ASPECTUAL RESTRICTION FOR FLOATING QUANTIFIERS*

Takuro Tanaka
University of Connecticut

1. Introduction

The main purpose of this paper is to investigate the appropriate licensing conditions of so-called floating numeral quantifiers (FNQ, henceforth) in Japanese. A typical example of sentence with FNQ is shown in (1).

(1) 'Two students came to the office.'

a. [*Hutari*-no gakusei]-ga ofisu-ni ki-ta
2(CL)-of students - Nom office-to come-Past

b. Gakusei-ga ofisu-ni *hutari* ki-ta
students-Nom office-to 2(CL)-of come-Past

It has been said that Japanese FNQ is compatible with object NP, passive subject, and unaccusative subject, but not with unergative subject and transitive subject

(2) FNQ from the object NP

a. Gakusei-ga [$_{NP}$ **san-satsu-no** hon]-o tosyokan-ni okut-ta
students-Nom 3-CL-GEN book-Acc library-DAT send-past

b. Gakusei-ga hon-o tosyokan-ni **san-satsu** okut-ta
students-Nom book-Acc library-DAT 3-CL send-past

'A student sent three books to a library'

(3) FNQ from passive subject

a. [$_{NP}$ **Ni-dai-no** kuruma]-ga dorobo-ni nusum-are-ta
2-CL-Gen car- Nom thief-by steal-PASS-PAST

* For very valuable comments, I am very much grateful to the audiences at ECO5 Syntax Workshop (University of Massachusetts, Amherst) and Nanzan-Connecticut Joint Workshop on Minimalist Syntax (Nanzan University). Special thanks go to Masatake Arimoto, Jonathan Bobaljik, Željko Bošković, Christopher Davis, Justin Fitzpatrick, Tomohiro Fujii, Jon Gajewski, Kyle Johnson, Keiko Murasugi, Kimiko Nakanishi, Mamoru Saito, Yael Sharvit, William Snyder, Kensuke Takita, and Susi Wurmbrand for their helpful and thought provoking feedback. All errors are of course mine.

Nanzan Linguistics: Special Issue 3, Vol. 2, 199–228
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b. Kuruma-ga dorobo-ni **nidai** nusum-are-ta
car-Nom thief-by 2-CL steal-PASS-PAST

'Two cars were stolen by a thief'

(4) FNQ form unaccusative subject

a. [$_{NP}$ **Hutari-no** Gakusei]-ga ofisu-ni ki-ta
2-CL Student- Nom office-to come-PAST

b. Gakusei-ga ofisu-ni **hutari** ki-ta
Student-Nom office-to 2-CL come-PAST

'Two students came to the office'

(5) FNQ from unergative subject

a. [$_{NP}$ **Huta-ri-no** Kodomo]-ga geragerato warat-ta
2-CL-Gen Children-Nom loudly laugh-PAST

b. *Kodomo-ta geragerato **huta-ri** warat-ta
Children-Nom loudly 2-CL laugh-PAST

'Two children laughed loudly'

(6) FNQ from the transitive subject NP

a [$_{NP}$ **San-nin-no** gakusei]-ga hon-o tosyokan-ni okut-ta
3-CL-Gen students-Nom book-Acc library-DAT send-past

b. *Gakusei-ga hon-o tosyokan-ni **san-nin** okut-ta
students-Nom book-Acc library-DAT 3-CL send-past

'Three students sent a book to a library'

This phenomenon has been studied in the previous literature on Japanese syntax, and many analyses have been suggested (Miyagawa (1989), Yatabe (1990), Fukushima (1991a,b), (1993), Mihara (1994, 2004), Miyamoto (1996), Hamano (1997), Kawashima (1998), Ishii (1999), Takami (2001), Yamashita (2002), Nakanishi (2004), among others). The main efforts in such previous literature went into considering a particular syntactic restriction to license good cases and to exclude ungrammatical ones based on the syntactic relation between FNQ and its host NP. Such a way to study FNQ has been based on an implicit assumption that syntactic conditions, especially constituency, require that FNQ and its host NP have to be close to each other. Among these literature, one of the most influential attempts can be found in Miyagawa (1989). Miyagawa's main point is that the distribution of FNQ is principled by some structural local condition. Based on a multiple branching structure, Miyagawa claims that the host NP and FNQ should mutually c-command each other, as represented in (7).

(7) Mutual C-command Requirement:
The NP or its trace and the numeral or its trace must c-command each other.

Miyagawa's analysis can explain why FNQs from the subject of a passive or unaccusative verb, and the object of a transitive verb are allowed, but FNQs from the subject of unergative verbs and transitive subject should be prohibited, as can be seen in (8).

(8) a. NP_1 [$_{VP}$ PP/Adv [$_{VP}$ **t_1** **FNQ** V]] (passive, unaccusative)

b. NP [$_{VP}$ PP/Adv [$_{VP}$ **NP** **FNQ** V]] (object of transitive)

c. * **NP** [$_{VP}$ PP/Adv [$_{VP}$ (NP) **FNQ** V]] (unergative, subject of transitive)

The subjects of passive and unaccusative are base-generated in the VP domain, and their traces and FNQ meet the mutual c-command relation in (8)a. The object of a transitive verb and FNQ, of course, c-command each other in (8)b. The subject of an unergative verb or a transitive verb in (8)c, however, are base-generated outside VP, hence the host NP and FNQ are not in a mutual c-command relation.

In this paper, I point out problematic data for current assumptions about FNQ, showing pairs where an example with FNQ is allowed but another is not even though their syntactic configurations seem to be the 'same' in terms of previous literature. A couple of analyses would be able to explain these data which I will provide in this paper. There seems to be some problems for the previous analyses, however. FNQ shows up in various types of environments, but each previous treatment argues about the licensing condition of FNQ for each environment separately. Intuitively, FNQs should be licensed under the same principle even though environments where they appear show variety, but little attention has been given to a unified analysis. Based on this point of view, there is still room for improvement in previous analyses.

2. Data

In this section, we will look at examples which would be problematic for Miyagawa's mutual c-command analysis. Some examples with FNQ in Japanese are grammatical but others are not even though the FNQ or its trace, and its host NP seem to be in mutual c-command relation.

(9) Distribution of Japanese FNQ

FNQ hosted by	Miyagawa's prediction	Problematic data
Transitive object	✓	*(19), *(22)b
Unaccusative subject	✓	*(10)b, *(11)b, *(12)b
Passive subject	✓	*(20)
Transitive subject	*	✓(14)b, ✓(16)b
Unergative subject	*	✓(13)b, ✓(15)b

The common property of grammatical examples which we will see in this section is a sort of "delimitedness" of event or tense. Japanese FNQ can be licensed only if it shows up in a "delimited" context. We will look at examples that show the bounded property one by one.

2.1. Stage / Individual Level Distinction

The first example is the contrast in (10)-(12). It has been said that Japanese FNQ is compatible with stage-level predicate ((a)-cases in (10)-(12)), but not with individual-level predicates ((b)-cases) (Harada 1976, Nishigauchi and Uchibori 1991, Okutsu 1996, Miyamoto 1996, Mihara 2004).

(10) a. Panda-ga **ni-tou** *genkii-da*
Panda-Nom 2-CL healthy-be

'Two pandas are healthy'

b. *Panda-ga **ni-tou** *honyurui-dai*
Panda-Nom 2-CL mammal-be

'Two pandas are mammals' (Nishigauchi and Uchibori 1991)

(11) a. Kono doubutsuen-dewa kaba-ga **san-tou** *byoki-da*
This Zoo-in hippos-Nom three-CL sick-be

'Three hippos are sick in the zoo'

b. *Kono doubutsuen-dewa kaba-ga **sa-tou** *ookii*
This Zoo-in hippos-Nom three-CL be big

'Three hippos are large in the zoo' (Mihara 2004)

(12) a. Amerika-dewa hikouki-gaisya-ga **mit-tsu** *tsubure-ta*
United States-in airlines-Nom three-CL bankrupt-PAST

'In the United States, three flight companies became bankrupt.'

b. *Amerika-dewa hikouki-gaisya-ga **mit-tsu** *yuumei-da*
United States-in airlines-Nom three-CL famous-be

'In the United States, three flight companies are famous'

Following Miyagawa's mutual c-command analysis, (10)-(12) share the same grammaticality because both of (a) and (b) are examples of unaccusative verbs. The only difference between (a)-cases and (b)-cases is the aspectual type of predicate. For example, *byoki-da* 'be sick' in (11)a and *tsubureru* 'bankrupt' in (12)a represent temporal events with stage-level predicates whose endpoint is delimited inherently, but, on the other hand, *osu-da* 'be male' in (11)b and *yuumei-da* 'be famous' in (12)b are individual-level predicates, which provide non-delimited events.

