

<Articles>The Discourse Semantics of Visual Perception and Knowledge(<Semantics and Pragmatics>)

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| 著者 | Takeda Shuichi |
| journal or publication title | Tsukuba English Studies |
| volume | 22 |
| page range | 177-190 |
| year | 2004-03-05 |
| URL | http://hdl.handle.net/2241/7536 |

The Discourse Semantics of Visual Perception and Knowledge*

Shuichi Takeda

1. Introduction

A language can be defined as being comprised of a set of linguistic expressions (e.g. words, phrases, sentences, etc.). Linguistic expressions are sometimes characterized in terms of the form-meaning correspondence. One of the central aims of linguistics is to elucidate this correspondence between form and meaning. We can extend this approach of language inquiry to the study of discourse. The units of discourse are sentences, and speakers, it seems, have certain intuitions about the organization of a sequence of sentences. Our concern is to account for the rules for combining sentences into larger structures.

Since Chomsky's epoch-making theory of language appeared in the middle of 1900s, a considerable amount of research has been done to elucidate the syntactic and semantic structures of sentences. This kind of research approach to language is, of course, indispensable, but it is also essential to extend language research beyond the sentence level. Linguistic attention should also be paid to the domain of discourse. One of the most important aims of discourse analysis is to account for how coherent pieces of discourse are structured. This paper is an attempt to cast some light on the analysis of discourse structure with special reference to human perceptual patterns.

In Section 2, I will discuss the semantics of verbs of visual perception and knowledge and abstract their cognitive patterns. I believe that these patterns will provide an important basis for the analysis of certain types of discourse. In Section 3, I will argue that the cognitive patterns associated with verbs of visual perception and knowledge are incorporated in some discourse structures. These patterns function as the cognitive schemata for combining the constitutional units of discourse. The linguistic phenomena created by verbs of visual perception and knowledge will, I believe, provide a fertile field for the study of discourse semantics.

2. Semantic Characteristics of Verbs of Visual Perception and Knowledge

As one important step towards the clarification of the relevance of word semantics to discourse semantics, I will discuss the meanings of verbs of visual perception and knowledge from a cognitive point of view. A semantic analysis of verbs of visual perception and knowledge is, it seems to me, a fundamental basis for the clarification of human perceptual processes. There may be a lot of verbs of visual perception and knowledge, but it seems plausible to take the verb *see* as an

example for analysis because this verb has all of the three key meanings which are important to clarify the relation between the semantic fields of visual perception and knowledge.

A simple observation of the uses of the verb *see* will tell us that there are at least three important meanings to clarify the basic patterns of perceptual processing:

Meaning 1: Object perception by the eyes

Meaning 2: Situation perception by the eyes

Meaning 3: Understanding on the basis of visual perception

These three meanings, which can be observed in the uses of the verb *see*, correspond to three main stages of perceptual processing. The meaning fields which consist of Meanings 1-3 are covered by various kinds of verbs of visual perception and knowledge.

Meaning 1 (object perception by the eyes) sets the most basic stage of perceptual processing. There are a lot of observable objects in the world around us. They are fundamental components of the world. The verb *see* expresses "perceive some object using the eyes" as its basic meaning. We can easily observe this kind of use of *see*.

(1) 'I saw the suitcase,' Mason said, 'but all that was in it at the time we looked were some newspapers.' (Gardner *The Case of the Phantom Fortune*: 37)

(2) 'Don't kid me, stranger. I saw a cigarette on the right side of your car.' (Chandler *Killer in the Rain*: 265)

In (1), one particular suitcase is the object of Mason's visual perception; in (2), similarly, one particular cigarette is the object of the speaker's visual perception.

Meaning 2 (situation perception by the eyes) is a little more developed type of visual perception compared with object perception by the eyes. The verb *see* displays various kinds of situation perception.

(3) "You live next door to Prescott?"

"Yes."

"And you saw that accident?"

"Yes, I saw it."

"Where were you at the time?"

(Gardner *The Case of the Lame Canary*: 111-112)

(4) Mason said, "Tell me exactly what you saw."

"The whole inside of that black bag," Gertie said impressively, "was just one mass of hundred-dollar bills, all neatly stacked in piles just as they came from the bank."

