

## The Comparative Morpheme in Modern Japanese: Looking at the Core from ‘Outside’

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[Draft version, July 2012]

### Abstract

Japanese differs from languages like English in that it (usually) has no overt comparative morphology like the English *-er/more*. However, in Modern Japanese *yor* can be used as the equivalent of the English comparative morpheme *more* in limited environments. (It is often assumed that the comparative morpheme *yor* developed due to the necessity for translation of comparative sentences written in European languages.)

The purpose of this paper is to examine the role of the comparative morpheme in Modern Japanese and to consider what its existence tells us about the semantics of ‘regular’ Japanese comparatives. I argue that in Japanese the comparative morpheme for pure comparison is used in a supplementary way in that it can only be used when a given sentence cannot otherwise express a meaning of comparison. I also argue, building on the idea of selection in Kennedy (2007a), that the comparative morpheme *yor* implicitly selects a standard *yor* PP (that has a meaning of comparison) at LF. We will also observe that there are native speakers who use the comparative morpheme *yor* freely as an intensifier meaning ‘still more’, and argue that the development of the intensification use can be viewed as another strategy of avoiding the violation of the constraint: do not use a comparative morpheme for pure comparison if it is not necessary.

Various proposals have been made regarding where the meaning of comparison is encoded in regular Japanese comparatives: a null comparative morpheme, a standard marker, or a gradable predicate. This paper argues that the development of the comparative morpheme for pure comparison and its ‘supplemental’ nature provide supportive evidence for the view that the standard marker expresses a meaning of comparison (e.g. Kennedy 2007a; Hayashishita 2009; Schwarzschild 2010).

**Keywords:** Japanese comparatives, the comparative morpheme *yor*, Modern Japanese, semantics of comparison, language contact

## 1. Introduction

Japanese differs from languages like English in that it (usually) has no overt comparative morphology like the English *-er/more*, as shown in (1):

- (1) a. Taro-wa Hanako-**yor**i (-mo) se-ga takai.<sup>1</sup>  
Taro-Top Hanako-than-MO height-NOM tall  
'Taro is taller than Hanako.'
- b. Taro-wa [Hanako-ga kai-ta (-no)]-**yor**i(-mo) nagai ronbun-o  
Taro-Top Hanako-NOM write-Past-NM]-than-MO long paper-Acc  
kai-ta.  
write-Past  
'Taro wrote a longer paper than Hanako wrote.' (NM=Nominalizer)

In (1) *yor*i behaves as a marker of standard. Structurally, (1a) is 'phrasal' and (1b) is 'clausal'.<sup>2</sup>

However, in Modern Japanese *yor*i is used in limited environments as the equivalent of the English comparative morpheme *more*, as shown in (2):

- (2) a. **Yor**i anzenna tokoro-ni hinan-site-kudasai.  
More safe place-to refuge-do-please  
'Please flee to a safer place.'
- b. **Yor**i ooku- no nihon-jin-ga Denver-**yor**i New York-ni  
More many-Gen Japan-people-NOM Denver-YORI New York-LOC  
sun-deiru.  
live-State  
'More Japanese people are living in New York than in Denver.'
- c. Futa-tu no atai- no nakade **yor**i ookii-hoo-no  
Two-CL.thing value-GEN among more big-direction-GEN  
atai-o erab-e.  
value-ACC choose-IMP  
'Of the two values, choose the larger one.'

The comparative morpheme *yor*i in the above sentences is for pure comparison in that it only expresses a relative relationship between a target and a standard.<sup>3</sup> For example, in (2a) since the speaker is asking the addressee to take refuge, we may consider the current place (and possibly the place of refuge as well) to be unsafe. However, this kind of information is not part of the lexical meaning of *yor*i. Likewise in (2b), since the speaker is talking about the number of people living in big cities, it is likely that the actual number of Japanese people living in both Denver and New York is actually large. However, this, too, comes from our world knowledge. (2c) is clearer in this respect. It compares the two values in a neutral

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<sup>1</sup> The particle *mo* can express the meanings of 'even' and 'also', but in comparative environments, it seems to be semantically null. At least, it does not affect the truth condition of the sentence.

<sup>2</sup> Throughout this paper I will call the comparative degree modifier that modifies a gradable predicate (e.g. the English *more*) a 'comparative morpheme' and the morpheme that marks a standard of comparison (e.g. the English *than*) a 'standard marker.'

<sup>3</sup> Note that there are speakers who interpret the comparative morpheme *yor*i as an intensifier. We will discuss this tendency below.

way and does not say anything about how large they are.

Although many studies have focused on the syntax and semantics of Japanese comparatives like that in (1) (e.g. Kikuchi 1987; Ishii 1991; Ueyama 2004; Beck et al. 2004; Hayashishita 2009; Kennedy 2007a, 2009; Oda 2008; Sudo 2009; Bhatt and Takahashi 2011; Shimoyama 2011; Kubota 2011), to the best of my knowledge, no serious attention has been paid to cases like (2). This may be because the comparative morpheme *yor*i only occurs in special environments and is not a purely native comparative expression.

As Martin (1988), Hida (2002a, b), and many Japanese dictionaries and reference grammars point out, Modern Japanese has developed the new comparative morpheme usage of *yor*i ‘more’ as in (2) under the influence of translations from European languages.<sup>4</sup> In the European languages such as English and Dutch, it is obligatory to use a comparative morpheme in order to express comparison, as follows:

- (3) a. Tom is {taller/\*tall} than Bill. (English)  
b. Dick is {groter/\*groot} dan Henry. (Dutch)  
Dick is taller/ tall than Henry  
‘Dick is taller than Henry.’

Since native Japanese does not have a comparative morpheme, the language created corresponding morphology, i.e. the comparative morpheme *yor*i.

However, the development of the new comparative morpheme *yor*i does not mean that it can be freely used. For many native speakers of Japanese, if we insert the comparative morpheme *yor*i in (1a) and (1b), the resulting sentences become odd:

- (4) [??] a. Taro-wa Hanako-**yor**i(-mo) **yor**i se-ga takai.  
Taro-TOP Hanako-than-MO more height-NOM tall  
‘Intended: Taro is taller than Hanako’  
[??] b. Taro-wa [Hanako-ga kai-ta-ronbun]-**yor**i(-mo) **yor**i nagai  
Taro-TOP Hanako-NOM write-Past-paper]-than-MO more long  
ronbun-o kai-ta.  
paper-ACC write-Past  
‘Intended. Taro wrote a longer paper than Hanako wrote.’

These speakers consider the above sentences odd because the use of the second *yor*i is redundant (although the sentences themselves are not syntactically ungrammatical.) ([??] stands for the judgment of these native speakers.) Interestingly, however, other native speakers consider sentences like (4) perfectly natural. The crucial point for this second group is that the second *yor*i behaves as an intensifier just like the comparative adverb *sarani* ‘still.more/even’. For example, they interpret sentence (4a) as a non-neutral emphatic/intensified comparison meaning ‘Taro is {even/still} taller than Hanako.’ What does this variation mean?

Things are different in example (2), where the comparative morpheme *yor*i is ‘obligatory’ in order to express comparison (whether it is a pure comparison or

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<sup>4</sup> As we will discuss in detail, the emergence of the comparative morpheme *yor*i has to do with the translation of Dutch comparative morphemes in particular (Hida 2002a,b).

not). If we delete the comparative morpheme *yor*, the resulting sentences are not interpreted as pure comparison:

- (5) a. Ooku- no    nihon-jin-ga            [Denver]-**yor**    [New York]-ni  
       many-GEN    Japan-people-NOM    Denver-rather than New York-LOC  
       sun-deiru.  
       live-State  
       ‘Many Japanese people are living in New York rather than in Denver.’
- b. Juumin-wa            anzenna tokoro-ni hinan-si-ta.  
       Living people-TOP    safe            place-to    refuge-do-PAST  
       ‘The residents fled to a safe place.’
- c. Futa-tu no    atai- no    nakade    ookii-hoo-no            atai-o  
       Two-CL.thing value-GEN    among    big-direction-GEN    value-ACC  
       erab-e.  
       choose-IMP  
       ‘Of the two values, choose the large one.’

(5a) is interpreted as a ‘contrastive’ sentence. In (5a) the speaker is not comparing the number of Japanese in New York with the number of Japanese in Denver; instead, he or she is ‘selecting’ one option (New York) and negating the other option (Denver). On the other hand, (5b) and (5c) are interpreted as adjectival sentences. In (5b) the speaker is assuming that the place of refuge is actually safe, and in (5c) the speaker is assuming that there is actually a large value. (The natural context for this interpretation is one where the speaker and the listener already know that there one of the two alternatives is in fact a large value).

In light of the above observations, the purpose of this paper is to investigate the syntax and semantics of the Japanese comparative morpheme *yor* and address the following questions:

- (6) a. In what environment does the comparative *yor* show up? Why is there a dispute regarding the meaning/distribution of comparative morpheme *yor*?
- b. What role does the comparative morpheme in Japanese play in the grammar of comparison?
- c. What does the emergence/development of the comparative morpheme *yor* for pure comparison tell us about the semantics of ‘regular’ Japanese comparatives?

As to the first question, I will propose that in Modern Japanese there is a constraint on the distribution patterns of the comparative morpheme for pure comparison, as follows:

- (7) Constraint on the use of comparative morphology (Japanese): Do not use a comparative morpheme to express pure comparison if it is not necessary.<sup>5</sup>

The basic idea behind this constraint is that in Modern Japanese the comparative

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<sup>5</sup> By pure comparison, I mean there is no additional meaning other than comparison. For example, if we add an intensifier like *much* or *even* to a comparative sentence, it is no longer a pure comparison because the sentence is no longer just measuring the relative relationship between two degrees,  $d_1$  and  $d_2$ .

morpheme for pure comparison can only be used when a given sentence cannot otherwise express comparison. This constraint naturally explains why there are speakers who consider sentences like (2) natural but sentences like (4) odd: the former does not violate the constraint in (7), but the latter does. We will also argue that this constraint naturally explains why there are native speakers who freely use the morpheme as an intensifier even in an environment like (4). The intensifier use of the comparative morpheme *yori* can be freely used in any comparative environment because it has nothing to do with the constraint in (7). I will suggest that the intensifier use of *yori* was developed as a way of avoiding violating the constraint in (7). The question is where the constraint comes from. I connect the constraint in (7) to Heath's (1978) concept according to which the job of morphemic borrowing is to fill functional gaps. I argue that the constraint in (7) is independently motivated by the strategy of borrowing.

In order to verify the above argument, I will check native speakers' intuitions about the meaning/distribution patterns of the comparative morpheme *yori* based on online newspaper corpuses and paper-pencil questionnaires, and show that there are in fact two different tendencies for the comparative morpheme *yori* (a pure comparative use and an intensifier use).

As for the second question, I will propose, building on the idea of selection in Kennedy (2007a), that the comparative morpheme *yori* for pure comparison is semantically null and its job is to select a standard *yori* PP (that has a meaning of comparison) 'implicitly' at the logical structure to give the sentence a meaning of comparison that it would not otherwise have. We will apply this analysis to various environments in which the comparative morpheme *yori* appears and show that it can explain all the comparative morpheme data in a unified way, including cases where a given sentence already seems to have an explicit standard *yori* PP (e.g. (2b)). We will compare the implicit selection approach to an alternative approach where the comparative morpheme *yori* can select both an implicit *yori* PP and an explicit standard *yori* PP. I will show that although both approaches work, the implicit selection approach has more advantages than the alternative in that it posits a simpler logical structure and does not have to assume a movement of the comparative morpheme. I will further argue that the implicit selection approach naturally fits the supplemental nature of the comparative morpheme.

As for the final question, I argue that the comparative morpheme *yori* (as a pure comparative morpheme) plays an important role in considering the semantics of 'regular' Japanese comparatives, which do not use a comparative morpheme. In the literature on Japanese comparatives, there are three theories on the place of encoding of comparative meaning. One view (perhaps the prevailing one) is that there is a null comparative morpheme MORE in regular Japanese comparatives and this has a meaning of comparison. The second view assumes that it is the standard marker that has a meaning of comparison (Kennedy 2007a; Hayashishita 2009; Schwarzschild 2010). The third approach assumes that in Japanese a comparative-like meaning is built into the semantics of gradable adjectives (Oda 2008). I argue that the emergence of the comparative morpheme *yori* and its supplemental nature provide linguistic evidence that it is the standard of comparison, rather than the comparative morpheme or a gradable predicate, that expresses a meaning of comparison in Japanese comparatives. Although all approaches may be able to explain the meanings of 'regular' (native) Japanese comparatives successfully, only the standard-based approach can naturally capture the relation between the regular comparatives (which do not use the comparative morpheme *yori*) and the comparatives with the comparative morpheme *yori* in an

explicit way. Furthermore, only this approach can naturally answer the fundamental question: why did Japanese develop the comparative morpheme *yor*?

