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THE SYNTACTIC AND SEMANTIC  
STATUS OF THE BY-PHRASE AND THE OF-PHRASE<sup>1</sup>

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1 Aim of the paper

I am interested (a) in exploring how various properties of the behaviour of the of-phrase and of the by-phrase may follow from, or be consistent with, the view in (1), and (b) in comparing an account of these properties based on (1) with other accounts that do not share this view.

- (1) the of-phrase and the by-phrase occurring in an event-denoting NP are arguments of the noun with which they occur.

I shall discuss a proposal by D.Dowty. Dowty (1986) has suggested that the way event-nouns are associated with their PPs differs from the way verbs are associated with their arguments. According to Dowty, nothing in the lexical entry of event-nouns need mention the PPs with which the noun may combine: these PPs are not arguments of the noun, but adjuncts (expressions of category CN/CN), whose semantic function, when applied to a noun, is to create a nominal denoting a subset of the set of events denoted by the noun with which they combine. The adjunct status of these PPs is supposed to account for their optionality. If Dowty's hypothesis concerning the nature of PPs associated with event-nouns were correct, (1) would be false, since event-nouns would

have no "argument slot" corresponding to the of-phrase and to the by-phrase. In the next section, I am going to provide a more detailed description of Dowty's hypothesis. Then, I shall raise some problems for his hypothesis, and argue that these problems do not arise, if the of-phrase and the by-phrase are regarded as arguments of event-nouns. If the of-phrase and the by-phrase are arguments of event-nouns, their optionality cannot be accounted for by their being adjuncts. I shall consider an account of their optionality that assumes the view in (1) and appeals to the existence of rules that satisfy implicitly the argument position of the of-phrase and of the by-phrase.

## 2 Dowty's (1986) proposal

Let us take a closer look at Dowty's proposal. Dowty has proposed the following picture of the difference between nouns and verbs with respect to argument association. Syntactically, he says, a verb needs "a particular fixed number of arguments to form a sentence. Semantically, a verb denotes an n-place relation, and, when the denotations of the proper number of arguments are combined with the relation in an appropriate way, a truth-value is denoted, a proposition is expressed, or a situation is described (depending on which semantic theory you use)... ." This way of forming complex expressions is the one we are familiar with from the predicate calculus. Dowty refers to it as the Ordered-Argument method of argument association. We may summarize the main features of this method as follows:

### The Ordered-Argument method of argument association

If a predicate F is combined with an expression Q via the Ordered-Argument method of argument association, then F subcategorizes for Q. Semantically, F denotes a function such that the entity denoted by Q belongs to the domain of this function.

According to Dowty's proposal, on the other hand, the PPs that occur with an event-noun are not arguments of the noun, but modifiers. Applied to the of-phrase and to the by-phrase, his view may be illustrated by the following example. Consider

(2) the destruction of the city by the enemy.

The noun destruction in (2) is assumed to be an expression of category CN and to denote a set of events. The of-phrase and the by-phrase in (2) are expressions of category CN/CN translated, respectively, as in (3) and (4):

(3)  $\lambda P \lambda e (P(e) \ \& \ \text{Agent}(\text{the enemy}, e))$

(4)  $\lambda P \lambda e (P(e) \ \& \ \text{Theme}(\text{the city}, e))$ .

The expressions of the intensional language Agent and Theme denote thematic relations, i.e., as appears from the notation in (3)-(4), relations between individuals and events in which these individuals participate. The complex noun that results from applying the of-phrase and the by-phrase to the noun destruction is thus translated as follows in the intensional language:

- (5)  $\lambda e$  (destruction (e) & Agent (the enemy, e) & Theme (the city, e)).

The expression in (5) denotes a set of destruction events whose agent is the enemy and whose theme is the city. Dowty refers to this way of forming complex predicates as the Thematic-Role method of argument association. The main features of this method may be summarized as follows:

#### Thematic-Role method of argument association

If a predicate F is combined with an expression Q via the Thematic-Role method of Argument association, nothing in the lexical entry of the predicate need mention the fact that the predicate may combine with Q. Q is an adjunct (i. e., in categorial terms, Q is an expression of category A/A, where A is the category of F) such that Q(F) denotes a set of events with a certain participant determined by the meaning of Q.

