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## On Semantic Classification of English Verbs\*

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### 0. Introduction

This paper is a brief report on the symposium "On Semantic Classification of English Verbs" held at the Second Annual Meeting of the Tsukuba English Linguistic Society.

In the symposium, we discussed the subject on the basis of three previous approaches: Kiparsky and Kiparsky (1970), Hooper (1975), and Cattell (1978). As is well-known, the Kiparskys propose 'factive' predicates, Hooper 'assertive' predicates, and Cattell 'stance' verbs. These approaches are summarized in Section 1.

Our contribution in the symposium lies in having made clear the interrelationship between factive, assertive, and stance verbs, which is shown in Section 2, and having discussed the scope and limit of each of the three approaches, which is shown in Section 3.

### 1. Three Previous Approaches

#### 1.1. Kiparsky and Kiparsky (1970): Factive predicates

The background assumption of this paper is that the choice of complement type is predictable from a number of semantic factors. In terms of the semantic notion presupposition, the Kiparskys divide the English predicates into two categories, factive and non-factive:

- (1) John regrets that the door is closed. (factive)  
 (2) I believe that John is ill. (non-factive)

In (1), "the speaker presupposes that the embedded clause expresses a true proposition, and makes some assertion about that proposition," Sentence (2) has no such presupposition.

Factive predicates can take gerundial complements but not non-factives:

- (3) I regret having agreed to the proposal. (factive)  
 (4) \*I believe having agreed to the proposal. (non-factive)

In contrast, only non-factive predicates allow accusative-with-infinitive construction:

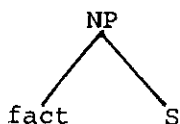
- (5) \*I resent Mary to have been the one who did it.  
 (factive)  
 (6) I believe Mary to have been the one who did it.  
 (non-factive)

Though both of these predicates take that-complements (as in (1) and (2)), only factive predicates allow complements with the NP the fact:

- (7) I want to make clear the fact that I don't intend to participate. (factive)  
 (8) \*I assert the fact that I don't intend to participate. (non-factive)

At deep structure, factive and non-factive predicates are distinguished by the following complement structures:

- (9) (factive)                      (10) (non-factive)



On this hypothesis, explanation for the difference between (7) and (8) is straightforward. Sentence (1) is derived by fact-deletion. Sentence (3) is generated through the gerund-formation operation, which applies only to factive complements.

Subject-raising cannot apply to factive complements because of Ross's Complex NP Constraint; for this reason, accusative-with-infinitives never appear after factive predicates (cf. (5) and (6)). Incidentally, the Complex NP Constraint also explains why the factives do not allow Neg-raising (Neg-transportation).

The structural difference between (9) and (10) enables us to account for sentence-pronominalization phenomena:

(11) John regretted that Bill had done it, and Mary  
regretted  $\left\{ \begin{array}{l} \text{it} \\ *so \end{array} \right\}$  too. (factive)

(12) John supposed that Bill had done it, and Mary  
supposed  $\left\{ \begin{array}{l} \text{it} \\ \text{so} \end{array} \right\}$  too. (non-factive)

The node which exhaustively dominates the factive complement is NP, while the non-factive complement is exhaustively dominated by NP and S. Therefore, it (the pro-form of NP) is permitted in both cases; so (th pro-form of S) is barred in (11).

In this way, the notion presupposition and the deep structure in (9), which is the syntactic reflection of presupposition, make it possible to capture the inter-relationship of syntax and semantics in the English complement system.

## 1.2. Hooper (1975): Assertive predicates

The background assumption of Hooper (1975) is that "syntactic phenomena have semantic explanations." Hooper introduces a semantic concept called 'assertion', which means "a declarative proposition or a claim to truth that may be taken as the semantically dominant in the discourse context"; that is, the assertion of a sentence is its core or main proposition.

