THE TWO KINDS OF JAPANESE NEGATIVE *Nai* IN TERMS OF THEIR NPI LICENSING CONDITIONS

Akira IKEYA
Toyo Gakuen University
ikeya@yk.rim.or.jp

Masahito KAWAMORI
NTT Basic Research Labs.
kawamori@atom.brl.ntt.co.jp

Abstract

Traditionally, Japanese is said to have two kinds of negative word nai, *meaning 'not' in English: the* nai *occurring after a verb or adjective and the* nai *with an independent status as a word. In contrast to traditional Japanese linguistics, most generative studies of Japanese have made no such distinction but rather focused their attention on such issues as the interaction between a scope of negation and a quantifier and the behavior of negative polarity items. In this paper we attempt to integrate all the proposals of each position by making use of both syntactic and semantic features. We also claim that the independent* nai *has a distinctly adjectival status with regard to its semantic structure.*

1 Introduction

The Japanese language has two kinds of negative word *nai* meaning 'not' in English: one is the *nai* occurring after a verb or adjective and the other is the *nai* which has an independent status as a word. The example of the latter is:

(1) Kokoni ringo wa   nai
     here   apple Nom not
     Here is no apple.

which is the negation of:

(2) Kokoni ringo ga   aru
     here   apple Nom is
     Here is an apple.

The former is exemplified by the sentence:

(3) watashi wa   ringo o   tabe-nai
     I   Nom   apple Obj eat not
     I do not eat an apple.

where *tabe-nai* is the negation of the verb *taberu* (eat), and the following:

(4) Kono hon   wa   omoshiroku-nai
     this   book Nom interesting not
     This book is not interesting.

where *omoshiroku-nai* is the negation of the adjective *omoshiroi*.

While the traditional Japanese linguistics has generally treated the independent *nai* as an adjective, it regarded the *nai* which occurs after a verb as an auxiliary and the *nai* which occurs after an adjective as an adjective. Hattori (1950) raised a question as to this distinction and proposed to use

a category-neutral term. He called the *nai* after a verb *fuzoku-keishiki* (dependent form) while he called the one after an adjective *fuzoku-go* (dependent word).

In a strong contrast to traditional Japanese linguistics, almost all the studies in generative grammar have made no distinction between the *nai* occurring after a verb or an adjective with no independent status, and the *nai* having an independent status by giving a unified name NEG whose syntactic or semantic status is left unspecified. They have focused their attention on the interaction between a scope of negation and a quantifier or the issue of the behavior of negative polarity items.

In this paper we attempt to integrate all the proposals of each position by making use of both syntactic and semantic features. Moreover, it is our main claim that the independent *nai* has a distinctly adjectival status in terms of a semantic structure which we propose below.

The paper consists of the following arguments. Firstly, the independent *nai* shows a semantic structure which is characteristic of ordinary adjectives. Secondly, it shares the same feature with the dependent *nai* in terms of the sensitivity to what is called negative polarity items, that is, NPI. Thus, it can be argued that the independent *nai* has an overlapping feature of being an adjective and at the same time of being sensitive to NPI.

2 Semantic Structure of Adjectives

2.1 Three Dimensions

In English, as well as in Japanese, there is a group of so called "degree adjectives" whose interpretation is heavily dependent on linguistic or pragmatic contexts. One such contextual factor is called Thematic Dimension by Bartsch (1986/1987). In addition to this dimension it is proposed in Ikeya (1991, 1996) that it is necessary to recognize two other such dimensions, which are termed the Comparative Contrastive dimension and the Degree dimension. Only after these three vectors are specified is it possible to determine the truth condition of a sentence which contains a degree adjective.

When we say *he is good*, the sentence has to be specified in terms of in what respect *he is good*, as compared or contrasted with whom *he is good* and to what degree *he is good*. For example, in *he is very good at basketball for a short Japanese* all these dimensions are expressed: *at basketball* is what we call the THEMATIC DIMENSION (TD), *for a short Japanese* is the so called COMPARATIVE CONTRASTIVE DIMENSION (CD) and *very* is our DEGREE DIMENSION (DD).

In English TDs have the following varieties:

(5) a. John is good at tennis.
   b. John is fine healthwise.
   c. John is fine in terms of health.
   d. John is fine in regards to his health.
   e. John is excellent in English.
   f. John is quick with words.
   g. John is quick in the uptake.
   h. John is quick about words.
   i. John is quick off the mark.
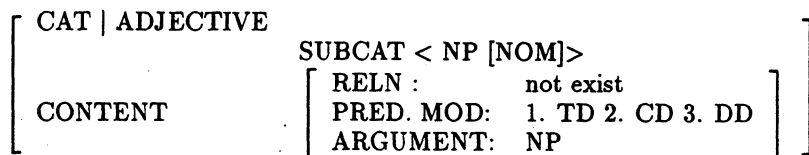   j. John is cautious with respect to standard theory.

As these examples show, in English TDs are expressed by such expressions as 'in terms of', 'as regards', or other prepositional phrases headed by 'of', 'at', 'about', 'off', 'in', etc. All these expressions give specification to adjectives in what respect *John is good, fine* or *quick*. It should be noticed that all these expressions grammatically correspond to adverbials. It should also be mentioned that TD is not obligatory. In such a sentence as *the business is very slow* no TD is expressed.

A degree adjective like *tall* implicitly encodes a comparison dimension like *taller than X*, with X being specified either by a linguistic or non-linguistic context. Take for example, the following sentences.