Dowty's hypothesis concerning the difference between nouns and verbs with respect to argument association may now be stated as follows.

(DPH)

#### Dowty's Pure Hypothesis

- a. The Ordered-Argument method of argument association is employed to associate verbs with their arguments.
- b. The Thematic-Role method of argument association is employed to create complex event-denoting nouns.<sup>2</sup>

My reason for calling the view above "the pure hypothesis" is that it seems to me that Dowty, ultimately, endorses a more mixed view than the one in (DPH) of the nature of PPs occurring with event-nouns. Dowty points out that the claim that nothing in the lexical entry of a derived nominal need mention its arguments is meant to apply only to PPs "that are marked with the 'contentful' prepositions by, to, with, from, on, etc. and is (probably) not correct for PPs marked with of, which though optional, appear to be the exceptional case where grammatical relations of the verb play a role in determining what argument is designated." The preposition of indeed cannot be once and for all given by the translation in (6)

(6)  $\lambda x \lambda P \lambda e (P(e) \ \& \ \text{Theme} (x, e))$ ,

since its meaning depends on the noun with which a PP marked by of combines. As is shown by Chomsky's (1957) examples in (7)-(8), the of-phrase may be assumed to refer to the theme of the event, when it combines with the noun raising, but it can only be understood as referring to the agent, when it combines with the noun growling:

- (7) the growling of the lions
- (8) the raising of flowers.

In discussing Dowty's proposal, I shall therefore consider the following hypothesis, in addition to the one in (DPH):

(DBH) **Dowty's Blended Hypothesis**

- a. The Ordered-Argument method of argument association is employed to associate verbs with their arguments and PPs marked by "non-contentful" prepositions with event-nouns.
- b. The Thematic-Role method of argument association is employed to associate complex event-nouns with PPs marked by "contentful" prepositions."<sup>3</sup>

### 3 Four problems for Dowty's proposal

In this section, I shall argue that, if we combine the of-phrase, or the by-phrase, with event-nouns via the Thematic-Role method of argument association, some difficulties arise, and that the same difficulties do not arise, if we regard the by-phrase and the of-phrase as arguments of the event-noun with which they occur. First, however, I want to examine the problem raised for Dowty's pure hypothesis by Chomsky's (1957) examples in (7)-(8). The examples in (7)-(8) show that the meaning of the preposition of cannot be once and for all given by the translation in (6). One possible reaction to this difficulty, as we saw, is to abandon the pure hypothesis, and to assume that the Thematic-Role method of argument association does not apply to prepositions like of. It seems to me, however, that the data in (7)-(8) by themselves do not necessarily argue that the pure hypothesis is wrong. Somebody interested in saving (DPH) might, for example, try to formulate the semantics of the preposition of in such a way that a PP marked by of picks out the theme of the event, if the events in the denotation of the noun with which of combines have a theme, while it picks out the agent of the event, in case the events in the denotation of the noun lack a theme. Technically, this would amount to formulating the semantics of the preposition of along the following lines:

- (9) of denotes a function  $f$  such that for every individual  $x$  and set of events  $Y$ ,  $f(x, Y)$  is the set of events  $Z$  such that an event  $e$  belongs to  $Z$  iff  $e$  belongs to  $Y$ , and either (i)  $e$  has a theme and  $x$  is the theme of  $e$ , or (ii)  $e$  does not have a theme and  $x$  is the agent of  $e$ .

Ultimately, I want to argue that even this way of specifying the meaning of the of-phrase is inadequate. My point in sketching the definition above is, however, that the examples in (7)-(8) alone may not be sufficient for rejecting the pure hypothesis. If we specified the meaning of the of-phrase along the lines suggested in (9), we would indeed expect the pattern in (7)-(8) to occur.