In terms of this concept, Hooper divides predicates into two classes, assertive and non-assertive: assertive predicates (e.g. believe, say, claim) take complements with assertion, and non-assertive predicates (e.g. likely, possible, deny) complements without assertion. This classification is based on complement assertion. Syntactically, the assertive/non-assertive distinction is determined by the applicability of Slifting: the assertives allow it, but not the non-assertives:

(13) He wants to hire a woman, he says. (assertive)

(14) \*Many of the applicants are women, it's likely.  
(non-assertive)

Assertive predicates, furthermore, are classified into strong and weak assertives. Strong assertives make the main clause a main assertion; their complement is an indirect assertion. On the other hand, weak assertives have a reduced semantic content and do not make an assertion independent of the complement assertion; their complement is a main assertion. The strong/weak assertive distinction is motivated syntactically by the applicability of Neg-transportation and Tag Question Formation from the complement clause:

- (15) a. I think these living conditions are not suitable.  
       = I don't think these living conditions are  
           suitable.
- b. He said the door wasn't closed properly.  
       ≠ He didn't say the door was closed properly.
- (16) a. I think the car needs a tune-up, doesn't it?  
       b. \*I assert that inflation will continue, won't it?

As we will see below (cf. Section 3), the distinction between assertive and non-assertive predicates can be used to account for other syntactic phenomena as well.

### 1.3. Cattell (1978): Stance verbs

The main concern of Cattell (1978) is to explain the fact that the sentence in (17) is ambiguous while those in (18) are not:

- (17) Why do the police believe (that) Sue killed Harry?
- (18) a. Why do they regret that Sue killed Harry?  
       b. Why do they deny that Sue killed Harry?  
       c. Why didn't the police believe that Sue killed  
           Harry?

(17) can be interpreted in two ways: on one reading, the speaker asks why the police hold the belief that Sue killed Harry; on the other reading, the speaker seeks to find out why she killed him, in view of the police. In contrast, each sentence in (18) has only the former reading. Cattell's explanation for this fact is based on the semantic notion, volunteered-stance.

Consider the following sentences:

- (19) a. Richard claimed that the road went through Windsor.
- b. Richard commented that the road went through Windsor.

If the propositional content of the that-clause is already part of the common ground of knowledge between speaker and hearer, (19b) would be appropriate, whereas (19a) would seem odd. This difference is due to the meaning difference between the main verbs. When a person claims that S, he is inviting his hearers to accept the complement proposition and so let it be incorporated into common belief. Therefore, the verb claim is incompatible with the circumstances in which the complement proposition is already part of the common ground of belief. But this is not the case with the verb comment. Cattell calls the claim type of verbs 'stance' verbs and the comment type of verbs 'non-stance' verbs.

In order to give an explanation for such ambiguous phenomena as (17), Cattell further subdivides stance verbs into two classes: volunteered-stance verbs (e.g. believe, claim) and response-stance verbs (e.g. agree, deny). Volunteered-stance verbs indicate that (the referent of) their subject makes a proposition on his own initiative, while response-stance verbs are used to respond to something previously suggested.

It should be noticed that volunteered-stance verbs alone allow the two readings mentioned above, because the complement proposition of such verbs represents the point of view of their subject, who accepts some kind of responsibility for it. On the other hand, neither response-stance verbs nor non-stance