(6)   a. He is tall.
      b. For a Japanese, he is tall.

In (6a), size "tallness" is always relative to some implicit measure such as the height of an average person and it is nonsense to talk about tallness except relative to such a comparison class. On the other hand, in (6b) a comparison class is explicitly encoded in the form of *for a Japanese*. This is the case of a linguistic specification of a comparison dimension, while (6a) is the case of contextual non-linguistic specification of a comparison dimension.
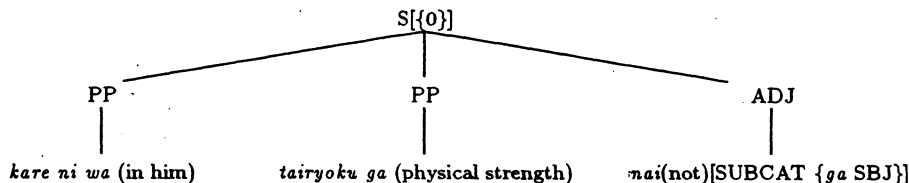
We incorporate the idea of three dimensions of adjectives into that of HPSG as outlined in Pollard and Sag (1987, 1994) in order to explain a wider range of data. At the same time this is an attempt to expand the original architecture of the HPSG framework, where there is no mechanism to handle the three kinds of dimensions. According to an expanded version of HPSG, the adjective *nai* has the following feature structure. As shown below, the three dimensions are treated as predicate modifiers.
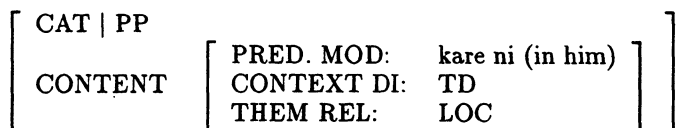
$$
\begin{bmatrix}
\text{CAT | ADJECTIVE} \\
\qquad \text{SUBCAT} < \text{NP [NOM]}> \\
\text{CONTENT} \quad
\begin{bmatrix}
\text{RELN :} & \text{not exist} \\
\text{PRED. MOD:} & \text{1. TD 2. CD 3. DD} \\
\text{ARGUMENT:} & \text{NP}
\end{bmatrix}
\end{bmatrix}
$$

The sentence (7)

(7) Kare   ni   wa   tairyoku   ga   nai.
     He   Dat. Top.   physical strength   Nom.   not
     In him there is no physical strength.

will be represented as follows:

Kare ni has the following feature structure:

$$
\begin{bmatrix}
\text{CAT | PP} \\
\text{CONTENT} \quad
\begin{bmatrix}
\text{PRED. MOD:} & \text{kare ni (in him)} \\
\text{CONTEXT DI:} & \text{TD} \\
\text{THEM REL:} & \text{LOC}
\end{bmatrix}
\end{bmatrix}
$$

As shown above, *kare ni* functions as a predicate modifier modifying the predicate *nai* and its contextual dimension is a TD. Its thematic relation denotes an abstract location. Here it would be convenient to make a distnction between a thematic role and a semantic functon when we talk about the content of predicate modifier.

2.1.1   Feature Classes of Adjectives

Before we go into detail, the following features have been proven useful in making a generalization of both the independent and dependent *nai* in terms of the behavior of NPI. Those features are ± adjective(adj.), ± composite (compo.), ± negative (neg.), ± verb (vb.). By those features the following classes are distinguished.

|				
a.	nai (not):	+adj	−compo	+neg
b.	omoshiroi (interesting):	+adj	−compo	−neg
c.	omoshiroku-nai (not interesting) :	+adj	+compo	+neg
d.	yoma-nai (not read):	+vb	+compo	+neg
e.	omowa-nai (not think):	+vb	+compo	+neg, +bridge
f.	yomu (read)	+vb	−compo	−neg

By the feature [+neg] the lexical items from (a) to (e) except (b) can be placed together into one group. The first *nai* can be distinguished from *omoshiroku-nai, yoma -nai, omowa-nai* by the absence of a feature +compo, which means that a negative element occurs after a verb adjective stem forming a composite word. *Omoshiroku-nai* and *yoma-nai* can be differentiated by the features +adj. and +vb. We will not treat the feature +bridge in this paper. In this way all the ideas contained both in the traditional and generative linguistics are incorporated into this feature system. For example, Hattori's *fuzoku-keishiki* (dependent form) can be represented as [+vb, +compo, +neg]. It should be noted that a feature [+neg] is a semantic head feature, which plays a crucial role in the licensing of NPI, as we will note below.

2.2 Negative Adjective *nai* and an NPI

Before we go into the problem of sensitivity of a Japanese NPI *shika* to a negative element we will state briefly how the simple sentence containing an negative *nai* can be described in terms of the semantic structure proposed in the foregoing section.

(8) Kare ni wa tairyoku ga nai (ga kanojo niwa aru.)
He Dat. Top. physical strength Nom. not (but she DAT exist
In him there is no physical strength but in her there is.