### 3.1 First problem: \*the dining of the apple

Dowty argues that verbs characteristically exhibit subcategorization and that this subcategorization is independent of the matter of what event participants are entailed to exist by the meaning of the verb. In support of his claim, Dowty points out that

the verbs dine, eat, and devour, for example, all entail the consumption of some quantity of food, but the first is obligatorily intransitive, the third obligatorily transitive and the second can occur in either subcategory:

- (10)a. John dined/\* John dined his lunch  
 b. John ate/ John ate his lunch  
 c. \* John devoured/ John devoured his lunch.

I agree. The examples in (10) argue that verbs exhibit subcategorization and that this subcategorization is independent of the matter of what event participants are entailed to exist by the meaning of the verb. If this is correct, however, it seems to me that the same kind of argument may be also used to show that nouns exhibit subcategorization. Suppose that Mary dined and that her meal consisted of an apple. Then, that apple is presumably the theme of that dining event. Notice, however, that the following description is ill-formed:

- (11) \* the dining of the apple.<sup>4</sup>

Now, suppose we adopt the analysis of the preposition of in

- (12)  $\lambda x \lambda P \lambda e [P(e) \ \& \ \text{Theme}(x, e)]$ .

In this case, it seems to me that the ill-formedness of (11) becomes hard to explain. Since the of-phrase is an adjunct, we cannot rule out (11) by appealing to syntactic subcategorization,

namely by pointing out that the noun dining does not subcategorize for an of-phrase. Moreover, if the apple that Mary had when she dined is the theme of the dining event, and the preposition of is interpreted as in (12), then (11) doesn't seem to be ruled out for semantic reasons either. By contrast, if the of-phrase occurring with event-nouns is an argument of the event-noun, the ill-formedness of (11) may be accounted for by the fact that the noun dining is not an argument-taking noun, and thus it cannot combine with an of-phrase. One might try to save the analysis in (12), by denying that the apple of which Mary's dinner consisted is the theme of the dining. But then, one must also provide a characterization of the notion of theme, from which the ill-formedness of (11) follows. Notice, on the other hand, that if one is inclined to accept (10)a in the quotation above as evidence that verbs exhibit subcategorization, one should also be inclined to regard (11) as evidence against the analysis in (12). To conclude this subsection, I should point out that the problem raised by (11) is a problem only for the pure hypothesis, since, as I have formulated it, it concerns only the non-contentful preposition of.<sup>5</sup>

### 3.2 Second problem: \* the destruction by the enemy

In this section, I am going to present an objection to the blended hypothesis. Lebeaux (1986), and Grimshaw (1986) have pointed out the following pattern:

- (13) the destruction of the city by the enemy
- (14) the destruction of the city
- (15) \* the destruction by the enemy.

In other words, the by-phrase can be associated with the event-noun, only if the of-phrase has already been associated with the event-noun. Now, suppose that, as suggested by the blended hypothesis, we adopt a mixed view of the status of the by-phrase and of the of-phrase, and that we assume that, while the by-phrase is an adjunct, the of-phrase is an argument of the noun destruction. My problem with this view is that it is not clear how it can rule out (15). Both the of-phrase and the by-phrase occurring with the event-noun destruction are optional, as shown by the examples in (16)-(17) below:

- (16) the destruction started at noon
- (17) the destruction went on and on.

(16)-(17) show that one needs to assume that there is a non-argument-taking noun destruction that is a predicate of events. Let us refer to this noun as destruction<sub>1</sub>, to distinguish it from the other event-noun destruction which, according to the blended hypothesis, takes an of-phrase as an argument. Now, the question is: if by the enemy is an adjunct whose translation is given in

(18), why is it barred from being adjoined to destruction<sub>1</sub> to yield (15)?

