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Light Verbs and  $\theta$ -Marking

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This is a study of  $\theta$ -marking with the Japanese Verb *suru*, which has the apparently peculiar property of allowing the head of its direct object to  $\theta$ -mark arguments at the clause level. Our general goal in this article is to explore the predicate-argument complex associated with *suru* and to show that its properties can be derived from the interaction of complex predicate formation with a particular theory of argument structure representation.

*Suru* is thematically incomplete or “light” in the sense of Jespersen (1954) and Cattell (1984).<sup>1</sup> It subcategorizes and case-marks a direct object NP, without assigning it a  $\theta$ -role.  $\theta$ -marking in the *suru* complex is a function of a process of complex predicate formation, which we call *Argument Transfer*. The nominal  $\theta$ -marker transfers some or all of its arguments to the argument structure of the light Verb *suru*. As a result, both *suru* and the head of the object NP can act as  $\theta$ -markers, each with its own  $\theta$ -marking domain. The Noun “lends” arguments to *suru*, turning *suru* into a  $\theta$ -marker and remaining an impoverished  $\theta$ -marker itself. Thus, Transfer does not simply merge the two predicates and their argument structures into a single unit, in the way that complex predicate formation is usually conceived. Ideas using complex predicate formation of various types have been developed for related English phenomena by Cattell (1984), Higgins (1974), and Jackendoff (1974).

The behavior of Transfer reflects certain properties of argument structures, which are not just lists of arguments, but form structured representations, as proposed in Grimshaw (to appear). In addition to the now familiar internal/external distinction of Williams (1981), developed in work by Zubizarreta (1985) and Levin and Rappaport (1986), we will argue that internal arguments are not homogeneous, but also participate in the structural organization of argument structure. Whereas Nouns and Verbs generally have

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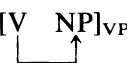
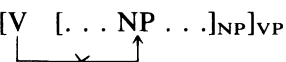
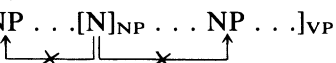
<sup>1</sup> Discussing “light” Verbs, Jespersen (1954, VI, 117–118) comments on “the general tendency of ModE to place an insignificant verb, to which the marks of person and tense are attached, before the really important idea . . .”.

similar argument structure representations, Nouns do not have subject arguments. Instead, the relevant position in their argument structure is lexically suppressed or satisfied and cannot be responsible for  $\theta$ -marking an argument, a hypothesis suggested in Zubizarreta (1985) and developed further in Grimshaw (1986; to appear).

We will show that the proposed representation of argument structure, together with the theory of Transfer, predicts the rather intricate pattern of argument distribution within the *suru* complex.

### 1. $\theta$ -Opaque and $\theta$ -Transparent NPs

$\theta$ -marking obeys strict locality conditions and is basically restricted to sisters (Chomsky (1981)). An argument NP fills a position in the argument structure of its governing Verb, and no element inside the NP interacts thematically with any element outside it. In this sense, argument NPs are opaque to  $\theta$ -marking. An NP can *be* an argument of a Verb, but it cannot *contain* an argument of a Verb. As a result, the  $\theta$ -marking in (1a) is possible, but that in (1b) is not: a Verb cannot assign a  $\theta$ -role *into* an NP. Moreover, the head of an NP does not assign a  $\theta$ -role outside its maximal projection, with the result that the  $\theta$ -marking in (1c) is not allowed. NP is generally opaque to  $\theta$ -marking in both directions, presumably because it is opaque to government in both directions.

- (1) a. [V NP]<sub>VP</sub>  
  
 b. [V [. . . NP . . .]<sub>NP</sub>]<sub>VP</sub>  
  
 c. [. . . NP . . . [N]<sub>NP</sub> . . . NP . . .]<sub>VP</sub>  


Japanese has a productive construction involving what appears to be a case of the  $\theta$ -marking in (1c). It is illustrated in (2a), where *aiseki* 'table-sharing', the head of the direct object NP, seems to be  $\theta$ -marking *John* and *Bill*.<sup>2</sup>

- (2) a. John-wa Bill-to AISEKI-o shita.  
 John-Top Bill-with table-sharing-Acc *suru*-Past  
 'John shared a table with Bill.'  
 b. John-wa Bill-to AISEKI shita.  
 John-Top Bill-with table-sharing *suru*-Past

The behavior of *suru* in Noun incorporation (as in (2b), where *aiseki* is not case-marked) has been extensively discussed in Japanese linguistics in Hasegawa (1979), Inoue (1976), Kageyama (1976–77; 1982), Kuroda (1965), Poser (1980), and many other works. Our goal is to determine and explain the properties of examples like (2a), where *suru* occurs with a direct object NP.

<sup>2</sup> *Shita* is composed of the stem *shi* and a past marker *ta*. We gloss all forms of the Verb as 'suru'. The entire direct object of *suru* will always be italicized, and the  $\theta$ -marking Noun will be capitalized.

The contribution of the object NP to  $\theta$ -marking can be easily seen in examples like (3a–c), where a different array of arguments appears in each case.

- (3) a. John-wa Mary-ni HANASHI-o shita.  
 John-Top Mary-to talk-Acc *suru*  
 ‘John talked to Mary.’
- b. John-wa Tookyoo-kara SHUPPATSU-o shita.  
 John-Top Tokyo-from departure-Acc *suru*  
 ‘John departed from Tokyo.’
- c. John-wa murabito-ni [ookami-ga kuru-to] KEIKOKU-o shita.  
 John-Top villager-to wolf-Nom come-Comp warn-Acc *suru*  
 ‘John warned the villagers that the wolf was coming.’

The argument array of the sentences in (3) varies with the Noun heading the direct object (*hanashi* ‘talk’ vs. *shuppatsu* ‘departure’ vs. *keikoku* ‘warning’). *Suru* has no influence on the number and type of arguments. Setting aside some complicated questions regarding the nature of argument structure in derived nominals discussed in Grimshaw (1986; to appear), the same set of arguments is seen to occur in nominalizations, where *suru* is not present and all the arguments are NP-internal. (The postposition *-ni* may not occur before *-no*. In these and later examples we replace it by *-e* inside NPs.)

- (4) a. John-no Mary-e-no HANASHI  
 John-Gen Mary-to-Gen talk  
 ‘John’s talk to Mary’
- b. John-no Tookyoo-kara-no SHUPPATSU  
 John-Gen Tokyo-from-Gen departure  
 ‘John’s departure from Tokyo’
- c. John-no murabito-e-no [ookami-ga kuru-to]-no KEIKOKU  
 John-Gen villager-to-Gen wolf-Nom come-Comp-Gen warning  
 ‘John’s warning to the villagers that the wolf is coming’

The argument structure of the Noun licenses the argument array that occurs with *suru*, even though the arguments occur outside the NP. The Noun is apparently assigning  $\theta$ -roles outside its own maximal projection. We will refer to such NPs as  *$\theta$ -transparent NPs*. It is easy to show that in (3) all arguments are outside the object NP. They have the case marking of the verbal/sentential system and not the nominal case marker *-no*, contrasting with the arguments in (4). They can undergo scrambling: for example, the NP marked with *-ni* in (3a,c) can be placed after the NP marked with *-o*, giving a word order that is normal inside S but impossible inside NP, where the head Noun is always the last element.

We use the term *light Verb* to refer to Verbs like *suru* that cooccur with  $\theta$ -transparent NPs. Other Japanese Verbs are *heavy* and take only  $\theta$ -opaque objects. For example, with *wasureru* ‘forget’ in (5), all arguments of the Noun must appear inside the object

NP. Example (5a), where the argument *Mary* occurs inside the NP, is grammatical, but (5b), where *Mary* occurs outside and is marked with *-ni*, is ungrammatical.

- (5) a. John-wa *Mary-e-no* HANASHI-o wasureta.  
 John-Top Mary-to-Gen talk-Acc forgot  
 ‘John forgot the talk to Mary.’  
 b. \*John-wa *Mary-ni* HANASHI-o wasureta.  
 John-Top Mary-to talk-Acc forgot

In sum, only *suru* takes a  $\theta$ -transparent object. Other verbs take only  $\theta$ -opaque objects, which allow only inside arguments. Other grammatical properties correlate with the difference between  $\theta$ -opaque and  $\theta$ -transparent NPs. Whereas  $\theta$ -opaque NPs can freely be topicalized,  $\theta$ -transparent NPs resist topicalization. This is illustrated in (6) and (7).

