

Locational Comparatives¹

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1 Introduction

- Much attention has been and is paid to comparative constructions. However, almost all of the literature only deals with comparatives of adjectives.
- In Nomura (2010), I argued that PP comparatives exist in Japanese.
- In this presentation, I will make an attempt to extend the data to Hebrew and English.

Proposal

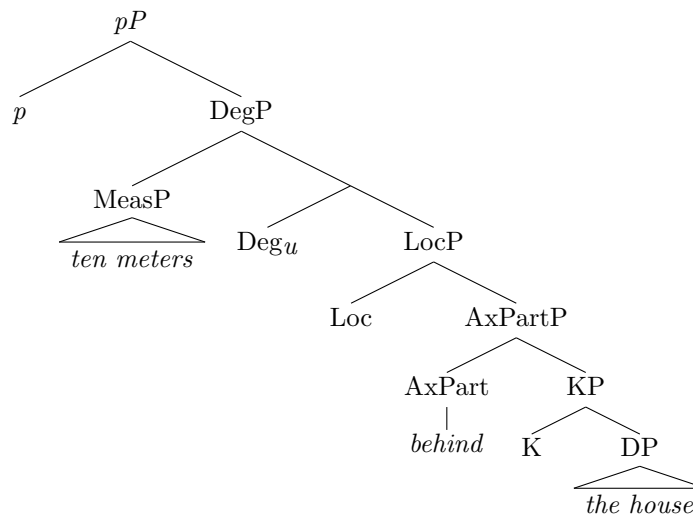
1. At least, some languages have PP comparatives.
2. Type of PP comparatives can differ from language to language like AP comparatives. Japanese has clausal PP comparatives, while Hebrew and English have phrasal PP comparatives.

2 Assumptions

2.1 Syntax of PP

- Because of the recent intensive study of PP syntax, it is getting clearer and clearer that PPs have ine grained structure.
- For example, Svenonius (2010) proposes the structure in (1) for the phrase “*ten meters behind the house.*”

(1)

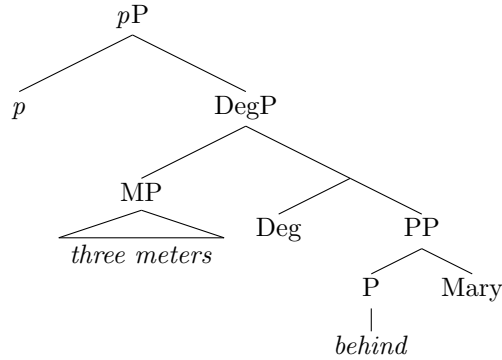


¹I would like to express much gratitude to Martin Hackl for the helpful comments and discussion. I also thank the audience at LFRG at MIT on August 11, 2010, the audience at my presentation at MIT class “Linguistic theory and Japanese” on October 26, 2010 and the audience at WAFL7 at USC on October 31, 2010. All remaining errors are mine.

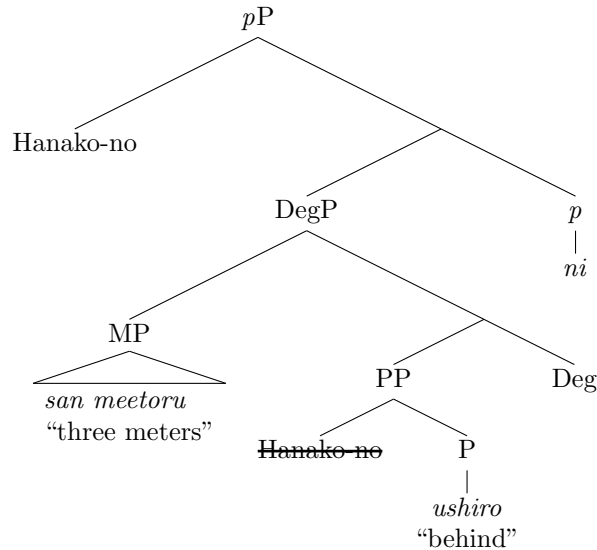
• Following many researchers (Bašić (2007), den Dikken (2010), Koopman (2000, 2010), Svenonius (2010), Watanabe (2009) among others), I assume a functional projection for the measure phrase (DegP).^{2,3} I also assume Japanese locative particle *ni* is *p* head. The relevant structures of (2) are as (3).⁴

- (2) a. John is three meters behind Mary.
 b. Taro-ga Hanako-no san-meetoru ushiro-ni iru. (Japanese)
 T-NOM H-GEN behind-LOC is
 “Taro is behind Hanako.”

