

# Some Notes on Atomicity and Distributivity in Japanese

Kenji Yokota

College of Industrial Technology, Nihon University, Japan

E-mail: [yokota.kenji@nihon-u.ac.jp](mailto:yokota.kenji@nihon-u.ac.jp)

Received: Nov. 2, 2017    Accepted: Nov. 29, 2017    Published: December 20, 2017

doi:10.5296/ijl.v9i6.12338    URL: <https://doi.org/10.5296/ijl.v9i6.12338>

## Abstract

We re-examine the semantic relation between atomicity and distributivity, which are considered relevant to the floating numeral quantifier construction (FNQ) in Japanese. It is shown that FNQ interpretation, distributive or non-distributive, may be to a large extent determined by pragmatic factors (including intonation) and real world knowledge shared by the speaker and hearer, rather than syntactic factors alone. This paper attempts the following three things: (i) it claims that there is a particular FNQ construction in Japanese, which is “NP-related” (unlike the normal FNQ construction which gives rise to a distributive reading, which is “VP-related”). (ii) It claims that this particular construction gives rise to a special focus reading. (iii) It offers a semantic/pragmatic account of this non-distributive reading.

**Keywords:** atomicity, (non-)distributive reading, floating numeral quantifier, Japanese

## 1. Introduction

This paper addresses the fundamental question as to what the contribution of the semantics of the floating numeral quantifier (FNQ) really is. Previous studies including Gunji and Hasida (1998), Kobuchi (2003, 2007), and Nakanishi (2004, 2007, 2008) need to be modified before they are able to incorporate data like (1) and (2). (Note that we consider NP-related FNQs often show general deaccenting phenomena such as downstep or deaccenting effects. This paper takes a closer look at the nature of FNQs about which there is still room for argument in the literature (see, e.g., Kobuchi 2003, 2007, and Nakanishi 2004, 2007, 2008). Our claim is that the assumption is valid that Japanese FNQs behave as either quantificational determiners or quantificational adverbs (Yokota 2014).

(1) **Gakusei ga** (//) *go-nin* tsukue o mochiageta.

student Nom 5-Cl desk Acc lifted

(i) ‘Five (of the) students lifted a desk (individually).’ [**Distributive reading**]

(ii) ‘Five students lifted a desk (together)’ [**Non-distributive reading**]

(Nakanishi 2007, 2008)

(2) a. **Gakusei ga** kinoo *san-nin* // Peter o koroshita.

student Nom yesterday 3-Cl Peter Acc killed

‘Three students (as a group) killed Peter yesterday.’

(Nakanishi 2007: 53)

b. **Otokonoko ga** kinoo *san-nin* isshoni booto o tsukut-ta.

boy Nom yesterday 3-Cl together boat Acc make-Past

‘Three boys made a toy boat together yesterday.’ (Nakanishi 2007: 58)

The above examples tell us that it is possible for the FNQ to have a non-distributive interpretation since the entities denoted by the FNQ are considered as an established group, though a distributive reading is also available for (1). In accounting for these interpretive effects, there seems not much to be obtained by viewing FNQs simply as VP-adverbs.

## 2. NP-related FNQ readings

To gain a handle on the semantic variance observed in the FNQ construction, we suggest that the two distinct meanings of FNQs (distributive and non-distributive) can be compared to restrictive and non-restrictive modifiers. In particular, re-evaluation of the NP-related FNQ from this perspective tells us that such an FNQ is primarily discourse-linked to its nominal status, rather than to its verbal status. In light of the assumption that an FNQ’s occurrence in float position localizes its interpretation, the FNQ’s association with the subject noun would

parallel that of a pronoun and its antecedent.<sup>1</sup> A simple (but plausible) explanation for this is that FNQs (especially NP-related FNQs) have almost the same status – as nominals. From this perspective, the FNQ phrase (i.e., the subject noun and its associated FNQ) is co-referential. In other words, they can refer to the same ‘piece of reality’ (Leech 1981: 12). The obvious candidate for such a seemingly non-quantificational interpretation is a kind of referring expression (e.g., anaphoric pronoun). More specifically, a given FNQ is construed as something like a property expression in non-focus position (though it is still a quantifier), but is changed to a full-fledged quantifier in the focus position (unmarkedly, in the verbal domain). We will particularly characterize the NP-related FNQ interpretation as exhibiting the same semantic/pragmatic properties that are typical of pronouns or definite description, where the FNQ informationally represents non-focus (e.g., topic, background) rather than focus. It then comes as no surprise that we may encounter the NP-related FNQ reading.

Given that processing ambiguity is systematic and general in FNQ sentences in Japanese, we can say that the ambiguity is likely to be resolved by contextual factors, which often accompany particular intonation contours (in relation to particular contexts) (Steedman 2000a, b). Assuredly, pitch accents regularly signal that the referent of a given constituent is new, informative or salient in the context. However, pitch accents may also signal something else – for instance, that the speaker attaches special importance to a given constituent or wishes to highlight it as new. This is the underlying assumption for the uses of the NP-related FNQs.

It is worth noting that the prosodic data obviously show that the sentence has a substantial pause between the subject NP and the following FNQ in the FNQ construction like (1). It is considered an NP-related FNQ, since the FNQ does not bear a new significant (high) pitch range. In order to really prove that a sentence with this pitch contour can be interpreted with non-distributive reading, it is useful to see if some collective predicate can sit here. Let us examine the following examples. (Words written in capital are focused.)

(3) a. *Context*: I heard that (six) members of the prime minister’s inner circle have made a radical move. But exactly what was it that they did?