- (6)  *$\theta$ -opaque object, topicalization possible*  
 a. John-ga [[ookami-ga kuru-to]-no HOOKOKU]-o wasureteita.  
 John-Nom wolf-Nom come-Comp-Gen report-Acc had forgotten  
 ‘John had forgotten the report that the wolf was coming.’  
 b. [[Ookami-ga kuru-to]-no HOOKOKU]-wa John-ga wasureteita.  
 wolf-Nom come-Comp-Gen report-Top John-Nom had forgotten
- (7)  *$\theta$ -transparent object, topicalization impossible*  
 a. John-ga [ookami-ga kuru-to] HOOKOKU-o shita.  
 John-Nom wolf-Nom come-Comp report-Acc *suru*  
 ‘John reported that the wolf was coming.’  
 b. \*HOOKOKU-wa John-ga [ookami-ga kuru-to] shita.  
 report-Top John-Nom wolf-Nom come-Comp *suru*

The  $\theta$ -opaque object of ‘forget’ in (6a) can be topicalized, as in (6b). The object NP in (7a) is  $\theta$ -transparent, since an argument of its head—the complement sentence *ookami-ga kuru-to* ‘that the wolf is coming’—is not marked with *-no* and hence is not part of the NP. The ungrammaticality of (7b), the topicalized version of (7a), shows that topicalization of  $\theta$ -transparent NPs is not possible.

There are other differences, which probably reflect the nonreferential, predicate-like character of transparent NPs. Only opaque NPs relativize, for example, and only opaque NPs allow modification by elements like numerals.

Nonetheless, the basic syntax of opaque and transparent NPs is identical. Both can contain a sequence of prenominal adjectives and other modifiers, and both reorder within S, following the standard Japanese pattern. Case marking is identical: both NPs receive accusative case, realized by *-o*. Both opaque and transparent NPs allow arguments of the Noun to appear within the NP. In (8) one argument (*murabito-ni*) of *keikoku* ‘warn’ appears outside the NP. The second argument (the complement sentence *ookami-ga kuru-to*) is inside the NP and is marked with *-no*, just as it was in example (6a).

- (8) John-wa murabito-ni [[ookami-ga kuru-to]-no KEIKOKU]-o shita.  
 John-Top villager-to wolf-Nom come-Comp-Gen warn-Acc suru  
 'John warned the villagers that the wolf was coming.'

A complicating factor in this study is the existence of another case of *suru*, in which it takes opaque objects; in fact, it is a  $\theta$ -marker of the usual kind. The ambiguity between this "heavy" *suru* and light *suru* is very similar to that between the English auxiliary *do* and the main verb *do*. The object of heavy *suru* shows none of the characteristics of transparent NPs; for example, topicalization is possible with heavy *suru*, as shown in (9), where *Tookyoo-e-no ryokoo-wa* is a topicalized object.

- (9) [Tookyoo-e-no RYOKOO]-wa John-ga shita.  
 Tokyo-to-Gen trip-Top John-Nom suru  
 'John made the trip to Tokyo.'

The object of heavy *suru* does not allow outside arguments. This is why (7b) is not grammatical, with heavy *suru* as the verb. Heavy *suru* also places thematic restrictions on the subject, which must be, roughly speaking, agentive. As a result, both topicalizability and resistance to outside arguments correlate with agentivity. (10a) is ungrammatical because topicalization requires heavy *suru*, but the subject (*densha* 'train') violates the agentivity requirement. (10b) is grammatical because it involves light *suru* (*Oosaka-ni* is an outside argument) and light *suru* places no requirements on its subject.

- (10) a. \*[Oosaka-e-no TOOCHAKU]-wa densha-ga shita.  
 Osaka-to-Gen arrival-Top train-Nom suru  
 'The train arrived in Osaka.'  
 b. Densha-wa Oosaka-ni TOOCHAKU-o shita.  
 train-Top Osaka-to arrival-Acc suru

Of course, both cases of *suru* are possible when the subject is agentive. Because of the differences between light and heavy *suru*, disambiguation can usually be achieved with nonagentive subjects and/or outside arguments. Some contamination of grammaticality judgments from the ambiguity is unavoidable, however. Speakers of Japanese are uncertain about the status of a number of the examples below marked with ?, judging them bad but finding it difficult to decide *how* ungrammatical they are. We interpret the indecision as meaning that the examples are ungrammatical, the judgments being blurred by the grammaticality of the very same NPs as opaque objects.

## 2. $\theta$ -Marking with Light Verbs

In this section we will sketch our basic proposal for light *suru*. Our hypothesis is that *suru* is a Verb with only a skeletal argument structure and that  $\theta$ -marking with light *suru* is a result of *suru* combining with a  $\theta$ -assigning Noun.

### 2.1. $\theta$ -Marking Nouns

Since the transparent NP occurring with *suru* is the source of  $\theta$ -marking for the clause, the Noun that heads such an NP must itself be a  $\theta$ -role assigner. The Nouns *hanashi* 'talk', *shuppatsu* 'departure,' and *keikoku* 'warning' resemble their English counterparts, which can be argument-taking. Concrete Nouns like 'dog' and 'chair' do not have this capacity and therefore cannot head transparent NPs. This accords with the position of Anderson (1983–4, 5) that concrete and abstract Nouns differ in their  $\theta$ -assigning capacities, with only abstract Nouns acting as  $\theta$ -assigners. This idea is developed in Grimshaw (1986; to appear) and Safir (1987), where it is argued that "process" nominals are  $\theta$ -markers and "result" nominals are not. Only process (that is,  $\theta$ -marking) Nouns will cooccur with light *suru*.

The difference between the two types is detectable in opaque nominals as well as transparent ones. Fundamentally, the prediction is that Nouns that cannot head transparent NPs will not take arguments in opaque nominals. They will occur only with possessives and other modifiers. The prediction appears to be borne out; citing pairs of examples like those given in (3) and (4), Inoue (1976, 242–243) makes the important observation that the correspondence is regular: every Noun that combines with light *suru* can also head a derived nominal. This generalization can be rephrased in our terms: all Nouns that can head  $\theta$ -transparent NPs can also head opaque process nominals, assigning the same  $\theta$ -roles in each case. So the argument structure assigned to Nouns that head transparent NPs can be independently motivated by opaque process nominals.

### 2.2. Light Verbs

What property of *suru* makes it a light Verb? Our hypothesis is that *suru* is thematically incomplete. In fact, it assigns no  $\theta$ -roles; any  $\theta$ -marking must be done by another item. A "light Verb," then, is one whose argument structure is skeletal or incomplete. In fact, it appears that *suru* assigns no  $\theta$ -roles at all. Although it is a main Verb, its argument structure is more like that of an auxiliary: English *do*, for example. It is important to stress here that light *suru* is not intrinsically agentive (see, for example, (10b)), and it imposes no restrictions on the  $\theta$ -role of its subject. No other selectional effects are detectable either: subjects of *suru* can be human or nonhuman, animate or inanimate, and so forth, as illustrated in (11).

- (11) a. John-ga Bill-to HANASHI-o shiteiru.  
 John-Nom Bill-with talk-Acc *suru*  
 'John is talking to Bill.'
- b. Ya-ga mato-ni MEICHUU-o shita.  
 arrow-Nom target-to hit-Acc *suru*  
 'The arrow hit the target.'

- c. America-ga 200-nen-mae-ni Igrisu-kara *DOKURITSU-o* shita.  
 America-Nom 200-year-ago-at England-from independence-Acc *suru*  
 ‘America became independent of England 200 years ago.’

The Nouns with which *suru* occurs can themselves have any number of arguments and any type of argument structure. The only positive property of *suru* is that it assigns accusative case; it is transitive. Of course, its direct object is not an argument—*suru* assigns case to a transparent NP, which bears the accusative case marker *-o*. *Suru* functions as a bearer of verbal inflection for the clause and as a case assigner, allowing the Noun in its direct object to assign  $\theta$ -roles in a verbal context. Combining an NP with *suru* turns the head Noun into the functional equivalent of a Verb.

The lexical entry of *suru* is given in (12). We use parentheses to indicate the argument list of the Verb: empty in the case of light *suru*. The notation <acc> indicates that *suru* assigns accusative case, but not to an argument position. (This is drawn from the Lexical Functional Grammar treatment of raising to object/exceptional case marking, where the verb is analyzed as taking a direct object that does not correspond to any of its arguments (Bresnan (1982)).)

(12) *suru*, V; ( ) <acc>

As we have already suggested, light *suru* resembles in many ways the *do* of English *Do Support*, which carries inflection but assigns no  $\theta$ -roles and imposes no selectional restrictions. The key difference between *do* and *suru* is that *suru* is transitive, so it can combine with NPs for  $\theta$ -role assignment, whereas *do* must combine with another Verb. Note that the intransitivity of *do* supports the idea that the transitivity of *suru* is a lexical property, since there is lexical variation among light Verbs.