This paper proceeds as follows. Section 2 provides a brief overview of the history of the marker of standard *yor* in Old Japanese and when and why the comparative morpheme *yor* emerged. In section 3, we will discuss the difference between the comparative morpheme *yor* and the standard marker *yor*. We will also discuss the differences between two uses of the comparative morpheme *yor*, a pure comparative use and an ‘impure’ comparison use (intensifier use), and consider the source of these two uses. It will be argued the two kinds of comparative morpheme can be viewed as strategies to avoid violating the constraint: do not use a comparative morpheme for pure comparison if it is not necessary. In section 4 we will verify the existence of the two kinds of comparative morpheme *yor* based on online corpuses and a questionnaire. In section 5 we will consider the relationship between a native Japanese comparative and comparatives with the comparative morpheme *yor* for pure comparison, using the standard-based approach. In section 6 we will compare the standard-based account to alternative theories and argue that the standard-based approach has more advantages in explaining the emergence of the comparative morpheme *yor* and in analyzing the meaning and distribution patterns of sentences with the comparative morpheme *yor*. Section 7 is the conclusion.

## 2. History of Japanese comparatives

Before engaging in a detailed analysis of the use of the comparative morpheme *yor* in Modern Japanese, let us look at the history of Japanese comparatives. This will provide important background for analyzing the semantic mechanism of modern-day Japanese comparatives. I will show that Japanese has changed from a language that does not have a comparative morpheme to a language that does have one. Also, we will see from a close examination of the historical data that the standard marker *yor* has a complicated history.

### 2.1. The standard marker *yor* during the 8<sup>th</sup> century C.E. (Nara Period)

During the Nara Period (710-784 C.E.), there was a postposition *yor*, which meant **source** ‘from’, **means** ‘by’, **pass** ‘through’ or **comparison** ‘than’ (Kitahara et al. 1981: 222). The following examples are from *Manyooshuu* (‘ten thousand leaves’), the oldest extant Japanese songbook, which contains songs and poems written in the 7<sup>th</sup> and 8<sup>th</sup> centuries C.E. by various people (e.g. emperors, officers, soldiers and wives):

- (8) a. Source (space) ‘from’ (Manyoosyuu 999)  
 Chinumi-**yor**i ame-zo furi-kuru...  
 Chinumi-from rain-Emphasis fall-come  
 ‘The rain comes **from** Chinumi.’
- b. Source (time) ‘from’ (Manyooshuu 462)  
 Ima-**yor**i-wa akikaze samuku fuki-namu-o ikanika hito-ri  
 Now-**from**-TOP fall wind coldly blow-will-ACC how one-Cl  
 nagaki yo-o ne-mu.  
 long night-ACC sleep-MU  
 ‘The fall wind will blow coldly **from** now on. How can I sleep a long night alone?’

- c. Means ‘by’ (Manyooshuu 3314)  
 Tsuginefu yamasirozi-o hitozuma-no uma-**yor**i  
 Tsuginefu road to Yamashiro-ACC husband of others-NOM horse-**by**  
 iku-ni ono tuma-si kati-**yor**i yuke-ba ...  
 go-though my husband-Focus (contrast) walking-**by** go-since  
 ‘Since other people’s husbands go to Yamashiro (in Tsuginefu) **by** horse  
 but [my husband]<sub>focus</sub> goes there **on** foot, ...’
- d. Pass ‘through’ (Manyooshuu 111)  
 Inisie-ni kofuru tori ka-mo yuzuruha-no mii-no  
 Past-to yearn bird Q-exclam tree -GEN fountain-GEN  
 ue-**yor**i naki-watari-yuku.  
 above-**through** sing-fly-go  
 ‘Oh. Is this a bird that yearns for the past? It flies singing **over** the fountain  
 of trees.’
- e. Comparison ‘than’ (Manyooshuu 892)  
 ... ware-**yor**i-mo mazusiki hito-no chichi haha-wa ue  
 ... I-than-MO poor person-GEN parents-TOP starve  
 koyu-ramu.  
 feel cold-must  
 ‘Parents whose sons are poorer **than** me must be hungry and feel cold.’

According to *Kogodaijiten* (a dictionary of Old Japanese), attested examples for the standard marker *yor*i are quite rare. This suggests that the comparative meaning is derivative.

Note that as many Old Japanese dictionaries and reference grammars point out, the adpositions *yu*, *yo*, and *yuri* can also be found in the Old Japanese of this period. These were semantically similar to the standard marker *yor*i. But the standard marker *yor*i was the most widely used marker and the only one to survive after the Heian Period (794-1191), while the other markers gradually disappeared.

## 2.2. The standard marker *yor*i during the 12<sup>th</sup> century C.E.

The Heian Period (794-1185 C.E.) saw the development of the word *kara*, meaning ‘from’ (time, space), ‘by’, ‘through’ or ‘cause.’ There was competition between *kara* and *yor*i, and most of the meanings of *yor*i (especially ‘from’, ‘by’, and ‘through’) were gradually superseded by *kara*. The only meaning of *yor*i that survived was the comparative use (i.e. ‘than’) (Kitahara et al. 1981: 223). Notice, however, that *yor*i meaning ‘from’ is still used (albeit rarely) in written form/formal speech in Modern Japanese, e.g. in official letters and reports:

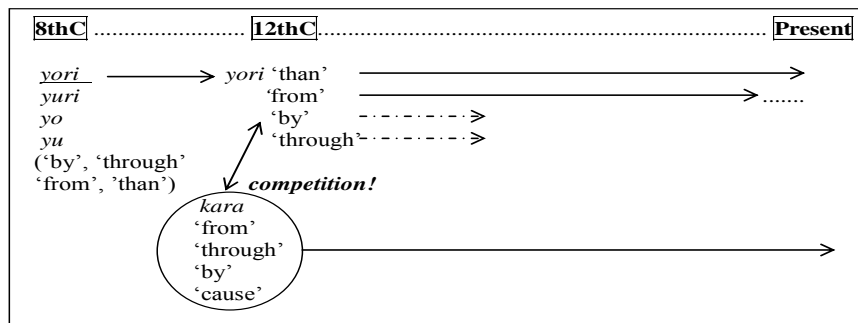
- (9) Tokyo-*yor*i tegami-ga mairi-masi-ta. (Modern Japanese)  
 Tokyo-from letter-NOM come.Polite-Pred.Polite-Past  
 ‘A letter came from Tokyo.’

It is also important to note that since *kara* did not have a comparative meaning, there was no competition between *yor*i and *kara* in this respect. The following sentence is ungrammatical:

- (10) \*Tokyo-wa Sapporo-kara atatakai. (Modern Japanese)  
 Tokyo-TOP Sapporo-from warm  
 ‘It is warmer in Tokyo than in Sapporo.’

The following figure shows the history of the marker of standard from the 8<sup>th</sup> century:

(11) History of the standard marker *yor* (from 8<sup>th</sup> C.-Present)



**3. Modern Japanese: the emergence of the comparative morpheme *yor***

The late 19th century saw the development of the comparative morpheme *yor*. As Martin (1988), Hida (2002a, b), and many Japanese dictionaries point out, Modern Japanese has developed the new comparative morpheme usage of *yor*, meaning ‘more’, under the influence of translations from European languages.

Hida (2002a, b) points out that *yor* was used in translating the comparative form of Dutch adjectives in the grammar book *Oranda gohookai* (和蘭語法解, 1812), the first Dutch grammar in Japanese, which is written by Fuzan Fujibayashi.<sup>6</sup> In this book, the comparative form of the Dutch adjectives is translated by [*yor* + an adjective]. Hida then points out that many translators of English grammars followed this convention.<sup>7</sup>

(12) *Oranda gohookai* (1812) (和蘭語法解)

Dutch	Translation (Japanese)
witter ‘more white’	yor shiro (より白)
langer ‘longer’	yor naga (より長)
karter ‘shorter’	yor mijika (より短)
Kouter ‘colder’	yor samu (より寒)
Heeter ‘hotter’	yor atu (より熱)

(Hida 2002: 80)

In this section we will investigate the syntax and semantics of the new comparative morpheme *yor* in Modern Japanese and consider the following two questions: What is the difference between the comparative morpheme *yor* and the standard marker *yor*? In what environment is the comparative morpheme *yor* used? What is the role of comparative morpheme in the grammar of Modern

<sup>6</sup> There are also scholars who pronounce 和蘭語法解 as *Oranda gohooge*.

<sup>7</sup> Hida (2002b: 170) also points out that although most English grammars in Japanese published between 1886 and 1902 translated the English comparative morpheme as *yor*, in some English grammars the English comparative morpheme was translated by the degree adverbs *nao* (尚ホ) ‘lit. still more, still’ and *hayaku* ‘fast’ (早ク, 疾ク). However, such strategies were not conventionalized. We don’t use *nao* or *hayaku* for expressing the meaning of pure comparison.



Japanese? These questions will be important for considering the syntax/semantics of native Japanese comparatives.

### 3.1 The comparative morpheme *yor* vs. the standard marker *yor*

Since the comparative morpheme *yor* and the standard marker *yor* have exactly the same form, one might think that the comparative morpheme *yor* is actually a standard marker. The Japanese language dictionary *Daigenkai* mentions that the comparative morpheme *yor* is actually an elliptical version of the demonstrative *sore* plus the marker of standard (i.e. *sore-yor* ‘than it’):

- (13) a. [Sore-yor]<sub>PP</sub> takai            hon  
           It -than            expensive    book  
           ‘The book that is more expensive than it.’  
       b. [ \_-yor]<sub>PP</sub> takai            hon  
           \_-than            expensive    book  
           ‘The book that is expensive than  $\varnothing$ ’

This assumes that there is a phenomenon of NP ellipsis of a pronoun. This is an interesting idea because it obviates the need to posit a new lexical entry for *yor*. However, it turns out not to be tenable. There are several pieces of empirical evidence for the idea that the comparative morpheme *yor* and the standard marker *yor* (= postposition) are lexically different.

First, unlike the postpositional *yor*, the comparative morpheme *yor* cannot combine with a particle like *mo*:

- (14) a. Taro-wa Hanako-yor-mo kashikoi.  
           Taro-TOP Hanako-than-MO smart  
           ‘Taro is smarter than Hanako.’  
       b. \* Taro-wa yor-mo kashikoi.  
           Taro-TOP more-MO smart  
           ‘Intended. Taro is smarter.’

Although *mo* can be attached to *yor* in (14a), it cannot be attached to *yor* in (14b).

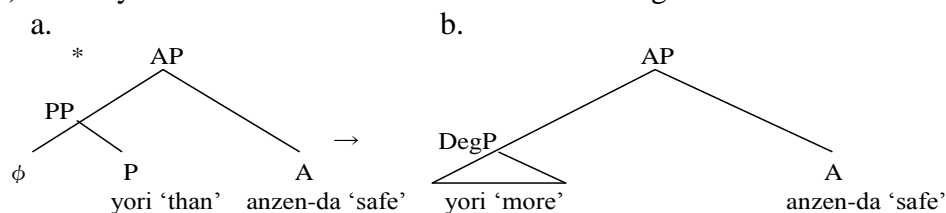
Second, the comparative morpheme *yor* and the marker of standard *yor* are pronounced differently. Although the standard marker *yor* does not have a pitch accent, there is a pitch accent at *yo* in the case of the comparative morpheme *yor*. This phonological difference would be unexpected if we considered the comparative morpheme *yor* and the standard marker *yor* to be lexically the same.

Based on the above arguments, it is safe to consider the comparative morpheme *yor* lexically different from the standard marker *yor*. The former is an adverb and the latter is an adposition/case marker.

### 3.2 Reanalysis? No!

One might think that the emergence of the comparative morpheme *yor* involves reanalysis from the structure in (15a) to the structure in (15b):

(15) Reanalysis from the marker of standard to the degree modifier



However, there is a question as to whether the analysis in (15) can be construed as a case of reanalysis. Reanalysis changes the underlying structure of a syntactic construction, but does not modify surface manifestation. We can define reanalysis as follows (Harris and Campbell. 1995; Campbell 2004):

- (16) Reanalysis is a mechanism that changes the underlying structure of a syntactic pattern and that need not involve any modification of its surface manifestation. It happens though reanalysis of (i) constituency, (ii) hierarchical structure, (iii) category labels, and (iv) other aspects of underlying structure.

The underlined part of (16) is relevant to our discussion. Reanalysis depends upon surface ambiguity or the possibility of more than one analysis (Langacker 1977; Harris and Campbell 1995; Hopper and Traugott 2003).

It is clear that the shift from (15a) to (15b) involves a change of (i) constituency, (ii) hierarchical structure and (iii) category labels. However, if we accept the above definition, we cannot consider the shift in (15) as reanalysis. The source stage (15a) is an ‘ungrammatical’ structure and there is no possibility of more than one analysis (interpretation). The fundamental motivation for the reanalysis of *yor*i is the necessity of translation, not a structural ambiguity. Then why did Japanese translators recycle the existing word *yor*i for a comparative morpheme? This is presumably because translators considered that *yor*i is the best candidate for translating European comparative morpheme, because *yor*i is the only morpheme that is directly relevant to the concept/meaning of pure comparison (see also footnote 7).