If this sentence has an emphatic stress on *kare* and is followed by a sentence in parentheses, it has the following semantic structure.
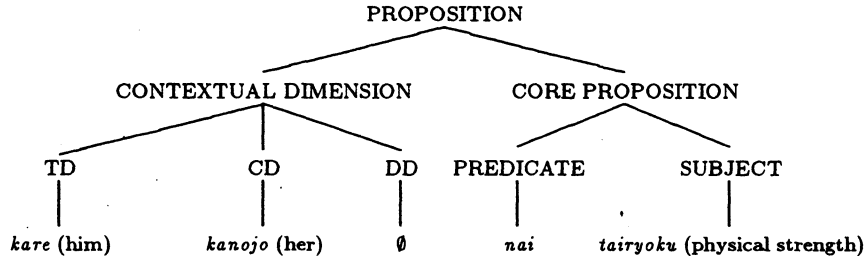
If this semantic structure is translated into HPSG framework, our predicate corresponds to Head Daughter, subject to Complement Daughter, CD and DD to Adjunct Daughter, respectively. The sentence (7) can be generated by the following rule.

(9)   [SUBCAT <>] → H [LEX], C,(A)*

We have shown that the semantic structure proposed above can be incorporated into the basic framework of HPSG. It does not mean, however, that we can dispense with the semantic structure: the implicit element of the contextual dimension cannot be incorporated into the HPSG architecture. Hereafter, therefore, both the basic framework of HPSG and the semantic structure of adjectives as outlined above will be employed as a basic theoretical tool for the description of Japanese NPIs.

(10) Kare ni wa donyoku shika nai
He Dat. Top. greed only not
There is only greed in him.

(11) Kare ni shika donyoku ga nai
He in only greed Nom not
Only in him there is greed.

It is generally accepted in traditional Japanese linguistics in both generative and non-generative persuasions that *shika* functions as an NPI: it never occurs without a negative element like *nai*. It attaches itself to the preceding nominal element placing a focus on it. The exact meaning of (10), for example, is that 'there is only greed in him and no other spirit such as a noble spirit or a kind heart exists in him.'

2.3 The Feature Structure of *Shika*

Shika has the following feature structure: as a head daughter it has a SUBCAT value PP or NP and has [+NPI] as a semantic feature, which in effect ensures that it combines with a lexical item having [+neg] as a semantic head feature. *Shika* is characterized as follows:
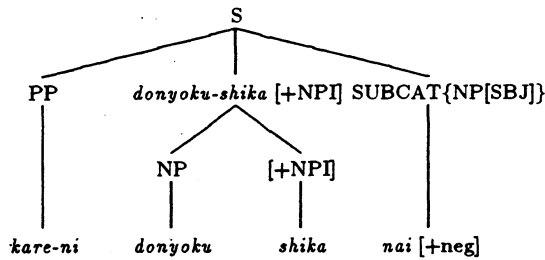
$$
\left[\text{SYNSEM} \left[\begin{array}{l} \text{CAT} \left[\text{HEAD} \left[\begin{array}{ll} \text{SUBCAT} & \{PP[1]\cdot || \ NP[1]\} \end{array} \right] \right] \\ \text{CONTENT} \left[\begin{array}{ll} \text{RELN} & F([1]) \\ \text{NPI} & + \end{array} \right] \end{array} \right] \right]
$$

Kare ni in (10) above has the following feature structure:

$$
\left[\begin{array}{ll} \text{CAT} & \{PP\} \\ \text{CONTENT} & \left[\begin{array}{ll} \text{PRED. MOD:} & \text{kare ni (in him)} \\ \text{CONTEXT DIM:} & \text{TD} \\ \text{THEM REL:} & \text{LOC} \end{array} \right] \end{array} \right]
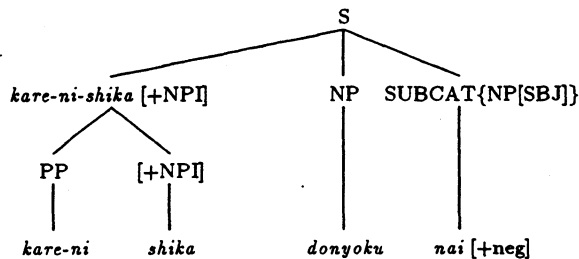$$

As shown above, *kare ni* functions as a predicate modifier modifying a predicate *nai* and its contextual dimension is a TD. Its thematic relation denotes an abstract location.

The sentence (10) has the following feature structure.

```
                        S
        ┌───────────────┼───────────────┐
       PP      donyoku-shika [+NPI] SUBCAT{NP[SBJ]}
        │          ┌─────┴─────┐              │
        │         NP         [+NPI]           │
        │          │            │             │
     kare-ni    donyoku       shika      nai [+neg]
```

Since the feature [+NPI] which exists in *shika* is a head feature, its structure is shared with the phrase *donyoku shika*, which in turn is licensed by the negative feature in the head *nai*. Thus the grammaticality of (10) is guaranteed.

On the other hand, (11) has the following feature structure.

```
                        S
        ┌───────────────┼───────────────┐
  kare-ni-shika [+NPI]      NP    SUBCAT{NP[SBJ]}
      ┌────┴────┐            │           │
     PP      [+NPI]          │           │
      │         │            │           │
  kare-ni     shika       donyoku   nai [+neg]
```

In (11), in contrast to (10), *kare ni shika* has [+NPI], which is licensed by [+neg] in the head *nai*. This sentence means that there is greed only in him, not in any other person.

2.4. Semantics of *shika*

Let us turn to the semantics of *shika*. Before we go on to define the meaning of NPI *shika* let us consider a simpler plain negative sentence like (12):

(12) Kare   ni   wa   donyoku   ga   nai
      He   in   Top. greed   Nom   not
      In him there is no greed.

