One of the most controversial problems in recent work on syntax is the so-called control phenomenon of the null subject of an infinitival clause. More specifically, the central issue is how the subject of the infinitival clause is interpreted. For instance, in the sentence, 'John promised Mary to go to Japan,' the subject of the infinitival clause, 'to go to Japan,' is necessarily interpreted as the same as the matrix subject, 'John'; whereas, in 'John persuaded Mary to go to Japan,' the subject of the infinitival clause is always construed as the same as object of the matrix clause, 'Mary.' Various linguists have attempted to determine which component of grammar this obligatory control phenomenon belongs to. Different analyses proposed to account for this phenomenon in English include the syntactic/pragmatic approach of Manzini (1983), the syntactic/thematic/pragmatic analysis of Nishigauchi (1984), and at least one approach, that of Culicover & Wilkins (forthcoming) which uses only thematic relations. In this paper, I will discuss the obligatory control phenomenon in Japanese, and examine what kind of analysis will be plausible. Consequently, this paper should be viewed as programmatic, rather than definitive.

The range of data I will be discussing is in (1-7). *(1)* is an example of 'subject' control.

(1a) John \(_1\) ga Bill \(_j\) ni [---\(_{i,j}\)] (ga) Mary o Shootai-suru] to yakusoku-shita. QT promised

John \(_1\) promised Bill \(_j\) that \(-_{i,j}\) would invite Mary.

(1b) \(-_{i,j}\) (ga) (Bill \(_j\), ni) [---\(_{i,j}\)] (ga) Mary o Shootai suru] to yakusoku-shita.

\(-_{i,j}\) Promised (Bill \(_j\)) that \(-_{i,j}\) would invite Mary.

(1c) [---\(_{i,j}\)] (ga) Mary o Shootai suru] to John \(_1\) ga Bill \(_j\) ni yakusoku shita.

John \(_1\) promised Bill \(_j\) that \(-_{i,j}\) would invite Mary.

The non-overt \(ga\)-marked argument in the embedded clause is interpreted as identical to 'John' in the main clause. As in (1b), the controlling argument, namely, 'John' in the main clause, does not have to be overt. In such cases, the interpretation of the \(ga\)-marked argument in the embedded clause is still the same as in (1a); that is, it is interpreted as an understood individual which satisfies the \(ga\)-marked argument in the main clause. (1c) is a case in which the embedded clause is scrambled to the front. The interpretation of the \(ga\)-marked argument in the embedded clause is identical to that of (1a).

(2) and (3) exemplify 'object' control.

(2a) John \(_1\) ga Bill \(_j\) o [---\(_{i,j}\)] (ga) sono ie kara yoo ni settoku-shita. leave QT persuaded

John \(_1\) persuaded Bill \(_j\) that \(-_{i,j}\) would leave the house.
b. (John, ga) — (o) [—*i/*j (ga) sono ie kara dete iku] yoo ni jsettoku-shita.

(John,) persuaded —j that —*i/*j would leave the house.

c. [—*i/*j (ga) sono ie kara dete iku] yoo ni John, ga Bill, o settoku shita.

John, persuaded Bill, that —*i/*j would leave the house.

(3)a. John, ga Mary, ni [—*i/*j (ga) amerika e shutchoo-suru] yoo ni meijita.

John, ordered Mary, that —*i/*j would go on a business trip to America.

b. (John, ga) — (ni) [—*i/*j (ga) amerika e shutchoo-suru] yoo ni meijita.

(John,) ordered — that —*i/*j would go on a business trip to America.

c. [—*i/*j (ga) amerika e shutchoo-suru] yoo ni John, ga Mary, ni meijita.

John, ordered Mary, that —*i/*j would go on a business trip to America.

In the (a) sentences of (2) and (3), the embedded ga-marked argument is understood as 'Bill' and 'Mary,' respectively, in the main clause. Other verbs of this type are kitai suru 'expect,' susumeru 'recommend,' kinziru 'prohibit,' tanomu 'ask' and so on. The (b) sentences of (2) and (3) are examples of the non-overt controllers, and the (c) sentences exhibit scrambling of the embedded clauses. The interpretation of the ga-marked argument in the embedded clause is the same as in (2a) and (3a). In other words, non-overt controllers and scrambling do not affect the interpretation of the controlled arguments.

(4a), (4b), and (4c) are passive counterparts of (1a), (2a), and (3a), respectively.

(4)a. (Bill) ga John, ni [—*i/*j (ga) Mary o shootai-suru] yoo ni yakusoku sa~e~e.

