Association of *hotondo* with a complex NP universal*

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Due to the universal interpretation of a sentence with a complex NP universal in Japanese, it is widely assumed that a universal quantifier exists somewhere within the complex NP. This paper addresses the following question: is this assumption always true? I use *hotondo* modification as a diagnostic. *Hotondo* has several meanings, but each possible interpretation is tightly connected with its distribution. By examining the available association patterns with complex NP universals, I show that in one case, the complex NP must contain a universal quantifier, while in another case, it cannot contain a universal quantifier.

1. Introduction: the distribution of *hotondo* and its meaning

*Hotondo* in Japanese has not been well represented in the literature (cf. Nakanishi and Romero 2004), but it exhibits intriguing behaviour with respect to its syntax and semantics. This paper focuses on the status and behaviour of NP-modifying *hotondo*; sentences with NP-modifying *hotondo* can bear at least two types of meanings, and the meanings are tightly connected with its syntactic distribution. The following section gives an overview of the distribution and meanings of NP-modifying *hotondo*.

In prenominal position, *hotondo* only takes a universally quantified NP as its target of modification.1 (1a) has a meaning similar to that of an approximated universal statement such as ‘for almost all students, they are good at English.’ This meaning seems to suggest that the prenominal *hotondo* is rather similar to the approximation modifier *almost* in English.2 It is well-known that when *almost* modifies an NP, a universally quantified NP can be a target of its modification.3

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2 Throughout this paper, I use the term ‘target’ to refer to an item that is mainly affected by *hotondo* modification in an intuitive sense. Therefore, it does not necessarily mean that *hotondo* has its target as an argument, or that *hotondo* quantifies over its target.
3 Almost-like *hotondo* also modifies free-choice items, as shown in (i). This is another similarity between *almost* and almost-like *hotondo*. Note that, throughout the paper, I ignore free choice items. The main reason why I ignore them is that their semantics is still unclear.

(i) (i-ikkagetu-go-wa) **hotondo** dare-demo eigo-ga hanas-eru.  
    (1-month-after-TOP) almost who-PTCL English-NOM speak-POT  
    ‘(After one month) almost anyone can speak English.’

3 It is also well-known that a target NP of *almost* modification is not restricted to a universally quantified NP. As shown in (i), it is associative with a cardinality expression (see Horn 2000; Lee & Horn 1994; Partee 1986). Note that, as mentioned above, the prenominal *hotondo* never does this, as the unacceptability of (3b) indicates.

(i) I could solve **almost** {all/any/half/note/50/*many/*most/*few} of the problems. (Horn 2000)
(1) a. hotondo subete-no-gakusei-ga eigo-ga umai (koto).
   almost all-GEN-student-NOM English-NOM good (fact)
   ‘(the fact that) almost all students are good at English’

   b. (*hotondo) 100-nin-no-gakusei-ga eigo-ga umai (koto).
   (al)most 100-CL-GEN-student-NOM English-NOM good (fact)
   ‘(the fact that) almost a hundred students are good at English’

   c. (*hotondo) (sorera-no)-gakusei-ga eigo-ga umai (koto).
   (al)most (those-GEN-)student-NOM English-NOM good (fact)
   ‘(the fact that) (*almost) the/those students are good at English’

However, the complete opposite happens if hotondo is preceded by an NP target. Compare (1) and (2). As shown in (2a), it cannot take a preceding universal NP, but, instead, can take preceding non-universal NPs as targets of its modification (see (2b-c)). In fact, the meanings in (2b) and (2c) seem different from the meaning of an approximated universal statement observed in (1a); they roughly mean that the proportion of the students that are good at English is relatively high. As indicated by their meanings, the target non-universal NPs of the postnominal hotondo modification seem to be quantified. Moreover, as suggested by the proportional meaning they have, the postnominal hotondo seems rather similar to the proportional quantifier most in English. In fact, the former seems to share at least one property with the latter. Probably due to vacuous quantification, most cannot take a universally quantified NP as its target, as indicated by the unacceptability of the translation in (2a). The unacceptability in (2a) may suggest that a similar effect occurs with postnominal hotondo in Japanese.