Suppose that all the attributes that *kare* (he) has are represented by K. Then what (12) means is effectively the same as:

$$\neg(greed \in K)$$

Using a quantifier and letting a variable range over the set of (possible) attributes of a person, we can express the same condition as follows:

$$(\forall x \in A)[(greed = x) \rightarrow \neg(x \in K)].$$

This says that for all the attributes that a person may have if an attribute is shown to be greed then this attribute does not belong to (the set of attributes of) *kare*. This is intuitively correct and satisfactory for our present purpose. One notices in this condition that the consequent $\neg(x \in K)$ is clearly to be associated with the negative *nai*, and since K represents all the properties possessed by *kare*, it is natural to associate K with *kare*. The rest of the condition,

$$(\forall x \in A)[(greed = x) \rightarrow (\ldots x \ldots)],$$

then, is attributable to *donyoku-ga*. Notice that the condition $(\ldots x \ldots)$ need not be negative, since *ga* is not an NPI.

Now let us turn to our goal, the semantics of *shika*. The sentence (10) means, in a similar manner to the representation above, roughly the same as follows:

$$(\forall x \in A)[(greed \neq x) \rightarrow \neg(x \in K)]$$

This is to interpret the *shika...nai* sentence as saying that for all the attributes that a person may have if it is not greed then it does not belong to *kare*. This condition is logically equivalent, classically, to the condition that any attribute he has is identifiable as greed. We notice that the first condition is practically the same as the set-theoretical condition $A - \{greed\}$, so we can rephrase this condition to:

$$(\forall x)[x \in (A - \{greed\}) \rightarrow \neg(x \in K)].$$

Looking at this formulation, it is not too difficult to see, just as in the case of *ga* above, that the meaning of *shika* can be seen as corresponding to the condition:

$$(\forall x)[x \in (A - \{greed\}) \rightarrow (\ldots x \ldots)].$$

Main part of its job is the condition $(A - \{greed\})$ which is to exclude, or select, depending on which side of the set you are on, those elements not identical to 'greed'. In other words, the meaning of *shika* is a sort of a selection, or exclusion, function that given an item and an appropriate domain, selects the set of elements that are not identical to, or sometimes incompatible with, the given item. Notice also that, unlike *ga*, *shika* requires the condition $(\ldots x \ldots)$ to be in negative since it is an NPI.

But how do we decide the appropriate domain? This is where the contrastive dimension (CD) comes in. CD can be seen as defining a function that given an element, associates with it its possibly relevant 'comparable elements'. More formally, let us denote by D all the possible objects of a world, including such intensional objects as concepts and properties. Then for each object in this domain,

we can think of a function that given the contextually defined contrastive dimension c, gives a set $A \subseteq D$ of objects related, with respect to the comparability given by c, with the object in question. In other words we are thinking of a function $G : D \times CD \rightarrow D$ such that:

$$G(greed)(c) = A \subseteq D.$$

From the universal domain D the function G selects the possible items which can be compared or contrasted with the particular item x, e.g. 'greed', in question and assigns them the status of the exponents of a comparative/contrastive dimension specifying at the same time that x exists. This means that G is a selection function which picks up possible candidates of contrastive or comparative dimension and at the same time an exclusion function which excludes all the items except a particular x by assigning them the status of exponents of a comparative or contrastive dimension. For example, there is a relevant domain where 'greed' is contrasted in sentence (10): 'ambition', 'noble spirit', 'good will', 'kind heart', and so forth.

Now the meaning of the phrase *donyoku shika* in context c can be represented as:

$$\llbracket donyoku\ shika \rrbracket_c = F_{greed}(G(greed)(c)) = F_{greed}(A) = \lambda N[(\forall x)[x \in (A - \{greed\}) \rightarrow N(x)]]$$

This condition will allow a compositional interpretation of *shika ... nai* construction without positing such a global operation as *shika ... nai* lowering.

The function F selects from the domain one particular item, that is, 'greed' by specifying its unique existence and excludes other items in the domain in question: 'ambition', 'noble spirit', 'good will', 'kind heart' and so on. Thus it plays the role of exclusion and selection function at the same time.

3 Independent and Dependent *nai*

In the preceding two sections we have demonstrated the basic tools with which to describe the two kinds of *nai* in Japanese: the independent *nai* and dependent *nai*. The former shares the characteristics of ordinary adjectives, which the latter lacks. But on the other hand, both share an interesting character of being sensitive to NPI. In order to capture this fact, we have given two kinds of *nai* a common semantic feature [+neg]. In this section we will discuss the three ways in which a negative element is sensitive to the Japanese NPI *shika*.

## 3.1 Independent *nai*

(13) [[Merii wa] [kodomotati ni] [eigo o osieta koto]]   ga nai
Mary   Top children   to English Obj taught experience Nom not
Mary has no experience of having taught English to children.