Shushoo ni            chikakat ta    giin ga                            roku-nin // X-TTE IU SEITOO o  
 prime minister to   close past    congressmen Nom   6-Cl                    X-that say pol.party Acc  
 tachiagechattandesu-yo.

founded-Prt

‘Six congressmen of the prime minister’s inner circle have founded the POLITICAL PARTY CALLED X.’

Here, the predicate is ‘found a political party called X’. In this case, the founding of a particular political party is a collective action by the six people as a group. Specifically, it is not the case that each of the six people has individually founded this party. ((3) a) is

---

<sup>1</sup> Pronouns represent familiar referents. Pronouns are anaphorically related to something already in the discourse and therefore cannot convey new information (Erteschik-Shir 1997, 2007).

well-formed under this reading. Next, consider the FNQ construction in which the numeral has focus. We will change the direct object slightly so that the sentence sounds more natural.

- (3) b. *Context:* I heard that some congressmen have founded the political party called X.  
But how many?

# Shushoo ni chikakat ta giin ga // *ROKU-nin* sono seitoo o  
p.m. to close-past congressmen Nom 6-Cl the pol.party Acc  
tachiagechattandesu-yo.  
founded-Prt

‘SIX congressmen of the prime minister’s inner circle have founded the political party.’

Here, the sentence sounds awkward (indicated by #) since it gives rise to a distributive reading in which each of the six congressmen has founded an identical political party individually. This sentence is an ordinary FNQ construction which yields a distributive reading. This awkwardness is predicted within the present analysis. Now, let us look at the following sentence, in which the focus is the identity of the people, thus stress is assigned to the subject DP. Again, we will change the direct object slightly and place an adverb between the subject NP and the FNQ.

- (3) c. *Context:* I heard that six congressmen have founded the political party called X. But who are they?

SHUSHOO-NI CHIKA-KATTA GIIN-GA // iki-tougou-shite  
p.m. to close-past congressmen Nom getting.along.well.with.each.other  
*roku-nin* sono seitoo o tachiagechattandesu-yo.  
6-Cl the pol.party Acc founded-Prt

‘Getting along well with each other, six congressmen of the PRIME MINISTER’S INNER CIRCLE founded the political party.’

Following the above data, let us assume that there is a substantial pause after the subject NP, but without a pitch rise on FNQ. Rather, the FNQ gets assigned a pitch that continues from the end of the subject NP, despite the pause. What reading does it give rise to? If it turns out that a collective reading is allowed, it would validate the sentence type ((3) c), which appears to be an FNQ construction even though the FNQ is interpreted with the subject NP. It would mean that the interpretation of the sentence is computed under the quantificational structure following the surface syntactic structure less rigidly and the effect of the prosodic cues is as substantial as what we assume in this paper. Next, we will turn to the issue regarding the lexical-semantic analysis of FNQ sentences, mainly referring to work of Kobuchi (2003, 2007) and Nakanishi’s (2004, 2007, 2008).

### 3. Atomicity and Distributivity

It seems necessary to keep in mind that information from the lexicon is in general subject to pragmatic enrichment (e.g., focal prominence) (see Lambrecht 1994; Steedman 2000a, b, 2012; Kempson et al. 2001, 2004, 2006, among others), and that the event semantic representation of the FNQ construction is ultimately determined in the context. A consequence of this assumption is that the FNQ does not necessarily contribute to distributivity. Rather, a distributive reading is more often than not a result of interpreting an FNQ compositionally within the verbal domain (i.e., unmarkedly, as a focused part of the sentence), together with the requirement that the classifier have the function of individuation (Kobuchi 2003, 2007). This function is compatible with the *ga*-marked host noun, which denotes existential individuation in the discourse (see Kuno 1973; Ishikawa 2008). Putting these assumptions together suggests the possibility of structural and contextual contribution to the semantic content of the FNQ construction. However, it seems that things are a bit more complicated than this.

#### 4. Lexical Representations of Japanese FNQs

This section discusses semantic representations that fit well with the grammar allowing distributive as well as non-distributive readings. It is instructive to begin our discussion with Japanese common nouns (which differ greatly from English common nouns).

As Takano (1992) claims, Japanese common nouns are indefinite NPs, which do not introduce an existential presupposition by nature. This assumption seems to indicate that in FNQ sentences a common noun (subject NP) is not always recognizable as the domain of quantification provided by the FNQ. Rather, there are cases where the host NP is focused (in the right context) and contributes to the scope of quantification (hence, generating an NP-related FNQ reading).

It is widely held that there is no grammatical distinction between singular and plural nouns in Japanese (Kuno 1973, 1978; Takano 1992; Ishikawa 2008, among others). For example, for both one apple and two apples, *ringo* ‘apple’ suffices. Whether *ringo* ‘an apple/apples’ is singular or plural depends on the context and is not marked in the noun form. It seems reasonable to consider that the noun potentially belongs to either a definite NP or an indefinite NP (see Yokota 2015 for discussion of the semantics of definites parallel to NP-related FNQs). Note that any function applicable to individuals is also applicable to groups, and vice versa in the standard plural theory (Landman 1989a, b, 1996, 2000). Correspondingly, it can be said that Japanese FNQ constructions allow non-distributive (or collective) construals in the right context.

For the sake of completeness, we propose possible lexical representations for FNQ sentences, as exemplified in ((3) a-d). In this way, each grammatical expression can be associated with more than one interpretation. We here take a position that semantics generates all the meanings possible, and a preferred (hence, optimal) meaning is selected in accordance with pragmatics (e.g., information structure).

