ARGUMENT ALTERNATIONS AND LEXICAL REPRESENTATIONS

Noriko Takara

University of Chicago

1. Introduction

In this paper, we will argue that, in a multidimensional functional framework such as Lexical Functional Grammar and Autolexical Grammar, an independent representational level for the conceptual structure of lexical items, in addition to the representation of predicate argument structure, makes it possible to explain some types of argument alternation. In particular, we will focus on a class of predicate forms that show the alternation from oblique to subject. The argument alternation to be examined here is what Levin (1993:79) calls 'Time Subject Alternation'. In section 2, we will make some comments on the verbs classified in this alternation class. Section 3 presents data and some discourse functional observation. Then in section 4, we will show a multidimensional analysis of the time subject alternation, arguing that the alternating patterns require a correlation between two lexical frames in the conceptual representation, and that each of such a lexical frame has a different projection on the selection of surface grammatical relations of arguments.

2. Verbs in Time Subject Alternation

First, examples of Time Subject Alternation are illustrated in (1):

(1) a. The world saw the beginning of a new era in 1492.
b. 1492 saw the beginning of a new era.

Cited from Levin (1993:79), this pair represents a subtype of a larger class of 'oblique subject alternation'. In this type of alternation, an oblique phrase (nonsubcategorized arguments in prepositional phrase) expressing time as in sentence (a), alternatively emerge in 'subject position' as in sentence (b). Yet, the alternation does not involve a change in transitivity, and when the verb takes an oblique subject, the agent/or experiencer is no longer expressed.

Levin classifies four verbs--*see, find, mark, catch*--under the class of time subject alternation verbs. However, these verbs do not all show the same pattern of behavior with regard to various properties of alternation. What at least could be generalized over these verbs is that they can take a subject of temporal expression which is predicated by an event as examples in (2) show.

(2) a. The 18th century saw many reforms.
b. September found us all in London.
c. Today marks the 50th birthday of Daniel Barenboim...
d. Tuesday caught us off guard.

The verbs, *mark* and *catch*, particularly deviate from the general characterization of this group, in that a canonical agentive subject alternative to an oblique subject is quite difficult to find for both verbs.

(3) a. ?caught us off guard on Tuesday.
b. ?marks the 50th birthday of Daniel Barenboim Today

We also find all sorts of non-temporal subjects expressed in the same syntactic/semantic frames as shown in (4):

(4) a. Mary's reaction caught us off guard.
b. The sudden rain caught us off guard.

It seems that, though the expressions like (2c) and (2d) may share some syntactic and semantic properties with (2a) and (2b), *catch* and *mark* are too heterogeneous to be included in the same argument alternation class with *see* and *find*. Though more frequently they are found, *see* and *find* do not distribute in the same way in regard with alternation patterns. This suggests that we need to employ categories such as verb classes with great precaution in order to avoid overgeneralizations. More extensive research on these verbs, such as detailed descriptions of the data and an explanation for the use of the temporal subject with these verbs, will be in order; however, due to the data available for now, this paper focuses on the lexical properties of the verb *see*.

3. Data and some Textual Observations

The data containing *see* with a temporal subject was collected mostly from written texts, the majority of which are detective stories. This might be considered as an indication that temporal alternation marks a certain discourse presentational style for written texts. Examples (5)--(11) below represent the clausal patterns found in the collected data.

(5) The following morning saw us at a conference of powers.
(The A.B.C. Murders, p.40 Agatha Christie)

(6) The next few hours saw a vast quantity of business rapidly transacted.
(The Mystery of the Blue Train, p.21 A.C.)