As the bracketing shows, there are four possibilities of occurrence of shika in the sentence above. The following are examples:
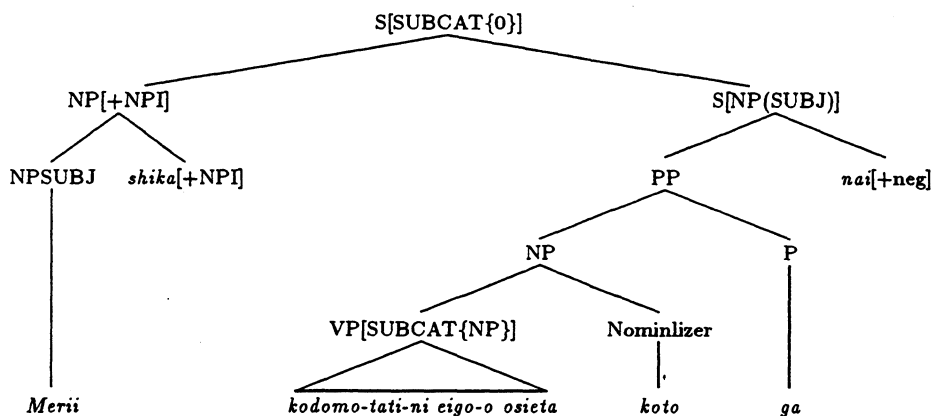
(14) [Merii shika kodomotati ni eigo   o   osieta koto]   ga nai
Mary   only children   to English Obj taught experience Nom not
Only Mary has the experience of having taught English to children.

(15) [Merii wa kodomotati ni shika eigo   o   osieta koto]   ga nai
Mary   Top children   to only English Obj taught experience Nom not
Mary has the experience of having taught English only to children.

(16) [Merii wa kodomotati ni eigo   shika osieta koto]   ga nai
Mary   only children   to English only taught experience Nom not
Mary has the experience of having taught only English to children.

(17) [Merii   wa   kodomotati ni   eigo   osieta   koto]   shika nai
      Mary   only children   to English taught experience only   not
      Mary has only the experience of having taught English to children.

There are several points to be noted. One is that *nai* in the sentences above is a case of independent *nai*. As an independent *nai* it is a one-place adjective taking a nominalized sentence [*Merii wa kodomotati ni eigo o osieta koto*], meaning ' the fact that Mary has taught English to children.' This is indicated by *koto* in Japanese. Furthermore, when *nai* acts as a predicate the feature [+nai] has a scope over every internal constituent NP or PP constituent within the nominalized sentence as well as the nominalized sentence itself. This is contrastive to the case where *nai* is a dependent element of a verb or an adjective. (17)

Merii-wa kodomotati-ni eigo-o osieta koto shika nai   S[SUBCAT{0}]

NP[+NPI]   *nai* [SUBCAT{NP(SUBJ)}][+neg]

NP   *shika* [+NPI]

Merii wa kodomotati ni eigo o osieta koto
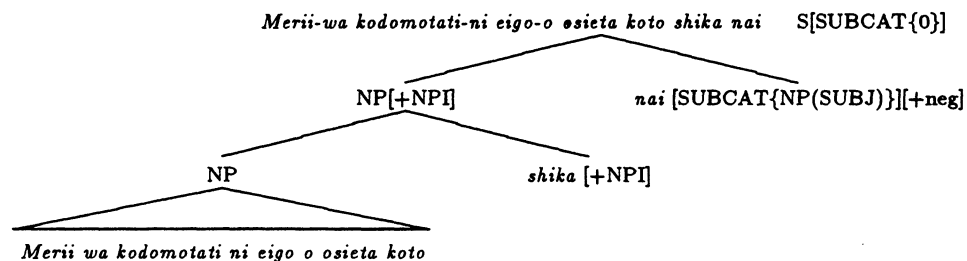
We will show below how *shika* in (14), where one of the constituent NPs in the sentence is within the scope of *nai*, is licensed within our framework.

S[SUBCAT{0}]

NP[+NPI]   S[NP(SUBJ)]

NPSUBJ   *shika*[+NPI]   PP   *nai*[+neg]

NP   P

VP[SUBCAT{NP}]   Nominlizer

Merii   *kodomo-tati-ni eigo-o osieta*   *koto*   *ga*

As shown in the diagram above, the [+neg] feature in the *nai* licenses one of the constituents within the complements of the head *nai*. In other words, as long as the head daughter has [+neg, −compo,+ adj] features, it has a scope over any NP or PP constituent within the complement daughter. This is the first tentative generalization.

In Japanese there is a slightly different sentence, where a PP *Merii ni wa* is employed instead of a subject *Merii wa* as shown below.

(18) [[Merii-ni-wa] [[kodomotati-ni] [eigo-o]   osieta koto]]-ga   nai.
      Mary-Dat-Top   children-to   English-Obj taught experience-Nom no
      For Mary there is no experience for having taught English to children.

We treat this PP as an adjunct phrase denoting an abstract location: literally it means that "in Mary there is no experience of having taught English to children." *Kodomotati ni eigo o osieta koto* as a whole denotes a verb phrase, not a sentence nominalized by *koto*.

The distribution of *shika* is shown in the following sentences.

8

(19) [Merii-ni   shika kodomotati ni eigo   o   osieta koto]   ga   nai
       Mary-Dat only children   to English Obj taught experience Nom not
       Only for Mary there is an experience of having taught English to children.

(20) [Merii-ni   wa kodomotati ni shika eigo   o   osieta koto]   ga   nai
       Mary-Dat Top children   to only   English Obj taught experience Nom not
       For Mary there is an experience of having taught English only to children.

(21) [Merii-ni   wa kodomotati ni eigo   shika osieta koto]   ga   nai
       Mary-Dat Top children   to English only taught experience Nom not
       For Mary there is an experience of having taught only English to children.