- (15) \* the destruction by the enemy  
 (18)  $\lambda P \lambda e (P(e) \ \& \ \text{Agent}(\text{the enemy}, e))$

Since destruction events entail the existence of agent participants, (15) is not ruled out on semantic grounds, and, moreover, there seems to be no obvious syntactic reason for the ill-formedness of (15). What I have not done so far is to show that the ill-formedness of (15) may be predicted, if we assume that both the of-phrase and the by-phrase are arguments of the event-noun destruction. Although this is an urgent task, I shall postpone it to a later section, and I shall turn to presenting an objection to the pure hypothesis based on data from Italian.

### 3.3 Third problem: \* il cantare dell'Internazionale

It has been argued in Grimshaw and Selkirk (1976), and in Salvi (1982), that in Italian there are different kinds of infinitival NPs. In particular, these authors agree that we should distinguish between infinitival NPs in which a verb has been made into a noun and no VP node is present, and infinitival NPs in which a whole VP, possibly an S,<sup>6</sup> has been nominalized. For example, according to Grimshaw, Selkirk and Salvi, infinitival NPs of the kind in (19)a. instantiate the construction in which a verb has been nominalized and no VP node is present, while the NPs in (20) instantiate a nominal construction in which a VP node is present:

- (19) a. lo scrivere interminabile di Sibilla  
           the write(inf) endless of Sibilla
- (20) a. il ricercare incessantemente la verita'  
           the seek(inf) endlessly the truth
- b. l'aver**e** baciato la sposa  
           the have(inf) kissed the bride.

The need to distinguish between these two kinds of syntactic constructions in Italian is shown, according to Grimshaw, Selkirk and Salvi, by the occurrence of the following pattern:

- (19)a. lo scrivere interminabile di Sibilla  
           the write(inf) endless of Sybilla
- b. \* lo scrivere interminabilmente di Sibilla  
           the write(inf) endlessly of Sibilla



- (21)a. il ricercare la verita'  
the seek(inf) the truth
- b. \* il ricercare la verita' di Piero  
the seek(inf) the truth of Piero
- (22)a. l'esser partito  
the be(inf) left
- b. \* l'essere partito di Piero  
the be(inf) left of Piero.

The data in (19), (21)-(22) may be accounted for by assuming that the of-phrase, as well as the post-infinitival adjective, can only occur when the verb has been made into a noun, while adverbs and auxiliaries can occur only when a VP node is present. If we make these assumptions, then the pattern in (19), (21)-(22) falls right out. The ill-formedness of (19)b. is explained by the fact that, in order for the of-phrase to be present, scrivere must be analyzed as a noun, but this is incompatible with the occurrence of the adverb interminabilmente, which requires the presence of a VP. The ill-formedness of (21)b. is explained in a similar way, since, in order for the of-phrase to be present, ricercare must be analyzed as a noun, but this is incompatible with the presence of a direct object. Finally, the ill-formedness of (22)b. is accounted for by the fact that the auxiliary requires a VP node, but this is incompatible, again, with the presence of the of-phrase which requires that the verb be analyzed as a noun. Further evidence that the occurrence of post-infinitival adjectives and of post-infinitival adverbs marks two different constructions is also provided, in my view, by the fact that infinitival NPs with a post-infinitival adverb have a different distribution from infinitival NPs with a post-infinitival adjective, as shown by the following data:

- (23)a. Giovanni udi' il mormorare sommesso  
John heard the whisper(inf) soft
- b. \* Giovanni udi' il mormorare sommessamente  
John heard the whisper(inf) softly
- (24)a. Giovanni faceva quel mormorare sommesso per  
segnalare la propria presenza  
John was making that whisper(inf) soft  
to signal his presence
- b. \* Giovanni faceva quel mormorare  
sommessamente per segnalare la  
propria presenza  
John was making that whisper(inf) softly to  
signal his presence

The distinction between nominals in which a Verb is made into a Noun and nominals in which a VP node is present is one that has been argued to exist in English also. It has been often suggested<sup>7</sup> that this distinction is instantiated in English by the following constructions:

- (25) the singing of the song
- (26) his singing the song.