(7) Ten minutes later saw us speeding through London, bound once more for the country. (Poirot Loses a Client, p.152)

(8) Eleven o'clock saw our departure from Victoria on our way to Dover.
(The Murder on the Links, p.13)

(9) The 1980s saw the rise of a new capitalist elite in Japan, made rich by its property holdings and stock speculation.
(The 21th Century: America and Japan, p.68 Paul McLean)

(10) The following weekend sees the opening of the three-day German Day Festival, which begins at 6 p.m. Sept. 25 on Leland Avenue between Lincoln and Western Avenues. (Chicago Tribune)

(11) Tomorrow night will see some rain coming in. (Ch.7 Eye Witness News)

All the examples except (11) are from written texts; (5)--(8) from mysteries, (9) from an English reading textbook, and (10) from a newspaper article. The use of

this construction in speech is rather limited to reportative or presentational discourse, such as speech by weather forecasters. Its formal written style makes it extremely difficult to find in conversation.

It is noted here that in many cases the text examples are found at the beginning of a paragraph or a new chapter. Only a few examples occur in a subordinate clause or in the second conjunct of coordinate clauses, and as James McCawley pointed out to me, possibilities for embedding are limited as shown in (12).

(12) a. *the persons who 11 o'clock saw speeding through London.
b. * I doubt that 11 o'clock saw them speeding through...

This observation seems to suggest that these sentences do not normally appear in the inner layers of discourse structures. But rather, opening a new paragraph, they often mark the fact that the scenario has shifted in a narrative such as a detective story.

We also find that in these examples, the verb *see* does not denote the sense of actual visual perception, and therefore experiencers that are normally associated with perception verbs are absent, or in some cases quite unimaginable as in the example (13), given by McCawley(p.c.).

(13) Three and half billion BC saw the beginning of life on earth.

The sense of perception is so weak that many of the examples can be paraphrased without the verb *see*.

(14) a. We were at a conference of powers on the following morning.
b. A vast quantity of business was rapidly transacted in the next few hours.
c. We departed from Victoria on our way to Dover at Eleven o'clock.

What is happening in the time subject alternation pattern is that a temporal expression is thematized, instead of being expressed in an oblique phrase as in (14), and occurs in a subject position where it functions as a discourse topic, serving as a point of departure for the further development of the discourse. At the same time a main propositional content appears in a postverbal position in the form of small clause. This clausal organization seems to create the effect such that the whole propositional content 'what happened next?' is relatively focused, as a newly introduced discourse information.

(15) illustrates this discourse function associated with a temporal alternation example:

(15) *The following morning* saw *us at a conference of powers.*
THEME (=Topic) Focus

What the verb *see* does in the current discourse frame is to mediate between the temporal topic and the relatively focused proposition, locating the occurrence of a certain event in a temporal field, by saying that the event comes to the awareness in time *x*.

The alternation between an oblique argument and a subject for presentation purpose is also found in locative inversion as studied in Bresnan (1994). The use of the post-verbal position for presenting a new discourse item is what is unique to both temporal alternation and locative inversion. In temporal alternation, the construction places a newly introduced 'event' in a focalized position, whereas a locative inversion construction uses the position for a newly introduced 'referent'–usually an NP. However, the major difference between the two is that the locative inversion is rather syntactically maneuvered so that the categorial status of a locative expression remains as PP, whereas the temporal expression in temporal alternation enters as an NP argument in syntax and its association to an oblique status will be found in the description of the lexical-conceptual structure of the verb *see*. According to Bresnan's analysis, the mismatch of roles between f-structure and c-structure is due to the converse association of grammatical function to the theme argument which is discoursally marked as focused. In temporal alternations, there is no mismatch between f-structure and c-structure; two different arrays of argument structures for the verb *see* can be considered to be associated in one conceptual description in another level. From such conceptual description, different lexical conceptual structures are interpreted as separate valence relations in a-structure. In the following, we will show that an addition of lexical-conceptual representation to grammar gives a better locus of overall description of temporal alternation verbs like *see*.

4. Multidimensional Approach to an Argument Alternation

It follows from these discourse functional observations that the earlier example (1), which Levin (1993) presented as a sample of 'time subject alternation', turns out to be a highly restricted type of alternation which is closely bound by the structural frame of presentational discourse, just as locative inversion is conditioned by a discourse environment.