2.2. Simultaneous / Successive Distinction

The next paradigms are shown in (13) and (14).

(13) a. ?* Kodomo-ga *wa-ni-natte* **10-nin** odotta
Children-Nom circle-become **10-CL** danced

'Ten children danced in a circle' (Miyagawa 1989; 44)

b. Kodomo-ga *tsugitsugi-to* **10-nin** odotta
Children-Nom sequence-in **10-CL** danced

'Ten children danced one after another'

(14) a. ?* Gakusei-ga hon-o **4-nin** katta
Students-Nom books-Acc **4-CL** bought

'Four students bought books'

b. Gakusei-ga hon-o *tsugitsugi-to* **4-nin** katta
Students-Nom books-Acc sequence-in **4-CL** bought

'Four students bought books one after another'

In these examples, the grammatical sentences and the ungrammatical ones are the cases of FNQ from the unergative subject ((13)) and from the transitive subject ((14)), both of which are predicted as ungrammatical by mutual c-command analysis. Again, the crucial thing here is an aspectual property of the event. In the bad case in (13)a, ten children were dancing simultaneously, but the good case in (13)b represents that ten children danced one by one successively and every child danced alone in his or her dancing. As can be seen in (14)b, if there is an aspectual adverb such as *tsugitsugi-to* 'in sequence', the successive reading is primary and these sentences are grammatical.

2.3. Progressive Effect

Next we will look at another aspectual property of FNQ. Mihara (1994) points out that even if the host of FNQ is an unergative subject or a transitive subject, which are not compatible with FNQ originally, the sentences are acceptable in the progressive tense.

(15) a. *Gakusei-ga tosyokan-de **go-nin** benkyo-su-ru
students-Nom library-in **5-CL** studied-do-Pres

'5 students study in the library'

b. Gakusei-ga tosyokan-de **go-nin** benkyo-si-*teiru*
students-Nom library-in **5-CL** studied-do-PROG(Pres)

'5 students are studying in the library'

(16) a. *Gakusei-ga kyokasyo-o **yo-nin** yon-da
Students-Nom textbook-Acc **4-CL** read –Past

'Four students read the textbook'

b. Gakusei-ga kyokasyo-o **yo-nin** yon-*deita*
Students-Nom textbook-Acc **4-CL** read-PROG(Past)

'Four students were reading the textbook'

It seems natural to consider that the distinction between present or past tense and progressive tense does not affect the local relation between a FNQ and its host NP. We need to explain why progressive saves the FNQ construction in these cases.

2.4. Psych Verb

Object NP of transitive verb and subject NP of passive can be the host NP of FNQ as can be seen in (17) and (18).

(17) a. John-wa ringo-o **san-ko** tabe-ta
John-Nom apples-Acc **3-CL** ate-Past

'John ate three apples'

b. Mary-wa ronbun-o **yon-hon** kai-ta
Mary-Nom papers-Acc **4-CL** write-Past

'Mary wrote four papers'

(18) a. Ringo-ga **san-ko** taber-are-ta
Apples-Nom **3-CL** eat-Passive-Past

'Three apples were eaten'

b. Ronbun-ga **yon-hon** kak-are-ta
Papers-Acc **4-CL** write-Passive-Past

'Four papers were written'

However, psych verbs, for example, *shinziru* 'believe,' *nikumu* 'hate,' *utagau* 'suspect,' are not compatible with FNQ even when the host NP is an object NP ((19)) or a passive subject ((20)).

(19) a. * John-wa tomodachi-o soredemo **san-nin** shinzita
John-Nom friends-Acc still **3-CL** believed

'John still believed his three friends'

b. * Gakusei-ga kyoju-o soredemo **go-nin** nikunda
Student-Nom professor-Acc still **5-CL** hated

'A student still hated 5 professors'

(20) a. * Kyouju-ga seito-ni **futa-ri** nikum-are-ta
Professors-Nom student-by **2-CL** hate-PASS-past

'Two professors were hated by a student'

b. * Soko-ni ita gakusei-ga keikan-ni **san-nin** utagaw-are-ta
there-in be students-Nom officer-by **3-CL** suspect-PASS-past

'Three students who were there were suspected by a officer'

As for the psych verbs, it has been said that there are two types of variations: Experiencer Subject (ES) type, and Experiencer Object (EO) type (Jackendoff (1972), Grimshaw (1990), Levin (1993), Belletti and Rizzi (1988), Zubizarreta (1992), Pesetsky (1995), among others).

(21) Two types of psych verbs (Levin 1993)

a. Experiencer-Subject Psych Verbs (ES)
like, love, dislike, trust, worship, dread, envy, fear, hate, loathe, regret, bother (for), cry (for), delight (in), despair (of), marvel (at), suffer (from), thrill (to), ...

b. Experiencer-Object Psych Verbs (EO)
amaze, amuse, anger, annoy, bore, bother, confuse, delight, disgust, encourage, enrage, excite, frighten, horrify, irritate, please, puzzle, surprise, terrify, threaten, worry, ...

(22) are examples of FNQ from object NP of psych verbs; *komaraseta* 'embarrassed' in (22) a is EO type, and *kowagatta* 'feared' in (22)b is ES type. Only EO type is compatible with FNQ as shown in (22)a, while mutual c-command analysis predicts that both of them should be grammatical.

(22) a. Kare-no furumai-ga gakusei-o **go-nin** komarasesta (EO)
he-of behaviour-Nom students-Acc **5-CL** embarrassed

'His behavior embarrassed five students'

b. *Kodomotachi-wa hanashi-o **itsu-tsu** kowagatta (ES)
Children-Nom stories-Acc **5-CL** feared

'Children feared five stories'

3. Theoretical Background

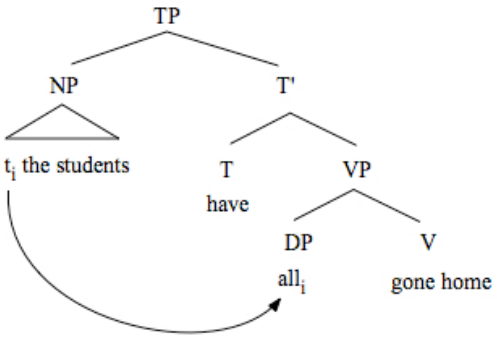
3.1. Syntactic Structure

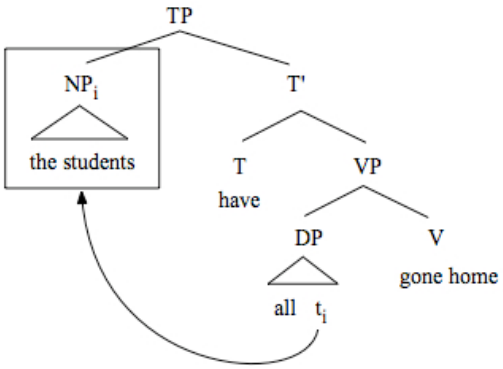
In previous literature, three types of analyses for syntactic structure of floating quantifier have been suggested.

(23) a. **All** the students have gone home.

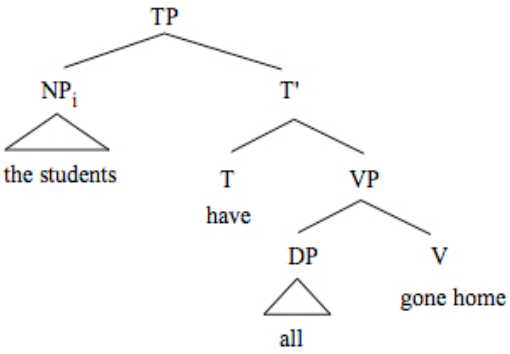
b. The students have **all** gone home.