In sum, the head of the direct object NP is a  $\theta$ -assigner but does not carry inflection or assign accusative case. The Verb *suru* is not a  $\theta$ -assigner, but it does assign accusative case and it does carry inflection.

### 3. The Distribution of Arguments

#### 3.1. *Transfer and $\theta$ -Marking*

The next issue, then, is how  $\theta$ -marking works in the NP-*suru* construction. As noted, when an NP is  $\theta$ -transparent, the Noun’s argument structure *appears* to be available for  $\theta$ -marking arguments outside the NP. We will argue that appearances here are misleading and that  $\theta$ -marking in the *suru* complex is local, just like  $\theta$ -marking elsewhere. Arguments inside the NP are  $\theta$ -marked by the Noun, and arguments under S are  $\theta$ -marked by *suru*, which absorbs argument structure from the Noun.

The basis of this is a process of *Argument Transfer*, through which *suru* acquires a  $\theta$ -marking capacity. There are two logically possible cases: one where the Noun retains some of its own argument-taking capacity, and one where it completely loses this capacity and *suru* is responsible for all  $\theta$ -marking.

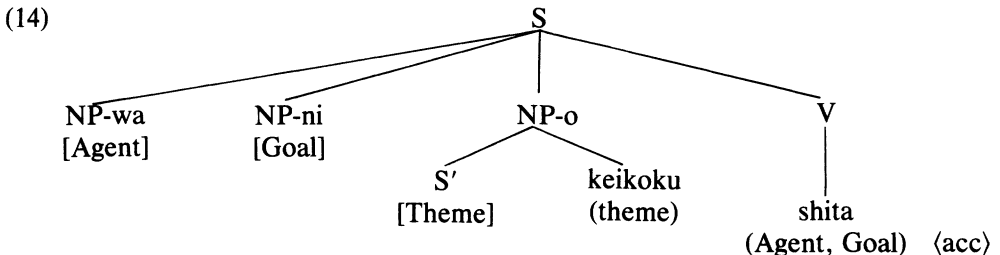


(13) illustrates the first possibility of Argument Transfer as it applies to *suru* and the Noun *keikoku* ‘warning’, which takes an Agent, a Theme, and a Goal. Although we will have reason to modify this later, for now we represent the argument structure of *keikoku* as a simple argument list. Transfer removes argument positions from the list associated with *keikoku*, inserting them into the argument structure of *suru* and leaving only the Theme in the argument structure of *keikoku*.

- (13) a. *keikoku* (Agent, Goal, Theme)  
 b. *suru* ( ) ⟨acc⟩  
 c. *keikoku* (Theme) + *suru* (Agent, Goal) ⟨acc⟩

(13a,b) are the inputs to Argument Transfer, and (13c) is the result, a pair of lexical items (which must appear together). The Noun *keikoku* retains just the Theme role, which will be assigned NP-internally, and the transitive Verb *suru* assigns the transferred roles Agent and Goal outside NP.

These argument structures support the  $\theta$ -marking schematically indicated in (14), where the  $\theta$ -role of each phrase is indicated in square brackets. (To simplify the representation, we do not include a VP node in our diagrams.) This is how  $\theta$ -marking works for (15) (= (8)).

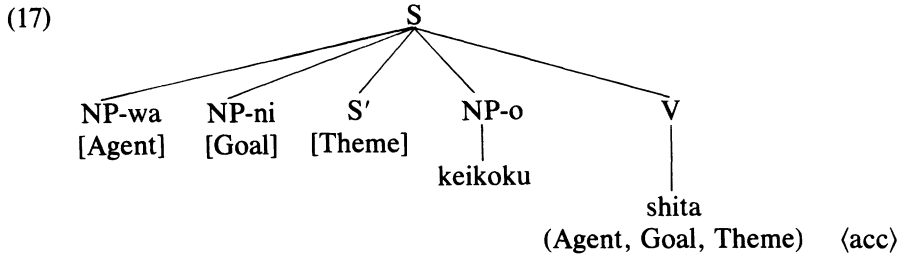


- (15) John-wa murabito-ni [[ookami-ga kuru-to]-no KEIKOKU]-o shita.  
 John-Top villager-to wolf-Nom come-Comp-Gen warn-Acc *suru*  
 ‘John warned the villagers that the wolf was coming.’

The second possibility is for *suru* to absorb all arguments of the Noun, leaving the Noun with no  $\theta$ -marking capacities. In this case all arguments are  $\theta$ -marked by the Verb and are therefore realized outside the object NP. This is illustrated in (16)–(18).

- (16) a. *keikoku* (Agent, Goal, Theme)  
 b. *suru* ( ) ⟨acc⟩  
 c. *keikoku* ( ) + *suru* (Agent, Goal, Theme) ⟨acc⟩

The derived argument structure of *suru*  $\theta$ -marks all the arguments, which occur outside the transparent NP as in (18).



- (18) John-wa murabito-ni [ookami-ga kuru-to] KEIKOKU-o shita.  
 John-Top villager-to wolf-Nom come-Comp warn-Acc suru  
 'John warned the villagers that the wolf was coming.'

The result of Transfer is a pair of linked lexical items that must be inserted together. Obviously, no well-formed structure would result if an argument structure from (13c) was combined with an argument structure from (16c). Inserting *suru* with the argument structure in (13c) together with *keikoku* with the argument structure in (16c) would result in no Theme being realized; inserting *suru* with the argument structure in (16c) together with *keikoku* with the argument structure in (13c) would result in two Themes being realized. The lexical insertion of the Noun-Verb complex can presumably be assimilated to a more general theory of phrasal constructions, which will govern the behavior of idioms (like *kick the bucket*) and other lexical expressions that do not constitute single words. In support of the hypothesis that the Noun and *suru* are listed together in a derived lexical entry we can cite the fact that there is lexical variation among Nouns with respect to the *suru* construction. For example, *shooshin* 'promotion' occurs with *suru* in the incorporation construction, as in (19a), and can head an opaque NP, as in (19b). However, *shooshin* in a phrasal *suru* complex (illustrated in (19c)) is accepted by some speakers and rejected by others.

- (19) a. John-wa buchoo-ni SHOOSHIN shita.  
 John-Top section chief-to promotion *suru*  
 'John obtained promotion to section chief.'
- b. Buchoo-e-no shooshin-ga hayakatta.  
 section chief-to-Gen promotion-Nom fast-Past  
 '(He) won speedy promotion to section chief.'
- c. ??John-wa buchoo-ni SHOOSHIN-o shita.  
 John-Top section chief-to promotion-Acc *suru*  
 'John obtained promotion to section chief.'

There appears to be no principled reason why *shooshin* should be ill-formed in (19c), so perhaps this represents a lexical gap for some speakers.

An immediate question is why Transfer cannot occur with just *any* Verb-Noun pair, instead being limited to light Verbs like *suru*. Our suggestion is that Transfer requires an incomplete argument structure—one with "space" for the addition of arguments. Verbs with completely specified argument structures cannot be targets for Transfer.

Transfer does not require a completely empty argument structure—*suru* has a causative form, *saseru*, which is illustrated in (20).

- (20) Mary-ga John-ni Bill-to AISEKI-o saseta.  
 Mary-Nom John-to Bill-with table-sharing-Acc *suru*-cause  
 ‘Mary made John share a table with Bill.’

Our analysis of (20) is this: causativization adds an argument to *suru*, giving it the partially specified representation in (21).

- (21) *saseru* (Agent, ) <acc>

Transfer then adds arguments in the usual way. This is possible because the argument structure of *saseru* is incomplete, so it remains a legitimate target for Transfer.

A crucial feature of the theory proposed here is that there are two  $\theta$ -markers in a *suru* complex, and two separate domains of  $\theta$ -marking. Transfer does not form a single predicate; it forms two predicates, each with altered  $\theta$ -marking properties. We could instead try to analyze these constructions as involving only a single  $\theta$ -marker, either *suru* or the Noun actually being responsible for all  $\theta$ -marking. If, for example, *suru* always inherited all arguments from the Noun, it could  $\theta$ -mark both inside and outside arguments, and the Noun would not be a  $\theta$ -marker at all. Alternatively, *suru* could be viewed as somehow allowing the Noun to  $\theta$ -mark through the NP node, so that the Noun could  $\theta$ -mark at the S level as well as within NP. The Noun would then be behaving essentially as though the NP node were absent. In both of these analyses there would be only one  $\theta$ -marker and one  $\theta$ -marking domain.

The argument-transfer theory, with its two  $\theta$ -markers, has two important advantages over a theory that posits a single  $\theta$ -marker. We summarize the relevant points here and provide a more detailed discussion in section 4.

(i) This solution maintains strict locality of  $\theta$ -marking, since  $\theta$ -marking in the two domains, NP and S, is performed by two different argument structures. Single-predicate theories would necessarily involve nonlocal  $\theta$ -marking (a case of (1b) or (1c), in fact).

