THE SYNTAX OF JAPANESE RECIPROCAL V-V COMPOUNDS: A VIEW FROM SPLIT ANTECEDENTS

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Japanese has two ways to indicate reciprocity between plural subjects: one makes use of a reciprocal anaphor *otagai* and the other makes use of a special type of V-V compound in which a reciprocal verb *au* ‘meet’ resides in the second position, which we call the *au-*construction. Furthermore, *otagai* and *au* can co-occur in a single sentence. I will show that *otagai* has a peculiar binding nature: it basically does not allow split antecedents but exceptionally allows split antecedents in the *au-*construction. Based on detailed observations regarding this fact, I will propose a new syntactic analysis of the *au-*construction. I will also show some semantic differences between *otagai* and the *au-*construction and propose that *au* unifies plural events into a single coextensive event.*

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1. Introduction

This article concerns the binding nature of the Japanese reciprocal anaphor *otagai* ‘each other.’ In this article, I will show some peculiar facts regarding the binding nature of *otagai* and provide a new syntactic analysis of the so-called *au-*construction.

English makes use of a reciprocal anaphor *each other* to indicate reciprocity between plural subjects as illustrated in (1a). *Each* can also occur in the position illustrated in (1b):

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(1) a. John and Bill slapped each other.
    b. John and Bill each slapped the other.

Note that there is a semantic difference between (1a) and (1b) in that in (1a), John’s action and Bill’s action have to occur at the same time while in (1b), they can occur at different times.

In contrast, Japanese has two expressions to indicate reciprocity between plural subjects. One makes use of a reciprocal anaphor *otagai* ‘each other’ as in (2) and the other makes use of a reciprocal V-V compound in which a verb *au* ‘meet’ occurs as V2 as in (3) (hereafter the *au*-construction). There is a difference between (2) and (3), the same one as observed with the English reciprocal expressions, namely, (2) can indicate that John’s action and Bill’s action can occur at different times and at different places, whereas (3) can only indicate that John’s action and Bill’s action occur at the same time and at the same place.

(2) John-to Bill-ga otagai-o nagut-ta.
    John-and Bill-Nom each other (e.o.)-Acc hit-Past
    ‘John and Bill hit each other.’

    John-and Bill-Nom hit-meet-Past
    ‘John and Bill hit each other.’

Furthermore, *otagai* and *au* can co-occur in a single sentence as illustrated in (4). Note that *otagai* in (4) can be marked either with Accusative case or Dative case.

    John-and Bill-Nom e.o.-Acc hit-meet-Past
    ‘John and Bill hit each other.’

    John-and Bill-Nom e.o.-Dat hit-meet-Past
    ‘John and Bill hit each other.’

However, some differences arise when the antecedents of *otagai* are split. *Otagai* basically does not allow split antecedents as illustrated in (5).

(5) *John-ga (kinoo) Bill-to otagai-o nagut-ta.
    John-Nom yesterday Bill-with e.o.-Acc hit-Past
    ‘John and Bill hit each other.’

However, we have a grammatical sentence when *otagai* occurs in the *au*-construction. Note that only *otagai* with Accusative case is possible in this
configuration and Dative case is not allowed.\footnote{Some speakers do not see a serious difference between (6a) and (6b), but it seems that the contrast becomes sharper when we replace V1 with other verbs like \textit{hihansuru} ‘criticize’ as illustrated in (i).}

\begin{enumerate}
\item a. John-ga Bill-to otagai-o naguri-au-ta. \\
John-Nom Bill-with e.o.-Acc hit-meet-Past \\
‘John and Bill hit each other.’
\item b. \textit{?}John-ga Bill-to otagai-ni naguri-au-ta. \\
John-Nom Bill-with e.o.-Dat hit-meet-Past \\
‘(lit.) John and Bill hit each other.’
\end{enumerate}

In what follows, I propose a new analysis of the \textit{au}-construction where \textit{au} selects for VP or \textit{vP} complement depending on whether its subjects are split or not, and \textit{pro} resides in the subject position of V1 in the split antecedents configuration. I also claim that \textit{au} functions as what I call a coextensivizer, which unifies plural events into a single coextensive event.

This article proceeds in the following way: section 2 reviews three analyses of the \textit{au}-construction by Ishii (1989), Nishigauchi (1992) and Yumoto (2005). I also point out some problems with their analyses in this section. Section 3 provides a new syntactic analysis of the \textit{au}-construction. Section 4 discusses the semantics of the \textit{au}-construction, and finally section 5 concludes the discussion.

2. Previous Studies on Reciprocal Expressions

This section reviews some previous analyses of English and Japanese reciprocal expressions. In 2.1 I will summarize Heim, Lasnik and May’s

\begin{tabular}{|c|c|c|c|c|c|}
\hline
 & Informant 1 & Informant 2 & Informant 3 & Informant 4 & Informant 5 \\
\hline
(6a) & ok & ok & ?* & ?* & ?? \\
(ia) & ok & ok & ok & ? & ok \\
\hline
\end{tabular}
(1991) analysis of English reciprocal expressions which is cited in many of the subsequent studies of Japanese reciprocal expressions cited here. In turn, I will summarize some previous studies of the au-construction by Ishii (1989), Nishigauchi (1992) and Yumoto (2005) in 2.2, 2.3 and 2.4, respectively, and I will show that they have some empirical and theoretical problems.


Let me start with reviewing Heim, Lasnik and May’s (1991) analysis of English reciprocal expressions, since their work is referred to by many analyses of Japanese reciprocal expressions cited below.

The most important part of their analysis is that they attribute different functions to each and other: each functions as a distributor and other functions as a reciprocator. Adopting this idea, the semantics of (7a) arises in the following way. In (7b), each moves out of its surface position to adjoin to its antecedents and then in (7c), [e other] adjoins to VP by QR and finally, the subject NP adjoins to TP by QR.

(7) a. John and Bill hit each other.
    b. [[John and Mary]0 each1] like [e1 other]
    c. [[John and Mary]0 each1]1 [e1 other]2 like e2
    d. [[John and Mary]0 each1]1 [e1 [e1 other]2 like2]]

They propose this analysis to explain the following example. (8) can be construed in three ways as illustrated in (8a–c), namely, (8) is ambiguous with respect to the interpretation of they.

(8) John and Mary told each other that they should leave.
    a. John told Mary that he should leave & Mary told John that she should leave.
    b. John told Mary that she should leave & Mary told John that he should leave.
    c. John told Mary, and Mary told John, “We should leave”

(Heim, Lasnik and May (1991: 64) with slight modification)

Given the derivation illustrated in (9), this ambiguity can be straightforwardly explained. (9a–c) correspond to the LF representation of (8a–c), respectively. The (a) reading of (8) arises when they is bound by the matrix subject which is distributed into individuals. (8b) arises when they is bound by [e2 other] which gives rise to a reciprocal interpretation. (9c) arises when they is bound by the non-distributed matrix subject.
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(9) a. [John and Mary₁ each₂] told [e₂ other₃] that they₂ should leave
b. [John and Mary₁ each₂] told [e₂ other₃] that they₃ should leave
c. [John and Mary₁ each₂] told [e₂ other₃] that they₁ should leave

(Heim, Lasnik and May (1991: 80) with slight modification)

2.2. Ishii (1989)

This section summarizes Ishii’s (1989) analysis of the au-construction. Pointing out some difference between the two reciprocal expressions in Japanese, i.e. (2) and (3), he claims that (i) au has the syntactic role of absorbing an argument position of the verb to which it attaches and makes a symmetric predicate and (ii) if otagai occurs in the au-construction, it loses its syntactic role as an anaphor. I will explain these points in 2.2.1 and 2.2.2 and then show some problems with his analysis in 2.2.3.

