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OBLIGATORY ADJUNCTS AND
THE STRUCTURE OF EVENTS*

1. THE PROBLEM

It is generally held that while arguments can be obligatory or optional, depending upon the predicates which select them, adjuncts are always optional. However, this is not strictly true. With certain passive predicates, a *by*-phrase, which usually is optional, appears to be obligatory, as shown in the examples in (1). (The existence of obligatory *by*-phrases was noted in Gross (1979, p. 864).)

(1) a.   *This house was built/designed/constructed

    b.   This house was built/designed/constructed by a French architect

    c.   *Tomatoes are grown; *The best tomatoes are grown

    d.   (The best) tomatoes are grown by organic farmers

However, it is not only the *by*-phrase that may save the ungrammaticality of (1a) and (1c). A range of other expressions, including adjuncts of time, place, manner, and purpose, may be substituted for the *by*-phrase:

(2) a.   This house was built yesterday / in ten days / in a bad part of town / only with great difficulty

    b.   (The best) tomatoes are grown in Italy / organically

This paper investigates these obligatory adjuncts. We will show that they occur in passives, but never in actives, and that they occur with certain verb clauses only — our primary examples will be a subset of the accomplishments. We will also show that not all adjuncts may substitute for the obligatory *by*-phrase; and that perfect and progressive can rescue otherwise ill-formed passives with no adjunct. Our account will try to explain this cluster of properties, employing the notion of "event structure", which represents the aspectual structure of the eventuality denoted by a verb.

2. THE HYPOTHESIS: EVENT STRUCTURE IDENTIFICATION

The assumptions we make about event structure are drawn from recent research on verbal aspect, in particular by Bach (1981, 1986), Dowty (1979), Pustejovsky (to appear), Tenny (1989), and Vendler (1967). In these works, event structure is shown to determine a range of properties

of predicates, including their behaviour with temporal and durational modifiers, their interaction with adverbs like *almost*, and other matters of "aspect". We propose that verbs which take obligatory adjuncts in the passive are verbs which have a complex event structure: their event structure contains two sub-events. Each of these sub-events must be 'identified'. The required expressions in (1) and (2) serve to identify one of the sub-events, which otherwise would receive no identification. (We should point out here that we employ the term 'event' as Bach (1989, p. 69) uses the term 'eventuality', to include all of the four Vendler/Dowty aspectual classes.)

Verbs like *build, grow*, and *construct*, members of the class of "accomplishments", have a two-part event structure, with the internal structure in (3), adapted from Pustejovsky (to appear):

(3)   [[process] [state]]
       event

According to this analysis, the verb *build* with its arguments denotes an event composed of a Vendler/Dowty *activity* or *process* of house-building, and a resulting *state* of existence of the house. In examples like (1a), **This house was built*, only the Theme, *this house*, is syntactically represented, and it serves to identify one of the sub-events. The other, however, goes unidentified, explaining the ill-formedness of these passives with no obligatory adjunct. The adjuncts in (1) and (2) identify the other sub-event, with the result that both aspectual components are identified.

This kind of account contrasts with a possible alternative, namely that the expressions which appear obligatorily in (1) and (2) are really arguments and not obligatory adjuncts at all. This is the only solution available for the problem of obligatory adjuncts within standard lexico-syntactic theory. If they were arguments, the phrases would satisfy a position in the argument structure of the predicate, and their presence would be required by the theta-criterion, accounting for their obligatoriness.

However, there are many reasons not to adopt this approach: The relevant expressions (the "obligatory adjuncts") are highly variable in form and semantic type, as shown in (2), whereas the form and semantic content of arguments only varies within very narrow limits, because of the effects of selection. Certain of the expressions that satisfy the requirement are not arguments in any other contexts, e.g. adverbials like *yesterday, in ten days, only with great difficulty, in Italy*, and *organically*. Moreover the passive *by*-phrase is treated as an adjunct of some kind in most current analyses. For example, in the "argument-adjunct" proposal of Grimshaw (1988, 1990), the *by*-phrase is an adjunct which is licensed by a "suppressed" or "absorbed" external argument; see also Jaeggli (1986) and Zubizarreta (1987), and the "clitic doubling" analysis in Baker et al. (1989). Finally, as we will see in section 7 below, the obligatoriness of the

adjunct is affected by the progressive and perfect, although argument structure is generally assumed to be constant under variation in the tense/aspect system. We conclude that the expressions in question are adjuncts, and not arguments, and that they cannot be regulated by argument structure.