(ii) In sections 3.2–3.4 we will explore the behavior of arguments within the *suru* complex. Part of the explanation for their distribution depends crucially upon the idea that an argument inside NP is  $\theta$ -marked by the Noun alone, whereas an outside argument is  $\theta$ -marked by the *suru* predicate.

To sum up, in this theory NP and S still constitute distinct domains for  $\theta$ -marking even for transparent NPs. Arguments of the Noun can go inside or outside the direct object NP because they can receive their  $\theta$ -marking equally well in either position, satisfying the argument structure of either the Noun or the *suru* predicate.

### 3.2. Transfer and Outside Arguments

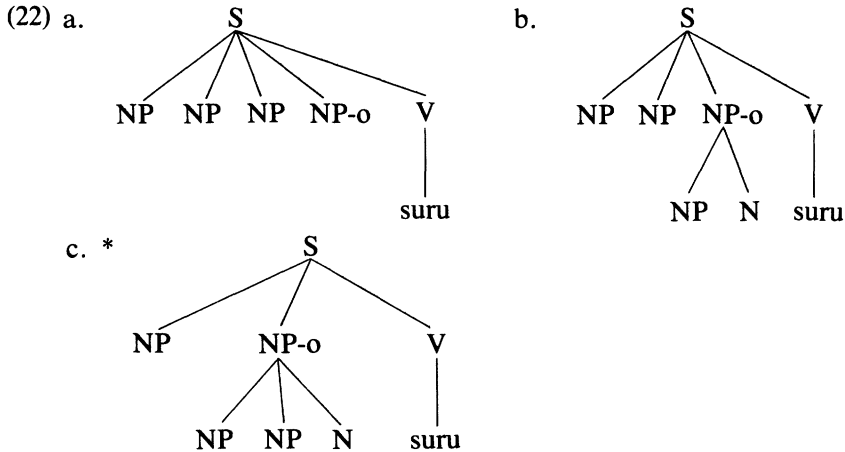
As articulated so far, the theory of light Verbs predicts that arguments of the Noun can freely occur distributed inside or outside the direct object NP. In fact, the distribution

of arguments is not completely free. There are three important generalizations:

- (i) At least one argument apart from the subject must be outside the NP.
- (ii) The subject argument must always be outside the NP.
- (iii) For Nouns that take a Theme and a Goal, if the Theme argument is realized outside NP, the Goal must also be realized outside NP.

We will argue that these restrictions follow from the hierarchical organization of argument structure plus the assumption that Transfer must transmit at least one unsuppressed argument position to the *suru* predicate.

For Nouns that take three arguments (a subject and two others) both nonsubject arguments can be realized outside the NP, as in (22a). Alternatively, one can be inside and one outside, as in (22b), a phenomenon we will refer to as *splitting*. However, it is not possible for both to appear inside the NP, even when the comparable opaque NP is fully well-formed. This is schematized in (22c).



For example, Nouns like *shoomei* 'proof' combine with *suru* and take both a sentential complement and an indirect object. (23a) shows that both arguments can occur outside, leaving just *shoomei-o* as the direct object NP.

- (23) a. Sono deeta-ga wareware-ni [kare-no riron-ga machigatte iru-to]  
 that data-Nom us-to he-Gen theory-Nom mistaken be-Comp  
*SHOOMEI-o* shiteiru.  
 proof-Acc *suru*  
 'That data proves to us that his theory is mistaken.'
- b. Sono deeta-ga wareware-ni [[kare-no riron-ga machigatte  
 that data-Nom us-to he-Gen theory-Nom mistaken  
*iru-to]-no SHOOMEI]-o shiteiru.  
 be-Comp-Gen proof-Acc *suru**

- c. ?Sono deeta-ga [wareware-e-no [kare-no riron-ga machigatte  
that data-Nom us-to-Gen he-Gen theory-Nom mistaken  
iru-to]-no SHOOMEI]-o shiteiru.  
be-Comp-Gen proof-Acc suru

In (23b) the sentential complement occurs inside the object NP, as indicated by the *-no* marker. The indirect object *wareware-ni* 'to us' is outside, however, so here the arguments of the Noun are split between the NP and the clause. (23c) is ungrammatical, with both the indirect object and the sentential complement inside NP. It might be suggested that the decline in grammaticality of (23c) should be attributed to the substitution of *-e* for *-ni* mentioned earlier. However, Naoki Fukui has pointed out to us that the contrast between (23a,b) and (23c) is preserved even if *ni* is replaced by *nitaishite*, which can occur inside NPs as well as in clauses.

The prohibition against having both arguments inside NP cannot be reduced to a general condition governing NPs. The reason is that (24), the opaque counterpart to (23c), is well-formed, if complex.

- (24) [Sono deeta-no wareware-e-no [kare-no riron-ga machigatte  
that data-Gen us-to-Gen he-Gen theory-Nom mistaken  
iru-to]-no SHOOMEI]-o tsukatta.  
be-Comp-Gen proof-Acc used  
'(I) used that data's proof to us that his theory is mistaken.'

Other examples support the general conclusion. *Shisa-o suru* 'to suggest' takes a direct object and an indirect object. For reasons irrelevant in the present context, both arguments cannot be outside with normal case marking: (25) is ungrammatical because it violates the Double *-o* Constraint (Harada (1973), Shibatani (1973), Kuroda (1978), Saito (1985)).

- (25) \*Sono hookokusho-wa Mary-ni [kaiketsu-no hookoo]-o  
that report-Top Mary-to solution-Gen direction-Acc  
SHISA-o shiteiru.  
suggestion-Acc suru  
'That report suggests to Mary the direction of the solution.'

Topicalizing *kaiketsu-no hookoo* 'direction of the solution' circumvents the Double *-o* Constraint, and (26a) shows that it is indeed possible to have both arguments outside. As before, it is perfectly acceptable to have one argument inside and one outside, splitting the two arguments between the NP and the clause, as in (26b). To have both arguments inside is not possible, however, so (26c) is ungrammatical.

- (26) a. [Kaiketsu-no hookoo]-wa sono hookokusho-ga Mary-ni  
solution-Gen direction-Top that report-Nom Mary-to  
SHISA-o shiteiru.  
suggestion-Acc suru

- b. Sono hookokusho-wa Mary-ni [[*kaiketsu-no hookoo*]-no  
that report-Top Mary-to solution-Gen direction-Gen  
*SHISA*]-o shiteiru.  
suggestion-Acc *suru*
- c. ?Sono hookokusho-wa *Mary-e-no* [*kaiketsu-no hookoo*]-no  
that report-Top Mary-to-Gen solution-Gen direction-Gen  
*SHISA*]-o shiteiru.  
suggestion-Acc *suru*

The opaque NP corresponding to (26c) is grammatical.

- (27) Bill-wa [*sono hookokusho-no Mary-e-no* [*kaiketsu-no hookoo*]-no  
Bill-Top that report-Gen Mary-to-Gen solution-Gen direction-Gen  
*SHISA*]-o mushishita.  
suggestion-Acc ignored  
'Bill ignored that report's suggestion to Mary of the direction of the solution.'

In general, then, light Verb complexes with two nonsubject arguments allow both arguments to be outside the object NP, and they allow splitting between the inside and outside positions, but they do not allow both arguments to be inside. This restriction appears to be specific to transparent NPs, given that opaque NPs allow multiple inside arguments.

One way of stating the descriptive generalization is to say that one nonsubject argument must be outside the NP. This connects the behavior of Nouns with three arguments to an apparently different restriction found in complexes with two arguments. In such cases no argument at all can appear inside the NP, and therefore only outside arguments are found. This is exemplified by the locative argument of *toochaku* 'arrival' in (28), which can appear outside the NP, but not inside.

- (28) a. Densha-wa Uenoeki-ni *TOOCHAKU*-o shita.  
train-Top Ueno station-to arrival-Acc *suru*  
'The train arrived at Ueno station.'
- b. ?Densha-wa [*Uenoeki-e-no TOOCHAKU*]-o shita.  
-to-Gen -Acc

Similarly, the complements of *shuppatsu* 'departure' and *aiseki* 'table-sharing' must be outside. All three take inside arguments when they head opaque NPs, as illustrated for *aiseki* 'table-sharing' in (31).

- (29) a. Densha-wa Uenoeki-kara *SHUPPATSU*-o shita.  
train-Top Ueno station-from departure-Acc *suru*  
'The train departed from Ueno station.'
- b. ?Densha-wa [*Uenoeki-kara-no SHUPPATSU*]-o shita.
- (30) a. John-wa Bill-to *AISEKI*-o shita.  
John-Top Bill-with table-sharing-Acc *suru*  
'John shared a table with Bill.'

