ON AMBIGUOUS SENTENCES WITH THE PARTICLE TO

by

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ABSTRACT

This thesis attempts to describe Japanese sentences in which *to* functions as the symmetric, concomitative, or coordinate particle. Earlier studies by Okutsu (1967), Kuno (1967-68) and Inoue (1976b) are closely examined. It is assumed that sentences with conjoined NP's like *Taroo to Hanako ga kekkon-si-ta* are all transformationally derived. In connection with this assumption, the rules of Conjunction Reduction, *Issyo ni* Insertion, NP Scrambling in NP, Conjunct Movement and Reciprocal Transformation are proposed. It is also argued that the rules should apply in the order given above.
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INTRODUCTION

0.1. The descriptive study of a language has the construction of a grammar as its goal. There have been constructed a great number of Japanese grammars. However, most of them are deficient in that they do not reflect the native speaker's knowledge of his language (i.e., competence). Although these grammars generate all the observed grammatical sentences of the language, they do not provide correct predictions of sentences not observed. In other words, such grammars are not descriptively adequate, even if they are observationally adequate. Their inadequacy seems to derive from the fact that they leave untouched (or unexpressed) many of the underlying regularities of sentences.

0.2. Recent development of the theory of transformational grammar seems to show that it is the optimal theory for describing competence (e.g., intuition about the relationship between sentences and so on). Within this theory, to describe the syntactic aspects of sentences, a grammar contains two types of rules: context-free phrase structure rules, which generate underlying (or deep) structures; and grammatical transformations, which map underlying structures onto surface structures. The intuitions about the relationship between sentences are captured by deriving related sentences from the same or highly similar underlying structures by means of transformations.
This thesis attempts to clarify the structure of Japanese sentences with the particle *to* basically within the framework of the theory proposed by Chomsky (1965). The main concern here is to determine the appropriate underlying structures for *to* sentences, and to formulate grammatical transformations for the derivation of well-formed surface structures.
Chapter 1

PRELIMINARY ANALYSIS OF DATA AND RECENT STUDIES

1.1. The particle to can be used in various kinds of sentences as the following examples show:

(1) Taroo ga Hanako to kekkon-si-ta.
   with marry do PAST
   'Taro married Hanako.'

(2) Taroo ga Hanako to gakkoo e it-ta.
   school to go
   'Taro went to school with Hanako.'

(3) Taroo to Hanako ga kekkon-si-ta.
   'Taro and Hanako married.'

(4) Taroo to Hanako ga gakkoo e it-ta.
   'Taro and Hanako went to school.'

(5) Basu to torakkku to takusii ga syoototu-si-ta.
   bus truck taxi collide
   'The bus, the truck, and the taxi collided.'

(6) Zyon ga isya to nat-ta.
   John doctor to become
   'John became a medical doctor.'

(7) Zyon ga rainen Nihon e ik-u to it-ta.
   next year Japan go say
   'John said that he would go to Japan next year.'

(8) Zyon wa byooki-na noni, gakkoo e ik-oo to si-ta.
   ill though try
   'John tried to go to school, though he was ill.'

(9) Zyon ga uti ni kaer-u to sugu, tomodati kara denwa ga kakat-home to return immediately friend from phone te ki-ta.
   come
'As soon as John returned home, he had a phone call from a friend.'

However, my concern here is with sentences like (1)-(5) only. These to's are called the symmetric particle in (1), the concomitative particle in (2), and the coordinate particle in (3)-(5).

1.1.1. In logic a relation $R$ is called symmetric, if for each $R$-pair the relation $R$ also holds in the inverse direction. In other words, a relation $R$ is called symmetric such that if $xRy$ is true, then $yRx$ is also true. According to this definition, we could say that the verbs kekkon-si in (1) and it in (2) both belong to the group of predicates which express a symmetric relation, for we have the following sentences, which are always true if sentences (1) and (2) are true.

(10) Hanako ga Taroo to kekkon-si-ta.
'Hanako married Taro.'

(11) Hanako ga Taroo to gakkoo e it-ta.
' Hanako went to school with Taro.'

However, those predicates are quite different syntactically. The difference shows up in sentences which do not take a noun phrase followed by the particle to.

(12) Taroo ga kekkon-si-ta.
'Taro married (someone).'</n(13) Taroo ga gakkoo e it-ta.
'Taro went to school.'

As the English translations show, sentence (12) implies that there
was someone to whom Taro got married, but sentence (13) does not imply that there was someone with whom Taro went to school. In other words, kekkon-si must take a noun phrase followed by the symmetric particle to (henceforth, a symmetric NP) in the deep structure, even if that NP is deleted at some stage of derivation, while it in (13) does not have such a co-occurrence restriction. Thus the underlying structure of sentence (12) would be

(14) Taro ga dareka to kekkon-si-ta,
    someone

while that of sentence (13) would be very similar to its surface structure. Such predicates like kekkon-si are often called "symmetric predicates".

Since a symmetric predicate can co-occur with a noun phrase followed by the concomitative particle to (henceforth, a concomitative NP), sentence (1) can have two readings:

(1) Taro ga Hanako to kekkon-si-ta.
   a. 'Taro got married to Hanako.'
   b. 'Taro got married (to someone) together with Hanako.'

If Hanako is Taro's sister, (b) is the most natural reading, showing that they married different spouses at a double wedding. In this reading sentence (1) can be paraphrased as

(15) Taro ga Hanako to issyo ni kekkon-si-ta.
    together

'Taro got married (to someone) together with Hanako.'

Note that sentence (15) is not ambiguous. From now on, when a sen-
ence (e.g., sentence (x)) has more than two readings (e.g., a, b, and c), I shall refer to sentence (x) in the sense of (a) reading as sentence (x/a).

1.1.2. Compare sentence (2) with the sentence given below:

(16) Taroo ga Hanako to issyo ni gakkoo e it-ta.
'Taro went to school together with Hanako.'

As the English translation shows, the paraphrase relation exists between sentences (2) and (16). However, these sentences behave differently when they are embedded as a relative clause in a noun phrase.

In Japanese, the relative clause is placed immediately before the NP it modifies. In other words, an NP containing a clause has the form \([ \text{NP} S \text{NP} ]\) in the deep structure. The surface structure of the NP is formed by simply deleting the identical NP in the embedded sentence. Thus when \(\text{Taro}\) of sentence (2) is relativized (i.e., when sentence (2) is embedded as a modifier to the NP \(\text{Taro}\)), (17) results from the application of Relativization.

(17) Hanako to gakkoo e it-ta Taroo
'Taro who went to school with Hanako'

The underlying structure of (17) would be that shown in (18).

(18) \([ \text{NP} [ S \text{Taro} \text{ ga Hanako to gakkoo e it-ta } ] \text{Taro} ]\)

In the derivation of (17) from (18), Relativization applies to (18) to delete the first occurrence of \(\text{Taro}\) (i.e., \(\text{Taro}\) in the embedded sentence) under the identity with the 'head' NP \(\text{Taro}\). Then the
dangling particle (ga in (18)), which results from the deletion of Taroo, is deleted by convention. When Taroo of sentence (16) is relativized, (19) is derived from the underlying structure (20) in the same manner.

(19) Hanako to issyo ni gakkoo e it-ta Taroo
    'Taro who went to school together with Hanako'

(20) \[ \text{NP} \left[ \text{STaroo ga Hanako to issyo ni gakkoo e it-ta} \right. \right. \left. \text{Taroo} \right] \]

Note that the paraphrase relation still holds between (17) and (19).

Next, let us see what happens when the concomitative NP's (i.e., Hanako's) of sentences (2) and (16) are relativized.

(21) \( \text{xTaroo ga gakkoo e it-ta Hanako} \)
    \( \text{xHanako who Taro went to school} \)

(22) Taroo ga issyo ni gakkoo e it-ta Hanako
    'Hanako whom Taro went to school together with'

The symbol x indicates that the sentences with it are unacceptable. Only (22) is acceptable, although the only difference between (21) and (22) is that (22) contains issyo ni while (21) does not. Their underlying structures would be those shown in (24) and (25) respectively.

(23) \[ \text{NP} \left[ \text{S Taroo ga Hanako to gakkoo e it-ta} \right. \right. \left. \text{Hanako} \right] \]
(24) \[ \text{NP} \left[ \text{S Taroo ga Hanako to issyo ni gakkoo e it-ta} \right. \right. \left. \text{Hanako} \right] \]

The difference in the grammaticality of (21) and (22) shows that a concomitative NP should not be deleted by Relativization except when it is followed by the phrase issyo ni.
Sentence (2) can be paraphrased not only by (16) but also by (25).

(25) Taro ga Hanako to tomo ni gakkoo e it-ta.
with
'Taro went to school with Hanako.'

Most native speakers would say that 
\textit{issyo ni} in (16) and 
\textit{tomo ni} in (25) are interchangeable, and that the former is less formal than the latter. But observe the following pairs of sentences:

(26) Taro wa Hanako to \{\begin{align*} & \text{a. } \textit{issyo ni} \text{ UBC no gakusei da.} \\
& \text{b. } \textit{tomo ni} \text{ of student is} \end{align*}\}
'Taro and Hanako are both students of UBC.'

(27) Sekiyu wa sekitan to \{\begin{align*} & \text{a. } \textit{issyo ni} \text{ meo-yasui.} \\
& \text{b. } \textit{tomo ni} \text{ burn easy} \end{align*}\}
'Petroleum and coal are both flammable.'

(28) Eigo wa suugaku to \{\begin{align*} & \text{a. } \textit{issyo ni} \text{ zyuuyoo de-ar-u.} \\
& \text{b. } \textit{tomo ni} \text{ important is} \end{align*}\}
'English and mathematics are both important.'

While (a) sentences of (26)-(28) are not acceptable, (b) sentences are all acceptable. Notice that the predicates of those sentences are a noun (+copula\textsuperscript{2}), an adjective, and an adjectival noun (+copula) respectively. These predicates will be referred to as "state predicates". The acceptability difference between (a) sentences and (b) sentences seems to indicate that \textit{tomo ni} has two distinct usages; one as a stylistic variant of \textit{issyo ni} as in (25) and the other as a different lexical item from \textit{issyo ni}, which should not co-occur with state predicates. Therefore, it is safe to say that sentence
(25) has the following two readings:

(25) Taroo ga Hanako to tomo ni gakkoo e it-ta.
  a. 'Taro went to school together with Hanako.'
  b. 'Taro and Hanako both went to school.'

Note that sentence (2) cannot have the second reading of sentence (25). That is, the paraphrase relation holds between sentence (2) and sentence (25/a), not between (2) and (25/b). The difference between *issyo ni* and *tomo ni* will be examined again in secs. 1.1.3.1-3 below.

1.1.3. Sentence (3) can have three readings:

(3) Taroo to Hanako ga kekkon-si-ta.
  a. 'Taro and Hanako got married (to each other).'
  b. 'Taro and Hanako got married (to someone together).'
  c. 'Taro and Hanako got married (to someone separately).'

Notice that sentence (3) takes a symmetric predicate and that it contains a conjoined NP as its subject. Sentence (3/b) is a paraphrase of sentence (1/b). Sentence (3/b) can be also paraphrased as (29), which is not ambiguous.

(29) Taroo to Hanako ga issyo ni kekkon-si-ta.
    'Taro and Hanako got married (to someone) together.'

On the other hand, sentence (3/c) means only that Taro and Hanako married different spouses, and it is noncommittal as to whether they married together or not. This sentence can be paraphrased as (30).

(30) Taroo to Hanako ga tomo ni kekkon-si-ta.
    'Taro and Hanako both got married.'
Sentence (30) is unambiguous as is sentence (29).

On the other hand, sentence (4) can have two readings only, although it seems to have the same kind of structure as sentence (3).

(4) Taroo to Hanako ga gakkoo e it-ta.
   a. 'Taro and Hanako went to school (together).'</n
   b. 'Taro and Hanako (both) went to school.'

The kind of semantic difference between sentences (3) and (4) seems to stem from the fact that the former takes a symmetric predicate, while the latter does not. Sentence (4/a) and sentence (4/b) can be paraphrased as (31) and (32) respectively.

(31) Taroo to Hanako ga issyo ni gakkoo e it-ta.
   'Taro and Hanako went to school together.'

(32) Taroo to Hanako ga tomo ni gakkoo e it-ta.
   'Taro and Hanako both went to school.'

Note that sentence (31) is also a paraphrase of sentence (16).