Bill, was persuaded by John, that —*i/*j would invite Mary.

b. Bill, ga John, ni [—*i/*j (ga) sono ie kara dete iku] yoo ni setttoku sa~e~e.

Bill, was persuaded by John, that —*i/*j would leave the house.

c. Mary, ga John, ni [—*i/*j (ga) amerika e shutchoo suru] yoo ni meiji sa~e~e.

Mary, was persuaded by John, that —*i/*j would go on a business trip to America.

The examples in (5) are causative sentences of (1a), (2a), and (3a).

(5)a. Tom, ga John, o Bill, ni [—*i/*j/*k (ga) Mary o shootai suru] yoo ni yakusoku sa~e~e.

Tom, made John, promise Bill, that —*i/*j/*k would invite Mary.

b. Tom, ga John, ni Bill, o [—*i/*j/*k (ga) sono ie kara dete iku] yoo ni setttoku sa~e~e.

Tom, made John, persuade Bill, that —*i/*j/*k would leave the house.

c. Tom, ga John, ni Mary, o [—*i/*j/*k (o) amerika e shutchoo suru] yoo ni meiji sa~e~e.

Tom, made John, order Mary, that —*i/*j/*k would go on business trip to America.
In (6), morau 'to receive a favor from' is attached to the verbs in the main clause.

(6)a. John i ga Bill j ni [-i/j (ga) Mary o SB IO SB DO
shootai-suru] to yakosoku-shite moratta invite QT promise received a favor
John, had Bill promise that —i/j would invite Mary.

b. Tom, ga John, ni Bill k o [-i/*j/k (ga) sono SB IO SB that
ie kara dete iku] yoo ni settoku-shite house from leave QT persuade
moratta received a favor
Tom, had John persuade Bill that —i/*j/k would leave the house.

c. Tom, ga John, ni Mary o [-i/*j/k (ga) America SB IO SB
e shutchoo-suru] yoo ni meijite moratta to go on business trip QT order received
a favor
Tom, had John order Mary that —i/*j/k would go on business trip to America.

This morpheme, morau, functions similarly to causative morpheme -sase with respect to control phenomenon.

Finally, (7a) and (7b) take cleft construction.

(7)a. John i ga Bill j ni yakusoku shita no wa [-i/*j SB IO promise NCP TP
(ga) Mary o shootai-suru] to iu koto da SB DO invite QT fact COP
It is that —i/*j will invite Mary that John promised Billj.

b. John i ga Mary ni meijita no wa [-i/*j SB IO ordered NCP TP SB
America e shutchoo-suru] to iu koto da to go on business trip QT fact COP

The interpretation of the ga-marked controlled argument takes the same pattern as in (1a) and (3a), respectively.

First of all, let us examine whether a syntactic approach would be plausible. It has been a controversial issue as to whether Japanese should be treated as configurational or as non-configurational. If Japanese is analysed as configurational, (1a) and (2a) are represented as (8a and b), whereas if it is treated as non-configurational, (1a) and (2a) look like (9a and b).

(8) a.

b.
In (8), we assume that the grammatical functions are defined configurationally. Thus, [NP, S] is the subject, and [NP, VP] is the object. Given such a definition, the controlling NP is the subject in (8a), while, in (8b), the controlling NP is the object. However, both sentences take an identical structure in relevant respects. Then, a question arises as to what a triggering factor is to distinguish 'subject' control from 'object' control. There does not seem to be a possible solution by purely syntactic means, unless we postulate features such as [+subject control] and [+object control] associated with the verb. But this would be a rather ad hoc solution.

Turning to (9), unlike (8), the grammatical functions cannot be defined configurationally, because the two N's which are sister to the main verb would be both [N', V']. Since there is no distinction between the two controllers in (9a) and (9b), and because there is no structural property which distinguishes 'subject' control from 'object' control, it is not plausible to assume the structure of (9) for the solution to the control phenomenon in Japanese. Thus, whichever structure we assume for Japanese, (8) or (9), a purely structural analysis of the control phenomenon seems implausible.