2.2.1. The Affixation of Au to V₁

The first difference pointed out by Ishii is illustrated in (10) and (11). On the one hand, when otagai occurs in the subject position of an embedded sentence as in (10a), it can be bound by the matrix subject kare-ra ‘they’ while it cannot be bound by the matrix subject when it occurs in the object position of the embedded sentence.

   they-Nom e.o.-Nom Mary-Acc love Comp say-Past
   ‘They said that each other loved Mary.’

   they-Nom Mary-Nom e.o.-Acc love Comp say-Past
   ‘(lit.) They said that Mary loved each other.’

   (Ishii (1989: 151))

On the other hand, as illustrated in (11), if a gap in the au-construction occurs in an argument position of the embedded clause, whether it is the subject position or the object position, there arises an ungrammatical sentence.

   they-Nom Mary-Acc love Comp believe-meet-Past
   ‘(lit.) They believed that each other loved Mary.’

   they-Nom Mary-Nom love Comp believe-meet-Past
   ‘(lit.) They believed that Mary loved each other.’

   (Ishii (1989: 152))

This contrast shows that au absorbs an argument position of the verb to which it attaches. Ishii further states that this affixation is a lexical opera-
tion rather than a syntactic one.

He also states that there is no empty category such as reciprocator in the gapped position of the au-construction, showing the following contrast between (12) and (13). The (a) reading and the (b) reading differ with respect to the interpretation of zibun ‘self.’ (12) allows both the (a) and (b) readings whereas (13) only allows the (a) reading.

(12): John-to Mary-ga otagai-o zibun-no heya-de hatarak-ase-ta.
John-and Mary-Nom e.o.-Acc self-Gen room-in work-cause-Past

a. ‘John caused Mary to work in John’s room and Mary caused John to work in Mary’s room.’

b. ‘John caused Mary to work in Mary’s room and Mary caused John to work in John’s room.’ (Ishii (1989: 153))

John-and Mary-Nom self-Gen room-in work-cause-meet-Past

a. ‘John caused Mary to work in John’s room and Mary caused John to work in Mary’s room.’

b. ‘*John caused Mary to work in Mary’s room and Mary caused John to work in John’s room.’ (Ishii (1989: 153))

He explains the ambiguity of (12) in the following way. (12a) arises when zibun is bound by the matrix subject and (12b) arises when zibun is bound by the reciprocator otagai. The fact that (13) does not have the (b) reading can be straightforwardly explained if we assume that there is no reciprocator in the au-construction.

2.2.2. Otagai in the Au-Construction

Ishii points out that there is another difference between the two reciprocal expressions. In general, otagai does not allow split antecedents as illustrated in (5) (repeated here as (14)). However, if otagai occurs in the au-construction, then it allows split antecedents as illustrated in (6a) (repeated here as (15)).

John-Nom yesterday Bill-with e.o.-Acc hit-Past
‘(lit.) John and Bill hit each other.’

John-Nom yesterday Bill-with e.o.-Acc hit-meet-Past
‘John and Bill hit each other.’

Given that the object position of the verb naguru ‘hit’ is absorbed via the affixation of au, otagai in (15) cannot occur in the object position of the V1. According to Ishii, otagai in (15) occurs in an adjunct position and
loses its syntactic role as an anaphor; hence it allows split antecedents.

2.2.3. Some Problems

This section discusses some problems with Ishii’s analysis. It will be pointed out that (i) his analysis cannot explain the contrast in (6) and that the *au*-construction should be regarded as a syntactic V-V compound.

The first problem with Ishii’s analysis concerns the binding nature of *otagai*. Recall that *otagai* usually does not allow split antecedents as illustrated in (5), but exceptionally allows split antecedents when occurring in the *au*-construction as illustrated in (6a) (repeated here as (16a)). According to Ishii, the affixation of *au* to V1 is a lexical operation that absorbs an argument position of V1; hence *otagai* occurs in a non-argument position when it occurs in the *au*-construction. Since *otagai* occurs in a non-argument position, it loses its syntactic role as an anaphor and therefore allows split antecedents. However, this analysis predicts that (6b) (repeated here as (16b)) is also grammatical, contrary to the fact. He has to explain why *otagai* allows split antecedents when it is marked with Accusative case and why it does not when it is marked with Dative case.


The second problem concerns the classification of V-V compounds. Ishii states that the affixation of *au* to V1 is a lexical operation. However, this view is incompatible with the classification of V-V compounds put forth by Kageyama (1993). Kageyama proposes that V-V compounds can be distinguished between lexical V-V compounds and syntactic V-V compounds. The former belong to the lexicon and the latter belong to the syntax. He offers the following diagnostics (17a–d) to see whether a given V-V compound is lexical or syntactic. Since these are syntactic operations, they can be applied only to syntactic V-V compounds. As for the *au*-construction, we get the results of (18a–d).

(17) a. *Do so* replacement of V1
   b. Subject honorification of V1
   c. Passivization of V1
   d. VN-*suru* construction as V1

   ‘Seeing boys hitting each other, girls did so, too.’
   teacher-Pl-Nom hit-honorificication-meet-Past
   ‘(lit.) Teachers hit each other.’

c. Hutari-wa otagai-ga hihan-sare-au-teiru
   two-Top e.o.-Nom criticize-passive-meet-ing Comp
   think-Past
   ‘The two thought that each other is being criticized.’

   John-and Bill-Nom e.o.-Acc criticize-meet-Past
   ‘John and Bill criticized each other.’

Although the subject honorification on V1 yields an odd sentence, the au-construction passes the other diagnostics. Therefore, it seems safe to conclude that the au-construction is a syntactic V-V compound rather than lexical V-V compound, contra Ishii’s analysis.

Third, Ishii also claims that there is no reciprocator in the au-construction showing the contrast between (12) and (13). However, if there is no reciprocator, it is not clear how a mutual relation holds in (13). Ishii simply claims that a mutual relation arises because the affixation of au makes V1 a symmetric predicate. However, there is good reason to believe that there is a null reciprocator in a sentence with a symmetric predicate: we can sometimes see an overt reciprocator in some symmetric sentences. Japanese symmetric predicates take as their arguments either a subject NP and a Comitative phrase or just a plural subject as illustrated below.

(19)

a. John-ga Mary-to kekkonsi-ta.
   John-Nom Mary-with marry-Past
   ‘John and Mary got married.’

   John-and Mary-Nom marry-Past
   ‘John and Mary got married.’

