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TELOCITY, STRANDED NUMERAL QUANTIFIERS, AND QUANTIFIER SCOPE*

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1. Introduction

In this chapter, I will give further support for two points that are commonly found in the literature on Japanese.

Stranded numeral quantifiers in Japanese identify copy of A-movement (Miyagawa 1989; see also Ueda 1986).

Japanese is a scopally rigid language; quantifier scope ambiguity obtains if one quantifier is overtly moved over another quantifier. (Kuroda 1971).

The first assumption is based on the idea that a numeral quantifier and its associate NP must observe strict locality, and when a numeral quantifier is stranded, it is because there is a copy of the associated NP that meets the locality requirement.

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Often this copy occurs precisely where one expects the copy of A-movement to occur, which gives evidence for A-movement. A number of counterexamples have been presented in the literature to this locality requirement of the associate NP and its numeral quantifier. Building on the work of Borer (2005), I will argue that many of the counterexamples fall under a particular aspectual interpretation — telic — and by making one assumption about the external argument for this aspect interpretation, we can continue to uphold the approach to numeral quantifiers that assumes strict locality. The evidence provides a particularly strong argument for the predicate-internal subject position, which is one of the most important concepts that distinguish MP from GB, yet evidence for it is hard to come by. What I will present also clarifies the relation that a stranded NQ has to the event expressed by the verbal predicate, something that has been noted, but has not been given a formal analysis that is consistent with the local nature of NQs. For the second assumption, that of scopal rigidity, we will see that, here, too, telicity plays a crucial role. What I will show is that, contrary to the widely-held assumption of scopal rigidity, which refers to the fact that quantifier scope that is the inverse of surface c-command relation is impossible, does not hold in telic examples, something which has not been noticed before in any systematic way. I will demonstrate that the structure I propose for stranded numeral quantifiers accounts readily for the surprising existence of inverse scope in telic sentences. What we will see is that the phenomenon is consistent with the observation by Kuroda (1971) that in Japanese, overt movement of a quantifier across another quantifier leads to scopal ambiguity. In Kuroda's work, the overt movement that induces inverse scope is scrambling, but in the telic examples, it is overt movement of the object quantifier to the domain of aspect head,

which has the effect of the object quantifier c-commanding the copy of the subject quantifier in the specifier of vP. I will begin with numeral quantifiers.¹

2. Stranding of quantifiers

Stranded quantifiers have been an important source of empirical argumentation for identifying where copies of displaced elements lie. Sportiche (1988) notes that the distribution of stranded quantifier in French and English identifies the predicate-internal subject position.

(1) a. Tous les enfants ont vu ce film.

all the children have seen this movie

b. Les enfants ont tous ___ vu ce film.

the children have all seen this movie (Sportiche 1988: 426)

On the assumption that the universal quantifier *tous* must be in a strictly local relation with the associated noun phrase *les enfants*, (1b) indicates that there is a copy of the noun phrase next to the stranded quantifier that fulfills the locality requirement, and this position corresponds to the predicate-internal subject position, an A-position that was not identified in GB but has come to play a critical role in the minimalist program era (see also Kuroda 1988, among others, who independently proposed the predicate-internal subject position).

¹Numeral quantifiers occur in a number of constructions (see Kamio 1977, Watanabe 2006, among others). In this chapter, I focus on the NP(-case)-NQ sequence as well as those cases of NQ stranding.

Stranded numeral quantifiers in Japanese also give evidence for the existence of copies left by movement. The following is the standard paradigm based on Haig 1980 and especially Kuroda 1980 (see Miyagawa and Arikawa 2007 for further discussion).

(2) Standard paradigm

a. Gakusei-ga san-nin sake-o nonda.

student-NOM 3-CL_{SUB} sake-ACC drank

‘Three students drank sake.’

b. *Gakusei-ga sake-o san-nin nonda.

student-NOM sake-ACC 3-CL_{SUB} drank

‘Three students drank sake.’ (Haig 1980, Kuroda 1980)

c. Hon-o gakusei-ga go-satu katta.

book-ACC student-NOM 5-CL_{OBJ} bought

‘Students bought five books.’ (Haig 1980, Kuroda 1980)

In (2a) the numeral quantifier (NQ) *san-nin* ‘3-CL’ and the associated subject noun phrase ‘students’ are adjacent to each other, but in (2b) the adjacency is violated because the object intervenes between the two. (2c) shows that, unlike the subject, the object can move away from its NQ and still meet adjacency, indicating that there is a copy of the moved object next to the object-oriented FNQ *go-satu* ‘5-CL’, shown by the underline below.

(3) Hon-o gakusei-ga ___ go-satu katta.

book-ACC student-NOM 5-CL_{OBJ} bought

‘Students bought five books.’

In Miyagawa (1989) and Ueda (1986), this line of argument is extended to the passive construction to demonstrate that the so-called direct passive involves movement; the following is from Miyagawa (1989).

- (4) Kuruma_i-ga doroboo-ni ____i ni-dai nusum-are-ta. (passive)
 car_i-NOM thief-by ____i 2-CL steal-PASS.-PAST
 ‘Two cars were stolen by a thief.’

The subject-oriented NQ *ni-dai* ‘2-CL’ is separated from the derived subject noun phrase *kuruma-ga* ‘cars-NOM’ by the by-phrase, yet the sentence is perfectly grammatical because there is a copy of the subject next to the FNQ *ni-dai* ‘2-CL’.

In Miyagawa (1989) I further show that the stranded NQ can distinguish between unaccusative and unergative constructions.

- (5) a. Doa_i-ga kono kagi-de ____i futa-tu aita. (unaccusative)
 door_i-NOM this key-with ____i 2-CL opened
 ‘Two doors opened with this key.’
 b. *Kodomo-ga geragerato san-nin waratta. (unergative)
 children-NOM loudly 3-CL laughed
 ‘Three children laughed loudly.’

The unaccusative verb ‘open’ in (5a) allows NQ that is separated from the associated noun phrase while the unergative ‘laugh’ in (5b) does not.² This together with the passive example show that the NQ data from Japanese gives evidence for copies left by A-movement.

²See later discussion that opens the possibility that (5b) may be grammatical under one interpretation.

One question that arises with the standard paradigm given in (2) above is the role of the predicate-internal subject position in the ungrammatical (2b), specifically, why doesn't the copy of the external argument in the specifier of vP fulfill the locality requirement? At the time the observation was made that sentences like (2b) are ungrammatical (Haig 1970, Kuroda 1970), the theory did not include the notion of predicate-internal subject position, but if it this position indeed exists, we should see its effects with in the stranding constructions. In Miyagawa and Arikawa (2007), we argued that, in fact, the lower copy of the external argument does play a role in some of the counterexamples to strict locality. In this chapter, I will extend this analysis by showing that the lower copy of the external argument is visible in telic aspect.