This conclusion does not, of course, extend necessarily to all similar-looking phenomena. For example, Grimshaw (1990) argues that obligatory *by*-phrases with participles like *contained* and *rimmed* are internal arguments, and not adjuncts. The obligatory adverbial with verbs like *behave*, or Fr. *se conduire*, and Da. *opføre sig*, must be a manner expression, so it does not pattern like the aspectual obligatory adjuncts discussed above in section 2. Similarly, the adverbial requirement for middles seems narrower than would be expected for obligatory adjuncts, although this depends on the exact nature of the representation assigned to middles, and thus remains an open issue.

3. VERB CLASSES WITH TWO-PART EVENT STRUCTURES

The solution sketched out above predicts that any verb with a two-place event structure should take obligatory adjuncts in the passive, just as *build, grow, design* and *construct* do. Thus we expect that all members of the Dowty/Vendler class of accomplishments (Dowty 1979) will behave like *build* and *construct*. Of the accomplishments, the following classes, among others, conform to the expectation: verbs of creation as in (4a) or in (4b), or change of state verbs, as in (4c):

(4) a. draw (a picture), knit (a sweater), dig (a hole)

    b. make, build, create, construct, erect, manufacture

    c. cook (a turkey), paint (a house), fix, freeze, broil/fry/saute, develop (a film)

All of these verb classes will clearly be given two-part event structures, given their accomplishment meaning, hence they are expected to require obligatory adjuncts.

However, there are some verbs which do not fit. Dowty's class of transitive verbs of destruction never require obligatory adjuncts. These are the verbs in (5a). Thus (5b) is just as good as (5c):

(5) a. destroy, kill, shoot, ruin, break, arrest

    b. The boat was destroyed (by the enemy)

    c. The burglar was arrested/shot (by the police)

Also the class which Dowty calls "verbs that create a performance object"

occur in the passive without obligatory adjuncts. Examples are *record* and *transcribe*, thus (6a, b) are perfectly fine without any adjuncts.

(6) a.   The conversation was recorded

   b.   The lecture was transcribed

The judgments here are sometimes delicate: even with many of these verb classes the truncated passive seems incomplete. However, an appropriate context eliminates this effect, while leaving the ill-formedness of the obligatory adjunct violations completely unaffected.[1]

(7)   Guess what? John was murdered
                Your conversation was recorded

      Guess what? *Syntactic Structures was written
   *This tomato was grown

So the transitive change of state class divides into two: one sub-set takes obligatory adjuncts and the other behaves like other transitive event verbs, and does not require an adjunct. Both must have two-part event structures (consisting of a process and a resulting state), so this cannot be the distinctive feature. It seems that what crucially distinguishes a verb that takes obligatory adjuncts from one that does not is that the ones that take obligatory adjuncts have a "constructive" interpretation; the change of state involves creation, or is tantamount to creation because it makes the element undergoing the change available in a way that it was not available before. For *build, grow*, etc., the object comes into existence as a result of the event. For *cook*, on the other hand, the event of cooking a turkey does not create the turkey, but it does create a turkey dish. (See Atkins, Kegl and Levin (1987) on the interpretation of verbs of cooking.) A similar point holds for a verb like *develop*. Thus all of these have in common that the Theme did not exist in its present form before the event occurred. We will refer to this group as the class of "constructive accomplishments".

The non-constructive accomplishments work quite differently. Destructive accomplishments, like *destroy*, denote events in which the Theme existed before the event, and does not exist after the event. Verbs like *record* or *transcribe* involve neither creation nor destruction of their object. Thus the Theme has a very different kind of status in the two kinds of accomplishments. For constructive accomplishments it does not exist (in the relevant form at least) until the entire event has occurred. For non-constructive accomplishments the Theme is involved from the very beginning. We can say, then, that the Theme participates in the process for the non-constructive accomplishments, but not for the constructive accomplishments. For *destroy*, or *record*, the process is one of destroying the city, or transcribing the conversation, whereas for *construct* or *cook*,

the process is one of constructing or cooking, and only the resulting state involves the Theme.

Under this interpretation, the Theme can identify both the process and the state for the verbs which are not constructive accomplishments. This is illustrated in (8a), where the process is identified by both the external and the internal argument, and the resulting state is identified by the internal argument. On the other hand, the Theme of a constructive accomplishment verb may not identify the process, as its existence is only predicated by the resulting state, and not presupposed by the process. This is shown in (8b), where the external argument identifies the process, and the internal argument identifies the resulting state only.