(24) a. Rightward Movement (Postal (1974)) b. Stranding (Sportiche (1988))





c. Adverbial (Dowty and Brodie (1984), Brisson (1998), Bobaljik (2003), a.o.)



In the early stage of generative syntax, it was argued that floating quantifier is base generated in the host-NP, and it moves to right (Postal (1974), Maling (1976), Baltin (1978)).

(25) Rightward Movement Analysis
$[_{IP}\ [_{NP}\ t_i$ the men] $[_{VP}\ all_i$ left]]

Following this rightward movement, however, the trace of the floating quantifier cannot be c-commanded, which give rise to the violation of Proper Binding Condition.

(26) Proper Binding Condition (Fiengo (1977), May (1977), Saito (1989))
Traces must be bound.

To avoid this problem, Sportiche (1988) suggests that floating quantifier does not move at all, and it is a stranded element of movement of its host NP. He follows VP-internal subject hypothesis, which argues that the subject NP is base generated in VP, and it moves up to the spec-IP in a stage of the derivation (Koopman and Sportiche (1991), Kuroda (1988), Fukui and Speas (1986), Kitagawa (1986), among others). He suggests that thesubject NP and VP have a relation of small clause, which is represented as *Vn*. Following his analysis, the derivation of FQ would be shown as (27).

(27) Stranding Analysis (Sportiche 1988, slightly modified)
a. $[_{IP}$ [**All** the children$]_i$ [Vn have [t_i] [VP seen the movie]]]

b. $[_{IP}$ [The children$]_i$ [Vn have [**all** t_i] [VP seen the movie]]]

Following this analysis, FNQ is base-generated next to its host NP, and it does not require the additional semantic interpretation rule to connect the FNQ and its host NP, which has been suggested by researchers who argue that a FNQ is base generated in the position which is pronounced without any movement (Nakamura (1983)). Sportiche's analysis is not based on rightward movement, and violation for proper binding condition does not take place. Besides, the fact that the position of FQ is mainly the left periphery of VP should be a natural implication the stranding analysis.

Some researchers have suggested an alternative analysis to the adNominal one: the adverbial analysis[1]. Following this point of view, there is no stage where FNQ is attached to its host NP directly, and the FNQ is base generated in preverbal position (see Nakamura (1983), Dowty and Brodie (1984), Akiyama (1994), Junker (1995), Hoeksema (1996), Doetjes (1997), Brisson (1998), Takami (2001), Bobaljik (2003), among many others, for this point of view). Takami (2001), for example, provides the following example in (28)b which would be counterexaple for Miyagawa's (1989) adNominal analysis.

(28) a. ?* Gakusei-ga hon-o **yo-nin** kat-ta.
student-Nom book-Acc **four-CL** buy-PAST

'Four students bought a book / books'

[1] This type of analysis for Japanese FQ has been challenged by some researchers. For example, Fitzpatrick (2006) argues that Japanese FQs are adnominal and A-bar related. He claims that both kinds of FQs, adnominal type and adverbial type, exist in human language, and they are distinguishable within and across languages. Adverbial FQs are associated with A-moved NPs, and adnominal FQs are related to A-bar moved NPs.

b. Gakusei-ga {sore / sono hon}-o **yo-nin** kat-ta.
student-Nom {it / that book}-Acc **four-CL** buy-PAST

'Four students bought it / that book'

(Takami 2001:139)

Takami argues that FNQs in preverbal position must provide some new information, following the traditional point of view that, in Japanese, the most important information (or new information) must appear in an immediately preverbal position (Kuno 1978). Based on this assumption, Takami (2001) argues that the distribution of FNQs does not depend on the locality condition, but rather on the following two pragmatic conditions: an NP can host an FNQ only when the NP can serve as a Theme of the sentence, and an FNQ must obey the information structure of Japanese sentences. In (28)a,b, the FNQ is interpreted as the most important information, being in a pre-verbal position. The difference in acceptability between the two sentences comes from the information status of the object. In (28)a, the object is an indefinite NP, which is interpreted to convey new information. Thus, both of the object NP *hon* 'book' and the FNQ *yo-nin* 'four-CL_{person}' should take significant information in the sentence, but there is a conflict between the object and the FNQ as to which one should be the focus of the sentence. In contrast, in (28)b, the object is a definite NP, which contains less important information. (28)a,b share the same configuration with respect to the mutual c-command relation between FNQ and its host NP. If only syntactic locality plays a crucial role to license FNQ as Miyagawa (1989)'s analysis, the prediction would be that (28)a and b share same acceptability. This is not the case, however.

Based on the adverbial analysis, a lot of counterarguments against Sportiche's type of stranding analysis. Firstly, Bobaljik (2003) points out that floating quantifiers which are hosted by a passive subject and a unaccusative subject are not allowed.

(29) Passive/Unaccusative

a. * [The boys]$_i$ were arrested [all t_i] (passive)

b. * [The boys]$_i$ have arrived [all t_i] (unaccusative)

(Bobaljik (2003))

The stranding analysis predicts that (29)a,b are grammatical because a subject NP and a FNQ are base-generated in VP, and onlysubject NP moves up to the spec-TP, which is the same way as Sportiche's analysis.

Secondly, the positions for FNQs are not only right before the verb. FNQs can appear in positions for adverbs, as shown in (30). The stranding analysis cannot explain this distribution of FNQs.

(30) The children would <all> have <all> been <all> doing that. (Baltin (1995))

3.2. Adverbial Quantification

We investigated three kinds of analyses for syntactic configuration for floating quantifiers in the previous section. Based on the evidences in (29) and (30), the adverbial analysis seems to be plausible. However, if we follow the adverbial analysis, we should consider a puzzling problem about quantification; how do "adverbs" quantify over individual variables? In the cases of Japanese floating numeral quantifiers, they should quantify individual variables because of the classifier. Consider the following example.

(31) Gakusei-ga hon-o tosyokan-ni **san-satsu** okut-ta
Students-Nom book-Acc library-Dat **3-CL** send-Past

'A student sent three books to a library.'

The classifier *-satsu* 'volume' is just for the number of books. Japanese classifiers are available only for a particular type of individuals.

(32) Japanese Classifiers

a. san-satsu-no hon 'three books' (for books)

b. san-hiki-no usagi 'three rabbits' (for small animals)

c. san-tou-no zou 'three elephants' (for big animals)

d. san-ken-no ie 'three houses' (for houses)

e. san-dai-no kuruma 'three cars' (for motor vehicle)

f. san-nin-no gakusei 'three students' (for people)

However, if we suppose that Japanese FNQs are adverbs, they cannot quantify individual variables; adverbs quantify over event variables.

To solve this dilemma, Nakanishi (2004) argues that Japanese FNQs are adverbs which are base-generated in the surface position without any movement operation. The FNQ is not an adNominal quantifier which quantifies individual variables over, but it is an adverbial quantifier for event variables. Nakanishi's points are summarized as in (33).

(33) Nakanishi (2004)

a. Japanese FNQs are subject to the Monotonicity Constraints (Schwarzschild (2002)).

b. Adverbial FNQs quantify over individual variables via Homomorphism Mapping.

c. A Measure Function μ combines an FNQ with a predicate.

Firstly, Nakanishi argues that Japanese FNQs are subject to monotonicity (Schwarzschild

(2002)) to explain the following data. The quantifier for amount of water, *san-rittoru* 'three liters,' is compatible with floating pattern in (34)b, but degree of water, *san-do* 'three degree,' does not allow its floating variant as shown in (35)b.