3. Intransitive verbs

A number of linguists have noticed that stranding of an NQ is possible in a particular aspectual context, namely, the telic aspect, in which there is an endpoint to the event expressed.³ The first to note this is Tsujimura (1989) in her study of unaccusative mismatches (Dowty 1991, Levin and Rappaport Hovav 1989, 1995). She gives the following minimal pairs with the intransitive verbs 'run' and 'swim' (p. 269).

(6) a. ?*Gakusei-ga kodomo-to san-nin hasitta.

student-NOM children-with 3-CL ran

'Three students ran with the children.'

b. Gakusei-ga kooen-made san-nin hasitta.

student-NOM park-as.far.as 3-CL ran

³See Levin and Rappaport Hovav (2005) for discussion of three types of telicity. In this chapter, I will not subdivide telicity into different types.

‘Three students ran to the park.’

(7) a. ?*Gakusei-ga kodomo-to inukaki-de san-nin oyoida.

student-NOM children-with dog.paddling-by 3-CL swam

‘Three students swam with children by dog paddling.’

b. Gakusei-ga kisi-made inukaki-de san-nin oyoida.

student-NOM shore-as.far.as dog.paddling-by 3-CL swam

‘Three students swam to the shore by dog paddling.’

As Tsujimura (1989: 269-270) notes, ‘run’ and ‘swim’ are typical unergative verbs, so that we would not expect them to allow stranding of NQ across PPs, which is what the (a) examples demonstrate, but, puzzlingly, not the (b) examples, which allow stranding.

According to Tsujimura, the addition of the goal phrase in the (b) examples “adds a specification of inherent direction as well as an *endpoint to the original meaning of the verb* and makes the verb function like [an unaccusative] verb” (emphasis added).

Tsujimura, referring to the work of Levin and Rappaport Hovav (1989, 1994; see also Dowty 1991), observes that with the goal phrase, these intransitive verbs behave like unaccusative verbs with inherent direction such as *arrive, come, go, depart, fall, return, and descend*.

In a later work, Mihara (1998) makes a similar observation based on his counterexamples to locality such as the one given in (8a) below; I have also added a similar counterexample from Kuno and Takami (2003: 284) that demonstrates the same point.

(8) a. Gakusei-ga tosyokan-de go-nin benkyoosi-tei-ta.

student-NOM library-at 5-CL study-PROG-PAST

‘Five students were studying at the library.’ (Mihara 1998: 89)

b. A: ‘Is this new magazine selling well?’

B: Ee, kesa-mo gakusei-san-ga

Yes this morning-also students-NOM

[_{VP} sore-o go-nin kat-te iki-masi-ta yo].

it-ACC 5-person buy-ing go-POLITE-PAST

‘Yes, this morning also, five students bought it.’

In noting the counterexamples to locality, Mihara makes the observation that stranding of an NQ requires the sentence to have aspectual delimitedness, which is similar to the observation made earlier by Tsujimura. Note that in the example given by Kuno and Takami, the verb contains the motion verb ‘go’, which naturally leads to a telic interpretation (see Miyagawa and Arikawa 2007 for discussion of this example from Kuno and Takami).

The following minimal pair demonstrates in a direct fashion the importance of aspectual interpretation for stranding of NQs.

(9) a. *Tomodati-ga zyup-pun futa-ri odotta.
friend-NOM 10-minutes 2-CL danced

‘Two friends danced for ten minutes.’

b. Tomodati-ga zyup-pun-no-uti-ni futa-ri odotta.
friend-NOM 10-minutes-in 2-CL danced

‘Two friends danced (a dance) in ten minutes.’

This is a classic test of aspect found in Vendler (1967) between activity (for ten minutes) and accomplishment (in ten minutes), the former without an end point that bounds the

event expressed, and the latter with such an endpoint. The judgment is crisp and clear: with the activity aspect, stranding of the FNQ is entirely ungrammatical while the accomplishment aspect makes it totally acceptable.⁴ There is nothing wrong with the meaning of the activity-aspect sentence in (9a), as shown by the fact that if the NQ is next to the subject, the example is perfectly fine.

- (10) Tomodati-ga futa-ri zyup-pun odotta.
 friend-NOM 2-CL 10-minutes danced
 ‘Two friends danced for ten minutes.’

Furthermore, it has been noted that stranding of an NQ is ungrammatical with permanent/individual-level predicates (Harada 1976, Fukushima 1991, Nishigauchi and Uchibori 1991, Ohki 1987), an observation that coincides with the idea that stranding of NQs is limited to telic expressions. The following is taken from Mihara (1998: 110-111; see also Nakanishi 2008).

⁴There are examples comparable to the ungrammatical (9a) that for some people are not so bad.

- (i) (*)Tomodati-ga itizikan futa-ri odotta.
 friend-NOM for.1.hour 2-CL danced
 ‘Two friends danced for one hour.’

For those who accept this sentence, the interpretation is that for every hour, two friends danced. This is a telic interpretation, and the grammatical nature of it is predicted. To get this interpretation, ‘for one hour’ and the NQ must be pronounced as a prosodic unit. The following pseudocleft example shows the fact that the two comprise a phrase (thanks to Hiroki Maezawa for pointing this out).

- (ii) Tomodati-ga odotta-no-wa itizikan futa-ri da.
 friend-NOM danced-NOMINALIZER-TOP for.1.hour 2-CL COP
 ‘It’s two each hour that friends danced.’

This example only has the interpretation that friends danced two at a time for each hour.’ In the ungrammatical (9a), combining ‘for ten minutes’ with the NQ is more difficult for reasons that I don’t understand.

- (11) a. Uti-no doobutuen-de-wa *kaba-ga* mada **san-too** genki-da.
 my zoo-at-TOP hippo-NOM still three-CL healthy
 ‘In my zoo, three hippos are still healthy.’
- b. *Uti-no doobutuen-de-wa *kaba-ga* zannennakotoni **san-too** osu-da.
 my zoo-at-TOP hippo-NOM unfortunately three-CL male
 ‘In my zoo, unfortunately, three hippos are male.’

Note that all of these examples involve a subject-oriented numeral quantifier that has been stranded. The pattern that emerges is that stranding of a subject-oriented numeral quantifier is possible in telic expressions. How can we account for this? Whatever account we come up with will need to account for the unaccusative mismatch that Tsujimura observed — the addition of a goal phrase to an unergative construction leads to possible stranding of a NQ. Although one option is to follow Tsujimura in assuming that the argument structure changes with the addition of the goal phrase, there is a sense that the predicate and the participant in the event are basically the same with and without the goal phrase, and that the difference is in the aspectual interpretation of the event.

What I suggest is the following:

(12) Telicity and the external argument (TEA)

Once the external argument moves to Spec,TP, its lower copy in the predicate-internal subject position is visible under telic interpretation.