“And you saw that in the mirror?”

“Yes.”

(Gardner *The Case of the Fabulous Fake*: 6)

In (3), the speaker of the third utterance asks the hearer about a particular situation perceived as an accident. Accidents are, like objects, important components of the physical world. In (4), Gertie gives Mason a detailed explanation of what she has seen in the mirror. This is an instance of vivid explanation of the situation perceived.

Meaning 3 (understanding on the basis of visual perception) corresponds to a derivational process from visual perception. Visual perception and knowledge are cognitively related phenomena in that visual perception is often a precondition for knowledge. That's why it is natural for the visual perception verb *see* to have the meaning “understand something”.

- (5) The Metro North commuter train pulled to a stop precisely on time, Jeff noted from his vantage point a hundred feet farther down the platform. At this time of day it was something of a misnomer to call it a commuter train, he thought; not many businessmen would have taken the 11:00 A.M. run into the city.

Jeff began walking briskly toward the ramp to the Terminal, as if he'd just gotten off a different line. He slowed his pace a bit as he passed the train from New Rochelle, and saw that he'd been right: There were a number of women dressed for shopping trips, a smattering of college students, but almost no one with a suit and tie and briefcase among the disembarking passengers. (Grimwood *Replay*: 294)

The verb *saw* in the eighth line of (5) means understanding, and the basis for this understanding is provided in the description following the colon in the same line.

Using the verb *see* as an example, I have surveyed the three kinds of meanings which illustrate the semantic fields related to human visual perception and knowledge. It is useful here to look at the verbs which typically cover the semantic fields of visual perception and knowledge. It seems that the semantic behaviors of these verbs often cognitively influence the structuring of discourse.

Let us consider first verbs of visual perception. Verbs of visual perception can be classified into the following two kinds:

- (6) a. glance (at), look (at), peep (at), peer (at), squint (at), stare (at), view, watch, etc.
 b. check, examine, inspect, scan, scrutinize, study, etc.

The verbs of (6a) (hereinafter, called Type I-1 verbs) express *general* “object per-

ception by the eyes”, and the verbs of (6b) (hereinafter, called Type I-2 verbs), as verbs of visual perception, express *close* “object perception by the eyes”.

These two types of verbs are different from each other in that Type I-2 verbs involve the meaning “minute visual perception” in some way. For instance, *check* means “make sure that something is true, satisfactory, properly done”, which sometimes involves minute visual perception. *Examine* means “carefully look at something or consider something”, which may also involve minute visual perception. It is important here to notice that minute visual perception is cognitively related to the situation perception as discussed in (3) and (4). Situation perception is sometimes a consequence of minute visual perception.

Let us consider here verbs of knowledge and judgement. These two types of verbs constitute a major semantic field for human mental activities.

- (7) a. know, learn, realize, understand, etc.
 b. assume, conclude, consider, guess, imagine, infer, reason, speculate, suppose, think, etc.

The verbs of (7a) (hereinafter, called Type II-1 verbs) involve understanding and knowledge. Understanding and knowledge are often based upon visual perception. This seems to be a natural mental process. The meanings of understanding and knowledge can expand into certain types of judgement (e.g. assumption, conclusion, inference, etc.). This semantic field is covered by the verbs of (7b) (hereinafter, called Type II-2 verbs). These verbs imply the opinion-formation based upon given information and careful examination, which can be realized only by proper understanding and knowledge.

3. Discourse Patterns for Visual Perception and Knowledge

In the previous section, I have surveyed the semantics of verbs of visual perception and knowledge. This survey will shed light on the cognitive aspects of word meanings and provide us a useful tool for understanding the organization of such pieces of discourse as related to visual perception and knowledge. The basic assumption I work on here is that the semantics of words can be reflected in the semantics of discourse structures. In other words, pieces of discourse are sometimes structured on the basis of the cognitive patterns displayed by the meanings of words. This section will focus on the cognitive factors which determine the discourse structures concerning visual perception and knowledge.