In (19a), the Comitative phrase Mary-to ‘with Mary’ occurs in an argument position of kekkonsi ‘marry.’ On the other hand, this position seems to be empty in (19b). However, I propose that this position is filled with a null reciprocator in (19b). As one piece of evidence for this proposal, symmetric predicates usually do not allow an overt reciprocator as illustrated in (20a), but an overt reciprocator is allowed when embedded as in (20b). Furthermore, English symmetric predicates allow an overt reciprocator even in a non-embedded configuration as in (21).
(20) a. *John-to Mary-ga otagai-to kekkonsi-ta.
   John-and Mary-Nom e.o.-with marry-Past
   ‘(lit.) John and Mary married to each other.’
b. John-to Mary-ga otagai-to kekkonsi-tai to
   John-and Mary-Nom e.o.-with marry-want Comp
   omot-teiru.
   think-Pres
   ‘John and Mary want to marry to each other.’

(21) The hat and the coat match (each other).

(Ishii (1989: 155) with slight modification)

Although it is not clear why an overt reciprocator *otagai* ‘each other’ is allowed in (20b), but it seems to be safe to conclude that there is a phonetically null reciprocator in a sentence with a symmetric predicate.

2.3. Nishigauchi (1992)

This section summarizes Nishigauchi’s (1992) analysis of the *au*-construction. It will be shown that (i) V1+*au* is a syntactic compound and (ii) the gap in the *au*-construction is an empty reciprocator.

2.3.1. Basic Ideas

Nishigauchi states that the *au*-construction has the following properties.

(22) a. Subject NP must be plural.
b. There must be a gap in an argument position of V1.
c. The antecedents of the gap must not split.

We will have a quick review on these properties in this section. Let me start with (22a) which Nishigauchi calls the *plural requirement*. This restriction can be seen in the following example.

   John-and Mary-Nom hit-meet-Past
   ‘John and Mary hit each other.’
   John-Nom hit-meet-Past
   ‘(lit.) John hit each other.’

(Nishigauchi (1992: 160) with slight modification)

(23a) has no problem since its subject is plural, whereas (23b) whose subject is singular is ungrammatical.

Let us move onto the second property of the *au*-construction which Nishigauchi calls the *gap requirement*. Nishigauchi states that if a sentence of this type indicates reciprocity, there must be a gap in an argument posi-
tion of V1. The following example shows this point.

    John-and Mary-Nom hit-meet-Past
    ‘John and Mary hit each other.’

    John-and Mary-Nom Bill-Acc hit-meet-Past
    ‘John and Mary hit each other Bill.’

(Nishigauchi (1992: 161) with slight modification)

In (24a), a reciprocal relation, namely a mutual hitting relation, holds between John and Mary. On the other hand, (24b) can indicate that John and Mary hit Bill in an alternative order, but no mutual relation holds between John and Mary.

A question arises as to under what condition the binding relation between the gap and its antecedent holds. We will see the nature of the gap in the next section.

Let us move onto the third property of the au-construction, *Split Antecedents. We have seen above that there must be a gap in an argument position of V1 in the au-construction. Nishigauchi further states that the gap cannot be bound by split antecedents, showing example (25) where the gap cannot be bound by the split elements, namely Bill and John.

    Bill-Nom John-Acc/Dat introduce-meet-Past
    ‘(lit.) Bill introduced John to each other.’

(Nishigauchi (1992: 162) with slight modification)

However, there are apparent counterexamples like (26), which is acceptable although the antecedents of the gap are split.

    John-Nom yesterday Bill-with hit-meet-Past
    ‘John and Bill hit each other.’

(Nishigauchi (1992: 162) with slight modification)

Nishigauchi explains the acceptability of (26) by proposing the derivation illustrated in (27).

(27) [t, John]-ga kinoo [Bill-to], [e] naguri-au-ta.

In (27), John and Bill-to constitute a single NP Bill-to John and the split antecedents arise as a result of extraposing the commutative phrase Bill-to. (27) does not violate *Split Antecedent because the gap is bound by the subject NP which contains the trace of Bill-to, namely, [t, John].
2.3.2. The Nature of the Gap

We have seen that the *au*-construction requires a gap in an argument position of V1 to indicate reciprocity. Nishigauchi claims that the gap cannot be an anaphor or a pronoun, showing the following examples.

(28) ?[John-to Mary]-ga [zibun-no sensei-tati-ga [e]_{s} home-ta
    John-and Mary-Nom self-Gen teacher-Pl-Nom praise-Past
    to] zyasuisi-au-ta.
    Comp suspect-meet-Past
    ‘John and Mary each suspected that self’s teachers praised the
    other.’  (Nishigauchi (1992: 165) with slight modification)

(29) [John-to Mary]-ga [sensei-tati-ga [e]_{s} home-au-ta to]
    John-and Mary-Nom teacher-Pl-Nom praise-meet-Past Comp
    zyasuisi-ta.
    suspect-Past
    ‘John and Mary suspected that teachers praised each other.’
    (Nishigauchi (1992: 166) with slight modification)

In (28), *au* attaches to the matrix predicate *zyasuisi* ‘suspect’ and the gap occurs in an argument position of the embedded verb *home* ‘praise’ and the gap is bound by the matrix subject [John-to Mary] crossing a clause boundary. This is a clear violation of Condition (A) of the Binding Principle, so the gap in the *au*-construction cannot be an anaphor. The gap cannot be a pronominal either since in (29) where *au* and the gap occur in the embedded clause, the gap can be bound by the embedded subject *sensei-tati* ‘teachers’ violating Condition (B) of the Binding Principle. From these facts, he claims that the gap falls into a Condition (C) realm. In other words, the gap should be a variable which is A-bar bound by an operator.

Assuming that the gap is an empty operator and that *au* is a raising verb, Nishigauchi proposes the following derivation.
Adopting (30), he explains the derivation of (31) in the following way: first, as in (31a), the NP in the subject position of V1 moves to [Spec, au] via an NP movement and the NP gets a distributive interpretation from au due to Spec-head agreement, then the operator moves to an A-bar position which au governs, and then the subject NP is adjoined to IP by QR. As a result, there occur two variables $t'_0$ and $t_1$.

    John-and Mary-Nom love-meet-ing
    ‘John and Mary love each other.’
    a. $[v_{p0} [\text{John-to Mary}]_0 [v_{p1} o_{p1} [v_{p1} t_0 t_1 aisi]-au]-teiru]$
    b. $[\text{John-to Mary}]_0 [v_{p0} t'_0 [v_{p1} o_{p1} [v_{p1} t_0 t_1 aisi]-au]-teiru]$
       (Nishigauchi (1992: 172–173) with slight modification)

So far, we have seen Nishigauchi’s (1992) analysis where the au-construction is a syntactic V-V compound and the gap is regarded as an empty operator. We have also seen that when otagai allows split antecedents, there occurs an extraposition of Comitative to phrase as illustrated in (27).

2.3.3. Some Problems

This section points out some problems with Nishigauchi’s analysis of the au-construction.

Nishigauchi argues that (26) does not violate *Split Antecedent, proposing the derivation illustrated in (27). However, this analysis has some empirical problems. This is illustrated in the following example where otagai and au co-occur in a single sentence. Recall that when otagai occurs in the au-construction, it can be marked either with Accusative case or Dative case. However, when the antecedents of otagai are split, only Accusative case is allowed. The extraposition analysis predicts that otagai with Dative
case can be bound by the matrix subject [t John] in the same way as the Accusative counterpart, contrary to fact.