It has been noted in the literature (e.g., Miyagawa 2001) that the lower copy of the external argument is not visible in Japanese. However, what TEA states is that the copy becomes visible under telic aspect. The reason is not clear, and it is beyond the scope of

this chapter to try to come up with an account, particularly because the relationship between the external argument and argument structure is, with few exceptions, uncharted territory. There is a handful of works that makes observations related to this relationship between the subject and telicity; see, for example, Folli and Harley (2005), Rappaport Hovav and Levin (2005), and Rappaport Hovav (2008). Folli and Harley, for example, note a number of examples from English and Italian where there is a close link between the type of event in the verbal predicate and the type of external argument that is allowed, and often it is the aspect of the event that governs the type of the external argument that can occur.

TEA accounts for all of the examples noted above in which a subject-oriented NQ is successfully stranded; in the telic aspect, the lower copy of the subject meets the strict locality requirement. We can in fact “repair” the ungrammatical example from the standard paradigm noted by Kuroda (1970) and see TEA at work.

(13) a. *Gakusei-ga sake-o san-nin nonda.
 student-NOM sake-ACC 3-CL_{SUB} drank
 ‘Three students drank sake.’

b. Gakusei-ga sake-o *sudeni* san-nin nonda.
 student-NOM sake-ACC already 3-CL_{SUB} drank
 ‘Three students already drank sake.’

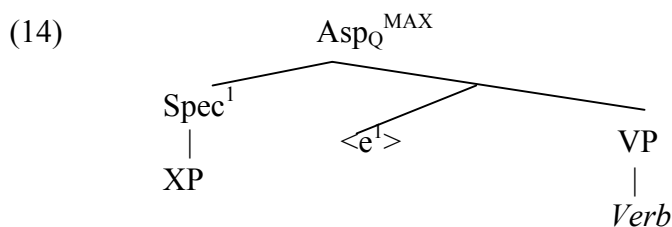
While most speakers I have consulted agree with the judgment that (13a) is degraded, (13b), which, because of the addition of ‘already’, gives a telic interpretation, is perfectly acceptable. This is true whether ‘already’ is placed before the verb or even the subject.

The account according to TEA is particularly important for the notion of predicate-internal subject position. Sportiche's (1988) examples from English and French on floated quantifiers provided one of the strongest pieces of evidence for this notion. However, Bošković (2004) and Tada (1999), among others, argue that the position of the stranded quantifier in English (and also French for Bošković) is not the original position of the subject, but it is in a derived, non- θ driven position. If this is the case, we no longer have quantifier stranding as empirical evidence for one of the most important notions that distinguishes MP from GB. If our analysis of subject-oriented-NQ in terms of TEA is correct, Japanese provides independent evidence for the predicate-internal subject position.

In presenting support for NQ stranding based on TEA, I will take into account observations made in the literature that stranded NQ not only modifies the associated NQ, but it also interacts with the event structure of the verbal predicate. Fujita (1994) argues that an NQ in the NP(case)-NQ sequence (or the stranded type) modifies its host NP through modification of the verbal predicate. Likewise, Nakanishi (2004, 2007a, 2007b) presents a semantic approach in which the the stranded NQ quantifies over events denoted by the verbal predicate as well as over individuals denoted by the host NP. What I will present is a stranding approach that makes explicit how the numeral quantifier can quantify over individuals denoted by the NP, which accounts for the agreement between the type of associated NP being counted and the classifier on the NQ, and at the same time it is able to directly participate in the quantificational structure of telic events denoted by the verbal predicate.

3.1. Grammaticalizing telicity

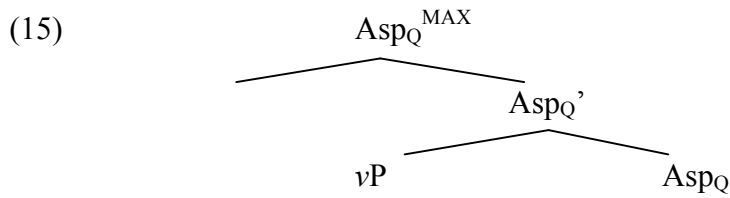
The analysis I will present for NQs in the NP(case)-NQ sequence and the stranded NQ is based on an extension of Borer's (2005) work. Borer (2005) argues that the telic aspect is structurally represented by an aspectual head, which she calls Asp_Q , where Q stands for "quantity." This "quantity" represents the notion that "telic events are quantities, in the sense that they involve quantification over event divisions" (p. 74) (Link 1983, 1987, Bach 1986, Krifka 1989, 1992; see also Tenny 1987, 1994, among others). In contrast, "atelic events are homogeneous" and do not involve a quantity aspectual head. In Borer's system, if Asp_Q occurs, an XP that provides the 'quantity' is merged into the specifier of this head, and the XP then binds an operator position within an extended verbal projection.



$\langle e \rangle$ is an open value that requires range assignment, and if bound by an XP with the property of quantity, it is given an appropriate range over event divisions. In an atelic event, there is no such structure (Borer sometimes assumes a nonce projection and at other times there is no such projection; I will assume the latter).

I will extract from Borer's work the idea that telic events require a special aspectual head that has the property of quantity, and that there is no such aspectual head for atelic events. Contrary to Borer, I am going to assume the standard analysis that arguments are merged in the complement position of verbs and in the specifier of vP . The aspectual

head, if it occurs, is projected above vP where other aspectual types are also represented; the following demonstrates this for the head-final structure.



I will further assume that an XP in (14) — object in the most typical case — can move into the specifier of Asp_Q in order to implement the telic interpretation, making the derived structure similar to Borer’s structure.

Let us again look at the minimal pair presented earlier.