(34) 'Three liters of water spilled on the table.'

a.	[**san-rittoru**-no	mizu]-ga	tukue-nouede	kobore-ta
	3-liters-of	water-Nom	table-on	spill-Past
b.	Mizu-ga	tukue-nouede	**san-rittoru**	kobore-ta
	water-Nom	table-on	3-liters	spill-Past

(35) 'Three degree water spilled on the table.'

a.	[**san-do**-no	mizu]-ga	tukue-nouede	kobore-ta
	3-degree-of	water-Nom	table-on	spill-Past
b.	*Mizu-ga	tukue-nouede	**san-do**	kobore-ta
	water-Nom	table-on	3-degree	spill-Past

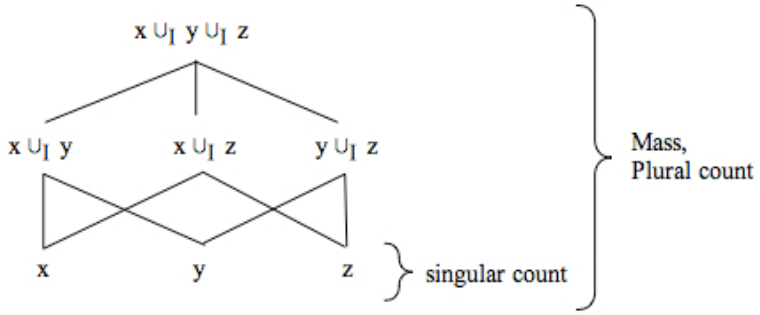
A crucial difference between volume and degree is monotonic property. The notion of monotonicity is suggested by Link (1983), and refined by Schwarzschild (2002). Link points out that plural count nouns are cumulative just like mass nouns.

(36) a. If a is water and b is water then the sum of a and b is water.

b. If the animals in this camp are horses, and the animals in that camp are horses, then the animals in both camps are horses.

Based on these examples, Link proposes to capture the similarities between the two model-theoretically using lattice structures. Assuming that the denotation of nominal predicates is a set of (singular and/or plural) individuals, it is possible to express the cumulative reference of mass nouns as well as of plural count nouns by ordering the individuals in the extension, as in lattice structures. A lattice is a partially ordered set, i.e. a set of objects ordered by a reflexive, anti-symmetric and transitive relation. For example, take a set containing elements in the figure in (37), where x, y, and z are atomic individuals, $\cup$ is an individual sum operator, and the lines indicate the ordering part-of relation $\leq$.

(37) Monotonic lattice structure



(38) a. Singular count nouns: ⟦ dog ⟧ = {x, y, z}
b. Plural count nouns: ⟦ dogs ⟧ = {x, y, z, $x \cup_I y$, $x \cup_I z$, $y \cup_I z$, $x \cup_I y \cup_I z$}
c. Mass nouns: ⟦ water ⟧= {x, y, z, $x \cup_I y$, $x \cup_I z$, $y \cup_I z$, $x \cup_I y \cup_I z$}

Suppose that x, y, and z are water, then their sums ($x \cup_I y$, $x \cup_I z$, $y \cup_I z$, $x \cup_I y \cup_I z$) are also water. In this sense, the mass noun water has the cumulative reference property. In the denotation of water, that is, { x, y, z, $x \cup_I y$, $x \cup_I z$, $y \cup_I z$, $x \cup_I y \cup_I z$ }, members can be ordered by the part-of relation (e.g. $x \cup_I y$ is a subpart of another member $x \cup_I y \cup_I z$). Thus, the extension of a mass noun can be modeled as a lattice of individuals.

Based on such an assumption, we can distinguish volume from degree in terms of monotonicity.

(39) Schwarzschild (2002)
a. Monotonicity
A property is monotonic if it tracks part-whole relations. e.g. If a quantity of oil has a certain volume, then every proper subpart of it will have a lower volume and superparts will have larger volumes. i.e., volume is monotonic.
b. Non-monotonicity
e.g. If the oil has a certain temperature, there is no reason to expect that proper parts of it will have lower temperatures. i.e., temperature is non-monotonic

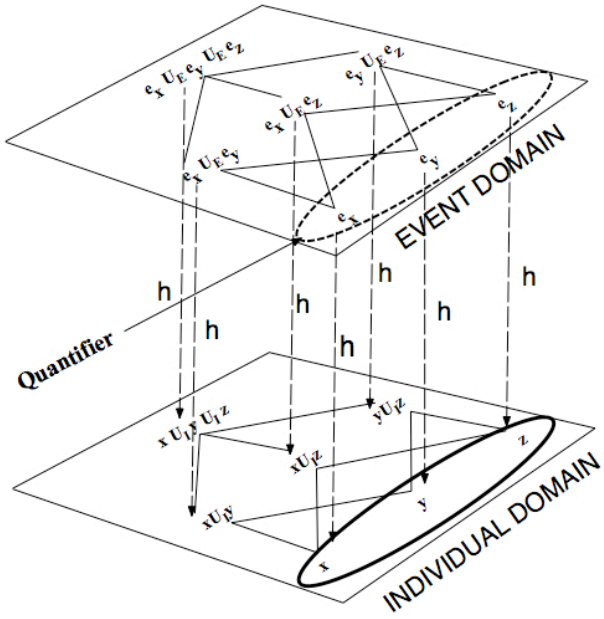
Volume of water shows the monotonic property, and it follows the Monotonicity Constrain to license Japanese FNQ. On the other hand, temperature of water is not monotonic. This is why (34)b is acceptable, but (35)b is not.

Nakanishi's second point in (33) is adverbial quantification over individual variables. Nakanishi suggests the homomorphism function h, which maps event variables to their correspondent individual variables.

(40) Homomorphism *h*
$\forall h\, \forall x,y \in D_e\, [h(x \cup_x y) = h(x) \cup_x h(y)]$

In Japanese, adverbial FNQs can not quantify event variables directly because of classifiers, but such quantification is possible indirectly via the homomorphism function. The homomorphism function *h* in (40) maps event variables into individual variables. This system is based on a basic assumption that an individual entity corresponds with an event. For example, in (31), an single sending event corresponds with a book, and three sending events include three books. Intuitively, in this case, e_1, e_2 , and e_3 are mapped into $book_1$, $book_2$, and $book_3$, respectively. (41) shows the quantification via homomorphism mapping.

(41) Quantification via Homomorphism h



Japanese FNQ, which is an adverb, quantifies over event variables directly, and individual variables indirectly through homomorphism mapping.

The last point in (33) is a measure function μ. Measure Phrases have a wide distribution in both English and Japanese, as illustrated in (42).

(42)

English		Japanese		
a.	**two feet** long	a.	**ni meetoru** nagai	'two meters longer'
b.	**two feet** longer	b.	**ni meetoru** naga-sugiru	'two meters too long'
c.	**two feet** of rope	c.	roopu **ni meetoru**	'two meters of rope'
d.	**two feet** away	d.	**ni meetoru** hanarete	'two meters away'
e.	walk **two feet**	e.	**ni meetoru** aruku	'walk two meters'

Schwarzschild (2002) proposes that, despite the seemingly cross-categorial syntactic distribution of MPs, all instances of MPs have exactly the same semantics. Assuming that Measure Phrases have a uniform semantics, he argues that a measure phrase is a predicate of scalar intervals (Schwarzschild 2002:231). Based on the assumption, Nakanishi proposes to spell out the denotation of Measure Phrases as in (43), where mp stands for the responding formal predicate in Predicate Logic (e.g. two-feet).

(43) $[\![\text{MP}]\!] = \lambda I_d.\ mp(I)$ (<d, t>)

A measure function μ is a measurement scheme that is obtained by examining a relation between an MP and the element to which the Measure Phrase applies. Nakanishi also introduces a measure function μ, which is a measurement scheme (e.g. volume, temperature, depth, etc.) that is obtained by examining a relation between an MP and the element to which

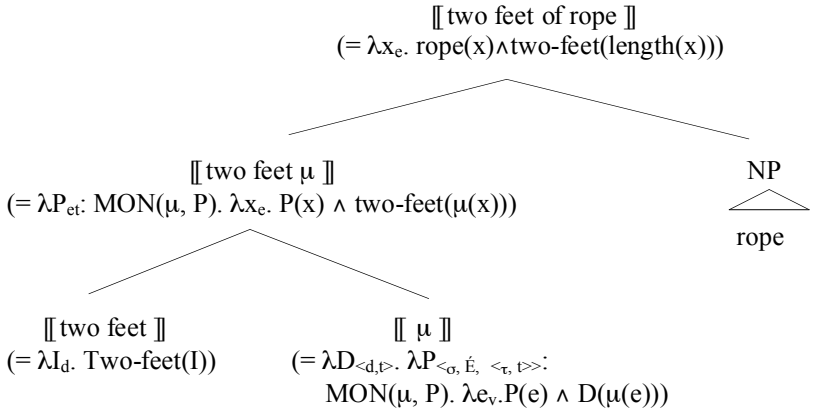
the MP applies. For example, in *two feet of rope*, since *two feet* specifies how long the relevant rope is, the measure function is "μ: spatial-length." Given such a view, semantics of measure phrases with different types of predicates can be described in the same way.