1.1.3.1. The semantic difference between issyo ni and tomo ni can be seen more clearly in the following dialogues:

(33) A: Taroo to Ziroo ga kekkon-si-ta-soo-da ne.
      I hear
      'I hear Taro and Jiro got married. Is that right?'

B: Aa. Taroo to Ziroo wa tomo ni kekkon-si-ta yo.
   'Yes. Taro and Jiro both got married, I tell you.'

A: issyo ni si-ta no ka.
   do  Q
   '(Lit.) Did they do together?'

   no separately  seem
'No. (Lit.) They seem to have done separately, I tell you.'

(34) A: Taroo to Ziroo ga kekkon-si-ta-soo-da ne. (=33A))
'I hear Taro and Jiro got married. Is that right?'

B: Aa. Taroo to Ziroo wa issyo ni kekkon-si-ta yo.
'Yes. Taro and Jiro got married (to someone) together, I tell you.'

A: #Tomo ni si-ta no ka.
'(Lit.) Did they both do?'

Since the first (B) sentence of (33) is noncommittal as to the
"togetherness" of Taro's and Jiro's marriages, the second (A) sen­
tence is a possible question. On the other hand, the (B) sentence
of (34) is not ambiguous as to that point, so the second (A) sentence
is a meaningless question. (The symbol # indicates that the sentence
is meaningless.)

Consider the following pairs of sentences:

(35) Eiga o mi-te, Tomoko to Yosiko wa
\begin{align*}
&\{ \begin{array}{l}
\text{a. issyo ni} \\
\text{b. tomo ni}
\end{array} \} \text{ sissin-si-ta.} \\
\text{movie see} \\
\text{'Upon seeing the movie,} \\
\{ \begin{array}{l}
\text{a. Tomoko and Yoshiko fainted together.} \\
\text{b. Tomoko and Yoshiko both fainted.}
\end{array} \}
\end{align*}

(36) Tomoko to Yosiko wa
\begin{align*}
&\{ \begin{array}{l}
\text{a. } x \text{issyo ni} \\
\text{b. tomo ni}
\end{array} \} \text{ betubetu ni syuusyoku-si-ta.} \\
\text{b. both entered the service separately.}
\end{align*}

The phrase \textit{issyo ni} in (35a) can be replaced by \textit{doozi ni} 'at the same
time', but \textit{tomo ni} in (35b) cannot. Sentence (36a) is semantically
anomalous, while sentence (36b) is interpretable. The semantic anomaly
of sentence (36a) is due to the fact that the meaning of \textit{issyo ni} is
entirely opposite to that of betubetu ni 'separately'. Therefore, a sentence without betubetu ni becomes perfectly acceptable as shown in (37).

(37) Tomoko to Yosiko wa issyo ni syuusyoku-si-ta.
   'Tomoko and Yoshiko entered the service together.'

By the same token, sentences (38) and (39) are also acceptable, although they are different from sentence (37) in meaning.

(38) Tomoko to Yosiko wa tomo ni syuusyoku-si-ta.
    'Tomoko and Yoshiko both entered the service.'

(39) Tomoko to Yosiko wa betubetu ni syuusyoku-si-ta.
    'Tomoko and Yoshiko entered the service separately.'

With respect to sentence (36b), some native speakers might not accept it as readily as (36a). It seems to me that the unacceptability of (36b)—if it is unacceptable—is due to the semantic redundancy between the two phrases tomo ni and betubetu ni.

To conclude, sentences with tomo ni are noncommittal as to the togetherness of the actions which two participants perform (as in (38)); however, that togetherness is clearly expressed in sentences with issyo ni (as in (37)).

1.1.3.2. I have mentioned in sec.1.1.2 that issyo ni should not co-occur with some kinds of predicates (i.e., state predicates). The co-occurrence restriction between issyo ni and those predicates still holds in sentences which take conjoined NP's.
(40) Satoo-san to Suzuki-san wa \{a. xissyo ni \} Nihon-zin da.  
\{b. tomo ni \} Japanese  
'Mr. Sato and Mr. Suzuki are both Japanese.'

(41) Satoo-san to Suzuki-san wa \{a. xissyo ni \} se ga takai.  
\{b. tomo ni \} tall  
'Mr. Sato and Mr. Suzuki are both tall.'

(42) Watakusi wa kono e to ano e ga \{a. xissyo ni \} suki da.  
I this picture that \{b. tomo ni \} like  
'I like both this picture and that picture.'

Therefore, we could conclude that a grammar of Japanese contains the following constraint:

(43) State predicates should not co-occur with the phrase issyo ni in a simple sentence.

This constraint implies that issyo ni may co-occur with verbs. This implication is confirmed by the fact that (a) and (b) sentences of (44)-(46) are all acceptable.

(44) a. Tomoko to Yosiko wa ima made issyo ni koko ni i-ta.  
now until here at exist  
'Tomoko and Yoshiko were here together until now.'

b. Tomoko wa ima made Yosiko to issyo ni koko ni i-ta.  
'Tomoko was here together with Yoshiko until now.'

(45) a. Tomoko to Yosiko wa ima Amerika ni it-te-i-ru.  
to go exist  
'Tomoko and Yoshiko are in America together now.'

b. Tomoko wa ima Yosiko to issyo ni Amerika ni it-te-i-ru.  
'Tomoko is in America together with Yoshiko now.'

(46) a. Taroo wa biiru to uisukii o issyo ni non-da.  
beer whiskey drink  
'Taro drank beer and whiskey together.'
b. Taroo wa biiru o uisukii to issyo ni non-da.
'Taro drank beer together with whiskey.'

In regards to the sentences in (45), one might claim that `issyo ni' co-occurs with `it, to go' in a simple sentence, which is embedded as a complement of an aspectual verb `te-i-ru'. However, although the claim is accepted, those sentences are not contrary to our expectation, for `it' is also a verb.

Next, consider the following pairs of sentences:

(47) a. Tomoko to Yosiko wa issyo ni UBC no gakusei ni nat-ta.
'Tomoko and Yoshiko became students of UBC together.'

b. Tomoko wa Yosiko to issyo ni UBC no gakusei ni nat-ta.
'Tomoko became a student of UBC together with Yoshiko.'

(48) a. 'Watakusi wa kono e to ano e ga issyo ni suki ni nat-ta.
'I became fond of this picture and that picture together.'

b. 'Watakusi wa kono e ga ano e to issyo ni suki ni nat-ta.
'I became fond of this picture together with that picture.'

In order that the constraint stated in (43) still apply to the sentences in (47), we must assume `nat' 'to become' takes a complement and that `issyo ni' co-occurs with `nat-ta', not `gakusei' (+copula), in a simple sentence; otherwise, as the constraint (43) prevents `issyo ni' from co-occurring with a noun (+copula), those sentences would be regarded as ungrammatical. However, even if we admit that `issyo ni' co-occurs with the verb `nat', we cannot account for the awkwardness of the sentences in (48). To explain the awkwardness, a further examination of the constraint on sentences with `issyo ni' is needed, but it is beyond the scope of the present study. For our purpose
we will be tentatively satisfied by saying that *issyo ni* must co-occur with verbs.

1.1.3.3. I have stated in secs. 1.1.2-3 that sentences without *issyo ni* can be synonymous with those with it. In sec. 1.1.3, I have also stated that sentences without *tomo ni* can be synonymous with those with it. This latter statement still proves valid, because the sentences below are synonymous with (b) sentences of (40)-(42).

(49) Satoo-san to Suzuki-san wa Nihon-zin da.
   'Mr. Sato and Mr. Suzuki are both Japanese.'

(50) Satoo-san to Suzuki-san wa se ga takai.
   'Mr. Sato and Mr. Suzuki are both tall.'

(51) Watakusi wa kono e to ano e ga suki da.
   'I like both this picture and that picture.'

It should be noted that these sentences take not only state predicates but also conjoined NP's. However, compare the following sentences with (b) sentences of (26)-(28), which take state predicates only.

(52) *x* Taroo wa Hanako to UBC no gakusei da.

(53) *x* Sekiyu wa sekitan to moe-yasui.

(54) *x* Eigo wa suugaku to zyuuyoo de-ar-u.

These sentences are all unacceptable. Their unacceptability stems clearly from the fact that they do not have *tomo ni*. Therefore, as far as sentences containing *tomo ni* are concerned, we could say something like this:

(55) Sentences without *tomo ni* can be synonymous with those with it, as long as they take conjoined NP's.
According to the statement given in (55), the following pairs of sentences would have to be synonymous with each other.

(56) a. Taroo wa gakkoo to kyookai e tomo ni it-ta.
   'Taro went to both school and church.'

   b. Taroo wa gakkoo to kyookai e it-ta.
   'Taro went to both school and church.'

(57) a. Taroo wa Tomoko to Yosiko to tomo ni kekkon-si-ta.
   'Taro got married (to someone) together with Tomoko and Yoshiko.'

   b. Taroo wa Tomoko to Yosiko to kekkon-si-ta.
   'Taro got married to Tomoko and Yoshiko.'

The sentences in (57) are not synonymous, though those in (56) are. As the English translations show, sentence (57a) states that Taro got married to someone other than Tomoko and Yoshiko, but sentence (57b) states that he got married to them. It should be noted, however, that (b) sentence of (58) can be synonymous with (a) sentence.

(58) a. Taroo wa Tomoko to / Yosiko to tomo ni kekkon-si-ta.
   'Taro got married to Tomoko together with Yoshiko.'

   b. Taroo wa Tomoko to / Yosiko to kekkon-si-ta.
   'Taro got married to Tomoko with Yoshiko.'

Notice that these sentences do not take conjoined NP's. Therefore, to account for the meaning difference between (a) and (b) sentences of (57), (55) should be changed into (59).

(59) Sentences without tomo ni can be synonymous with those with it, as long as they take conjoined NP's but not symmetric predicates.
1.1.4. Let us consider sentences like (5) in which three NP's are conjoined and constitute a subject. Sentence (5) is three-way ambiguous like sentence (3), although (a) is the most natural reading.

(5) Basu to torakku to takusii ga syoototu-si-ta.
   a. 'The bus, the truck, and the taxi collided (with one another).'
   b. 'The bus, the truck, and the taxi collided (with something together).'
   c. 'The bus, the truck, and the taxi collided (with something separately).'

The verb syoototu-si 'to collide' is a symmetric predicate, because if (a) sentence of (60) is true, (b) sentence is also true.

(60) a. Basu ga torakku to syoototu-si-ta.
    'The bus collided with the truck.'
   b. Torakku ga basu to syoototu-si-ta.
    'The truck collided with the bus.'

On the other hand, sentences like (61) which do not take a symmetric predicate can have no more than two readings like sentence (4), even if they have the same kind of structure as sentence (5).

(61) Taroo to Hanako to Yosiko ga dekake-ta.
    go out
   a. 'Taro, Hanako, and Yoshiko went out (together).'
   b. 'Taro, Hanako, and Yoshiko all went out.'

Sentence (61/a) can be paraphrased as

(62) Taroo to Hanako to Yosiko ga issyo ni dekake-ta.
    'Taro, Hanako, and Yoshiko went out together.'
According to these facts, a sentence which takes conjoined NP's as subject can have three readings when it takes a symmetric predicate; on the other hand, such a sentence can have no more than two readings when it does not take such a predicate.

Next, compare sentences (5/a) and (61/a) with the following pairs of sentences, in which one or two of the conjoined NP's in (5/a) and (61/a) are moved out of subject position.

(63) a. Basu to torakku ga takusii to syoototu-si-ta.
   'The bus and the truck collided with the taxi.'

b. Basu ga torakku to takusii to syoototu-si-ta.
   'The bus collided with the truck and the taxi.'

(64) a. Taroo to Hanako ga Yosiko to dekake-ta.
   'Taro and Hanako went out with Yoshiko.'

b. Taroo ga Hanako to Yosiko to dekake-ta.
   'Taro went out with Hanako and Yoshiko.'

Semantically, sentences with and without a symmetric predicate behave in different ways. Sentence (63a) is noncommittal as to whether or not the bus and the truck collided with each other, and sentence (63b) is also noncommittal as to whether or not the truck and the taxi collided with each other. That is, they are neither synonymous with each other, nor with sentence (5/a). On the other hand, sentences (64a) and (64b) are synonymous not only with each other, but also with sentence (61/a). They can be paraphrased as (65a) and (65b) respectively.

(65) a. Taroo to Hanako ga Yosiko to issyo ni dekake-ta.
   'Taro and Hanako went out together with Yoshiko.'
b. Taroo ga Hanako to Yosiko to issyo ni dekake-ta.
'Taro went out together with Hanako and Yoshiko.'