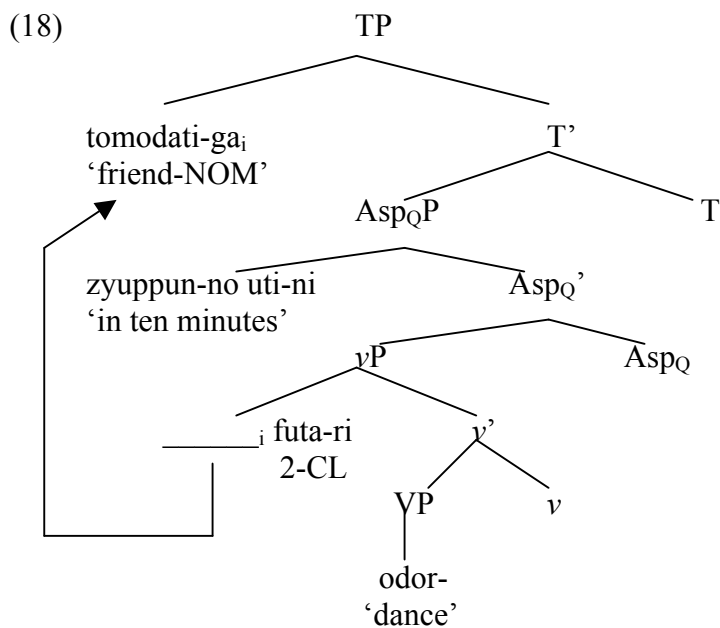
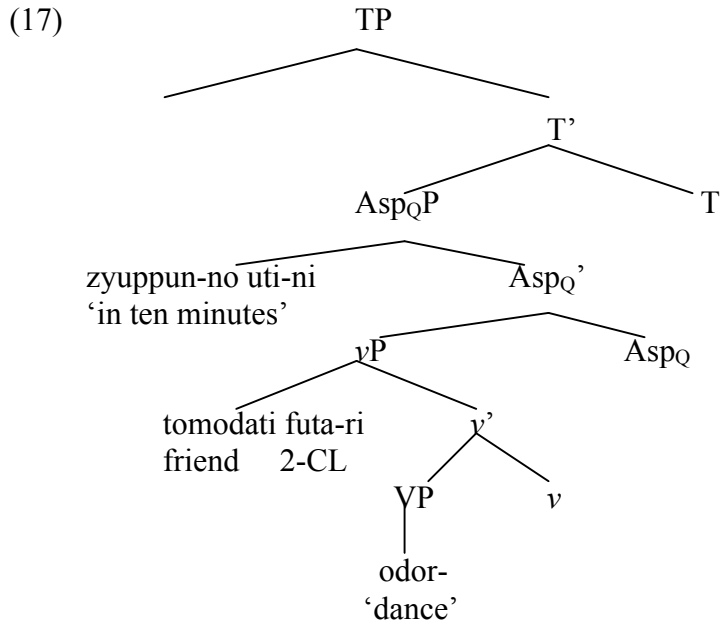
- (16) a. *Tomodati-ga zyup-pun futa-ri odotta.
 friend-NOM 10-minutes 2-CL danced

‘Two friends danced for ten minutes.’

- b. Tomodati-ga zyup-pun-no-uti-ni futa-ri odotta.
 friend-NOM 10-minutes-in 2-CL danced

‘Two friends danced (a dance) in ten minutes.’

Beginning with the grammatical (16b) example, this sentence has a telic interpretation because of the adverb ‘in ten minutes’. The structure for this sentence is given below before and after the movement of the external argument.



The adverb “in ten minutes” gives the sentence the telic interpretation, hence it occurs in the specifier of AspQ.⁵ The external argument ‘friend’ moves to Spec,TP, leaving behind a

⁵ If we follow Borer (2005), the phrase 'in ten minutes' begins below AspQP, and moves to Spec,AspQP, leaving behind a variable that the moved phrase binds to give the required quantificational structure for telic interpretation.

copy in the predicate-internal subject position. Because this is in telic aspect, this lower copy is visible by TEA and able to fulfill the locality requirement with the stranded NQ.

In the ungrammatical activity example, (16a), the lower copy is not visible under TEA, hence the stranded NQ violates locality.⁶ If the subject NP and the NQ are moved together to Spec,TP, the NQ is local to its associate NP and the sentence is grammatical as expected.

- (19) Tomodati-ga futa-ri zyup-pun odotta.
friend-NOM 2-CL 10-minutes danced
'Two children danced for an hour.'

3.2. Stranded NQ and modification of events

An interesting observation made by Fujita (1994) and Nakanishi (2004) is that a stranded NQ not only modifies the associated NP, but also the event represented by the verbal predicate. A particularly striking example is given by Nakanishi to demonstrate this (Nakanishi 2004: 67).

- (20) a. Gakusei-ga kinoo san-nin Peter-o tatai-ta.
student-NOM yesterday three-CL Peter-ACC hit-PAST
'Three students hit Peter yesterday.'

⁶Nobuaki Nishioka has pointed out to me that the ungrammatical (16a) can be improved by adding a locative PP.

- (i) ?Tomodati-ga *butai-de* zyup-pun futa-ri odotta.
friend-NOM stage-on 10-minutes 2-CL danced
'Two friends danced for ten minutes on the stage.'

I agree that this sentence is much better than (16a), although it isn't clear why. It suggests that TEA, which states that the lower copy of the moved external argument is visible in telic aspect interpretation, needs to be expanded to other kinds of interpretations. I will keep this issue open.

b. ?*/??Gakusei-ga kinoo san-nin Peter-o korosi-ta.
student-NOM yesterday three-CL Peter-ACC kill-PAST

‘Three students killed Peter yesterday.’

Nakanishi’s point is that in (20a) the event of hitting (a semelfactive verb) can occur multiple times, for each of the three students, but in (20b) the event of killing Peter can only occur once, and the example is odd because the NQ ranges over multiple events that distribute over each of the three students. Nakanishi uses this interesting data to argue against the floating analysis of NQs (see also Nakanishi 2008), arguing that examples such as (b) suggest that the NQ is an adverb (see also Ishii 1999). This debate about the nature of NQs in Japanese is a debate that has taken place for floated quantifiers in general: on one side it is asserted that all floating quantifiers are of the floated kind (e.g., Cirillo 2009, Shlonsky 1991, Sportiche 1988) and on the other side, there are those who argue that floated quantifiers are either all adverbs or maybe either floated quantifiers or adverbs depending on the context (e.g., Bobaljik 1998, Doetjes 1997, Fitzpatrick 2006, Fukushima 1991, Ishii 1999, Nakanishi 2004, Sag 1978). For Japanese, Nakanishi’s example has been one of the most compelling pieces of empirical evidence given for the adverb analysis of “stranded” NQs (her analysis can be traced back to the work by Ishii 1999, whose work in turn owes insights from Kitagawa and Kuroda 1992).

But there is no reason to consider (20a/b) as counterexamples to a floating analysis of stranded NQs. Given that the verb ‘kill’ clearly defines a telic event, the structure contains Asp_Q . In (20b), the stranded NQ “two” c-commands the Asp_QP , thereby modifying the event subdivision of Asp_Q and giving the interpretation that there are two instances of the (subdivided) event. This accounts naturally not only for Nakanishi’s

(and Fujita's) observations, but it also accounts easily for the fact that the NQ, by virtue of its classifier, is closely associated with the associate NP, something that the adverb approach to stranded NQ fails to account for.

There is one type of example that argues against Nakanishi-type adverb approach to “stranded” NQs, and at the same time, is consistent with the analysis we have presented.