(3) a.



b.



²Some researchers propose QP or #P for the measure phrase. I do not distinguish between Deg_(u), Q and # for the sake of simplicity.

³Adjunction of MP to PP cannot be a right analysis, because deictic elements can be between P and MP. The data below are from Bašić (2007).

- (a) dær 10 metri-ye un birun-e xane (Persian)
 at 10 meters-EZ DIST outside-EZ house
 “there, 10 meters outside the house”
 (b) 10 metara tamo ispred kuće (Serbian)
 10 meters there in.front house
 “there, 10 meters in front of the house”

⁴I use the label MP for the measure phrases for the convenience and do not intend to express the category of the measure phrases.

2.2 Adjectival comparatives

2.2.1 Clausal comparatives

• I assume (a simplified version of) Heim’s (2006) analysis of the clausal comparatives. Let me show the derivation of (4). First, the relevant lexical entries are in (5).

(4) John is taller than Mary is.

- (5) a. $\llbracket tall \rrbracket = \lambda D_{\langle d,t \rangle} . \lambda x_e . x' s \text{ height} \in D$
 b. $\llbracket -er_D \rrbracket = \lambda d_d . \lambda d'_d . d' > d$

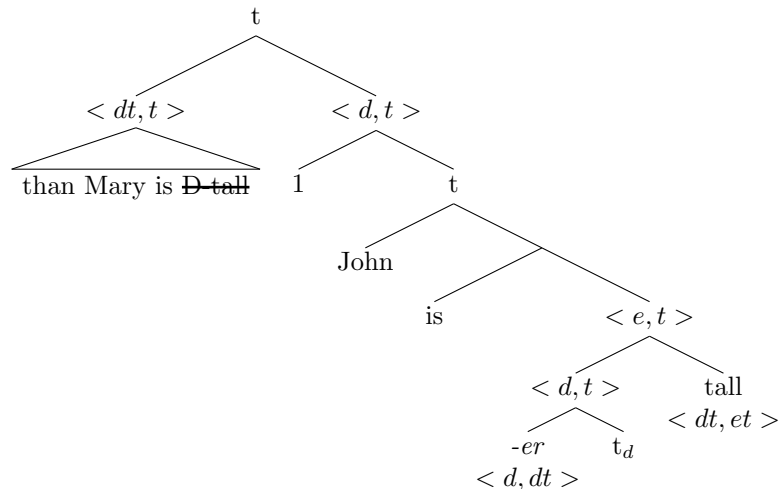
• Notice that gradable adjectives, *tall* in (4), first take an element of type $\langle d, t \rangle$, rather than an element of type d .

• *than*-clause is interpreted as below:

(6) $\llbracket \text{than Op } Mary \text{ is } t_{\langle d,t \rangle} \text{-tall} \rrbracket = \{D_{\langle d,t \rangle} : \text{Mary's height} \in D\}$ (The trace of Op is of type $\langle d, t \rangle$!)

• Following the standard analysis, she assumes that *-er* takes *than*-clause as its complement at LF. As we saw in (6), *than*-clause is of type $\langle dt, t \rangle$, which results in type mismatch. Thus, QR is necessary.

(7)



(8) $\llbracket (4) \rrbracket = \text{Mary's height} \in \{d : \text{John is } d\text{-tall}\}$

• This mechanism might seem unnecessary complex. However, it is necessary to interpret examples like (9) where *than*-clause contains quantifiers.

- (9) a. John is taller than every girl is.
 b. $\llbracket \text{than every girl is} \rrbracket = \{D_{\langle d,t \rangle} : \forall x_e : \text{girl}(x) \rightarrow x' s \text{ height} \in D\}$
 c. $\llbracket (9)a \rrbracket = \forall x_e : \text{girl}(x) \rightarrow x' s \text{ height} \in \{d : \text{John is } d\text{-tall}\}$

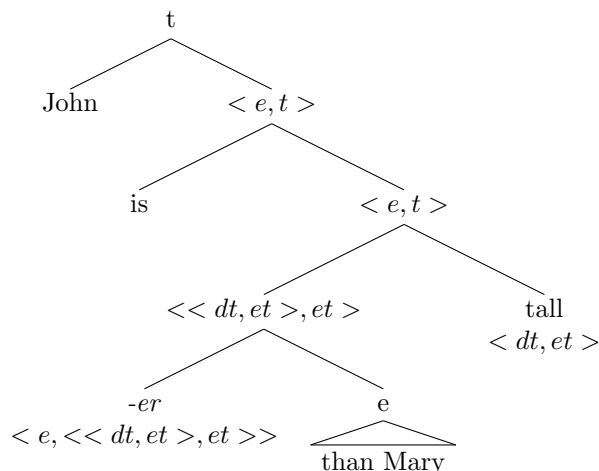
2.2.2 Phrasal comparatives

• For *-er* in phrasal comparatives, I assume the lexical entry below:

(10) $\llbracket -er_I \rrbracket = \lambda x_e . \lambda g_{\langle dt, et \rangle} . \lambda y_e . \text{Max}\{d : D(d)=1 \wedge g(D)(y)=1\} > \text{Max}\{d : D(d)=1 \wedge g(D)(x)=1\}$

• The structure for the sentence “*John is taller than Mary*” is as below:

(11)



3 PP comparatives in Japanese

3.1 Proposal of Nomura (2010)

- In Nomura (2010), I argue that one of the two kinds of locatives in Japanese involves comparatives ((12)b), while the other doesn't ((12)a).

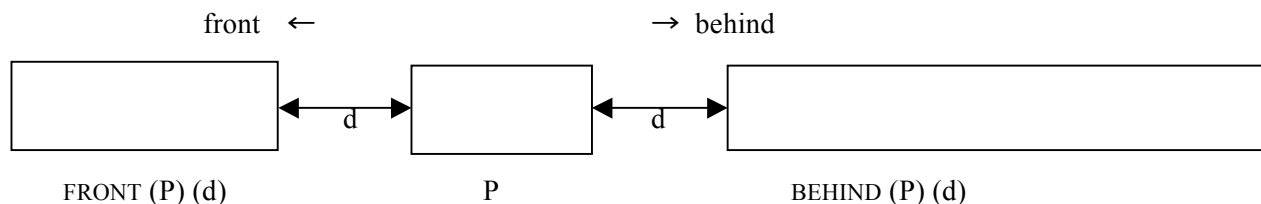
- (12) a. Taro-ga Hanako-**no** mae-ni iru. (*no*-locatives)
 T-NOM H-GEN front-LOC is
 “Taro is in front of Hanako.”
- b. Taro-ga Hanako-**yor**i mae-ni iru. (*yor*i-locatives)
 T-NOM H-YORI front-LOC is
 “Taro is ahead of Hanako.”

- Let me fist review the analysis of Nomura (2010) with some modification.
- A locational function and an invert locational function