1.2. There are some analyses dealing with the data presented so far. I will examine them closely in the sections below.

1.2.1. Among such works, Okutsu (1967) was the first one done within the framework of transformational grammar, although it only dealt with sentences containing symmetric predicates. The following claims are made on the basis of the paraphrase relations between such sentences.

(66) (i) Sentences like (3/a) are derived from sentences like (1/a) by a transformational rule which is formulated in (67).

(ii) Sentences like (3/b) are derived from sentences like (1/b) or (15) by a transformational rule which is formulated in (68). Note that the underlying structure of sentence (1/b) is considered to be the same as that of sentence (15).

(iii) Sentences like (3/c) are derived from conjoined sentences like (69) by Conjunction Reduction, though this term is not employed.

(67) $X [NP_1 C]_{Subj} Y [NP_2 C]_{Symm Z} \xrightarrow{OPT} X [NP_1 Conj NP_2 Conj C]_{Subj Y Z}$

(Subj=Subject, Symm=Symmetric, C=Case marker, Conj=Conjunction, OPT=Optional)

(68) $X [NP_1 C]_{Subj} Y [NP_2 C]_{Concom Z} \xrightarrow{OPT} X [NP_1 Conj NP_2 Conj C]_{Subj Y Z}$

(Concom=Concomitative)

(69) Taroo ga kekkon-si, Hanako ga kekkon-si-ta.
'Taro got married, and Hanako got married.'

The weakness of Okutsu's claims lies in the fact that there are a number of sentences which cannot be accounted for by the rules of (67) and (68). Consider the following sentences:

(70) Nihon ga Doitu to Amerika to tatakat-ta.
     'Japan fought Germany and America.'

(71) Nihon ga Doitu to Amerika to tatakat-ta.
     'Japan fought America with Germany.'

Notice that these sentences take a symmetric predicate tatakat 'to fight'. Sentences (70) and (71) are both ambiguous, and they can convey the following readings respectively.

(70) Nihon ga Doitu to Amerika to tatakat-ta.
     a. 'Japan fought Germany and America (at the same time).'  
     b. 'Japan fought Germany and America (separately).'  
     c. 'Japan fought (some country) with Germany and America.'

(71) Nihon ga Doitu to Amerika to tatakat-ta.
     a. 'Japan fought Germany with America.'
     b. 'Japan fought America with Germany.'

As sentence (70/a) meets the SD (Structural Description) of the rule (67), this rule can apply to yield (72), the meaning of which is entirely different from that of (70/a).

(72) Nihon to Doitu to Amerika ga tatakat-ta.
     'Japan, Germany, and America fought.'

The second claim stated in (66) implies that sentence (72) can be
synonymous with sentence (70/a), but this is not the case. Though
sentence (72) has various readings, it can never be synonymous with
sentence (70/a).

(72) Nihon to Doitū to Amerika ga tatakat-ta.
   a. 'Japan, Germany, and America fought (one another).'
   b. 'Japan, Germany, and America fought (some country together).'
   c. 'Japan, Germany, and America fought (some country at
different times).'

Sentence (72) is derivable not only from sentence (70/a), but also
from sentences (70/c), (71/a) and (71/b). In the case of (70/c)
rule (68) is applied, and in the case of (71/a) and (71/b) rules
(67) and (68) are both applied. However, sentence (72) can be synony­
mos with neither those sentences nor sentence (70/a). Thus, sentence
(72) cannot be generated by Okutsu's grammar.

The same kind of problem occurs in the derivation of sentence
(73) in the sense of (a) reading.

(73) Taro to Hanako ga kekkon-si-tagat-ta.
   want
   a. 'Taro and Hanako wanted to get married (to each other).'
   b. 'Taro and Hanako wanted to get married (to someone
together).'
   c. 'Taro and Hanako (both) wanted to get married (to someone).'

According to Okutsu, sentence (73/a) would have to be derived from
the sentence below.

(74) Taro to Hanako to kekkon-si-tagat-ta.
    'Taro wanted to get married to Hanako.'
However, sentence (74) cannot be synonymous with sentence (73/a). Sentence (74) represents only Taro's intention of marrying, while sentence (73/a) represents Taro's and Hanako's reciprocal desire. Therefore, sentence (73/a) cannot be generated by Okutsu's grammar either.

1.2.2. The proposals made by Kuno (1967-68) are mainly based on Lakoff and Peters (1966). One proposal states that a grammar of Japanese should contain a rule schema of the form

\[(75) \text{NP} \rightarrow \text{NP}^n \text{to}, n>2\]

where (75) represents an infinite set of rules, each having the form \(\text{NP} \rightarrow \text{NP} \cdots \text{NP} \text{to}\). These rules generate base structures of the form

\[(76)\]

\[
\begin{array}{c}
\text{NP} \\
\text{NP} \cdots \text{NP} \text{to}
\end{array}
\]

Consequently, sentences like (3/a) are generated by one of the above rules; on the other hand, to relate these sentences to sentences like (1/a), Kuno proposes a rule of Conjunct Movement. This rule can be written as follows:

\[(77) \text{Conjunct Movement}\]

\[
\begin{array}{c}
\text{SD}: [ [\text{NP to}] - \text{NP} ] \text{NP} \rightarrow \text{VP} \\
1 \quad 2 \quad 3 \quad \xrightarrow{\text{OPT}} \\
\text{SC}: \emptyset \quad 2 \quad 1+3
\end{array}
\]

If we follow Kuno, sentence (1/a) would be derived from sentence (3/a) by Conjunct Movement.
The problems inherent in Okutsu's analysis which were mentioned above can be solved using Kuno's proposals. Take the second problem as an example. The following would be the underlying structures of sentences (73/a) and (74) respectively.

By the application of the principle and the rule stated in footnote 10, structures (78) and (79) are converted into (80) and (81) respectively.
To (80) Equi NP Deletion applies on the $S_0$ cycle to delete $NP_2$, and then Case Marking applies to yield the surface structure of sentence (73/a). To derive the surface structure of sentence (74) from (81), Case Marking applies first on the $S_1$ cycle and then Conjunct Movement stated in (77) applies to yield $[S_0 \text{Taroo} [S_1 \text{Taroo ga Hanako to kekkon-si}] \text{tagat-ta}]$. Next, Equi NP Deletion applies on the $S_0$ cycle before the application of Case Marking to delete the second Taroo in $S_1$.

Let us now examine how sentences (3/b) and (3/c) are derived. Kuno posits (82) and (83) as their respective underlying structures.

$$[\text{dareka Taroo to }]_{NP} \text{kekkon-si-ta}_1 + [\text{dareka Hanako to }]_{NP} \text{kekkon-si-ta}_1$$
These structures are different only in that the predicate of each conjunct has an identical index in (82), while it does not in (83). The derivation of sentence (3/b) from (82) is as follows:

\[(84) \text{[dareka Taroo to]}_{NP} \text{ kekkon-si-ta}_1 + \text{[dareka Hanako to]}_{NP} \text{ kekkon-si-ta}_1 \] (\#(82))

\[\Rightarrow \text{[dareka to Taroo]}_{NP} \text{ ga kekkon-si-ta}_1 + \text{[dareka to Hanako]}_{NP} \text{ ga kekkon-si-ta}_1\]

\[\Rightarrow \text{Taroo ga dareka to kekkon-si-ta}_1 + \text{Hanako ga dareka to kekkon-si-ta}_1\]

\[\Rightarrow \text{Taroo ga kekkon-si-ta}_1 + \text{Hanako ga kekkon-si-ta}_1\]

\[\Rightarrow \text{[Taroo to Hanako]}_{NP} \text{ ga kekkon-si-ta}_1\]

After the application of the universal principle and certain rules, Conjunct Movement, Indefinite Pronoun Deletion and Conjunction Reduction apply in that order. Sentence (3/c) is derived from (83) in the same manner. Thus it would be safe to say that the derivation of sentence (4/a) is that shown in (85).

\[(85) \text{Taroo ga gakkoo e it-ta}_1 + \text{Hanako ga gakkoo e it-ta}_1\]

\[\Rightarrow \text{[Taroo to Hanako]}_{NP} \text{ ga gakkoo e it-ta}_1\]

Then, how does Kuno relate sentence (3/b) to sentence (1/b)? He assumes that a grammar has a universal principle which replaces each conjunct with the other in conjoined NP's. If the principle applies to the surface structure of (3/b), the structure will be converted
into $[\text{Hanako to Taroo}]_{\text{NP}} \text{ ga kekkon-si-ta}_1$. By applying Conjunct Movement to this structure, the surface structure of (1/b) is derived.

Kuno's proposals presented above involve a number of serious problems. One of these is related to his mechanism for generating a phrasal conjunction. As the mechanism is too powerful, it can produce underlying structures such as:

$([\text{Taroo Hanako to}]_{\text{NP}} \text{ Ziroo to}]_{\text{NP}} [\text{Zyon Mearii to}]_{\text{NP}} \text{ to }]_{\text{NP}} \text{ kekkon-si-ta}$

However, we do not have any utterance which corresponds to this structure.

The second problem concerns the derivation of the following sentence.

(87) Kinoo kekkon-si-ta Taroo to Hanako wa UBC no gakusei da.

'Yesterday Taro and Hanako who got married yesterday are students of UBC.'

According to Kuno, state predicates (such as $\text{gakusei da}$ 'to be a student') can take neither a phrasal conjunction nor an identical index. Thus, if it is the case that Taro and Hanako got married to each other, the underlying structure of sentence (87) would have to be something like this:
On the $S_3$ and $S_4$ cycles, Case Marking applies first and then Conjunct Movement applies to yield (89) as the subtree $S_1$.

As Conjunct Movement is an optional rule, we do not have to apply it; however, if we do not, we cannot get to the $S_0$ cycle, for Relativization is blocked on the $S_1$ cycle because of a general constraint. 

The structure (89) meets the SD of Relativization, and this rule applies to yield:
The subtree $S_2$ becomes (91) in the same manner.

\[(91) \left[ S_2 \left[ NP_2 \left[ S_4 \text{Hanako to kinoo kekkon-si-ta] Taroo] UBC no gakusei da} \right. \right] \right. \]

Now we must conjoin the two NP's $NP_1$ and $NP_2$ in order to get the surface structure of (87). However, we do not have a rule to do it. Although we have Conjunction Reduction, this rule just converts $S_0$ into (92). Note that Case Marking applies on the $S_1$ and $S_2$ cycles.

\[(92) \left[ S \left[ NP \left[ NP_1 \left[ S_3 \text{Hanako to kinoo kekkon-si-ta] Taroo] to} \right[ NP_2 \left[ S_4 \text{Taroo to kinoo kekkon-si-ta] Hanako]] ga UBC no gakusei da} \right. \right] \right] \right. \]

Therefore, I conclude that sentence (87) in the sense of 'those who got married to each other' cannot be generated by Kuno's grammar.

The third problem is related to Conjunct Movement. Kuno states that sentences (1/b) and (15) are derived from sentence (3/b) by this rule, as sentence (1/a) is from sentence (3/a). In the derivation of sentence (15), **issyo ni** is attached to the right of the term which is moved to the left of the VP by Conjunct Movement, while it is not in the derivations of sentences (1/a) and (1/b). To explain this discrepancy, Kuno annexes the following conditions to Conjunct Movement.

\[(93) (i) \text{issyo ni is attached optionally to the moved term, when} \]
this term is a conjunct of conjoined NP's which are
derived from conjoined sentences with identical indices.

(ii) Issyo ni is attached obligatorily to the moved term, when
this term is a conjunct of doubly-conjoined NP's which are
generated in the base component.

(iii) Issyo ni must not be attached to the moved term, when
this term is a conjunct of conjoined NP's (but not doubly-
conjoined ones) generated in the base component.

The existence of issyo ni in sentence (15) is accounted for by con-
dition (93i), because the sentence is derived from the structure
underlying sentence (3/b), whose conjoined NP's are derived from
conjoined sentences as shown in (84). Condition (93ii) explains
issyo ni in sentence (94), the derivation of which is shown in (95).

(94) Mearii ga Zyon to issyo ni kenka-si-ta. (=Kuno's (6.27))
Mary John quarrel
'Mary quarrelled (with someone) together with John.'