(21) Gakusei-ga sakihodo san-nin teeburu-o motiageta.
student-NOM while.ago 3-CL table-ACC picked-up

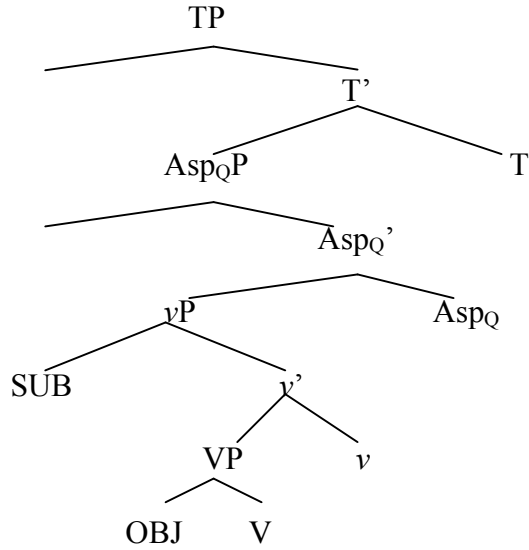
‘A while ago, three students picked up a table.’

This sentence has both collective and distributed meaning, so that the students either together picked up a table or they each individually picked up a different table. The adverb analysis would only be consistent with the distributed meaning. But on the analysis we have presented, the NQ itself does not trigger event division; if the event itself is collective because of the nature of the predicate, as in (21) above, the NQ does not force a distributed meaning. This is why a collective interpretation is possible; the distributed meaning is simply an option that comes with the meaning of the verbal predicate.

3.3. Subjects and objects

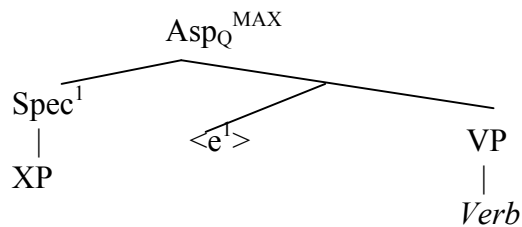
We have so far dealt mostly with intransitive constructions. Let us now turn to transitive constructions to see how they fit into the kind of aspect structure that I have proposed by extending Borer's (2005) work. I will assume that, contrary to Borer, even in a transitive construction, Asp_Q is merged above vP .

(22)



In a transitive construction, telicity is made possible by the object “measuring out” or “delimiting” the event (e.g., Tenny 1987, 1994). This means that, as Borer (2005) notes, the object, if it occurs, must occur in the specifier of Asp_QP. Unlike her approach, in which the object is merged directly into this position, I assume the structure in (22) above in which the object is merged as the complement of the verb as is usually assumed. Moreover, the object moves to the specifier of Asp_Q, leading to a structure essentially identical to Borer’s original analysis, repeated below.

(23)



<e> is an open value that requires range assignment, and, on our analysis, it is created by moving the object to the specifier of Asp_Q. One immediate issue to face is locality. In the structure above in (22), the closest XP to Asp_Q is the subject, and not the object, although the object must move into the specifier of Asp_Q. There are a number of ways to implement this. One possibility is that the agreement here is triggered by the feature

Quantity on the Asp_Q, which agrees with the same feature on the object. This allows non-objects such as a goal PP that has this feature to also enter into agreement and move into the specifier of Asp_Q. There are other possibilities such as Case, but I will not pursue them here.

Let us now see what happens with the object NP-NQ in which the NQ is stranded.

- (24) Teeburu-o_i Taroo-ga ____i mit-tu fuita.
 table-ACC Taro-NOM 2-CL wiped

‘Taro cleaned three tables.’

Note that there are two possible positions for the stranded NQ, one in the original complement position of the object, the other in Spec, Asp_QP above vP. The latter possibility is due to the fact that the object NP-NQ moves to Spec, Asp_QP together, then the object NP moves higher, stranding the NQ.

- (25) a. [AspQP ... [vP ... [VP ...NQ ...]]]...
 b. [AspQP ...NQ ... [vP ... [VP ...]]]...

The first possibility is shown by the example below in which there is subject NQ stranding as well as object NQ stranding.

- (26) Teeburu-o_i kodomo-ga_j sakki ____j futa-ri, ____i mit-tu fuita.
 table-ACC child-NOM a.while.ago 2-CL 3-CL wiped

‘Two children cleaned three tables a while ago.’

The stranded subject NQ, *futa-ri* ‘2-CL’, is in Spec,vP, which means that the stranded object NQ *mit-tu* ‘3-CL’ is in VP, arguably in the original complement position.⁷ The following shows that the object NQ may be stranded in Spec, Asp_QP.

(27) (?) *Omotya-o_i kodomoj-ga itizikan-no-uti-ni ____i mit-tu, ____j futa-ri kowasita.*
 toy-ACC child-NOM two.hours.in 3-CL 2-CL broke
 ‘Two children broke three toys in one hour.’

Because of the crossing nature of the example, the sentence is mildly awkward, but most speaker I consulted accepts it as a grammatical sentence. The object NQ *mit-tu* ‘3-CL’ is arguably in Spec, Asp_QP, above the stranded subject NQ *futa-ri* ‘2-CL’, which is in Spec,vP. Note that the judgment changes if the sentence is atelic.

(28) **Sigoto-o_i gakusei-ga kotosi ____i mit-tu, ____j futa-ri site-iru.*
 toy-ACC child-NOM this.year 3-CL 2-CL do-ing
 ‘Two students are working on 2 jobs this year.’

In this atelic example, there is no Asp_Q, hence there is no position above Spec,vP to strand the object NQ. The sentence improves considerably if it is made into a telic example with the insertion of ‘already’.

(29) *Sigoto-o_i gakusei-ga kotosi ____i mit-tu, ____j sudeni futa-ri site-iru.*
 toy-ACC child-NOM this.year 3-CL already 2-CL do-ing
 ‘Two students have worked on 2 jobs this year already.’

⁷Occurrence of two stranded NQs, as in this example, is, for some speakers, mildly awkward, although acceptable. Also, this example shows that in Japanese, it is possible to strand an NQ in a θ -position, contrary to the analysis in Bošković (2004).

3.4. On non-standard judgments

In Miyagawa and Arikawa (2007), we responded to a number of counterexamples to the standard paradigm, including examples such as those below in which the subject and its NQ are separated by the object.

(30) ?Gakusei-ga sake-o imamadeni san-nin nonda
 student-NOM sake-ACC so far 3-CL_{SUB} drank
 ‘Three students drank sake so far.’ (Gunji and Hasida 1998: 57)

(31) Gakusei-ga watasi-no hon-o futa-ri-sika kaw-anakat-ta
 student-NOM my-GEN book-ACC 2-CL_{SUB}-only buy-not-past
 ‘Only two students bought my book.’ (cf. Takami 1998, 1: 92)

One point that we note is that in these examples, the subject NQ is prosodically separated from the object, so that the NQ cannot mistakenly be construed with the object. What we argued is that these “non-standard judgment” examples are cases of double scrambling in which the object first scrambles above the subject, then the subject moves above the object, stranding its NQ. We adopted the EPP analysis in Miyagawa (2001) in which the object moves to Spec,TP, although this is not so crucial for present purposes.

(32) [_{TP} SUB [_{TP} OBJ [_{VP} [_t_{SUB} NQ_{SUB}] ... t_{OBJ} ...]]]