(8) a. *x destroys y*

event

process   state
x, y   y

b. *x builds y*

event
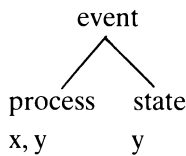
process   state
x   y
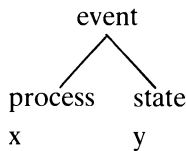
Thus we have an initial characterization of which subset of the class of accomplishments takes obligatory adjuncts with passives.

4. IDENTIFYING ADJUNCTS

We have seen that a participating argument serves to identify the sub-event. What adjuncts identify a sub-event? The simplest assumption is that the identifying expressions include any that may independently relate to either subpart of the event structure. The process component can be identified by an expression that specifies manner, time, duration, place, or purpose of the process, or reason for the process, hence the range of cases illustrated in (9):[2]

(9) a. This example was constructed by two linguists yesterday/in ten minutes /in Geneva /with difficulty /to prove our point /in order to show that we are right /using an IBM /for a good reason

b. . . . and then this example was constructed

c. When was this example constructed?

However, the choice of adjuncts is not completely free. As we would expect if identification of the sub-parts of the event structure is at issue, adverbials which have no relationship to the event do not suffice to save the constructions, as they cannot possibly identify a sub-eventuality. Examples are *probably* and *fortunately*:

(10) a. *This example was probably constructed

b. *Fortunately, this example was constructed

(Note that the participles in (10), like some of the others cited, do have an alternative reading, in which they have a state interpretation. This is discussed below, in section 6.)

Since the adjunct functions to identify the process component of the accomplishment, the general expectation is that the adjuncts which fulfill the requirement will be those that are independently associated with, and licensed by, activities.

5. ACTIVES VERSUS PASSIVES: SEPARATING EVENT STRUCTURE FROM ARGUMENT STRUCTURE

The combination of argument structure requirements and event identification requirements explains why obligatory adjuncts are limited to passives, and are never found with active verb forms. In the active, the sub-events are identified by the very elements that satisfy the argument structure. In (11a), for instance, the subject identifies the process component of *design*, and the object identifies the state component:

(11) a. Bill Blass designed the dress

b. *The dress was designed

(12)		Argument structure	Event structure
	design	x, y	[process, state]
	designed	x-∅, y	[process, state]

Hence the identification requirements of the event structure are not detectable in the active, as they are automatically fulfilled by elements required on independent grounds by argument structure.

In the passive, however, the external argument (in this case an Agent) is "suppressed", cf. Zubizarreta (1987), Grimshaw (1988, 1990). The suppression of the external argument is represented by the '∅' in the second line of (12). A suppressed argument is not satisfied by a syntactic expression, so the *by*-phrase is optional in passives, as far as argument structure is concerned. Since the argument structure of a passive verb has only one syntactically satisfiable position, it only requires one expression for its satisfaction. The event structure of an accomplishment, however, remains

two-part, and still requires the identification of both the process and the (resulting) state. In the passive, then, the demands of argument structure and the demands of the event structure are teased apart.

Notice that this whole approach to the active/passive asymmetry is incompatible with the analysis of Jaeggli (1986) and Baker et al. (1989), in which the passive morpheme -en is treated as the external argument of a passive verb. The solution to the distribution of obligatory adjuncts presupposes that -en is not an argument, as it cannot identify the process. If it could, the external argument would always be present, there would be no difference between the active and the passive, and the passive would never require an adjunct. It is only because the external argument of the active is suppressed, and hence cannot identify part of the event structure, that passives behave differently from actives. For further arguments that actives and passives have different argument structures, see Grimshaw (1990).

6. THE (CONTRASTIVE/COMPLETIVE) STATE INTERPRETATION

We have seen that in the passive with no adjunct, the event structure associated with a constructive accomplishment cannot be properly realised, since one or the other of the two components remains unidentified. There is, however, as mentioned above, an interpretation which is possible when no adjunct appears, in which the verb denotes a state, rather than an accomplishment. The fact that no adjunct is required under this interpretation will be explained if the event structure for these states is simple, as in (13), with only one sub-event:

(13)   [state]
         event

The single argument (which appears in surface subject position) will suffice for all event structure identification purposes.