(32)  
\begin{enumerate}
    \item a. John-ga Bill-to otagai-o naguri-au-ta.
        John-Nom Bill-with e.o.-Acc hit-meet-Past
        ‘John and Bill hit each other.’
    \item b. \([t_i \text{John}]\)-ga \([\text{Bill-to}]\)_i otagai-o naguri-au-ta.
\end{enumerate}

(33)  
\begin{enumerate}
    \item a. ?John-ga Bill-to otagai-ni naguri-au-ta.
        John-Nom Bill-with e.o.-Dat hit-meet-Past
        ‘(lit.) John and Bill hit to each other.’
    \item b. \([t_i \text{John}]\)-ga \([\text{Bill-to}]\)_i otagai-ni naguri-au-ta.
\end{enumerate}

In this section, we have seen Nishigauchi’s (1992) analysis of the au-construction. It has shown that (i) V1+au is a syntactic V-V compound in Kageyama’s (1993) sense, (ii) the gap in the au-construction is an operator, and that (iii) (26) is derived by virtue of extraposing the Comitative phrase [Bill-to]. I argued that the null operator analysis of the gap and the extraposition analysis cannot be on the right track, showing some empirical problems.

2.4. Yumoto (2005)

This section summarizes Yumoto’s (2005) analysis of the au-construction, where the au-construction is formed by the direct merger of two verbs, and then shows that her analysis has an empirical problem regarding the scope relation between au and an adverb.

2.4.1. Basic Ideas

Her claim is based on the following observation, namely, the subject or the object of the au-construction cannot be c-commanded by au.

(34)  
\begin{enumerate}
    \item a. Kyoodai hutari-no subete-no syutyoo-ga mujunsi-au-teiru.
        brothers two-Gen every-Gen claim-Nom contradict-meet-ing
        ‘Every claim of the older brother and every claim of the younger brother contradict to each other.’
    \item b. Hutari-wa ryoochoo-no te-o nigiri-au-ta.
        two-Top both-Gen hand-Acc hold-meet-Past
        ‘The two held both of each other’s hands.’
\end{enumerate}

(Yumoto (2005: 200))

(34a) cannot indicate that every claim of the older brother contradicts each of his other claim, and the same is true for the younger brother’s
claim. (34a) must indicate that every claim of the older brother and every claim of the younger brother are in one-to-one relations where one is in contradiction to the other. Similarly, (34b) cannot indicate that each of the two held their own hands. It must indicate that one holds both of the other’s hands with both of his hands and vice versa. Yumoto claims that those interpretations arise only if the quantifier of the subject or the object of the au-construction takes wider scope over au.

To explain this fact, Yumoto proposes a new type of syntactic V-V compound, where a complex predicate is formed by directly merging two verbal heads (cf. Saito and Hoshi (1998)), as illustrated in (35).

\[
(35) \quad \text{The semantics of (34), where } au \text{ always has narrow scope, follows straightforwardly from this structure, since } V1 \text{ cannot be a phrase with its object or subject.}
\]

This section has reviewed Yumoto’s (2005) analysis of the au-construction. It has been shown that the au-construction is formed by a direct merger of two verbal heads, V1 and au, hence the subject or the object of this configuration always takes scope over au.

2.4.2. Some Problems

This section points out an empirical problem of Yumoto’s V0 merger analysis of the au-construction. See the example (36). (36) can be construed in two ways as shown in (36a, b).

\[
(36) \quad \text{We can explain this ambiguity postulating the following structures. In (37a), nikai ‘twice’ has narrow scope with respect to au, whereas in (37b) it has wide scope with respect to au.}
\]

Yumoto’s V0 merger analysis is compatible with the (b) reading of (36)
since the adverb adjoins to VP2 after the head-head merger of V1 and _au_. However, her analysis is incompatible with the (a) reading. To have a narrow scope reading with respect to _au_, the adverb has to adjoin to V1 before V1 merges with _au_. Therefore, I propose that the complement of _au_ should be a phrase rather than a head, and this is not allowed in Yumoto's V⁰ merger analysis.

In this section, we have seen Yumoto's (2005) analysis of the _au_-construction, in which V1+au is formed in the syntax via a direct merger of the two verbs, and I have provided a piece of evidence which shows that the sister of _au_ should not be a head but a phrase.

Before moving onto the next section, let me summarize the problems of the previous studies of the _au_-construction. First, Ishii's (1989) analysis is problematic, since he treats the affixation of _au_ to V1 as a lexical operation. Second, although Yumoto (2005) classifies the _au_-construction as a syntactic V-V compound, her analysis cannot explain the ambiguity of (36). We have also seen that Ishii’s and Nishigauchi’s analysis of _otagai_ with split antecedents are not on the right track since they cannot explain the contrast exemplified in (6), namely, they cannot explain why _otagai_ allows split antecedents if it is marked with Accusative case but not with Dative case. I will focus on this question in the next section.

3. _Otagai_ in the _Au_-Construction

This section provides a new syntactic analysis of the _au_-construction. It will be shown that (i) the _au_-construction has a bi-clausal structure, (ii) _pro_ resides in [Spec, vP] in the embedded clause, (iii) the gap in the _au_-construction is a phonetically null anaphor which is subject to Condition (A) of Binding Theory, and (iv) _otagai_ has to be licensed in an argument position of either V1 or _au_. Now, for the first approximation, I propose the structure (39a, b) for the two simple cases of the _au_-construction (38a, b), adopting the syntactic V-V compound analysis of the _au_-construction.²

² Although it is abstracted away in the present structures, I also claim that there is a null reciprocator in an argument position of _au_ in the non-split configuration (39a) just as in (19). The following example where _otagai_ is reduplicated seems to be an overt counterpart. I suppose that the Dative-marked _otagai_ occurs in an argument position of _au_ while the Accusative-marked _otagai_ occurs in an argument position of V1 naguru ‘hit.’

(i) John-to Bill-ga _otagai-ni_ _otagai-o_ naguri-au-ta.

John-and Bill-Nom _e.o.-Dat_ _e.o.-Acc_ hit-meet-Past

‘John and Bill hit each other.’
John-and Bill-Nom hit-meet-Past
‘John and Bill hit each other.’
John-Nom Bill-with hit-meet-Past
‘John and Bill hit each other.’

(39) a.

b.

Note that the current analysis differs from Yumoto’s (2005) analysis in that a phrase, rather than a head, occurs as a complement of *au*, allowing us to explain the ambiguity in (36) (we can get the two structures illustrated in (37)).

In what follows, I will explain these structures in detail with some modification in a step by step fashion.
3.1. Unification of the Split Antecedents

We need to explain why (6) can avoid *Split Antecedents. We have already seen that both Ishii’s and Nishigauchi’s analysis have problems when they come across otagai in the au-construction. I propose here that pro rather than PRO resides in the subject position of the embedded verb to unify the split indices into one. There is a relevant example offered by Hornstein (1999) which shows that pro can unify split indices into one.