- b. ?John-wa [*Bill-to-no AISEKI*]-o shita.  
 John-Top Bill-with-Gen table-sharing-Acc *suru*
- (31) John-wa [*Bill-to-no AISEKI*]-o kotowatta.  
 John-Top Bill-with-Gen table-sharing-Acc refused  
 'John refused to share a table with Bill.'

Our conclusion is that at least one argument (other than the subject) must be outside the NP. As a result, three-argument complexes allow at most one inside argument, whereas two-argument complexes allow no inside arguments. Setting aside for the moment the case of the subject, this means that at least one position in the argument structure of the Noun must be transferred to *suru*.

This generalization has a number of further consequences. First, a Noun with *three* nonsubject arguments should allow *two* of them to occur inside, leaving only one outside. (32) is a candidate example, and the judgments support the predictions. (32a) contains only one inside argument, (32b) contains two inside arguments, and (32c) contains three inside arguments.

- (32) a. America-wa kin-de Mexico-to [*shinamono-no TORIHIKI*]-o  
 America-Top gold-for Mexico-with goods-Gen business-Acc  
 shiteiru.  
*suru*  
 'America does business in goods with Mexico in exchange for gold.'
- b. America-wa kin-de [*Mexico-to-no shinamono-no TORIHIKI*]-o shiteiru.
- c. ?America-wa [*kin-de-no Mexico-to-no shinamono-no TORIHIKI*]-o  
 shiteiru.

As expected, it is ungrammatical to include all three nonsubjects in the NP, as in (33a), although the opaque nominal in (33b), which corresponds to the ungrammatical transparent NP, is well-formed.

- (33) a. ?America-wa [*kin-de-no Mexico-to-no shinamono-no TORIHIKI*]-o  
 shiteiru.
- b. *Kin-de-no Mexico-to-no shinamono-no TORIHIKI-wa* abunai.  
 gold-for-Gen Mexico-with-Gen goods-Gen business-Top dangerous  
 'Doing business with Mexico in exchange for gold is dangerous.'

A second prediction is that only *arguments* should be relevant for determining whether an argument has been transferred to *suru*. Adjuncts, since they are not listed in the argument structure, cannot be transferred. An adjunct appearing outside the NP should therefore have no effect on grammaticality. This prediction seems correct: (34a) and (34b) correspond to the ungrammatical (23c) and (26c). Both are ungrammatical even though an adjunct has been added in the outside position (although speakers do report a slight improvement, inexplicable in our terms).

- (34) a. ?Sono deeta-ga koko-de/kyoo [wareware-e-no [kare-no  
 that data-Nom here/today us-to-Gen he-Gen  
 riron-ga machigatte iru-to]-no SHOOMEI]-o shiteiru.  
 theory-Nom mistaken be-Comp-Gen proof-Acc suru
- b. ?Sono hookokusho-wa saigoni/koko-de [Mary-e-no  
 that report-Top finally/here Mary-to-Gen  
 [kaiketsu-no hookoo]-no SHISA]-o shiteiru.  
 solution-Gen direction-Gen suggestion-Acc suru

So at least one argument of the Noun must transfer to *suru*. Why? We suggest that when no Transfer occurs, the  $\theta$ -Criterion is violated. During Transfer, which is after all a kind of complex predicate formation, the NP becomes exempt from the  $\theta$ -Criterion. It is certainly not an argument of *suru*, so it cannot be  $\theta$ -marked. Presumably it is licensed in a different fashion—by participation in  $\theta$ -assignment. If no Transfer occurs, however, the NP has the usual status and must be construed as the argument of some predicate. *Suru* is light and cannot meet this requirement; hence, a violation ensues. In this way, we can derive the result that one argument must be realized outside the object NP, as a side effect of Transfer.

### 3.3. Subjects

There are two issues to be addressed concerning the behavior of subjects in *suru* complexes. The first is why the subject of the complex must always be outside the NP. The second concerns the properties of Transfer: since the subject appears outside NP, it must be  $\theta$ -marked by *suru*. In order to be  $\theta$ -marked by *suru*, the subject must have been transferred to the *suru* predicate. Yet we have just shown that an additional argument must also be transferred. The problem is, then, why transferring *just* the subject does not exempt the NP from the  $\theta$ -Criterion.

There are many well-known differences between subjects of Nouns and subjects of Verbs; it has often been assumed that Nouns and Verbs have the same kind of argument structure but are subject to different principles governing the realization of their arguments. In this category are the proposals of Anderson (1983–4), Kayne (1981), and Rappaport (1983). However, recent work on nominalization suggests that the “external” argument structure position corresponding to the subject of a Verb is lexically suppressed for Nouns (see Zubizarreta (1985), Grimshaw (1986; to appear)), rather than internalized as suggested in Williams (1981). As a result, the argument position can never be syntactically satisfied: its status is very different from that of other arguments of Nouns and Verbs. Possessive NPs, then, are adjuncts, rather than arguments, a view developed more fully in Grimshaw (1986; to appear). A related hypothesis, based on the work of Esther Torrego on the ECP and extraction from NP, can be found in Chomsky (1986, 45–46).

For the sake of concreteness, we can view  $\theta$ -marking as assignment of an index from a position in an argument structure to the corresponding phrase, roughly as in



Stowell (1981). We can define an open position as one whose index has not been assigned to any phrase. A suppressed argument is an argument position with no index to assign. For example, *shoomei* ‘proof’ takes three arguments: Agent/Source, Theme, and Goal. Since it is a Noun, the Agent/Source (subject) position is suppressed as in (35) and has no associated index.

(35) *shoomei* (Agent/Source, Theme<sub>j</sub>, Goal<sub>k</sub>)

We have established that Transfer strips positions from the argument structure of the Noun and assigns them to that of *suru*. If the subject of the Noun were an open position, just like any other argument position, then it should certainly count for Transfer, and no other argument should have to be transferred. However, if the real requirement is that an *open* position must be transferred, the suppressed argument will not count for the computation, and the desired result will follow. It seems, then, that the basic principle governing  $\theta$ -transparent NPs is that the Noun must transfer to *suru* at least one argument with an unassigned index.<sup>3</sup> One possible interpretation of this is that more generally, suppressed arguments may not be visible for argument structure operations, which should perhaps be viewed as applying to a representation in which suppressed arguments are omitted entirely.

We return now to the first restriction to be explained: the fact that the subject must always appear in the clause and not within the NP, that is, as an outside and not an inside argument. For example, (36b) is ungrammatical, even though the Goal (*Mary-ni*) is  $\theta$ -marked by the *suru* predicate, so that Transfer has apparently occurred. Moreover, the NP itself in (36b) is not structurally ill-formed: the opaque nominal in (36c) is identical, and grammatical.

- (36) a. John-ga Mary-ni HANASHI-o shita.  
 John-Nom Mary-to talk-Acc suru  
 ‘John talked to Mary.’  
 b. \*Mary-ni John-no HANASHI-o shita.

<sup>3</sup> If the Noun must always transfer an open position to the Verb, and if the ‘‘subject’’ never counts as open for this purpose, no single-argument Nouns should ever participate in the *suru* construction. A one-argument Noun will have only a ‘‘subject’’ argument position, and we know that this is not sufficient for transfer. The prediction is difficult to evaluate, because as we showed in section 2, *suru* is ambiguous between the light Verb of interest here, and a heavy Verb, rather like main Verb *do* in English. The situation is further complicated by the fact that in the case of monadic Nouns the technique for disambiguation that we have used throughout (outside arguments) is unavailable. However, since heavy *suru* has agentive (or at least ‘‘actor’’) subjects, Nouns like those in (i) can presumably be analyzed as complements to heavy *suru*.

(i) *suiei-o suru* ‘swim’, *sampo-o suru* ‘walk’, *seppuku-o suru* ‘commit suicide’, *undoo-o suru* ‘exercise’, *seikatsu-o suru* ‘make a living’, *shigoto-o suru* ‘work’, *jisatsu-o suru* ‘commit suicide’

Once agentive Nouns like these are factored out, a few cases remain, including those in (ii).

(ii) *wakajini-o suru* ‘die young’, *byooki-o suru* ‘be sick’, *fuhai-o suru* ‘become rotten’, *daraku-o suru* ‘be morally ruined’, *kushami-o suru* ‘sneeze’, *seki-o suru* ‘cough’, *bimboo-o suru* ‘become poor’

The analysis of these remains uncertain. They may represent a small class of fixed expressions, or they may be unaccusative Nouns, like the Verbs with similar meanings (Perlmutter (1978), Burzio (1981)). In this case their single argument would be internal rather than external and might be unsuppressed and thus transferable.

- c. *John-no hanashi-o hometa.*  
 John-Gen talk-Acc praised  
 '(I) praised John's talking.'