In order to obtain the cardinal interpretation in ((4) a), we will make use of a (silent) existential quantifier ( $\exists$ ), which is mapped onto syntactic structure as represented in (1)

above. Importantly, the semantic representations in ((4) a-d) are compatible with representations embodying structured event quantification.

(4) (=1) Gakusei ga (/) go-nin tsukue o mochiageta.

student Nom 5-Cl desk Acc lifted

(i) ‘Five (of the) students lifted a desk (individually).’ [Distributive]

(ii) ‘Five students lifted a desk (together)’ [Non-distributive]

Possible semantic representations for (4):

- a.  $\exists e([\exists X:*student'(X) \wedge |X|=5](*lift.a.desk'(e) \wedge *Ag(e)=X)) \Rightarrow (-p, +d)$
- b.  $\exists e([\exists X:*student'(X) \wedge |X|=5](*lift.a.desk'(e) \wedge *Ag(e)=\uparrow(X))) \Rightarrow (-p, -d)$
- c.  $\exists e([\exists X:*student'(X)](*lift.a.desk'(e) \wedge *Ag(e)=X \wedge |X|=5)) \Rightarrow (+p, +d)$
- d.  $\exists e([\exists X:*student'(X)](*lift.a.desk'(e) \wedge *Ag(e)=\uparrow(X) \wedge |X|=5)) \Rightarrow (+p, -d)$

Given that the term *lift.a.desk'* in (4) takes both an individual atom and a group atom, at least six possible interpretations for the FNQ construction are constructed; (+part(itive), +dist(ributive)) is from ((4) c), (+part, +dist) from ((4) d), (–part, +dist) from ((4) a), and (–part, –dist) from ((4) b). ((4) a) and ((4) b) are constructed as NP-related FNQs, while ((4) c) and ((4) d) are constructed as VP-related FNQs. When the host NP denotes a type, the type is unspecified with respect to quantity, and a partitive reading does not arise from ((4) b). This follows from the basic assumption that topical material cannot be interpreted as being in the nuclear scope of a quantifier (see also Cresti 1995 and Van Valin 2005), which is accounted for by ((4) a-d).

We will follow Landman’s (1989a, 1989b, 1996, 2000) event semantics, which basically follows Link’s lattice-theoretic approach, but Landman argues for the notion of ‘groups’, which is different from Link’s ‘sums’. Landman assumes that predicates can have a ‘group predicate reading’ whereby the predicate denotes not only the set of atomic individuals that have a certain property but also the individual sums of all those atomic parts that form the denotation of the individual predicate. The distinction between sums and groups directly corresponds to the distinction between the distributive and the collective reading. For purely distributive predicates like *sing*, all we need to assume is that one can derive a group denotation from the simple set denotation by using the plural operator ‘\*’.

On this hypothesis, it is possible to derive a group denotation from the simple set denotation. Landman (1989a, 1989b, 1996, 2000) uses ‘\*’ to make predicates always distributive. In Landman’s framework, the distributive properties are always applied to sums and the collective properties are applied to groups only. As for a collective reading, it is assumed to be the result of a predicate applying to a collection of individuals as a group. Technically, a group is formed by applying a group-forming operator ‘ $\uparrow$ ’ to a sum of individuals, as in  $\uparrow(x \cup y \cup iz)$  (see also Nakanishi 2004, 2007 for a similar approach).

For Landman, a plural denotation can be derived from a singular predicate denotation by freely applying the plural operator ‘\*’ both in the nominal and in the verbal domain. Non-distributive interpretations are made possible by the group operator ‘↑’. In ((4) b, d), it applies first in the restriction clause, and enters into the nuclear scope (see Landman 1989, 2000; Nakanishi 2004, 2007, 2008; Tancredi 2005 for related discussions). The distributive construal obtains, directly entering an individual sum into the pluralized domain in the nuclear scope. The distinction between partitivity and non-partitivity is reflected in the restriction (nominal) contents, i.e., in ((4) c, d) the information conveyed by the FNQ is not specified there, which induces partitivity. ((4) c) and ((4) d) are construed as VP-related FNQs, while ((4) a) and ((4) b) are construed as NP-related FNQs.

Note that we have a special semantics for NP-related FNQs as in ((4) a, b) where when the host NP denotes something like a type, the type appears to be unspecified with respect to quantity, and a partitive reading does not arise from ((4) a, b). The semantics in ((4) a, b) is tenable because it is closely related to the assumption that topical material cannot be interpreted as being in the nuclear scope of a quantifier (see Van Valin 2005: Chapter 3 for further discussion of this point).

With the semantic architecture in place, as shown in ((4) a-d), pragmatics (including intonation) is utilized to select among several readings generated by the grammar, as in other cases of disambiguation. To be more specific, in information-structure terms, the default reading of the FNQ (i.e., the distributive reading) hosted by the subject NP will simply reflect the information structure of the sentence in the kinds of discourse contents that the speakers could imagine for it, rather than sorts of particular semantics that Kobuchi and Nakanishi propose. A preferred reading is often selected with the help of intonation (in accordance with the information-structure) from a set of available readings that are captured by the semantic representations, as exemplified in ((4) a-d).

## 5. Plurality and non-distributive interpretations

As mentioned above, an object-denoting noun such as *gakusei* ‘student’ can be interpreted as singular or plural. Japanese NPs are ambiguous between a definite and an indefinite reading. To conceive of this point in relation to plurality of nouns, let us turn back to an (at first blush) unacceptable example like (2), repeated here in (6), which has a non-distributive reading with non-partitivity. What happens here is, for a felicitous interpretation to follow, (6) should have a structure like ((2) a) (non-local NP-related FNQ structure) and a semantic representation such as ((4) b), (–p, –d).