(40)  
   a. John, told Maryj [that [[proi+j washing each other] would be fun.]]
   b. *John, told Maryj [PROi+j to wash each other.]

   (Hornstein (1999: 73) with slight modification)

In a non-obligatory control (NOC) configuration like (40a), split antecedents are allowed, whereas in an obligatory control (OC) configuration like (40b), they are not allowed. This fact shows that NOC pro can unify split indices into one, whereas OC PRO cannot. We can see the same contrast in Japanese as well: the split antecedents are allowed in the NOC configuration as illustrated in (41a) whereas it is not allowed in the OC configuration as illustrated in (41b.)

(41)  
   a. John-ga, Bill-ni, [proi+j otagai-o hihansuru koto-ga]  
      John-Nom Bill-Dat e.o.-Acc criticize that-Nom  
      daiji da to] it-ta.  
      important be Comp say-Past  
      ‘John told Bill that criticizing each other is important’
      John-Nom Bill-Dat e.o.-Acc criticize to say-Past  
      ‘(lit.) John told Bill to criticize each other.’

Now, let us go back to the structure (39b) where the antecedents of the gap are split. In (39b), the split indices are unified in the same way as in (40a), and the null anaphor is bound by pro, satisfying Condition (A).

However, (39a) seems to be problematic. Since pro is a pronominal, it falls in a Condition (B) realm, but the matrix subject and pro are assigned the same index. I propose that au selects VP or vP depending on whether the subjects are split or not. Au selects a VP complement, just like Kageyama’s (1993) classification of syntactic V-V compounds, if the antecedents of the gap are not split as illustrated in (42a), whereas it selects vP as its complement if the antecedents of the gap are split as illustrated in (42b). (42a) does not violate Condition (B), since the reciprocal anaphor is directly bound by the subject.
There is a good reason to believe that *au* can take *vP* or *VP* complement depending on whether its subjects are split or not, and when it takes *vP* complement, *pro* resides in [Spec, *vP*] and unifies split indices into one. Consider the contrast illustrated in example (43). When subject honorification is applied to the complex predicate *naguri-au*, it gives rise to an acceptable sentence as in (43a), while the acceptability degrades when subject honorification is applied only to *V1 naguru* as in (43b).³

(43) a. Sensei-ga seito-to o-naguri-ai-ninat-ta.
   teacher-Nom student-with hit-meet-honorification-Past
   ‘The teacher and the student hit each other.’

   b. ??Sensei-ga seito-to o-naguri-ninari-au-ta.
   teacher-Nom student-with hit-honorification-meet-Past

³ An anonymous reviewer asked me as to why (43b) is slightly better than (45), but for me (43b) is also hardly acceptable, and I focused on the difference between (43a) and (43b) here.
‘The teacher and the student hit each other.’
The difference between (43a) and (43b) is exactly what the current analysis predicts. Assuming that subject honorification in Japanese is triggered by an agreement between a honorific head (H) and its associated [Spec, vP] as put forth by Kishimoto (2012), I propose the following two structures, (44a, b) for (43a) and (43b), respectively.

(44) a. In (44a), the honorific head merges with the higher vP, and agrees with

b. In (44b), the honorific head merges with the higher vP, and agrees with
[Spec, vP], sensei, ‘the teacher’ which can be the target of honorification, resulting in an acceptable sentence. On the other hand, in (44b), the honorific head merges with the lower vP. In this case, \( pro_{i+j} \) rather than sensei, is in an agreement relation with the honorific head, resulting in an ill-formed sentence. We could assume that (43b) is ill-formed, because the subject of naguru is not sensei but \( pro_{i+j} \), namely, ‘the teacher and the student,’ cannot be a target of honorification. Note that in (45), ‘the teacher and the student’ cannot trigger subject honorification.

(45) *Sensei-to seito-ga hon-o o-yomi-ninat-ta.
   teacher-and student-Nom book-Acc read-honorification-Past
   ‘The teacher and the student read the book.’

However, it seems that the ill-formedness of (43b) is not because \( pro \) includes seito, which cannot trigger subject honorification. The following example, (46), where both of the antecedents of \( pro \) can trigger subject honorification, is also unacceptable.4

(46) ??Yamada-sensei-ga Tanaka-sensei-to [pro_{i+j}]
   Yamada-Prof-Nom Tanaka-Prof-with
   o-naguri-ninari]-au-ta.
   hit-honorification-meet-Past
   ‘(lit.) Prof. Yamada and Prof. Tanaka hit each other.’

Alternatively, I propose that (43b) and (46) are excluded because NOC \( pro \) cannot trigger subject honorification. (47) shows this point. The subject of the embedded sentence should be NOC \( pro \) in Hornstein’s (1999) sense: an empty subject is NOC \( pro \) when occurring in CP whereas it is an NP trace when occurring in IP.

(47) a. Yamada-sensei-wa [dooyatte densya-ni pro noru ka]
   Yamada-Prof.-Top how train-Dat get.on Comp
   o-wasure-ninat-ta.
   forget-honorification-Past
   ‘Prof. Yamada forgot how to get on a train.’

4 It should be noted that the non-split counterpart of (46) also sounds awkward even though \( pro \) does not occur in this configuration.

(i) ??Yamada-sensei-to Tanaka-sensei-ga o-naguri-ai-ninat-ta.
   Yamada-Prof.-and Tanaka-Prof.-Nom hit-honorification-meet-Past
   ‘(lit.) Prof. Yamada and Prof. Tanaka hit each other.’

This example is ruled out for a different reason. According to Kishimoto (2012), the honorific head can only agree with [Spec vP], but V1 in (i) does not project vP; hence subject honorification to V1 cannot occur in (i).
b. Yamada-sensei-wa [dooyatte densya-ni pro
Yamada-Prof-Top how train-Dat
o-nori-ninaru ka] o-wasure-ninat-ta.
get.on-honorification Comp forget-honorification-Past
‘(lit.) Prof. Yamada forgot how to get on a train.’

We can apply subject honorification to the matrix verb whose subject is
Yamada-sensei ‘Prof. Yamada’ as illustrated in (47a) whereas applying sub-
ject honorification to the embedded verb whose subject is pro gives rises to
an ill-formed sentence. We can exclude (43b) and (46) for the same reason
that (47b) is ill-formed, and we can support the current analysis in which
pro resides in [Spec, vP] when au selects a vP complement.

3.2. The Notion of Null Anaphor in Nakamura (1996)

Finally, I have to explain the nature of the gap. This section summarizes
Nakamura’s (1996) discussion of the tough construction, in order to moti-
vate the null anaphor analysis of the gap in the au-construction.

Before Nakamura (1996), the gap in the tough construction was regarded
as an empty operator as illustrated in (48a–c).

(48) a. John is easy to please.
b. John is easy [[PRO to please OP]].
c. John is easy [OP, [PRO to please ti]] (Nakamura (1996: 233))

Nakamura points out some problems for the empty operator analysis: if
there is an empty operator movement in the tough construction, it is pre-
dicted that this construction should be exempted from the A-over-A (AOA)
principle violation. However, violation of the AOA principle is observed in
the tough construction as illustrated in (49).