However, unlike locative inversion, which always finds a noninverted pattern with a theme subject as shown in (16)

(16) a. A little boy jumped into the pond.
b. Into the pond jumped a little boy.

it is often the case that in temporal alternation an alternative experiencer subject to a temporal subject is hard to find without changing a narrative point of view, or it is even impossible in some cases to find an appropriate experiencer subject. The fact that the alternation does not always surface in a pair like (1) raises doubts about a syntactic analysis of such an alternation in which either one of the pair is claimed to be derived from the other.

It seems to be more appropriate to posit two separate syntactic representations as found in Perlmutter & Postal (1984). They give a relational grammar account of oblique-to-subject alternation, in which they claim that some transitive clauses contain a subject which has been already advanced from another

grammatical relation such as oblique, and therefore they block a further application of advancements to 1[1] as in (17) [= P & P (1984):(35)].

(17) a. Labour Day saw the government's policy in shreds.
b. *The government's policy was seen in shreds by Labour Day.

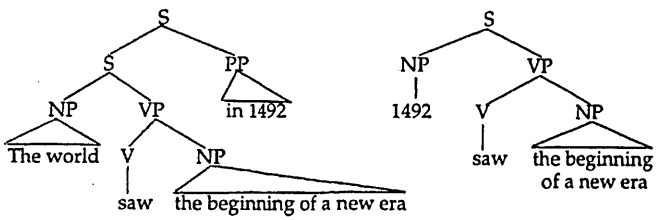
Unfortunately, their account is not fully extended to an explanation for the lexical relationship observed between a pair like (1). The analysis of temporal alternation given here attempts to fill in this gap, by trying to present multidimensional representations for each of the pair .

4.1 Constituent Structure

In this analysis, each of (1a) and (1b) has a different lexical representation for argument structure, functional structure, and categorial structure. First of all, the constituent structures (c-structure) for (1a) and (1b) are shown in the figure 2 below:

Figure 2.

(i) c-structure for (1a) (ii) c-structure for (1b)



A temporal expression appears as an NP constituent in (ii), while it functions as a sentential modifier and is categorized as a nonsubcategorized PP in (i). In both structures, the head of VP *see* is a transitive verb, taking an NP object. Note that the complement of the verb can be either a small clause as in (5)--(7), and (11) or an NP headed by a verbal noun--"departure" (8), "rise" (9), and "opening" (10), all of which represent an event.

The c-structures for the examples that contain a small clause are more complicated in that it is hard to tell whether there is a Raising-to-Object taken place there. Possibilities for passivization often suggest the constituent structure of post-verbal elements; however, passives are impossible with time subject alternation as shown in (18).

[1] This phenomenon is predicted by the 1-Advancement Exclusiveness Law (1AMEX) which excludes multiple applications of 1-Advancement in a clause. Cf. Perlmutter & Postal (1984).

(18) a. *A vast quantity of business was seen rapidly transacted in the next few hours.
b. *A vast quantity of business rapidly transacted was seen in the next few hours.
c. *Some rain will be seen coming in tomorrow night.
d. *Some rain coming in will be seen tomorrow night.

(18a) and (18c) may be acceptable if the reading of actual seeing is involved, as in '*A vast quantity of business was seen rapidly transacted in the next few hours by the group of company representatives.*' But notice that the presence of agentive by-phrase indicates that this passive construction rather corresponds to the active counterpart such as '*The group of company representatives saw a vast quantity of business rapidly transacted in the next few hours*', not to the example (6). At the moment we will leave this issue open for further examinations.

4.2 Argument Structure

As observed in all examples of oblique-to-subject alternation above, an experiencer role that is associated with a perception verb such as *see* cannot be expressed with a temporal subject.

(19) * 1492 saw the beginning of a new era by the world.

This characterization of temporal alternation verbs is illustrated by the array of arguments that appear in a predicate argument structure. The argument structure for (1b) lacks an experiencer argument.

