

A Dual Function of *tokoro* in the CENP Construction

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1 Introduction

In this paper, I will discuss the semantics of the Japanese so-called "Counter-Equi NP" (henceforth, CENP) Construction, given in (1).

(1) CENP Construction

Keisatsu-wa [doroboo-ga nige-ru]-**tokoro**-o tsukamae-ta.
police-TOP burglar-NOM escape-PRES-occasion-ACC arrest-PAST
'The police arrested a burglar on the occasion during which he/she was escaping.'

The CENP construction is similar to the so-called "internally headed relative clause" (henceforth, IHRC) construction, given in (2), in that, in the CENP construction, an NP within the embedded *tokoro*-clause is interpreted as an argument of the matrix verb.

(2) IHRC Construction

Keisatsu-wa [doroboo-ga nige-ru]-**no**-o tsukamae-ta.
police-TOP burglar-NOM escape- PRES-NO-ACC arrest-PAST
'The police arrested a burglar on the occasion during which he/she was escaping.'

In both (1) and (2), the embedded subject *doroboo* 'burglar' is interpreted as an object of the matrix verb *tsukamaer* 'arrest'.

In this paper, I argue that the noun *tokoro* semantically has a dual function. To be more specific, it is a generalized quantifier over an entity and at the same time an event when it combines with the *tokoro*-clause, adopting Srivastav's (1991) generalized quantifier approach to Hindi correlatives.

2 Standard Theory and its problems

2.1 Standard Theory

Under the standard theory (Harada 1973, Mihara 1994, and Murasugi 1994 among others), the *tokoro*-clause in the CENP construction is a circumstantial adverbial clause and a "pro" exists as the matrix object, as shown in (3).

(3) Keisatsu-wa [doroboo_i-ga nige-ru]-tokoro-o pro_i tsukamae-ta.
police-TOP burglar-NOM escape-PRES-occasion-on arrest-PRES

The "pro" in (3) must be anaphorically related to an argument within the *tokoro*-clause. Furthermore, under the standard theory, the particle *-o*, attached to the *tokoro*-clause, is assumed to be an adverbial particle, and not to be related to Accusative Case.

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2.2 Problems --- the maximality effect in the interpretation of event and entity

The standard approach is too vague to explain why the matrix "pro" of the CENP construction exhibits a so-called "maximality" effect in its interpretation, an effect that is also observed in the "internal" head in IHRCs and correlatives (Srivastav 1991, Bittner 1998), as shown in (4).

- (4) Taro-wa [hotondo-no doroboo_i-ga nige-ta]-tokoro-o tsukamae-ta.
 TOP almost-GEN burglar-NOM escape-PAST-occasion-ACC arrest-PAST
 'Almost of the burglars escaped, and Taro arrested **all of them** on the occasion.'

Furthermore, even the approach to IHRCs or correlatives (Srivastav 1991, Basilico 1996) used for other languages does not explain the fact that the event of the matrix clause in the CENP construction also exhibits a "maximality" effect in its interpretation, as shown in (5).

- (5) Keisatsu-wa [doroboo-ga sankai nigeru]-tokoro-o tsukamae-ta.
 police-TOP burglar-NOM three times escape-occasion-ACC arrest-PAST
 'Burglars tried to escape three times, and the police arrested them on **all those occasions.**'

The approach to IHRCs or correlatives used for other languages assumes quantification over an individual. However, it would not capture an eventual or situational relationship between the embedded clause and the matrix clause.

3 The proposed analysis - a dual function of tokoro

In this paper, I propose that the noun *tokoro* is related to an entity as well as to an event. More specifically, the noun *tokoro* has the property of acting as a generalized quantifier over the relation that holds between an entity " x_e " and an event " y_s " of the ordered pair $\langle x_e, y_s \rangle$ when it combines with the embedded clause. For example, with regard to (1), the *tokoro*-clause acts as the following generalized quantifier:

- (6) $\lambda R.R [\iota y_s [\iota x_e ["x_e" \text{ is a participant(s) in a situation' } "y_s"]]]$

(6) denotes the set of all relations such that " x_e " is a unique participant(s) in a unique situation " y_s ". Under this assumption, the semantic interpretation of sentence (1) is given in (7).