(49) a. *John, is fun to see [pictures of ti]
b. [Pictures of John], are fun to see ti (Nakamura (1996: 234))

In contrast, overt wh-movement does not violate the AOA principle as illus-
trated in the following example.

(50) a. Who, did you see [picture of ti]
b. *John, was seen [pictures of ti] (Nakamura (1996: 234))

Nakamura states that this property is quite similar to what can be seen in
NP movement rather than wh-movement, and introduces a new notion of
null anaphor (N.A.) and shows (51) as a derivation of the tough construc-
tion.

(51) a. John is easy [[e] to [PRO please N.A.]].
b. John is easy [[N.A.], to [PRO please ti]].
(Nakamura (1996: 235))
Now recall that Nishigauchi (1992) proposes that the gap in the *au*-construction is an empty operator, showing (28) and (29) (repeated here as (52) and (53) respectively).

(52) ?[John-to Mary]-ga [zibun-no sensei-tati-ga [e]/*j home-ta
John-and Mary-Nom self-Gen teacher-Pl-Nom praise-Past
Comp suspect-meet-Past
‘John and Mary each suspected that self’ s teachers praised the other.’

(53) [John-to Mary]-ga [sensei-tati-ga [e]/*j home-au-ta to]
John-and Mary-Nom teacher-Pl-Nom praise-meet-Past Comp
suspect-Past
‘John and Mary suspected that teachers praised each other.’

According to Nishigauchi, (52) and (53) show violation of Condition (A) and (B), respectively. However, notice that the acceptability degrades in (52) (for me (52) is worse than ‘?’ and hardly acceptable under the intended meaning). If the gap is a null anaphor rather than an empty operator, the degradation in (52) follows straightforwardly from Condition (A).

In this section, we have reviewed Nakamura’s (1996) analysis of the *tough*-construction, where the gap is reanalyzed as a null anaphor rather than an empty operator, and we have shown that the gap in the *au*-construction should also be a null anaphor, contra Nishigauchi’s (1992) empty operator analysis.

3.3. Non-Anaphoric Nature of *Otagai*

So far, I have treated *otagai* as an anaphor, but it should be noted that *otagai* is sometimes non-anaphoric by nature. With example (54), where *otagai* is bound by split antecedents, Hoji (2003) argues that *otagai* is not an anaphor.5

(54) Ieyasu1-wa Nobunaga2-ni [Shingen-ga sineba [otagai1+2-no
Ieyasu-Top Nobunaga-Dat [Shingen-Nom die-if each.other-Gen
dyoodo]-ga sibarakuwa antaida to] tuge-ta.
territory-Nom for.a.while is.safe Comp tell-Past
‘Ieyasu1 told Nobunaga2 that, if Shingen dies, their1+2 territories
will be safe for a while.’

(Hoji (2003: 434))

5 I thank an anonymous reviewer for informing me of this problem.
However, *otagai* in (54) does not have a reciprocal interpretation. Presumably, there are at least two types of *otagai*; one is an anaphor which has a reciprocal interpretation, and the other is a pronoun, without a reciprocal interpretation. All instances of *otagai* in this article are reciprocal; hence we regard *otagai* as an anaphor.

### 3.4. A New Syntactic Analysis of the *Au*-Construction

Now we are ready to discuss the contrasts observed in the first section. Let me repeat the main issue of this article. Japanese has two options to indicate reciprocity: one makes use of a reciprocal anaphor *otagai* and the other makes use of the *au*-construction. Recall that *otagai* basically does not allow split antecedents as illustrated in (55b).

   John-and Bill-Nom e.o.-Acc hit-Past
   ‘John and Bill hit each other.’

   John-Nom Bill-with e.o.-Acc hit-Past
   ‘John and Bill hit each other.’

   John-and Bill-Nom hit-meet-Past
   ‘John and Bill hit each other.’

When *otagai* occurs in the *au*-construction, it can be marked either with Accusative case or Dative case as in (57).

   John-and Bill-Nom e.o.-Acc hit-meet-Past
   ‘John and Bill hit each other.’

   John-and Bill-Nom e.o.-Dat hit-meet-Past
   ‘John and Bill hit each other.’

When *otagai* occurs in the *au*-construction, it can be marked either with Accusative case or Dative case as in (57).

   John-Nom Bill-with e.o.-Acc hit-meet-Past
   ‘John and Bill hit each other.’

   John-Nom Bill-with e.o.-Dat hit-meet-Past
   ‘(lit.) John and Bill hit each other.’

Ishii (1989) and Nishigauchi (1992) explain the difference between (55b) and (58a) in different ways. Ishii argues that *otagai* loses its syntactic role
as an anaphor when it occurs in the *au*-construction; hence it allows split antecedents. Nishigauchi argues that (58a) arises as a result of extraposing the Commutative phrase *Bill-to* from *[Bill-to John]* and *otagai* is bound by the subject NP which contains the trace of *Bill-to* namely, *[t John]* without violating Condition (A). However, Ishii and Nishigauchi cannot explain why the acceptability degrades when *otagai* is marked with Dative case.

Alternatively, I propose (59) and (60) as two basic structures of the *au*-construction. (59) has non-split antecedents and (60) has split antecedents. There is no problem for (59), since the antecedents of the gap are not split. (60) is also acceptable, although the antecedents of the gap are split, since *pro* can unify indices of split antecedents into one.

Let us take a look at (57a) and (58a) where *otagai* which is marked with Accusative case occurs in the *au*-construction. Their structures are shown in (61) and (62). (61) has no problem with respect to *Split Antecedents* since the antecedents of *otagai* are not split. (62) also has no problem since *pro* unifies split indices and *pro* binds the reciprocal anaphor *otagai*, satisfying Condition (A) and (B) at the same time.
Let us move onto the contrast between (57b) and (58b), where *otagai* is marked with Dative case. First, let us discuss (57b), whose structure is (63). (63) is grammatical because the antecedents of *otagai* are not split. However, I propose here that *otagai* with Dative case occurs in an argument position of *au* rather than one in V1, since *au* can license either a *to* phrase or a *ni* phrase in its argument position as illustrated in (64).

(63)
(64) a. Sono huku-wa kono tokei-to au-u.  
that cloth-Top this watch-with meet-Pres  
‘That cloth matches the watch.’  
b. Sono huku-wa kono tokei-ni au-u.  
that cloth-Top this watch-Dat meet-Pres  
‘That cloth matches the watch.’

Next, let us discuss the example with the split antecedents, (58b), whose structure (65) is ungrammatical, since there is no place for pro to reside in (65). Otagai-ni cannot occur in (65a) because this position is already filled with the commutative to phrase. It cannot occur in (65b) either, since pro has to be here. If otagai-ni occurs in this position, the split indices cannot be unified into one and this gives rise to a violation of *Split Antecedents. Otagai-ni cannot occur in (65c) either, since the V1 naguru ‘hit’ cannot license an NP with Dative case as exemplified in (66).