### 3.3 The distribution of the comparative morpheme *yor*i

Let us now think about the distribution patterns of the comparative morpheme *yor*i. What is interesting about the comparative morpheme *yor*i is that it can only be used in a limited environment (for those native speakers who treat it as a purely comparative morpheme). For example, as we observed in the introduction, for many native speakers it is odd to use the comparative morpheme *yor*i as a pure comparison in an environment like (17a) and (18a):<sup>8</sup>

- (17) a. Taro-wa Hanako-yori-mo se-ga takai.  
 Taro-TOP Hanako-than-MO height-NOM tall  
 ‘Taro is taller than Hanako.’
- [??] b. Taro-wa Hanako-yori-mo yori se-ga takai.  
 Taro-TOP Hanako-than-MO more height-NOM tall  
 ‘Taro is taller than Hanako.’

<sup>8</sup> However, as we will discuss later, there are speakers who consider the (b) sentences to be perfectly natural as intensified comparison.

- (18) a. Taro-wa [Hanako-ga kai-ta (-no)]-yori(-mo) nagai  
 Taro-TOP Hanako-NOM write-PAST -NM]-than(-MO) long  
 ronbun-o kai-ta.  
 paper-ACC write-PAST  
 ‘Taro wrote a longer paper than Hanako wrote.’ (NM=Nominalizer)
- [??] b. Taro-wa [Hanako-ga kai-ta (-no)]-yori(-mo) yori nagai  
 Taro-Top Hanako-NOM write-PAST -NM]-than(-MO) more long  
 ronbun-o kai-ta.  
 paper-ACC write-PAST  
 ‘Taro wrote a longer paper than Hanako wrote.’ (NM=Nominalizer)

On the other hand, these native speakers think that the comparative morpheme *yori* can naturally appear in the following environment:

- (19) a. **Yori** anzenna tokoro-ni hinan-site-kudasai.  
 more safe place-to refuge-do-please  
 ‘Please flee to a safer place.’
- b. **Yori** ooku- no nihon-jin-ga [Denver]-yori(-mo)  
 More many-GEN Japan-people-NOM Denver-than-MO  
 [New York]-ni sun-deiru.  
 New York-LOC live-Stativive  
 ‘More Japanese people are living in New York than in Denver.’
- c. Futa-ri-no uti {**yori**/?**sarani**} se-no takai-  
 Two-CL.PERSON-GEN among more/still.more height-GEN tall-  
 hoo-o era-be.  
 direction-ACCselect-IMP  
 ‘Of the two persons, choose the taller one.’

What does the above asymmetry mean? Is there any constraint that creates the asymmetrical relationship use of the comparative morpheme *yori*? I propose that Modern Japanese has the following constraint on the use of the comparative morpheme (for pure comparison):

- (20) Do not use comparative morphology for pure comparison if it is not necessary.

The basic intuition behind this constraint is that if a given sentence **can** express comparison, we cannot use the comparative morpheme. This constraint naturally explains why the comparative morpheme *yori* cannot be used in environments like (17a) and (18a) but is necessary in environments like (19). In the former environment the comparative morpheme is not necessary because the given sentences can express comparison without the morpheme. On the other hand, in the latter environment it is necessary because otherwise the sentence could not express the meaning of comparison.

The above constraint also predicts that if we delete the comparative morpheme *yori* from the examples in (19), the resulting sentences cannot express a neutral comparative meaning. This prediction is borne out:

- (21) a. *Watashi-tati-wa yori anzenna tokoro-ni idoo-si-ta.*  
 I-PI-TOP more safe place-to move-do-PAST  
 ‘We moved to a safe place.’
- b. ~~*Yori*~~ *ooku- no nihon-jin-ga [Denver]-yori [New York]-ni*  
~~*More*~~ many-GEN Japan-people-NOM Denver-than New York-LOC  
*sun-deiru.*  
 live-Stativ  
 ‘Many Japanese people are living in New York rather than in Denver.’
- c. *Futa-ri-no uti yori se-no takai-hoo-o*  
 Two-CL.PERSON-GEN among more height-GEN tall-direction-ACC  
*erab-e.*  
 select-IMP  
 ‘Of the two persons, choose the tall one.’

(21a) and (21c) are interpreted as adjectival sentences. On the other hand, (21b) is interpreted as a ‘contrastive’ sentence. In (21b) the speaker is choosing between two alternatives. Here the sentence entails that ‘many’ Japanese people are living in New York.

The fact that the comparative morpheme *yori* cannot appear in a differential comparative sentence also supports the constraint in (20):

- (22) a. *Kono sao-wa ano sao-yori 10-senchi nagai.*  
 This rod-TOP that rod-than 10-cm long  
 ‘This rod is 10 cm longer than that rod.’
- b. ?? *Kono sao-wa ano sao-yori 10-senchi yori nagai.*  
 This rod-TOP that rod-than 10-cm more long  
 ‘Intended. This rod is 10 cm longer than that rod.’
- c. *Kono sao-wa 10-senchi nagai.*  
 This rod-TOP 10 -cm long  
 ‘This rod is 10 cm longer.’  
 (NOT: This rod is 10 cm long.)
- d. ?? *Kono sao-wa 10-senti yori nagai.*  
 This rod-TOP 10-cm more long  
 ‘Intended. This rod is 10 cm longer.’

As Snyder et al. (1995) and Schwarzschild (2005) point out, Japanese does not allow measure phrases to combine directly with an adjective. Therefore, (22c) can only mean ‘This rod is 10 cm longer.’ As (22d) shows, if the comparative morpheme *yori* is inserted in (22c), the resulting sentence becomes odd. The proposed constraint in (20) can capture this fact. We do not need the comparative morpheme *yori* if a given sentence can express comparison without using it.

### 3.4 Another tendency for the use of the comparative morpheme *yori*

However, as we observed in section 1, there are native speakers who use the comparative morpheme *yori* as an intensifier/emphatic expression meaning ‘still more/even’:

- (23) a. *Okinawa-wa Kagoshima-yori(-mo) yori atatakai.*  
 Okinawa-TOP Kagoshima-than(-MO) still.more warm  
 ‘Okinawa is {still more/even} warmer than Kagoshima.’

- b. Taro-wa [Hanako-ga kai-ta (-no)]-yori(-mo) yori  
 Taro-TOP Hanako-NOM write-Past -NM]-than(-MO) still more  
 nagai ronbun-o kai-ta.  
 long paper-ACC write-PAST  
 ‘Taro wrote {an even/a still} longer paper than Hanako wrote.’

Why do they use the comparative morpheme *yori* as an intensified comparative morpheme? This is interesting and somewhat surprising, because originally, the morpheme was developed for translating the comparative morphology of European languages. Clearly, the intensifier use is a derived use. But I would argue that the intensifier use of the comparative morpheme *yori* is not a counter-example to our proposed constraint in (24).

- (24) Constraint on the use of the comparative morpheme *yori*: Do not use a comparative morpheme for pure comparison if it is not necessary.

We can view the development of the intensifier use as another strategy of avoiding the violation of the constraint. It is possible to imagine that because of this grammatical pressure, the speakers feel odd using the comparative morpheme *yori* as a purely comparative morpheme in an environment like (23), so they have started using it as an intensifier/emphatic expression. And since the intensifier use of *yori* is not a purely comparative morpheme, it can be used freely in any comparative environment. Thus, it is possible to argue that the development of the comparative morpheme *yori* as an intensifier supports the existence of the constraint in (24).

But where does the constraint on the comparative morpheme come from? I would argue that this constraint is independently motivated by the general strategy of morphemic borrowing. According to Heath (1978:115), “only those morphemes have actually been diffused which contribute something to the borrowing language which was previously lacking... morphemic borrowing is viewed in its therapeutic aspects. Borrowings are interpreted as devices to fill functional gaps.” Although the notion of filling structural gaps is controversial and not all scholars support it (e.g. Brody 1987), it does fit the supplemental use of the comparative morpheme for pure comparison.

#### 4. Surveys based on online corpuses and questionnaire

In this section we will assess the proposed analyses/constraint on the meaning/distribution of the comparative morpheme based on corpus data and questionnaires.

##### 4.1 Corpus studies

Let us first assess the proposed distribution of the comparative morpheme *yori* based on corpus data. In the previous sections we argued that native speakers of Japanese tend to consider sentences like (25) odd, because in such an environment the comparative morpheme *yori* is not necessary for expressing the meaning of comparison. However, we also noted that there are native speakers who regard the comparative morpheme *yori* as an intensifier like *sarani* ‘still.more’, and for these speakers the following sentence is natural:

- (25) Okinawa-wa Kagoshima-yori(-mo) yori atatakai.  
 Okinawa-TOP Kagoshima-than(-MO) YORI warm  
 ‘Okinawa is even warmer than Kagoshima.’

In order to test the validity of the above assumptions/ideas, I first looked at the frequency of the comparative morpheme *yori* in environments like (25). I made the following minimum pair and searched the string [*yori-mo* ADJ] and [*yori-mo yori* ADJ] in four corpuses: the *Nikkei Telecon* newspaper database, the *Tokyo Shinbun* newspaper database, the *Asahi* newspaper database, and Google Japanese.

- (26) a. x-wa y-[yori-mo ADJ]  
 x-TOP y-STAND-MO ADJ  
 b. x-wa y-[yori-mo **yori** ADJ]  
 x-TOP y-STAND-MO YORI ADJ

The particle *mo* is attached so that the first *yori* must be interpreted as a marker of standard.<sup>9</sup>

For samples adjectives, I chose the following gradable adjectives: *ookii* ‘big’, *chiisai* ‘small’, *ataakai* ‘warm’, *samui* ‘cold’, *muzukasii* ‘difficult’, *kantan-da* ‘easy’, *tanoshii* ‘interesting’, *anzen-da* ‘safe’, *nagai* ‘long’, *kashikoi* ‘smart’. Table 1 shows the frequency of the minimal pair.

(27) The frequency of the comparative morpheme *yori*

	<i>Nikkei Telecon</i> newspaper (September 28, 2011)	<i>Tokyo Shinbun</i> newspaper (September 28, 2011)	<i>Asahi</i> newspaper (November 18, 2011)	Google Japanese
1a. yori-mo <i>ookii</i> than-MO big	840 hits (100%)	105 hits (100%)	500 hits (99.703%)	30,200,000 hits (97.1%)
1b. yori-mo yori <i>ookii</i> than-MO more big	0 hits (0%)	0 hits (0%)	1 hit* (0.207%)	882,000 hits (2.9%)
2a. yori-mo <i>chiisai</i> than-MO small	528 hits (100%)	46 hits (100%)	177 hits (100%)	15,600,000 hits (95.9%)
2b. yori-mo yori <i>chiisai</i> than-MO more small	0 hits (0%)	0 hits (0%)	0 hits (0%)	647,000 hits (4.1%)
3a. yori-mo <i>ataakai</i> than-MO warm	22 hits (100%)	3 hits (100%)	27 hits (100%)	2,000,000 hits (99.99935%)
3b. yori-mo yori <i>ataakai</i> than-MO more warm	0 hits (0%)	0 hits (0%)	0 hits	13 hits (0.00065%)
4a. yori-mo <i>samui</i> than-MO cold	16 hits (100%)	3 hits (100%)	24 hits (100%)	7,340,000 hits (99.99977%)

<sup>9</sup> In Google Japanese, I used brackets for the search to get examples in which the string forms a phrase. (If I had not used brackets, I would have found many cases in which the lexical elements appear in non-adjacent positions.)

