

## E-type anaphora of degree in *izyooni*(than)-comparatives

### 1. Issue: How the relation between a ‘than’-constituent and its matrix clause is mediated

Comparatives in Japanese have attracted wide attention. One of the central issues is how the relationship between a ‘than’-constituent and its matrix clause is mediated. The dominant view is that it is done by rigid compositional calculation as in the case of *more-than*-comparatives in English (Shimoyama 2012 a.o.). Another view is that it is contextually done (Beck et al. 2004 a.o.). In this study, I will propose a third view and argue that in *izyooni*(than)-comparatives in Japanese, the relationship is mediated by E-type anaphora.

### 2. Framework: Shimoyama (1999)

I will follow Shimoyama’s (1999) framework of E-type anaphora for the interpretation of internally headed relative clauses (IHRCs) of Japanese. The embedded clause of (1) is dislocated in LF as in (2). An unpronounced pronoun  $p$  of type  $\langle e, t \rangle$  receives its denotation from the context of utterance via the assignment function  $g_c$ . *No*(NM) plays the role of *the*.

(1) Taro-wa [[<sub>CP</sub>Hanako-ga dono simbun-mo katte kita]-no]-o tana-ni narabeta.  
Taro-Top [[Hanako-Nom every newspaper buy came]-NM]-Acc shelf-on placed  
‘Hanako bought and brought every newspaper, and Taro shelved them.’

(2) LF of (1): [[<sub>CP</sub>Hanako bought every news paper]<sub>i</sub>[[Taro shelved [ the  $t_i$   $p_{\langle e, t \rangle}$ ]]]]

(3)  $g_c := [3 \rightarrow \lambda x \in D_e. x \text{ is newspapers that Hanako bought}]$

Essentially the same analysis applies to *izyooni*(than)-comparatives. In what follows, I will present three types of data and show how they are analyzed with E-type anaphora.

#### 3.1 Embedded positive sentence and E-type anaphora

It has been pointed out that *izyooni*(than)-clauses behave as positive sentences (Hayashishita 2007). Therefore in (4), Y is considered ‘long,’ which means it is longer than a contextually given standard length,  $d_{\text{std-length in } c}$ . Consequently, X in the matrix clause is considered ‘long’ as well. This is crucially different from clausal *yori*(than)-comparatives, which do not have such implication. The standard oriented implication in the *izyooni*(than)-clause is a natural outcome if the clause is dislocated and interpreted independently from the matrix clause. In LF,  $p$  is type  $\langle d, t \rangle$ .  $g_c$  assigns to the index a set of degree  $d$  s.t. Y is  $d$ -long and  $d$  is considered ‘long.’ The standard degree (Y’s length) is obtained when max operator applies to the set.

(4) X-wa [Y-ga nagai]-izyooni nagai.

X-Top [Y-Nom long]-than long

‘X is longer than Y is.’ (Implication: Both X and Y are considered ‘long.’)

(5) LF of (4): [[<sub>CP</sub>Y is long]<sub>i</sub>[[X is longer than [  $t_i$   $p_{\langle d, t \rangle}$ ]]]]

(6)  $g_c := [4 \rightarrow \lambda d \in D_d. Y \text{ is } d\text{-long} \wedge d > d_{\text{std-length in } c}]$

#### 3.2 Ambiguous *izyooni*(than)-clauses and E-type anaphora

One *izyooni*(than)-clause can have ambiguous interpretations, and our analysis with E-type anaphora is flexible enough to accommodate such ambiguity. The first interpretation is for comparatives of absolute degrees (c.f. Kubota 2012). In (7), the standard-oriented implication in the *izyooni*(than)-clause is visibly expressed by *maisuuuseigen yorimo ni-peeji* ‘2 pages (more) than a page limit.’ The sentence compares the length of X and that of Y, and Y’s length is 2 pages longer than a page limit. English paraphrase is given in (8), where ‘that’ refers to ‘2 pages longer than the page limit.’ Note that the index  $i$  is used for explanatory purpose.

(7) X-wa [Y-ga maisuuuseigen yorimo ni-peeji nagai]-izyooni nagai.

X-Top [Y-Nom page.limit than two-page long]-than long

Lit. ‘X is longer than Y is 2 pages longer than a page limit.’

(8) Y is [2 pages longer than a page limit]<sub>i</sub>, and X is longer than that<sub>i</sub>.

