

[Article]

Reexamination of the Interpretation of the Internally Headed Relative Clause Construction*

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1. Introduction

The aim of this paper is to reexamine the interpretation of the internally headed relative (IHR) clause construction in Japanese, exemplified in (1), where the head *sandoitti* ‘sandwich’ is inside the relative clause.

- (1) Taro-wa Hanako-ga sandoitti-o tukutta-no-o tabeta.
Taro-Top Hanako-Nom sandwich-Acc made-NM-Acc ate
‘Hanako made a sandwich, and Taro ate it.’

This paper is organized as follows. Section 2 reviews some previous studies. Section 3 opens up a new option for IHRs to be interpreted, and Section 4 considers yet another option. Section 5 is the conclusion.

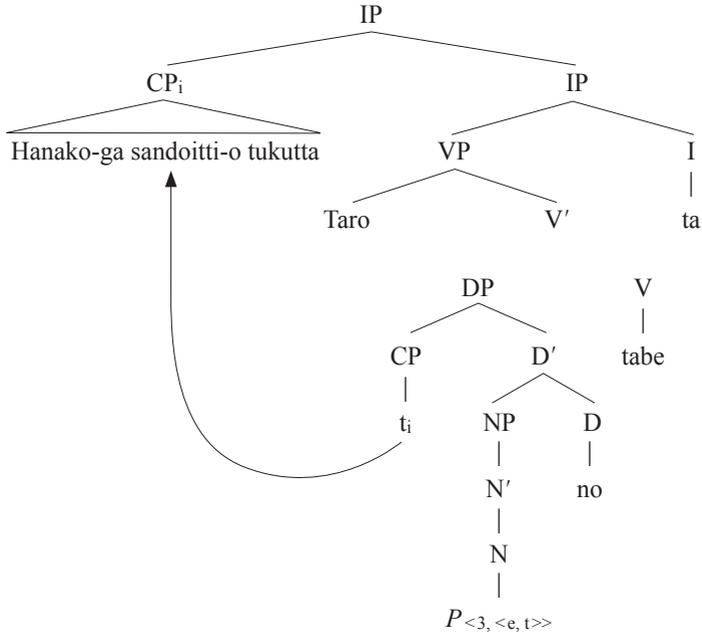
2. E-type anaphora in the IHR

Hoshi (1995) and Shimoyama (1999), two influential studies of IHRs, argue that the interpretation of the construction involves E-type anaphora, which can be paraphrased by a definite description constructed from material in

* I am grateful to two anonymous reviewers for their helpful comments. All errors and inadequacies are my own.

the antecedent sentence. On Shimoyama's analysis, (1) has an LF representation like (2).

(2)



The IHR-clause is extraposed at LF and is interpreted as an independent sentence. The (now remnant) IHR-DP contains a phonologically null proform. In this case, it is a variable of type $\langle e, t \rangle$. It receives its value from the variable assignment determined by the IHR-clause. In this case, it is the property of being a sandwich that Hanako made. The phonologically null NP is taken by the nominalizer *-no*, which serves like the definite article *the* in English. The IHR-DP, therefore, denotes the sandwich Hanako made.

However, there are examples that are problematic for the E-type approach to IHRs. Consider the examples in (3).

- (3) a. Amerika-kara burakkubasu-ga motikomareta-no-ga
 America-from black bass-Nom were brought in-NM-Nom
 seitaikei-o midasiteiru.
 ecosystem-Acc are disturbing
 ‘Black bass, which were brought in from America, are disturbing the ecosystem.’
- b. Watasitati-wa doituzin-ga syuryo-yoni
 we-Top the Germans-Nom hunting-for
 dakkusuhundo-o tukuridasita-no-o petto-tosite katteiru.
 dachshund-Acc bred-NM-Acc pet-as keep
 ‘The Germans bred dachshunds for hunting, which we keep as pets.’

The (natural) interpretation of these IHRs does not involve E-type anaphora. (3a), for example, means that different black bass were brought in from America and are disturbing the ecosystem.

3. Referential anaphora in the IHR

Before tackling the examples in (3), let us digress to consider an example like (4), where the internal head is a proper name.