Next, let us examine a morphological approach to the control problem focusing on surface case particles. First, consider the examples in (1) and the (a) sentences of (4-6), which are instances of 'subject' control. Notice that the controller, which is in the main clause, is the ga-marked argument in (1), the ni-marked argument in (4a) and (6a), and the o-marked argument in (5a). Although (1), (4a), (5a), and (6a) all show 'subject' control, the case particles which are attached to the controlling argument vary in each example. Similar observations are made in (2), (3), and the (b and c) sentences of (4-6). In (2), (5b and c), and (6b and c), the controlling argument is marked as o. In (3), the ni-marked argument is the controller. And, in (4b and c), the case particle associated to the controller is ga. Notice that while these sentences all show instances of 'object' control, the range of case particles which are attached to the controlling argument is not unique. It appears that the range of particles in question depends on the case array that a verb possesses. Thus, even within the same type of control, like in (2 and 3), the case particle attached to the controlling argument varies. Then, it will not be possible to draw a generalization underlying case particles and the control phenomenon, and, in effect, a morphological approach fails to account for the control phenomenon.

Next, I would like to attempt a morpho-semantic approach assuming lexical structure and the case linking rule in Farmer (1980). I will first state some of the assumptions relevant to our discussion. In Farmer (1980), passive morpheme -hare and causative morpheme -sase are treated as...
verbal affixes instead of verbs, and passives and causatives are considered as complex predicates as a result of morphological operations. Farmer further claims that lexical structure of *tabe* 'to eat,' for example, and its complex predicates look like (10):

\[
\begin{align*}
& a. \quad (\_\_\_ \text{tabe}) \\
& b. \quad (\text{direct}) \text{ passive} \\
& \quad (\_\_\_ \text{tabe} \text{ rare}) \\
& c. \quad \text{causative} \\
& \quad (\_\_\_ \text{tabe} \text{sase})
\end{align*}
\]

In (10a), *tabe* 'to eat' is a two-place predicate, and the lexical structure has two argument slots. 'S' rule applies to the lexical structures as in (10) to indicate 'primary' argument position. The diacritic 'S' stands for 'subject.' The 'S' rule is stated as in (11):

\[
(11) \quad \text{Assign the diacritic 'S' to the primary argument position in a propositional argument structure [lexical structure]} \quad \text{(Farmer 1980)}
\]

After the application of (11), the lexical structures in (10) would appear as follows:

\[
\begin{align*}
& a. \quad (\_\_\_ \text{tabe}) \\
& \quad S \\
& b. \quad (\text{direct}) \text{ passive} \\
& \quad (\_\_\_ \text{tabe} \text{ rare}) \\
& \quad S \\
& c. \quad \text{causative} \\
& \quad (\_\_\_ \text{tabe} \text{sase}) \\
& \quad S \quad S
\end{align*}
\]

To the lexical structures in (12), the case linking rule of (13) applies:

\[
(13)a. \quad \text{Link leftmost 'S': GA} \\
\quad b. \quad \text{Link rightmost argument: O} \\
\quad c. \quad \text{Elsewhere link: NI}
\]

given these assumptions, consider (1a). Presumably, *yakusoku suru* 'to promise' takes two argument slots in its lexical structure. One slot corresponds to the person who promises (i.e., source), and the other slot corresponds to the content of the promise, that is, what is promised (i.e., theme). In the present case, theme is represented syntactically as a complement clause. I assume the complement clause corresponding to theme takes the rightmost argument slot in lexical structure, and that this slot is exempted from the case linking rule of (13). Notice, in (1a), the goal argument *Bill ni* is present. However, this goal argument can be absent in (1a). Thus, the goal is not an obligatory linguistic argument of *yakusoku*-s. Therefore, I assume the goal argument slot is not specified in the lexical structure of *yakusoku*-s. After the linking rule of (13) applies, the lexical structure of *yakusoku*-s would look like (14), and the passive and causative counterparts would be (15) and (16):

\[
\begin{align*}
& (14) \quad (\text{GA } V' \text{ yakusokus}) \\
& \quad v'=\text{propositional complement} \\
& (15) \quad (\text{NI } \text{GA } V' \text{ yakusokus}) \text{ are} \\
& (16) \quad (\text{GA } O \text{ V' yakusokus}) \text{ sase}
\end{align*}
\]

Coming back to the data in (1) and the (a) sentences of (4 and 5), compare the controllers of the embedded *ga*-marked arguments in these sentences, on the one hand, and (14)
through (16), on the other. The controller corresponds to GA in (14), NI in (15), and O in (16). Notice the positions of these case particles in (14-16). They uniquely occupy the leftmost argument slot of the minimal (or innermost) boundary within the lexical structure. In other words, the ga-marked argument in the lexical structure of the embedded clause in (1) and the (a) sentences of (4 and 5) is always controlled by the leftmost argument slot of the minimal domain in the lexical structure of the main verb. Then, the control phenomenon can be captured in terms of the interdependency between the two lexical structures which correspond to main predicate and embedded predicate. For example, the interdependency for (1a) is illustrated as in (17):