Since an outside argument is  $\theta$ -marked by *suru* and an inside argument by the Noun, the issue of why the subject must be outside reduces to the question of why the subject argument must be transferred to *suru* and cannot remain as an argument of the Noun. If it could remain as an argument of the nominal, it would remain lexically suppressed. Linking a genitive phrase to it would pose no problem, and (36b) should be grammatical. If, on the other hand, the argument is transferred to *suru*, it will be the argument of a Verb, not a Noun. We assume that it will therefore be activated and will receive an index. Since it is  $\theta$ -marked by the *suru* predicate, it must be under S, not inside the NP. (The fact that the argument that is suppressed for the Noun is reactivated for the Verb provides crucial evidence that the suppressed argument must be represented in the Noun's argument structure in some form. Otherwise, Transfer based on the argument structure of the Noun could not possibly have the right effect.)

Why should the subject argument always transfer? So far we have established that one open argument must be transferred to *suru*. Of necessity, this will always be an *internal* argument, in the sense of Williams (1981), since only internal arguments are unsuppressed for Nouns. The desired result will follow if transferring the internal argument has transfer of the external argument as a consequence. Since the internal argument *must* always be transferred to avoid a violation of the  $\theta$ -Criterion, it will then follow that the external argument must be too.

We propose that this dependency between the external and internal arguments follows from the organization of argument structure, in accordance with the usual division into external and internal arguments, based on Williams (1981). Like Hale (1983), we take the external/internal distinction to be reflected in the organization of argument structure, with the external argument—the Agent/Source of *shoomei*, for example—being external, and represented as more prominent than the other arguments. The argument structure of *shoomei* is given in (37).

- (37) *shoomei* (Agent/Source (Goal<sub>j</sub>, Theme<sub>k</sub>))

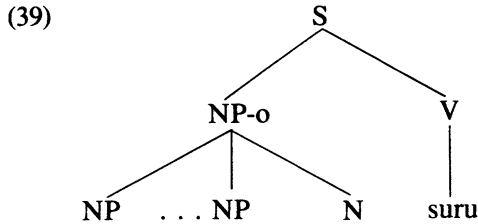
Transfer acts in a top-down fashion, preserving the structural organization or prominence relations of the argument structure: it cannot remove a lower argument without removing all the higher arguments as well. This will disallow an outcome in which the Goal has been transferred and the Agent has not, as in (38a), but will allow one in which both have been transferred, as in (38b).

- (38) a. *suru* (Goal<sub>j</sub>) + *shoomei* (Agent, Theme<sub>k</sub>)  
 b. *suru* ((Agent<sub>i</sub>, Goal<sub>j</sub>)) + *shoomei* (Theme<sub>k</sub>)

Crucially, then, the process of Argument Transfer must apply in an outside-in fashion, thus preserving the basic organization of the input argument structure. Given this, plus

the hypothesis that the Agent/Source is the “highest” argument, the situation can be fully explained.

There are, inevitably, some alternative accounts for the positioning of the subject in the *suru* complex. Let us examine the situation that would arise if *suru* appeared with a direct object NP and no transfer had occurred. Schematically, we would have a configuration like (39), instantiated in (40).



- (40) \**John-no Bill-to-no AISEKI-o shita.*  
 John-Gen Bill-with-Gen table-sharing-Acc *suru*

One line of reasoning might appeal to the argument status of the subject. Perhaps the subject is really an argument of *suru* and not of the Noun, and this is why it cannot appear inside the NP. There are two problems for such an account. First, *suru* imposes absolutely no requirements on this NP, so it is not an argument in the usual sense. To call it one is tantamount to subcategorizing for a subject. Second, this proposal would allow for other light verbs differing from *suru* in precisely this respect: they would not have such an argument slot and would therefore allow the subject of the Noun to appear within NP. Presumably, though, it is not an accidental lexical property of *suru* that makes inside subjects impossible.

Another possibility is that it is the absence of a subject for the clause that makes the configuration in (39) impossible, if (39) violates some condition (like the Extended Projection Principle of Chomsky (1982)) that requires clauses to have subjects. The nature of the explanation here is not clear—presumably the clause could contain a null expletive subject, satisfying the structural condition and leaving the real argument of the Noun free to occur inside. Moreover, there is another problem for an explanation based on the absence of a subject. Recall that *saseru*, the causative of *suru* discussed in section 3.1, has one argument that acts as the subject of the entire causative predicate. We have already given an example with *saseru* in (20) (repeated here as (41)).

- (41) *Mary-ga John-ni Bill-to AISEKI-o saseta.*  
 Mary-Nom John-to Bill-with table-sharing-Acc *suru*-cause  
 ‘Mary made John share a table with Bill.’

In (41) all arguments of *aiseki* have been transferred to *saseru* and are realized outside the NP. Since *saseru* has a subject argument (*Mary-ga*) that is realized as the subject

of the clause, no Extended Projection Principle violation would result if the subject argument of *aiseki* (*John*) was not transferred to *saseru* but instead was realized inside the NP. Nevertheless, failure to transfer the subject argument of *aiseki* leads to ungrammaticality, regardless of whether another argument (*Bill-to*) is also transferred, to comply with the obligatoriness of Transfer. Thus, both (42a) and (42b) are ungrammatical.<sup>4</sup>

- (42) a. \*Mary-ga [John-no Bill-to-no AISEKI]-o saseta.  
 Mary-Nom John-Gen Bill-with-Gen table-sharing-Acc *suru*-cause  
 b. \*Mary-ga Bill-to [John-no AISEKI]-o saseta.

As usual, the corresponding  $\theta$ -opaque NP is grammatical, showing that there is nothing intrinsically wrong with the object NP in (42).

- (43) [John-no Bill-to-no AISEKI-wa] machigai datta.  
 John-Gen Bill-with-Gen table-sharing-Top mistake was  
 'John's sharing a table with Bill was a mistake.'

In (42) *saseru* has a subject, but *John* must still be  $\theta$ -marked by *saseru* and thus must be transferred from *aiseki*. Hence, it must appear outside the NP, even though it is not acting as the subject of the *suru* complex. We conclude that the obligatory outside positioning of this argument cannot be reduced to a condition requiring subjects for clauses.

We have argued that the behavior of subjects in the *suru* complex follows from the representation of argument structure. We will show in the following section that this explanation generalizes to the behavior of internal arguments.

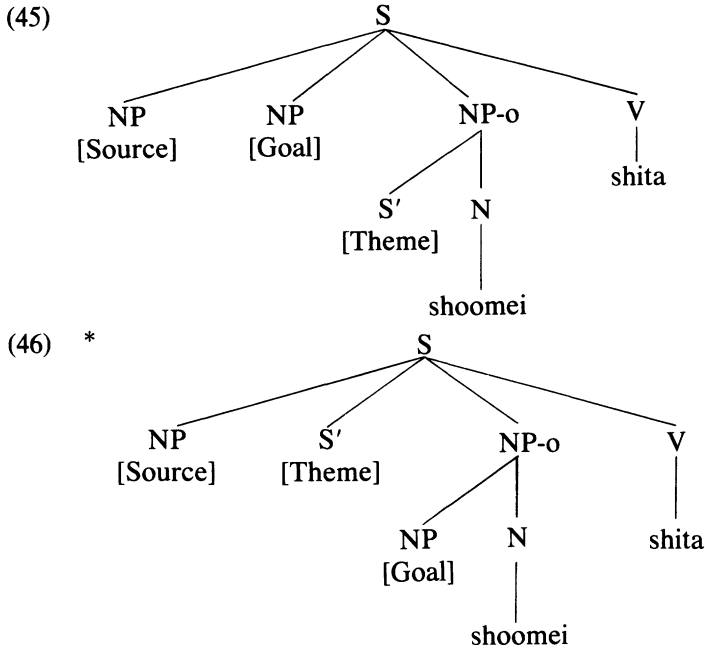
### 3.4. The Distribution of Internal Arguments

The arguments of a Noun can be split between the inside and outside positions. This was shown earlier by (23b) and (26b), repeated in (47a) and (48a). However, switching the positions of the arguments makes these examples ungrammatical. The data are presented schematically in (45) and (46). The Goal can be outside the NP with the Theme inside, but the Theme cannot be outside with the Goal inside. The relevant examples follow in (47) and (48).

<sup>4</sup> One complication is that (42a) improves considerably if the subject of *aiseki* is transferred while *Bill-to* stays behind.

- (i) ?Mary-ga John-ni [Bill-to-no AISEKI]-o saseta.  
 Mary-Nom John-to Bill-with-Gen table-sharing-Acc *suru*-cause

No open position has been transferred in this example, which should therefore be ungrammatical as a *suru* complex. However, note that none of the critical properties of light *suru* are involved here, so this example may actually involve heavy *suru*. On the other hand, the marginality of (30b) suggests that *aiseki* may not combine with heavy *suru*.



