

PREDICATE-ARGUMENT STRUCTURE OF ENGLISH ADJECTIVES

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Abstract

This paper will argue the following points. 1) What is a semantic status of prepositional phrases in such sentences as "Tom is good at tennis," "It is wise of Tom to go there," "This book is easy for John to read."? 2) What is the semantic status of to infinitive (henceforth, to VP) in the following sentences : "He is honest to bring back the money," "He is sure to win." 3) Is there a semantic difference in such sentences as "It is wise of Peter to go home", "Peter is wise to go home?" If there is any, what is it? 4) What is the predicate-argument structure of a sentence containing a predicate adjective like "John is easy for Mary to please?" Is it one-place, two-place or three-place-structure? 5) By introducing the notion of a predicate modifier we can solve these problems. 6) We conclude that adjectives are simply a one-place predicate.

1. The Semantic Structure of Adjectives

1.1 Three Dimensions

In English as well as in Japanese there is a group of what is called degree adjectives whose interpretation is heavily dependent on contexts, pragmatic or linguistic. One of such contextual factor is termed THEMATIC DIMENSION by Bartsch [1]. In addition to this dimension it was proposed in Ikeya [4] that it is necessary to recognize two other such dimensions, which are termed COMPARATIVE DIMENSION and DEGREE DIMENSION. It is 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*, this sentence has to be specified in what respect he is good, as compared to what 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 THEMATIC DIMENSION (TD), *for a short Japanese* is a so called CD, and *very* is our DEGREE DIMENSION (DD).

1.2 TD in English Adjectives

In English TDs have the following varieties.

- (1) a. John is good *at tennis*.
- b. John is fine *in terms of health*.
- c. John is blind *of one eye*.
- d. John is quick *at words*.
- e. John is cautious *with respect to the standard theory*.

As these examples show, in English TDs are expressed by such expressions like *in terms of*, *as regards*, or other prepositional phrases headed by *of*, *at*, *about*, *off*, *in* and the like. All these expressions give a semantic 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 be remarked that TD is not obligatory. In such sentence as *the business is very slow* no TD is expressed.

1.3. CD in English Adjectives

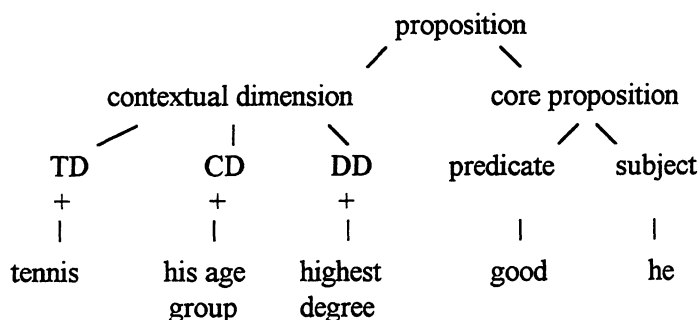
A degree adjective like *tall* implicitly encodes a comparison dimension like *taller than X*, with *X* being specified either by a linguistic or non-linguistic context. Take for example, the following sentences.

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

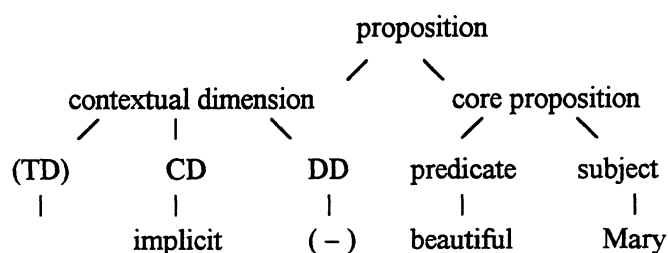
In (2)a a size like “tallness” is always relative to some implicit measure such as the height of average persons and it is nonsense to talk of tallness except relative to such a comparison class. On the other hand, in (2)b a comparison class is explicitly encoded in the form of *for a Japanese*. This is the case of a linguistic specification of a comparison dimension, while (2)a is the case of non-linguistic contextual specification of a comparison dimension.

- (3) He is very good at tennis for his age.

In terms of a tree diagram, (3) has the following semantic structure.