(22) [Merii-ni   wa kodomotati ni eigo   osieta koto]   shika nai
       Mary-Dat Top children   to English taught experience only not
       For Mary there is only an experience of having taught English to children.

These sentences in (18) and (19) to (22) show that when the head daughter *nai* has a feature specification [+neg, − compo, +adj], it has a scope over not only its complement daughter and adjunct daughter but also over internal constituents NP or PP in a complement daughter.

3.2 Dependent *Nai*

3.2.1 Verb Stem + Dependent NAI

We have discussed how the independent *nai* acting as a head daughter is sensitive to its complement or adjunct daughter. In this section, we will deal with the problem of how the dependent *nai* in a head daughter behaves in relation to its complement and adjunct daughter.

(23) *[John-ga   kodomotati-ni eigo   shika osieta koto-o] [watashi-wa] sir-anai.
       John-Nom children-to   English only taught fact-Obj I-Top know-not
       I don't know that John taught only English to children.

(24) *[John-ga   kodomotati-ni eigo   shika osieta koto-o] [kare-wa] hanas-anai.
       John-Nom children-to   English only taught fact-Obj he-Top talk-not
       John doesn't talk that he taught only English to children.

In terms of a negative element both *sira-nai, hanasa-nai* consist of two components: a verb stem *sira, hanasa* and *nai*. We will see below how *shika* is distributed over the constituents of a sentence.

(25) *[John-shika kodomotati-ni eigo-o   osieta koto-o] [watasi-wa] sir-anai.
       John-only   children-to   English-Obj taught fact-Obj I-Top know-not
       I don't know that only John taught English to children.

(26) *[John-ga   kodomotati-ni shika eigo-o   osieta koto-o] [watasi-wa] sir-anai.
       John-only children-to   only   English-Obj taught fact-Obj I-Top know-not
       I don't know that John taught English only to children.

(27) [John-ga   kodomotati-ni eigo   osieta koto-o] [watasi-shika] sir-anai.
       John-only children-to   English taught fact-Obj I-only know-not
       No one but me knows that John taught English to children.

(28) [John-ga   kodomotati-ni eigo   osieta koto-shika] [watasi-wa] sir-anai.
       John-only children-to   English taught fact-only   I-Top know-not
       I know only the fact that John taught English to children.

9

It should be noted that *sira-nai* and *hanasa-nai* have a subject noun and a sentence as complement daughters and those sentences judged ungrammatical are the ones in which internal constituents, that is, NP or PP is within the scope of *nai*. The sentences (25), (26) are cases in point. On the other hand, the sentences (27), (28) are those where the two complements, the subject NP and the sentential complement daughters are not internal constituents.

This means that a sentential NP or PP complement can be a possible candidate of a target of the scope of the dependent *nai* but the internal NP or PP constituents cannot. In other words, the dependent *nai* which combines with a verb stem cannot refer to constituents within a sentential complement.

(29) [watashi-wa] [anata-ni] [enpitu-o sanbon motteitte ii to] iwa-na katta
I-Top   you-to   pencil-Obj three take allowed Comp tell-not past
I didn't tell you that you are allowed to take with you three pencils.

(30) [watashi-shika] [anata-ni] [enpitu-o sanbon motteitte ii to] iwa-na katta
I-only   you-to   pencil-Obj three take allowed Comp tell-not past
Only I told you that you are allowed to take with you three pencils.

(31) [watashi-wa] [anata-ni-shika] [enpitu-o sanbon motteitte ii to] iwa-na katta
I-Top   you-to-only   pencil-Obj three take allowed Comp tell-not past
I told only to you that you are allowed to take with you three pencils.

(32) *[watashi-wa] [anata-ni]   [enpitu-shika sanbon motteitte ii to] iwa-na katta
I-Top   you-to-only pencil-only three   take allowed Comp tell-not past
I didn't tell you that you are allowed to take with you only three pencils.

(33) [watashi-wa] [anata-ni]   [enpitu sanbon motteitte ii to-shika] iwa-na katta
I-Top   you-to-only pencil three   take allowed Comp-only tell-not past
I told you only that you are allowed to take with you three pencils.

(34) *[watashi-wa] [anata-ni]   [enpitu sanbon-shika motteitte ii to] iwa-na katta
I-Top   you-to-only pencil three-only   take allowed Comp tell-not past
I didn't tell you that you are allowed to take with you three pencils only.

The sentence (30) has three complement daughters: PP *watashiwa, anata ni* and a VP *enpitu o sanbon motte itte ii* , with *iwa-nai* 'not say ' as a head daughter. Among the five sentences above, (30), (31), and (33) are judged grammatical while c and e are ungrammatical. The grammatical sentences are those in which the PP and VP are complement daughters while the ungrammatical ones are those in which the internal constituents of a VP are a possible candidate of the scope of the complex verb phrase consisting of a verb stem and *nai*. In a word, dependent *nai* cannot have a scope over internal constituents of a complement daughter.

3.2.2 Adjective Stem + Dependent *Nai*

The following sentence is a case where a dependent *nai* occurs not with a verb stem but with an adjective stem.

(35) *Uma-ga   biiru-shika nomu koto-ga   omoshiroku-nai.
horse-Nom beer-only   drink fact-Nom interesting-not
The fact that a horse drinks only beer is not interesting.

(36) *Uma-shika biiru-o   nomu koto-ga   omoshiroku-nai.
horse-only beer-Obj drink fact-Nom interesting-not
The fact that only a horse drinks beer is not interesting.