(6) *Gakusei ga kinoo san-nin // Peter o koroshita.*  
 student Nom yesterday 3-Cl Peter Acc killed

‘Three students (as a group) killed Peter yesterday.’ (Nakanishi 2007: 53)

Semantically, definite descriptions involving plurals are taken to denote a totality (equivalent to a maximality operator) of related items fitting the description expressed in the NP. We will extend this view to FNQ constructions by claiming that the FNQ (particularly, the NP-related

FNQ) provides a totality effect. This line of analysis makes it clear that the entire subject (i.e., all the members that make up the subject) enters into quantification in relation to the FNQ.

Gunji and Hasida (1998: 65) claim that the default reading of the FNQ hosted by the subject NP is distributive. An FNQ is more likely to be associated with a distributive reading compared to a non-FNQ (i.e., [NP *no* NQ]).

(7) a. Gakusei ga      *san-nin*      kabin o      mochiageta.  
          student Nom    3-Cl            vase Acc      lifted

‘Three students (each) lifted a/the vase.’

b. *San-nin no* gakusei ga      kabin o      mochiageta.  
          3-Cl Gen    student Nom    verse Acc      lifted

‘Three students lifted a/the vase.’

Concerning the interpretation of (7), without contextual or prosodic cues, both *the student* and *a student* are available. However, since the subject host needs to have a distributive reading (by Gunji and Hasidas’ assumption), the former interpretation is not likely. Note, however, this is not the only possible interpretation. Another possibility is that the quantity denoted by the quantifier in an FNQ sentence does not always contribute to the creation of a new (sub)set (as we saw in (1) in Section 1). That is, the set referred to by an NP-related FNQ may be used when the set is recognized as an established (not new) one in the discourse; such an FNQ should have an exhaustive reading by default (see, e.g., (6)).<sup>2</sup>

Note in passing that the same thing can be said of sentences like (8) (from Kobuchi 2003: 32). (The judgment for the sentence is hers.) The preferred interpretation would require the FNQ to be interpreted with respect to individuals, i.e., thirty (and only thirty) students.

(8) ??Kodomo ga      *sanjuu-nin*      gasshoo-shita.  
          child Nom      30-Cl            sang in chorus

‘Thirty children sang in chorus.’

Kobuchi claims that sentence (8) can only be well-formed under a shift to a non-quantificational amount term reading of the NQ. Setting this aside as a special interpretive possibility, under a quantificational reading an FNQ causes a sentence containing a non-distributive (collective in Nakanishi’s terms) predicate to be semantically ill-formed. Since in (8) there are no atomic individuals who have the property of singing in chorus, the sentence again results in ill-formedness.

<sup>2</sup> Due to the lack of status of an established set, FNQs sometimes cannot easily have a non-distributive reading and each instantiated entity/object has to be individually involved in the action/event to obtain a distributive reading.



However, here too, sentence (8) increases acceptability when a pause occurs right after the FNQ, just as is the case in (6). Hence, it can be construed as an NP-related FNQ.<sup>3</sup> This also indicates that non-partitivity denotation (often related to non-distributive readings) can be obtained in non-local FNQ constructions as well, as long as it does not cause inconsistency in sentence interpretation and intonational pattern. This helps greatly in understanding how the well-formedness of FNQ sentences is ultimately determined by contexts associated with relevant information structure. Thus, sentences such as (5), (6) and (8) are considered representative cases where different (plausible) contexts can disambiguate the two interpretations (i.e., distributive and non-distributive), since in the right context (with an associated prosody) FNQs serve as non-distributive expressions.

## 6. More on Non-Distributive Interpretations

It has been pointed out that in the literature that the FNQ construction generates distributive interpretation, but this semantic requirement is too strong, as discussed in the preceding sections. We will re-examine data in the literature involving non-distributive readings of FNQ constructions, which are unresolved by Nakanishi (2007: Chapter 2), positing that the FNQ obligatorily yields distributivity (see also Kobuchi (2003, 2007)). We will see that it is not always true that the semantic constraint applies to FNQ examples. The central empirical part of my claim is that such a requirement seems to be relaxed in contexts such as those in (4), (5) and (7) above. While Nakanishi does not have an explanation to offer for why the requirements should be relaxed in FNQ sentences, Cases 1-3 given below suggest that there are a number of cases where FNQs that appear to be VP-related can actually receive the NP-related interpretation when the appropriate context is provided.

### 6.1 Case 1: Non-distributivity with progressive

Let us first consider the following examples involving progressive predicates.

(9) =(Nakanishi's (116))

a. ??Gakusei ga kinoo san-nin sono tsukue o kowashi-ta.  
 student Nom yesterday 3-Cl that table Acc break-Past

‘Three students broke that table yesterday.’

b. Gakusei ga kinoo san-nin sono tsukue o kowashi-te-ita.  
 student Nom yesterday 3-Cl that table Acc break-Prog-Past

‘Three students were breaking that table yesterday.’