- (47) a. Sono deeta-ga wareware-ni [[*kare-no riron-ga*  
that data-Nom us-to he-Gen theory-Nom  
*machigatte iru-to*]-no *SHOOMEI*]-o shiteiru.  
mistaken be-Comp-Gen proof-Acc *suru*  
'That data proves to us that his theory is mistaken.'
- b. \*Sono deeta-ga [*kare-no riron-ga machigatte iru-to*]  
that data-Nom he-Gen theory-Nom mistaken be-Comp  
[*wareware-e-no SHOOMEI*]-o shiteiru.  
us-to-Gen proof-Acc *suru*
- (48) a. Sono hookokusho-wa Mary-ni [[*kaiketsu-no hookoo*]-no  
that report-Top Mary-to solution-Gen direction-Gen  
*SHISA*]-o shiteiru.  
suggestion-Acc *suru*  
'That report suggests to Mary the direction of the solution.'
- b. \*[*Kaiketsu-no hookoo-wa*] sono hookokusho-ga  
solution-Gen direction-Top that report-Nom  
*Mary-e-no SHISA-o* shiteiru.  
Mary-to-Gen suggestion-Acc *suru*

Note that both phrases at issue would normally be taken to be arguments of the Noun, and not merely adjuncts. As evidence for their argument status we can cite the fact that the transfer of the *ni* phrase is evidently sufficient to make the *suru* complex well-formed.

Theme arguments are not absolutely barred from the outside position: they occur outside in grammatical sentences provided that the other argument is also outside ((23a) and (26a)). It seems highly unlikely that indirect object arguments are absolutely barred from occurring inside the NP. After all, they certainly can occur inside opaque NPs. Moreover, in (32b), one of the four-argument Noun examples, a rather similar type of argument—*Mexico-to-no* ‘with Mexico’—*does* occur inside, suggesting that Goals should be able to as well, under the right circumstances. It does not seem to be the absolute positions of the individual arguments that are responsible for the ungrammaticality of (47b) and (48b). Instead, the *relative* position is the important matter: the *combination* of an outside Theme and an inside Goal is ill-formed.

Why should this combination be ill-formed? It appears that “closeness” to the Noun in some sense is the key factor here. When splitting occurs, the more closely linked Theme arguments must be inside, the less closely linked arguments must be outside.

Our proposal is that the internal arguments in an argument structure are hierarchically structured. Just as the external argument is more prominent than the internal arguments, so some internal arguments are more prominent than others. In particular, Goals are more prominent than Themes, so the argument structure of *shoomei* ‘proof’ is (49), where the parentheses indicate the structure assigned to the argument list. The most prominent argument is the Agent/Source argument, then the Goal, and then the Theme.

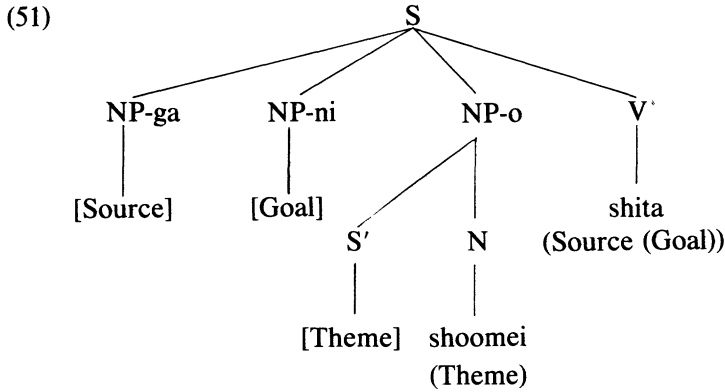
(49) *shoomei* (Agent/Source (Goal<sub>j</sub> (Theme<sub>k</sub>)))

With this hypothesis about argument structure representation the theory of Transfer already given will explain the generalization. The restriction on splitting follows from the fact that the transfer of arguments respects the structure of the input representation: the process can peel off outside layers but can never remove an inside layer without also removing the layers outside it. This is exactly the principle that was motivated by considering the distribution of subjects in *suru* complexes.

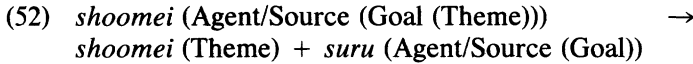
As our example, we will use an argument structure containing an Agent/Source, a Goal, and a Theme. The basic form is given in (50).

(50) (Agent/Source (Goal<sub>j</sub> (Theme<sub>k</sub>)))

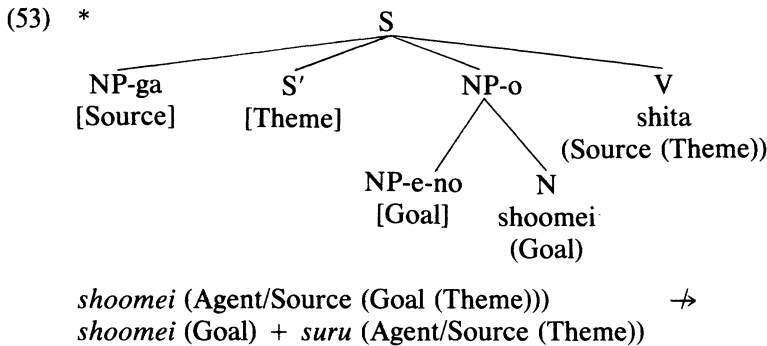
Transfer yields a number of possible outcomes when this argument structure combines with *suru*. Recall that *suru* cannot just receive the Agent/Source argument, because it is not an open position. *Suru* can receive the Agent/Source and the Goal, however, giving the result in (51), where *suru*  $\theta$ -marks an Agent/Source and a Goal, and the Noun  $\theta$ -marks a Theme. As discussed above, after Transfer the Agent/Source position in the argument structure carries an index since it is now part of a verbal argument structure and therefore is not suppressed.



The Transfer involved here is legitimate, because it preserves the structure of the input.



For the ungrammatical examples (47b) and (48b), on the other hand, Transfer cannot derive appropriate argument structures since it would have to remove an argument lower in the structure, without also removing the higher arguments. For (47b) the Theme would have to be transferred, illegitimately leaving the more prominent Goal behind, as shown in (53).



In fact, then, the ungrammaticality of (47b) is due to a violation of the  $\theta$ -Criterion: there is no *suru* complex that can  $\theta$ -mark both the outside Theme and the inside Goal. In the grammatical cases of splitting, the Theme is  $\theta$ -marked by the Noun, and the Goal by *suru*.

In this way, the behavior of internal arguments in the *suru* complex follows from the theory of argument structure representation. Provided that Transfer respects the structure of argument structure, the range of possible positions for Themes and Goals can be derived.

#### 4. An Alternative

In the proposal made here, the *suru* complex involves two  $\theta$ -markers, not just one. A key feature of the process involved is that, except when all arguments are transferred, the result is not a single  $\theta$ -marker. Neither *suru* nor the Noun is alone responsible for all  $\theta$ -marking. Each has its own domain, as usual, but carries an argument structure that is modified by its role in the *suru* complex. It is illuminating to compare this solution to an alternative in which there is only one  $\theta$ -marker, and *suru* is responsible for  $\theta$ -marking all arguments, whether they are inside the NP or outside it.

In this solution complex predicate formation would transfer all arguments from the Noun to *suru*, leaving the Noun with no arguments at all. An obvious disadvantage to this account is that it would require nonlocal  $\theta$ -marking into the NP. Assuming that this is allowed, how would the properties of the *suru* complex be explained? There are three problems of interest: the outside positioning of the subject, the relative positioning of internal arguments, and the requirement that one argument apart from the subject must occur outside.

The explanation for the outside positioning of the subject within this theory would depend on the idea that a possessive-marked NP is incapable of satisfying an argument position of the complex predicate. Since Nouns do not have subject arguments, the *-no*-marked phrases that *seem* to satisfy those argument positions must really be adjuncts and not arguments; see Grimshaw (1986; to appear). However, the complex predicate that is formed by combining *suru* and a Noun is *verbal* in character, since *suru* itself is a Verb. Verbs do not have satisfied subjects; hence, the argument structure formed by complex predicate formation will have an unsuppressed subject argument, which must be syntactically satisfied by a phrase in the clause.

Now we can see what would explain the ungrammaticality of (54a), for example: *John-no* can never satisfy the Agent argument of *benkyoo-suru*; it is not even an argument. Hence, the ungrammaticality of inside subjects reduces to a violation of the  $\theta$ -Criterion. In (54b) the grammatical counterpart *John-ga* is  $\theta$ -marked by the complex predicate. It is an argument rather than an adjunct; hence, no violation results.