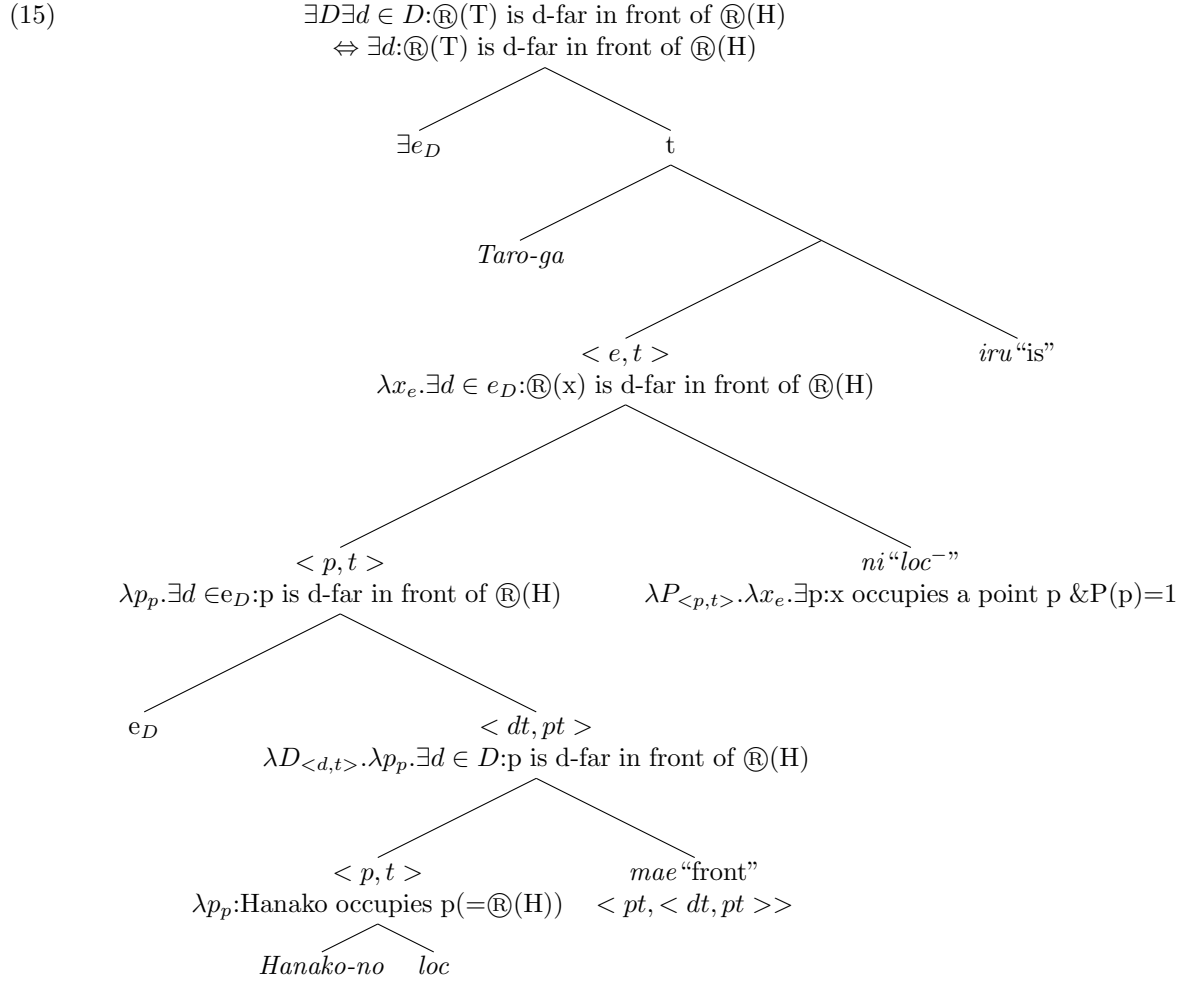
- (13) a. $[[loc]] = \mathbb{R}(x) = \lambda x_e . \lambda p_p . x \text{ occupies a point } p \text{ (a set of points } x \text{ occupies)}$
 b. $[[loc^-]] = \mathbb{R}^- = \lambda P_{\langle p, t \rangle} . \lambda x_e . \exists p : x \text{ occupies a point } p \ \& \ P(p) = 1 \text{ (a set of individuals whose positions occupy a point in } P)$

- The lexical entry for *mae* “front”

- (14) $[[mae \text{ “front”}]] = \lambda P_{\langle p, t \rangle} . \lambda D_{\langle d, t \rangle} . \lambda p_p . \forall q \in D_p : P(q) = 1 \rightarrow [\exists d \in D : p \text{ is } d\text{-far from } q] \ \& \ [\exists r \in D_p : P(r) = 1 \ \& \ p \text{ is in front of } r]$



- The structure for (12)a is in (15). e_D is a variable of type $\langle d, t \rangle$ to which existential closure applies.



- *Yori*-locatives like (12)b involves comparatives. This construction is quite similar to the clausal comparatives we saw in section 2.2.1.
- The comparative morpheme in (16) is used in Japanese. This is the same one as (5)b except that Japanese one is covert.