On the other hand, in the sentence *Mary is beautiful* there is neither TD nor DD which is explicitly expressed, though there is an implicit CD. So the semantic structure of the sentence may be represented as follows.



There are two cases of parentheses: the first case is where TD is optional; the second case is where a lexical item corresponding to DD is optional. In what follows, we are going to stipulate that the semantic structure shown just above is the basic one and therefore unmarked one, and the one corresponding to *He is very good at tennis for his age* is the marked one, whose semantic structure has all the three dimensions.

2. Predicate-argument structure of English Adjectives

In the preceding section we have tried to differentiate between “authentic arguments” and “pseudo arguments” by positing the semantic structure of adjectives shown above. For

example, we have shown that in sentence *John is good at tennis*, the prepositional phrase *at tennis* is not an argument of *good* but a predicate modifier named TD. In this section we will try to further distinguish “genuine arguments” from “seeming arguments”.

2.1. Tough Predicates or Silva and Thompson’s Class E

Jacobson [7] argues that the *tough* predicates denote a three-place semantic structure when there is a *PP* among two individuals and an action. Arguing against this position, Ikeya [6] asserts that the *tough* predicates denote a one-place predicate. This contention can be summarized as follows:

By treating *tough* predicates as a head in the sense of HPSG, the head can take only a ‘surface’ *NP* as a Subcat value, the other elements such as *to VP* and *for NP* being treated syntactically as adjuncts. Semantically *to VP* and *for NP* are treated as predicate modifiers, whose type is $\langle\langle e, t \rangle, \langle e, t \rangle\rangle$.

The reason for treating these two elements as predicate modifiers is as follows:

- (4) a. This book is very easy for me to read.
 b. This book is very easy for me.
 c. This book is very easy to read.

Set theoretically, the set defined by *very easy*, which is itself a subset of *easy*, is mapped either by *for NP* or *to VP* to its subset defined by *very easy for me* or *very easy to read*. Therefore, Jespersen [8] is quite right when he says that “the infinitive often serves to specify or give a *supplementary determination to a word* which in itself has a somewhat vague signification.” In our terms a *supplementary determination to a word* means giving a subset defined by *for NP* or *to VP*. On the difference of the sentences (i) and (ii), Berman [2] also comments as follows. “(i) *Mary is unpleasant to argue with*. (ii) *Mary is unpleasant*. It is clear that the meaning of (i) is equivalent to that of (iii) *Arguing with Mary is unpleasant*. That is, (i) does not imply that Mary is unpleasant in general, just as (iii) does not. Note that we can say (iv) *Mary is really nice, but she’s unpleasant to argue with*.” This comment also confirms our view that *to VP* is playing the function of specifying in what way or point the predicate *pleasant* is true.

So all the sentences in (4) boil down to one and the same predicate-argument structure, which can be represented as follows:

*tough*_{predicate} + *for NP*_{pred. modifier} + *to VP*_{pred. modifier} [entity]_{argument}

Very tough + *for me* + *to read* as a whole functions as a complex predicate, *for me* and *to read* serving as optional predicate modifiers, and *this book* plays the role of an argument. The square brackets represent the argument position. Therefore we assert that all the occurrences of *easy* in (4) is a one-place predicate having an entity as its argument, quite irrespective of whether there is *for NP* or *to VP* as a predicate modifier. In addition to this type, which has an entity as an argument of one-place predicate, there are two other types of argument: one is nominalized property, which is a syntactic counterpart of a verb phrase, and the other is a proposition, which is a syntactic counterpart of a sentence with *that* or *for to* complementizer. These two types are exemplified as follows.

- (5) a. To read this book is very tough for me.
 b. It is tough to read this book.

- (6) a. It was tough for John to fail the exam.
 b. To fail the exam was tough for John.
 c. Talking to Mary is easy for John.
- (7) a. For his wife to accept this view would be tough for John.
 b. It would be tough for John for his wife to accept this view.

The predicate argument structures of (5), (6) and (7) are as follows.

(5 & 6)' tough_{predicate} + (for NP)_{predicate modifier} [nominalized property]_{arg}.

(7)' tough_{predicate} + (for NP)_{predicate modifier} [proposition]_{arg}.