Before continuing, let us here summarize the cognitive characteristics of verbs of visual perception and knowledge in the light of the previous discussions. In the previous section, I have discussed the cognitive continuum from visual per-

ception through knowledge to judgement. Direct visual perception is the most basic mental activity, which can be expressed by Type I-1 verbs. We are surrounded by various kinds of objects, which can be easily identified. This direct visual perception develops into minute visual perception as a natural perceptual process. This aspect of the semantic field for visual perception is covered by Type I-2 verbs. Other two types of verbs are Type II-1 verbs (verbs of understanding and knowledge) and Type II-2 verbs (verbs of judgement). The cognitive patterns for these four types of verbs provide us a crucial tool for analyzing the nature of discourse structures.

3.1. Three Basic Discourse Patterns

We should notice here that the cognitive patterns displayed by verbs of visual perception and knowledge are observable in certain types of discourse. There are discourse structures which can be characterized by combining some of the cognitive patterns displayed by the four types of verbs as discussed in Section 2. In the light of the discussions made in Section 2, we can get the following main discourse patterns:

Discourse Pattern 1: Object Perception + Situation Perception

Discourse Pattern 2: Object Perception + Understanding

Discourse Pattern 3: Situation Perception + Understanding

The first two discourse patterns may be divided into a few sub-patterns according to the differences in object perception.

Discourse Pattern 1 generates situations in which someone perceives some object and develops detailed observation about the object. This observation is encoded as a situation form. This discourse pattern is guaranteed by the cognitive patterns realized by Meaning 1 (object perception by the eyes) and Meaning 2 (situation perception by the eyes). Some illustrative examples are given below:

- (8) Harry looked back at Hagrid, smiling, and saw that Hagrid was posi-
 (a) (b)
tively beaming at him. (Rowling *Harry Potter and the Philosopher's Stone*: 68)
- (9) I picked up the cigarette case, looked at it casually, and saw that a
 (a) (b)
hand-tinted photo of a big-boned, dark man decorated the front of it.
 (Chandler *Killer in the Rain*: 273)
- (10) ‘...Once I caught sight of my face in the cockpit mirror and I saw that
 (a) (b)
I was smiling, smiling with my eyes and with my mouth, and when I
 looked away I knew that I was still smiling, simply because that was

the way I felt...' (Dahl *The Collected Short Stories of Roald Dahl*: 295)

- (11) Then slowly he opened his eyes, looked down at his hand and saw that
 (a) (b)
he was holding something which was white. It was the edge of a sheet. He knew it was a sheet because he could see the texture of the material and the stitchings on the hem. (*Ibid.*: 302)
- (12) Harry looked up into the fierce, wild, shadowy face and saw that the
 (a) (b)
beetle eyes were crinkled in a smile. (Rowling *Harry Potter and the Philosopher's Stone*: 56)

The (a) parts in (8)-(12) describe a visual activity by which one particular object is cognitively fixed. The expressions *look (back) at*, *catch sight of*, *look down at*, *look up into* are all typical verbal expressions of direct visual perception. The (b) parts in (8)-(12) describe an activity of making a detailed observation about the fixed object. The *that*-clause following the verb *see*, in each case, expresses the situation perceived about the fixed object.¹

In all of sentences (8)-(12), the object of visual perception is mentioned in some way in the *that*-clause. In (8), Hagrid is mentioned again in the *that*-clause, and in (9), the pronoun *it* in the *that*-clause refers to the specific cigarette case previously mentioned. In (10), there is no mention of the speaker's face in the *that*-clause, but we can easily understand that the *that*-clause describes the speaker's face. *My face* and *I* are metonymically linked, since they create the part-whole relation. A similar thing can be observed in (11) and (12). In (11), a metonymical linkage holds between *his hand* and *he*, and in (12), the same type of metonymical linkage holds between *the fierce, wild, shadowy face* and *the beetle eyes*. They are both instances of the part-whole metonymy.²

A slightly different case of Discourse Pattern 1 can be observed in the following extract:

- (13) Suddenly he pointed ahead through the glass windshield of the aero-
 (a)
plane and she saw that the sky was full of searchlights. There were
 (b)
 many hundreds of them; long white fingers of light travelling lazily across the sky, swaying this way and that, working in unison so that sometimes several of them would come together and meet in the same spot and after a while they would separate and meet again somewhere else, all the time searching the night for the bombers which were mov-

ing in on the target. (Dahl *The Collected Short Stories of Roald Dahl*: 314)

In part (a), there is no verb of visual perception. In spite of that, object perception is implied by part (a). One specific object for situation perception, that is, the sky is contextually fixed. Part (b) gives a description of the sky.³ Interestingly enough, in the context following part (b), a detailed description is given of what is happening in the sky.