10

(37) Uma-ga   biiru-o   nomu koto-shika   omoshiroku-nai.
      horse-Nom beer-Obj drink fact-only   interesting-not
      Only the fact that a horse drinks beer is interesting.

It should be noticed that the basic structure of the sentences above consists of a complex predicate having a dependent *nai* as a head and a sentential complement *uma ga biiru o nomu* (a horse drinks beer) nominalized by *koto*. If the dependent *nai* refers to an NP constituent within an NP nominalized by *koto*, that is, when an internal NP is within the scope of a dependent *nai* , the sentence is judged as ungrammatical: the sentences (35) and (36) are cases in point. On the other hand, when the *nai* refers only to the sentential complement, the sentence is grammatical, which is exemplified by (37). How the NPI is licensed is shown below.
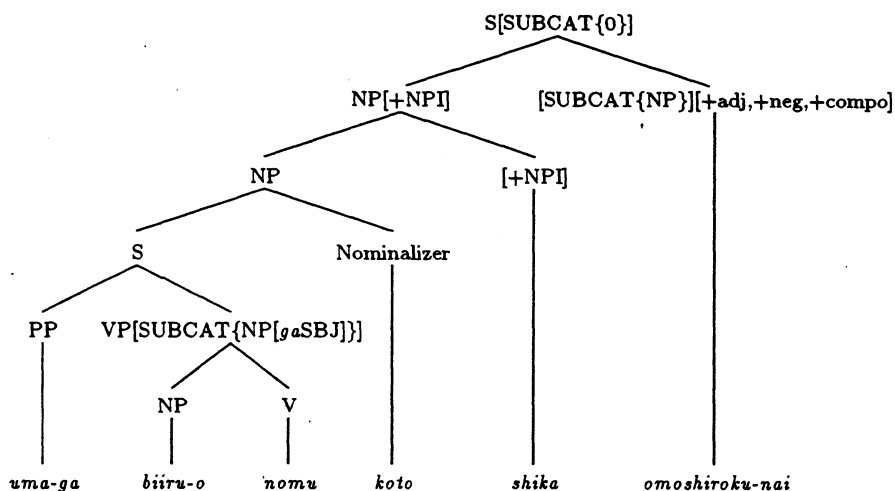
We can summarize this section as follows: If a head daughter has a feature specification [+ neg, + adj, −compo], that is, if a head is an independent *nai* , the negative element has a scope over not only its complement or adjunct daughter, but also internal NP or PP constituents. On the other hand, if a head daughter has a feature specification [+neg, +vb,+adj, +compo], such a predicate has a limited scope: it has a scope over only its complement, not any internal NP or PP constituents. The difference can be attributed to the independent or dependent property of a negative element *nai*: in the case of an independent adjective *nai* the only element preceding it is the one with less semantic content such as a nominalizer *koto* but on the other hand, the dependent *nai* is preceded by a verb or adjective stem with a substantial semantic content. This generalization accords well with native speaker's intuition.

4   Theoretical Implications and Conclusions

In this paper we have proposed the following.

(1) Correspondence Between Syntactic and Semantic Structures of an Independent *Nai*

In dealing with a semantic structure of an adjective we have stipulated three components: a predicate, argument, and predicate modifier. In the framework of HPSG a predicate corresponds to a head daughter, an argument to a complement daughter, and a predicate modifier to an adjunct . In terms of HPSG framework a head daughter *nai* has a scope over a complement and adjunct daughter. Equivalently, we can restate that a predicate have a scope over an argument and a predicate modifier in terms of a predicate-argument structure.

(3) The Scope Principle

'In the scope of' is defined over a head-complement with or without an adjunct daughter or a predicate argument structure in the case of independent *nai*, both of which are in an equivalent relation. The scope of a head daughter consists of its complement and or adjunct(s), and possibly their internal constituent(s).

11

(4) NPI absorption

The semantic feature [+NPI] in a *shika* phrase is absorbed by [+neg] feature in a head daughter whenever [+NPI] is in the scope of [+neg] in the head daughter. This mechanism ensures that there must be only one *shika* present in the scope of a head daughter with [+neg]. The first assumption implicitly states that there is a one-to-one mapping relation between a syntactic structure and a semantic counterpart, a basic claim made by traditional Montagovian frameworks. By the second and fifth principle it is easy to make a general statement why sentences with two *shika*'s like (38) and (39) are grammatical, while the sentence (40) is judged as ungrammatical.

(38) watashi-shika anata-ni [asu-shika ame-ga hur-anai]   -to iwa-na katta
      I-only   you-Dat   [tomorrow-only rain-Nom fall-not] -Comp say-not Past
      Only I and no other person said to you that it will rain only tomorrow.

(39) watashi-wa [[sono chihoo-de-shika hanas-arete i-nai]   hoogen-shika] rikai dekinai.
      I-Top   that area-in-only   speak-Passive be-not   dialect-only   understand cannot
      I can undersand only a dialect which is spoken only in that area.

