

b. *ni-, san-giin (NC)
2- 3-assembly.member
'two or three assembly members'

(18) a. iti-mai, ni-mai, san-mai, … (CL)
1-CL[2D phys] 2-CL 3-CL
"One sheet, two sheets, three sheet, …"

b. ni-, san-mai (CL)
2- 3-CL[2D phys]
'two or three sheets'

3.4. Referentiality

As described in 2.1, CLs classify and count limited and specific groups of nouns, which means that they modify the object nouns, as seen in (19). NCs, however, do not always co-occur with their objects as seen in (20b)[8] (cf. Mano and Yonezawa, 2013).

(F) NP modification: Can they co-occur with their objects?

(19) san-mai-no sara (CL)
3-CL[2D phys]-GEN plate
'three plates'

(20) a. san-rei-no syasin (NC)
3-NC(example)-GEN picture
'three pictures/ #pictures of three examples'

b. *san-giin-no kokkai-giin (NC)
3-NC(assembly.member)-GEN Diet-assembly.member
'three Diet members'

This deeply relates to the referentiality of NCs. We assume that when the NCs possess concrete referential meanings, they have difficulty to count other objects as classifiers. On the other hand, if the one's meaning is abstracted, it easily has a function to count other objects. We, therefore, examine whether each NC can co-occur and count their object nouns or not.

3.5. Behavioral properties of NCs

All the NCs obtained from the data were examined their behaviors focusing on the six phenomena explained above, and the results are summarized in Table 1. This table clearly shows that some NCs behave more like CLs, but some are more similar to nouns. We will refer to the NCs close to typical CLs as "typical NCs" and the ones similar to nouns as "peripheral NCs."

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[8] It is possible to count the object noun, *kokkai-giin*, if we use a CL instead.

(i) san-nin-no kokkai-giin (cf. (20b))
3-CL[human]-GEN Diet-assembly.member
'three Diet members'

Table 1. Behaviors of NCs

phenomena / Part of Speech and examples		Sem.Rel.	[+countable]				[-refer.]
		A	B	C	D	E	F
CLs	*-kai* 回 [events], *-nin* 人 [humans], *-hiki* 匹 [animals], *-mai* 枚 [2D phys], *-ko* 個 [3D phys]	✓1	✓	✓	✓	✓	✓
Typical NCs	*rei* 例 'example,' *dan* 段 'step,' *tsubu* 粒 (small phys), *kabu* 株 'root'[9]	✓1	✓	✓	✓	✓	✓
⇕	*daigaku* 大学 'university,' *ginkou* 銀行 'bank,' *keiyaku* 契約 'contract'	✓1	✓	✓	✓	✓	#
⇕	*kai* 階 'floor,' *rui* 塁 'base'	*2	✓	✓	✓	✓	*
⇕	*geemu* ゲーム 'game,' *kazoku* 家族 'family,' *sakuhin* 作品 'creation'	✓1	✓	✓	✓	*	*
⇕	*giin* 議員 'assenbly member,' *kyoodai* 兄弟 'brother'	✓1	✓	*	✓	*	*
⇕	*bunretsu* 分裂 'division,' *renketsu* 連結 'interlink'	* 3, 4	✓	*	✓	*	*
Periph-eral NCs	*bijin* 美人 'beautiful woman'	✓1	*	*	*	*	*
Nouns	*gakkoo* 学校 'school'…	* *numeral	*	*	*	*	*

4. Discussion and Conclusions

As we showed in the previous section, several types of semantic relations are observed between numerals and peripheral NCs just like in "noun-noun compounds," while typical NCs do not show such variation like CLs (See 3.2.). Peripheral NCs tend not to co-occur with their objects, especially when they appear in the same forms, as seen in (21a). This is also pointed out by Narita (1990). We suggest that peripheral NCs still have lexical information as nouns, in other words they are more referential than typical NCs and CLs.

(21) a. ??san-<u>daigaku</u>-no <u>daigaku</u>
3-NC(university)-GEN university
'three universities'

b. san-daigaku-no tokusyokuaru daigaku (Narita 1990)
3-NC-GEN distinctive university
'three distinctive universities'

[9] It should be noted that the NCs in this cell are considered to be CLs in some of the previous studies (cf. Iida, 1999; Mano and Yonezawa, 2013).

Table 1 also shows that some peripheral NCs, notably the ones expressing "roles," such as *-giin* 議員 'assembly member,' occur only with limited numerals, while typical NCs do not show such restriction. This suggests that typical NCs are gaining counting function like CLs, but not peripheral NCs.

These facts suggest that there is a continuum from nouns to classifiers in Japanese, as shown in Figure 1. NCs are in the process of grammaticalization from nouns to CLs, losing the referential meanings as nouns and gaining function to count objects, as shown in Figure 1.

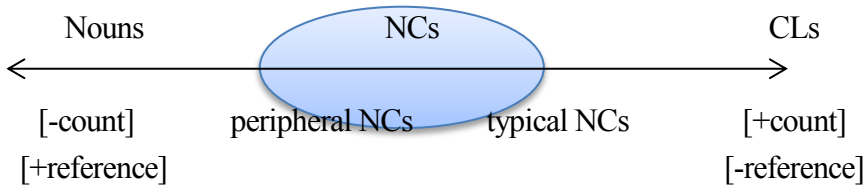

Figure 1. The Noun-Classifier Continuum in Japanese

It needs further investigation, however, because we examined limited properties of NCs and the result show the common characteristics of a linguistic category. Further research is necessary to explore the grammaticalization process of NCs to CLs.

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