4b. yori-mo yori samui than-MO more cold	0 hits (0%)	0 hits (0%)	0 hits (0%)	17 hits (0.00023%)
5a. yori-mo muzukasii than-MO difficult	146 hits (100%)	35 hits (100%)	161 hits (100%)	17,100,000 hits (98.64%)
5b. yori-mo yori muzukasii than-MO more difficult	0 hits (0%)	0 hits (0%)	0 hits (0%)	232,000 hits (1.36%)
6a. yori-mo kantan-da than-MO easy-PRED	8 hits (100%)	3 hits (100%)	14 hits (100%)	3,730,000 hits (99.9992%)
6b. yori-mo yori kantan-da than-MO more easy-PRED	0 hits (0%)	0 hits (0%)	0 hits (0%)	3 hits (0.0008%)
7a. yori-mo tanoshii than-MO interesting	30 hits (100%)	17 hits (100%)	144 hits (100%)	29,200,000 hits (99.552%)
7b. yori-mo yori tanoshii than-MO more interesting	0 hits (0%)	0 hits (0%)	0 hits (0%)	131,000 hits (0.448%)
8a. yori-mo anzen-da than-MO safe-PRED	4 hits (100%)	7 hits (100%)	12 hits (100%)	808,000 hits (99.99991%)
8b. yori-mo yori anzen-da than-MO more safe-PRED	0 hits (0%)	0 hits (0%)	0 hits (0%)	8 hits (0.00099%)
9a. yori-mo nagai than-MO long	264 hits (100%)	63 hits (100%)	242 hits (100%)	13,400,000 hits (97.21%)
9b. yori-mo yori nagai than-MO more long	0 hits (0%)	0 hits (0%)	0 hits (0%)	374,000 hits (2.79%)
10a. yori-mo kashikoi than-MO smart	5 hits (100%)	5 hits (100%)	5 hits (100%)	865,000 (95.57%)
10b. yori-mo yori kashikoi than-MO more smart	0 hits (0%)	0 hits (0%)	0 hits (0%)	37,500 (4.43%)

We can observe the following points. First, examples of type (b) are far less frequent than those of type (a). Second, if we consider (a) and (b) in terms of proportion, the proportion of examples of type (b) is close to zero percent. Even in the cases of *ookii* ‘big’ and *tanoshii* ‘interesting’, the proportion of examples of type (b) is very small. We can observe this tendency more clearly in the *Asahi* newspaper than in Google Japanese.<sup>4</sup> The above result seems to support the idea that in Japanese the comparative morpheme for pure comparison is used in a supplemental manner: It can only be used when a given sentence cannot otherwise express a meaning of comparison.

One of the reviewers, however, pointed out that there is another interpretation for the result of the above corpus survey. The reviewer suggested that the second *yori* is actually an intensifier (meaning ‘still more’) and the low frequency of ‘*yori-mo yori*’ comes from the rareness of the context in which its special pragmatic property is appropriate. The reviewer said that sentences whose form is [*yori mo yori* Adj] give rise to the implicature that the objects under comparison both possess the property described by the adjective. The reviewer

therefore suspected that the contexts where the relevant implicature is at issue are rare. I found this assumption reasonable.

In order to check the validity of this assumption, I compared the frequency of ‘*yorimo yori*’ and ‘*yorimo sarani*’. *Sarani* is an intensified comparative morpheme meaning ‘still more/even’ and it generates the same pragmatic inference as the ‘intensifier use’ of *yorimo*. Thus, if this assumption is correct we would predict the frequency of these two patterns to be the same (or at least similar). The following table shows the frequency of the two strings:

(28) The frequencies of *yorimo yori* and *yorimo sarani*

	<i>Nikkei Telecon</i> newspaper database (September 28, 2011)	<i>Tokyo Shinbun</i> newspaper database (September 28, 2011)	<i>Asahi</i> newspaper database (September 28, 2011)	Google Japanese (September 28, 2011)
<i>Yorimo yori</i>	119 hits	9 hits	44 hits	25,900,000 hits
<i>Yorimo sarani</i>	1469 hits	191 hits	789 hits	14,600,000 hits

The above result shows that in the newspaper database corpuses, there is a large difference between [*yorimo yori*] and [*yorimo sarani*] in terms of frequency. [*Yorimo yori*] is far less common than [*yorimo sarani*]. This strongly suggests there is an (additional) independent reason for the low frequency of [*yorimo yori*].

However, we should also admit the fact that [*yorimo yori*] does occur in the newspaper corpuses. And what is surprising is that in the case of Google Japanese the relative frequency of [*yorimo yori*] and [*yorimo sarani*] is reversed. The latter is more frequent than the former.

## 4.2. Paper-pencil questionnaire

Although corpus data tell us how frequent the comparative morpheme *yorimo* is in environments like (26b), they do not tell us how the meaning of the morpheme is to be interpreted. In order to better understand the meaning and distribution of the comparative morpheme *yorimo*, I constructed two questionnaires. The first questionnaire focuses on situations like (26b) where the comparative morpheme *yorimo* is not necessary to express the meaning of pure comparison. The second questionnaire focuses on incomplete comparisons, where the comparative morpheme *yorimo* is obligatory for expressing the meaning of comparison (whether it is pure or intensified comparison).

### 4.2.1 Questionnaire 1

In this questionnaire, I provided the following two sets of data ((29) and (30)) to 63 native speakers of Japanese and asked them to rate the naturalness of each sentence based on the following scale: [\*] = terrible, [??] = quite odd, [?] = a bit odd, [OK] = perfectly natural. The questionnaire was conducted at a Japanese university in October and November 2011. All respondents were native speakers of Japanese.



- (29) a. Taro-wa Hanako-yori-mo se-ga takai.  
Taro-TOP Hanako-than-MO height-NOM tall  
'Taro is taller than Hanako.'
- b. Taro-wa Hanako-yori-mo yori se-ga takai.  
Taro-TOP Hanako-than-MO YORI height-NOM tall  
'Taro is taller than Hanako.' (or whatever the sentence means.)
- c. Taro-wa Hanako-yori-mo sarani se-ga takai.  
Taro-TOP Hanako-than-MO still.more height-NOM tall  
'Taro is even taller than Hanako.'
- (30) a. Okinawa-wa Kagoshima-yori-mo atatakai.  
Okinawa-TOP Kagoshima-than-MO warm  
'Okinawa is warmer than Kagoshima.'
- b. Okinawa-wa Kagoshima-yori-mo yori atatakai.  
Okinawa-TOP Kagoshima-than-MO YORI warm  
'Okinawa is warmer than Kagoshima.' (Or whatever the sentence means.)
- c. Okinawa-wa Kagoshima-yori-mo sarani atatakai.  
Okinawa-TOP Kagoshima-than-MO still.more warm  
'Okinawa is even warmer than Kagoshima.'

In addition to the rating task, I also asked the informants to answer the following question in the comment column (optionally):

- (31) Question: Are the (b) sentences natural? If not, why not? If they are natural, in what context can the sentences be used?

The following tables show the result of their judgments:

(32) The native speakers' judgment on (29)

	*	??	?	OK
(a) <i>yori-mo</i> (=29a)	0	0	0	63 (100%)
(b) <i>yori-mo yori</i> (=29b)	3 (4.8%)	17 (27%)	29 (46%)	14 (22.2%)
(c) <i>yori-mo sarani</i> (=29c)	0	3 (4.8%)	19 (30.1%)	41 (65.1%)

(33) The native speakers' judgment on (30)

	*	??	?	OK
(a) <i>yori-mo</i> (=30a)	0	0	0	63 (100%)
(b) <i>yori-mo yori</i> (=30b)	3 (4.8%)	14 (22.1%)	24 (38.1%)	22 (35%)
(c) <i>yori-mo sarani</i> (=30c)	0	2 (3.2%)	23 (36.5%)	38 (60.3%)

Let us first look at the (a) sentences and the (b) sentences. As for the (a) sentences, all informants considered the sentences perfectly natural. As for sentences (29c) and (30c), a majority of the informants considered them perfectly natural. However, some speakers considered them slightly odd. I am not sure why the minority thought this, but it may be because the informants felt they needed to posit a special context in order to interpret the sentences (i.e. a context of non-neutral comparison). Anyway, what is important here is that very few speakers considered the sentences very odd [??] or worse [\*].

Let us now look at the speakers' judgment on the (b) sentences. The informants' judgment on the (b) sentences is significantly different from how they

viewed the (a) and (c) sentences. First, it should be pointed out that unlike the case with the (ac) and (c) sentences, a number of speakers considered the (b) sentences quite odd ([??]) or worse ([\*]). Approximately 31.8% of the native speakers considered (29b) to be quite odd ([??]) or worse ([\*]), and approximately 27% of the speakers considered (30b) to be so. Crucially, there is no such tendency with regard to the (c) sentences. In the comment column, many speakers mentioned that they are odd because they are semantically redundant.

However, we should also notice that a relatively high proportion of speakers considered the (b) sentences perfectly natural. In the comment column, there were a lot of comments pointing out that the (b) sentences are natural in a situation where the standard is A but the target is even A-er. These comments suggest that the respondents treated the comparative morpheme *yor* as an intensifier like *sarani* ‘still more/even.’

What these results suggest is that our proposed analysis is valid. There is variation among native speakers of Japanese in terms of the meaning/use of the comparative morpheme *yor*.

#### 4.2.2 Questionnaire 2

But what about the meaning of the comparative morpheme *yor* in a situation where it is ‘necessary’ to express the meaning of comparison (pure comparison or otherwise)? In order to answer this question, I provided the three sets of data in (34)-(36) to 66 native speakers of Japanese and asked them to rate how natural the sentences are based on the following scale: [\*] = terrible, [??] = quite odd, [?] = a bit odd, [OK] = perfectly natural. Again, all of the subjects were native speakers of Japanese.

- (34) Yori anzenna basyo-ni hikkosi-ta.  
 YORI safe place-LOC move-PAST  
 ‘Lit. (I/he/she/they) moved to a {safer/even safer} place.’
- (35) a. Futa-ri-no uti yori se-no takai-hoo-ga  
 Two-CL.person-GEN among YORI height-GEN tall-direction-NOM  
 Taro-da.  
 Taro-PRED  
 ‘Lit. ‘Taro is the {taller/even taller} person of the two persons.’
- b. Futa-ri-no uti sarani se-no takai  
 Two-CL.person-GEN among still.more height-GEN tall-direction  
 -hoo-ga Taro-da.  
 -direction-NOM Taro-PRED  
 ‘Lit. Taro is the even taller person of the two persons; Taro is even taller.’
- (36) a. Futa-tu-no atai-no nakade yori ookii-hoo-no  
 Two-CL.thing-GEN value-GEN among YORI big-direction-GEN  
 atai-o erab-e.  
 value-ACC choose-IMP  
 ‘Lit. Of the two values, choose the {larger/even larger} one.’
- b. Futa-tu-no atai-no nakade sarani ookii-hoo  
 Two-CL.thing-GEN value-GEN among still.more big-direction  
 -no atai-o erab-e.  
 -GEN value-ACC choose-IMP  
 ‘Lit. Of the two values, choose the even larger one.’

Regarding sentence (34), I also asked the informants in what context the sentence can be used if it sounds natural. The intention behind soliciting responses to examples (35) and (36) is to check whether there is also variation among speakers with respect to the meaning of the comparative morpheme *yor* in incomplete (elliptical) comparatives. These sentences are special in that the speaker is choosing one of two alternatives. In this situation, only the pure comparative morpheme should be possible. I provided minimally different sentences with *sarani* in order to check whether the informants would properly assign a negative value to the sentences. The sentences with *sarani* are expected to be very odd because *sarani* presupposes that the standard of comparison satisfies the standard provided by A (and by inference we also get the meaning/inference that the target of comparison also satisfies the contextual standard provided by A; see section 7). This kind of norm-related comparison, however, does not fit the alternative situation where there are only two choices in the domain of comparison.

Our predictions are as follows: if the informants treat the comparative morpheme *yor* as an intensifier (just like *sarani* ‘still more’), they will consider sentences (35a) and (36a) bad. However, if they treat the morpheme as a pure comparative morpheme, they will consider the sentences to be natural. The following table shows the results of their judgment on sentences (34)-(36):

(37) The native speakers’ judgment on (34)-(36)

	*	??	?	OK
(34)	0 (0%)	0 (0%)	0 (0%)	66 (100%)
(35) a.	7 (10.6%)	8 (12.1%)	30 (45.5%)	21 (31.8%)
b.	28 (42.4%)	23 (34.9%)	15 (22.7%)	0 (0%)
(36) a.	0 (0%)	2 (3%)	24 (36.4%)	40 (60.6%)
b.	28 (42.4%)	25 (37.9%)	13 (19.7%)	0 (0%)

All the informants rate sentence (34) as perfectly natural. Some native speakers say that the sentence is natural in a situation where the place where the speaker and listener are before moving is already safe, suggesting that they are using the morpheme as an intensifier. Other speakers say that the sentence can be natural in a situation where the place where the speaker and listener are before moving is dangerous, suggesting that they are using the comparative morpheme for pure comparison. As for sentences (35b) and (36b), all the informants rate the sentences poorly, as we predicted.

Now let’s consider (35a) and (36a). Unlike the cases with *sarani*, the judgment for (35a) and (36a) is not stable (polarized). On the one hand, there were speakers who considered that the sentences perfectly natural (approximately 31.8% for (35a) and approximately 60.6% for (36a)). Crucially, we don’t see this tendency regarding sentences (35b) and (36b), where the adverb *sarani* is used. It seems that these speakers treated the comparative morpheme *yor* as a pure comparative morphology. (Otherwise, the sentences should have sounded bad to them.) But on the other hand, approximately half of the speakers considered the sentences slightly odd or worse. It seems that this second group of speakers interpreted the comparative morpheme *yor* as an intensifier. This result suggests that there is variation among native speakers with regard to the use of the comparative *yor* in the incomplete comparative environment.