(2) a. subete-no-gakusei-ga (*hotondo) eigo-ga umai (koto).
   all-GEN-student-NOM (al)most English-NOM good (fact)
   ‘(the fact that) *for all students, most of them are good at English’

   b. 100-nin-no-gakusei-ga hotondo eigo-ga umai (koto).
   100-CL-GEN-student-NOM most English-NOM good (fact)
   ‘(the fact that) most of the one hundred students are good at English’

   c. (sorera-no)-gakusei-ga hotondo eigo-ga umai (koto).
   those-GEN-student-NOM most English-NOM good (fact)
   ‘(the fact that) most (of the) students are good at English’

This most-like aspect of hotondo is not restricted to its postnominal associations. As shown in (3), (4) and (5), hotondo can occur in NP-internal positions if its target is a non-universal NP.\(^4\) In addition, the meanings of (4) and (5a-b) seem equivalent to those of (2b) and (2c), respectively.

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\(^4\) The internal association has some restrictions. In contrast to (5b), the internal hotondo cannot occur in the initial position of an NP if the target NP is a cardinality expression or a demonstrative NP (see (iia) and (iia)). Furthermore, the internal hotondo cannot occur in a NP-middle position if the target NP is a cardinality expression (see (ib)).

(i) a. (?hotondo-no-)100-nin-no-gakusei-ga eigo-ga umai (koto).
   most-GEN-100-CL-GEN-student-NOM English-NOM good (fact)

   b. 100-nin-no-(*hotondo-no)-gakusei-ga eigo-ga umai (koto).
   ‘(the fact that) most of the one hundred students are good at English’

(ii) a. hotondo-no-(*sorera-no)-gakusei-ga eigo-ga umai (koto).
   most-GEN-those-GEN-student-NOM English-NOM good (fact)

   b. sorera-(no-)hotondo-no-gakusei-ga eigo-ga umai (koto).
   ‘(the fact that) most (of the) students are good at English’
(3)  

a. \textit{subete-no-gakusei-(*hotondo/*no-hotondo-)}ga eigo-ga
all-GEN-student-(al)most/GEN-(al)most-NOM English-NOM
umai (koto).
good (fact)

b. \textit{subete-no-(*hotondo-no-gakusei-)}ga eigo-ga umai (koto).
all-GEN-(al)most-GEN-student-NOM English-NOM good (fact)

c. \textit{(*hotondo-no-)*subete-no-gakusei-}ga eigo-ga umai (koto).
(al)most-GEN-all-GEN-student-NOM English-NOM good (fact)
‘(the fact that) (*most of) all students are good at English’

(4) \textit{100-nin-no-gakusei(-no)-hotondo-}ga eigo-ga umai (koto).
100-CL-GEN-student-GEN-most-NOM English-NOM good (fact)
‘(the fact that) most of the one hundred students are good at English’

(5)  

a. \textit{(sorera-no-)*gakusei(-no)-hotondo-}ga eigo-ga umai (koto).
those-GEN-student-GEN-most-NOM English-NOM good (fact)

b. \textit{hotondo-}no-\textit{gakusei-}ga eigo-ga umai (koto).
most-GEN-student-NOM English-NOM good (fact)
‘(the fact that) most (of the) students are good at English.’

The unacceptable cases in (1b-c), (2a) and (3) seem to suggest that \textit{almost}-like \textit{hotondo} and \textit{most}-like \textit{hotondo} are in complementary distribution. Note that, due to such complementary distribution, one might think that the two meanings, i.e. approximation and proportion, are reducible to a syntactic factor, namely the relative scope of \textit{hotondo} with respect to its target NP, rather than appealing to lexical ambiguity. More precisely, \textit{hotondo} can be decomposed as ‘almost all,’ as \textit{most} is not so different from \textit{almost all} even in English.\textsuperscript{5} Then, the universally quantificational force of a target universal NP is somehow suppressed (or neutralized) if \textit{hotondo} takes it in its scope as in (1a).

At this stage, however, I find at least two problems\textsuperscript{6} with the idea that \textit{hotondo} is decomposed in such a way. While I leave this possibility open, the following discussion assumes that NP modifying \textit{hotondo} is lexically ambiguous in two ways, namely approximation and proportion, as described in (6).

(6)  

In the surface structure,

a. approximation \textit{hotondo} must precede its universal NP target, and

b. proportion \textit{hotondo} must be either preceded by or internally associated with a non-universal NP as a restrictor.

\textsuperscript{5} Although Japanese allows null objects rather freely, I strongly hesitate to postulate a covert universal quantifier since there seems to be no way to restrict occurrences of such a covert universal quantifier.