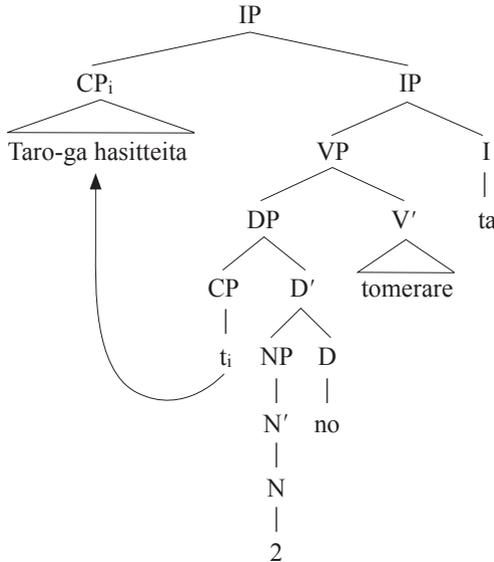
- (4) Taro-ga hasitteita-no-ga Ziro-niyotte tomerareta.
 Tara-Nom was running-NM-Nom Ziro-by was stopped
 ‘Taro was running, and he was stopped by Ziro.’

Shimoyama may not treat examples like (4) as genuine instances of the IHR construction,¹ but let us assume that they are and see where this assumption leads.

Given that the internal head is a proper name, it seems that the interpretation of (4) involves referential anaphora, rather than E-type anaphora. Under Elbourne’s (2005) unified theory of the semantics of personal pronouns, the apparatus developed by Shimoyama can readily be extended to handle examples

like (4).² According to Heim and Kratzer (1998: Ch.5), pronouns are variables and bear an index, and Elbourne proposes to take indices to be phonologically null NPs, which are taken by a Fregean definite article. (4) is now analyzed at LF as shown in (5).

(5)



The IHR-DP contains the index 2. It receives its value from the variable assignment determined by the IHR-clause, and it is Taro in this case. In order to interpret sentences with respect to variable assignments, Elbourne proposes the following rule, a revision of the Traces and Pronouns Rule of Heim and Kratzer.

(6) *Traces and Pronouns Rule, Mark II*

For all indices i and variable assignments a such that $i \in \text{dom}(a)$,
 $\llbracket i \rrbracket^a = [\lambda x. x = a(i)]$

The index 2 is taken by *-no*, which is a Fregean definite article and has the following semantics:

$$(7) \llbracket \text{no} \rrbracket = \lambda f. f \in D_{\langle e, t \rangle} \ \& \ \exists ! x. f(x) = 1. \text{tx} f(x) = 1$$

The semantic derivation of the matrix clause proceeds as shown in (8), which says that Taro was stopped (by Ziro).

(8)

$$\begin{aligned} & \llbracket [2 \text{ no}] \text{ was-stopped} \rrbracket^{[2 \rightarrow \text{Taro}]} \\ &= \llbracket \text{was-stopped} \rrbracket^{[2 \rightarrow \text{Taro}]} (\llbracket \text{no} \rrbracket^{[2 \rightarrow \text{Taro}]} (\llbracket 2 \rrbracket^{[2 \rightarrow \text{Taro}]}) \\ &= \llbracket \text{was-stopped} \rrbracket^{[2 \rightarrow \text{Taro}]} (\llbracket \text{no} \rrbracket^{[2 \rightarrow \text{Taro}]} (\lambda x. x = \text{Taro})) \\ &= [\lambda x. x \text{ was-stopped}] ([\lambda f. f \in D_{\langle e, t \rangle} \ \& \ \exists ! x. \lambda f(x) = 1. \text{tx} f(x) = 1] (\lambda x. x = \text{Taro})) \\ &= [\lambda x. x \text{ was-stopped}] \text{tx} x = \text{Taro} \\ &= 1 \text{ iff Taro was stopped} \end{aligned}$$

To summarize so far: the NP complement of *-no* is phonologically null, and when the complement of *-no* is a variable of type $\langle e, t \rangle$,³ the IHR-DP behaves as E-type anaphora. On the other hand, when the complement of *-no* is an index, the IHR-DP behaves as referential anaphora.

Now let us return to the examples in (3), which are repeated in (9).