To summarize, the results of the above corpus studies and the two questionnaires strongly support the idea that there is in fact variation among

native speakers with regard to the meaning of the comparative morpheme *yor*. Some native speakers use the comparative morpheme *yor* for pure comparison only when it is necessary. Other speakers use it freely as an intensifier (see section 3.4 for a detailed discussion of the source of this variation.) Furthermore, the results also support our proposed constraint on the use of Japanese comparative morphology: Do not use a comparative morpheme for pure comparison if it is not necessary. We can argue that the variation in the meaning/distribution of the comparative morpheme *yor* is the result of strategies used to avoid violating this constraint.<sup>10</sup>

## 5. Analysis: Looking at the core from ‘outside’

Let us now consider the role of the comparative morpheme in Japanese in a more theoretical way. The main questions are (i) what are the syntax/semantics of sentences with the comparative morpheme *yor* (for pure comparison), and (ii) what the limited use of the pure comparative morpheme *yor* suggests about the grammar of comparison in Japanese. In this section I will argue that the comparative morpheme *yor* is semantically meaningless and its job is to ‘implicitly’ select a comparative standard PP at LF, which has a meaning of comparison. We will also discuss the alternative approach whereby the comparative morpheme *yor* can select for either an implicit standard *yor* PP or an explicit standard *yor* PP. We will show that although the alternative approach also works, the implicit selection approach is better in that its logical structure is much simpler and it fits the supplemental nature of the comparative morpheme *yor* more naturally.

### 5.1. Semantics of ‘native’ Japanese comparatives

In order to discuss the role of the comparative morpheme *yor*, it is necessary to think about the semantics of ‘native’ Japanese comparatives, because our analysis of the former may change depending on what approach we take to the latter. The following example may be called an instance of a ‘native’ Japanese comparative, because there is no comparative morphology:

- (38) Tokyo-wa [Sapporo]-**yor** atatakai.  
Tokyo-TOP Sapporo -than warm  
‘It is warmer in Tokyo than in Sapporo.’

An interesting question here is where the meaning of comparison is encoded. In the literature on Japanese comparatives there are three approaches to the place of encoding in comparative meaning:<sup>11</sup>

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<sup>10</sup> There is a question as to exactly when the intensifier use of *yor* emerged. Since the original motivation to create the comparative morpheme *yor* is to translate European comparative morpheme, I think it is safe to consider that the intensifier use of *yor* developed later than the pure comparative morpheme *yor*. I would like to leave this question for future research. Thanks to Roger Schwarzschild for the valuable discussion on the emergence of the intensifier use of *yor*.

<sup>11</sup> There is also a different approach to comparatives, called the measure function approach (e.g. Kennedy and McNally 2005; Kennedy and Levin 2008). In this approach the function of comparative morphology is to turn a basic measure

- (39) a. **The comparative morpheme-based account** (majority view): There is an invisible MORE<sub>JP</sub> that expresses a meaning of comparison.
- b. **The standard-based account**: The meaning of comparison is expressed by a standard marker (e.g. Kennedy 2007a; Hayashishita 2009, Schwarzschild 2010).<sup>12</sup>
- c. **The gradable predicate-based approach** (Oda 2008): In Japanese a gradable predicate already has a comparative-like meaning.<sup>13</sup>

In this section we will choose the standard-based approach as a basis for analyzing the syntax/semantics of sentences with the comparative morpheme *yorī*. At this point we will not go into the reasons why we take this view, but we will return to this question in section 6 and argue that the standard-based approach has more advantages than other approaches. There can be various ways to analyze the meaning of sentence (38) according to the standard-based approach, but here I assume that the standard marker *yorī* has the following denotation:

$$(40) \llbracket \text{yorī}_{\text{STAND}} \rrbracket = \lambda y \lambda g \lambda x. \max \{ d' | g(d')(x) \} > \max \{ d'' | g(d'')(y) \}$$

The standard *yorī* in (40) takes a standard, a gradable predicate and a target and denotes that the maximum degree of  $x$  on the scale of  $g$  is greater than the maximum degree of  $g$  with respect to  $y$ .

As for the meaning of the gradable predicate, I assume that gradable adjectives denote relations between degrees and individuals (type  $\langle d, \langle e, t \rangle \rangle$ ) (Cresswell 1976; Kennedy and McNally 2005). For example, the denotation of the adjective *atatakai* ‘warm’ in (38) can be represented as follows:

$$(41) \llbracket \text{atatakai} \rrbracket = \lambda d \lambda x. \text{warm}(x) \geq d$$

The following diagram represents the logical structure of example (38):

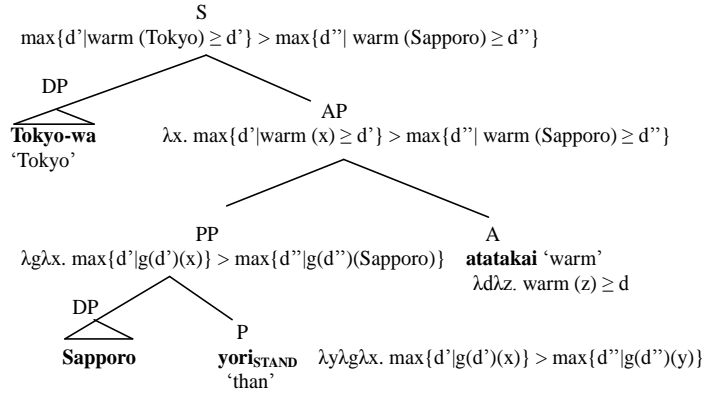
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function into a difference function with a scale whose minimal element—the ‘derived zero’—corresponds to the degree introduced by the comparative standard. See Kubota (2011) for an application of this approach to the semantics of comparatives in Japanese. Since this approach construes comparative sentences as a special case of adjectival sentences, we will set it aside.

<sup>12</sup> Recently Alrenga, Kennedy, and Merchant (to appear) proposed a new theory for the semantics of the English comparatives where they assume that in English both the comparative morpheme *more/-er* and the standard morpheme *than* contribute to the semantics of comparison. The crucial point is that the theory assumes that if a language lacks comparative morphology altogether, it relies on the standard morphology for the expression of comparison. In this respect, we can say that this approach is consistent with the standard-based approach for the Japanese comparatives.

<sup>13</sup> Oda (2008) calls her approach the lexical approach.

(42)



At the end of the day, we get a truth condition as follows:

(43)  $\max\{d'|\text{warm}(\text{Tokyo}) \geq d'\} > \max\{d''|\text{warm}(\text{Sapporo}) \geq d''\}$

In prose, (43) says that the proposition in (38) is true just in case the maximum degree of warmth in Tokyo is greater than the maximum degree of warmth in Sapporo.

## 5.2. The meaning of the contrastive *yori*

Before analyzing the syntax/semantics of sentences with the comparative morpheme *yori*, we need to understand the meaning of the contrastive *yori*. As we discussed earlier, the adpositional use of *yori* also has the meaning of ‘rather than.’ Let us look at the meaning of the contrastive *yori* based on the following example:

(44) *Watashi-wa Shinjuku-(ni)-yori-mo Harajuku-ni iku.*  
 I-TOP Shinjuku-to-rather than-MO Harajuku-to go  
 ‘I will go to Harajuku rather than to Shinjuku.’

The sentence is contrastive in that the speaker is choosing between two alternatives. I posit the following lexical entry for the contrastive *yori* (I am ignoring tense/world information.):

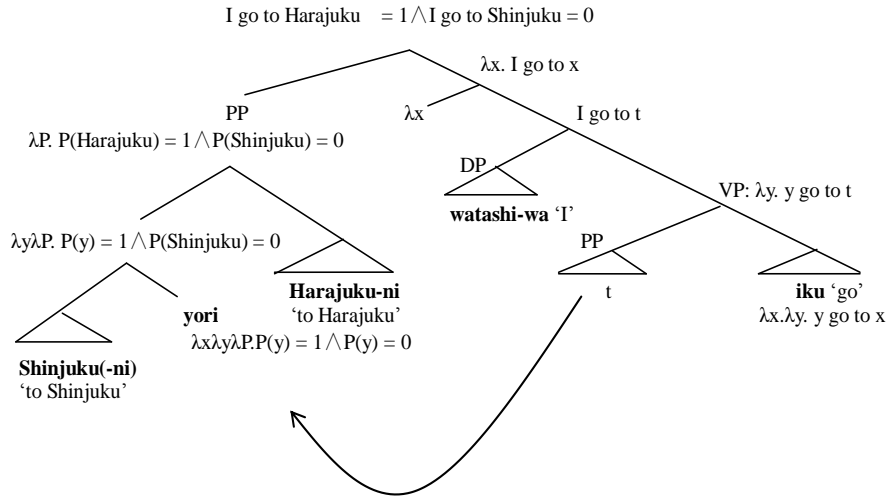
(45)  $[[\text{yori}_{\text{CONT}}]] = \lambda x \lambda y \lambda P. P(y) = 1 \wedge P(x) = 0$

Note that here I assume that in the contrastive comparison the string [*x-yori-mo y*] forms a constituent just like a conjoined constituent [*x and y*]. One piece of evidence for this idea is that [*x-yori-mo y*] can be a target of a cleft sentence:

(46) *Watashi-ga iku-no-wa [Shinjuku-yori-mo Harajuku]-da.*  
 I-NOM go-NM-TOP Shinjuku-than-MO Harajuku-PRED  
 ‘It is to Harajuku rather than to Shinjuku that I usually go.’

The following figure shows the logical structure of (44) (I have omitted tense information for the sake of simplicity):

(47)



### 5.3. A sentence with the comparative morpheme *yori*

#### 5.3.1. Case 1: use of one *yori*

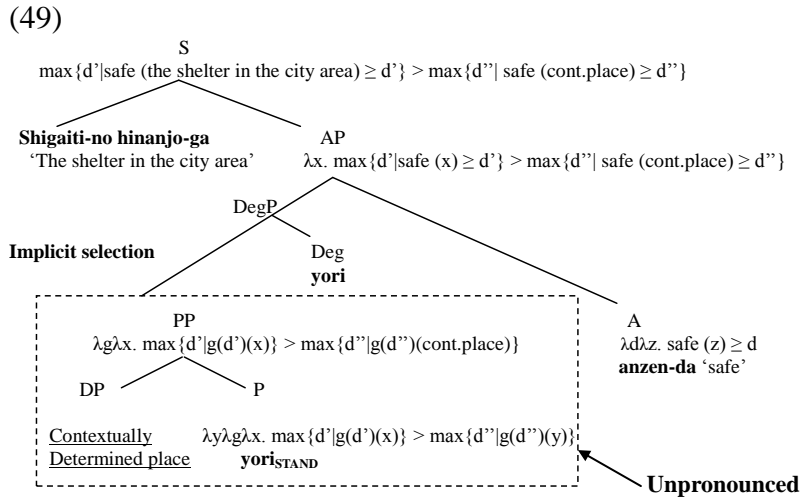
Based on the above setup, let us analyze the syntax/semantics of comparative sentences with the comparative morpheme *yori* (for pure comparison). Thanks to the emergence of the comparative morpheme *yori*, Japanese can express elliptical comparison as follows:

- (48) Sigaiti-no hinanjo-ga **yori** anzen-da.  
 City area-GEN shelter-NOM more safe-Pred  
 'The shelter in the city area is safer.'

The important point here is that the comparative morpheme *yori* in (48) can behave as a purely comparative morpheme.

How can we get the meaning of comparison from the above sentence? Intuitively, the comparative morpheme *yori* signals that there is a hidden standard. One way to analyze this is to assume that the comparative morpheme 'selects' (Kennedy 2007a) a standard *yori* PP. Kennedy (2007a) argues that the comparative morpheme is meaningless by itself; instead, its job is to turn a gradable predicate into something that can 'select' for a standard constituent.

Building on Kennedy's idea about selection, I propose that the comparative morpheme *yori* selects for a standard *yori* PP implicitly at LF. For example, we can say that the comparative morpheme *yori* selects an implicit '*yori* PP' as its complement and signals that there is a hidden/implicit standard PP, as shown in the following figure:



The important point is that since the standard PP is implicit (unpronounced), the standard itself is also construed as 'implicit.' It is identified via context.<sup>14</sup>

### 5.3.2. Case 2: use of two *yoris*

Let us now consider a more complicated case—a sentence with two *yoris*:

- (50) **Yori** ooku-no nihon-jin-ga Denver-**yori**-(mo) New York-ni  
 More many-GEN Japan-people-Nom Denver-YORI-MO New York-Loc  
 sun-deiru.  
 live-STATIVE  
 'More Japanese people are living in New York (rather) than in Denver.'

The problem is what the second *yori* is. There are two possible approaches to the semantics of cases like this. One approach is to assume that the second *yori* is a contrastive *yori* meaning 'rather than.' This approach is driven by the fact that if we delete the first *yori*, the sentence is interpreted as a contrastive sentence:

- (51) Ooku- no nihon-jin-ga [Denver]-**yori** [New York]-ni  
 many-GEN Japan-people-Nom Denver-rather than New York-LOC  
 sun-deiru.  
 live-STATIVE  
 'Many Japanese people are living in New York rather than in Denver.'