\textsuperscript{6} Needless to say, one problem is, in what way is the universal quantifier in its scope neutralized (or suppressed)? The other problem is an overgeneration problem. If the universal quantifier within \textit{hotondo} quantifies over the same domain that is quantified over by the target universal quantifier within the scope of \textit{hotondo}, this may end up with vacuous quantification. Therefore, the universal quantifier within \textit{hotondo} should have its own domain, independent of the quantification domain for the target universal quantifier. If this is the case, however, it seems hard to exclude as unacceptable (2a) by way of vacuous quantification. Moreover, this analysis, as it stands, probably cannot account for the unacceptability in (1b-c).
Note that, as implied in (6), the interpretation of *hotondo* seems to depend on the surface structure: it seems that the scope reconstruction effect from scrambling is absent. It is well-known that Japanese is a scope rigidity language, i.e., the surface scope relation must be preserved (see Hoji 1985). It is also well known that a sentence exhibits scope ambiguity once its word order is scrambled. Assuming that a scrambled item can undergo scope reconstruction in Japanese, the resistance to the scope reconstruction in (7b) and (8b) is rather mysterious.

(7) a. Yukio-ga *hotondo* subete-no-gaikugo-o hanasu (koto) Yukio-NOM almost all-GEN-foreign.language-ACC speak (fact) ‘(the fact that) Yukio speaks almost all foreign languages’
   b. subete-no-gaikukugo-o Yukio-ga (*hotondo) hanasu (koto).

(8) a. *hotondo* eigo-o subete-no-gakusei-ga hanasu (koto). almost English-ACC all-GEN-student-NOM speak (fact) ‘(the fact that) almost all students speak English’
   b. subete-no-gakusei-ga (*hotondo) eigo-o hanasu (koto)

There seem to be two problems with the generalization in (6), however. One surfaces in negative environments, which I will discuss on another occasion. The other problem, which I discuss in this paper, happens when *hotondo* takes a complex NP universal as a target of its modification. However, Section 3 shows that the problem is illusory, and association of *hotondo* with a complex NP universal maintains the generalization in (6). Before the discussion, Section 2 gives a brief introduction to complex NP universals in Japanese.

2. Complex NP universals

It is well known that the complex NP Island effect is apparently absent in Japanese; (9) is not considered unacceptable, even though a wh-phrase is located in the relative clause.  

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7 As shown in (i), while the canonical order never exhibits inverse scope, the word order derived by scrambling exhibits both the surface scope and the inverse scope. Although there is a long debate about why only (ib) is ambiguous, one of the plausible accounts for its ambiguity is that, due to the scope rigidity of Japanese, the shifted object in (ib) (i.e., *ni-satu-izyoo-no-hon-o* ‘more than two books’) is reconstructed into its canonical position to derive the non-surface order scope relation (i.e., the narrow scope reading).

(i) a. \( \sqrt{\text{at least } 3 > \text{more than } 2} \), \( * \text{more than } 2 \geq \text{at least } 3 \)

   Furukawa-sensei-wa sukunakutomo san-nin-no-gakusei-ni *ni-satu-izyoo-no-hon-o*
   Furukawa-teacher-TOP at least 3-CL-GEN-student-DAT 2-CL-more-GEN-book-ACC
   yom-ase-ta.
   read-CAUS-PAST
   b. \( \sqrt{\text{at least } 3 > \text{more than } 2} \), \( * \text{more than } 2 \geq \text{at least } 3 \)

   Furukawa-sensei-wa ni-satu-izyoo-no-hon-o sukunakutomo san-nin-no-gakusei-ni t,
   Furukawa-teacher-TOP 2-CL-more-GEN-book-ACC at least 3-CL-GEN-student-NOM
   yom-ase-ta.
   read-CAUS-PAST

   “Prof. Furukawa let at least 3 students read more than 2 books.”

3. Association of hotondo with a complex NP universal

Contrary to the cases of non-complex NP targets observed earlier, a complex NP universal accommodates all of the three association patterns of hotondo modification (i.e., the prenominal, internal and postnominal associations). Due to the peculiarities of the quantification in a complex NP universal (see (10)), however, the meanings of the three association patterns are not uniform. Through the investigations about the meaning of each association pattern, the following section discusses first the majority of cases that follow the generalization in (6). Second, it observes one problematic case, one in which the meaning does not coincide with the distribution of hotondo, in that an approximation meaning is derived, though its distribution predicts a proportion meaning. Third, however, Section 3.3 shows that the problematic meaning is derivable in terms of its proportion meaning. Hence, I conclude that association of hotondo with a complex NP universal has no discrepancy between its distribution and meanings. Finally, this conclusion, and in particular the analysis of the problematic case has several interesting consequences about the status of a complex NP universal, as will be discussed in the end of Section 3.3.