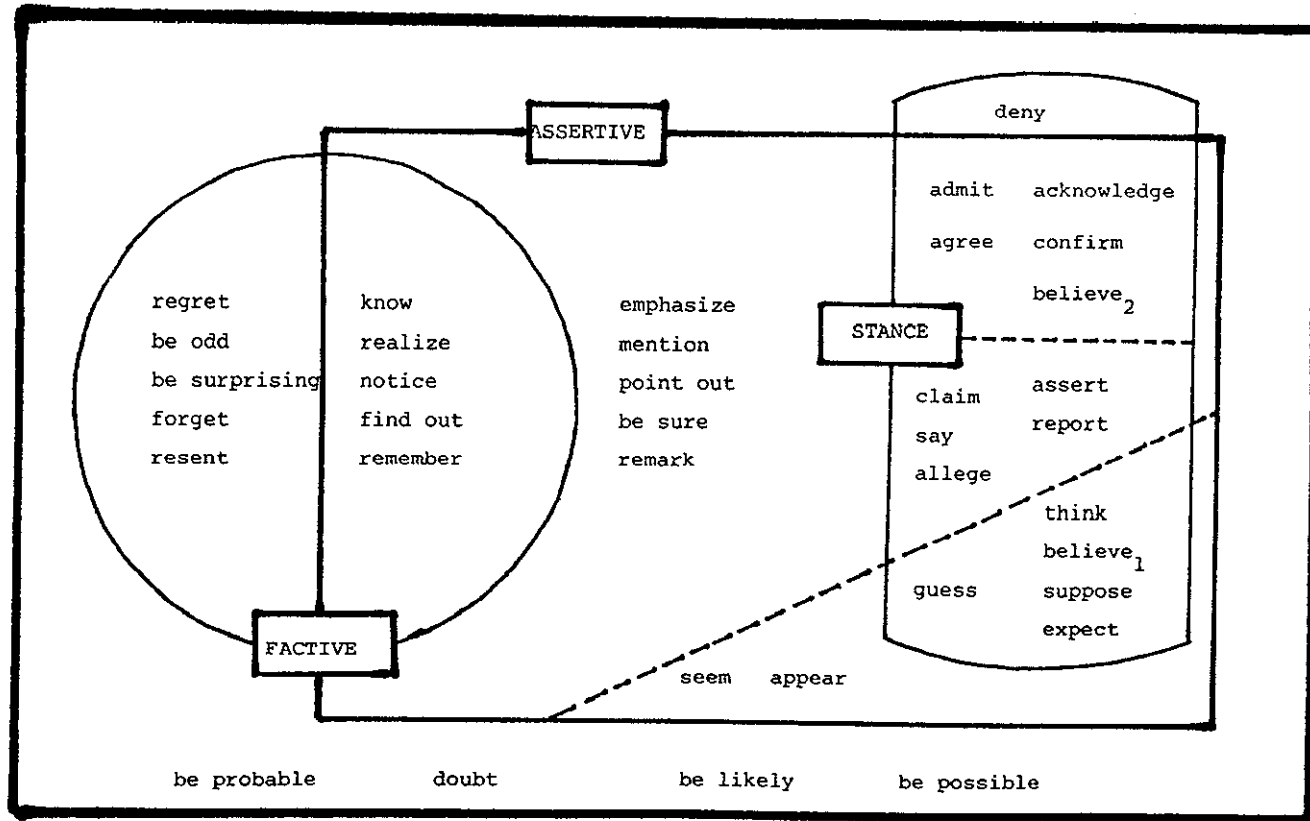


verbs allow the second of the two readings, since their subject is not a 'guarantor' of the truth of the complement. Note also that negation of the verb dissolves the subject's responsibility for the truth of the complement; hence (18c) is unambiguous, though it contains the volunteered-stance verb believe.

## 2. Interrelationship between Factive, Assertive, and Stance Verbs

The interrelationship between the three verb classifications is shown by the diagram on the next page.<sup>1</sup> Two dotted lines represent the subclassification of assertive and stance verbs, respectively: as is already familiar to us, assertive verbs are divided into weak assertives (e.g. seem, expect) and strong assertives (e.g. claim, agree); stance verbs are divided into volunteered-stance verbs (e.g. claim, think) and response-stance verbs (e.g. agree, admit). Factive verbs also consist of two subclasses: the verbs contained in the area where FACTIVE overlaps with ASSERTIVE are called semi-factive (e.g. know, realize), the rest being (true) factive.

We note in passing that Cattell is not concerned with those predicates which take a sentential subject or pleonastic it as subject (e.g. seem, be likely). Though placed in the domain of non-stance verbs, they do not necessarily show the same behavior as the other non-stance verbs; for example, with respect to extraction from the complement sentence, seem is in accordance with volunteered-stance verbs and not with non-stance verbs.



regret  
be odd  
be surprising  
forget  
resent

know  
realize  
notice  
find out  
remember

emphasize  
mention  
point out  
be sure  
remark

deny

admit acknowledge  
agree confirm  
believe<sub>2</sub>

claim assert  
say report  
allege

think  
believe<sub>1</sub>  
guess suppose  
expect

be probable      doubt      be likely      be possible

seem    appear

### 3. Verb Classifications and Syntactic Operations

The three verb classifications surveyed in Section 1 each offer a number of problems concerning the behavior of verbs in various syntactic operations. In the symposium, we pointed out such problems and thereby discussed the scope and limit of each verb classification. Here space prevents us from detailing this discussion; we simply give a very brief summary of it in 3.1. In 3.2, a table is presented which shows the relation between each verb classification and various syntactic operations. In 3.3, examples are given to illustrate this relation.