<sup>14</sup>Another way to analyze this is to posit a lexical item for the standard marker used for implicit selection:

(i) [[*yori* STAND.IMPLICIT]] =  $\lambda s \lambda g \lambda x. \max \{d'|g(d')(x)\} > \max \{d''|g(d'')(s)\}$   
 (where *s* is a contextual entity)

However, we may not need to posit this, because the implicit selection selects for an unpronounced *yori* PP, which automatically ensures that the standard of comparison is contextual (implicit).

One of the reviewers suggested an alternative approach whereby if a sentence contains the comparative morpheme *yori*, it expresses a meaning of comparison (and if a sentence does not contain the morpheme, the standard *yori* expresses a meaning of comparison). We will discuss the plausibility of this approach in section 7.



Another approach is to assume that the second *yor*i is a marker of standard meaning ‘than.’ I argue that although both approaches work, the first approach (= the implicit selection approach) has more advantages than the second approach in that it posits a simpler logical structure and does not have to assume a movement of the comparative morpheme.

We will compare the two approaches in detail in the next section, but for now let us focus on how the first approach can be used to analyze the meaning of (50). The basic idea behind this approach is that the meaning of (50) is interpreted in a similar fashion to the case of (48)—namely, the comparative morpheme *yor*i implicitly selects a standard *yor*i PP as its argument.

The only difference between (48) and (50) is that in (50) the complement of standard marker *yor*i denotes a degree rather than an individual:<sup>15</sup>

$$(52) \llbracket \text{yor}_{\text{STAND.DEG}} \rrbracket = \lambda d \lambda g \lambda x \lambda P. \max\{d' | g(d')(x)(P)\} > d$$

This denotation basically says that the maximal degree with respect to a given gradable predicate *g* and other elements is greater than with *d*. As for the meaning of *ooku-no*, I assume that it measures the cardinality of an individual (in this case *Nihonjin* ‘Japanese people’). I will posit the following denotation for *ooku-no* in (50):<sup>16</sup>

$$(53) \llbracket \text{ooku-no} \rrbracket = \lambda d \lambda x \lambda P. |x| = d \wedge P(x)$$

In the implicit selection approach, the logical structure of (50) can be represented as follows:

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<sup>15</sup> Hayashishita (2009:79) also points out that the standard marker *yor*i can take a degree as its first argument.

(i) [-5<sup>C</sup> -yor*i*] tumetai-tte donna tumetasa?  
 -5<sup>C</sup> -than cold-TE what:kind coldness  
 ‘What kind of coldness is cold[er] than -5 °C?’

<sup>16</sup> In a comparative environment *ooku-no* just measures the cardinality of individual *x*. However, in an adjectival sentence like (i), it denotes that the cardinality of *x* is **many**:

(i) Ooku-no Nihonjin-ga NY-ni sun-deiru.  
 Many-GEN Japanese-NOM NY-LOC live-TEIRU  
 ‘Many Japanese are living in NY.’

For the semantics of the adjectival sentence, I will assume, building on the discussion of the semantics of gradable adjectives in the literature (Bartsch and Vennemann 1972; Cresswell, 1977; von Stechow, 1984; Kennedy 2007b), that the adjective *ooku-no* combines with the null degree morpheme *pos*, whose function is to take a gradable predicate, and denotes that the at-issue degree is greater than a contextual standard (norm):

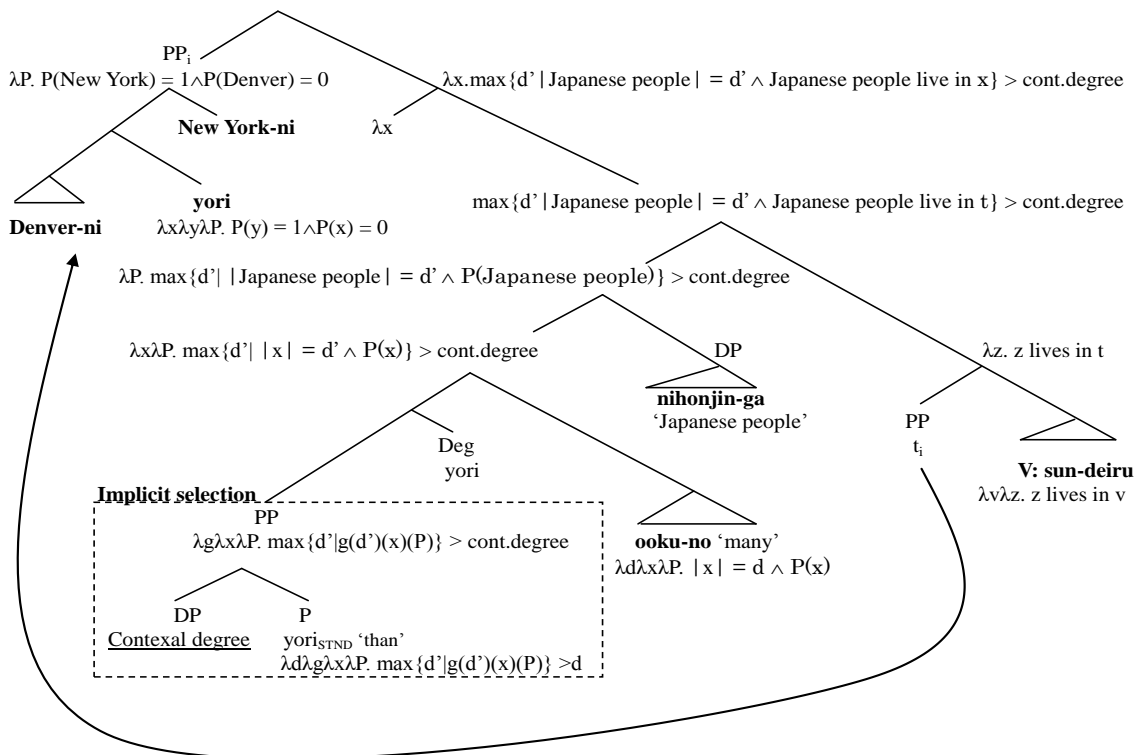
(ii)  $\llbracket \text{pos}_{\text{ATTR}} \rrbracket = \lambda G \lambda x \lambda P. \exists d [d > \text{STAND} \wedge G(d)(x)(P)]$

Thus, if the *pos* morpheme and *ooku-no* are put together, we get the following meaning:

(iii)  $\llbracket \text{pos}_{\text{ATTR}} \rrbracket ( \llbracket \text{ookuno} \rrbracket ) ( \llbracket \text{nihonjin-ga} \rrbracket )$   
 $= \lambda P. \exists d [d > \text{STAND} \wedge |\text{Japanese}| = d \wedge P(\text{Japanese})]$

(54)

$\max\{d' \mid \text{Japanese people} = d' \wedge \text{Japanese people live in New York}\} > \text{cont.degree} = 1$   
 $\wedge \max\{d' \mid \text{Japanese people} = d' \wedge \text{Japanese people live in Denver}\} > \text{cont.degree} = 0$



At the end of the day, we get the following truth condition for sentence (50):

(55)  $\max\{d' \mid \text{Japanese people} = d' \wedge \text{Japanese people live in New York}\} > \text{cont.degree} = 1\} \wedge$   
 $\max\{d' \mid \text{Japanese people} = d' \wedge \text{Japanese people live in Denver}\} > \text{cont.degree} = 0$

In prose, (55) says that it is true that the maximum number of Japanese people living in New York is greater than a contextually determined degree, and it is false that the maximum number of Japanese people living in Denver is greater than the contextually determined degree. The most natural way of understanding the contextually determined degree is to assume that it corresponds to ‘the number of Japanese living in Denver.’ Since the speaker is choosing New York rather than Denver, it is pragmatically likely that ‘the number of Japanese people in Denver’ is assumed to be an implicit standard of comparison (Yusuke Kubota, personal communication). Thus the truth condition of (55) can be (re)interpreted as follows:

(56)  $\max\{d' \mid \text{Japanese people} = d' \wedge \text{Japanese people live in New York}\} > \text{the number of Japanese in Denver} = 1 \wedge$   
 $\max\{d' \mid \text{Japanese people} = d' \wedge \text{Japanese people live in Denver}\} > \text{the number of Japanese people in Denver} = 0$

This analysis correctly captures the relative ranking of New York and Denver in terms of the number of Japanese people living there.

#### 5.4. Alternative approach for the case of two *yoris*

Let us now consider the alternative account of sentence (50). The alternative approach assumes that the second *yoris* in (50) is a standard marker *yoris*, rather than the contrastive *yoris*. The basic idea of this account is that sentence (57a) and sentence (57b) are semantically the same:

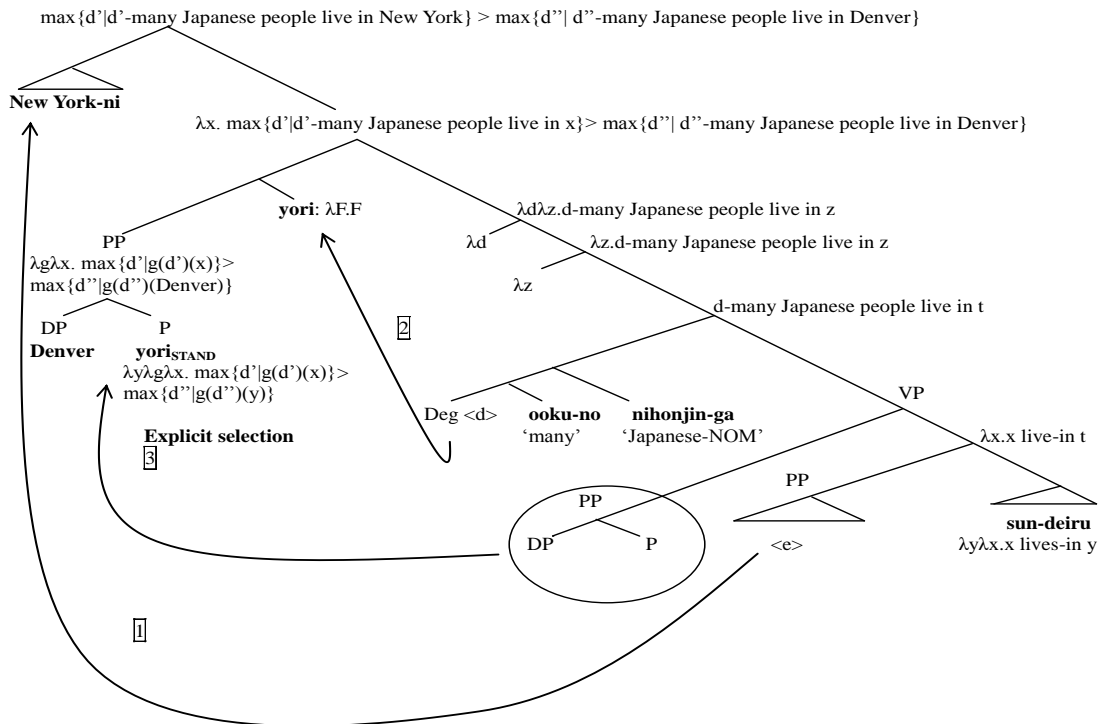
- (57) a. **Yori** ooku-no          nihon-jin-ga          Denver-**yoris**-(mo)  
More many-GEN Japan-people-NOM Denver -than-MO  
New York-ni          sun-deiru.          (= (50))  
New York-LOC live-STATIVE  
'More Japanese people are living in New York than in Denver.'
- b. New York-ni-wa          Denve-**yoris**-(mo) ooku-no          nihon-jin-ga  
New York-LOC-TOP Denver-than-MO many-GEN Japan-people-NOM  
sun-deiru.  
live-Stativive  
'More Japanese people are living in New York than in Denver.'

The difference between (57a) and (57b) is that in (57b) a standard *yoris* PP combines with a gradable predicate directly (locally), while in (57a) a standard *yoris* PP does not combine with a gradable predicate directly.

This alternative account says that in order to make the *yoris* PP combine with the gradable predicate directly, the comparative morpheme *yoris* in (57a) selects for the existing *yoris* PP explicitly as its argument. However, in order to make this idea work, we need a complicated LF.

Kennedy (2007a) argues that English sentences like '*more people live in New York than Chicago*' have a complicated LF, which involves a 'parasitic scope' (Heim 1985; Barker 2007; Bhatt and Takahashi 2007; Kennedy and Stanley 2009; Matsui and Kubota to appear). If we consider the second *yoris* to be a standard marker, we must assume that such a complicated LF exists in example (57a):

(58)



There are several steps involved in the above LF. First, the DP is raised to scope over the entire sentence. Second, the comparative morpheme *yori* is raised for interpretability to a position above ‘ $\lambda z$ ’ and binds the degree argument in its base position. Note that at this point the comparative morpheme is linked with the dotted line. Note also that the comparative morpheme *yori* is semantically vacuous. Since the operation of the second movement depends on the first movement, we can say that the scope relation is ‘parasitic.’ Finally, the comparative morpheme *yori* selects the comparative phrase *Denver-yori* ‘than Denver’ **explicitly**. In other words, this approach assumes that in addition to implicit selection, there is an explicit selection involved in selection by the comparative morpheme *yori*. At the end of the day, the structure of (58a) is like that of ‘native Japanese’ comparatives (e.g. (58b)), where no comparative morpheme *yori* is used.