- (9) a. Amerika-kara burakkubasu-ga motikomareta-no-ga
 America-from black bass-Nom were brought in-NM-Nom
 seitaikei-o midasiteiru.
 ecosystem-Acc are disturbing
 ‘Black bass, which were brought in from America, are disturbing the ecosystem.’
- b. Watasitati-wa doituzin-ga syuryo-yoni
 we-Top the Germans-Nom hunting-for
 dakkusuhundo-o tukuridasita-no-o petto-tosite katteiru.
 dachshund-Acc bred-NM-Acc pet-as keep
 The Germans bred dachshunds for hunting, which we keep as pets.’

I propose that the interpretation of the IHRs in (9) involves referential anaphora

on the kind-level in the sense of Carlson (1977). To see this, consider the following examples.

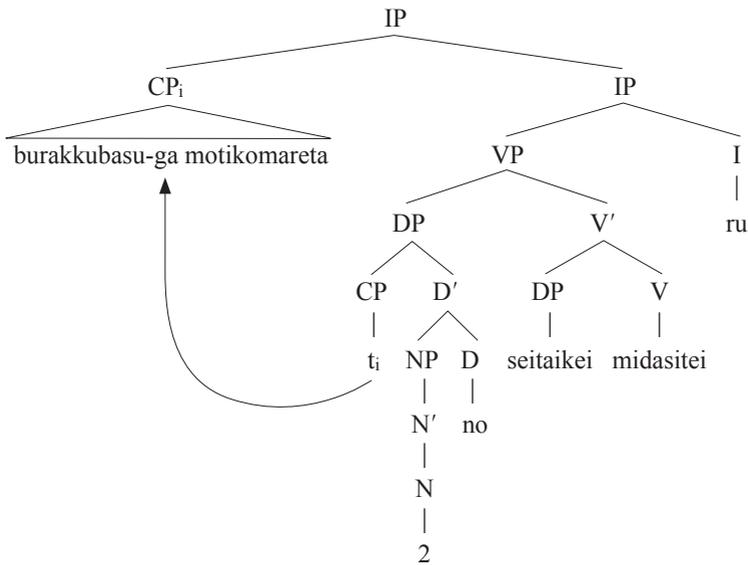
- (10) a. Amerika-kara burakkubasu-ga motikomareta. Sosite
 America-from black bass-Nom were brought in and
 Sono-syurui-no-sakana-ga seitaikei-o midasiteiru.
 that-kind-Gen-fish-Nom ecosystem-Acc are disturbing
 ‘Black bass were brought in from America. And that kind of fish is
 disturbing the ecosystem.’
- b. Doituzin-wa syuryo-yoni dakkusuhundo-o tukuridasita.
 the Germans-Top for hunting dachshunds-Acc bred
 Sikasi watasitati-wa petto-tosite sono-syurui-no-inu-o katteiru.
 but we-Top pet-as that-kind-Gen-dog-Acc keep
 ‘The Germans bred dachshunds for hunting. But we keep that kind of
 dog as pets.’
- (11) a. Amerika-kara burakkubasu-ga motikomareta. Sosite
 America-from black bass-Nom were brought in and
 sore-ga/pro seitaikei-o midasiteiru.
 they-Nom/pro ecosystem-Acc are disturbing
 ‘Black bass were brought in from America. And they are disturbing the
 ecosystem.’
- b. Doituzin-wa syuryo-yoni dakkusuhundo-o tukuridasita.
 the Germans-Top for-hunting dachshunds-Acc bred
 Sikasi watasitati-wa petto-tosite sore-o/pro katteiru.
 but we-Top pet-as them-Acc/pro keep
 ‘The Germans bred dachshunds for hunting. But we keep them as pets.’

As is obvious, *sono-syurui-no-sakana* ‘that kind of fish’ is kind-oriented, and the felicity of (10a) shows that *burakkubasu* ‘black bass’ and *sono-syurui-no-sakana* refer to the same thing on the kind-level. In fact, if Chierchia (1998) is right about saying that bare nouns in classifier languages such as Japanese refer to kinds, the bare noun *burakkubasu* ‘black bass’ refers to the kind black

bass. Interestingly, *sono-syurui-no-sakana* can be replaced by a pronoun, non-null or null, as shown in (11a). This indicates that those pronouns are referential pronouns on the kind-level.