It should be noticed that although a *tough* predicate in the sentences (5), (6) and (7) is different in terms of the kind of an argument, all these sentences are the same in that they are a one-place predicate, with a predicate and predicate modifier forming a complex predicate.

2.2. Class A

2.2.1. Type I Adjectives

In Silva and Thompson [10], this class is divided into the two subclasses.

Type I:

It Cop Adj $\left[\begin{array}{c} \triangle \\ \text{of NP} \end{array} \right]$ [to VP]

- (8) a. It was wise of Peter to go home.
 b. It was ridiculous of Mary to argue in favor of that point.
 c. It was clever of Sally to do this.
 d. It was kind of Lisa to say that.
 e. That Bernie ran away from the bear was wise of him.
 f. For Bernie to run away from the bear was wise of him.
 g. It was wise that he refused.

Type II: $\left[\begin{array}{c} \triangle \\ \text{for NP} \end{array} \right]$ [(for NP) to VP]

- (9) a. It is dangerous for Godfather to get angry.
 b. It was nice for Sven to continue working.
 c. It was important for Warren to leave home.
 d. It was pleasant for Mona to say it.
 e. It would be unpleasant for us for it to rain now.

2.2.2. Semantic function vs. Thematic role

It would be convenient to make a distinction between a thematic role and a semantic function when we talk about the role of *of NP* and *for NP*. When we state that the Semantic role of *of NP* or *for NP* in (8) and (9) is an agentive role, and experiencer or beneficiary role respectively, as it is asserted in Silva and Thompson [10], we call such semantic role a *thematic role*. On the other hand, when we assert that the *for NP* or *to VP* can specify the meaning of a predicate denoted by an adjective, we call such a specification a *semantic function*. We have set up as a contextual element three dimensions, TD, CD, and DD at the outset of our paper. All these

factors play the *semantic function* of a predicate modifier which specifies the denotation of a predicate. This can be summarized as follows:

	semantic function	thematic role
for NP	predicate modifier	experiencer (TD)
of NP	predicate modifier	agentive (TD)

2.2.3. Predicate-argument structure of class A adjectives

2.2.3.1. Type I Adjectives

We stipulate that the *of NP* in type I adjectives in (8) plays the role of TD and we state that the thematic role of the phrase is *experiencer* by following Silva and Thompson [10]. Alongside the sentence (8)a, we have the following varieties.

- (10) a. It was wise to go home.
 b. Peter was wise to go home.

The predicate-argument structure of the sentences (8) and (10) can be represented as follows.

- (8)' a. ~ d. {wise_{predicate} + (of NP)_{pred. mod.}} [nominalized property]_{arg.}
 e. & f. {wise_{predicate} + (of NP)_{pred. mod.}} [proposition]_{arg.}
 g. {wise_{predicate}} [proposition]_{arg.}
 (10)' a. {wise_{predicate} + (implicit of NP)_{pred. mod.}} [nominalized property]_{arg.}
 b. {wise_{predicate} + (to VP)_{pred. mod.}} [entity]_{arg.}

It should be mentioned that the difference of (8)a and (10)a is that in the former there is an explicit *of NP* denoting an agent, while in the latter there is an implicit *of NP* denoting a contextually specifiable agent. The difference between (8)a and (10)b is that while in the former the subject of a verb phrase is denoted in the form of *of NP*, in the latter the NP, that is, *Peter* is a subject of *wise*, not *to VP*. Furthermore, *to VP* in (10)b functions as a predicate modifier of *wise*, not as a subject as in (8)a.

In addition, *wise* has following patterns.

- (11) a. He is wise --ask his advice.
 b. John was wise in matters of this sort.
 c. John was wise at making decisions.
 d. He is being very wise about it.

The predicate-argument structures of (11)a and b to d are as follows.

- (11)' a. {wise_{predicate}} [entity]_{arg.}
 b.~d. {wise_{predicate} + (prep. + NP)_{pred. mod.}} [entity]_{arg.}

We can conclude that the Pattern I adjectives are one-place predicates quite irrespective of whether the argument is an entity, nominalized property or proposition.

2.2.3.2. Type II Adjectives

The predicate-argument structure of Type II adjectives belonging to the class A adjective runs as follows.