There is another instance of Discourse Pattern 1 to be noticed. In this instance, there is no verb of visual perception. In spite of this, one object is introduced by a situation description. One particular object is first selected and fixed as a focus in some way, just as an object is fixed by the focus operation of camera lenses. After that, a detailed description is given of the situation involving the relevant object. One typical example is as follows:

- (14) Mason swung his car so that the headlights fell on the license plate of
 (a)
one of the parked cars. He saw that it held an "E" within a diamond,
 (b)
the sign of a police car. (Gardner *The Case of the Silent Partner*: 57)

In (14), part (a) helps to make the focus clear. The license plate is focused on by means of the description of the headlights. In part (b), the situation involving the license plate is visually perceived as a situation form.

Discourse Pattern 2 generates discourse structures which are basically similar to the discourse structures created by Discourse Pattern 1 in that in both of the types perception progression begins with visual object perception. In contrast with the case of Discourse Pattern 1, in Discourse Pattern 2 visual perception leads to understanding, not situation perception. Some typical examples are given below:

- (15) Perry Mason glanced at the date, and saw that it was the date on which
 (a) (b)
Norton had met his death. (Gardner *The Case of the Sulky Girl*: 68)
- (16) Jeff glanced at Pamela, saw that she, too, had understood immediately.
 (a) (b)
 (Grimwood *Replay*: 204)

The (a) parts in (15) and (16) describe a visual activity. The expression *glance at* is one of the most typical verbal expressions of visual perception. On the other hand, the (b) parts in (15) and (16) describe a specific understanding.⁴ The progression from visual perception to understanding is extremely natural, since visual perception is often an important basis for understanding.⁵

It is important to notice here that object perception is, as already seen with

respect to Discourse Pattern 1, not always introduced by verbs of visual perception. Such a phenomenon can be observed in the following extracts:

- (17) Suddenly, Gladys caught her breath. From the darkness ahead came
(a)

the gleam of a light.

For a moment she thought it might be an automobile approaching, then she saw that it was a steady, stationary light shining through
(b)

the trees and apparently not too far away. (Gardner *The Case of the Mythical Monkeys*: 12)

- (18) The last envelope she opened was the one which presented the puzzle. It was a thin envelope and might have contained merely a routine
(a)

statement of accounts covering some purchases Mason had made. Actually, it held a folded oblong of tinted paper with serrated edges. The body was typewritten, the signature in heavy ink.

Della Street saw that it was a cheque drawn on the Farmers,
(b)

Merchants & Mechanics Bank for 2,500 dollars payable to Perry Mason and signed Lola Faxon Allred. (Gardner *The Case of the Lazy Lover*: 5)

In (17), part (a) gives a description by which one specific but unknown object is identified. This triggers the situation perception and understanding described in part (b). In (18), part (a) gives a detailed description of the envelope, which is a basis for the introduction of a specific cheque. This triggers the situation perception and understanding described in part (b). The pronoun *it* in part (b) refers to *a folded oblong of tinted paper with serrated edges*.

In discourse pieces of Discourse Pattern 3, the progression from situation perception to understanding is observed. One situation is visually perceived and the situation perceived triggers some understanding. One typical example can be seen in the following extract:

- (19) He saw that she was holding a pencil and notebook. He knew she had
(a) (b)

the licence number of the car he was driving. (Gardner *The Case of the Guilded Lily*: 29)

Part (a) describes a visual situation in which she is holding a pencil and notebook. On the basis of this situation, one specific understanding is acquired and this understanding is described in part (b).

3.2. Further Observation on Discourse Patterns

As pointed out in the discussions on word meanings in Section 2, understanding can often lead to judgement. In the light of this speculation, it is not surprising to find pieces of discourse in which situation perception is followed by judgement. One illustrative example is given below:

- (20) It was very apparent that he was expecting a payment of money, that he expected this from a man, that when he saw that two people were in
(a)
the room he became suspicious and thought perhaps a trap was being
(b)
laid for him. (Gardner *The Case of the Fabulous Fake*: 170)

The *that*-clause in part (a) describes a visual situation, and this visual situation triggers the activity of guessing described in part (b).