The following question will naturally arise. How can we be sure that the comparative morpheme *yori* in (49) selects for an implicit *yori* PP, while the comparative morpheme *yori* in (58a) selects for an explicit *yori* PP? Why doesn’t the comparative morpheme *yori* in (58a) select a standard PP implicitly? One possible explanation for this is to assume the following economy principle:

(59) The principle of economy of selection: If there is an explicit standard PP, select it.

This economy principle ensures that the comparative morpheme *yori* in (57a), but not the one in (48), chooses an explicit selection.<sup>17</sup>

<sup>17</sup> This economy principle is somewhat similar to Kennedy’s (2007b) economy principle concerning the selection of a standard in the semantics of relative and absolute gradable adjectives:

Let us now compare the above approach to the approach we have taken in section 5.3.2. Although the above alternative account may also work, the contrastive-based implicit selection approach has more advantages. First, the contrastive-based implicit selection approach is simpler in that we don't have to posit invisible movements. In particular, there is a theoretical concern as to the movement of the comparative morpheme *yor*. There seems to be no theoretical reason why the comparative morpheme *yor* has to move like this, other than to get the semantics right.

Second, the contrastive-based implicit selection account better fits the 'supplemental' nature of the comparative morpheme than the alternative account. The implicit selection account assumes that the second *yor* in (57a) is a contrastive *yor*. This assumption is based on the fact that if we delete the comparative morpheme *yor* (the first *yor*), the second *yor* is interpreted as a contrastive *yor*. This account naturally fits the supplemental strategy of the comparative morpheme *yor* because it clearly shows that the meaning of the sentence with the comparative morpheme *yor* derives from the already existing semantic structure. By contrast, the explicit selection account of (57a) does not fit the supplemental nature of the comparative morpheme *yor* because it assumes that the status of the second *yor* changes depending on the presence of the comparative morpheme *yor*. That is, if there is no comparative morpheme *yor*, the second *yor* is a contrastive *yor* meaning 'rather than', but if there is a comparative morpheme *yor* meaning 'more', the second *yor* is a comparative standard marker. Thus, there is no semantic cumulativity in the explicit selection account. This does not perfectly fit the supplemental strategy of using the comparative morpheme *yor*.

Third, the contrastive-based implicit selection approach can cover a wider range of empirical facts than the explicit selection approach. In the contrastive-based implicit selection approach, the comparative morpheme *yor* selects a contextually determined implicit standard. In the analysis of example (50), I argued that the implicit standard corresponds to a locally salient degree, i.e. the number of people living in Denver. However, I think that the contextually determined standard does not have to be the local degree that is related to the complement of the second *yor*. As the following example shows, the standard of comparison can correspond to a 'non-local' degree, i.e. the number of students who selected Hawaii (55 students):

- (60) (Context: A university has a study abroad program. There are two options for places to study abroad, LA or Hawaii. Last year 55 students chose Hawaii rather than LA.)

Kotoshi-wa	<b>yor</b>	ooku-no	gakusei-ga	LA- <b>yor</b> -(mo)
This year-TOP	more	many-GEN	student-Nom	LA-rather than-MO
Hawaii-o		sentaku-si-ta.		

- 
- (i) *Interpretive Economy*: Maximize the contribution of the conventional meanings of the elements of a sentence to the computation of its truth conditions. (Kennedy 2007b:36)

This economy principle requires that if a given adjective has a minimal element (whether built-in, in the case of lower closed scale adjectives, or derived, in the case of comparative difference functions), the null morpheme *pos* should choose this minimal element as its standard rather than introducing a contextual standard, since in so doing it maximizes the contribution of conventional meaning.

Hawaii-ACC select-do-PAST  
 ‘Lit. This year more students chose Hawaii rather than LA.’

In this context it is possible to assume that the standard of comparison is ‘55 students.’ This context is salient in a situation where the speaker is comparing last year and this year in terms of the number of the students who selected Hawaii (instead of LA).<sup>18, 19</sup> The semantics of this reading can be represented as follows:

$$(61) \max\{d' \mid |\text{student}| = d' \wedge \text{students selected Hawaii}\} > 55 = 1 \wedge \\ \max\{d' \mid |\text{student}| = d' \wedge \text{students selected LA}\} > 55 = 0$$

It is of course possible to get another interpretation whereby the contextually determined standard corresponds to the number of students who chose LA, but the point here is that there are multiple possibilities for the determination of the contextually determined standard. The explicit selection approach, on the other hand, cannot have a reading like (61) because the comparative morpheme *yor*i must explicitly select a standard *yor*i PP as its argument.

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<sup>18</sup> If there is no such contextual background, we will assume that the standard of comparison corresponds to be the number of students who selected LA.

<sup>19</sup> An anonymous reviewer raised a question as to whether it is possible for the comparative morpheme to take an explicit standard PP as in (i):

- (i) (?) **300-nin-yori-mo** ooku-no nihinin gakusei-ga Denver-yori-(mo)  
 300-CL-than-MO many-GEN Japanese student-NOM Denver -than-MO  
 New York-ni iki-tagat-teiru.  
 New York-to go-want-STATIVE  
 ‘More than 300 Japanese want to go to New York rather than to Denver.’

In an out-of-the blue context, the above sentence may sound a bit unnatural. However, I think that the sentence becomes natural if the number ‘300 people’ is pragmatically salient. For example, the sentence sounds natural if we assume a context where someone has said that the maximum number of students the study program can send is 300.

Note that if we use *yor*i-*mo* with *ijou* ‘more than or equal to’, the sentence may become much more natural. In that case, it does not seem to have a background requirement:

- (ii) **300-nin-ijoo-no** nihonjin gakusei-ga Denver-yori-  
 300-CL-geater than or equal to-GEN Japan student-NOM Denver-than-  
 (-mo) New York-ni iki-tagat-teiru.  
 -MO New York-to go-want-STATIVE  
 ‘More than (or exactly) 300 Japanese students want to go to New York  
 rather than to Denver.’ (NOTE: 300 is included)

(ii) is perfectly natural in an out-of-the-blue context. For example, we can naturally utter (ii) as a reply to the question, ‘How many students want to go to NY rather to Denver?’ At this moment, I am not sure why there is a difference between (i) and (ii) in terms of background requirement/discourse familiarity. I would like to leave this issue for future research. Thanks to an anonymous reviewer for bringing comparative examples like (i) to my attention.

Based on the above argument I conclude that the contrastive-based implicit selection account is superior to the standard-*yor*i based explicit selection account for the meaning of cases like examples (58a) and (61). We can summarize the role of the comparative morpheme *yor*i as follows:

- (62) The role of the comparative morpheme for pure comparison
- a. The comparative morpheme *yor*i for neutral comparison (which is semantically null) *selects* (Kennedy 2007a) a standard *yor*i PP implicitly at LF.
  - b. The comparative morpheme for pure comparison is used only when necessary. (This characteristic is independently motivated by the strategy of borrowing.)

## 6. Discussion

In the previous section we have analyzed the semantics of comparatives with the morpheme *yor*i and argued that the job of the comparative morpheme *yor*i is to select a standard PP so that a sentence which does not have a (pure) comparative meaning can be given a comparative meaning.

The underlying assumption behind this analysis of the comparative morpheme is that it does not have a meaning of comparison, only a property of selection. In our analysis, the meaning of comparison is encoded in the standard marker *yor*i. However, as we briefly mentioned in section 5.1, there are alternative approaches to the semantics of Japanese comparatives that do not involve a comparative morpheme:

- (63) a. **The comparative morpheme-based account** (majority view): There is an invisible MORE<sub>JP</sub> that expresses a meaning of comparison.
- b. **The standard-based account**: The meaning of comparison is expressed by a standard marker.
- c. **The gradable predicate-based approach**: In Japanese a gradable predicate already has a comparative-like meaning.

In this section we will consider how the alternative approaches (i.e. the comparative morpheme approach and the gradable-predicate approach) can analyze the semantics of comparative sentences with the comparative morpheme *yor*i and its relation to ‘regular’ comparatives.

Let us briefly consider the main feature of each approach. The first approach is perhaps the prevailing one, having been adopted in much of the literature on Japanese comparatives (e.g. Beck et.al. 2004; Bhatt and Takahashi 2011, Shimoyama to appear, etc). Note that this approach is compatible with the dominant view of the analysis of English comparatives, where the comparative morpheme *more* is considered to have a meaning of comparison. One way to analyze this is to posit that Japanese has the following denotation for the null comparative morpheme:

$$(64) \llbracket \text{MORE}_{\text{JP}} \rrbracket = \lambda y \lambda g \lambda x. \max \{ d' | g(d')(x) \} > \max \{ d'' | g(d'')(y) \}$$

Actually, there can be other ways to describe the denotation of MORE<sub>JP</sub>, but we

will assume this is representative.<sup>20</sup>

The second approach is the one we took. This approach is the opposite of the comparative morpheme approach in that it assumes that the standard marker *yor*, not a comparative morpheme, denotes a meaning of comparison (Kennedy 2007a; Hayashishita 2009; Schwarzschild 2010). As Kennedy (2007a) says, this view looks plausible because many languages do not have an overt comparative morphology (Ultan 1972).<sup>21</sup> In Kennedy's (2007) theory, comparative morphemes like the English *more* select for a standard as a categorical selection.

The gradable predicate-based approach (Oda 2008) is different from the above two approaches in that it assumes that some Japanese adjectives already have comparison-like meanings. In this approach, the adjective 'tall' in Japanese denotes 'x is *d* much taller than a contextually given degree' instead of 'x is *d*-tall.' (This idea is somewhat similar to Schwarzschild's (2005) approach to what he calls the covert comparative adjectives (e.g. *early* and *late*), which inherently have a comparative meaning.)

Let us now consider how the comparative morpheme approach and the gradable-predicate approach can analyze the semantics of comparative sentences with the comparative morpheme *yor* and its relation to 'regular' comparatives.

First, the comparative morpheme approach. Whatever the actual denotation of  $\text{MORE}_{\text{JP}}$  is, if we admit that Japanese has a null comparative morpheme, we must posit that there are two kinds of comparative morphemes in Japanese—a null morpheme and the comparative morpheme *yor* (CM stands for comparative morpheme):

- (65) a.  $[[\text{MORE}_{\text{JP}}]] = \lambda g \lambda y \lambda x. \max\{d' | g(d')(x)\} > \max\{d'' | g(d'')(y)\}$   
 b.  $[[\text{yor}_{\text{CM}}]] = \lambda g \lambda y \lambda x. \max\{d' | g(d')(x)\} > \max\{d'' | g(d'')(y)\}$

In this view the null comparative morpheme  $\text{MORE}_{\text{JP}}$  and *yor* have exactly the same lexical meaning. But this approach is not very economical, because we have to make a division of labor between the null comparative morpheme  $\text{MORE}_{\text{JP}}$  and the comparative morpheme *yor*. Furthermore, we have to restrict the environment of  $\text{MORE}_{\text{JP}}$ . Otherwise the theory runs into a problem. As Hayashishita (2009) argues, the theory cannot naturally explain why we cannot get a comparative meaning in an adjectival sentence even if we set up an appropriate context:

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<sup>20</sup> Beck et al. (2004) posit a different semantics for the null comparative morpheme:

(i)  $[[\text{-er}_{\text{JP}}]] = \lambda g \lambda x. \text{Max}(\lambda d. g(d)(x)) > c$

(where *g* is of type  $\langle d, \langle e, t \rangle \rangle$ ; an adjectival meaning)

This approach is contextual in that the null comparative morpheme posits a contextual standard *c*. One way to fix this value is to use a *yor* PP, which makes a particular object highly salient.

Also, there is what is so called the 'A-not A analysis.' In this approach the denotation of  $\text{MORE}_{\text{JP}}$  inherently has a negation, and the meaning of (i) can be analyzed as follows, using negation:

(ii) a. A is more expensive than B.

b. There is some expense-threshold: A meets it and B does not.

See Schwarzschild (2008) for a detailed overview of this analysis.

<sup>21</sup> Ultan (1972) states that 32 of 108 languages surveyed by him do not have overt comparative morphology.