Based on the approach in this chapter, it is necessary to add that this “double scrambling” which strands the subject NQ is only possible under a telic interpretation. This is shown below.

(33) a. *Gakusei-ga sake-o yonzyuugo-fun san-nin nonda
 student-NOM sake-ACC 45-minutes 3-CL_{SUB} drank
 ‘Three students drank sake for forty-five minutes.’

b. Gakusei-ga sake-o yonzyuugo-fun-no-uti-ni san-nin nonda
 student-NOM sake-ACC 45-minutes-in 3-CL_{SUB} drank
 ‘Three students drank sake in forty-five minutes.’

4. Copy of A-movement in the VP

We have seen that the copy of A-movement in Spec,_vP is visible in telic aspect.

(34) Telicity and the external argument (TEA)

Once the external argument moves to Spec,TP, its lower copy in the predicate-internal subject position is visible under telic interpretation.

What about the copy of A-movement in VP that is found in passives and unaccusatives?

Since TEA is a condition on the copy of A-movement in Spec,_vP, we would not expect the copy inside VP to be subject to TEA or any other condition. We can see this in the passive example below.

(35) Kuruma_i-ga doroboo-ni sanzyuppun _____i ni-dai untens-are-ta.
 cars-NOM thief-by 30.minutes 2-CL drive-PASS-PAST
 ‘Two cars were driven by thieves for thirty minutes.’

This is an atelic aspect example, as indicated by the temporal adverb ‘for thirty minutes’, yet the NQ stranding is possible, showing that the copy inside the VP is visible regardless of the kind of aspect that the sentence takes.

For unaccusatives, it is difficult, maybe impossible, to come up with an atelic example because unaccusatives by nature are telic given that they typically represent change of state of position. However, a simple way to show that the copy inside VP is visible in an atelic aspect are the following existential examples.

(36) a. Kodomo_i-ga gakkoo-ni ____i iru.

child-NOM school-at exist

‘Three children are at school.’

b. Hon_i-ga teeburu-no-ue-ni ____i san-satu aru.

book-NOM table-on 3-CL exist

‘Three books are on the table.’

These are stative unaccusative predicates. As we saw earlier in (11), a transitive stative predicate does not allow the copy of A-movement to be visible in Spec,vP. The fact that these examples are perfectly grammatical again indicates that the copy of A-movement within VP is visible regardless of the type of aspect found in the expression. These stranding examples with the passive and the unaccusative uphold the idea that there is a sharp line to be drawn between passives and unaccusatives on the one hand and transitives and unergatives on the other, as I originally noted in Miyagawa (1989).

The one difference from my original analysis is that we now know that it is possible strand a subject-oriented NQ under the telic aspect. A relevant example from Tsujimura (1989) is repeated below.

(37) Gakusei-ga kooen-made san-nin hasitta.

student-NOM park-as.far.as 3-CL ran

‘Three students ran to the park.’

The occurrence of the goal phrase ‘to the park’ furnishes an endpoint to the event, thereby making the aspect telic, and, by TEA, the copy of the external argument in Spec,vP is visible, allowing the stranding. There is, however, a fundamental difference between this external argument and an internal argument of the unaccusative. As indicated in Miyagawa (1989: 97-100) (see also Tsujimura 1990), a resultative phrase can only modify an internal argument (Simpson 1983).

(38) a. Taroo-ga sarao-o konagona-ni watta.

Taro-NOM plate-ACC pieces broke

‘Taro broke the plate into pieces.’

b. Sara-ga konagona-ni wareta.

plate-NOM pieces broke

‘The plate broke into pieces.’

In both, the resultative phrase ‘into pieces’ modifies an internal argument within the VP. In contrast, the following shows that the external argument of an unergative verb cannot be modified by a resultative phrase.

(39) Kodomo-ga ni-san-nin-no guruupu-de/*-ni hasitta.

children-NOM 2-3-CL-GEN group-in/-into ran

‘The children ran in/*into two groups.’

We can see below that the Tsujimura-type example, which allows stranding, nevertheless disallows modification by a resultative phrase because what is visible is the copy of the external argument, not internal argument.

(40) *Gakusei-ga kooen-made kutakutani hasitta.

student-NOM park-as.far.as tired ran

‘Students ran to the park becoming tired.’

5. Quantifier scope

Since Kuroda (1971), it has been widely assumed that Japanese is a scopally rigid language (see also Hoji 1985).

(41) Dareka-ga dono-sensei-mo kiratteiru.

someone-NOM every-teacher hates

‘Someone hates every teacher.’

Unlike its English counterpart, in the Japanese example in (41), the surface scope of a particular person who loves everyone is strongly preferred; for most speakers, the inverse scope is out of the question. This has become one of the defining characteristics of Japanese.

However, a closer look at the data shows that this characterization as a general property of the language is incorrect. There are examples in which native speakers have an easier time getting the inverse scope interpretation. Following are two such examples.

(42) a. (Gozi-kan-no-uti-ni) dareka-ga dono-mado-mo aketa.

5-hours-in someone-NOM every-window opened

‘Someone opened every window (in five hours).’

b. (Nizi-kan-no-uti-ni) dareka-ga dono-omotya-mo kowasita.

2-hours-in someone-NOM every-toy broke

‘Someone broke every toy (in two hours).’

As we can see, these are clearly telic examples.⁸ Before turning to the analysis, the following minimal pair shows that telicity is what is at work to make not only inverse scope possible, but also event division.

- (43) a. Dareka-ga sanzi-kan-de dono-yama-mo nobotta.
 someone-NOM 3-hours-in every-mountain climbed
 ‘Someone climbed everyone mountain in three hours.’
 Someone > every mountain, (?) every mountain > someone
- b. ??Dareka-ga sanzi-kan dono-yama-mo nobotta.
 someone-NOM for.3-hours every-mountain climbed
 ‘Someone climbed everyone mountain for three hours.’
 someone > every mountain, *every mountain > someone

(36a) has two pragmatically appropriate interpretations: one is surface scope in which a specific person climbed each mountain in three hours, obviously at different times. The other is that for each of the mountains, there is a different person who climbed it in three hours. (36b) is odd in that it has only surface scope, and, due to the atelic nature of the aspect, there is no Asp_Q to allow quantification over event divisions, which makes the most prominent interpretation a single event in which someone climbed all the mountains in three hours, an unlikely state of affairs.

Finally, the following, pointed out to me by Toshiaki Inada and Hiroaki Tada, also demonstrates that telicity is relevant to scope relation.

- (44) Dareka-ga dono-hon-mo yonde-iru.

⁸A few speakers noted that as soon as they hear *dareka* ‘someone’ in the subject position, they immediately imagine a specific person, and for these speakers, inverse scope is not available. Most speakers I consulted were able to get the inverse scope.

someone-NOM every-book read-ING

‘Someone has read/is reading every book.’