#### 3.1. Summary of the problems<sup>2</sup>

As we can readily observe in the table below (cf. 3.2), factives show salient behavior in the given syntactic operations; that is, they comprise a proper subset of those semantic classes of verbs which are effective in explaining these syntactic phenomena. To put it negatively, we cannot predict the behavior of non-factives, which constitute a heterogeneous verb class.

This motivates Hooper's classification in terms of the notion of assertion, which she claims is reflected syntactically in the applicability of Slifting and Main Clause Phenomena. However, there are phenomena that cannot be sufficiently explained by assertion. Consider, for example, extraction phenomena--more specifically, those cases in which a certain element is extracted out of the complement sentence. Clearly, Hooper's analysis runs into a problem in accounting for these cases: while weak assertives in principle allow extraction from the complement, some strong assertives do not. Her analysis cannot explain why this is so.

This motivates Cattell to propose another classification of verbs in terms of the notion 'stance', which accounts properly for extraction phenomena. However, as is shown by the table below, Cattell's classification also presents a number of problems concernig other kinds of syntactic phenomena.

In the symposium, we further considered what semantic factors were involved in each syntactic operation listed in the table, and discussed whose verb classification could give the best explanation to which syntactic operation, taking into consideration other relevant semantic analyses of verbs attempted by a number of linguists.<sup>3</sup>

### 3.2. Table: Verb classifications and syntactic operations

#### Abbreviations

- F: factive
- SF: semi-factive
- NF: non-factive
- A: assertive
- WA: weak assertive
- SA: strong assertive
- NA: non-assertive
- VS: volunteered-stance
- RS: response-stance
- NS: non-stance

	F	SF	NF	A		NA	VS	RS	NS
				WA	SA				
Slifting	*	OK	OK/*	OK		*	OK	OK/*	*/OK
Main Clause Phenomena	*	OK	OK/*	OK		*	OK	*/OK	*/OK
Extraction	*	OK	OK/*	OK	OK/?/*	*	OK	*	*
Tag Question Formation from the Complement S	*	OK <sup>4</sup>	OK/*	OK	*	*	OK/*	*	*
NEG Transportation	*	*	OK/*	OK	*	* <sup>7</sup>	OK/*	*	*
Sentence Pronominalization	<u>it</u>	<u>it</u> <sup>5</sup>	<u>it/so</u>	<u>so</u>	<u>it</u> <sup>6</sup>	<u>it</u>	<u>so/it</u>	<u>it</u>	<u>it</u>
Sentential Subject	OK	/	OK/*	*	OK	OK	OK/*	OK	OK

## 3.3. Examples

3.3.1. Slifting

- (1) a. \*Santa has lost a lot of weight, I regret. (F)  
 b. Many of the applicants are women, it seems. (NF)  
 c. \*Many of the applicants are women, it's likely.  
 (NF)
- (2) a. Many of the applicants are women, it seems. ((W)A)  
 b. \*Many of the applicants are women, it's likely.  
 (NA)
- (3) a. John will come, I think. (VS)  
 b. Hibernation has its drawbacks, they admit. (RS)  
 c. \*Harry is the murderer, I deny. (RS)  
 d. \*Santa has lost a lot of weight, I regret. (NS)  
 e. Santa has lost a lot of weight, I notice. (NS)

3.3.2. Main Clause Phenomena

- (4) a. \*It's surprising that standing among the spectators  
 was the former champion himself. (F)  
 b. It seems that marry her he will. (NF)  
 c. \*It's likely that marry her he will. (NF)
- (5) a. It seems that marry her he will. ((W)A)  
 b. \*It's likely that marry her he will. (NA)
- (6) a. I suppose that most embarrassing of all was  
 falling off the stage. (VS)  
 b. \*I denied that into the garden ran a yellow cat.  
 (RS)  
 c. He admitted that beyond the next hill stood a  
 large fortress. (RS)  
 d. \*I forgot that playing in the concert was Artur  
 Rubinstein. (NS)

- e. I noticed that playing in next month's concert  
would be Artur Rubinstein. (NS)