3.1 The prenominal association

According to the generalization in (6a), a prenominal association of hotondo requires a following universal NP in order for it to have a meaning of approximation. As shown in (11), the sentence following hotondo is exactly the same as the universal sentence in (10a), whose universal
quantification quantifies over the set of people/authors. Then, (6a) predicts that its *hotondo* approximates the universally quantified set of people/authors rather than quantifying over the set of articles. As indicated by the translation in (11), this prediction seems to be borne out.

(11) *hotondo* [[*dare-ga* kaita] *ronbun-mo*] syuppans-are-ta.
    almost [[*who-NOM* wrote] article-*MO*] publish-PASS-PAST
    ‘For almost everyone, her/his articles were published.’

3.2 The internal association

The generalization in (6b) predicts that the internally associated *hotondo* in (12) quantifies over the target complex NP. (Remember that its complex NP is existentially quantified as shown in (10b).) The prediction seems to be borne out: as indicated by the translation, (12) roughly means that the proportion of the published articles (per each author) is very high. Since the universal quantifier in a complex NP universal construction takes wider scope than the complex NP (see (10b)), the quantification by the proportion *hotondo* over the complex NP necessarily takes place under the scope of the universal quantifier.

(12) a. [[*dare-ga* kaita] **hotondo-no-ronbun-mo**] syuppans-are-ta.
    [[*who-NOM* wrote] most-GEN-article-*MO*] publish-PASS-PAST

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10 One might wonder whether or not *hotondo* in (11) is an element of the matrix clause. For the following three reasons, I claim that this is the case. First, in Japanese, all non-head elements in a noun phrase (except elements in a relative clause) must have Genitive Case marking. In order for *hotondo* to be located in the noun phrase headed by *ronbun* ‘article’, it must be followed by the Genitive Case particle, as we will see in (12), though (12c) is less preferred.

Second, *hotondo* in (11) is not an element of the relative clause. As shown in (i), the matrix subject can intervene between *hotondo* and its target (i.e. the universally quantified subject of the relative clause). Note that (i) involves no scrambling to locate *hotondo* in the pre-subject position. Scrambling out of a complex NP is severely degraded as shown in (iib).

(i) *hotondo* MITpuresu-wa [[*dare-ga* kaita] *ronbun-mo*] syuppans-ita.
    almost MIT.press-TOP [[*who-NOM* wrote] article-*MO*] publish-PASS
    “For almost everyone, the MIT Press published those articles that s/he wrote.”

    Mary-*NOM* [[John-*NOM* Sue-DAT eat-CAUS-PAST] misosoup]-ACC make-PAST
    “Mary made miso soup that John let Sue eat.”

    Sue-DAT Mary-*NOM* [[John-*NOM* eat-CAUS-PAST] misosoup]-ACC make-PAST
    “Mary made miso soup that John let Sue eat.”

Finally, although the wh-phrase within the relative clause (i.e., *nani* ‘what’) seems to be universally quantified by *mo* in (iii), it seems impossible to directly associate *hotondo* with it. The universal reading of *nani* crucially depends on the presence of the *mo*-particle associated with the head noun of the relative clause; whether or not it is universally quantified may not be specified at the level of the relative clause.

(iii) [[John-ni (?*hotondo*) nani-*o* tabe-sase-ta] hito-*mo*] taihos-are-ta.
    “For almost everything, those who let John eat it were arrested.”
3.3 The postnominal association

As indicated by the translations, (13) has two readings, i.e. the proportion reading and the exceptional author reading (approximation). The generalization (6b) predicts that its postnominal \textit{hotondo} is the proportion \textit{hotondo}. Furthermore, we observed that the proportion reading of the series of examples in (12) is due to its quantification over articles whose scope is under the scope of the universal quantifier ‘everyone’. As far as I can see, I do not find any significant difference between the proportion reading in (12) and the one in (13). Thus, I conclude that the proportion reading in (13) satisfies the prediction in (6b).

(13) \[[\text{dare-ga kaita} \text{ ronbun(-no)-hotondo-mo}] \text{ syuppans-are-ta.}\]
\[[\text{who-NOM wrote} \text{ article-GEN-most-MO}] \text{ publish-PASS-PAST}\]

‘For everyone, most of her/his articles were published’ or
‘Almost everyone had her/his articles published.’

However, its exceptional author reading does not meet with the prediction in (6). On the one hand, we observed in (11) that the exceptional author reading is due to the approximation \textit{hotondo}, which has a universal quantifier in its scope. On the other hand, as observed in Section 1, the approximation \textit{hotondo} never follows its universal NP target. If it is assumed that its complex NP universal has a universal NP ‘everyone’ that can be a target of its modification, the absence of the exceptional author reading is expected in (13), contrary to its actual reading.