- (7) $\lambda R.R [\iota y_s [\iota x_e ["x_e" \text{ is a participant(s) in a situation' } "y_s"]]] (\lambda y_s [\lambda x_e ["x_e" \text{ is arrested in a situation' } "y_s"]])$

The semantic interpretation of (7) is that the set of the relation denoted by the matrix clause, which holds for the ordered pair $\langle x_e, y_s \rangle$, is in the set of the relation that is denoted by the embedded clause. In other words, the set of the ordered set $\langle \iota x_e, \iota y_s \rangle$ that satisfies the relation expressed by the matrix clause must also satisfy the relation expressed by the embedded clause.

4 More details

This section gives more details about the proposed analysis.

4.1 tokoro-clause as an object

In this paper, I assume that the *tokoro*-clause of the CENP construction is a complement of the matrix verb. The motivation for this assumption comes from the Case-alternation and the Case matching of the *tokoro*-clause.

First of all, when the potential morpheme *-are* is attached to the matrix verb, the particle *-o*, attached to the embedded *tokoro*-clause, exhibits an ACC-NOM Case alternation, as shown in (8).

(8) Counter-Equi

Keisatsu-wa [sono-doroboo-ga nigeru]-tokoro-ga tsukamaer-are-ta.
 police-TOP the-burglar-NOM escape-occasion-NOM arrest-POT-PAST
 'The police could arrest the burglar while he/she was trying to escape.'
 (Harada 1973 among others)

The above Case alternation is usually observed in objects assigned Accusative Case in Japanese.

Second, the particle attached to the *tokoro*-clause is identical with the Case particle that is related to the Structural Case assigned to the object by the matrix verb as shown in (9) and (10).

(9) Taro-wa Hanako-**ni/*o** at-ta.
 TOP DAT/ACC meet-PAST
 'Taro met Hanako.'

(10) Taro-wa [Hanako-ga hashit-te iru]-tokoro-**ni/*o** at-ta.
 TOP NOM run-TE be-occasion-DAT/ACC come across-PAST
 'Taro came across Hanako while she was running.'

The verb *at* 'meet' assigns Dative Case to an object as shown in (9). When the *tokoro*-clause appears with the verb *at* 'meet', the Dative Case particle also appears with the *tokoro*-clause, as shown in (10).

4.2 *tokoro* as a relational noun and a generalized quantifier over an ordered pair

Regarding the proposed analysis, there arises one question as to how the noun *tokoro* is related to an entity as well as to an event in the CENP construction. I assume that this relation is realized by the property of the noun *tokoro*. Specifically, I propose that the *tokoro*-clause is a relational noun that has a denotation of the relation $[\lambda y \in D [\lambda x \in D [x \text{ is a participant(s) in a situation', } y]]]$.

Under this assumption, the noun of *tokoro* is an expression of type $\langle s, \langle e, t \rangle \rangle$. Furthermore, I assume that the type of the embedded clause is $\langle s, t \rangle$. However, the function expressed by the *tokoro*-clause, namely, $\langle s, \langle e, t \rangle \rangle$ cannot be applied to the argument, *tokoro*-clause, which is an expression of type $\langle s, t \rangle$. To solve this problem, I propose the type-shifting rule given in (12)¹.

(11)

$$\begin{array}{c}
 \text{NP} \\
 / \quad \backslash \\
 \text{IP} \quad \text{N} \\
 | \quad | \\
 \text{embedded-clause} \quad \text{tokoro } \langle s, \langle e, t \rangle \rangle \\
 | \\
 \langle s, t \rangle \rightarrow \langle s, \langle e, t \rangle \rangle
 \end{array}$$

¹ I speculate that this type-shifting rule might be related to "causal chain" proposed by Croft (1991) and "action chain" proposed by Langacker (1991). With regard to this issue, I need further research.