The question in regard to a particular thematic role name is often a complicated matter, however, a discussion in Jackendoff (1983) on the Thematic Relation Hypothesis (TRH) by Gruber (1965) and its extension to nonspatial semantic fields suggests a reasonable scheme of an argument array for the verb *see*. Based on the observation that the syntactic and semantic parallelisms between temporal PPs and spatial PPs, Jackendoff gives the definition of the temporal field as following;

(20) Temporal field: [Jackendoff, 1983:189]
a. [EVENTS] and [STATES] appear as theme.
b. [TIMES] appear as reference object.
c. Time of occurrence plays the role of location.

In this approach, the concept of time is analyzed as an extension of spatial concepts, in which a temporal expression defines an abstract spatial domain--a temporal field--and, just as a spatial expression functions as a location or a path of entities (theme), a temporal expression behaves as if it locates events in the time-line. Therefore the argument that expresses an event (or a state) in the experiencer verb *see* is assigned the thematic role of theme, while the temporal expression is considered to be a locative argument[2]. Now the argument structure of (1a) and (1b) can be represented as in the figure 3:

---

[2] Cf. Gruber (1967) and Goldsmith (1979), in which the verb *see* is analyzed as a motion verb and its lexical semantic structure of *x sees y* is represented as *x's gaze (theme) goes to y (location).*

Figure 3.

(i) a-structure for (1a)

'see < exp th (loc) >'
exp ['the world']
th ['the beginning...']
loc ['1492']

(ii) a-structure for (1b)

'see < th loc >'
th ['the beginning...']
loc ['1492']

The parentheses for a locative argument in (i) indicate its optionality. On the other hand, the locative argument in temporal alternation construction is an obligatory argument for a clause to be complete. This change in polyadicity is the part of the a-structure representation that characterizes the use of *see* as a temporal alternation verb.

4.3 Functional Structure

These argument structures are mapped to the following functional structures (f-structure) in the Figure 4.

Figure 4.

(i) f-structure for (1a)

SUBJ ['the world']
PRED ['see < exp th loc >']
OBJ ['the beginning...']
OBL ['1492']

(ii) f-structure for (1b)

SUBJ ['1492']
PRED ['see < th loc >']
OBJ ['the beginning...']
FOC

The subjecthood of a temporal expression in (ii) can be confirmed by examining the subject-verb agreement and the possibility of subject raising. The verb in example (10) appears in a present tense form and is able to show that the verb agrees in number with the temporal expression. The following example also clarifies that it does not agree with the object:

(21) The month of June sees two nation-wide sport events in Chicago:the NBA finals starting on... and the world soccer tournament, the opening parade of which is scheduled on...

It is rather difficult to construct a subject-raising sentence with a temporal alternation verb, but it is not impossible as seen in (22).

(22) The year 2000 is likely to see our company in the top competitive group in this new industry, as the consumption of our new products grows in a rapid rate...

Note that the object in (ii) is associated with a special discourse function of focus, namely a marked presentation of a newly developed event in the discourse as observed in the previous section. The association with this special

discourse condition causes the deviation from the default subject linking which maps the highest thematic role to the subject. In temporal alternation, it is locative which is mapped to the subject, while the theme argument with a special focus is linked with object function. This reversed linking is the similarity found in temporal alternation and locative inversion. The exact nature and the effects of focus in discourse will, of course, differ between two constructions, however, it is simply noted here that the post-verbal position is exploited in the same way in these constructions for the special presentational effects.

4.4 Conceptual Structure

As shown so far, three levels of representations--c-structure, f-structure, and a-structure-- have treated the verb *see* as if there are two separate verbs as see_a and see_b. However, these senses of *see* should not be confused as two distinct lexical items as cautioned by Jackendoff (1983:151). He compares the meanings highlighted in the use of *see* as a motion verb (23a) and in the use of *see* as an experiencer (or perception) verb (23b) [= Jackendoff, 1983:150 (35)]

(23) a. I must have seen that a dozen times, but I never noticed it.
b. I must have looked at that a dozen times, but I never saw it.