(44) Measure Function μ (Cartwright (1975), Schwarzschild (2002))
$[\![\mu]\!] = \lambda D_{<d,t>}. \lambda P_{<\sigma, \ldots, <\tau, t>>}: MON(\mu, P). \lambda e_v. P(e) \wedge D(\mu(e))$

(45) a. $[\![$ *two feet of rope* $]\!] = \lambda x_e.$ rope(x) ∧ two-feet(μ(x)), where μ: spatial-length
b. $[\![$*walk two feet* $]\!] = \lambda x_e.$ walk(x) ∧ two-feet(μ(x)), where μ: spatial-length

The syntactic structure of measure phrase and μ is shown in (46), which is suitable to capture the cross-categorial nature of MPs. In (46), μ first combines with a Measure Phrase that is a predicate of an interval, and then applies to the measured individual x.

(46) *two feet of rope*



3.3. Aspectual Functions of Arguments

As we have seen in section 2, the common property of grammatical examples with FNQ is a sort of "boundedness." We need reflect this intuition to the syntactic structure of FNQ. In previous literature, some functional phrases for aspectual properties of arguments have been suggested. Let us survey such studies briefly.

The relation of the argument structure and delimitednes is surveyed by Tenny (1994). She suggests a measuring-out constraint where internal arguments, but not external ones, can 'measure out the event' to which the verb refers.

(47) The Non-Measuring Constraint on External Arguments
An external argument cannot participate in measuring out or delimiting the event described by a verb. An external argument cannot be a measure, a path, or a terminus.
(Tenny 1994:83)

(48) Measuring-Out Constraint on Direct Internal Arguments
(i) The direct internal argument of a simple verb is constrained so that it undergoes no

necessary internal motion or change, unless it is motion or change which 'measures out the event' over time (where 'measuring out' entails that the direct argument plays a particular role in delimiting the event).

(ii) Direct internal arguments are the only overt arguments which can 'measure out the event.'

(iii) There can be no more than one measuring-out for any event described by a verb.

(Tenny 1994:11)

To capture such a relation between arguments and their aspectual property, functional phrases for aspect have been suggested (Borer (1994), Travis (1994), Kratzer (1996), Ritter and Rosen (1998), Arad (1999))

(22) a. $[_{AspP}\ NP_i\ [_{AspP'}\ ASP\ [_{VP} \ldots t_i \ldots]\ ]\ ]$ (cf. Borer 1994)

b. $[_{TP}\ [_{F(initiation)}\ [_{VP}\ V\ [_{F(\ -delimit)}\ [_{VP} \ldots]\ ]\ ]\ ]\ ]$ (Ritter & Rosen 1998)

Ritter and Rosen (1998) suggest that there are two aspectual phrases: higher and lower phrases, which correspond to AgrS and AgrO, respectively. The higher aspectual phrase assigns a "initiator" of a event to the external argument, and the lower aspectual phrase assigns a "delimiter" of the event to the internal argument. In a sentence *John ate an apple*, the external argument (John) is the initiator of the eating event, and the internal argument (an apple) is the delimiter of the event. An animate agent noun phrase starts an event, and when you finish an apple, the eating event is over.

4. Analyses

Now we will investigate the appropriate condition for FNQs in Japanese. As we have seen, the acceptability of FNQ is different even in a paradigm where two sentences seem to share the same syntactic configurations. I suggest here, however, that structural identification based on the property of predicate (transitive, unaccusative, unergative, and passive) is not enough to discuss the structure of sentences with FNQ. Aspectual property gives rise to different structures even though the types of predicate would be the same. Now I will suggest the appropriate analysis for FNQ licensing from an aspectual point of view.

4.1. Delimit Phrase

As I briefly mentioned in section 2, the common property of grammatical examples with FNQ is a sort of "delimitedness." Here I suggest that Japanese FNQs should be related to delimited properties (event or tense). Japanese FNQ can be licensed only if it shows up in a "delimited" context.

For example, events which are described with individual-level predicates are not delimited: it does not imply endpoint of an event inherently. On the other hand, stage-level

predicates provide an event which is delimited with a particular endpoint. The latter is compatible with Japanese FNQ because delimitedness is important property to license FNQ.

Simultaneous vs. successive distinction relates with delimitedness. Look back again to our example in (13) (repeated as (49) here).

(49) a. ?*Kodomo-ga *wa-ni-natte* **10-nin** odotta
Children-Nom circle-become **10-CL** danced

'Ten children danced in a circle' (Miyagawa 1989; 44)

b. Kodomo-ga *tsugitsugi-to* **10-nin** odotta
Children-Nom sequence-in **10-CL** danced

'Ten children danced one after another'

The only difference between the weird (49)a and the grammatical (49)b is that the distinction between *wa-ni-natte* 'in a circle' and *tsugitsugi-to* 'one after another.' The former has nothing to do with delimitedness and the FNQ *10(-nin)* does not delimit anything in the event of children's dancing. However, with the latter adverb *tsugitsugi-to* 'one after another,' the FNQ *10-nin* delimits a sequence of dancing events. There is a dancing event for the first child, and next, second child make a dance, then third, forth, and so on. The sequence of dancing events comes to end by tenth child. Here, *10-nin* delimits the whole dancing events.

In the case of progressive with *-teiru* in (15)b (repeated here as (50)b), propositions describe ongoing events.

(50) a. *Gakusei-ga tosyokan-de **go-nin** benkyo-suru
students-Nom library-in **5-CL** studied-do

'5 students study in the library'

b. Gakusei-ga tosyokan-de **go-nin** benkyo-sit-*eiru*
students-Nom library-in **5-CL** studied-do-PROG (Pres)

'5 students are studying in the library'

Japanese progressive with *–teiru* corresponds to *be V-ing* in English. Progressive in English has been argued to describe a limited duration, which means that the described event takes place in a certain limited period (Leech 1971). Progressive aspect of activity, accomplishment, and achievement verbs implies that an described event will stop after a certain period. Japanese *–teiru* has similar aspectual property. For example, aspectual expression "now" with contrastive focus is compatible with progressive tense, but it is not with non-progressive. (51)b implies that John is studying just right now, but he seem to stop studying later on.

(51) a. John-ga tosyokan-de (*ima-WA) benkyo-suru
students-Nom library-in now-FOCUS study-do

'John studies in the library (NOW)'

b. John-ga tosyokan-de (ima-WA) benkyo-sit-*eiru*
students-Nom library-in now-FOCUS study-do-PROG (Pres)

'John is studying in the library (NOW)'

Based on the assumption that Japanese FNQ is licensed in the delimited context, I will suggest that there is a functional phrase to check the delimitedness.

(52) The head of a functional head of DelP (Delimit Phrase) licenses FNQ.

Here I suggest that there are two structural DelPs: higher and lower positions. Lower DelP is between VP and *v*P. This DelP licenses the delimitedness property of the internal argument. The relation of the argument structure and delimittednes is surveyed by Tenny (1994) in (47) and (48). She suggests a measuring-out constraint where internal arguments, but not external ones, can 'measure out the event' to which the verb refers. Measuring-out constraint plays an important role in interpretation when the predicate is not stative or there is an internal argument which delimits the event. This aspectual property of the internal argument motivates the lower DelP.