(12) type-shifting rule

$$\langle s, t \rangle \rightarrow \langle s, \langle e, t \rangle \rangle$$

After the above type-shifting rule is applied to the *tokoro*-clause, both the embedded-clause and the noun *tokoro* have the type $\langle s, \langle e, t \rangle \rangle$. For the next step, following Heim and Krazter (1998), I assume the semantic composition rule given in (13).

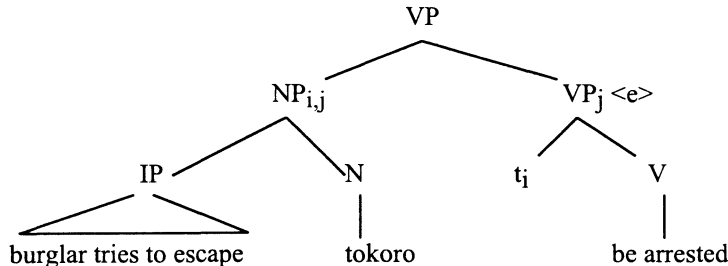
(13) Predicate Modification

If α is a branching node, $\{\beta, \gamma\}$ is the set of α 's daughters, and $[\beta]$ and $[\gamma]$ are both in $D_{\langle e, t \rangle}$, then
 $[\alpha] = \lambda x \in D_e. [\beta](x) = [\gamma](x) = 1$

Under the assumption of the Predicate Modification, after the above type-shifting, the embedded clause combines with the noun *tokoro*, and the NP which dominates the IP, embedded clause, and the noun, *tokoro*, has the type $\langle s, \langle e, t \rangle \rangle$. Furthermore, the noun *tokoro* changes the expression of type $\langle s, \langle e, t \rangle \rangle$ to the unique ordered pair of entity and event $\langle \iota x_e, \iota y_s \rangle$. I assume that this is a peculiar property of the noun *tokoro*. Furthermore, the noun *tokoro* has the property of type-shifting this unique ordered pair into a generalized quantifier. As a result, we have the generalized quantifier expression given in (5).

Since the noun *tokoro* is related to both entity and event, in this paper, I assume that the *tokoro*-clause plays the role of an operator binding a variable related to an event, as well as an entity, as shown in (14).

(14)



First, the quantifier, the *tokoro*-clause in the CENP construction is moved up and adjoined to VP. As a result, we have the syntactic structure in (14). In (14), the $NP_{i,j}$ c-commands VP_j and t_i . It plays the role of two operators, namely, the operator related to an entity and the operator related to an event. Each of these two operators, namely, the *tokoro*-clause, c-commands the co-indexed variables. In this manner, the variable binding between the operator *tokoro*-clause and the variables is realized.

5 Empirical data to support the proposed proposal

5.1 Maximality effect

Before the *tokoro*-clause becomes a generalized quantifier over the relations that hold between an entity and an event, *tokoro* yields a unique ordered pair $\langle \iota x_e, \iota y_s \rangle$, which consists of a unique entity " ιx_e " and a unique event " ιy_s ". This property of a unique entity and a unique event of the

unique ordered pair leads to the maximality effect in the interpretation of both the entity and the event of the matrix clause.

5.2 Interpretation of *takusan* 'a lot'

When the adverb *takusan* 'a lot' appears in the *tokoro*-clause, as shown in (15), the CENP construction can have both an object-related reading and an event-related reading (Krifka 1990).

- (15) Keisatsu-wa [doroboo-ga **takusan** nigeru]-tokoro-o tsukamae-ta.
 police-TOP burglar-NOM a lot escape-occasion-ACC arrest-PAST
 (object-related) 'The police arrested many burglars on one occasion during which they tried to escape.'
 (event-related) 'The police arrested burglars on many different occasions during which they tried to escape.'