- (54) a. \*Nihongo-wa [*John-no BENKYOO*]-o shiteiru.  
 Japanese-Top John-Gen study-Acc *suru*  
 b. Nihongo-wa John-ga *BENKYOO*-o shiteiru.  
 Japanese-Top John-Nom study-Acc *suru*  
 'John is studying Japanese.'

The relative positioning of internal arguments might be derivable from the theory of  $\theta$ -marking, given two assumptions. First, the argument structure representation must be as we are suggesting, with the Theme argument lower than the Goal. Second,  $\theta$ -marking (rather than Transfer as in the proposed theory) must respect the structure of the argument structure in the following sense. Arguments lower in the argument structure must be  $\theta$ -marked before arguments higher in the argument structure. Provided that  $\theta$ -



marking proceeds in a bottom-up fashion,  $\theta$ -marking inside NP will precede  $\theta$ -marking outside NP. As a result, the argument that is lower in argument structure (the Theme) cannot be outside the NP, if the Goal is inside. Again, then, the restriction might reduce to a violation of the  $\theta$ -Criterion. The exact character of  $\theta$ -marking in this proposal is a little suspect: it assumes that the NP could define a *domain* of  $\theta$ -marking, despite the fact that it is transparent and the  $\theta$ -marker itself is outside it. The proposal also assumes that the Verb can assign a  $\theta$ -role within the NP domain, despite the fact that the Verb itself is *outside* that domain. The notion of “domain” for  $\theta$ -marking is thus disconnected from the relationship of an argument to a  $\theta$ -marker, since arguments of a single predicate appear in different domains. Whether these points render the solution untenable is unclear to us.

Setting this question aside, so far the single  $\theta$ -marker theory seems to be able to match our proposal. A problem arises, however, with the requirement that one argument must go outside, in addition to the subject. It is hard to see how this might be expressed, let alone explained, if the *suru* complex contains a single  $\theta$ -marker. Once we have stated that one nonsubject argument must be outside the NP, it is presumably possible to derive the position of the subject: since it is higher in the argument structure representation, it must be  $\theta$ -marked after every other argument. Therefore, if any argument is outside the NP, the subject must be also. However, why should an argument have to occur outside NP to begin with? In terms of this theory it means that one argument must be  $\theta$ -marked outside NP, but this makes no sense if arguments inside and outside NP have the same status. Moreover, why should the subject not count as meeting the requirement, whatever it is? All the arguments are arguments of the Verb, so the subject should count in the same way as any other argument.

In sum, although the single  $\theta$ -marker account can match the dual  $\theta$ -marker account quite closely in a number of respects, it does not seem to have the same overall scope. It is important to emphasize also that the single  $\theta$ -marker alternative preserves many of the essential features that we have been arguing for here. For example, the Noun and *suru* would have to be lexically inserted as a pair in this theory too; otherwise, *suru* could inherit an argument structure from one Noun and be inserted with another. Moreover, the explanations sketched above for argument distribution in the *suru* complex depend entirely on the idea that argument structure is hierarchically organized, with the organization constraining  $\theta$ -marking in the single  $\theta$ -marker account and Transfer in the dual  $\theta$ -marker account.

## 5. Conclusion

The *suru* complex is formed by a process of complex predicate formation, in which a predicate acquires arguments that it does not normally license. Complex predicate formation applies to the argument structures with variable results, sometimes leaving the Noun with no arguments and sometimes leaving it as an impoverished  $\theta$ -assigner. With this assumption, the exact range of possible outcomes follows from the theory of complex predicates and the lexical entries for *suru* and Nouns. Part of the explanation relies

crucially on the hypothesis that the light Verb complex contains two predicates. This opens up the possibility that other cases of complex predicate formation might also involve dual  $\theta$ -markers, rather than a single predicate. In causatives and other cases of "clause union," where both predicates are verbal, or in the English light Verb construction where case marking is not available, it is not always easy to determine where responsibility for  $\theta$ -marking lies. The case-marking system of Japanese makes it easy to monitor the distribution of arguments in the light Verb complex.

Although the focus of this investigation has been the phrasal *suru* complex, there is a widely studied incorporation construction, illustrated in (2b) and repeated as (55), in which *suru* and a Noun form a single compound word.

- (55) John-wa Bill-to AISEKI shita.  
 John-Top Bill-with table-sharing *suru*-Past

A glance at the literature on Japanese incorporation cited earlier will reveal that incorporation exhibits many apparent idiosyncrasies—for example, Nouns that occur in the incorporated version, but not in the phrasal light Verb complex. Nevertheless, the productive cases of incorporation can be straightforwardly understood in the present terms. They are formed by morphological compounding, applied to the case of complex predicate formation where the Noun yields all its  $\theta$ -assigning capacities to *suru*. The argument structure of the output then is a verbalized version of the argument structure of the Noun, just as it is in the corresponding phrasal *suru* complex. What is being incorporated is the Noun that is lexically listed with the derived argument structure of *suru*. Note that incorporation in Japanese differs from that found in some other language families (Baker (1985), Rosen (1987)) in that it is not an argument, but part of the complex predicate, that is incorporating. (In fact, there is some evidence (see Grimshaw, Itô, and Mester (in preparation)) that what is involved is really incorporation of a Verb, not a Noun.) Of course, the interaction of incorporation and complex predicate formation bears on the correct treatment of each: if incorporation is lexical (see di Sciullo and Williams (1987), Rosen (1987)), then complex predicate formation itself must have the status of a lexical process, if it is to feed incorporation.

The Verb *suru* illustrates one kind of light Verb: its argument structure is so highly underspecified that it is incapable of  $\theta$ -assignment of any kind. Other light Verbs, like *saseru*, have a more fully specified argument structure: incomplete, but with some arguments specified. A particular case of this seems to occur with the English light Verbs in expressions like *put the blame on*, *give someone a kick*, *take a walk* (Higgins (1974), Jackendoff (1974), Oehrle (1975), Wierzbicka (1982), Cattell (1984)). These expressions are almost synonymous with their verbal counterparts: *blame someone*, *kick someone*, and *walk*, suggesting that the argument structure of *blame*, *kick*, and *walk* carries most of the burden. Nevertheless, the influence of the Verb itself is detectable in subtle meaning changes. For example, although a spider can *walk*, a spider does not normally *take a walk*. This difference presumably reflects the influence of the argument structure of *take* on the interpretation of the complex. Moreover, there are systematic relations

(discussed in the references cited) between the properties of the Verbs themselves and those of the Nouns they combine with: *give* combines with predicates that take Goals, for example. The English light Verbs, then, resemble *saseru* in having partially specified argument structures, not the completely empty one of *suru*. The English facts are extremely complex, in part because of the high degree of lexicalization and in part because of the difficulty of determining the exact phrasal position of the arguments. Nevertheless, it is clear in outline how the theory might apply to them. The Verb provides the sub-categorization/case structure for the clause level and has an incomplete argument structure, whereas the Noun has a complete one. Arguments of the Noun transfer to the Verb, as for *suru*. Where the Verb already has a corresponding argument, there are a number of possibilities, the most likely being that the two argument positions simply merge into one. Whether the general principles governing *suru* light Verb complexes can be detected in the English counterparts remains a question for investigation, but in outline, at least, this resembles proposals made for English (see Cattell (1984)).

Comparison of *suru* and the English light Verbs raises another question. Some of the English light Verbs are ditransitive and assign case to two object NPs. Examples include *give someone a kick*, *make someone an offer*. In these cases it is the second NP that is transparent, not the first. So objects of transitive Verbs and second objects of ditransitive Verbs can be transparent. Why do subjects and first objects of ditransitives not participate? Presumably this is related to the degree of semantic cohesion between the Verb and its arguments: it has often been noted that idioms seem to treat the Verb and second object as a unit, leaving the first NP position free: *give NP the slip*, for example. Moreover, idioms involving Verbs and their external arguments are certainly rare if not impossible. Eventually, then, the generalization about which NPs can be transparent should reduce to the theory of possible complex lexical entries.

Two hypotheses about argument structure representation are crucially invoked in this study. The first is the idea that Nouns do not have subject arguments, which is central to the account of why the outside occurrence of the subject is not sufficient for a well-formed complex. The second is the hypothesis that the list of arguments in an argument structure is hierarchically structured. This lies behind the inside/outside distribution of internal arguments, as well as the fact that the subject of the complex must be outside NP. What then determines the hierarchical structure? The proposal developed in Grimshaw (to appear) is that a thematic hierarchy (like that of Jackendoff (1972)) determines the organization of argument structure. The central properties of light Verb complexes with *suru* then follow from the theory of argument structure and complex predicate formation.

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