(17)a. matrix (\[GA V' yakusoku-s\])

b. embedded (\[GA O shootai-s\])

(The left argument slot in (17b) does not have any corresponding representation within the string of words as in (1), and is called 'unevaluated argument slot' following the terminology in Farmer (1980)). We can state a rule which links the two argument slots across the two lexical structures. This is stated in (18) as a first approximation:

(18) Coindex the unevaluated argument slot in lexical structure of an embedded predicate with the leftmost argument slot of the minimal domain in the lexical structure of the main predicate.

Turning to 'object' control, settoku-s 'to persuade', for example, takes three argument slots, one of which is a complement clause. After the application of case linking rule of (13), the lexical structure of settoku-s will look like (19):

(19) (\[GA O V' settokus\])

Complex predicates such as passive and causative follow the same procedure deriving the lexical structure in (20) and (21).

(20) (\[(NI GA V' settokus) are\])

(21) (\[GA (NI O V' settokus) ase\])

Contrast (19-21) with the controller in (2) and the (b) sentences of (4 and 5). In the case of the simple predicate, as in (19), and the causative, as in (21), the controller is the o-marked argument slot. On the other hand, in the case of passive, as in (20), the controller is the ga-marked argument slot. Assuming again that the propositional complement positions at the rightmost argument slot in lexical structure, all the controllers occupy the penultimate argument slot in the lexical structure in (19-21). Thus, the interdependency between the matrix lexical structure and the embedded lexical structure for (2a), for example, is shown in (22).

(22)a. matrix (\[GA O V' settokus\])

b. embedded (\[GA dete-ik\])

(Again, the ga-marked argument slot in (22b) is 'unevaluated argument slot.' A rule can be stated as in (23).

(23) Coindex the unevaluated argument slot in lexical structure of an embedded predicate with the penultimate argument slot in the lexical structure of the matrix predicate.

Given the rules in (18) and (23), one might wonder what disallows the rule of (23) to apply to the control phenomenon
triggered by verbs like yakusoku-s, and what disallows the rule of (18) to apply to the control phenomenon triggered by verbs like settoku-s. That is, (18) and (23) are not sufficient to exclude the wrong application of the rules. Suppose each predicate is associated with at least one thematic role. Suppose, further, that each argument slot in lexical structure corresponds to the thematic role associated with the predicate in Japanese. For example, the thematic roles associated with yakusoku-s 'to promise' would be theme, and source (and perhaps optional goal). And, each correspondence can be shown as in (24):

(24) (GA source V' yakusokus) theme

The same thematic roles can be assumed for settoku-s 'to persuade', although their assignment is slightly different, as in (25):

(25) (GA source V' settokus) theme goal

Recall that the controller is the leftmost argument in (24), and the penultimate argument in (25). Moreover, the unevaluated argument is contained in the propositional complement. Thus, when the controlled element (the unevaluated argument) is contained in theme, the controller is source; and when the controlled element is contained in goal, the controller is theme. This regularity is precisely what Culicover and Wilkins (forthcoming) argue as thematic condition for one type of control cases as in (1-3) for English. When we look at complex predicates such as passive and causative, the same regularity is found since the relation described in (24) and (25) is always contained in these complex predicates. Therefore, the passive morpheme ~rare and the causative morpheme ~sase should not influence thematic relation within the minimal domain of the lexical structures of yakusoku-s and settoku-s.

Then, using the constraint on thematic relations, we can modify the rules of (18) and (23), which are stated in (26) and (27), respectively:

(26) Coindex the unevaluated argument slot in lexical structure of an embedded predicate with the leftmost argument slot of the minimal domain in the lexical structure of the matrix predicate (= (18))

Let the thematic role corresponding to the argument slot which contains the unevaluated argument slot be 01, and the thematic role corresponding to the leftmost argument slot of the minimal domain in the lexical structure of the matrix predicate be 02

thematic condition: (i) 01 and 02 must be assigned by the same θ-assigner
(ii) 01 is theme, and 02 is source

(27) Coindex the unevaluated argument slot in lexical structure of an embedded predicate with the penultimate argument slot in the lexical structure of the matrix predicate (= (23))

thematic condition: (i) 01 and 02 must be assigned by the same θ-assigner
(ii) 01 is goal, and 02 is theme