- (66) [Context: You happen to notice that John is taller than Bill.]  
 # John-{wa/ga} se-ga takai.  
 John-TOP/NOM back-NOM tall.  
 ‘John is tall.’ (NOT: John is taller.) (Hayashishita 2009: 91)

If Japanese has a null degree morpheme, it should be possible to analyze the above sentence as an ‘incomplete comparative.’ However, the sentence cannot express incomplete comparison.<sup>22</sup> It may be possible to resolve this issue by saying that MORE<sub>JP</sub> always co-occurs with an explicit *yor*i PP, and the comparative morpheme *yor*i co-occurs with an implicit *yor*i PP. However, I am not sure whether this kind of stipulation is empirically supported.

The standard-based approach does not have this problem because it does not stipulate that there are two kinds of comparative morphemes in Modern Japanese. We don’t have to worry about the complementary distribution of the null comparative morpheme and the comparative morpheme *yor*i. In our analysis the use of the comparative morpheme *yor*i is constrained by the independently motivated, supplemental nature of borrowing.

Let us now consider how the gradable predicate approach analyzes the comparative morpheme *yor*i. The basic idea of the gradable predicate approach is that unlike English adjectives, Japanese adjectives have comparative-like semantics (Oda 2008). The intuition behind this analysis is that Japanese adjectives are interpreted as ‘A-er’. This analysis implies that Japanese adjectives are inherently comparative and context dependent. Oda (2008) proposes the following lexical entry for Japanese adjectives:<sup>23</sup>

- (67) Lexical meaning of Japanese adjectives  
 $\lambda x. \max\{d' \mid A(d')(x)\} > c$

This approach says that if there is no overt comparative standard as in (68), *c* is interpreted as a context-dependent norm. On the other hand, if there is an explicit standard as in (69), *c* refers to the element:

- (68) Kono hon-wa takai.  
 This book-TOP expensive  
 ‘This book is expensive.’  
 (69) Kono hon-wa ano hon-yori takai.  
 This book-TOP that book-than expensive  
 ‘This book is more expensive than that book.’

According to Oda, the idea that Japanese adjectives have a comparative meaning

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<sup>22</sup> See Schwarzschild (2010) for a similar argument. Schwarzschild observes that in Hebrew, the comparative morpheme *yoter* is optional in the environment ‘Taro is taller than Bill’ but is obligatory in incomplete environments like ‘Taro is taller.’ Schwarzschild argues that these linguistic facts are inconsistent with the idea that the meaning of comparison is encoded in the comparative morpheme. (Note that Schwarzschild (2010) argues that these data are also inconsistent with the gradable-based approach wherein gradable predicates have an inherently comparative meaning.)

<sup>23</sup> Actually, Oda (2008) posits another lexical entry for Japanese adjectives that are used for ‘differential’ measurement. We will discuss this point below.

can naturally explain why the Japanese expression equivalent to the English phrase ‘the rope is 2 meters long’ means literally ‘the rope is 2 meters *longer*.’ The following sentence gives rise to differential measurement, despite the absence of any overt comparative morphology (Snyder et al. 1995; Kikuchi 2006; Nakanishi 2007; Hayashishita 2009):

- (70) Kono hon-wa 300-yen takai.  
 This book-TOP 300-yen expensive  
 ‘This book is 300 yen more expensive.’

Oda (2008: 69) analyzes this differential interpretation by assuming that Japanese adjectives can also posit the following denotation:

- (71)  $\lambda d'' \lambda x. \max\{d' \mid A(d')(x)\} > c+d''$

Although the idea of a gradable-predicate analysis (or the lexical approach) is intriguing, there seem to be some technical problems regarding how it works in other environments. First, Japanese does allow direct measurement when a measure phrase combines with a gradable predicate that has a zero point (Sawada and Grano 2011):

- (72) Kono sao-wa 5-do magat-teiru.  
 This rod-TOP 5-degree bend-PERF  
 ‘This rod is 5 degrees bent.’ (NOT: ‘This rod is 5 degrees more bent.’)

In (72) the degree of bentness is measured from a zero point (i.e. a minimum standard). As Kubota (2011) points out, it is not clear how Oda’s theory can explain the meaning of the absolute measurement. Although the above sentence contains a verbal predicate, semantically it is gradable, just like pure lexical adjectives such as *takai* ‘tall/expensive’ (See Sawada and Grano 2011 for detailed discussions on this point.)

Another question has to do with the relation between adjectival sentences and equivalent sentences with the comparative morpheme *yori*:

- (73) a. Koko-wa anzen-da.  
 Here-TOP safe-PRED.  
 ‘This place is safe.’ (NOT: this place is safer.)  
 b. Koko-wa yori anzen-da.  
 Here-TOP more safe-PRED.  
 ‘This place is safer.’

Both (73a) and (73b) assume a ‘contextual standard’, but each sentence posits a different kind of contextual standard. In (73a) a contextual norm is assumed, while in (73b) a contextual place is assumed. It is not clear at this point how Oda’s theory can capture this difference. We need a mechanism that can correctly distinguish between the two kinds of ‘contextual’ interpretations.

On the other hand, the standard-based approach can naturally explain the above variations. For the standard-based approach, the interpretations of measure phrases are not relevant because the interpretation mechanism does not depend on the existence of the standard marker. The standard-based approach can also naturally explain the semantic difference between (73a) and (73b). According to

this approach, the contextually determined norm is provided by a *pos* morpheme (see Kennedy 2007b for a detailed discussion of the semantics of *pos*), while a contextual entity is provided by the implicit selection of a contextual *yor*i PP (see footnote 13).

To summarize, in this section we have considered how alternative approaches can be used to analyze the phenomenon of the comparative morpheme *yor*i. I argued that although each approach may be able to explain the meanings of ‘regular’ Japanese comparatives, only the standard-based approach can explicitly and naturally capture the relation between comparatives without the comparative morpheme *yor*i (for pure comparison) and comparatives with the morpheme. However, I have a more fundamental reason for choosing the standard-based approach—only the standard-based theory naturally explains why the comparative morpheme developed in Modern Japanese. If we consider a null comparative morpheme or an adjective to have a meaning of comparison, I don’t think we can answer the question in a natural way.

## 7. Conclusions

This paper investigated the syntax and semantics of the Japanese comparatives through detailed analyses of the comparative morpheme *yor*i in Modern Japanese and considered what role it plays in the grammar of comparison, as well as what its emergence and development tells us about the semantics of ‘regular’ Japanese comparatives.

Based on evidence from corpus data and questionnaires, I claimed that there is variation among native speakers with regard to the meaning of the comparative morpheme *yor*i (despite the fact that it was originally developed for the translation of the European comparative morpheme). The pure comparative use is quite different from that of European comparative morphemes in that it can only appear in an environment where a sentence cannot otherwise express a comparative meaning. I explained this limited use by proposing that Modern Japanese has the constraint: Do not use comparative morphology if it is not necessary. I then connected this constraint to the strategy of morphological borrowing.

The other use is an intensifier/emphatic use. The intensifier *yor*i can be used freely in any comparative environment, signaling that both the target and a standard satisfy the standard provided by the relevant adjective. I argued that the meaning/use of the intensifier *yor*i can be viewed as the result of another strategy of avoiding the violation of the constraint: do not use a comparative morpheme for pure comparison if it is not necessary.

As for the role of the comparative morpheme for pure comparison in Modern Japanese, I argued that the comparative morpheme *yor*i for pure comparison, which is semantically vacuous, implicitly selects a comparative *yor*i PP that has a meaning of comparison at the semantic level (LF).

The development and distribution patterns of the comparative morpheme *yor*i for pure comparison contribute to our understanding of the nature of the semantics of regular Japanese comparatives. There are various competing theories regarding the semantics of regular Japanese comparatives, but I argued that only the standard-based approach (Kennedy 2007a, Hayashishita 2009) can naturally explain the development of the comparative morpheme *yor*i and its relation to the regular comparatives. It seems to me that historical data are often neglected in formal semantic theories. I hope that this paper has shed new light on the relationship between historical linguistics and formal semantic theories.

This paper leaves many questions for future research. For example, this paper has only looked at Japanese data, but recent studies have shown that many languages can express the meaning of comparison without the use of comparative morphemes. Schwarzschild (2010) shows that in Hebrew, it is possible to express comparison without using the comparative morpheme *yoter*:

- (74) a. Yael *yoter* *xazaka* mi-Dani.  
 Yael more strong[3sg.fem] than-Danny  
 ‘Yael is stronger than Danny.’  
 b. Yael *xazaka* mi-Dani.  
 Yael strong[3sg.fem] than-Danny  
 ‘Yael is stronger than Danny.’

(Schwarzschild 2010)

Hebrew is different from Japanese in that the use of the comparative morpheme is optional in complete comparatives (at least in the case of adjectives like *xazaka* ‘strong’) (Roger Schwarzschild, personal communication). However, it is somewhat similar to Japanese in that the comparative morpheme *yoter* is necessary in environments of incomplete comparisons, like ‘Yael is stronger.’ (See Schwarzschild (2010) for a detailed discussion of environments in which the comparative morpheme is necessary.) These similarities and differences suggest that there is cross-linguistic variation with respect to the use of comparative morphemes. More typological and historical surveys need to be conducted to clarify the variations.

Another question concerns the analysis of the comparative morpheme *yori*. In this paper I proposed that the comparative morpheme *yori* for pure comparison implicitly selects a standard *yori* PP (that has a meaning of comparison) at LF. However, one of the anonymous reviewers suggested an alternative view: that in Japanese the meaning of comparison is encoded in two lexical items. According to this argument, when the comparative morpheme *yori* is present in a sentence, as in (75a), it expresses the meaning of comparison, and when the comparative morpheme *yori* is not present in a sentence, as in (75b), the standard marker *yori* expresses the meaning of comparison:

- (75) a. **Yori** *anzenna tokoro-ni hinan-site-kudasai.*  
 more safe place-to refuge-do-please  
 ‘Please flee to a safer place.’  
 b. Taro-wa Hanako-**yori** (-mo) *se-ga takai.*  
 Taro-Top Hanako-than-MO height-NOM tall  
 ‘Taro is taller than Hanako.’

This alternative approach is similar to our approach in that it assumes that in the regular (native) Japanese comparatives, the standard marker *yori* expresses a meaning of comparison. However, our approach and the alternative approach are different with respect to the analysis of the comparative morpheme *yori* for pure comparison. One advantage of the alternative approach is that, as the reviewer says, it makes it possible to analyze the meaning of the sentence with the comparative morpheme *yori* in a simpler way. We don’t have to posit an implicit selection of the standard *yori* PP.

However, there seems to be a potential problem for the alternative approach as well. It is not clear how this approach would analyze the meaning of a

sentence with the intensifier *yor* where the standard *yor* PP is also present:

- (76) Kono hon-wa ano hon-yori-mo {sarani/yori<sub>INTENS</sub>} omoshiroi.  
This book-TOP that book-than-MO still.more interesting  
'This book is still more interesting than that book.'  
(Presupposition: That book is interesting.)

Recall that some native speakers use the comparative morpheme *yor* freely as an intensifier, even in environments where there is a standard *yor* PP. If we assume that the comparative morpheme *yor* has a meaning of comparison, it is natural to consider the intensified use of the comparative morpheme also to have a special kind of comparative meaning (i.e. intensified comparison, 'still more'). However, in (76) there is also a standard marker *yor* which, under this view, has a meaning of comparison.

The important point regarding the intensifier *yor* (and also *sarani*) is that it triggers the norm-related presupposition that 'a standard of comparison satisfies a contextual standard associated with a gradable predicate.' For example, (76) presupposes that 'that book is interesting.' This information is a presupposition because it remains even when it is embedded under a question (or other operators, such as a possibility modal or an antecedent of a conditional):

- (77) Kono hon-wa ano hon-yori-mo {sarani/yori<sub>INTENS</sub>} omoshiroi-no?  
This book-TOP that book-than-MO still.more interesting-Q  
'Is this book still more interesting than that book?'  
(Presupposition: That book is interesting.)

How can we analyze the presupposition-including comparative meaning in a compositional way? In the standard-based approach (our approach) we may say that the intensifier use of *yor* (and *sarani*) is the same as the use of the pure comparative morpheme *yor*, except that the former implicitly/explicitly selects a standard PP whose degree satisfies a standard of A. However, at this point, it is not so clear how the alternative approach (i.e. the two-denotation approach) would analyze the meaning of (77). I would like to leave these questions for future research.

### Acknowledgements

I am very grateful to Peter Alrenga, Anastasia Giannakidou, Tommy Grano, Koji Kawahara, Chris Kennedy, Yusuke Kubota, Salikoko Mufwene, Harumi Sawada, Jun Sawada, Roger Schwarzschild, Hajime Takeyasu and the anonymous reviewers and editors of *Journal of East Asian Linguistics* for their valuable comments and discussions on the current and earlier versions of this paper. Parts of this paper were presented at BLS 34 (2008) and the semantics discussion meeting at the U. of Chicago, and I also wish to thank the respective audiences for their helpful feedback and suggestions. This paper is based upon work supported by the Japan Society for the Promotion of Science (Grant-in-Aid for Young Scientists (B), Grant number: 23720204). All remaining errors are of course my own.

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