(95) \[ N_p \text{dareka to } N_p \text{Zyon to Mearii} \] \text{ga kenka-si-ta}
\[ \Rightarrow N_p \text{Zyon to Mearii} \text{ga dareka to kenka-si-ta} \]
\[ \Rightarrow \text{Mearii ga Zyon to issyo ni dareka to kenka-si-ta} \]
\[ \Rightarrow \text{Mearii ga Zyon to issyo ni kenka-si-ta} \ (= (94)) \]

Condition (93iii) is necessary to block the derivation of sentence
(15) from sentence (1/a), for these sentences cannot be synonymous.
The above conditions, however, are clearly not sufficient to account
for the behavior of issyo ni. First, they cannot explain why sentence
(29) can take issyo ni. The sentence is considered to be derived
from the structure underlying sentence (3/b), the derivation of
which is shown in (84). Though Conjunct Movement applies in (84), *issyo ni* must not be attached to the moved term because of condition (93iii). Therefore, the phrase in (29) cannot be generated by Kuno's grammar. Secondly, the conditions stated in (93) depend on whether the moved term is a conjunct of conjoined NP's derived from conjoined sentences or not. However, there is no way of knowing this.

1.2.3. Concerning sentence (3), Inoue (1976b) makes the following proposals:

(96) (i) Sentence (3/a) is derived from sentence (1/a) by a transformation which inserts a symmetric NP into a subject NP. The derivation of sentence (3/a) is shown in (97a).

(ii) Sentence (3/b) is generated in the base component, and sentence (1/b) as well as sentence (15) is derived from it by Conjunct Movement. The derivation of (1/b) and (15) is shown in (97b).

(iii) Sentence (3/c) is derived from conjoined sentences like (69) through Conjunction Reduction. The derivation of sentence (3/c) is shown in (97c).

(97) a. Taroo ga Hanako to kekkon-si-ta. (=1/a))
"Taro got married to Hanako."

⇒ Taroo to Hanako ga kekkon-si-ta. (=3/a))
"Taro and Hanako got married (to each other)."

b. Taroo to Hanako ga kekkon-si-ta. (=3/b)
"Taro and Hanako got married (to someone together)."
Therefore, sentence (4/a) would be generated in the base component, and sentence (4/b) would be derived from conjoined sentences.

Inoue's proposals involve a serious problem with relation to the derivation of sentences with a symmetric predicate. According to the proposal (96i), sentence (5/a) would have to be derived from either sentence (63a) or sentence (63b) by the insertion rule. However, on the basis of the fact that (5/a) can be synonymous with neither (63a) nor (63b), she claims that it should be derived from sentence (98) through a deletion rule.

(98) Basu to torakku to takusii ga basu to torakku to takusii to syoototu-si-ta.

'The bus, the truck, and the taxi collided with the bus, the truck, and the taxi.'

This claim implies the possibility of sentence (3/a) being derived from the sentence given below.

(99) Taroo to Hanako ga Taroo to Hanako to kekkon-si-ta.

'Taro and Hanako got married to Taro and Hanako.'

However, she would deny the possibility on the grounds of the accept-
ability difference between the following sentences:

(100) \( ^{\text{x}} \) Taro to Hanako ga tagai ni kekkon-si-ta.

'Taro and Hanako got married to each other.'

(101) Basu to torakku to takusii ga tagai ni syoototu-si-ta.

'The bus, the truck, and the taxi collided with one another.'

Her argument would be something like this: (i) as sentence (5/a) is derived from sentence (98) via (101), if sentence (3/a) is derived from sentence (99), (3/a) must be derived from (99) via the ungrammatical sentence (100); (ii) it is incorrect to derive a grammatical sentence from an ungrammatical one; (iii) therefore, sentence (3/a) should not be derived from sentence (99). However, although I accept step (i) I do not accept (ii), therefore I hesitate to accept the conclusion (iii). In addition, if Inoue's argument is correct, sentence (102) will never be derived from sentence (103), because sentence (104) is not acceptable.

(102) Taro to Ziroo to Saburoo ga kyoodai da.

'Taro, Jiro, and Saburo are brothers.'

(103) Taro to Ziroo to Saburoo ga Taro to Ziroo to Saburoo to kyoodai da.

'Taro, Jiro, and Saburo are brothers of Taro, Jiro and Saburo.'

(104) \( ^{\text{x}} \) Taro to Ziroo to Saburoo ga tagai ni kyoodai da.

That is, sentence (102) cannot be generated by Inoue's grammar. Note that kyoodai da 'to be a brother' is a symmetric predicate, because if (105a) is true (105b) is also true.
(105) a. Taroo ga Zirou to kyoodai da.
'Taro is a brother of Jiro.'
b. Zirou ga Taroo to kyoodai da.
'Jiro is a brother of Taro.'

To conclude, Inoue's grammar is inadequate in that it permits the derivation of sentence (3/a) from not only sentence (1/a) but also from sentence (99).

Inoue's other problem is related to the rule of Conjunct Movement. She does not give the formulation of the rule, but it is not difficult to suppose that she regards it something like the one proposed by Kuno (i.e., (77)). If this is the case, Conjunct Movement would have to apply to sentences like (3/a) and (3/c) as well as to sentences like (3/b), because they all have the same structure at the stage where the rule applies. If we apply the rule to sentences (3/a) and (3/c), we will get sentence (1) (i.e., Taroo ga Hanako to kekko-si-ta) in both cases. However, this resulting sentence poses a problem. That is, as sentence (3/a) is derived from sentence (1/a) as shown in (97a), the sentence which is derived from (3/a) by Conjunct Movement and the sentence from which (3/a) is derived become the same sentence; moreover, sentence (3/c) cannot be synonymous with the sentence which is derived from it by the rule. This fact suggests that Conjunct Movement should not apply to sentences (3/a) and (3/c). That is, Inoue's Conjunct Movement also needs some conditions as Kuno's does. My discussion of Kuno's conditions stated in (93) also applies to Inoue's. As sentences (3/a-c) have the same structure at the point when Conjunct Movement applies, it is difficult to prevent the rule from applying to sentences (3/a) and (3/c).
Inoue might argue that this difficulty is overcome by arranging the rules in question in the proper order. To make Conjunct Movement applicable only to sentence (3/b), she might propose that the rule applies before Conjunction Reduction and the insertion rule which derives sentence (3/a) from (1/a). However, even if the rules are arranged in this way, there is still a problem. In this case, the problem lies in the fact that the sentence derived from (3/b) by Conjunct Movement and sentence (1/a) are of exactly the same structure. Thus, if the order is adopted, sentence (3/a) will be derived from the two sentences whose structures are the same but whose meanings are different.
2.1. In the previous sections, I have reviewed the proposals of Okutsu (1967), Kuno (1967-68) and Inoue (1976b) which relate to the derivation of sentences (1)-(5), in particular (1) and (3). Among these studies, the latter two seem to present observationally adequate grammars. However, both of these grammars are not descriptively adequate, because they do not always provide correct predictions about the relations between the sentences. Their defect seems to stem from the fact that they contain the rule schema stated in (75). The introduction of the rule schema not only makes those grammars too powerful, but in Kuno makes the formulation of Conjunct Movement more complicated. In Inoue, it derives an ungrammatical sentence from two different underlying structures. Therefore, rejecting the rule schema (75) I take the position that sentences with conjoined NP's (such as sentences (3)-(5)) are all transformationally derivable.

2.2. Following Kuno and others, I assume that sentences like (3/c) are derived from conjoined sentences by a rule of Conjunction Reduction.

(3/c) Taroo to Hanako ga kekkon-si-ta.
'Taro and Hanako got married (to someone separately).'

2.2.1. Conjunction Reduction can be stated roughly as in (106).
(106) Conjunction Reduction

a. SD: $\left[ X - A \right]_B^n - AND \stackrel{OPT}{\longrightarrow} B$

SC: $\left[ 1 \ 2 \ 3 \right]_B$

b. SD: $\left[ A - X \right]_B^n - AND \stackrel{OPT}{\longrightarrow} B$

SC: $1# \left[ 0 \ 2 \ 3 \right]_B$

Condition: all occurrence of A are identical.

The above is a Japanese version of Ross's formulation of Conjunct Movement. Therefore, the notation employed in (106) is exactly what he uses in his formulation of the rule. He states:

This notation should be interpreted to mean that in any coordinate node of the category B, which dominates any number of conjuncts which are also of the category B, and each of which either ends or begins with a constituent of category A, where all occurrences of A are identical, all of these occurrences of A are superimposed, and adjoined to the conjoined node B. [Ross (1967): 220]

Thus, Conjunct Movement derives sentence (3/c) from the underlying structure (107) in the following manner:

(107)

```
   S0
  /   \      AND
 /     \     /   \
S1      S2
      / \
NP1   VP   NP2   VP

Taroo ga dareka to kekkon-si-ta Hanako ga dareka to kekkon-si-ta
```

Conjunction Reduction
S

| S_1  S_2 AND  dareka to kekkon-si-ta |
|---|---|---|
| NP_1  NP_2 |
| Taroo ga Hanako ga |

↓
S_1, S_2 Pruning

S

| S_0 AND  dareka to kekkon-si-ta |
|---|---|---|
| NP_1  NP_2 |
| Taroo ga Hanako ga |

↓
Node Relabeling

S

| NP_0 AND  dareka to kekkon-si-ta |
|---|---|---|
| NP_1  NP_2 |
| NP_3  NP_4 |
| Taroo ga Hanako ga |

↓
Conjunction Reduction

S

| NP ga  dareka to kekkon-si-ta |
|---|---|---|
| NP_0 |
| NP_1  NP_2 AND |
| NP_3  NP_4 |
| Taroo Hanako |

↓
NP Pruning
The nodes $S_1$ and $S_2$ in (108), which is generated by Conjunction Reduction, are pruned by a general convention. In (109) the node $S_0$ is changed into NP by a special node relabeling convention which converts structures of the form $[X \text{ AND}]_Y$ into those of the form $[X \text{ AND}]_X$, whenever $Y$ immediately dominates conjoined structures of $X$. Then, Conjunction Reduction applies to $NP_0$ in (110) to yield (111). After the general convention prunes $NP_3$ and $NP_4$ in (111), the universal principle and the rule stated in footnote 15 apply to (112) to yield (113). Finally, Indefinite Pronoun Deletion$^{19}$ applies to this structure to yield the surface structure of sentence (3/c). Sentence (30) is derived from the surface structure of (3/c) by an optional transformation which adjoins the element tomo ni.

(30) Taroo to Hanako ga tomo ni kekkon-si-ta.
2.2.2. As I mentioned in sec. 1.2.3, Inoue also derives sentences like (3/c) by Conjunction Reduction. However, the operation of her Conjunction Reduction is entirely different from that of mine. She regards it as deletion but I regard it as adjunction. Therefore, if we follow her, sentence (114) and (115) would be derived from the underlying structures (116) and (117) respectively.

(114) Taro ga hon to zassi o kat-ta.
     book magazine buy
     'Taro bought a book and a magazine.'

(115) Taro ga hon o kat-te yon-da.
     read
     'Taro bought and read the book.'

(116)
\[
\begin{array}{c}
S \\
\text{and} \\
S \\
NP \quad NP \quad \text{Pred} \\
\text{Taro} \quad \text{book} \quad \text{buy} \\
\quad \text{Taro} \quad \text{zassi} \quad \text{magazine}
\end{array}
\]

(Pred=Predicate)

(117)
\[
\begin{array}{c}
S \\
\text{and} \\
S \\
NP \quad NP \quad \text{Pred} \\
\text{Taro} \quad \text{book} \quad \text{buy} \\
\quad \text{Taro} \quad \text{zassi} \quad \text{read}
\end{array}
\]

In the derivation of (114), the circled Pred and NP in (116) are deleted by Conjunction Reduction; similarly, in that of (115) the circled NP's in (117) are deleted. If the boxed NP in (117)
is deleted by the rule, we will get an ungrammatical sentence.

(118) Taroo ga kat-te, hon o yon-da.

Therefore, Inoue's rule of Conjunction Reduction must contain some condition like (119) to block the derivation of (118) from (117).

(119) If the identical elements are neither the leftmost nor the rightmost element of each conjunct, delete all identical elements except for the one of the leftmost conjunct.

However, unfortunately this condition does not work well. Consider the following structure:

(120)

According to (119), the circled NP hon o, as well as the other circled elements in (120), should be deleted by Conjunction Reduction, but if this is done an ungrammatical sentence will result.

(121) Taroo ga Hanako ni hon o Ziroo ni age-ta.

To get a grammatical sentence from (120), we must delete the boxed NP by Conjunction Reduction, not the circled one.

(122) Taroo ga Hanako to Ziroo ni hon o age-ta.