On the other hand, the higher DelP is between *v*P and TP (cf. Travis (1994), Kratzer (1996), Arad (1999)). It is a functional phrase which would exist only if interpretation of the proposition has some delimiting aspectual property other than delimitedness provided by an internal argument. In other words, the higher DelP is provided by the interpretation. For example, in our examples in (11) (repeated as (53) here), both of the two predicates, 'be sick' and 'be big,' are unaccusative, and their syntactic configurations are basically same. Their interpretations with respect to aspectual property gives rise to the difference: 'be sick' is a stage-level predicate, and 'be big' is a individual-level predicate. Only the former describes a delimited event, and its structure contains the higher DelP, based on its interpretation.

(53) a. Kono doubutsuen-dewa kaba-ga **san-tou** *byoki-da*
This Zoo-in hippos-Nom three-CL sick-be

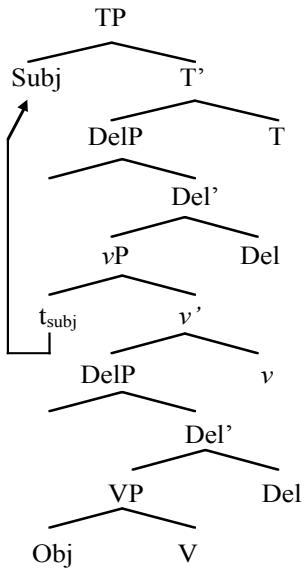
'Three hippos are sick in the zoo'

b. *Kono doubutsuen-dewa kaba-ga **sa-tou** *ookii*
This Zoo-in hippos-Nom three-CL be big sick-be

'Three hippos are large in the zoo' (Mihara 2004)

The configuration based on the assumption is represented as below.

(54) Structure with two DelPs



The difference in grammaticality in (28) (repeated here as (55)) supports this analysis. These sentences are examples of FNQ from transitive subject, but the grammaticality of these sentences is different depending on the definiteness of the object NP; definite NP is compatible with FNQ in (55)b, but indefinite NP is not in (55)a.

(55) a. ?*Gakusei-ga hon-o **yo-nin** kat-ta.
student-Nom book-Acc **four-CL** buy-PAST

'Four students bought a book / books'

b. Gakusei-ga {sore / sono hon}-o **yo-nin** kat-ta.
student-Nom {it / that book}-Acc **four-CL** buy-PAST

'Four students bought it / that book'

(Takami 2001:139)

Both of the sentences contain a object NP, which provide the lower DelP based on Tenny's measuring constraint. However, the interpretations of these sentences about aspectual property of delimitedness are different. In (55)a, the indefinite NP does not describe what kind of books and how many books are bought. Under this interpretation, the buying events by four students are separated and they have nothing to do with each other, which means that they are not interpreted as a series of events. The notion of "delimitedness" requires that the same kind of events should take place in sequence, but (55)a does not have such an interpretation. It causes that the structure of (55)a does not contain the upper DelP. In (55)b, on the other hand, the definite NP refers a particular book. This definite NP give rise to "in sequence" interpretation, and the number of buying event is delimited by the FNQ, which is four. In this case a series of buying books is delimited, and there is the upper DelP. This analysis is supported by an example such as (56), where the object NP is definite, but it does

not give rise to "in sequence" interpretation. There is only one buying event, and the interpretation is not delimited by the number of people who buy a house.

(56) *Gakusei-ga [sono ie]-o **yo-nin** kat-ta.
student-Nom that house-Acc four-CL buy-PAST

'Four students bought that house'

Different from (55)b, (56) is ungrammatical even though the object is a definite NP. It is because the interpretation is not delimited, and its structure does not contain the upper DelP which license FNQ.

Notice that the upper DelP is not provided by an overt lexical element, but it comes from interpretation of delimitedness. Chances are that it can be available a situation where (55)a becomes grammatical because of a pragmatic effect. For example, suppose a situation where you are working at a bookstore, and right before you closed the store four students rushed into your store to buy particular books. Because of the business, you closed the store 10 minute later than usual. In that situation, the sentence in (55)a can be acceptable without any particular aspectual adverb.

(57) A: Why did you close your store 10 minute late today?
B: [Gakusei-ga hon-o **yo-nin** kat-ta] kara.
students-Nom books-Acc **4-CL** buy-Past because

'It is because four students bought books'

In the case of (57), the buying events take place in a short time, and the series of events can be delimited by the number of students: four. In that case there is the upper DelP without any aspectual adverb in its specifier position. In out-of-the-blue contexts, a default interpretation of (57)a is an unbounded interpretation; no particular endpoint of buying events in your store on the day is presupposed inherently, and there is no restriction about potential number of students who come to your bookstore. In such a default interpretation, there is no delimitedness, leading that the DelP is absence and FNQ is not allowed. The contrast between (55)a and (57) reveals that the DelP is not given by an aspectual adverb, but delimitedness interpretation.

4.2. Presupposition of Delimitedness

Based on the Nakanishi's explanation with the Homomorphism function, I will provide an explanation for the paradigms addressed in section 2. The data show that Japanese FNQs are compatible with the distributive reading, where each individual event (which can be mapped onto a particular individual) takes place separately. In other words, event variables should not combine with each other to give rise to the group reading. To reflect this basic assumption on the formalized representation, I suggest the following restriction for a measure function μ: event arguments should be atomic.

(58) $[\![\mu]\!] = \lambda D_{<d,t>}. \lambda P_{<\sigma, \ldots, <\tau, t>>}$:MON(μ, P). λe_v:**ATOM(e, P)**. P(e) ∧ D(μ(e))

The atomicity is defined as shown in (59).

(59) ATOMic property (Krifka (1998))
$\forall X \subseteq U_P \, \forall x \in U_P \, [ATOM_P(x, X) \leftrightarrow X(x) \wedge \neg \exists y \in U_P [y <_P x \wedge P(y)]]$

The atomicity of event arguments should be satisfied in a stage of derivation. Here let us suppose that a covert head of the Delimit Phrase satisfies this presupposition.

(60) Covert head of Delimit Phrase
$[\![\text{Del}]\!] = \lambda Q_{vt}$. Q s.t. MON(μ, Q) ∧ ATOM(e, Q)

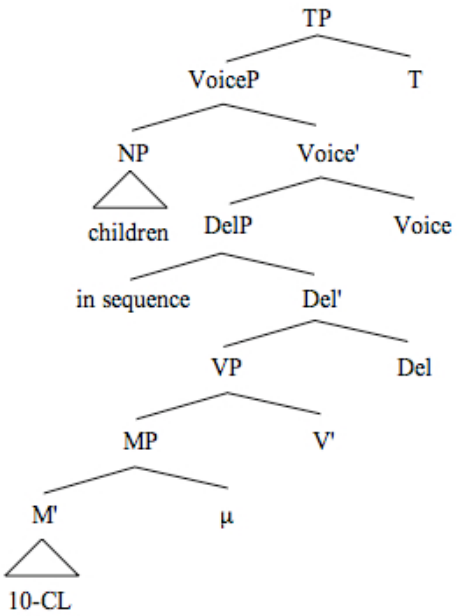
If interpretation provides DelP in the structure, the presupposition of event arguments for the measure function μ can be satisfied. However, if there is no DelP because of undelimited interpretation, the presupposition is not satisfied and give rise to presupposition failure. For example, structure and interpretation of (13)b (repeated as (61)) are represented as (62) and (63).