Rather, I claim that \textit{hotondo} in (13) is unambiguously the proportion \textit{hotondo}, and the exceptional author reading in (13) is derivable from its proportion meaning. Why do I consider its \textit{hotondo} to be proportion \textit{hotondo}? One of the characteristic properties of \textit{most} and proportion \textit{hotondo} is that, perhaps due to their distributive nature, neither of them can take a cardinality predicate (see (14)).  

(14) a. \textit{#hotondo-no-ronbun-ga nizyu-ppon-da.}
\textit{most-GEN-article-NOM 20-CL-CPL}

b. \textit{ronbun-ga (#hotondo) nizyu-ppon-da.}
\textit{article-NOM most 20-CL-CPL}

‘#Most articles were 20.’

On the other hand, a complex NP universal can be compatible with such a cardinality predicate, since the head noun of the relative clause is existential, and hence, cardinal (see (15b)). Association by the approximation \textit{hotondo} does not change this nature, as shown in (15a).

\[\text{11}\] The question as to why the sentences in (14) (including in English) are unacceptable is not easy to answer. Although it is not unreasonable to think that their unacceptability is partly due to the distributivity of these quantifiers, I leave this issue for further research.
    almost [[who-NOM wrote] article-MO] 20-CL-CPL
    ‘For (almost) everyone, the articles that s/he wrote were 20.’

b. $\forall x[\text{person}(x) \rightarrow \exists y[\text{article}(y) \land \text{write}(x,y)]]$

Given these properties, consider (16). The inassociability of hotondo in (16) seems to suggest that its hotondo is the proportion hotondo, which quantifies over the head noun of the relative clause; if it were the approximation hotondo, its inassociability would be unexpected.

    [who-NOM wrote] article-MO most 20-CL-CPL

Then, how can (13) have the ‘exceptional author’ reading in terms of the proportion hotondo? First of all, as shown in (17), (13) is meaningful even without the complex NP universal if the domain of the quantification for the proportion hotondo is provided by the previous context.

(17) hotondo(-ga) syuppans-are-ta /#nizyu-pon-da.
    most-NOM publish-PASS-PAST /20-CL-CPL
    ‘Most were published/#20.’

I claim that its complex NP universal is not a QP, but simply a guide for its domain restriction. To avoid any complicated conceptual discussion about the domain of quantification, I simply assume that a pronoun corresponding to ‘(of) them/it’ is covertly associated with its proportion hotondo, and this covert pronoun is anaphoric to the complex NP universal. Given these assumptions, I propose (18).

(18) a. The complex NP universal in (13) simply makes the domain restriction for its proportion hotondo explicit,

b. the complex NP universal denotes a set of individuals \{articles that $a$ wrote, articles that $b$ wrote, articles that $c$ wrote, …\}, and

c. (13) is interpreted as ‘Most of the members in this set were published.’

Note that to designate the set of articles in a specific way the proposal here appeals to the notion of p-set as defined in (18b) (see also Hamblin 1973; Rooth 1985; Shimoyama 2001). In fact, the shape of the set in (18b) is exactly the same as the shape of a p-set proposed by Shimoyama (2001). She proposes that a complex NP universal has a p-set, which is a restriction for the universally quantificational particle $mo$, and its p-set is designated in such a specific way due to the nature of the wh-phrase in Japanese (called an indeterminate pronoun) as a free variable. Although the exceptional author reading in (13) supports the existence of a p-set within a complex NP, it does not support her assumption that $mo$ is a universal quantifier. In fact, if my proportion hotondo-based analysis is a correct account of the exceptional author reading in (13), its reading may be counterevidence to any analysis that assumes that $mo$ is a universal quantifier,\(^\text{12}\) since the complex NP universal is not universally quantificational in this reading.

It also casts doubt on the inverse linking analysis of a complex NP universal by Ohno (1989) and von Stechow (1996). The inverse linking analysis assumes that the complex NP in (13) contains

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a universal quantifier, ‘everyone’, that has a scope out of the complex NP. If hotondo in (13) is uniformly the proportion hotondo, the inverse linking analysis wrongly predicts the absence of its exceptional author reading, since its hotondo had to stay within the scope of such a universal quantifier.

To conclude, if the proportion hotondo based analysis of the exceptional author reading is correct in (13), its complex NP is present in order for an existential presupposition about a set of articles to be explicit. In other words, its complex NP should not contain any universal quantifier in this reading. In contrast, the complex NP in (11) must contain a universal quantifier in its exceptional author reading.

References

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