At this point, we should reconsider the rules of (26) and (27). The morpho-semantic approach I have shown appears to work with an additional thematic condition, as in (26) and (27). However, once thematic conditions are added, the relevance of the morpho-semantic treatment, as in (18) and (23), to the control phenomenon becomes quite questionable. In other words, what is really necessary in order to account for the control phenomenon instantiated in (1-7) seems to be not the morpho-semantic operation as in (18) and (23), but rather, the thematic constraint with a locality condition on
lexical structure. In other words, we can utilize lexical structure and thematic roles to account for the control phenomenon in Japanese. Then, it would be reasonable to get rid of the morpho-semantic approach in favor of thematic analysis for a simpler explanation of the phenomenon. Thus, the thematic constraints should be stated as in (28):

(28) Let the thematic role corresponding to the argument slot which contains the unevaluated argument slot be $\theta_1$, and the thematic role corresponding to the controlling argument be $\theta_2$

**thematic condition:** (i) $\theta_1$ and $\theta_2$ must be assigned by the same $\theta$-assigner
   (ii) a. If $\theta_1$ is theme, then $\theta_2$ is source, or
       b. If $\theta_1$ is goal, then $\theta_2$ is theme

The thematic condition stated in (28) accounts for all the data in (1-7).

In conclusion, I have demonstrated that syntactic and morphological approaches fail to account for control phenomenon because neither approach would be able to distinguish 'subject' control from 'object' control. I have also discussed a morpho-semantic approach which turned out to be redundant since what is actually relevant is only the thematic relation between verbal arguments. Finally, I claimed that thematic constraints on lexical structure alone are sufficient in provicing a solution to the obligatory control phenomenon in Japanese. As I originally stated, this paper is programmatic. Only further investigation will confirm or refute the tentative results presented here.

**Notes**

- I would like to thank Peter Culicover, Stuart Davis, Ann Farmer, Kayoko Hirata, Eloise Jelinek, and Chisato Kitagawa for their comments and discussions on earlier versions of this paper.

1. Throughout the examples, I use indices as follows: When two noun phrases (one or both can be non-overt) are un-indexed, they should be interpreted as the same individual; whereas when they are indexed differently they are to be construed as different individual. '*' indicates that the sentence is not acceptable, and '?' means that the sentence is questionable.

2. At this point, it is not clear to me how to determine the number and the type of arguments associated with a verb. In this regard, English seems to be clear in comparison to Japanese, because, in most cases, there is a one-to one correspondence between lexical structure and a string of words. Thus, in the sentence 'I promised to go to Japan,' for example, the goal argument (i.e., the person to whom the promise is directed) need not be present. Then, we could conclude that the goal is not an obligatory linguistic argument associated with promise. In Japanese, on the other hand, the judgement is not so straightforward because noun phrases such as subjects and objects can be non-overt given a context. That is, unlike English, the arguments required in lexical structure are not necessarily represented in a string of words. In this paper, I assume that yakusoku suru forms a parallel lexical structure to promise in English, and that it takes two obligatory linguistic arguments, source and theme. (As we will notice below, assuming goal as an obligatory argument would not make a difference to the thematic analysis I will propose later, however.)

3. For the same reason stated in Note 2 above, it is not clear to me how to determine the number of arguments a verb takes. I simply postulate that settoku suru is associated with source, goal, and theme, and thus, forms a three-place predicate.
REFERENCES


DEFINING THE MINIMAL DOMAIN OF BINDING IN JAPANESE

Mari Sakaguchi
University of California, Los Angeles

1. Introduction.

Our aim in this paper is twofold: first, to give the precise condition for the interpretation of *jibun*, and second, to express the distribution of reflexives in terms of the same syntactic parameter as that of pronouns. One attraction of Chomsky's Government and Binding Theory (Chomsky, 1981) is that it attempts to satisfy both of our goals.

The following two properties show that *jibun* differs from English reflexives:

1. There can always be a deictic (i.e., utterance-dependent) reading in addition to the bound-variable reading.

2. The antecedent of *jibun* does not have to be in the same clause that contains *jibun*.

These are properties that resemble English pronouns. These facts cause problems for the Binding Theory, which is defined in terms of minimal domain.

The facts above can be accounted for if we distinguish the clause-bounded interpretation of *jibun* from its non-clause-bounded interpretation. 1 Close examination of the 'sloppy identity' phenomenon reveals that anaphor-antecedent