It is claimed that (i) the sense of see_a--"x's glance fell upon y"-- and the sense of see_b--"y comes to x's visual awareness"--are typicality conditions in the reading of a single verb *see*, (ii) either alone suffices for calling an act *seeing*, (iii) and in normal stereo-typical, veridical *seeing*, both conditions are satisfied (1983:151).

Extending this cognitive approach to lexical structure, it can be said that in the level of lexical conceptual representation, various senses observed in the use of *see* reflect a family resemblance character in the meanings of a lexical item. The conceptual description of the stereo-typical act of *seeing* is thus formulated as follows:

(24) lexical conceptual description
see: x's gaze goes to y and x makes visual contact, the contents of x's visual field enter x's awareness, and x makes recognition of y.

Based on this conceptual description, it is possible to highlight the lexical-conceptual structure such as [*x's gaze goes to y*] as in (25);

(25) Mary quietly saw into the conference room,

or to extend the lexical conceptual of [*y comes to x's (visual) awareness*] as in (26):

(26) I see what you mean by that.

In temporal alternation, the experiencer is suppressed and the construction of a sentence is based on a lexical conceptual structure such as (27):

(27) [*y comes into awareness in time z*].

Here, the temporal field is incorporated in the lexical conceptual structure so that it can be used as a grammatically interpretable argument in the transitive clause structure of *see*.

The lexical frames given above are all part of lexical conceptual representation of *see*, but their projections on the selection of polyadic patterns--possible a-structures--create constructional variations in surface. Thus the so-called oblique-to-subject alternation observed in temporal alternation is a reflection of two distinct a-structures realized by the possible lexical conceptual structures that arise in the description of the lexical conceptual structure of the verb. On the other hand, the effect of oblique-to-subject alternation in locative inversion is due to *two* possible mappings of grammatical functions to the single a-structure. Therefore it may be said that the discourse effect is lexically induced in temporal alternation, while it is rather maneuvered syntactically by using different linkings in locative alternation.

5. Concluding Remarks

The analysis of temporal alternation shown in 4.1 incorporated an additional level of representation in the framework of LFG. The lexical conceptual representation of a lexical item gives more detailed descriptions of meanings and it is associated to semantically possible lexical conceptual structures for the purpose of linking to the other representation levels.

This level of representation has not been formally formulated in LFG; however, the architecture of LFG does not prevent such an extension of the model. An attempt at the outline of two distinct but related levels of predicate-argument representation such as a lexical semantic representation (lexical conceptual structure in the current analysis) and a lexical syntactic representation (a-structure) has been made in Rappaport et al. (1993), and the analysis of locative alternation and locative inversion in Ackerman(1991) also suggests the necessity of the distinction of such levels. The analysis of constructional behaviors associated with a single verb *see* seems to shed light on the application of this additional representational level--lexical conceptual component--to the modular organization of grammar, which makes it possible to explain a certain lexical variation as in temporal alternation.

REFERENCE

Ackerman, Farrell. 1991. Locative alternation vs. locative inversion. Proceedings of the 9th Annual West Coast Conference on Formal Linguistics, ed. by Aaron L. Halpern. Stanford: CSLI Publications.

Bresnan, Joan. 1994. Locative inversion and the architecture of universal grammar. Lg. 70.72-131.

Gruber, J. S. 1965. Studies in lexical relations.Cambridge, MA: MIT dissertation.

Jackendoff, Ray. 1983. Semantics and cognition. Cambridge, MA: MIT Press.

Levin, Beth. 1993. English verb classes and alternations: a preliminary investigation. Chicago: University of Chicago Press.

Perlmutter David M. and P. M. Postal. 1984. The 1-advancement exclusiveness law. Studies in relational grammar, ed. by David M. Perlmutter and Carol Rosen, 81-125. Chicago: University of Chicago Press.

Rappaport Malka, Mary Laughren, and Beth Levin. 1993. Levels of Lexical Representation. Semantics and the lexicon, ed. by James Pustejovsky, 37-54. Dordrecht: Kluwer Academic Publishers.