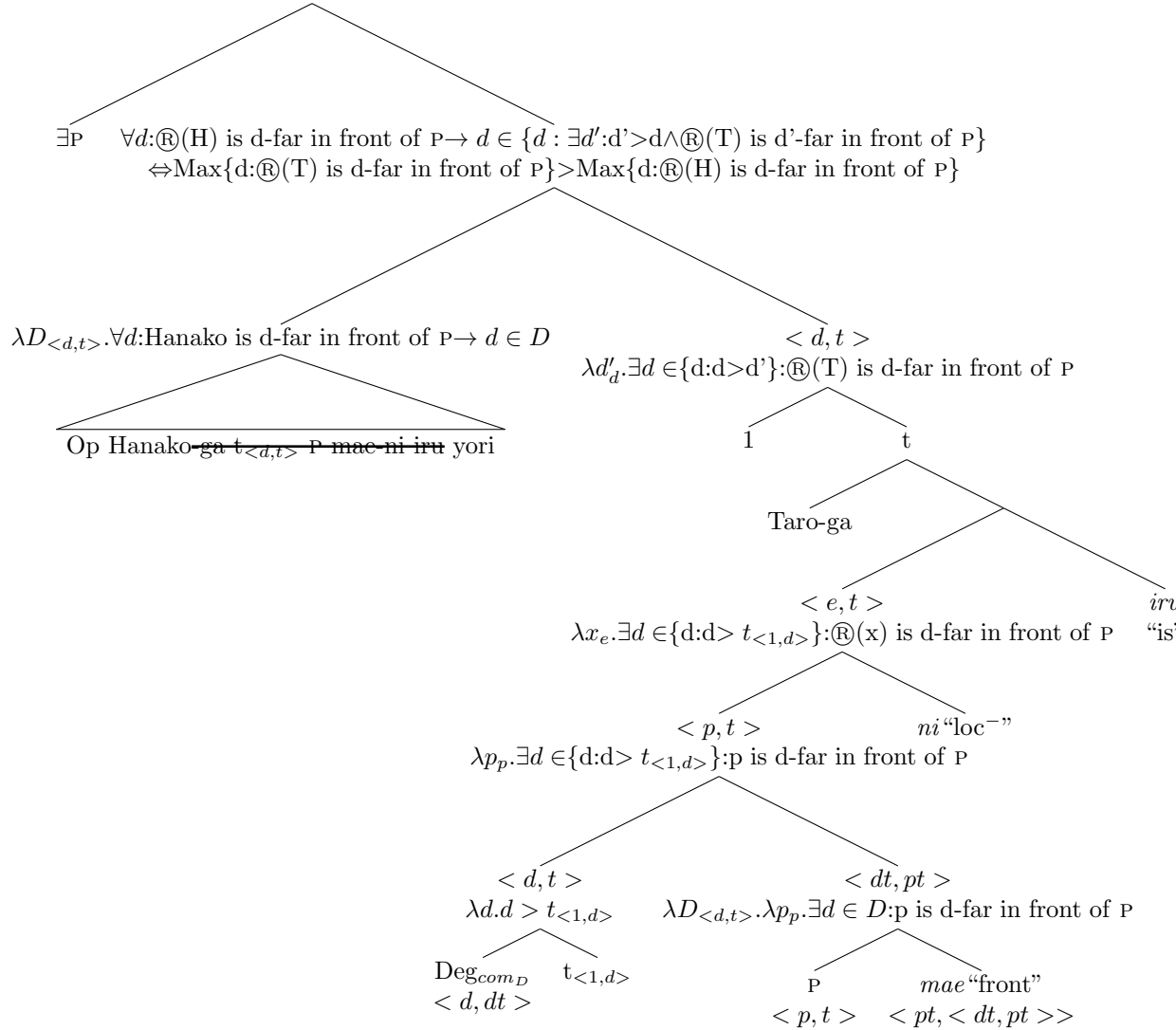
$$(16) \quad \llbracket Deg_{com_D} \rrbracket = \lambda d_d. \lambda d'_d. d' > d$$

- Deg_{com_D} takes *yori*-clause. *Yori*-clause is interpreted as below:

$$(17) \quad \llbracket Op \text{ Hanako-ga } t_{\langle d, t \rangle} \text{ P mae ni iru yori} \rrbracket = \{D: d \in D \wedge \text{Hanako is } d\text{-far in front of P}\}$$

- The structure for (12)b is as below:

(18) $\exists P \text{ Max}\{d:\textcircled{R}(T) \text{ is } d\text{-far in front of } P\} > \text{Max}\{d:\textcircled{R}(H) \text{ is } d\text{-far in front of } P\}$



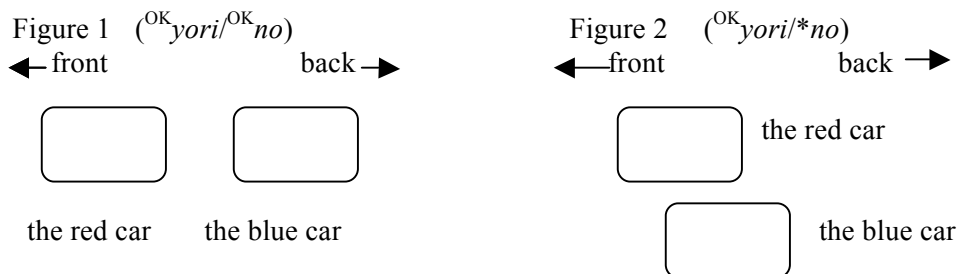
3.2 Five differences between the two kinds of locatives

- In this section, we will see five differences between *yori*-locatives and *no*-locatives. We will also see how the analysis in the previous section explains the differences.

3.2.1 Truth conditions

- (19) a. Akai kuruma-ga aoi kuruma-**yori** mae-ni tomatteiru.
 red car-NOM blue car-YORI front-LOC is.parked
 “The red car is parked ahead of the blue car.”
 b. Akai kuruma-ga aoi kuruma-**no** mae-ni tomatteiru.
 red car-NOM blue car-GEN front-LOC is.parked
 “The red car is parked in front of the blue car.”