This explains the state interpretation which is found with some predicates e.g. (14a, c):

(14) a.   The example was (probably) constructed

     b.   ??The bridge was (probably) constructed

     c.   The paper was written

(14a) is ill-formed as an accomplishment, but it may be interpreted as a state. The acceptability of this interpretation varies from example to example, as the contrast between (14b) and (14c) shows: a contrastive interpretation seems to be required for well-formedness. Since a constructed bridge does not contrast with any other kinds, whereas a constructed example does contrast with other kinds, we find the difference in

(14a) and (14b). In (14c), a contrastive interpretation is again available; the paper is written as opposed to typed, for example. In addition, there is a further interpretation in which the paper is declared to be finished — a completive interpretation. In all of these cases there is a shift in the aspectual analysis of the passive participle: when it has no adjunct, it denotes a state; and when it has an adjunct, it denotes an accomplishment.

That the presence of adjuncts entails an accomplishment reading can be seen from the behaviour of the two cases in the present tense:

(15) a. ?This example is constructed by a linguist/in Geneva

b. These examples are (usually) constructed by linguists/in Geneva

c. This example is constructed

When accompanied by an adjunct, *constructed* behaves just like any other event predicate, and receives a habitual interpretation in the present tense. Hence the difference between (15a) and (15b). When the adjunct is omitted, however, the present tense no longer forces a habitual interpretation, hence (15c) is well-formed just like any other state predicate in the present tense.

Another kind of support comes from Danish, where there is clear evidence that absence of adjuncts forces a state reading, as shown in (16) and (17). In Danish, as in most other Germanic languages, there is a statal passive, constructed with *vaere* 'be', and a non-statal one, with *blive* 'become'. The examples without adjuncts are only acceptable with the statal passive construction.

(16)   Da.   a.   Dette eksempel er (formentlig) konstrueret
                     This example is (presumably) constructed

        b.   *Dette eksempel blev (formentlig) konstrueret
              This example became (presumably) constructed

        c.   Dette eksempel blev (formentlig) konstrueret af en dansker
              This example became (presumably) constructed by a Dane

(17)   Da.   a.   Artiklen er skrevet
                     Article-the is written

        b.   *Artiklen blev skrevet
              Article-the became written

        c.   Artiklen blev skrevet i Boston
              Article-the became written in Boston

The correlation between aspectual type — accomplishment versus state — and the required presence of an adjunct, supports the basic line we are exploring, in which the adjunct is required by event structure.

In certain cases, the presence of the negative morpheme *un*-seems to rescue a passive with no obligatory adjunct from ill-formedness:

(18) a. The paper was unwritten

     b. The film was undeveloped

It does not seem likely that the negative can identify a sub-event. But if it cannot, then why are such examples well-formed? The answer is that they are not well-formed as events, but only as states, with the event structure of (13), and not that of (8b). Hence the negative is not identifying a sub-event at all. The negative makes the state reading available, by providing a contrastive interpretation; *unwritten* obviously contrasts with *written*, and so on. As predicted, the Danish counterpart of (18) is possible in the statal construction with *be* (19a), and it is not possible in the non-statal version with *become* (19b) even when an adjunct is present, since the participle has only a state reading.

(19)   Da.   a.   Sengen var uredt
                       Bed-the was unmade

               b.   *Sengen blev uredt
                       Bed-the became unmade

               c.   *Sengen blev uredt af en linguist
                       Bed-the became unmade by a linguist

7. INTERACTION WITH THE PERFECT AND PROGRESSIVE

It seems that the obligatory adjunct requirement is not effective in the perfect and progressive, at least for some of the constructions discussed above:

(20) a. *This film was developed

     b. This film was developed in Geneva/by Fred/on Tuesday/too quickly

     c. This film has been developed

     d. This film is being developed

(21) a. *This turkey was cooked

     b. This turkey was cooked for thanksgiving

     c. This turkey has been cooked

     d. This turkey is being cooked

There is no obligatory adjunct requirement in the present perfect or the

progressive, at least for these verbs. (Note that *design* seems to require an obligatory adjunct even in the perfect, a fact for which we have no explanation.)