Under the object-related reading, there is one occasion in which many burglars tried to escape. Under the event-related reading, there are many different occasions in each of which a burglar tried to escape. In each case, the number of occurrences of events and the number of burglars in the matrix-clause and the *tokoro*-clause must be the same.

The proposed theory gives a unified account of this phenomenon. Under the proposed hypothesis, the *tokoro*-clause in the CENP construction is a generalized quantifier over an event as well as an entity. In other words, the *tokoro*-clause picks up the set of sets related to an event as well as an entity that have both relations expressed by the embedded clause and the matrix clause. In this sense, an event and an entity must be shared in the embedded clause and the matrix clause. Thus, because of this function of *tokoro*, when we have the interpretation of the object-related reading, the matrix object in (15) also has the interpretation of 'many burglars'. In the same manner, when we have the interpretation of the event-related reading, the matrix event is also considered to have occurred many times.

5.3 The Locational adverbial particle vs. the Case marker

When we attach the locational adverbial particle *-de* to the *tokoro*-clause and the *tokoro*-clause loses the Accusative Case marker, the matrix object does not have to be an NP that has an obligatory anaphoric relation with an NP within the *tokoro*-clause. In this case, the simultaneity requirement between the events of the matrix clause and the *tokoro*-clause is also absent, although that kind of sentence is still grammatical with a different meaning, as illustrated in (16).

- (16) **Kyoo** Taro-wa [Hanako-ga **kinoo** nige-ta]-tokoro-de doroboo-o
 today TOP NOM yesterday escaped-place-LOC burglar-ACC
 tsukamae-ta.
 arrest-PAST
 'Today, at the place where Hanako_i escaped yesterday, Taro arrested her_{i/j}.'

The proposed analysis accounts for the correlation between the interpretation of the matrix object and the relation between the events of the matrix clause and the *tokoro*-clause. Under the proposed analysis, the noun *tokoro* has a dual function related to an entity and to an event. Both relations of entity and event must be satisfied between the matrix clause and the embedded clause within a sentence. Furthermore, under the proposed theory, these two relations crucially depend on the *tokoro*-clause being a matrix object. If there is no trace left by the movement of the object, the *tokoro*-clause, in the matrix clause, we will not have any variable that must be bound by the operator of an individual. This causes a problem of quantification over a relation

that holds for an entity and an event of the matrix clause. Thus, when the *tokoro*-clause loses the status of an object, we lose the property related to both event and entity.

6 Contrast with Internally-headed relative clauses in other languages

As discussed above, under the analysis proposed here, a difference between IHRCs in other languages, on one hand, and the CENP construction (and Japanese IHRC), on the other, can be reduced to a difference in the property of the head, the head being like the demonstrative in some native American languages, and *tokoro* in the CENP construction (and *no* in the Japanese IHRC). When the demonstrative appears in the head position of the IHRC, as illustrated in (17), the demonstrative is related to an entity.

(17) ahavy	masahay	?-ay-nʸ-č	?ahot-k	(Diegueño)
dress	girl	1-give-DEM-SUBJ	good-TENSE	
'The dress I gave to the girl is nice.'				(Basilico 1996)

As a result, the IHRC of this type does not exhibit a "temporal sequence" (Culy 1990, Ohara 1996) that is observed in the Japanese IHRC. On the other hand, in the Japanese CENP construction, not only the relation of an individual but also an event between the embedded clause and the matrix clause should be observed, since the head of the embedded clause, which is a type of relational noun, is related to both an individual and an event.

7 Conclusion

I have given an analysis of the Japanese CENP construction, adopting the "Quantificational" approach to Hindi correlatives (Srivastav 1991). More specifically, I have made the following two proposals:

- (i) The *tokoro*-clause is a generalized quantifier expression.
- (ii) The *tokoro*-clause is a quantifier over a relation that holds for the ordered pair of an entity and an event.

Furthermore, the proposed analysis also suggests that the difference between IHRCs in other languages, on one hand, and the CENP construction (and the Japanese IHRC), on the other, can be reduced to the property of the head.

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