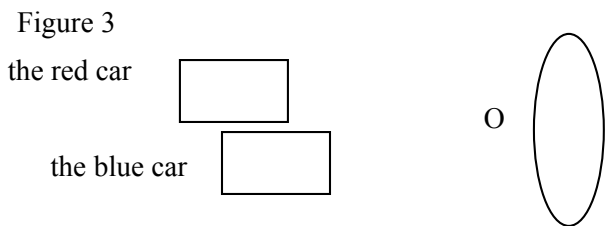
- Both (19)a and (19)b are true in a situation where the back of the red car is in front of the blue car, which is illustrated in Figure 1. However, when the blue car is beside the red car but the red car is ahead of the blue car (Figure 2), only (19)a is considered to be true.



- As we saw in (15), *no*-locatives are not different from English locatives like *in front of*. Thus, there is no wonder why (19)b cannot express the situation in Figure 2.
- The question is why (19)a is true in the situation in Figure 2.
- Our analysis predicts this. (19)b is interpreted as below:

(20) $\llbracket (19)a \rrbracket = \exists P: \text{Max}\{d: \text{The red car is parked } d\text{-far in front of } P\} > \text{Max}\{d: \text{The blue car is } d\text{-far in front of } P\}$

- A set of points which satisfies the condition above can be found easily. See Figure 3.



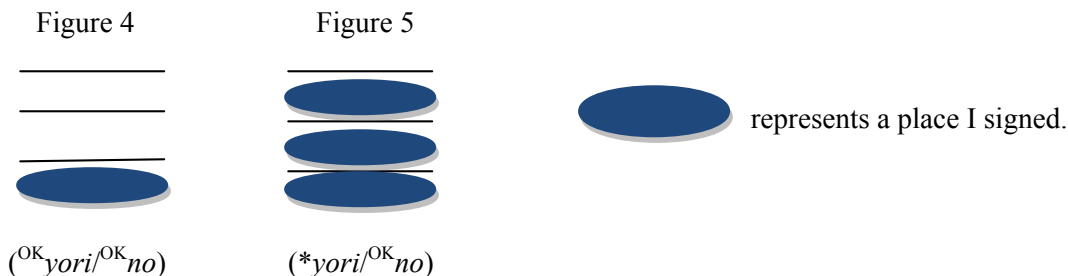
3.2.2 Scope ambiguity

- When *-yori/-no* takes a quantifier phrase as its complement, *no*-locatives become ambiguous, while *yori*-locatives remain unambiguous.

- (21) a. San-bon-no sen-**yori** shita-ni sainshita. (unambiguous)
 three-CL-LINK line-YORI under-LOC signed
 “I signed below the lowest line of the three.”
 * “I signed below each of the three lines.”
- b. San-bon-no sen-**no** shita-ni sainshita. (ambiguous)
 three-CL-LINK line-GEN under-LOC signed
 “I signed below the lowest line of the three.”
 “I signed below each of the three lines.”
- (22) a. Subete-no sen-**yori** shita-ni sainshita. (unambiguous)
 every-LINK line-YORI under-LOC signed
 “I signed below the lowest line (of all).”
 * “I signed below each line.”

- b. Subete-no sen-**no** shita-ni sainshita. (ambiguous)
 every-LINK line-GEN under-LOC signed
 “I signed below the lowest line (of all).”
 “I signed below each line”

- As the translations show, (21)a and (22)a are true if and only if I signed a place below every/the three line(s). This situation is illustrated in Figure 4. On the other hand, (21)b and (22)b have another reading where I signed as many times as the number of lines there are as is illustrated in Figure 5.



- Before seeing the analysis of the (un)ambiguity of the locatives, let me introduce some facts on Japanese nouns. In Japanese, noun phrases can be interpreted as either collective or distributive.

- (23) San-nin-no gakusei ga tsukue-o hakonda.
 three-CL-LINK students NOM desk-ACC carried
 “The three students carried a desk.” (Collective)
 “The three students each carried a desk.” (Distributive)

- This explains the ambiguity of *no*-locatives like (21)b.
- When *san-bon-no sen* “three-CL-LINK lines” is interpreted as collective, we get the meaning “I signed below the three lines.” On the other hand, when it is interpreted as distributive, the meaning of the sentence is “I signed below each of the three lines.”