- (9)' a. {dangerous_{predicate} + (for NP)_{pred. mod.}} [nominalized property]_{arg.}
f. {unpleasant_{predicate} + (for NP)_{pred. mod.}} [proposition]_{arg.}

In addition to this type, *dangerous* has the following patterns.

- (12) a. Broken glass is dangerous.
b. Their hunting elephants can be dangerous for you.
c. The river is dangerous to swim in.
d. It's dangerous that so many people have guns.

The predicate-argument structure of these sentences are as follows.

- (12)' a. {dangerous_{predicate}} [entity]_{arg.}
b. {dangerous_{predicate} + (for NP)_{pred. mod.}} [nominalized property]_{arg.}
c. {dangerous_{predicate} + to VP_{pred. mod.}} [entity]_{arg.}
d. {dangerous_{predicate}} [proposition]_{arg.}

In terms of a predicate-argument structure, it can be concluded that all the adjectives belonging to Type II and the related patterns can be boiled own to a one-place predicate.

2.3. Class S

Class S is what Silva and Thompson call 'Comment on solution', which includes the following items: *odd, peculiar, weird, crazy, ridiculous, absurd, typical, strange, fashionable, rare, just, logical, etc.*

- (13) a. It is ridiculous for these flowers to be yellow.
b. It is odd for the lawn to be watered every day.
(14) a. It was absurd of Frank to open that restaurant.
b. It was absurd for Frank to open that restaurant.

The predicate-argument structure of the sentences (13)a and b is as follows.

- (13)' {ridiculous/odd_{predicate}} [proposition]_{arg.}

(14)a is quoted by Silva and Thompson as belonging to class A and (14)b to the class S predicate. Therefore, (14)a has the same predicate-argument pattern as (8)a, and (14)b to (9)a.

2.4. Fond of type adjectives

There are in English a few adjectives which obligatorily take *PP* or *that* clause or *to VP*. These are never used without these elements.

- (15) a. He is fond of children.
b. His behavior is worthy of reverence.

- c. The incident is worthy to be remembered.
- d. We are desirous of such result.
- e. He is desirous that I should go there to help the needy.

These can be treated as cases of genuine two-place predicates since some adjective such as *fond of* can be replaced by a transitive verb *like*, a typical two-place predicate. It should be pointed out, however, that it is sometimes difficult to decide what role should be assigned to *to PP*, *to VP* and *that* clause: these can be given the status of predicate modifiers modifying the meaning of *fond*, *worthy*, and *desirous*. Or *fond of*, *worthy of* and *desirous of* can be treated as constituting a complex phrases equivalent to a transitive verb. We treat *to PP*, *to VP* and *that* clause as constituting predicate modifiers since not all adjectives + *PP* cannot be replaced by corresponding transitive verbs. Moreover, it is not always easy to make a distinction between the role of *to VP* in such phrases as *easy to read* and *worthy to be remembered*: both cases can be viewed as a case of a predicate modifier. If it is correct to treat the phrases *PP*, *to VP* and *that* clause as predicate modifiers, those adjectives taking these elements obligatorily can be considered as a one-place predicate, not a two-place predicate.

2.5. *Similar to* type adjectives

There is a small group of adjectives which seems to be a genuine type of two-place predicate. *Similar to* is a typical example, as shown below.

(16) This car is similar to mine.

Similar to seems to have two arguments: *this car* and *mine*. Similar examples can be multiplied.

- (17) a. The railroad is parallel to the road.
- b. This car is the same as mine.
- c. Man is different from animals in having the faculty of speech.
- d. Such acts are equivalent to murder.

We assert that these adjectives are not the case of a two place predicate but assume that they are simply a one-place predicate with a restriction that the subject of these adjectives always denotes two entities as can be attested by the following examples.

- (18) a. The two railroads are parallel.
- b. These cars are the same.
- c. These cases are completely different.
- d. They are morally equivalent acts.

Conclusion

By assuming a semantic structure proposed in Ikeya [4], we have reached a conclusion that adjectives are basically a one-place predicate. In the process of our argumentation, we tried to sort out the genuine argument and pseudo-argument so that what was traditionally treated as an argument is assigned the status of a predicate modifier in our framework.

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