We would like to suggest, following an idea in Bach (1981, pp. 61, 68), that perfect and progressive turn the entire accomplishment, which has a complex event structure, into a state, which has a simple event structure. Therefore both a process and a resulting state must be identified in the past tense forms in (20) and (21), whereas only a state must be identified in the perfect and progressive forms. (Alternatively, we could follow C. Vikner (1986, p. 97, note 10) and say that progressive creates a process.) As is well known from studies of the auxiliary system, neither the perfect nor the progressive can be progressivized; this follows if both are states:

(22) a. We have developed this film

   b. *We are having developed this film

   c. We are developing this film

   d. *We are being developing this film

This is obviously an oversimplification (for recent discussions see Mittwoch (1988) and references therein) but hopefully the general point is clear. Derived event structures with non-branching structure should not require obligatory adjuncts.

8. OBLIGATORY ADJUNCTS WITH PRENOMINAL MODIFIERS

The obligatoriness of adjuncts with certain passive participles suggests an explanation for the behaviour of participles as prenominal modifiers. As has been pointed out in the relevant literature (e.g. Wasow 1977, pp. 348—349), they often appear to require an additional element to make them fully well-formed.

(23) a.   ??a photographed building/a grown tomato

   b.   a much-photographed building/a locally-grown tomato

This observation now looks like a special case of the general phenomenon of obligatory adjuncts. As (24) illustrates, the constructive accomplishments require an adjunct when prenominal, following the previously established pattern:

(24) a. *a built house, a rebuilt house, a recently built house

   b. a written paper, an unwritten paper, a carefully written paper

   c. *a designed house, an architect-designed house, a carefully designed house

Evidently, these predicates retain their complex event structure even when

they are prenominal, hence they require adjuncts unless they have state interpretations, as *written* does. Because of syntactic restrictions on prenominal modification in general, the obligatory adjuncts are more limited in this case than in the verb phrase. They must be realised as part of a compound, or adverbially. Apart from this, the adjuncts allowed are the same as the ones allowed in passives in general.

However, our prediction is not borne out straight-forwardly for prenominal non-constructive accomplishments. What has been said so far would lead us to expect that no obligatory adjunct should be required here, yet the data in (25) suggests that this is not the case:

(25) a. the ruined shirt, the arrested man, the hidden solution ?the destroyed house, ?the killed chicken

   b. the newly destroyed house, the freshly killed chicken, the deliberately destroyed house, the machine-killed chicken

This is a problem for which there is no obvious solution in the present terms. We see a few possible lines of explanation. One is that the character of the violation here is like that for non-constructive accomplishments in (5) and (6) above, and that a context comparable to the one used in (7) would show the expected sharp contrast between constructive accomplishments and other events. Other possibilities include the existence of a difference in event-structure between the adjectival form and the verbal form, for these verb types, or a difference in the identification possibilities in the adjectival and verbal forms, perhaps linked to differences in argument structure between verbs and adjectives.

9. CONCLUSION

Obligatory adjuncts tease apart the consequences of aspectual structure from those of argument structure, and thus allow us to examine the nature of event structure. By exploiting current ideas of event structure representation, it is possible to predict the pattern of distribution of obligatory adjuncts, in a way which is aspectual, rather than strictly grammatical.

Many questions remain open, a particularly important one being the behavior of passives of state predicates, which we do not report on here. (26) shows that the stative *hold* behaves like the constructive accomplishments in requiring an obligatory adjunct, although the range of possible adjuncts is rather different, due to the general difference in event type between accomplishments and states:

(26) a. *This position is held

   b. This position is held by many linguists / all over the world

   c. This position is widely held

If the general idea explored here is along the right lines, it must be the case that the event structure of such verbs requires the presence of the adjunct.

An additional issue concerns the interaction between the obligatory adjunct effects and properties of the derived subject. In our data we have included only definite subjects, but as discussed in Abraham (1989) there are interesting interactions between the well-formedness of short passives and the definiteness of the subject.

Finally, it has been suggested that the obligatory adjunct phenomenon is just a matter of meeting a requirement that one "say something" (D. Pesetsky, personal communication). Although this may be true in some sense, it seems to us that the interesting problem is to characterise the notion of "say something" in a revealing way. To do so leads us into theoretical exploration of events and their syntactic realizations, just as exploring the observation that some sentences seem to "make sense" and some do not, leads into other investigations of theoretical linguistics.

NOTES

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[1] Some verb classes remain problematic, however. The "locatives", for instance, including verbs like *hide, cover, box, uncover, crate, shell.*
[2] The well-formedness of *in ten minutes* in examples like (9a) may require a sharper formulation of identification, since this kind of temporal expression is not licensed by a process: see Dowty (1979) for detailed discussion.

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