The verbal inflection *-iru* can indicate progressive or resultative, the former representing activity and the latter, accomplishment. In the progressive interpretation, this sentence is unambiguous, with only the surface scope being possible, but with the resultative interpretation, the inverse scope becomes possible, although surface scope is preferred.

Why is it that inverse scope appears under the telic aspect? Let us begin by looking into how inverse scope is made possible in English. Johnson and Tomioka (1997) and Johnson (2000) argue that inverse scope in a sentence such as the following is possible thanks to the fact that the object quantifier ‘many of the questions on the exam’ takes scope over the copy of the subject in Spec,*v*P.

(45) Some student or other has answered many of the questions on the exam.

(46) [_{TP} subject_i [_{vP} object_j [_{vP} ____i [_{VP} V ____j]...]

In Johnson and Tomioka (1997), the reason why the object moves to *v*P is to correct type mismatch; in Johnson (2000) the movement of the object is covert scrambling. On either account, the analysis does not depend on the object undergoing QR to adjoin to TP, which is the classic analysis of inverse scope (May 1977). Johnson (2000) gives the following as evidence to show that it is the copy of the subject in Spec,*v*P that is operative in inverse scope. First, we are reminded that the indefinite *some* cannot scope under negation.

(47) I have not met some student. (some student > not)

Johnson then notes the following, which is the negative counterpart of the ambiguous sentence we saw in (45) above.

(48) Some student or other hasn't answered many of the questions on the exam.

This example fails to have inverse scope in which 'many...' takes scope over the subject 'some...'. We can understand this lack of inverse scope if negation keeps the subject indefinite *some student or other* from being interpreted in its original Spec,vP position. Without this copy available for interpretation, inverse scope becomes impossible, showing that it is the copy of the subject that enters into the calculation of inverse scope.

Returning to Japanese, the surprising availability of inverse scope in telic sentences finds explanation in our approach to stranding of NQs based on telicity, in a way that parallels the analysis of inverse scope in English just outlined. A telic example has the derived structure below.

(49) [TP someone_i [ASP_{QP} every window_j [VP ____i [VP ____j V]] ...

The object 'every window' has moved to Spec,Asp_{QP}, and from this position, it c-commands the copy of the subject 'someone', which is visible due to TEA.

Without Asp_Q, there is no reason for the object to move, and Japanese being a scrambling language, covert movement of the type Johnson (2000) notes for English is either not possible or strongly dispreferred (Miyagawa 2011). This is consistent with the observation Kuroda (1971) made that scope ambiguity in Japanese obtains under overt movement, in his case, scrambling, as shown below. Recall that the following is unambiguous.

(50) Dareka-ga dono-sensei-mo kiratteiru.

someone-NOM every-teacher hates

'Someone hates every teacher.'

However, as Kuroda noted, scrambling the object quantifier across the subject quantifier leads to scope ambiguity.

- (51) Dono-sensei-mo dareka-ga kiratteiru.
every-teacher someone-NOM hates
'Someone hates every teacher.'

In the case of the telic examples, the overt movement involves movement of the object (or some other appropriate quantifier) to Spec,Asp_Q from where it is able to c-command the copy of the subject quantifier.

5. Conclusion

I demonstrated that a subject NQ can be stranded only under the telic aspect. The counterexamples that have been given in the literature to the analysis in Miyagawa (1989) that requires strict locality between the NQ and its associate NP are, by and large, examples with telic interpretation. I suggested that the effect we are seeing with telicity is the fact that in this aspectual interpretation, the lower copy of the moved external argument is visible, and this lower copy fulfills the requirement of strict locality with the stranded NQ. We saw that this analysis can also account straightforwardly for the surprising cases of inverse scope relation in telic sentences.

References

Borer, Hagit. 2005. *The normal course of events*. Oxford and New York: Oxford University Press.

- Bošković, Željko. 2004. Be careful where you float your quantifiers. *NLLT* 22: 681-742.
- Cirillo, Robert. 2009. *The syntax of floating quantifiers: Stranding revisited*. LOT, Utrecht, Netherlands.
- Doetjes, Jenny. 1997. *Quantifiers and selection*. Holland Academic Graphics, The Hague.
- Dowty, David. 1991. Thematic proto-roles and argument selection. *Language* 67: 547-619.
- Fitzpatrick, Justin. 2006. Two types of floating quantifiers and their A/A-bar properties. *Proceedings of the Northeast Linguistic Society* 36, GLSA, Amherst.
- Folli, R. and H. Harley. 2005. Consuming results in Italian and English: Flavors of V". In P. Kempchinsky and R. Slabakova, eds., *Aspectual Inquiries*. Springer, Dordrecht, 95-120.
- Fujita, Naoya. 1994. *On the Nature of Modification: A Study of Floating Quantifiers and Related Constructions*. Ph.D. dissertation, University of Rochester.
- Fukushima, Kazuhiko. 1991. Generalized floating quantifiers. Doctoral dissertation, University of Arizona, Tucson.
- Gunji, Takao, and Koiti Hasida. 1998. Measurement and quantification. In *Topics in constraint-based grammar of Japanese*, ed. by Takao Gunji and Koiti Hasida, 39-79. Dordrecht: Kluwer.
- Haig, John, H. 1980. Some observations on quantifier floating in Japanese. *Linguistics* 18:1065-1083.
- Harada, Shin-Ichi. 1976. Quantifier float as a relational rule. *Metropolitan Linguistics* 1:44-49.

- Ishii, Yasuo. 1999. Floating quantifiers in Japanese: NP quantifiers vs. VP quantifiers, or both? Grant-in-Aid for COE Research Report (2), 149-171. Kanda University of International Studies.
- Johnson, Kyle, and Satoshi Tomioka. 1997. Lowering and mid-size clauses. In *Reconstruction: Proceedings of the 1997 Tübingen Workshop*, ed. by Graham Katz, Shin-Sook Kim and Heike Winhart, 185-206, Universität Stuttgart and Universität Tübingen.
- Kamio, Akio. 1977. Suuryooshi no syntakkusu (The syntax of numeral quantifiers). *Gengo* 8, 83-91.
- Kegl, Judy and Christiane Fellbaum. 1988. Non-canonical argument identification. *Cognitive science laboratory report* 25, 187-203, Princeton University.
- Kitagawa, Yoshihisa and S.Y. Kuroda. 1992. Passive in Japanese. Ms. , University of Rochester and University of California, San Diego.
- Koizumi, Masatoshi. 1994. Secondary predicates. *Journal of East Asian Linguistics* 3, 25-79.
- Krifka, Manfred. 1989. Nominal reference, temporal constitution and quantification in event semantics. Renate Bartsch, John van Benthem, and Peter van Emde Boas (eds.), *Semantics and contextual expressions*, 75-115. Dordrecht: Foris.
- Krifka, Manfred. 1992. Tgenmatuc rekatuibs as kubjs between nominal reference and temporal constitution. Ivan a. Sag and Anna Szabolsci (eds.), *Lexical matters*, 29-53. Stanford, CA: Center for the Study of Language and Information.