(40) *watashi-shika anata-ni [asu-shika ame-ga hur-anai]   -to itta
       I-only   you-Dat   [tomorrow-only rain-Nom fall-not] -Comp say Past

In an embedded clause *asu* shika *ame ga huranai* of (38), *shika* is attached to an adjunct *asu* 'tomorrow' and the feature [+NPI] in *asu shika* 'only tomorrow' is absorbed by a negative feature [+neg] in the head daughter *huranai* 'rain not' because it is in the scope of a negative predicate in a minimal domain, that is, in a clause. The [+NPI] in the phrase *watashi shika* is absorbed by the predicate *iwanakatta* 'said not' since it is in the scope of a negative predicate *iwanakatta* 'said not' in the next higher domain. In (39) the negative predicate *hanasarete inai* 'is spoken not' has an adjunct daughter, *sono chihoo de shika*, to which *shika* is attached. In a matrix clause a complement daughter [[*sono chihoo de* shika *hanasarete inai*]*hoogen shika*] the feature [+NPI] in *hoogen shika* is absorbed by a head daughter *rikai dekinai* so that the sentence as a whole is judged as grammatical. In (38) [+ NPI] in the phrase *asu shika* is absorbed by a negative particle *huranai* 'rain not' so that there is no counterpart by which [+ NPI] in the phrase *watashi shika* is absorbed. Hence ungrammaticality of (38) results.

The third principle plays a most important role in this framework in that it attempts to define the licensing condition of an NPI without having recourse to the notion of configurational definition such as a c-command relation. If we follow the configurational principle, we are going to specify all the constituents in a clause as being in a c-command domain.

(41) [John-wa]   [[kare-no otooto-no   hon-o]   [yom-anai]]
      John-Top   he-Gen brother-Gen   book-Obj   read-not
      John does not read his brother's book.

Unless there is some ad-hoc restriction, all the constituents in a clause are in the c-command domain of the negative predicate *yomanai* 'read not'. For example, of the following four sentences sentences, 43 and 44 must be filtered out as ungrammatical by some means or other.

(42) [John-shika] [[kare-no otooto-no   hon-o]   [yom-anai]]
      John-only   he-Gen brother-Gen   book-Obj   read-not
      Only John reads his brother's book.

(43) *John [[kare-no-shika otooto-no   hon-o]   [yom-anai]]
       John he-Gen-only brother-Gen   book-Obj   read-not

(44) *John [[kare-no otooto-no-shika   hon-o]   [yom-anai]]
       John he-Gen brother-Gen-only   book-Obj   read-not

12

(45) John [[kare-no otooto-no hon-shika] [yom-anai]]
     John he-Gen brother-Gen book-Obj-only read-not
     John reads only his brother's book.

On the other hand, in our framework 'yomanai' belongs to a class of verbs which cannot have a scope over internal constituents of a complement daughter, and because *John no otooto no hon* 'John's brother's book' constitutes a single constituent NP, we can correctly predict that the sentences (43) and (44) are ungrammatical.

References

[1] Bartsch, Renata (1986/ 87) "The construction of properties under perspective," Journal of Semantics 5, 293-320.

[2] Chomsky, Noam. (1986) *Language in a Psychological Setting.* Sophia Linguistica 22, Monograph. Tokyo: Sophia University.

[3] Hattori, Shiro (1950) "Fuzokugo to fuzoku-keishiki, " Gengo Kenkyuu 15, 1-26.

[4] Ikeya, Akira (1991) " A contextual approach to Japanese Adjectives, " The Sixth Japanese-Korean Joint Conference on Formal Linguistics. ed. by Akira Ikeya, 64-90.

[5] Ikeya, Akira (1996) "Tough constructions in HPSG framework, "In Meaning and Discourse — A Festschrift for Proffessor Eva Hajicove, ed. by Barbara Partee and Petr Sgall, Amsterdam , John Benjamins.

[6] Kato, Yasuhiko (1979) "Sika-nai constrution and a theory of binding," Sophia Linguistica 5, 92-104.

[7] Kato, Yasuhiko (1985) *Negative Sentences in Japanese.* Sophia Linguistica 19, Monograph. Tokyo: Sophia University.

[8] Kato, Yasuhiko (1994) "Negative polarity and movement" Formal approaches to Japanese linguistics 1, MIT working papers in linguistics 24, 101-120.

[9] Kawamori, Masahito. (1991) "Remarks on '-*wa* and -*ga*' from the standpoint of inference", *Gengo* 11, 54–69 .

[10] Kawamori, Masahito. (1993) "Exhaustive-listing -*ga* Accomodated", *4th Interanational Conference on Pragmatics.*

[11] Kawamori, Masahito. (1996) *Hilbertian Description and Discourse Semantics.* Sophia Linguistica 39, Monograph. Tokyo: Sophia University.

[12] Konomi, Keiji (1989) " Sika nai koobun no koozo" (The structure of Sika nai construction) in Ohye Saburoo Sensei Tuitoo Ronbunsyuu Hensyuu iinkai, ed. Eigogaku no siten, Kyuushu Daigaku syuppankai, 369-385.

[13] Kuno, Susumu (1994) "Negative polarity items in Japanese and English, Proceedings of 1994 Nanzan Symposium. 225-264.

[14] Muraki, Masatake (1978) "The sika nai construction and predicate restructuring," in John Hinds and Irwin Howard, eds., Problems in Japanese Syntax and semantics, Kaitakusha, Tokyo.

[15] Pollard, Carl and Ivan, Sag (1987) Information-based syntax and semantics, CSLI Standford.

[16] Pollard, Carl and Ivan, Sag (1994) Head-driven phrase structure. CSLI , Stanford.

[17] Sells, Peter (1996) " The projection of phrase structure and argument structure in Japanese, Studies on the universality of constraint-based phrase structure grammars. 39-90.

13