Nakanishi (2004, 2007, 2008) claims that Japanese FNQ constructions permit distributive readings only. However, ((9) a) may be used felicitously to give an ‘on the scene’ report with a pause right after the FNQ. As Nakanishi points out, the availability of collective readings

<sup>3</sup> Alternatively, if a pause is put immediately before the FNQ, then a VP-related FNQ interpretation might be available (as long as the constituent following the FNQ forms a distinct intonational phrase). In such cases, when the given sentence is pronounced with stress on the quantifier, it is highly likely that focus is imposed on the FNQ, so that unnaturalness will be removed from the sentence.

seems to depend on the aspect of verbal predicates. Specifically, collective readings are available more easily with progressive VPs, as shown in ((9) b). In the present account, the above observed empirical behavior indicates that a notable semantic property pertaining to the FNQ and its host NP phrase in the sentence is that it behaves as if it were an existential quantifier which receives an existential (or cardinal) interpretation (Milsark 1974), and in the *V-te iru* structure (*-te* form of the verb and the existential verb *iru*) the quantifier force takes wide scope (e.g., Begehlli 1997).<sup>4</sup> In such cases, no matter how we may construct the context, the truth conditions will simply be those of an existential.

In those sentences expressing recognition of the existence of a situation, the NP-related FNQ is likely to be interpreted as something that denotes speaker's perception of the existence of an object/entity within NP, while the VP-related FNQ is normally linked to the whole event described by the verbal predicate, where the speaker first introduces the subject as topic at the moment of uttering the sentence and the comments on it with the predicate. A relevant question is why FNQ constructions permit non-distributive readings when the VP is atelic as in the following examples.

(10) =(Nakanishi's ((122) b))

a. Gakusei ga kinoo *san-nin* kaato o oshi-ta.

student Nom yesterday 3-Cl cart Acc push-Past

'Three students pushed a cart yesterday.' [<sup>OK</sup>distributive, <sup>OK</sup>collective]

b. Gakusei ga kinoo *san-nin* kaato o mise made oshi-ta.

student Nom yesterday 3-Cl cart Acc store to push-Past

'Three students pushed a cart to the store yesterday.' [<sup>OK</sup>distributive, <sup>OK</sup>collective]

If the observation that both ((10) a) and ((10) b) allow non-distributive readings is correct, then the account developed in Nakanishi (2007) would lose the generalization that FNQ constructions permit non-distributive readings with atelic, but not telic, predicates.

Further examples are provided in (11), in which the subject NP in stative sentences can also host an FNQ as in (11), where the FNQ occurs in a floated position, and is yet construed with the preceding noun *gakusei* 'student(s)'. Note that these sentences may be uttered out of the blue (without contexts). This being the case, in the present account, what is crucial in (11) is that the members of the host NP denotation constitute a single (and unique) domain of 'quantification'. That is, something like a property-denoting strategy may be taken when the

<sup>4</sup> This idea also seems well-motivated in view of the fact that FNQ sentences permit a collective reading with a progressive predicate *-te ita* 'was/were doing' and a perception verb like *mita* 'saw' used in the matrix clause (see Yamamori 2006 for a relevant discussion), as shown in (i) (taken from Yamamori 2006: 128), respectively.

(i) **Kodomo ga** umide *futari* ?\*oyoida/oyogu no o mita.  
 children Nom sea in 2-Cl swam/swim Comp Acc saw  
 '(I) saw two children swam in the sea.'

denotation as a set is highlighted in the discourse, resulting in a non-partitive reading. This is also considered a necessary condition for the interpretability of NP-related FNQs.

- (11) a. Gakusei ga        *san-nin*        byooki-da.  
          student Nom    3-Cl            be.sick-Cop  
          ‘Three students are sick.’
- b. Sono ikimono wa        me ga        *mit-tsu*        aru.  
          the creature Top        eye Nom    3-Cl            exist  
          ‘The creature has three eyes.’

Nakanishi (2007, 2008) reports that although stative verbs are not in general available for FNQ constructions, examples like (11) indicate that the semantic aspect of the verbs does not contribute clearly to FNQ constructions (contrary to Mihara 1998; Kobuchi 2003, 2007; Nakanishi 2004, 2007, 2008). Hence, Nakanishi’s quantifier float condition related to the aspectuality of verbs is too strict. This implies that an event-semantic representation of an FNQ is highly likely to be determined in context.

### 6.2 Case 2: Non-Distributivity with *Isshoni* ‘Together’

When collectivizing adverbs such as *isshoni* ‘together’ co-occur with FNQs, as in (12), only non-distributive readings are available.

(12) =(Nakanishi’s (126))

- Otokonoko ga**    *san-nin*    *isshoni*        booto o        tsukut-ta.  
 boys Nom        3-Cl        together        boat Acc        make-Past  
 ‘Three boys built a boat together yesterday.’

Nakanishi (2007) claims that a seemingly collective (or non-distributive) reading with a collectivizer is not collective but distributive in that each building-a-boat event is mapped to each group of three boys. However, it is plausible that the collectivizing adverbs, as in (12), relying on Landman’s (1989, 2000) group formation operator  $\uparrow$ , map a sum of individuals (e.g.,  $x \cup y \cup z$ ) to an atomic group individual (e.g.,  $\uparrow(x \cup y \cup z)$ ). For instance, (12) forms a group of three boys, yielding the interpretation that one group consisting of three boys built a model boat. In this case, (12) means that a group of three boys built a boat, where there was only one agent, namely a group of three boys.

Nakanishi (2007) also contends that native speakers might manipulate the existence of collectivizing adverbs. For instance, non-distributive interpretations obtain when the copula *-de* after the FNQ (e.g., *san-nin-de* ‘by three (as a group)’). Even when an FNQ is not followed by *-de*, speakers may obtain ‘illusory’ non-distributive reading by positing a covert *-de*. This is, however, a speculative possibility and would require independent confirmation.