(65)

\[
\begin{array}{c}
\text{v} \\
\text{P}
\end{array}
\]
\[
\begin{array}{c}
\text{NP} \\
\text{v'} \\
\text{VP} \\
\text{v}
\end{array}
\]
\[
\begin{array}{c}
\text{John-ga} \\
\text{VP} \\
\text{v'} \\
\text{v}
\end{array}
\]
\[
\begin{array}{c}
\text{NP} \\
\text{V'} \\
\text{V}
\end{array}
\]
\[
\begin{array}{c}
\text{(a) *otagai-ni}_{i+j}/ \text{Bill-to}_{j} \\
\text{vP} \\
\text{V}
\end{array}
\]
\[
\begin{array}{c}
\text{(b) *otagai-ni}_{i+j}/ \text{pro}_{i+j} \\
\text{v'} \\
\text{(a) *otagai-ni}_{i+j} \\
\text{au}
\end{array}
\]
\[
\begin{array}{c}
\text{V'} \\
\text{v}
\end{array}
\]
\[
\begin{array}{c}
\text{VP} \\
\text{v}
\end{array}
\]
\[
\begin{array}{c}
\text{NP} \\
\text{V}
\end{array}
\]
\[
\begin{array}{c}
\text{(c) *otagai-ni}_{i+j} \\
\text{naguri}
\end{array}
\]

John-Nom Bill-Acc hit-Past  
‘John hit Bill.’  
John-Nom Bill-Dat hit-Past  
‘(lit.) John hit Bill.’

Note that (65c) is not possible because of the case licensing of V1. Consequently, it is predicted that if V1 can independently license an NP with Dative case, it gives rise to a grammatical sentence. This is in fact the case. See the following examples. The verb nageru ‘throw’ can license a Dative marked NP as in (67).
   John-Nom Bill-Dat ball-Acc throw-Past  
   ‘John threw a ball to Bill.’

With this verb, *otagai-ni* allows split antecedents in the *au*-construction as illustrated below.

(68) John-ga Bill-to otagai-ni booru-o nage-au-ta.  
   John-Nom Bill-with e.o.-Dat ball-Acc throw-meet-Past  
   ‘John and Bill threw a ball to each other.’

I propose (69) as the syntax of (68). Here, *pro* unifies the split indices into one, and *otagai-ni*, which occurs in the argument position of *nageru* ‘throw,’ is bound by *pro*.

\[
(69)
\]

3.5. A Problem regarding the Licensing of *Otagai*

I have proposed in the previous section that *otagai* has to be licensed either in the argument position of V1 or V2. One may wonder why *otagai-to* cannot occur in the *au*-construction as illustrated in (71), since we have seen that *au* ‘meet’ as a single verb can license a *to* ‘with’ phrase as its argument as in (64a) (repeated here as (70)).

(70) Sono huku-wa kono tokei-to au-u.  
    that clothes-Top this watch-with meet-Pres  
    ‘That cloth matches the watch.’

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6 I am grateful to Yoshiki Ogawa for informing me of this problem.
John-to Bill-ga otagai-to naguri-au-ta.
John-and Bill-Nom e.o.-with hit-meet-Past
‘(lit.) John and Bill hit each other.’

However, we have a grammatical sentence when otagai-to occurs in an embedded clause as illustrated in (72), just like the contrast illustrated in (20).

John-and Bill-Nom e.o.-with hit-meet-want Comp think-Pres
‘John and Bill want to hit each other.’

I leave open the question why otagai-to can only occur in certain types of embedded clause, but it seems safe to conclude that otagai has to be licensed either in an argument position of V1 or V2.

3.6. Acquisition of the Difference between vP and VP

The final problem of the current analysis is concerned with acquisition. In the current analysis, the difference between vP and VP is important to see whether pro occurs in the au-construction or not. However, one may wonder how children are able to know this difference.7

I suppose that the distinction of clause size is an integral part of UG; hence, children do not have to acquire it. It should be noted that this is a general issue when concerning different sizes of clauses and their different linguistic behaviors. For example, according to Hornstein (1999), in English, OC pro and NOC pro are distinguished depending on the type of the clause in which they occur: pro is obligatory controlled (an NP trace in Hornstein’s sense) when it occurs in IP and it is not obligatory controlled when it occurs in CP.

The difference between vP and VP can be observed in German. Wurmbrand (2004) shows that there are two types of restructuring verbs in German, namely, the functional restructuring verb and the lexical restructuring verb. According to Wurmbrand, functional restructuring verbs are functional heads which take vP complement whereas lexical restructuring verbs are full lexical verbs which take VP complement.

Another instance of the distinction of clause size is seen in Kageyama’s (1993) classification of syntactic V-V compounds. He proposes that syntactic V-V compounds should be distinguished between VP complement types and V’ complement types: in the former type, V2 selects a VP as its complement types and V’ complement types: in the former type, V2 selects a VP as its

7 I thank an anonymous reviewer again for giving me this question.
complement, and in the latter type, V2 selects a V′ as its complement. He distinguishes these types depending on whether the whole compound verb can be passivized or not.

Of course the current analysis and the two analyses cited above are different from each other, but we have the common issue as to how we can come to know this difference. For now, again, I will assume that this difference is encoded in UG.

In this section, I have provided a new syntactic analysis of the *au*-construction. It has been argued that (i) *au* selects VP or vP as its complement depending on its subject, (ii) *pro* resides in the subject position of V1 to unify split indices into one, (iii) the gap in the *au*-construction is a null anaphor, and (iv) *otagai* must occur in an argument position of either V1 or *au*.

4. The Semantics of the *Au*-Construction

This section is concerned with the semantics of the *au*-construction. It will be shown that *au* has a function to unify plural events into a single coextensive event, a notion to be defined below. I will also propose that symmetric events and reciprocal events should be distinguished in terms of their event times.

4.1. Reciprocal Expressions in English and Japanese

English has two ways to indicate reciprocity between plural subjects: one makes use of *each other* as in (73a) and the other makes use of *each-the-other* as in (73b).

(73)  
\begin{itemize}
  \item a. John and Bill slapped each other.
  \item b. John and Bill each slapped the other.
\end{itemize}

Fiengo and Lasnik (1973) point out that there is a semantic difference between *each other* and *each-the-other*: *each-the-other* can indicate that plural events occur at different times whereas *each-other* cannot.

(74)  
\begin{itemize}
  \item a. Each of the cars bumped into the other; the Pontiac bumped into the Plymouth on Monday, and the Plymouth bumped into the Pontiac on Tuesday.
  \item b. The cars bumped into each other; *the Pontiac bumped into the Plymouth on Monday, and the Plymouth bumped into the Pontiac on Tuesday.  \quad (Fiengo and Lasnik (1973: 450–451))
\end{itemize}

The same contrast is seen between Japanese reciprocal expressions, *otagai* and the *au*-construction. (75a) can indicate that John’s action of hitting Bill and Bill’s action of hitting John occur at different times and at different
places. On the other hand, (75b) can only indicate that John’s action and Bill’s action occur at the same time and at the same place.⁸

(75)  
(a) Kinoo, John-to Bill-ga otagai-o nagut-ta.  
yesterday John-and Bill-Nom e.o.-Acc hit-Past  
‘Yesterday, John and Bill hit each other.’
(b) Kinoo, John-to Bill-ga naguri-au-ta.  
yeaterday John-and Bill-Nom hit-meet-Past  
‘Yesterday, John and Bill hit each other.’