### 3.3.3. Extraction

- (7) a. \*Who do you regret that you have invited? (F)  
b. What does it appear that he meant? (NF)  
c. \*When is it impossible that he should be here? (NF)
- (8) a. What do you guess that Mike would hit? (WA)  
b. What did you report to them that she had done?  
(SA)  
c. ?What did you admit that she had done? (SA)  
d. \*What did he emphasize that he had given her? (SA)  
e. \*What do you deny that John bought? (NA)
- (9) a. What did you think that he had done? (VS)  
b. \*What do you deny that John bought? (RS)  
c. \*Who do you regret that you have invited? (NS)

### 3.3.4. Tag Question Formation from the Complement S

- (10) a. \*I regret it didn't stop snowing, did it? (F)  
b. I suppose the Yankees will lose again this year,  
won't they? (NF)  
c. \*I assert that inflation will continue, won't it?  
(NF)
- (11) a. I suppose the Yankees will lose again this year,  
won't they? (WA)  
b. \*I assert that inflation will continue, won't it?  
(SA)  
c. \*It's possible we'll be arriving right on time,  
won't we? (NA)

- (12) a. I suppose the Yankees will lose again this year,  
won't they? (VS)
- b. \*I assert that inflation will continue, won't  
it? (VS)
- c. \*You admit that the book is obscene, isn't it?  
(RS)
- d. \*I regret it didn't stop snowing, did it? (NS)

### 3.3.5. NEG Transportation

- (13) a. I regret that he didn't accept my invitation.  
≠ I don't regret that he accepted my invitation.  
(F)
- b. I think these living conditions are not suitable.  
= I don't think these living conditions are  
suitable. (NF)
- c. I claim that the earth is not round.  
≠ I don't claim that the earth is round. (NF)
- (14) a. I think these living conditions are not  
suitable.  
= I don't think these living conditions are  
suitable. (WA)
- b. I claim that the earth is not round.  
≠ I don't claim that the earth is round. (SA)
- c. It's possible these living conditions are not  
suitable.  
≠ It's not possible these living conditions are  
suitable. (NA)



- (15) a. I think these living conditions are not suitable.  
 = I don't think these living conditions are  
 suitable. (VS)
- b. I claim that the earth is not round.  
 ≠ I don't claim that the earth is round. (VS)
- c. I agree that the earth is not round.  
 ≠ I don't agree that the earth is round. (RS)
- d. I regret that he didn't accept my invitation.  
 ≠ I don't regret that he accepted my invitation.  
 (NS)

### 3.3.6. Sentence Pronominalization

- (18) a. John regretted that Bill had done it, and Mary  
 regretted it too. (F)
- b. He says John is here, and I claim it. (NF)
- c. He says John is here, and I think so. (NF)
- (19) a. He says John is here, and I think so. (WA)
- b. He says John is here, and I claim it. (SA)
- c. John regretted that Bill had done it, and Mary  
 regretted it too. (NA)
- (20) a. He says John is here, and I claim it. (VS)
- b. He says John is here, and I think so. (VS)
- c. Bill claimed that Sue was guilty, and Harry  
 denied it. (RS)
- d. John regretted that Bill had done it, and Mary  
 regretted it too. (NS)

### 3.3.7. Sentential Subject

- (21) a. That we must make this criticism is regretted.  
 (F)

- b. That Smith had arrived was reported by the UPI.  
(NF)
- c. \*That he is happy is believed. (NF)
- (22) a. \*That he is happy is believed. (WA)
- b. That Smith had arrived was reported by the UPI.  
(SA)
- c. That we must make this criticism is regretted.  
(NA)
- (23) a. That Smith had arrived was reported by the UPI.  
(VS)
- b. \*That he is happy is believed. (VS)
- c. That the president has been indicted will be  
denied. (RS)
- d. That we must make this criticism is regretted.  
(NS)

## NOTES

\* This paper was written by K. Iwabe, N. Kaga, K. Kanno,  
J. Murata, Y. Hirose, and S. Seki.

<sup>1</sup> The diagram was drawn by Nobuhiro Kaga.

<sup>2</sup> In reading this summary, the reader is referred to the  
table in 3.2.

<sup>3</sup> E.g. Cushing (1972), Erteschik (1973), Erteschik and  
Lappin (1979), Nakau (1979, 1981).

<sup>4</sup> \*discover, \*find out

<sup>5</sup> know: so

<sup>6</sup> be afraid, hope, say, know: so

<sup>7</sup> be likely: OK

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