'Taro gave a book to Hanako and Jiro.'
This fact seems to provide a piece of evidence against Inoue's Conjunction Reduction.

On the other hand, Conjunction Reduction stated in (106) predicts that sentences (118) and (121) are ungrammatical. That is, those sentences cannot be derived by the rule from the structures (123) and (124) which underlie sentences (115) and (122) respectively.

(123)

(124)

Sentence (115) is derived from (123) via (125a) and (125b).

(125) a. \[
\left[ S \left[ \_NP\text{Taroo ga} \right] \right] \left[ VP \left[ \_VP \text{hon o kat-ta} \right] \right] \left[ \_VP \text{hon o yon-da} \right] \text{AND} \]

b. \[
\left[ S \left[ \_NP\text{Taroo ga} \right] \right] \left[ VP \left[ \_NP \text{hon o} \right] \right] \left[ \_V \left[ \_V \text{kat-ta} \right] \right] \left[ \_V \text{yon-da} \right] \text{AND} \]

Sentence (122) is derived from (124) via (126a-c).

(126) a. \[
\left[ S \left[ \_NP\text{Taroo ga} \right] \right] \left[ VP \left[ \_VP \text{Hanako ni hon o age-ta} \right] \right] \left[ \_VP \text{Ziroo ni hon o age-ta} \right] \text{AND} \]
The above facts indicate that the rule of Conjunction Reduction stated in (106) seems to be descriptively more adequate than the one proposed by Inoue.

2.2.3. It is not always the case that Conjunction Reduction can apply to conjoined structures whenever they meet its SD. Observe the following pairs of sentences:

(127) a. Watakusi wa ano hon to kono hon o yon-da.
   'I read that book and this book.'
   b. Watakusi wa ano to kono hon o yon-da.

(128) a. Watakusi wa omosiroi hon to tumaranai hon o yon-da.
   'I read an interesting book and a boring book.'
   b. Watakusi wa omosiroi to tumaranai hon o yon-da.

(129) a. Watakusi wa kinoo kat-ta hon to ototoi kat-ta hon o yon-da.
   'I read the book which I bought yesterday and the book which I bought the day before yesterday.'
   b. Watakusi wa kinoo kat-ta to ototoi kat-ta hon o yon-da.

(130) a. Watakusi wa o-kome to o-imo o kat-ta.
   'I bought rice and sweet potatoes.'
   b. Watakusi wa o-kome to imo o kat-ta.

(131) a. Watakusi wa Amerika e to Kanada e it-ta.
   'I went to America and Canada.'
b. Watakusi wa Amerika to Kanada e it-ta.
'I went to America and Canada.'

The structures of the underlined parts in (a) sentences of (127)-(130) are informally represented in (132), and the underlined part in (131a) has the structure (133).

(132)
```
 (NP
  (NP
    (Det) N
    (Adj) S
    (Hon)
  )
  (NP
    (Det) N
    (Adj) S
    (Hon)
  )
  AND
)
```

(133)
```
 (NP
  (NP
    N
  )
  (NP
    N
  )
  AND
  (P
    P
  )
)
```

The ungrammaticality of the (b) sentences of (127)-(130) illustrates that Conjunction Reduction should not apply to structures like (132), while the grammaticality of sentence (131b) shows that the transformation must apply to structures like (133). That is, structures (134a) and (134b) should not be derived from (132) by Conjunction Reduction, but structure (135) must be derived from (133).

(134) a.
```
 (NP
  (Det)
  (Adj)
  (S)
  (AND
    (Det)
    (Adj)
    (S)
  )
  N
)
```

(134) b.
```
 (Hon)
  (N
    N
  )
  AND
)
To describe these facts, a condition like (136) must be incorporated into Conjunction Reduction stated in (106).

(136) When the category B is NP, Conjunction Reduction must not apply to the structures in which the category A is a main constituent of the NP or Honorific Marker, and it must apply to the structures in which the category A is Particle.

Needless to say, the main constituent of NP is N in structure (132) and NP in structure (133).

2.3. In the sections below, I will re-analyze sentences with *issyo ni* and finally I will propose that those sentences are derived from conjoined sentences with identical indices.

2.3.1. Consider the following sentences:

(137) Taroo to Hanako ga *issyo ni* kuruma o kat-ta.  
\[\text{car buy}\]  
'Taro and Hanako bought a car together.'

(138) Taroo to Hanako ga *issyo ni* syoosetu o kai-te-i-ru.  
\[\text{novel write}\]  
'Taro and Hanako are writing a novel together.'

These sentences are ambiguous.

(137) a. 'Taro and Hanako jointly bought a car.'

b. 'Taro and Hanako bought cars together.'

(138) a. 'Taro and Hanako are jointly writing a novel.'
b. 'Taro and Hanako are writing novels together.'

Speaking of sentence (137), (b) reading indicates Taro and Hanako bought cars respectively and that their actions of buying cars were performed at the same time and place. Thus the difference between the two readings depends on whether the car(s) which they bought is(are) exactly the same or not. The same is true of sentence (138). Its meaning difference depends on whether or not the novel Taro is writing is strictly identical to the one Hanako is writing. These facts suggest that sentence (31) can also have two readings.

(31) Taroo to Hanako ga issyo ni gakkoo e it-ta.
     a. 'Taro and Hanako went to school [the same school] together.'
     b. 'Taro and Hanako went to school [different schools] together.'

On the other hand, the sentences given below are not ambiguous.

(139) Taroo to Hanako ga issyo ni zisatu-si-ta.
     suicide do
     'Taro and Hanako committed suicide together.'
(140) Tomoko to Yosiko ga issyo ni sissin-si-ta.
     faint
     'Tomoko and Yoshiko fainted together.'

Note that sentences (139) and (140) take a self-controllable verb and a non-self-controllable verb respectively. Those sentences indicate only that the action expressed by a verb was performed by the conjoined NP's (e.g., Taro and Hanako in (139)) at the same time and place. How does it come about that sentences like (137) have two readings while those like (139) have only one reading? One reason that I can
think of at present is that sentences like (137) have an NP in addition to a conjoined NP while those like (139) have only a conjoined NP. Yet, this line of reasoning might be fallible, since we have sentences which have an NP in addition to a conjoined NP and which do not carry two readings.

(141) Watakusi ga pen to enpitu o issyo ni kat-ta.  
pen pencil  
'I bought a pen and a pencil together.'

(142) Watakusi ga hon to tegami o issyo ni okut-ta.  
letter send  
'I sent the book and the letter together.'

In these sentences, the reason seems to lie in the fact that we cannot imagine two different watakusi's. Then, how should we deal with the sentences given below?

(143) Watakusi wa Taroo to Hanako ni issyo ni sen-en-satu o age-ta.  
1000 yen bill give  
'(Lit.) I gave a 1000-yen bill to Taro and Hanako together.'

(144) Watakusi wa kono mondai o seizi-men to keizai-men kara issyo  
problem politics aspect economy from  
ni kangae-te-mi-ta.  
think try  
'(Lit.) I tried to think over this problem from a political aspect and an economical aspect together.'

Sentence (143) can have two readings: in one reading, Taro and Hanako as a unit got a 1000-yen bill, and in the other reading they each got one. However, sentence (144) seems to have only one reading, because the NP kono mondai 'this problem' refers to a specific thing like watakusi in (141). From the data given so far, we could say that a sentence with issyo ni can have two readings, when it has not only
a conjoined NP but also a NP whose referent is ambiguous.

Next, let us consider the meaning of issyo ni. It indicates temporal and spatial togetherness. Thus it is not possible for issyo ni to co-occur with a conjoined NP whose conjuncts indicate place or time, because it is impossible to do something at different times in the manner of "togetherness" and also impossible to be in or to go to different places in the manner of "togetherness". This prediction is confirmed by the fact that sentences (145)-(149) are all unacceptable.

(145) \text{X} Taroo ga ni-zi to san-zi ni issyo ni gakkoo e it-ta.  
two o'clock three  
\'X Taro went to school at two o'clock and three o'clock together.'

(146) \text{X} Taroo ga 1970-nen to 1972-nen ni issyo ni zisatu-si-ta.  
year  
\'X Taro committed suicide in 1970 and 1972 together.'

(147) \text{X} Hon-ya ga ni-kai to san-kai ni issyo ni ar-u.  
bookstore 2nd floor 3rd on exist  
\'X The bookstore is on the second floor and third floor together.'

(148) \text{X} Taroo ga gakkoo to kyookai e issyo ni it-ta.  
church  
\'X Taro went to school and church together.'

(149) \text{X} Taroo ga kono miti to ano miti o issyo ni toot-ta.  
road go along  
\'X Taro went along this road and that road together.'

To summarize:

(150) (i) When a sentence with issyo ni contains not only a conjoined NP but also an NP whose referent is ambiguous, the sentence can have two readings. If the referent of the NP is not ambiguous, the sentence receives only a "joint interpretation".
(ii) When NP's which indicate place or time are conjoined, the conjoined NP's should not co-occur with *issyo ni.*

2.3.2. Compare sentences (137)-(142) with the following sentences, where one of the conjoined NP's is moved to the position before *issyo ni.*

(151) Taroo ga Hanako to *issyo ni* kuruma o kat-ta.
'Taro bought a car together with Hanako.'

(152) Taroo ga Hanako to *issyo ni* syoosetu o kai-te-i-ru.
'Taro is writing a novel together with Hanako.'

(153) Taroo ga Hanako to *issyo ni* zisatu-si-ta.
'Taro committed suicide together with Hanako.'

(154) Tomoko ga Yosiko to *issyo ni* sissin-si-ta.
'Tomoko fainted together with Yoshiko.'

(155) Watakusi ga pen o enpitu to *issyo ni* kat-ta.
'I bought a pen together with a pencil.'

(156) Watakusi ga hon o tegami to *issyo ni* okut-ta.
'I sent the book together with the letter.'

These sentences are synonymous with sentences (137)-(142) respectively, though sentences (151) and (152) are ambiguous and sentences (153)-(156) are not. However, it is not always the case that sentences which take conjoined NP's as objects are semantically equivalent to those where one of the conjoined NP's is moved.

(157) Taroo ga Tomoko to *Yosiko o issyo ni* mi-ta.
look at
'Taro looked at Tomoko and Yoshiko together.'

(158) Taroo ga Tomoko o *Yosiko to issyo ni* mi-ta.
'Taro looked at Tomoko together with Yoshiko.'
Sentence (157) has only one reading, but sentence (158) can have two readings.

(158) a. 'Taro looked at Tomoko and Yoshiko together.'
    
b. 'Taro and Yoshiko looked at Tomoko together.'

Sentences (158/a) and (158/b) are synonymous with sentences (157) and (159) respectively.

(159) Taro to Yoshiko ga issyo ni Tomoko o mi-ta.
    'Taro and Yoshiko looked at Tomoko together.'

Note that sentence (159) is not ambiguous and that it is synonymous with sentence (160).

(160) Taro ga Yoshiko to issyo ni Tomoko o mi-ta.
    'Taro looked at Tomoko together with Yoshiko.'

That is, sentences (158/b), (159) and (160) are synonymous with one another.

Next, compare sentence (143) with the following sentence:

(161) Watakusi wa Taro ni Hanako to issyo ni sen-en-satu o age-ta.
    'I gave a 1000-yen bill to Taro together with Hanako.'

Sentence (161) is five-way ambiguous: it can carry not only the two readings sentence (143) has, but also the readings that sentences (162) and (163) have.

(162) Hanako to watakusi wa issyo ni Taro ni sen-en-satu o age-ta.
    a. 'Hanako and I jointly gave a 1000-yen bill to Taro.'
    
b. 'Hanako and I each gave a 1000-yen bill to Taro.'
In (a) reading of (162) Taro gets only 1000 yen, but in (b) reading he gets 2000 yen. Sentence (163) is unusual, although it is interpretable in the sense that Hanako is given as a bride; however, if Hanako of (163) is replaced by hon, the sentence is quite normal as shown in (164).

(164) Watakusi wa Taroo ni sen-en-satu to hon o issyo ni age-ta.
'I gave Taro a 1000-yen bill and a book together.'

Note that sentences (163) and (164) are both unambiguous. From the facts presented above, we could say the following:

(165) Sentences in which one of the conjoined NP's is moved to the position before issyo ni are synonymous with sentences with the conjoined NP's; moreover, they can have other readings.

2.3.3. As for the surface structures of sentences like (137), we can propose two kinds of trees. The difference between them is due to the structural position of issyo ni. Thus, we could propose either (166a) or (166b) as the surface structure of sentence (137).

(166) a.
b.