- Kuno, Susumu, and Ken-ichi Takami. 2003. Remarks of unaccusativity and unergativity in Japanese and Korean. *Japanese/Korean Linguistics* 12:280-294. Stanford: CSLI Publications.
- Kuroda, S.-Y. 1971. Two remarks on pronominalization. *Foundations of Language* 7:183-198.
- Kuroda, S.-Y. 1980. Bun kouzou no hikaku [The comparison of sentence structures]. In Kunihiro, Tetsuya (ed.), *Niti-Eigo Hikaku Kouza 2: Bunpou* [Lectures on Japanese-English Comparative Studies 2: Grammar], 23-61. Tokyo: Taisyukan.
- Levin, Beth and Malka Rappaport Hovav 1989. An approach to unaccusative mismatches. *Proceedings of the North Eastern Linguistic Society* 19, 314-328. GSLA, University of Massachusetts, Amherst.
- Levin, Beth and Malka Rappaport Hovav. 1995. *Unaccusativity: At the syntax-lexical semantics interface*. MIT Press, Cambridge, MA.
- Levin, Beth and Malka Rappaport Hovav. 2005. *Argument realization* (Research Surveys in Linguistics). Cambridge: Cambridge University Press.
- Link, Godehard. 1983. The logical analysis of plurals and mass terms: a lattice-theoretic approach. Rainer Bäuerle, Chirstophe Schwarze, and Arnim von Stechow (eds.) *Meaning, use and interpretation of language*, 303-323. Berlin: de Gruyter.
- Link, Godehard. 1987. Algebraic semantics for event structures. Jeroen Groenendijk, Maretin Stokhof, and Frank Veltman (eds.) *Proceedings of the Amsterdam colloquium* 6, 243-262. University of Amsterdam, Institute for Language, Logic, and Information.
- May, Robert. 1977. The grammar of quantification. Ph.D. dissertation, MIT, Cambridge, Mass.

- May, Robert. 1985. *Logical Form: Its structure and derivation*. Cambridge, Mass.: MIT Press.
- McCloskey, James. 2000. Quantifier float and wh-movement in an Irish English. *Linguistic Inquiry* 31:57-84.
- McNulty, Elaine M. 1988. *The Syntax of adjunct predicates*. Doctoral dissertation, University of Connecticut, Storrs.
- Mihara, Ken-ichi. 1998. Suuryoosi renketu koobun-to 'kekka'-no gain'I [Quantifier linking construction and the implication of 'resultative']. *Gengo [Language]* 6:86-95.
- Miyagawa, Shigeru. 1989. *Structure and Case-Marking in Japanese*. New York: Academic Press.
- Miyagawa, Shigeru. 2011. Optionality. Cedric Boeckx (ed.) *The Oxford handbook of linguistic minimalism*, 354-376. Oxford and New York: Oxford University Press.
- Miyagawa, Shigeru and Koji Arikawa. 2007. Locality in syntax and floating numeral quantifiers. *Linguistic inquiry* 38: 645-670.
- Nakanishi, Kimiko. 2004. *Domains of measurement: Formal properties of non-split/split quantifier constructions*. Ph.D. dissertation, University of Pennsylvania, Philadelphia.
- Nakanishi, Kimiko. 2007a. *Formal properties of measurement constructions*. Berlin: Mouton de Gruyter.
- Nakanishi, Kimiko. 2007b. Measurement in the nominal and verbal domains. *Linguistics and Philosophy* 30:235-276.
- Nakanishi, Kimiko. 2008. Syntax and semantics of floating numeral quantifiers. Shigeru Miyagawa and Mamoru Saito (eds.) *Oxford handbook of Japanese linguistics*, 287-319. Oxford and New York: Oxford University Press.

- Nishigauchi, Taisuke, and Asako Uchibori. 1991. Japanese bare NPs and syntax-
semantics correspondences in quantification. Ms., Osaka University and
University of Connecticut, Storrs.
- Ohki, Mitsuru. 1987. Nihongo-no yuuru suuryoosi-no danwa kinoo-ni tuite [On
discourse functions of floating quantifiers in Japanese]. *Sityookaku*
Gaikokugokyoiku Kenkyuu [Research in audio-visual education of foreign
languages] 10:37-68.
- Rappaport Hovav, M. (2008) ``Lexicalized Meaning and the Internal Temporal Structure
of Events'', in S. Rothstein, ed., *Crosslinguistic and Theoretical Approaches to the
Semantics of Aspect*, John Benjamins, Amsterdam, 13-42.
- Rappaport Hovav, M. and B. Levin (2005) ``Change of State Verbs: Implications for
Theories of Argument Projection'', in N. Erteschik-Shir and T. Rapoport, eds., *The
Syntax of Aspect*, Oxford University Press, Oxford, 274-286.
- Rothstein, Susan. 2000. Secondary predication and aspectual structure. *ZAS papers in
linguistics* 17, 241-263.
- Shlonsky, Ur. 1991. Quantifiers as functional heads: A study of quantifier float in
Hebrew. *Lingua* 84: 159-180.
- Simpson, Jane. 1983. Resultatives. In eds., Lori Levin, Malka Rappaport and Annie
Zaenen, *Papers in Lexical-functional Grammar*, 143-157. Bloomington: Indiana
University Linguistics Club.
- Sportiche, Dominique. 1988. A theory of floating quantifiers and its corollaries for
constituent structure. *Linguistic Inquiry* 19:425-449.

- Tada, Hiroaki. 1999. Attracting categorial features. *Fukuoka University Review of Literature and Humanities* Vol. XXXI, No. 1, 97-110.
- Takami, Ken-Ichi. 2001. *Nitieigo-no kinooteiki koobun bunseki* [A functional analysis of English and Japanese]. *Gengo* [Language]. Tokyo: Hoo Syoboo.
- Tenny, Carol. 1987. Grammaticalizing aspect and affectedness. Ph.D. dissertation, MIT, Cambridge, MA.
- Tenny, Carol. 1994. *Aspectual roles and the syntax-semantics interface*. Dordrecht: Kluwer.
- Tsujimura, Natsuko. 1989. Unaccusative mismatches in Japanese. *Proceedings of the annual meeting of the Eastern states conference on linguistics* 6, 705-710.
- Tsujimura, Natsuko. 1990. Ergativity of nouns and case assignment. *Linguistic Inquiry* 21, 277 — 287.
- Vendler, Zeno. 1967. *Linguistics and philosophy*. Ithaca: Cornell University Press.
- Watanabe, Akira. 2006. Functional projections of nominals in Japanese: Syntax of classifiers. *Natural Language & Linguistic Theory* 24:241-306.
- Willimas, Edwin. 1980. *Linguistic Inquiry* 11, 203-238.