(61)

Kodomo-ga	*tsugitsugi-to*	**10-nin**	odotta
Children-NOM	sequence-in	**10-CL**	danced

'Ten children danced one after another'

(62)



(63) $[\![\textit{dance}]\!] = \lambda e_v$. *dance(e)
$[\![\textit{ten}\text{-CL}]\!] = \lambda I_d$. ten-individuals(I)
$[\![\mu_{VP}]\!] = \lambda D_{<d,t>}.\lambda P_{<v,t>}$:MON($\mu$,P). λe_v:ATOM(e,P). P(e) $\wedge$ D(μ(e))
$[\![$ VP $]\!] = \lambda e_v$. *dance(e) $\wedge$ 10-individuals(cardinality-of-individuals(*h*(e)))
$[\![$ Voice $]\!] = \lambda y_e. \lambda e_v$. Agent(e)=y
$[\![$ Voice' $]\!] = \lambda y_e. \lambda e_v$. Agent(e)=y $\wedge$ *dance(e) $\wedge$ 10-ind.(card.-of-ind.(*h*(e)))
$[\![$ NP $]\!]$ = CHILDREN (type e (kind))
$[\![$ VoiceP $]\!] = \lambda y_e. \lambda e_v$. Ag(e)=y $\wedge$ *dance(e) $\wedge$
10-ind.(card.-of-ind.(*h*(e)))(CHILDREN)
(Derived Kind Predication (DKP))
$\lambda e_v. \exists x [^{\cup}$child(x) Ag(e)=x $\wedge$ *dance(e) $\wedge$ 10-ind.(card.-of-ind. (*h*(e)))]
$[\![$ TP $]\!] = \exists e \exists x [^{\cup}$child(x) $\wedge$ Ag(e)=x $\wedge$ *dance(e) $\wedge$ 10-ind.(card.-of-ind.(*h*(e)))][2].

5. Implementation

Based on the assumption which we suggested in the previous section, we will see the implementations to explain each data with FNQ.

5. 1. Stage / Individual-level Predicate

Kratzer (1995) argues that individual level predicates do not contain event variables, based on (64).

(64) a. *When Mary knows French, she knows it well.

b. When Mary speaks French, she speaks it well.

c. *When Mary speaks French, she knows it well.

d. *When Mary knows French, she speaks it well.

To explain the data, Kratzer suggests that individual level predicate *know* does not contain event variables for its argument. She also suggests the following restriction for quantification.

(65) Prohibition against Vacuous Quantification (Kratzer (1995))
For every quantifier Q, there must be a variable x such that Q binds an occurrence of x in both its restrictive clause and its nuclear scope.

Assuming that a *when*-clause introduces the quantifier *always*, the sentences in (64) are expressed by tripartite structures consisting of *always*, a restrictive clause, and a nuclear scope, as in (66) (Heim 1982 for tripartite structures).

---

[2] This compositional semantics follows Event Identification (Kratzer (1996)).

f	g	→	h
<e, <v, t>>	<v, t>		<e, vt>

$[\![$ h $]\!] = \lambda x.\lambda e$. f(x)(e) $\wedge$ g(e), when $[\![$ f $]\!] \in D_{<e, vt>}$ and $[\![$ g $]\!] \in D_{vt}$

(66) a. *Always [know(Mary, French)] [know-well(Mary, Frnch)]
b. Always [speak(Mary, French,l)] [speak-well(Mary, Fench,l)]
c. *Always [speak(Mary, French,l)] [know-well(Mary, French)]
d. *Always [know(Mary, French)] [speak-well(Mary, French,l)]

Only (66)b satisfies (65). The event argument *l* is bound by *always* both in restrictor and matrix. If there is no event variable, it is not compatible with FNQ because of the restriction for event delimitedness by DelP. Structures of (67) (=(10)) are represented as (68).

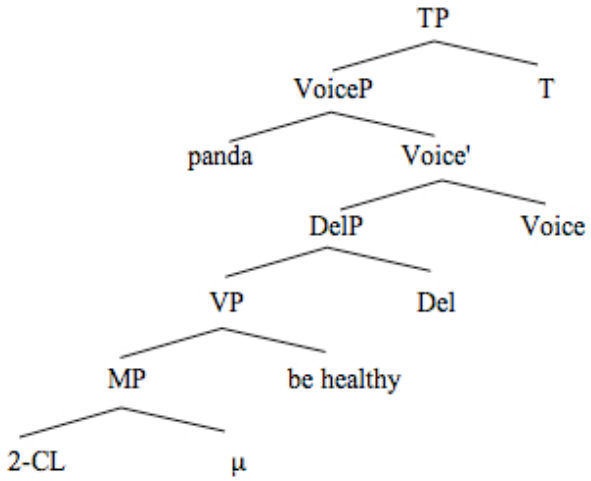
(67) a. Panda-ga **ni-tou** *genkii-da*
Panda-Nom 2-CL healthy-be

'Two pandas are healthy'

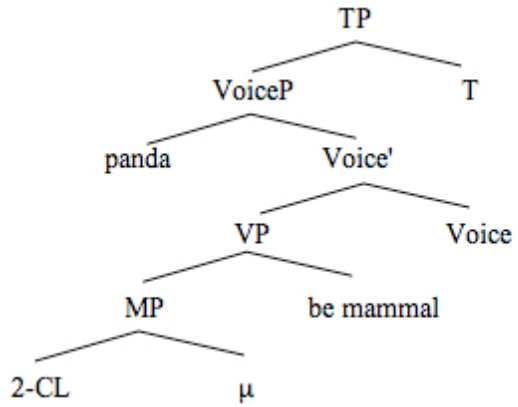
b. *Panda-ga **ni-tou** *honyurui-dai*
Panda-Nom 2-CL mammal-be

'Two pandas are mammals' (Nishigauchi and Uchibori 1991)

(68) a. Structure of (67)a



b. Structure of (67)b



In (68)b with individual predicate *be mammal*, there is no DelP because of the interpretation. The presupposition of μ is not satisfied. This is why the structure in (68)b is not acceptable.

5. 2. Progressive

Next, we will look back to the examples that show that progressive morphemes *–teiru* (present) and *–teita* (past) save the grammaticality of sentences with FNQ in (15) and (16) (repeated as (69) and (70) for our convenience).

(69) a. *Gakusei-ga tosyokan-de **go-nin** benkyo-su-ru
students-Nom library-in **5-CL** studied-do-Pres

'5 students study in the library'

b. Gakusei-ga tosyokan-de **go-nin** benkyo-si-*teiru*
students-Nom library-in **5-CL** studied-do-PROG(Pres)

'5 students are studying in the library'

(70) a. *Gakusei-ga kyokasyo-o **yo-nin** yon-da
Students-Nom textbook-Acc **4-CL** read –Past

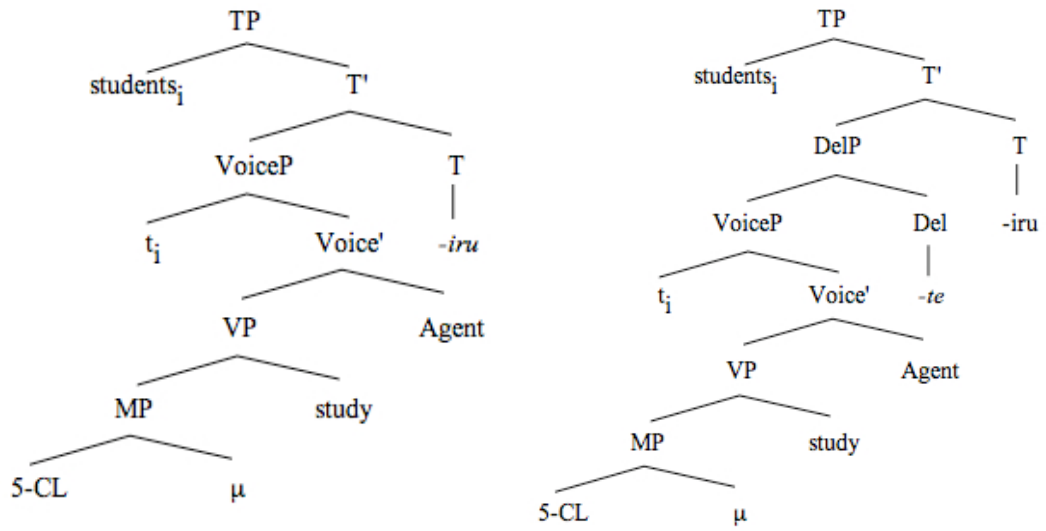
'Four students read the textbook'

b. Gakusei-ga kyokasyo-o **yo-nin** yon-*deita*
Students-Nom textbook-Acc **4-CL** read-PROG(Past)

'Four students were reading the textbook'

Several researchers have argued about the configuration of *–teiru* (McClure 1993, Shirai 1997, Ogihara 1998, Kusumoto 2003, among others). The most accepted consensus is that *–teiru* is lexically decomposed into *–te* (or *–de* when the stem of the verb ends with a voiced sound) for progressive aspect, and morphemes of *–i-ru* (*be*-present) or *–i-ta* (*be*-past). Such an overt aspectual element provides the higher DelP between TP and *v*P. Following these assumptions, I suggest that *-iru* or *-ita* appears in the head-TP, and the progressive morpheme *–te* is the trigger for the delimitedness interpretation. The delimited interpretation gives rise to the upper DelP and the progressive morpheme *–te* shows up at the head of the DelP. It is why (b)-cases in (69) and (70) with the progressive morpheme is grammatical.