I will propose that (i) symmetric events and reciprocal events should be distinguished from each other and that (ii) au unifies plural events into a single coextensive event to explain the contrast in (75). Hereafter, I will use the term coextensive event in the following sense.

(76) Coextensive Event

A Coextensive event is a set of events which share the same predicate and occur in the same spatio-temporal extent.

4.2. Some Difference between Symmetric Events and Reciprocal Events

This section shows a certain difference between symmetric events and reciprocal events. According to Ishii, the affixation of au to V₁ makes a symmetric predicate. However, there are some differences between symmetric events and reciprocal events. See the following examples. (77) is an example of Japanese reciprocal predicate kekkonsu ‘marry.’ Interestingly, this predicate can co-occur with au as illustrated in (78).

(77) Nizyuudai-no danzyo-ga kekkonsi-ta.  
twenties-Gen man.and.woman-Nom marry-Past  
(a) ‘A couple got married.’  
(b) ‘Some couples got married.’

(78) Nizyuudai-no danzyo-ga kekkonsi-au-ta.  
twenties-Gen man.and.woman-Nom marry-meet-Past  
(a) ‘*A couple got married.’  
(b) ‘Some couples got married.’

If the affixation of au makes V₁ a symmetric predicate from a non-sym-

---

⁸ There are some examples of the au-construction which do not require coextensiveness. For example, in (i), John’s action and Bill’s action do not have to occur at the same time and at the same place, although they are construed as a single event.

(i) John-to Bill-ga hihansi-au-ta.  
John-and Bill-Nom criticize-meet-Past  
‘John and Bill criticized each other.’
metric predicate, why can \textit{au} be attached to \textit{kekkonsu} which is a symmetric predicate on its own? Note here that there is a semantic difference between (77) and (78). Since Japanese does not distinguish between a plural form and a singular form of a noun, (77) is ambiguous between (a) and (b). On the other hand, (78) is acceptable only under the (b) reading.

Another difference between symmetric events and reciprocal events is exemplified in (79). (79a–c) are examples including a symmetric predicate, \textit{otagai} and the \textit{au}-construction, respectively. When we put in the adverb \textit{gokai-zutu} ‘five times respectively,’ we can see a difference between reciprocal events and symmetric events. See the contrast between (79a) and (79b). (79a) becomes unacceptable with the adverb. On the other hand, we can count the number of times John’s actions and Bill’s actions occur, using \textit{gokai-zutu} in (79b). Now take a look at (79c), an example of the \textit{au}-construction. If V1+\textit{au} were a symmetric predicate as Ishii put forth, it would be predicted that (79c) should be ungrammatical for the same reason that (79a) is ruled out. However, (79c) is perfectly grammatical.

John-and Mary-Nom five-times respectively marry-Past  
‘John and Mary got married five times respectively.’

John-and Bill-Nom e.o.-Acc five-times respectively hit-Past  
‘John and Bill hit each other five times.’

John-and Bill-Nom five-times respectively hit-meet-Past  
‘John and Bill hit each other five times.’

To capture the contrast in (79a–c), I propose that symmetric events and reciprocal events should be distinguished in the following way.

(80) Reciprocal Event
A reciprocal event consists of at least a set of counterdirectional events, where plural subjects have the same mutual impact on each other, and spatio-temporal identity is not required between the plural events.

(81) Symmetric Event
A symmetric event is a single event in which multiple subjects are involved. 

Given these definitions, we can formalize the semantics of a reciprocal event and a symmetric event as in (82) and (83), respectively. In (82), John’s action and Bill’s action are bound by different event arguments; accordingly, they can occur at different times and at different places. On the
other hand, (83) is construed as a single event since there is only one event argument.

\[(82)\]  
John-to Bill-ga otagai-o nagut-ta.  
John-and Bill-Nom e.o.-Acc hit-Past  
‘John and Bill hit each other.’  
\[\exists e_1, e_2[(hit (e_1, Bill, John)) \land (hit (e_2, John, Bill))]\]

\[(83)\]  
John-to Mary-ga kekkonsi-ta.  
John-and Mary-Nom marry-Past  
‘John and Mary got married.’  
\[\exists e_1[(marry (Mary, John, e_1)) \land (marry (John, Mary, e_1)))]\]

Now we can explain the contrast among (79a-c) as follows. Since reciprocal events like (79b, c) consist of at least two sub-events, *John hit Bill* and *Bill hit John*, each event can be modified by using *zutu* ‘respectively’ when the number of the two sets of events are identical. On the other hand, since symmetric events like (79a) consist of a single event between A and B, there can be no division into sub-events, and therefore there can be no modification with *zutu*.

4.3. *Au* as a Coextensivizer

So far, we have seen that symmetric events and reciprocal events should be distinguished with respect to their event times. However, we still cannot explain why, in an *au*-construction like (75b), spatio-temporal identity is required and why (78) has only the (b) reading. To capture this fact, I propose that *au* has the following function.

\[(84)\]  
a. *Au* selects VP (or *vP*) which indicates plural events.  
b. *Au* unifies plural events into a single coextensive event.

Now we can explain the contrast in (75). (75a) and (75b) are both reciprocal events, but in (75b), the sub-events are unified into a single coextensive event by virtue of *au*. We can also explain why (78) has only the (b) reading. Since *au* selects plural events, (78a), which contains only one symmetric event, is not allowed, whereas (78b), which contains multiple symmetric events, is consistent with the function of *au*.

We can further attest this function of *au* by the following examples. In (85a), spatio-temporal identity is not required, so the sub-events, namely John’s and Bill’s hitting actions, can be modified by different spatial PPs *kenkyuusitu de* ‘at the laboratory’ and *syoko de* ‘at the library.’ In the *au*-construction, however, John’s and Bill’s actions cannot be modified by different PPs because *au* unifies plural events into a single coextensive event.
   John-Nom laboratory at Bill-Nom library at e.o.-Acc hit-Past
   ‘John at the laboratory and Bill at the library hit each other.’

   John-Nom laboratory at Bill-Nom library at hit-meet-Past
   ‘(lit.) John at the laboratory and Bill at the library hit each other.’

This section has discussed semantic differences between the two reciprocal expressions in Japanese, namely, *otagai* and the *au*-construction. This section has also discussed semantic differences between symmetric events and reciprocal events. It has been shown that *au* has a function to combine plural counterdirectional events, which share the same predicate, into a single coextensive event, and it was suggested that symmetric events and reciprocal events should be distinguished in terms of their event times.

5. Conclusion

In this article, we have focused on the peculiar binding nature of Japanese reciprocal anaphor *otagai*: it usually does not allow split antecedents, but allows split antecedents when it occurs in the *au*-construction. I have provided a new syntactic analysis of the *au*-construction. I have also focused on some semantic differences between *otagai* and the *au*-construction and proposed that *au* unifies plural events into a single coextensive event.

REFERENCES


Kageyama, Taro (1993) *Bunpoo to Gokeisei* (Grammar and Word Formation), Kurosio, Tokyo.
Yumoto, Yoko (2005) *Hukugoo Dooshi, Hasei Dooshi no Imi to Toogo* (Syntax and Semantics of Compound Verbs and Derived Verbs), Hituzi Syobo, Tokyo.

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