Such an effect that may contribute to non-distributive readings should be explained semantically or pragmatically in an explicit manner. In our view, as previously mentioned, this statement should be covered in the following manner: What makes NP-related FNQ examples like (12) possible is using the FNQ *san-nin* to refer back to a particular plural individual, consisting of the established set (implicitly) described by the associate noun *gakusei* ‘student(s)’. This means that an NP-related quantifier could be interpreted as the quantitative attribute of an established (sub)set, hence in certain contexts the NP-related FNQ is allowed to have an exhaustive (or non-partitive) reading rather than a particular (or partitive) reading.

Another possible explanation is that we can attribute the different readings to a (non-)presuppositional effect with the host NP (cf. Ishii 1998, 1999). If this is correct, then the host noun is not necessarily limited to topic, contrary to Takami’s (1998) and Hatori’s (2002) claim that an NP in a sentence allows quantifier float only if it can function as a topic of the sentence.<sup>5</sup>

To investigate the issue further, let us consider Brisson’s (1998) theory concerning English collectivizing adverbials, which supposedly force collectivity (non-distributivity in our terms). According to Brisson, the distribution of all and every differ with respect to a subclass of collectivizing adverbials, as shown in (13) and (14) (taken from Brisson 1998:141).

(13) All the planes landed together/in formation/as a group/at once.

(14) \*Every plane landed together/in formation/as a group/at once.

Brisson claims that a collectivizing adverb takes a predicate that applies to atomic individuals, such as land, and appears to turn it into a predicate that will apply only to pluralities. An expression like together involves a kind of quantification over individual parts of a plural NP. The same explanation holds true for examples in Japanese like (15) (taken from Mizuguchi 2004: 83, and the judgment is hers). In the example, a common noun *gakusei* ‘student(s)’ is used which denotes a set containing both sums and atoms.<sup>6</sup>

(15) \***Gakusei ga** *san-nin* *isshoni* *kabin o* *mochiageta*.

student Nom 3-Cl together vase Acc lifted

‘Three students lifted the vase together.’

Mizuguchi claims that (15) could be acceptable when *isshoni* means ‘at the same time’, but when it means ‘together’, the sentence is unacceptable. She explains the unacceptability in (15) by saying that post-nominal classifier phrases (FNQs in our terms) do not evoke the

<sup>5</sup> Here it is worth mentioning that Ohki (1987) points out in his descriptive work that the host NP must be a potentially focal element, which is contrary to Takami’s (1998) claim, though Ohki does not discuss the difference between NP-related and VP-related FNQs.

<sup>6</sup> In general, Japanese nouns are not directly combined with numbers: sometimes they refer to plural entities, while at other times they refer to singular individuals (see Mizuguchi (2004: Chapter 3) for a detailed discussion of this matter).

collective reading, because, she claims, the sets individuated by post-nominal classifier phrases are not individuated further.

However, this hypothesis needs to be examined a little further. The case in question runs counter to Mizuguchi's expectation. There are various ways to improve the grammaticality of FNQ sentences such as (15). For instance, it yields the intended reading and becomes better if the FNQ can be construed as an NP-related FNQ, quantifying over the individuals (here *gakusei* 'student') resulting in a non-distributive reading, which is compatible with the denotation of *isshoni* 'together'. If the speaker puts a pause immediately after *san-nin* (rather than after the subject), the sentence is judged as being considerably more acceptable (if still not perfect), denoting the students all joined forces and lifted the vase, resulting in a non-distributive reading.

### 6.3 Case 3: Non-Distributivity with Collective Predicates

The following examples show that FNQ constructions are compatible with collective predicates such as *torikakomu* 'surround' and *atsumaru* 'gather'.

(16) =(Nakanishi's ((129) b))

<b>Heishi ga</b>	kinoo	<i>gohyaku-nin</i>	machi o	torikakon-da.
soldier Nom	yesterday	500-Cl	city Acc	surround-Past

'Five hundred soldiers surrounded the city yesterday.'

(17) =(Nakanishi's ((131) b))

<b>Gakusei ga</b>	kinoo	<i>juu-nin</i>	atsumat-ta.
student Nom	yesterday	10-Cl	gather-Past

'Ten students gathered yesterday.'

The fact that the examples in (16) and (17) are acceptable appears to be problematic for Nakanishi's monotonicity constraint<sup>7</sup> (which constitutes the core of her theory of FNQs), because the constraint ought to exclude collective readings, though she supposes that predicates such as *gather* are not genuinely collective but distributive, relying on Dowty (1987). On this supposition, although the collective predicate *gather* does not distribute down to the individual members of a group, it distributively entails a property of the members of the group (e.g. each undergoing a change of location).

This account could work under the definition of distributivity in reference to agents rather than events. However, a problem is that the approach presented by Nakanishi in order to account for data like (16)-(17) does not really help in considering why the collective verb is

<sup>7</sup> Nakanishi (2007) applies the notion of monotonicity (describing patterns of entailment between sets and subsets) that Schwarzschild (2002) discusses in terms of nominal domain to the verbal domain as well. That is, what she claims is that in the non-split MP (Measure Phrase) construction monotonicity must be respected in the nominal domain, while in split the MP construction it must be respected in the verbal domain. The former corresponds to our non-FNQs, and the latter to our FNQs.

used in the sentence to begin with. Note that it is impossible to say *Gakuseiga kinoo hitori / hutari astumatta* ‘One student/Two students gathered yesterday’.<sup>8</sup> This indicates that Nakanishi’s distributivity entailment (e.g., each individual is undergoing a change of location) is in fact not necessarily available for all cases involving collective predicates. For this reason, Nakanishi’s account of examples (16)-(17) is untenable.