- (24) a. $\llbracket (21)a \rrbracket =$ I signed under the three lines. (Collective)
 b. $\llbracket (21)a \rrbracket =$ I signed under three lines. (Distributive)
 $= \exists X = \{x_i\} : x_i$ is a line & $|X|=3$ & I signed under x_i

- The next question is why *yor*i**-locatives like (21)a are not ambiguous.
- Let me show the meanings of *yor*i**-clause with the collective reading (25)a and with the distributive reading (25)b.

- (25) a. $\llbracket Op \text{ Sanbo-no sen } \underline{ga} \ t_{\langle a,t \rangle} \ P \text{ (no) } \underline{mac-ni} \ \underline{aru} \ yor*i* \rrbracket$ “Op three lines are $t_{\langle d,t \rangle}$ far in front of P”
 $= \{D : \text{The three lines are } d\text{-far in front of } P \wedge d \in D\}$ (Collective)
 b. $\llbracket Op \text{ Sanbo-no sen } \underline{ga} \ t_{\langle a,t \rangle} \ P \text{ (no) } \underline{mac-ni} \ \underline{aru} \ yor*i* \rrbracket$ “Op three lines are $t_{\langle d,t \rangle}$ far under P”
 $= \{D : \exists X = \{x_i\} : x$ is a line $\wedge |X| \wedge x_i$ is d -far under $P \wedge d \in D\}$ (Distributive)

- (25)a and (25)b refer to the same set of degrees. We get the interpretation roughly as below:

- (26) $\llbracket (21)a \rrbracket = \text{Max}\{D : \text{I signed } d\text{-far under } P \wedge d \in D\} > \text{Max}\{d : \text{The three lines are } d\text{-far under } P \wedge d \in D\}$
 $= \text{Max}\{d : \text{I signed } d\text{-far under } P\} > \text{Max}\{d : \text{The three lines are } d\text{-far under } P\}$

3.2.3 (In)compatibility with some adpositions

- Some adpositions such as *chikaku* “near” and *soba* “near” are not compatible with *yor*i-locatives, while they can be used in *no*-locatives.

- (27) a. *Taro-ga Hanako-yori chikaku-ni iru.
 T-NOM H-YORI near-LOC is
 Intended “Taro is near Hanako.”
 b. Taro-ga Hanako-no chikaku-ni iru.
 T-NOM H-GEN near-LOC is
 “Taro is near Hanako.”

- The meaning of (27)a is predicted to be as below:

(28) $[[\text{(27)a}] = \text{Max}\{d:\text{Taro is d-far from P}\} < \text{Max}\{d:\text{Hanako is d-far from P}\}$

- Informally, this means that there is a set of points which is closer to Taro than to Hanako. This is not the intended reading and indeed (27) has this reading. However, this doesn’t make any sense, because this is always true unless Taro and Hanako occupy the exactly same position.
- Using an overt DP instead of the variable P makes the sentence acceptable. My proposal also explains this.

- (29) Taro-ga Hanako-yori **Jiro-no** chikaku-ni iru.
 T-NOM H-YORI J-GEN near-LOC is
 “Taro is closer to Jiro than Hanako is.”

(30) $[[\text{(29)}] = \text{Max}\{\text{Taro is d-far from Jiro}\} < \text{Max}\{\text{Hanako is d-far from Jiro}\}$

3.2.4 (In)compatibility with *tyou*do “right” & *sug*u “just”

- *Tyoudo* “right” and *sugu* “just” can be inserted before adpositions in *no*-locatives, but it cannot be inserted in *yor*i-locatives.

- (31) a. *Taro-ga Hanako-yori {tyoudo/sugu} mae-ni iru.
 T-NOM H-YORI {right/just} front-LOC is
 Intended “Taro is just/right ahead of Hanako.”
 b. Taro-ga Hanako-no {tyoudo/sugu} mae-ni iru.
 T-NOM H-GEN {right/just} front-LOC is
 “Taro is {just/right} in front of Hanako.”

- Incompatibility of *tyou*do “right” and *sugu* “just” in *yor*i-locatives ((32)a (=31)a) is predicted, since comparatives cannot be modified by these modifiers as is shown in (33).

- (32) a. *Taro-ga Hanako-yori {tyoudo/sugu} mae-ni iru.
 T-NOM H-YORI {right/just} front-LOC is
 b. Taro-ga Hanako-no {tyoudo/sugu} mae-ni iru.
 T-NOM H-GEN {right/just} front-LOC is
 “Taro is {just/right} in front of Hanako.”