The same *izyooni*(than)-clause can be used for comparisons of deviation (c.f. Hayashishita 2007), where two differential degrees are compared. In (9), another *yorimo*(than)-phrase is added in the matrix sentence. The sentence compares the gap between X and its relevant page limit and another gap between Y and its relevant page limit. English paraphrase is given in (10), where ‘**that**’ refers to ‘**2 pages**.’ Note that the reading in (10) is independent of (8), because in (10) the length of X itself can be shorter than Y. In (8), however, that is not possible.

(9) X-wa [Y-ga maisuuseigen yorimo ni-peeji nagai]-izyooni  
 X-top [Y-Nom page.limit than two-page long]-than  
 [maisuuseigen yorimo] nagai.  
 [page.limit than] long

Lit. ‘X is longer than a page limit more than Y is 2 pages longer than a page limit.’

(10) The length of Y exceeds (its relevant) page limit by [**two pages**]<sub>j</sub>, and the length of X exceeds (its relevant) page limit by a larger number of pages than **that**<sub>j</sub>.

Notice in (7) and (9), relevant degree positions are filled, i.e., the position of ‘2 pages -er than the limit’ for the comparison of absolute degrees in (7), and the position of ‘2 pages’ for the comparison of deviation in (9). This makes it difficult to apply previous analyses of *izyooni*(than)-comparatives (Hayashishita 2007, Kubota 2012).

Under our E-type analysis, the complement of *izyooni* is dislocated as in (11a) and (12a). Crucially,  $g_c$  gives appropriate denotation flexibly in each case, namely a set of absolute degrees in (11b) and a set of differential degrees in (12b). Notice that the lack of gaps in degree argument positions in the *izyooni*(than)-clause does not cause any problem.

(11)a.LF of (7):[[<sub>CP</sub> Y is 2 pages longer than a page limit]<sub>i</sub>[X is longer than [<sub>t<sub>i</sub></sub>  $p_{<5<d,t>}$ ]]]

b.  $g_c := [5 \rightarrow \lambda d \in D_d. Y \text{ is } d\text{-long} \wedge d \text{ is } 2 \text{ pages longer than a page limit}]$

(12)a.LF of (9):[[<sub>CP</sub> Y is 2 pages longer than a page limit]<sub>i</sub>[X exceeds a page limit by [<sub>t<sub>i</sub></sub>  $p_{<6<d,t>}$ ]]]

b.  $g_c := [6 \rightarrow \lambda d \in D_d. Y \text{ is } d\text{-longer than the page limit} \wedge d=2 \text{ pages}]$

### 3.3 Embedded questions and E-type anaphora

When wh-questions are embedded in *izyooni*(than)-clauses, it is expected under our E-type analysis that the questions are interpreted independently of their matrix clauses, and relevant E-type anaphora is paraphrased with a variable x. This is borne out. In the attributive clausal comparative (13), Taro knows two sets of true propositions of the form in (14), and the standard degree of comparison contains a variable x that ranges over people.

(13)Taro-wa [[dare-ga tsuretekita neko-ga kawaii]-izyooni kawaii kounu]-ga  
 Taro-wa [[who-Nom brought.along cat-Nom cute]-than cute puppy]-Nom  
 iru ka sitteiru.  
 there.is Q know

Lit. ‘Taro knows that [**the cat who<sub>x</sub> brought along**]<sub>i</sub> is cute and that there is [a puppy that is cuter than **it<sub>i</sub>** is].’

(14) [that the cat that x brought along is cute] and [that there is a puppy that is cuter than **the maximum degree d s.t. the cat x brought along is d-cute**]

**References** [1]Beck et al. (2004) “Parametric Variation in the Semantics of Comparison: Japanese vs. English,” *JEAL* 13, 289-344. [2]Hayashishita(2007) “*Izyoo*(ni)- and *gurai*-comparatives: Comparison of deviation in Japanese,” *Gengo Kenkyu* 132, 77-109. [3]Kubota (2012) “The presuppositional nature of *izyoo*(-ni) and *gurai* comparatives: A note on Hayashishita (2007),” *Gengo Kenkyu* 141:33-46 [4]Shimoyama (1999) “Internally Headed Relative Clauses in Japanese and E-Type Anaphora,” *JEAL* 8, 147-182. [5] Shimoyama (2012) “Reassessing crosslinguistic variation in clausal comparatives,” *NALS* 20(1):83-113.