We instead contend that Japanese FNQs have two uses and that a distinction must be drawn between distributive and non-distributive readings. That is to say, non-distributivity as well as distributivity exists in FNQ constructions from the outset. Extra-syntactic factors will choose which reading fits well in the context. This does not require us to suppose the process of change in meaning (as posited by Nakanishi) when we encounter sentences allowing non-distributive readings, which are not expected from Nakanishi’s theory. In Section 4, we claimed that FNQ sentence meanings can in principle have any of the four possible feature combinations allowed by the semantic features [+/-part(itive)] and [+/-dist(ributive)], and that when this sort of sentence is placed in the right context, a collective implication observed in the example is simply an instantiation of either (+part, -dist) (e.g., (4b)) or (-part, -dist) (e.g., (4c)), depending on the context. Thus, it seems unproblematic to allow for the generation of both collective and distributive interpretations within our semantic analysis. The same account applies to other examples, such as the following.

- (18)(cf. (2)) #**Otoko ga** //    *san-nin*    Tanaka o    koroshi-ta.  
                                  man Nom    3-Cl    Tanaka Acc    kill-Past  
                                  ‘Three men killed Tanaka.’ (Kobuchi 2007: 110)  
                                  (cf. *Otokoga san-nin // Tanaka o koroshita.*)

In choosing the preferred interpretation out of possible interpretations, as provided in ((4) a-d), a plausible way to conduct a compositional interpretation procedure is to take into account context, intonation, lexical meaning, and structure, because all can interact in the determination of the preferred interpretation. In our account, in light of data like (6), (7) and (8), syntactic differences corresponding to the different meanings that are not reflected in prosodic structure cannot contribute to the disambiguation of potentially ambiguous FNQ sentences. Hence, it seems unrealistic to assume that a semantic interpretation is derived (in a more complicated manner) only after a discourse as a whole has been processed, as researchers including Kobuchi (2003, 2007) and Nakanishi (2004, 2007, 2008) suppose.

## 7. Conclusion

We have seen that the FNQ construction viewed as a focus-affected phenomenon, whose interpretation is crucially contingent upon information status in the context. A major portion of the argument in this paper has been devoted to validating the presence and motivation of the distinction between the two types of FNQs to fully describe FNQ placement and interpretation in Japanese. To recapitulate, the NP-related FNQ often behaves as a sort of

<sup>8</sup> Depending on the context, ‘two students gathered yesterday’ may sound only mildly unacceptable in Japanese.

referring expression, when we consider the fact that the NP-related FNQs tend to be defocalized and anaphoric(-like) nominals rather than adverbials or (secondary) predicates (see Miyagawa 1989; Fukushima 1991, 2007 for analyses of FNQs as predicates). In discourse-semantic terms, the NP-related FNQ can be interpreted as something that denotes a speaker's/hearer's perception of the existence of some entity (or individual), whereas the VP-related FNQ is linked to the whole event (or action) described by the verbal predicate.

Further research is of course required to determine whether the approach illustrated in this paper is indeed plausible. However, it seems significant that examples judged unacceptable in the literature turn out to be acceptable once they are put in the right context, specifically when either the FNQ or the subject NP receives focus in the sentence. Previous studies have taken little or no account of contexts in which FNQs are used. To solve the problem, we would need a more wide-ranging analysis of the semantic-pragmatics of Japanese FNQs, along with the current view developed in our discussion. This paper would hopefully be another step uncovering the complexity of Japanese FNQ constructions.

## References

- Bäuerle, R., Christoph, S., & Armin, S. (1983). *Meaning, Use, and Interpretation of Language*. Berlin: Mouton de Gruyter.
- Beghelli, F., & Tim, S. (1997). The syntax of distributivity and negation. In Anna Szabolcsi, ed., *Ways of Scope Taking*, 71-108 Dordrecht: Reidel.
- Brisson, C. M. (1998). *Distributivity, Maximality, and Floating Quantifiers*. Doctoral dissertation, The State University of New Jersey, Rutgers.
- Cresti, D. (1995). *Indefinite Topics*. Doctoral dissertation, MIT.
- Erteschik-Shir, N. (1997). *The Dynamics of Focus Structure*. Cambridge: Cambridge University Press.
- Erteschik-Shir, N. (2007). *Information Structure*. Oxford: Oxford University Press.
- Fukushima, K. (1991). *Generalized Floating Quantifiers*. Doctoral dissertation, University of Arizona.
- Fukushima, K. (2007). Conspiracy of form and context for proper semantic interpretation: The implications of lonesome numeral classifiers in Japanese. *Journal of Pragmatics*, 39, 960-989.
- Gunji, T., & Hasida, K. (2009). *Topics in Constraint-Based Grammar of Japanese*, 39-79. Dordrecht: Kluwer.
- Hatori, Y. (2002). Nihongo no suuryoushi yuuri [Quantifier float in Japanese: Factual observations on its functional properties]. *Kawamura Gakuen Joshi Daigaku Kiyou* [The Bulletin of the Department of English Literature, Kawamura Women's University] 13(1), 13-32.