```
      S
     /\  
    NP  VP
   /\   /\ 
  NP  ?  NP  V
 /\  |  |  |
 NP NP issyo ni NP o kat-ta
 |    |    |
 NP to Hanako kuruma
```

Note that the node label dominating `issyo ni` is represented with a question mark in both structures. Considering the grammaticality of the pseudo-cleft sentences of (137), one might claim that the node should be NP.

(167) a. Taroo to Hanako ga kuruma o kat-ta no wa issyo (ni) da.
     '(Lit.) The way Taro and Hanako bought a car is together.'

b. Issyo ni kuruma o kat-ta no wa Taroo to Hanako da.
     'The persons who bought a car together are Taro and Hanako.'

c. Taroo to Hanako ga issyo ni kat-ta no wa kuruma da.
     'What Taro and Hanako bought together is a car.'

The element which is moved before the copula `da` by Pseudo-cleft Sentence Formation is usually considered to be an NP. Therefore, the grammaticality of sentence (167a) seems to provide a piece of evidence in support of the claim. However, observe the following sentence:

(168) Hanako ga benkyoo-si-das-ita no wa kyyu ni da.
     study begin suddenly
     '(Lit.) The way Hanako began to study is suddenly.'

This sentence is acceptable as is sentence (167a). Sentence (169)
underlies sentence (168).

(169) Hanako ga kyuù ni benkyoo-si-das-ita.
    'Hanako began to study suddenly.'

No one would claim that the phrase kyuù ni 'suddenly' in sentence (169) is an NP. This suggests that the element moved by Pseudo-cleft Sentence Formation is not always an NP. Such adverbs as kyuù ni can also be moved by this transformation. Thus the grammaticality of sentence (167a) cannot simply lead us to the conclusion that issyo ni in sentence (137) is an NP.

In Japanese all NP's can be topicalized at least in a simple sentence. In addition, the topicalized phrases are only NP's. The sentences in (170) are derived from sentence (171) by Topicalization.

(170) a. Boku wa Hanako ni tosyokan de at-ta.
    I library at meet
    'As for myself, I met Hanako at the library.'

   b. Hanako ni wa boku ga tosyokan de at-ta.
    'As for Hanako, I met her at the library.'

   c. Topyokan de wa boku ga Hanako ni at-ta.
    'As for at the library, I met Hanako there.'

(171) Boku ga Hanako ni tosyokan de at-ta.
    'I met Hanako at the library.'

The grammaticality of sentences (170a)-(170c) shows that the phrases boku ga, Hanako ni and tosyokan de in sentence (171) are all NP's. One might argue that kyuù ni in sentence (169) is also an NP, since the phrase has the same function (i.e., that of modifying predicates) as ordinary NP's (e.g., Hanako ni in (171)). However, the argument
is not correct, because sentence (172), in which *kyuu ni* in sentence (169) is topicalized, is not acceptable.

(172) \[^x\] Kyuu ni wa Hanako ga benkyoo-si-das-ita.

The unacceptability of this sentence demonstrates that *kyuu ni* is not an NP.\(^24\) As sentence (173), in which *issyo ni* in sentence (137) is topicalized, is also unacceptable, this phrase is not an NP either.

(173) \[^x\] Issyo ni wa Taroo to Hanako ga kuruma o kat-ta.

The facts presented so far illustrate that *kyuu ni* and *issyo ni* are syntactically very similar. The phrase *kyuu ni* is considered to be an adverb; therefore, it would be safe to say that the node with a question mark in (166a) and (166b) is Adv (i.e., Adverb).

Then, which of the two structures is more appropriate as the surface structure of sentence (137)? I have shown in footnote 17 that VP's can be replaced with *soo-si 'to do so'* by the replacement transformation. The phrase *issyo ni kuruma o kat* in sentence (137) can be replaced by *soo-si* as in (174).

(174) Taroo to Hanako ga issyo ni kuruma o kat-ta. Zyon to Mearii mo soo-si-ta.

'Taro and Hanako bought a car together.' 'John and Mary did so too.'

This fact indicates that *issyo ni* is a part of the VP. Thus I conclude that sentence (137) has as its surface structure (166b') in which the node ? in (166b) is replaced by Adv.
As a result, sentences (141) and (143) are considered to have the following surface structures respectively.

(175)

Next, let us consider the surface structures of sentences like (151), which do not take conjoined NP's. Sentence (151) could have the following two possibilities as its surface structure.
I consider (177a) more appropriate as the surface structure of sentence (151) than (177b) for the following reason. Consider sentence (178).

(178) Taroo ga Hanako to / kuruma o issyo ni kat-ta.
    'Taro bought a car together with Hanako.'

To derive this sentence from (177b), we must posit a transformation which inserts an element into an adverbial phrase or moves an element of an adverbial phrase out of that phrase. However, there are no independent reasons for such a transformation. On the other hand, to derive sentence (178) from (177a) we can make use of a rule of Scrambling, which can be written in this way:

(179) Scrambling

\[
\text{SD: } X \rightarrow \{\text{NP}_{\text{Adv}}\} - X \rightarrow \{\text{NP}_{\text{Adv}}\} - X \rightarrow \text{OPT} \\
1 \quad 2 \quad 3 \quad 4 \quad 5 \\
\text{SC: } 1 \quad 4 \quad 3 \quad 2 \quad 5
\]
This transformation is also used to relate sentence (180) with sentence (181).

(180) Watakusi wa kinoo tosyokan kara hon o kari-ta.
    'I borrowed a book from the library yesterday.'

(181) Watakusi wa tosyokan kara kinoo hon o kari-ta.
    'I borrowed a book from the library yesterday.'

That is, in the derivation of sentence (178) from (177a) we need not posit a new transformation. This indicates that (177a) is more appropriate than (177b) as the surface structure of (151), for the former does not make the grammar more complicated than the latter does.

2.3.4. In sec. 2.1 I have rejected the claim that sentences with conjoined NP's are generated in the base component. Alternatively, I propose that sentences like (137) which contain such NP's are derived from conjoined sentences whose predicates take identical indices.

Thus sentence (137) would be derived from the underlying structure given below:

```
(182)
```

```
S0
   /\     \
  S1  AND  S2
   |       |
   NP     NP
   /\     /\  \
  Taroo  Hanako
   |     |
  kuruma kuruma
     kat-ta_i  kat-ta_i
```

The symbol _i_ indicates that the constituents with it are identical.

To get the surface structure of sentence (137) (i.e., (166b')),
Case Marking applies first on the \( S_1 \) and \( S_2 \) cycles.

\[(183)\]

As the resulting structure (183) meets the SD of Conjunction Reduction stated in (106), the rule applies on the \( S_0 \) cycle to yield (184).

\[(184)\]

Note that a V like \( \text{kat-ta}_1 \) in (184) which is derived by the application of Conjunction Reduction to V's with identical indices is considered to be a marked element. The general convention and the special node relabeling convention stated in sec. 2.2.1 apply to (184) to prune the nodes \( S_1 \) and \( S_2 \) and to change the node \( S_0 \) into NP.
As NP₀ in (185) also meets the SD of Conjunction Reduction, the rule applies on the S cycle to yield (186).

The general convention applies to this structure again to prune the nodes NP₃ and NP₄. Next, Issyo ni Insertion, the formulation of which is something like (187), applies to (186) without those NP's to yield (188).

(187) **Issyo ni Insertion**

SD: \( X - \left[ \text{NP}\left( \text{NP}_1 \text{ X AND} \right) \text{ P} \right] - X - V \)

SC: 1 2 3 4

Condition: 4 is a marked element.
Finally, the general principle and the rule stated in footnote 15 apply to the node $NP_0$ in (188) to yield (189).

The structure in which AND in (189) is realized as to is the surface structure of sentence (137) (i.e., (166b')). Similarly, sentence (141) is derived from the underlying structure given below:
It should be noted that if Issyo ni Insertion does not apply to (186), (186) will be converted into (191) by the general principle and other rules.

(191)

The structure in which AND in (191) is realized as to is the surface structure of the following sentence.

(192) Taroo to Hanako ga kuruma o kat-ta.
      'Taro and Hanako bought a car (together).'

I have mentioned before that sentence (137) has the two readings (a) and (b). I assume that the meaning difference depends on whether or not the NP kuruma in the first conjunct (i.e., $S_1$) of (182) and the NP kuruma in the second conjunct ($S_2$) are strictly identical. That is, sentence (137/a) is derived when the referents of those NP's are the same, and sentence (137/b) is derived when they are not. It is obvious that this claim is not wild, when the following English sentence is considered carefully.

(193) John scratched his arm and so did Mary.
According to Ross (1967: 189), sentence (193) is ambiguous—it could be derived from the structure underlying sentence (194) or the one underlying sentence (195).

(194) \( \text{John}_i \) scratched \( \text{his}_i \) arm and \( \text{Mary}_j \) scratched \( \text{her}_j \) arm too.

(195) \( \text{John}_i \) scratched \( \text{his}_i \) arm and \( \text{Mary}_j \) scratched \( \text{his}_i \) arm too.

The problem is that the difference between \( \text{his}_i \) arm and \( \text{her}_j \) arm in sentence (194) is disregarded in the derivation of sentence (193). In other words, though the NP's are not strictly identical, sentence (193) is derived from the structure underlying (194). Thus Ross (1969: 268) claims that any theory in which (193) can be derived from (194) must contain a definition of "sloppy identity", in which it is specified exactly what differences can be disregarded. This claim clearly corresponds to my assumption. Therefore, if Ross's claim is accepted, mine should also be accepted. 27

Next, I will explain how sentences like (151) are derived. Since these sentences are synonymous with sentences like (137), I propose that they should be derived from the same underlying structures. Thus sentence (151) is derived from the structure underlying sentence (137). Its derivation would be as follows:

(196) a. \[
S_0 \left[ S_1 \text{Taroo kuruma kat-} \text{ta}_1 \right] [S_2 \text{Hanako kuruma kat-} \text{ta}_1] \text{ AND } \]

(= (182))

\[
\downarrow
\]

b. \[
S \left[ NP_0 \left[ NP_1 \text{Taroo} \right][NP_2 \text{Hanako}] \text{ AND } \right] \text{ ga } \text{ issyo ni}
\]

\[
\text{kuruma o kat-} \text{ta}_1 \]

(= (188))

\[
\downarrow
\]
Needless to say, the structure (196b) is derived from (196a) in the same manner (188) is derived from (182). To derive (196c) from (196b), an optional transformation applies to $NP_0$ in (196b) to change the order of the conjoined NP's (i.e., $NP_1$ and $NP_2$). This transformation, which I call NP Scrambling in NP, can be formulated in this way:
The implication of the proposal which I have presented in this section is that concomitative NP's are not generated in the base component. They are derivable only by Conjunct Movement stated in (198). Therefore, if this rule applies cyclically it can apply to a conjunct of conjoined sentences, in which case sentence (199) would be derived from the two entirely different underlying structures (200) and (201).

(199) Taroo to Ziroo ga Hanako to gakkoo e it-ta.
'Taro and Jiro went to school together with Hanako.'
The derivations of (199) from (200) and (201) would be roughly (202) and (203) respectively.
(203)

Conjunction Reduction (on the $S_1$ and $S_2$ cycles)

$S_0$

$S_a$

Taroo to Hanako ga gakkoo e $\text{it-ta}_1$

Ziroo to Hanako ga gakkoo e $\text{it-ta}_1$

$S_b$

AND

NP Scrambling in NP and Conjunct Movement (on the $S_a$ and $S_b$ cycles)

$S_0$

$S_a$

Taroo ga Hanako to gakkoo e $\text{it-ta}_1$

Ziroo ga Hanako to gakkoo e $\text{it-ta}_1$

$S_b$

AND

Conjunction Reduction (on the $S_0$ cycle)

$S$

NP

Taroo to Ziroo ga

VP

Hanako to gakkoo e $\text{it-ta}_1$

It is undesirable to derive an unambiguous sentence from more than two different underlying structures, so we must block one of the derivations. If we admit derivations like (203), we will have several underlying structures for the following unambiguous sentence.

(204) Taroo to Ziroo to Saburoo ga Hanako to issyo ni gakkoo e $\text{it-ta}$.

'Taro, Jiro, and Saburo went to school together with Hanako.'
This fact suggests that we must block the derivation of (199) from (201). To block it we must prevent Conjunct Movement from applying cyclically. This means that the rule applies only on the last cycle. Needless to say, it must apply after Conjunction Reduction.

I have mentioned in sec. 1.1.3.2 that \textit{issyo ni} should not co-occur with state predicates while \textit{tomo ni} can.

(26) a. Taroo wa Hanako to issyo ni UBC no gakusei da.
    b. Taroo wa Hanako to tomo ni UBC no gakusei da.
    'Taro and Hanako are both students of UBC.'

(40) a. Satoo-san to Suzuki-san wa issyo ni Nihon-zin da.
    b. Satoo-san to Suzuki-san wa tomo ni Nihon-zin da.
    'Mr. Sato and Mr. Suzuki are both Japanese.'

The sentences in (26) and (40) are considered to be derived from conjoined sentences. For example, sentence (40b) is derived from the underlying structure (205) by Conjunction Reduction.

(205)

Thus, to block the derivations of (26a) and (40a), \textit{Issyo ni} Insertion and Conjunct Movement must have another condition, which says:

(206) \textit{V} is not a state predicate.

However, the grammaticality of sentence (26b) suggests that Conjunct
Movement applies even when \( V \) is a state predicate. To account for this fact, the conditions of the rule must be revised in this way:

(207) Conditions of Conjunct Movement:

(i) \( 5 \) (i.e., \( V \)) is a marked element and is not a state predicate, or

(ii) \( 4 \) contains \textit{tomo ni} and \( 5 \) is a state predicate.

Condition (ii) predicts that sentence (52) is not grammatical.

(52) \textit{Taroo wa Hanako to UBC no gakusei da.}

The structure underlying sentence (52) does not contain \textit{tomo ni} although it has a state predicate, so it does not meet condition (ii). Thus Conjunct Movement cannot apply to the structure to yield (52).

2.4. In the sections below, I will discuss how sentences with a symmetric predicate are derived.

2.4.1. I assume that sentences (3/b) and (70/a) have (208) and (209) as their respective underlying structures.

(3/b) \textit{Taroo to Hanako ga kekkon-si-ta.}

'Taro and Hanako got married (to someone together).'

(70/a) \textit{Nihon ga Doitu to Amerika to tatakat-ta.}

'Japan fought Germany and America (at the same time).'

(208)
Sentence (3/b) is derived from (208) in the same manner sentence (3/c) is derived from (107). Sentence (70/a) is derived from (209) by Conjunction Reduction via (210a) and (210b).

(210) a. \[ S [\text{NP Nihon ga}][\text{VP Doitu to \text{tatakat-ta}_1}][\text{VP Amerika to \text{tatakat-ta}_1}] \text{AND} \]

b. \[ S [\text{NP Nihon ga}][\text{VP [\text{NP Doitu to}][\text{NP Amerika to}]}] \text{AND} \]

Sentences (3/b) and (70/a) have (211) and (212) as their respective intermediate structures.

(211)
The structures (211) and (212) both meet the SD of Issyo ni insertion with revised conditions (206), so if the rule applies we will get sentences (213) and (214).

(213) Taroo to Hanako ga issyo ni kekkon-si-ta. (=29)
'Taro and Hanako got married (to someone) together.'

(214) Nihon ga Doitu to Amerika to issyo ni tatakat-ta.

Sentence (214) is unacceptable in the sense of sentence (70/a). In addition, if we apply Conjunct Movement to the structures which are derived from (211) and (212) by applying NP Scrambling in NP and some other rules, we will get the following sentences:

(215) a. Taroo ga Hanako to kekkon-si-ta. (=1/b)
'Taro got married (to someone) together with Hanako.'

b. Taroo ga Hanako to issyo ni kekkon-si-ta. (=15)
'Taro got married (to someone) together with Hanako.'

(216) a. Nihon ga Doitu to / Amerika to tatakat-ta.

b. Nihon ga Doitu to / Amerika to issyo ni tatakat-ta.
Notice that not only Conjunct Movement but also Issyo ni Insertion is applied in (b) sentences. The sentences in (216) are unacceptable like sentence (214) in the sense of sentence (70/a). As the structure (212) differs from (211) in that symmetric NP's are conjoined, the unacceptability of sentences (214) and (216a-b) suggests that Issyo ni Insertion and Conjunct Movement should not apply to the structures in which symmetric NP's are conjoined. Therefore, in order to prevent the transformations from applying to such structures, a condition like (217) is necessary.

(217) The conjoined NP's are not symmetric ones.

This condition blocks the derivations of sentences (214) and (216a-b) from (212). As a result of (217), Issyo ni Insertion and Conjunct Movement have (218) and (219) as their respective conditions.

(218) Conditions of Issyo ni Insertion: (i) and (ii) and (iii)

(i) 4 (i.e., V) is a marked element.

(ii) 4 is not a state predicate. (= (206))

(iii) The conjoined NP's are not symmetric ones. (= (217))

(219) Conditions of Conjunct Movement: ((i) or (ii)) and (iii)

(i) 5 (i.e., V) is a marked element and is not a state predicate. (= (207i))

(ii) 4 contains tomo ni and 5 is a state predicate. (= (207ii))

(iii) The conjoined NP's are not symmetric ones. (= (217))

2.4.2. I assume that a Japanese grammar contains a rule of Reciprocal Transformation, which can be represented schematically in (220).
I consider that this transformation can apply only when each conjunct meets the following conditions:

(221) Conditions of Reciprocal Transformation: (i) and (ii) and (iii)

(i) Each conjunct takes the same symmetric predicate.

(ii) Each conjunct is identical except for a subject NP (or a head NP) and a symmetric NP.

(iii) A subject NP (or a head NP) and a symmetric NP of the first conjunct are identical with a symmetric NP and a subject NP (or a head NP) of the second conjunct respectively. (i.e., \(NP_1 = NP_4\), \(NP_2 = NP_3\))

2.4.2.1. Reciprocal Transformation stated in (220a) applies to the structure (222) to yield sentence (3/a).
(3/a) Taroo to Hanako ga kekkon-si-ta.
'Taro and Hanako got married (to each other).'

Reciprocal Transformation stated in (220b) applies to the structure (223), which is derived from (224), to yield the structure underlying sentence (87) in the sense of "those who got married to each other".

(87) Kinoo kekkon-si-ta Taroo to Hanako wa UBC no gakusei da.
'Taro and Hanako who got married yesterday are students of UBC.'
Note that in the derivation of (223) from (224) Relativization and Conjunction Reduction are applied.

Symmetric predicates include not only verbs but also adjectives and nouns, so Reciprocal Transformation can apply to the underlying structure (225) to yield (226).

(225) \[ S \left[ S_Taroo ga Ziroo to kyooodai da \right] S_{Ziroo ga Taroo to kyooodai da} \] AND

(226) Taroo to Ziroo ga kyooodai da.
'Taro and Jiro are brothers.'

However, the rule should not apply to structures like (227)-(230).

(227) \[ S \left[ S_Taroo ga Hanako o ai-si-ta \right] S_{Hanako ga Taroo o ai-si-ta} \] love AND

(228) \[ S \left[ S_Taroo ga Ziroo to kyooodai da \right] S_{Ziroo ga Taroo to naka no ii kyooodai da} \] good AND
(229) \[ S \left( s_{\text{Taroo}} \text{ ga } \underline{\text{kinoo Hanako to kekkon-si-ta}} \right) \left( S_{\text{Hanako ga senzitu kekkon-si-ta}} \right) \text{AND} \]

(230) \[ S \left( S_{\text{Taroo ga Hanako to kekkon-si-ta}} \right) \left( S_{\text{Hanako ga Ziroo to kekkon-si-ta}} \right) \text{AND} \]

The underlined parts in each structure violate the conditions stated in (221). As the verb \( ai-si \) 'to love' is not a symmetric predicate, (227) violates condition (i). Structures (228)-(229) and (230) violate conditions (ii) and (iii) respectively.

2.4.2.2. Sentence (5/a) is derived from (231) through Reciprocal Transformation.

(5/a) Basu to torakku to takusii ga syoototu-si-ta.
'The bus, the truck, and the taxi collided (with one another).'

(231) \[ S \left( S_{\text{basu ga torakku to syoototu-si-ta_1}} \right) \left( S_{\text{torakku ga basu to syoototu-si-ta_1}} \right) \]
\[ S_{\text{torakku ga takusii to syoototu-si-ta_1}} \left( S_{\text{takusii ga torakku to syoototu-si-ta_1}} \right) \left( S_{\text{takusii ga basu to syoototu-si-ta_1}} \right) \]
\[ S_{\text{basu ga takusii to syoototu-si-ta_1}} \text{AND} \]

I consider that the acceptability difference between sentences (101) and (104) depends on whether their predicates express a transitive relation or not.

(101) Basu to torakku to takusii ga tagai ni syoototu-si-ta.
'The bus, the truck, and the taxi collided with one another.'

(104) \( ^x_{\text{Taroo to Ziroo to Saburoo ga tagai ni kyoudai da.}} \)
A transitive relation is a relation $R$ such that if $xRy$ and $yRz$ are true, then $xRz$ is also true. The noun *kyoodai* 'a brother' expresses a transitive relation, because if sentences (232a-b) are true, sentence (232c) is also true.

(232) a. Taroo ga Ziroo to kyoodai da.
   'Taro is a brother of Jiro.'

   b. Ziroo ga Saburoo to kyoodai da.
   'Jiro is a brother of Saburo.'

   c. Taroo ga Saburoo to kyoodai da.
   'Taro is a brother of Saburo.'

However, the verb *syoototu-si* 'to collide' does not express such a relation, because the fact that sentences (233a-b) are true does not imply that sentence (233c) is also true.

   'The bus collided with the truck.'

   b. Torakku ga takusii to syoototu-si-ta.
   'The truck collided with the taxi.'

   c. Basu ga takusii to syoototu-si-ta.
   'The bus collided with the taxi.'

Therefore, we can conclude that *tagai ni* 'each other' can occur in sentences in which two or more NP's are conjoined and constitute a subject, only if the predicates of these sentences are symmetric predicates which do not express a transitive relation.

2.4.2.3. I have stated in sec. 2.3.4 that Conjunct Movement applies on the last cycle after Conjunction Reduction. Though sentences (3/a) and (3/b) are derived by Reciprocal Transformation and Conjunction
Reduction respectively, the sentences have the same structure; so if Reciprocal Transformation is ordered before Conjunct Movement, the latter rule can apply to sentence (3/a) to yield sentence (1/a). However, such a derivation must be blocked, for sentence (1/a) is considered to be generated in the base component. Therefore, to prevent Conjunct Movement from applying to sentences like (3/a) which is derived by Reciprocal Transformation, I assume that Reciprocal Transformation is ordered after Conjunct Movement.
Chapter 3

CONCLUDING REMARKS

3.1. In Chapter 1, I have made detailed examinations of Okutsu (1967), Kuno (1967-68) and Inoue (1976b). Notice, however, that the latter two works give no explicit formulations of the rules in question. In Chapter 2, I have shown that sentences with conjoined NP's are all transformationally derived, and have proposed several transformations for the derivations of such sentences. The proposed transformations are Conjunction Reduction, Issyo ni Insertion, NP Scrambling in NP, Conjunct Movement, and Reciprocal Transformation.

3.2. The grammars of Okutsu, Kuno and Inoue presented several problems. Let us examine briefly how these difficulties are overcome in my grammar.

Okutsu's grammar (and perhaps, Inoue's as well) cannot generate sentence (73/a), though Kuno's can.

(73/a) Taroo to Hanako ga kekkon-si-tagat-ta.
'Taro and Hanako wanted to get married (to each other).'

In my grammar, this sentence is derived from the underlying structure (234) in the following manner:
Sentence (29) can be generated by Okutsu's grammar (and perhaps Inoue's also), but it cannot by Kuno's.

(29) Taroo to Hanako ga issyo ni kekkon-si-ta.
    'Taro and Hanako got married (to someone) together.'

Though Issyo ni Insertion must be accompanied by Conjunct Movement...
in Kuno's grammar, the latter rule is not applied in the derivation of sentence (29); so the grammaticality of the sentence cannot be accounted for by Kuno's. In my grammar, not only sentence (29) but also sentences (1/b), (3/b) and (15) are derived from the same underlying structure (208) as shown in sec. 2.4.1. On the other hand, sentence (87) in the sense of "those who got married to each other" can be generated by neither Kuno's grammar nor Okutsu's (nor Inoue's perhaps).

(87) Kinoo kekkon-si-ta Taroo to Hanako wa UBC no gakusei da.
'Taro and Hanako who got married yesterday are students of UBC.'

In my grammar, this sentence is derived by Reciprocal Transformation as shown in sec. 2.4.2.1.

Sentence (236) is semantically anomalous in the sense that Taro, Jiro and Hanako got married to one another, but Inoue's grammar as well as Kuno's cannot account for this semantic anomaly because the conjoined NP's are generated in the base component in both grammars.

(236) Taroo to Ziroo to Hanako ga kekkon-si-ta.
'Taro, Jiro, and Hanako got married.'

In my grammar this sentence is derived from conjoined sentences, one of which is (237).

(237) Taroo ga Ziroo to kekkon-si-ta.
'Taro got married to Jiro.'

This sentence demonstrates why sentence (236) is semantically
anomalous, for sentence (237) implies that the marriage of persons
of the same sex was permitted.
FOOTNOTES

1 Japanese examples are transcribed in the National Romanization System (i.e., Kunrei-siki) with the following modifications: the long vowels are indicated by repetition of the same vowels, and hyphenation as well as spacing is used to represent a sequence of morphemes. Each of the examples is followed by an English translation and (sometimes) word-by-word glosses. If an example has several interpretations, its translation reflects the most natural one, as long as it is not under discussion.

2 The copula  is has two stylistic variants: de-ar-u and desu.

3 That is to say, state predicates are predicates other than verbs.

4 In this sentence, Taroo to Hanako is a constituent. As any phrase can occupy any position in Japanese, we can move Taroo to in sentence (i) to the initial position to yield a sentence identical to (3).

(i) Hanako ga Taroo to kekkon-si-ta. (= (10))
  'Hanako married Taro.'

However, Taroo to Hanako is not a constituent in the sentence derived from (i). To show this kind of information I use a slash (/) in the following manner:

(ii) Taroo to / Hanako ga kekkon-si-ta.
  'To Taro, Hanako got married.'

There is a slight pause at the place where the slash is placed.

5 In Japanese, momentary (or punctual) verbs, which indicate a momentary action, express the continuation of a completed action when followed by te-i-ru. Therefore, as it 'to go' is regarded as one of them, it-te-i-ru means something like (i) not (ii).

(i) (Someone) went (there) and is (still there).
(ii) (Someone) is going (there).

Thus the literal translation of sentence (45a) is something like this:

(iii) Tomoko and Yoshiko went to America and are there together now.

6 Sentences preceded by a question mark indicate that native speakers cannot make a uniform judgment as to their grammaticality.

7 The particle to corresponds to and in English. Sentences with and are discussed in a number of works. See Gleitman (1965), Lakoff and Peters (1966), McCawley (1968), Smith (1969), Dougherty (1970, 1971), and Stockwell et al. (1973).
The formulations of this rule and rule (68) are from Okutsu (1971). Note that the second Conj in both SC's (Structural Changes) is optionally deleted at a later stage of the derivation.

The symbols X, Y and Z are variables which range over all strings, including the null string.

Kuno assumes that there is a universal principle which converts structures like this into