Let us consider here more complicated cases in which a number of cognitive processes are concurrently involved in one piece of discourse.

- (21) "... I compared the fingerprints with those on the check and saw that
(a) (b)
the print on the check was a right thumbprint which coincided with the
right thumbprint on the sheet of paper which had been handed me, and
naturally assumed it was Ralph Endicott's print..." (Gardner *The Case*
(c)
of the Lonely Heiress: 212)

- (22) Then Lola Strague was performing introductions and Harley's hand was
(a)
gripped by Rodney Beaton's powerful fingers.

Harley saw that Beaton was some ten years older than Burt
(b)
Strague. He was tall, powerful, loose-jointed, not fat, but thick. He
(c)
had a smiling mouth, a firm jaw, and was wearing a western hat of the
type generally referred to as a "five gallon." (Gardner *The Case of the*
Buried Clock: 23)

- (23) The light behind the man in the doorway showed him only in silhou-
(a)
ette. She saw that he was tall, with broad shoulders and wavy hair.
(b)
He was evidently young, but his voice was uncordial and sharp with
(c)
suspicion. (Gardner *The Case of the Mythical Monkey*: 12)

In (21), the comparison described in part (a) is virtually equal to visual perception.

This visual perception triggers a detailed description of the fingerprints on the check in part (b). This part also conveys the speaker's understanding. Part (c) describes the speaker's assumption supported by his activity of comparison and understanding. Part (a) in (22) is a description of the accident which has happened on Harley's hand. This information on the accident is the basis for Harley's understanding described in part (b). Part (c) is a detailed description of the reason for Harley's understanding. The same phenomenon can be observed in (23). Part (a) is the description of a particular phenomenon involving one specific person. Part (b) expresses the understanding acquired in regard to the phenomenon described by part (a). As we can see from the occurrence of *evidently*, part (c), as an elaboration of part (b), expresses the judgement made by the person referred to as *she*.

A more sophisticated phenomenon can be observed in some pieces of discourse. We often encounter discourse structures in which direct visual perception leads through situation perception to guessing and judgement.

- (24) Steele bent forward and regarded the circular piece of tin, then went
(a)
over to look at the can. "Well, I'll be darned," he said. "I saw that
(b)
piece of tin lying here on the counter last night and naturally supposed
(c)
it had come off this can. Why in the world would Mr. Gentrie have opened the can, thrown the top away, then taken the top from another tin out of that box of scraps? But Gentri is left-handed. You're right about that top—but, why ...?" (Gardner *The Case of the Empty Tin*: 53)

Part (a) describes Steele's activity of visual perception, and part (b), in the form of situation perception, offers his comments on one of the two perceived objects. Part (c) expresses Steele's judgement based upon the situation perceived. This example shows the progression from direct perception through situation perception to understanding.

4. Concluding Remarks

In this paper, I have explored the relationship between form and meaning in the domain of discourse. The important hypothesis is that discourse semantics often depends on word semantics. This hypothesis is crucially important from a cognitive point of view. As a first stage of argumentation, I have inquired into how the semantic fields of verbs of visual perception and knowledge are organized. As a means of clarifying this issue, I have examined the semantics of the visual per-

ception verb *see*. This examination has shown the cognitive progression from visual perception to knowledge. As properly stated in Wierzbicka (1980), what we perceive triggers our knowledge of the world. This line of analysis is well supported by empirical data.

As a second stage of argumentation, I have analyzed some pieces of discourse using the possible discourse patterns which have been gained in the discussions on verbs of visual perception and knowledge. No piece of discourse is just an arbitrary set of sentences, but a structured set of sentences. My suggestion is that words and sets of sentences are cognitively processed and analyzed in a remarkably similar manner. My ultimate purpose is to define discourse structures as reflecting the cognitive patterns of language users.

It is important to note here that some kind of parallelism can often be observed in different domains of a given language. As pointed out in Dixon (1982), the same principles often operate for both idiomatic and non-idiomatic expressions. For instance, in the literal verb-preposition combination, the word sequence 'verb+NP+preposition' is impossible. Furthermore, an adverb can come between a verb and a literal preposition. Interestingly enough, the same thing holds for the idiomatic verb-preposition sequence.