(71) a. *No overt aspectual morpheme ((69)a) b. *–te* delimits an studying event ((69)b)



In ungrammatical (a)-cases, however, there is no higher DelP, and the presupposition of μ cannot be satisfied, which bring about ungrammatical configuration. This analysis means that sentences with present / past tense and ones with present / past progressive do not share the same syntactic structure actually; the progressive morpheme gives rise to the functional category DelP.

5. 3. Psych Verbs

Psych verbs describe a state without any particular endpoint of the event, not a temporally delimited event. Even if there is an internal argument of psych verb, it cannot delimit an event which the verb describes. The structure does not involve lower DelP where the presupposition of the measure function μ is satisfied, even if a psych verb contains an internal argument.

(72) a. *John-wa tomodachi-o soredemo **san-nin** shinzita
John-Nom friends-Acc still **3-CL** believed

'John still believed his three friends'

b. *Gakusei-ga kyoju-o soredemo **go-nin** nikunda
Student-Nom professor-Acc still **5-CL** hated

'A student still hated 5 professors'

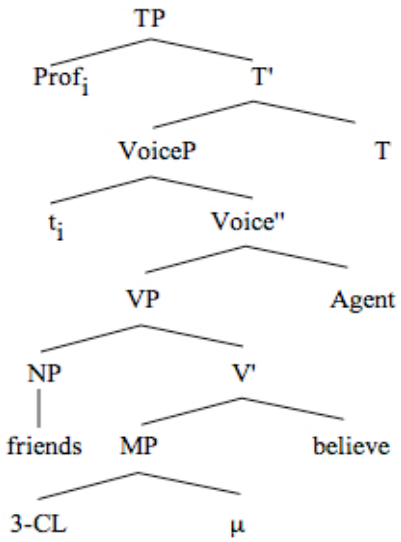
(73) a. *Kyouju-ga seito-ni **futa-ri** nikum-are-ta
Professors-Nom student-by **2-CL** hate-PASS-past

'Two professors were hated by a student'

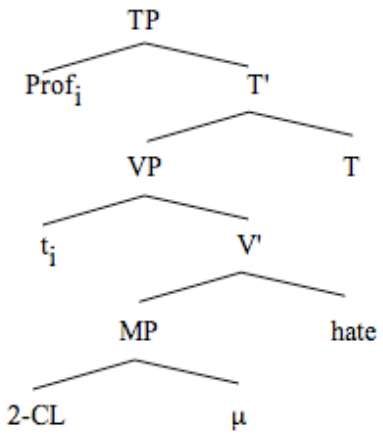
b. *Soko-ni ita gakusei-ga keikan-ni **san-nin** utagaw-are-ta
there-in be students-Nom officer-by **3-CL** suspect-PASS-past

'Three students who were there were suspected by a officer'

(74) a. Structure of (72)a (=(19)a)



b. Structure of (73)a (=(20)a)



This explains why sentences in (72) (=(19)), which are examples of FNQ from object, are ungrammatical. In the subject-oriented cases in (73) (=(20)), there is no overt aspectual expression and its interpretation is not delimited. It means that there is no higher DelP in the

structures of (73) first of all. Data in (73) are passive whose subject is base generated inside VP. Internal arguments of psych verbs do not delimit the event and there is no lower DelP either.

EO type psych verbs and ES type ones show different acceptability with respect to FNQ; object-oriented FNQ is allowed with EO type psych vertbs ((22)a, repeated in (75)a), but not with ES type((22)b, repeated in (75)b).

(75) a. Kare-no furumai-ga gakusei-o **go-nin** komarasesta (EO)
he-of behaviour-Nom students-Acc **5-CL** embarrassed

'His behavior embarrassed five students'

b. *Kodomotachi-wa hanashi-o **itsu-tsu** kowagatta (ES)
Children-Nom stories-Acc **5-CL** feared

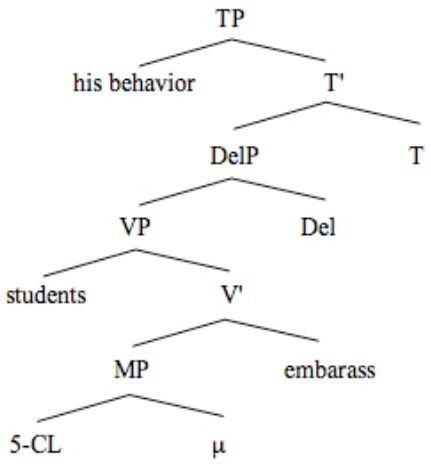
'Children feared five stories'

In the previous literature about psych verbs based on fine-grained semantics, it has been said that ES type and EO types are different with respect to an aspectual property (Grimshaw (1990), van Voorst (1992), Pesetsky (1995)); ES type verbs are stative verbs, and EO type verbs are causative verbs which describe a delimited event.

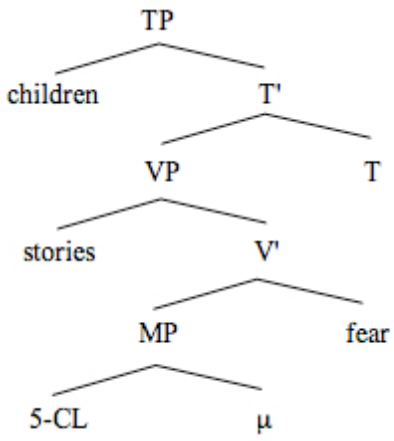
(76) a. Bill fears ghosts (ES)
b. Ghosts frighten Bill (EO) (Grimshaw 1990)

Based on this point of view, a sentence with an EO type psych verb, "Ghosts frighten Bill," is interpreted as [Ghosts$_i$ CAUSE [Bill fears PRO$_i$]]. Important thing for us here is that interpretation of causal event is a delimited one with an inherent endpoint. Now let us suppose that the structure of EO type verbs contains lower DelP between *v*P and VP. Based on this assumption, the structures of EO type verbs with FNQ are represented as below.

(77) a. (75)a



b. (75)b



EO type verbs are interpreted as causative, and there is a lower DelP, which satisfies the presupposition that there is a endpoint of the relevant event. As for ES type verb in (77)b, the sentence is not acceptable because of absence of DelP in the structure with ES type verbs.

6. Conclusion

We have seen that Japanese Floating Numeral Quantifier is an aspectual-sensitive pheNomenon. FNQ is licensed by the "delimited" property assuming a particular temporal endpoint. These delimited properties are given by inherent aspectual property of predicates like as stage-individual level distinction or an overt delimiting lexical element. This analysis can be applied to several kinds of data which is problematic for Miyagawa's mutual c-command analysis. There are cases where it is allowed FNQ from subject NP of transitive verb and unergative subject, and it is not allowed FNQ from transitive subject, unaccusative subject, and passive subject. These data show us that the distribution of FNQ in Japanese cannot be explained only by the syntactic configuration in terms of constituency. Based on the analysis with delimitedness restriction, we can give a unified analysis about the distributions which are counterexamples for Miyagawa's mutual c-command analyses.

The ungrammatical cases with FNQ are not acceptable because of a presupposition given by the measure function μ. The function μ is a kind of presupposition trigger, and such a presupposition should be satisfied on the way of derivation. Presupposition is not a vague conception, but it comes from a particular calculation based on an appropriate syntactic structure and compositional semantics. This standpoint follows the strategy of "localist" approach of pragmatics, where pragmatic effect, such as presupposition, should be calculated based on structure. Japanese FNQ would be a breakthrough to investigate the possibility of the localist approach of pragmatics.

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