```
NP
NP to • • • NP to
```

In addition, he claims that the last to of the conjoined structure is deleted by some transformational rule.

The symbol + is used to denote sister adjunction. Under this adjunction, a phrase marker like (i) is converted into (ii).

(i)  S  (ii)  S
```
\[ \begin{array}{c}
  \vdots \\
  W \\
  \cdots A \cdots \\
  \downarrow \text{ta}
\end{array} \]
```
```
\[ \begin{array}{c}
  \vdots \\
  W \\
  \cdots B A \cdots \\
  \downarrow \text{ta}
\end{array} \]
```

That is, when the element B is sister-adjoined to the left of the node A, B becomes immediately dominated by the node which immediately dominates A.

This verb takes a verb sentential complement. For further detail, see Nakau (1971).

I omit an irrelevant detail in this structure.

This constraint is often referred to as the "Coordinate Structure Constraint". Ross (1967: 89) defines it as follows:

(i) The Coordinate Structure Constraint
In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct.

A grammar of Japanese contains a rule schema of the form

(i) \( S \rightarrow S^n \) AND, \( n \geq 2 \)

where (i) represents an infinite set of rules, each having the form \( S \rightarrow S S \cdots S S \) AND. These rules generate base structures of the form
There is a universal principle which converts structures like (ii) to (iii).

We have an obligatory rule which deletes the last AND. In addition, the other AND's can be deleted by some optional rule. Note that AND is not a real lexical item. It is realized as te if it is dominated by S, and as to and te if it happens to be dominated by NP and VP respectively by means of Conjunction Reduction.

The symbol § is used to denote Chomsky adjunction. Under this adjunction, a phrase marker like (i) is converted into (ii).

That is, when the element B is Chomsky-adjoined to the right of the node A, the old node A keeps its constituents and a new node A is created to dominate the old node A and the element B.

I take the position that a Japanese grammar contains the category VP. This position is argued against by Inoue (1976a), who considers that there are no transformations whose SD's refer to VP. However, Inoue's argument is weak because it is based on the observation of the following pairs of sentences:

(i) a. Hanako ga gakkoo de eigo o narat-ta.
   'Hanako learned English at school.'
   b. Taroo mo soo-si-ta.
   also so do
   'Taro did so too.'

(ii) a. Watakusi wa nairon-burausu o te de arai-masu.
   nylon blouse hand by wash
   'I wash a nylon blouse by hand.'
   b. Watakusi wa ke no seetaa mo soo-si-masu.
   wool sweater
   '(Lit.) I do a wool sweater too.'

According to her, the phrases gakkoo de in (ia) and nairon-burausu...
in (iia) are outside VP and inside VP respectively. Therefore, the fact that the underlined parts in (a) sentences of (i) and (ii) are replaced by the pro-expression soo-si shows that the replaced phrases are not VP's. From this fact, Inoue concludes that the SD of the transformation which replaces certain phrases by soo-si does not refer to VP. However, compare sentences (ia) and (iia) with the following sentences:

(i) c. Taroo wa kyookai de soo-si-ta.
   church
   'Taro did so at church.'
(ii) c. Watakusi mo soo-si-masu.
   'I do so too.'

In these (c) sentences, eigo o narat and nairon-burausu o te de arai in (a) sentences are replaced by soo-si respectively. That is, VP's in (a) sentences are replaced by the pro-expression in (c) sentences. This indicates that the SD of this replacement transformation refers to the category VP. What are needed to describe sentences like (ib) and (iib) are simply conditions which make the transformation also applicable to phrases other than VP. Thus, those (b) sentences do not lead us to the conclusion that the category VP is not necessary in a Japanese grammar.

\[18\] I have ignored the problems of tense in this thesis.

\[19\] Although I take the position that this rule applies to (113), one could also posit that the rule applies to (107). In this case, the structure (107) is changed into (i).

(i)

```
S
  \[S_1\]  \[S_2\]
    NP_1   VP   NP_2   VP
  Taroo ga   kekkon-si-ta   Hanako ga   kekkon-si-ta
```

\[20\] This sentence is ungrammatical if the honorific marker o is interpreted as modifying imo as well as kome.

\[21\] I assume that a grammar of Japanese contains (i) as one of the phrase structure rules.

(i) NP → NP P

However, for the sake of simplicity of the tree diagram, I have not used the category symbol P, which stands for Particle. The dummy symbol which the node P immediately dominates is not substituted by a lexical transformation; rather, it is substituted by Case Marking (such as Subject Marking). Thus, sentence (ii) is derived from an underlying structure like (iii) by Subject Marking.

(ii) Taroo ga ki-ta. 'Taro came.'
Subject Marking, the formulation of which is something like (iv), applies to (iii) to substitute _ga for the dummy symbol (i.e., △).

(iv) Subject Marking

SD: NP - P - X

OBLIG

1 2 3

SC: 1 ga 3

22 I do not intend to claim that this structure is not acceptable. I simply want to say that Conjunction Reduction should not apply to (132). Therefore, sentences like (i) are perfectly all right.

(i) Watakusi wa muzukasiku-te tumaranai hon o yon-da.

'I read the difficult, boring book.'

The underlined part of this sentence has the following structure, but it is not derived from (132).

(ii)

NP

| Adj N |

| Adj Adj AND |

23 This statement implies that all NP's can be moved by Pseudo-cleft Sentence Formation, as long as the A-over-A principle is accepted. This principle asserts that all transformations which refer to A must apply to the topmost instance of A, not dominated A. That is, in a phrase marker like (i) the transformations apply to A₁ not A₂.

(i)

Therefore, the ungrammaticality of the following sentences, in which the NP's Taroo to Hanako _ga and kuruma o in sentence (137) are moved by Pseudo-cleft Sentence Formation, is due to the idiosyncrasy of each of the particles attached to the NP's.

(ii) a. Issyo ni kuruma o kat-ta no wa Taroo to Hanako ga da.

b. Taroo to Hanako ga issyo ni kat-ta no wa kuruma o da.

That is, the subject marker _ga and the direct object marker _o must be deleted when they are placed before the copula _da. On the other hand, the indirect object marker _ni must not be deleted and the deletion of the place marker _de is optional. Compare the sentences
in (ii) with the following pairs of sentences:

(iii) a. Taroo ga tegami o kai-ta no wa Hanako ni da.
   'The person to whom Taro wrote the letter is Hanako.'
   
   b. Taroo ga tegami o kai-ta no wa Hanako da.

(iv) a. Taroo ga nooto o kat-ta no wa ano hon-ya de da.
   'The place where Taro bought a notebook is that bookstore.'
   
   b. Taroo ga nooto o kat-ta no wa ano hon-ya da.
   'The place where Taro bought a notebook is that bookstore.'

The sentences in (iii) and (iv) are considered to be derived from sentences (iiic) and (ivc) respectively through Pseudo-cleft Sentence Formation.

(iii) c. Taroo ga tegami o Hanako ni kai-ta.
    Taro wrote the letter to Hanako.'

(iv) c. Taroo ga ano hon-ya de nooto o kat-ta.
    'Taro bought a notebook at that bookstore.'

We have the following sentence, in which kyuu ni seems to be topicalized.

(i) Kyuu ni wa deki-nai. 'I cannot do it in a hurry.'
   can not

Notice that the phrase kyuu ni is used with a negative in sentence (i). As the translation shows, sentence (i) is an abridged sentence. Its unabridged counterpart would be something like this:

(ii) Watakusi ni wa sore ga kyuu ni wa deki-nai.
    it
    'I cannot do it in a hurry.'

In this sentence, watakusi ni not kyuu ni is clearly the topic. The particle wa which follows kyuu ni is used to indicate the scope of negation.

One might claim that (177b) also meets the SD of this rule, but this is not the case. As Hanako to and issyo ni are dominated by Adv in (177b), the A-over-A principle stated in footnote 23 applies to prevent Scrambling from applying to those phrases.

This transformation creates a new node. Notice that the node Adv which dominates issyo ni in (188) is created by this transformation. Thus one might consider that transformations can perform various operations; however, the operations which transformations can perform are rather restricted. The following are the only possible operations.

(i) adjunction
(ii) substitution
(iii) deletion

They are often referred to as elementary transformations. Conjunction Reduction stated in (106) also creates a new node. However, in this case, it is not entirely new but is a copy of an old node. On the
other hand, the node created by **Issyo ni** Insertion is entirely new. From this fact, it follows that this transformation is an exceptional one as it stands. Therefore, to accept such a transformation, it will be necessary to extend the class of possible operations of transformations. However, if the node Adv in question is not created but is generated in the base component, such an extension will not be necessary. In this case, **Issyo ni** Insertion would have to be formulated in this way:

(iv) **Issyo ni** Insertion

\[
\begin{align*}
SD: &\quad X \rightarrow [NP\ [NP\ X\ \text{AND}]\ P] - \text{Adv} - X - V \\
&\quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \\
SC: &\quad 1 \quad 2 \quad \text{issyo ni} \quad 4 \quad 5 \\
\text{Condition:} &\quad 5 \text{ is a marked element.}
\end{align*}
\]

**Issyo ni** Insertion stated above consists of an elementary substitution transformation, while that stated in (187) consists of an elementary adjunction transformation. It should be noted that whichever formulation we may adopt, the attached condition is necessary to block the derivation of (29) from sentence (3/c).

As an alternative to an assumption like mine, we could posit some kind of interpretation rule to account for the meaning difference in sentence (137). This position corresponds to the one Akmajian (1973) proposed with relation to sentence (193). Which of those alternatives is correct should be subject to empirical tests.
BIBLIOGRAPHY