- Ishii, Y. (1998). Floating quantifiers in Japanese: NP quantifiers, VP quantifiers, or both? *Researching and Verifying an Advanced Theory of Human Language*, (2), 149-171. Chiba: Kanda University of International Studies.
- Ishii, Y. (1999). A Note on floating quantifiers in Japanese. In M. Muraki and E. Iwamoto, eds., *Linguistics: In Search of the Human Mind. - A Festschrift for Kazuko Inoue*, 236-267. Tokyo: Kaitakusha.
- Ishikawa, K. (2008). Overriding effects of focus on weak NPs inthetic sentences. In A. Nikki, A. Cooper, F. Parrill and T. Wier, eds., *Proceedings of the 40th Annual Meeting of the Chicago Linguistic Society (CLS)*, 127-138.
- Kempson, R., Wilfred, M. V., & Gabbay, D. M. (2001). *Dynamic Syntax: The Flow of Language Understanding*. Oxford: Blackwell.
- Kempson, R., & Jieun, K. (2004). Japanese scrambling as growth of semantic representation. Ms., King's College, London.
- Kempson, R., Ronnie, C., & Jieun, K. (2006). Topic, focus and the structural dynamics of language. In V. Molnár and S. Winkler, eds., *The Architecture of Focus*, 59-82. Berlin/New York: Mouton de Gruyter.
- Kobuchi-Philip, M. (2003). *Distributivity and the Japanese Floating Quantifier*. Doctoral dissertation, The City University of New York.
- Kobuchi-Philip, M. (2007). Floating numerals and floating quantifiers. *Lingua*, 117(5), 814-831.
- Kuno, S. (1973). *The Structure of the Japanese Language*. Cambridge, MA: MIT Press.
- Kuno, S. (1978). *Danwa no bunpoo* [Grammar of discourse]. Tokyo: Taishuukan.
- Lambrech, K. (1994). *Information Structure and Sentence Form: A Theory of Topic, Focus and the Mental Representations of Discourse Referents*. Cambridge: Cambridge University Press.
- Landman, F. (1989a). Groups I. *Linguistics and Philosophy*, 12, 559-605.
- Landman, F. (1989b). Groups II. *Linguistics and Philosophy*, 12, 723-744.
- Landman, F. (1996). Plurality. In S. Lappin, ed., *The Handbook of Contemporary Semantic Theory*. Oxford: Blackwell.
- Landman, F. (2000). *Events and Plurality: The Jerusalem lectures*. Dordrecht: Kluwer.
- Link, Godehard. 1983. The logical analysis of plurals and mass terms: A lattice-theoretical approach. In R. Bäuerle, C. Schwarz and A. von Stechow, eds., 303-323.
- Mihara, K. (1998). Suuryoushi renketsu koobun-to 'kekka'-no gan'i [Quantifier linking construction and the implication of 'resultative']. *Gengo* [Language] 6: 86-95, 7: 94-102, 8: 104-113.



- Milsark, G. (1974). *Existential Sentences in English*. Doctoral dissertation, MIT.
- Miyagawa, S., & Koji, A. (2007). Locality in syntax and floating numeral quantifiers. *Linguistic Inquiry*, 38(4), 645-670.
- Mizuguchi, S. (2004). *Individuation in Numeral Classifier Languages*. Tokyo: Syoohakusya.
- Nakanishi, K. (2004). *Domains of Measurement: Formal Properties of Non-split/Split Quantifier Constructions*. Doctoral dissertation, University of Pennsylvania.
- Nakanishi, K. (2007). *Formal Properties of Measurement Constructions*. Berlin/New York: Mouton de Gruyter.
- Nakanishi, K. (2008). The syntax and semantics of floating numeral quantifiers. In S. Miyagawa, Shigeru and Mamoru. Saito, eds., *The Oxford Handbook of Japanese Linguistics*, 287-319, Oxford: Oxford University Press.
- Steedman, M. (2000a). Information structure and the syntax-phonology interface. *Linguistic Inquiry*, 34, 649–689.
- Steedman, M. (2000b). *The Syntactic Process*. Cambridge, MA: MIT Press.
- Steedman, M. (2012). *Taking Scope: The Natural Semantics of Quantifiers*. Cambridge, MA: MIT Press.
- Schwarzschild, R. (2002). Singleton indefinites. *Journal of Semantics*, 19, 289-314.
- Takami, K. (1998). Nihongo no suuryoushi yuuri ni tsuite: kinouronteki bunseki [On quantifier floating in Japanese: A functional analysis]. *Gekkan Gengo*, 27(1), 86-95, 27(2), 86-95, 27(3), 98-107. Tokyo: Taishukan.
- Takano, H. (1992). *Syntactic and Semantic Natures of Japanese Common Nouns*, Doctoral dissertation, Michigan State University.
- Tancredi, C. (2005). Plural predicates and quantifiers. In N. Imanishi, ed., *Gengo kenkyuu no uchuu* [The World of Linguistic Research: A Festschrift for Kinsuke Hasegawa on the Occasion of His Seventieth Birthday], 14-28. Tokyo: Kaitakusha.
- Van Valin, R. D., Jr. (2005). *Exploring the Syntax-Semantics Interface*. Cambridge: Cambridge University Press.
- Yamamori, Y. (2006). *Nihongo no genryoo hyoogen no kenkyuu* [A Study of Quantifier Expressions in Japanese]. Tokyo: Kazama shoboo.
- Yokota, K. (2014). Japanese floating numeral quantifiers as generalized quantifiers. *Language Sciences*, 45, 123-134. Elsevier.
- Yokota, K. (2015). Towards a proper treatment of NP-related floating numeral quantifiers in Japanese. *Open Journal of Modern Linguistics*, 5(4), 370-378.

**Copyrights**

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>)