- (33) *Taro-ga Hanako-yori {tyoudo/sugu} se-ga takai.
 T-NOM H-YORI {right/just} height-NOM tall
 Lit “Taro is {just/right} taller than Hanako.”

4 Hebrew and English

4.1 Hebrew

- In this section, I would like to claim that Hebrew and English also have PP comparatives. The difference between these languages and Japanese is that the former has the phrasal comparatives while the latter has the clausal comparatives.

- Note that Japanese use *yor*i in both locatives and AP comparatives.

- (34) a. Taro-ga Hanako-**yor**i mae-ni iru.
T-NOM H-YORI front-LOC is
“Taro is ahead of Hanako.”
- b. Taro-ga Hanako-**yor**i se-ga takai.
T-NOM H-YORI height-NOM tall
“Taro is taller than Hanako.”

- In Hebrew, both of the constructions use the morpheme *mi*-.

- (35) a. hu af **mi**taxat le-ananim. (Botwinik-Roter & Terzi (2008))
he flew under LE-cloud
“He flew under the clouds.”
- b. Dan axal yoter bananot **mi**-aSer Dina axla. (Hazout (1995))
Dan ate more bananas than Dina ate
“Dan ate more bananas than Dina did.”

- Some adpositions have both forms with *mi*- and forms without *mi*-.⁵

- (36) ha-ish xatam (mi-)taxat la-kav.
the-man signed (MI-)under to.the-line
“The man signed under/below the line.”

- There are some differences between the adpositions with *mi*- and the adpositions without *mi*-. Let me show two of them.

- First, the meaning is different.(36) with *mi*- is true in both Figure 6 and Figure 7, while (36) without *mi*- is true only in Figure 6.

Figure 6



Figure 7



represents a place I signed.

- The second difference is that the adpositions with *mi*- can omit the object, while the adpositions without *mi*- cannot.

- (37) a. dan sam et ha-tikim mi-taxat.
Dan put ACC the-bags MI-under.
“Dan put the bags below.”
- b. *dan sam et ha-tikim taxat.
Dan put ACC the-bags under.
“Dan put the bags under (it).”

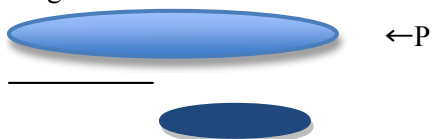
⁵Hebrew data are from Hadas Kotek (p.c.) unless specified.

- Comparative analysis can explain the first difference. According to that analysis, the meaning of (36) with *mi-* is as bellow:

(38) $\exists P: \text{Max}\{d: \text{Dan signed d-far under P}\} > \text{Max}\{d: \text{The line is d-far under P}\}$

- We can find a set of points which satisfies the condition above.

Figure 8



- As for the second difference, the optimality of the standard in the AP comparatives might be the key to the answer. Because the noun following the adpositions with *mi-* is a standard rather than the complement of the adposition, it is not strange for the noun to be able to omit like the standard in AP comparatives.

(39) hu niya yoter xazak. Schwarzschild(Yesterday)
 he became more strong
 “He got stronger.”

- Note that with the quantifier phrases, PP comparatives in Hebrew behave differently from those in Japanese.

(40) ha-ish xatam mi-taxat le arba'ah kaveem. (Ambiguous)
 the-man signed MI-under to four lines
 “The man signed below each of the four lines.” (Distributive)
 ?“The man signed below the lowest line of the three.” (Collective)

- Though the collective reading is somewhat stilted, (40) is ambiguous.
- I would like to propose that PP comparatives in Hebrew is phrasal and the quantifier phrases can QR to derive the distributive interpretation.

4.2 English

- We can find the same contrast between *under* and *below* in English.
- (41)a is false in Figure 7, while (41)b is true in both Figure 6 and Figure 7.

(41) a. I signed under the line.
 b. I signed below the line.

- The following noun can be omitted if the adposition is *below*, while it is impossible in the case of *under*.

(42) a. We stood on a bridge. **Below** (it) we could see barges laden with port wine. Svenonius(2010)
 b. We sttod on a bridge. **Under** *(it) we could see barges laden with port wine. Mitcho (p.c.)

- PPs with the quantifier phrases have the distributive reading.

(43) I signed below three lines. (^{OK}Distributive)

- I seems appropriate to analyse *below* (and perhaps *above* and *ahead*), though further resaerch is obviously required.

5 Conclusion

- We have seen that assuming the PPs have comparatives like APs explain the properties of the locative constructions.
- I also have proposed that Japanese has the clausal PP comparatives, while Hebrew and English have the phrasal PP comparatives.

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