Let us assume that after the IHR-clause is extraposed, the IHR-DP in (9a) behaves as referential anaphora on the kind-level and is interpreted in the same way as the pronouns in (11a) are. (9a) is analyzed at LF as shown in (12).

(12)



The semantic derivation of the matrix IP proceeds as follows.

(13)

$$\begin{aligned}
 & \llbracket [2 \text{ no}] \text{ is-disturbing-the-ecosystem} \rrbracket^{[2 \rightarrow \text{black bass}]} \\
 &= \llbracket \text{is-disturbing-the-ecosystem} \rrbracket^{[2 \rightarrow \text{black bass}]} (\llbracket \text{no} \rrbracket^{[2 \rightarrow \text{black bass}]} (\llbracket 2 \rrbracket^{[2 \rightarrow \text{black bass}]}) \\
 &= \llbracket \text{is-disturbing-the-ecosystem} \rrbracket^{[2 \rightarrow \text{black bass}]} (\llbracket \text{no} \rrbracket^{[2 \rightarrow \text{black bass}]} (\lambda x. x = \text{black} \\
 & \quad \text{bass})) \\
 &= [\lambda x. x \text{ is-disturbing-the-ecosystem}] ([\lambda f. f \in D_{\langle e, t \rangle} \ \& \ \exists !x \lambda f(x) = 1. \iota x f(x) \\
 & \quad = 1] (\lambda x. x = \text{black bass}))
 \end{aligned}$$

= $[\lambda x. x \text{ is-disturbing-the-ecosystem}] \text{ } t x \text{ } x = \text{black bass}$

= 1 iff black bass is disturbing the ecosystem

In the last line, there is a mismatch between *black bass* and *is disturbing the ecosystem*: the former refers to a kind (of fish), but the latter is a stage-level predicate, which applies to stages, spatio-temporal slices of kinds (and objects). It does not make sense to say that a kind is disturbing the ecosystem. This mismatch is fixed by the relation R, which holds between realizations and their associated kinds.⁴ Therefore, the last line is interpreted as meaning (14), which says that there are stages of the kind black bass which are disturbing the ecosystem.

(14) 1 iff $\exists x[R(x, \text{black bass}) \ \& \ x \text{ is disturbing the ecosystem}]$

4. Bound variable anaphora in the IHR?

Can the interpretation of IHRs involve bound variable anaphora? Or can an IHR-DP behave as bound variable anaphora? Now that examples where the IHR-DP behaves as referential anaphora have been accommodated, this question is worth asking, because as well as referential pronouns, bound pronouns are variables, which bear an index. However, bound pronouns are syntactically constrained in a way that referential pronouns are not: bound pronouns must be c-commanded by their binders. But this is impossible in an example like (15).

(15) Taro-wa Hanako-ga hotondo-no-ringo-o kattedekita-no-o tabeta.
Taro-Top Hanako-Acc most-Gen-apple-Acc bought-NM-Acc ate
'Hanako bought most apples, and Taro ate them.'

When the IHR-clause has been extraposed at LF, *hotondo-no-ringo* 'most apples' cannot c-command the IHR-DP containing the index because *hotondo-no-ringo* is contained in the IHR-clause. Given that QR is clause-bound, it cannot be QRred out of the IHR-clause, either. In fact, it seems impossible for

(15) to receive a reading where *hotondo-no-ringo* distributes over the rest of the sentence. The only possible reading of this example is one where the IHR-DP behaves as E-type anaphora. The answer to the question posed at the beginning of this section is no.

5. Conclusion

In this paper, I have argued that the interpretation of the IHR clause construction in Japanese can involve referential anaphora in addition to E-type anaphora. I have also argued that it cannot involve bound variable anaphora.

Notes

1. She may regard it as an instance of the so-called *tokoro* construction.
2. Under Elbourne's (2005) unified theory, personal pronouns in English are Fregean definite articles, and when they take an NP which is deleted at PF, E-type pronouns occur. On the other hand, when definite articles take an index, referential or bound pronouns occur.
3. Or of type $\langle e \langle e, t \rangle \rangle$. See Shimoyama (1999: 168).
4. The examples in (10-11) receive similar treatment. In the case of examples like (1), the R relates stages to objects.

References

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