(25) [Literal verb-preposition sequence]

- a. John sat on the chaise longue.
- b. *John sat the chaise longue on.
- c. John sat gingerly on the chaise longue.

(26) [Idiomatic verb-preposition sequence]

- a. John picked on Fred.
- b. *John picked Fred on.
- c. He picked immediately on John.

(Dixon (1982: 20-21))

Another parallelism can be observed about *come* and *bring*. The verb *come*, in its literal sense, has a causative construction with *bring*, as in (27a) and (27b).

- (27) a. John came to our office.
b. We brought John to our office.

According to the view of Nunberg (1978), this characteristic can be preserved in the idiomatic expressions with *come* and *bring*. That is, the idiomatic expressions with *come* show parallel causative expressions with *bring*, as can be seen in the following:

- (28) a. John came to when he was given smelling salts.
b. We brought John to with smelling salts.

- (29) a. The topic came up in discussion.
 b. John brought up the topic in discussion.
- (30) a. The party came off without a hitch.
 b. John brought the party off without a hitch.

(Nunberg (1978: 119))

These two cases of parallelism show that a cognitive pattern governing one phase of language use can be available in another phase of language use. In this respect, the cognitive relevance of word semantics to discourse semantics is worth noting. The discussion regarding visual perception and knowledge in the discourse domain may only be available to one aspect of human language, but I believe that it will give us a key to understanding human language as a whole. Considering the very close relationship between language and cognition, this paper will also very likely make a contribution to our understanding of the human mind.

NOTES

* This research is supported in part by a special grant (2003) from Shizuoka Prefecture. I wish to thank Professor Kirk Hyde, who went painstakingly through an earlier version of this paper and gave me a lot of constructive comments.

¹ As discussed in Section 2, the verb *see* can express Meaning 1 (object perception by the eyes), Meaning 2 (situation perception by the eyes) and Meaning 3 (understanding on the basis of visual perception). Because of this idiosyncratic characteristic, the meaning of the verb *see* followed by the *that*-clause often sways between Meaning 2 and Meaning 3. Which meaning is preferred or dominant in a sentence seems to be determined on the basis of the context and the situation described in the *that*-clause.

² There are cases in which the parts expressing a visual activity and situation perception are separated by the long detailed description of the object perceived by the visual activity.

She opened her eyes wide and stared at the coat. Then she pounced on it and lifted it out
 (a)

of the box. Thick layers of fur made a lovely noise against the tissue paper as they unfolded, and when she held it up and saw it hanging to its full length, it was so beautiful it took her breath away.

Never had she seen mink like this before. It *was* mink, wasn't it? Yes, of course it was. But what a glorious colour! The fur was almost pure black. At first she thought it *was* black; but when she held it closer to the window she saw that there was a touch of
 (b)

blue in it as well, a deep rich blue, like cobalt. (Dahl *The Collected Short Stories of Roald Dahl*: 73)

Part (a) expresses a visual activity. This triggers another visual description of the coat. Part (b) expresses situation perception.

³ We can also say that in part (a) in (13) a perceptual frame is fixed for the situation perception which follows. The sky functions as this perceptual frame. There are other cases in which a frame, not an object, is fixed for situation perception. The following extract contains the visual perception verb *look (up)* in part (a); no object, however, is fixed for situation perception.

When I looked up again, I saw that the Arab had raised the bonnet of the car on the
 (a) (b)

righthand side, and was bending over the engine. His head and shoulders were out of sight, and so were his hands and arms. (Dahl *The Collected Short Stories of Roald Dahl*: 343)

Part (a) describes a visual activity, by which the frame for situation perception is cognitively fixed. Part (b) describes a situation within this perceptual frame. We can plausibly say that this is also an instance of Discourse Pattern 1.

⁴ See Note 1.

⁵ It seems that there is some universality in this kind of cognitive process. Interestingly enough, old Japanese has a similar phenomenon. In the form ‘...mitsureba ...keru’, *mitsureba* expresses a visual activity and *keru* expresses understanding. This observation will support my claim. For further discussions, see Ito (1995).

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