Only the NP in (26), it has been claimed, contains a VP node, while in (25) the gerund singing is the result of making a Verb into a Noun. It should also be noticed, at this point, that both English gerundive nouns and Italian infinitival nouns are arguably predicates of event-like entities, as shown by the fact that they may occur with predicates like lasted for hours (respectively, duro' per ore):

- (a) the singing of the crowd lasted for hours
- (b) il cantare della folla duro' per ore<sup>8</sup>

There is, however, an important difference between Italian and English with respect to the nominalization of verbs. While in English gerundive NPs the of-phrase may correspond to the object of the related verb, as shown by (25), in Italian infinitival NPs the of-phrase can never correspond to the object of the related verb, but only to the subject. In Italian, therefore, the NPs in (27)-(28) are well-formed, but the NPs in (29)-(30) are not:

- (27) lo scrivere di Sibilla  
the write(inf) of Sibilla
- (28) il cantare di Giorgio  
the sing(inf) of Giorgio
- (29) \* lo scrivere della lettera  
the writing of the lettera
- (30) \* il cantare dell'Internazionale.  
the sing(inf) of the International

The of-phrase may correspond to the object of the related verb, on the other hand, with (non-infinitival) derived nouns, as shown by (31)-(32) below:

- (31) il canto di Giorgio  
the chant of Giorgio
- (32) il canto dell'Internazionale.  
the chant of the International

A question one may ask is, therefore: why do Italian infinitival nouns have this feature? Why do they bar the occurrence of an of-phrase corresponding to the object of the related verb? It seems to me that one may consider the following hypotheses. One hypothesis is that (a) Italian infinitival nouns lack an of-argument corresponding to the object position of the related verb, because the nominalization operation has, among other things, the effect of saturating the argument corresponding to the object of the verb. Another hypothesis is that (b) in Italian only intransitive verbs are made into infinitival nouns, and infinitival nouns simply preserve the argument structure of the verb from which they are derived. One possible test to decide between the hypothesis in (a) and the one in (b) seems to me to be the following. Let us pick a verb alpha, whose NP object cannot be dropped. If the reason why infinitival nouns do not allow an of-phrase corresponding to the NP object of the related verb is that in Italian only intransitive verbs are nominalized, we should expect that alpha could not be nominalized. On the other hand, if the nominalization operation is responsible for saturating implicitly the argument corresponding to the direct object of the verb, I think that there would be no reason to expect that alpha could not be nominalized. It seems to me that the data in (33)-(38) argue for the hypothesis in (b), namely for the hypothesis that in Italian only intransitive verbs are nominalized:

- (33) la polizia ha assassinato uno dei dimostranti  
the police murdered one of the demonstrators
- (34) ? la polizia ha assassinato  
the police murdered
- (35) ? l'assassinare della polizia  
the murder(inf) of the police
- (36) I partigiani hanno distrutto il ponte  
the partisans destroyed the bridge
- (37) ? I partigiani hanno distrutto  
the partisans destroyed
- (38) ? il distruggere dei partigiani  
the destroy(inf) of the partisans

The NP in (35) is marginal, but if assassinare could be nominalized, we might expect that (35) should be unproblematic in the interpretation in which the police is the murderer. The same considerations hold for (38). But why is all this relevant to our discussion of Dowty's proposal? It may be noticed that both the hypothesis in (a) and the hypothesis in (b) account for the contrast between (30) and (32),

(30) \* il cantare dell'Internazionale  
the sing(inf) of the International

(32) il canto dell'Internazionale  
the chant of the International

by assuming that, while the derived noun canto in (32) has an (unsaturated) argument position corresponding to the of-phrase, the noun cantare in (30) does not. Notice, however, that if the of-phrase in (32) is an adjunct with the analysis in (39), there is no obvious reason why (30) should be ill-formed:

(39)  $\lambda P \lambda e (P(e) \ \& \ \text{Theme} (l'Internazionale, e))$

Since a singing event entails the existence of something that is sung, (30) is not ruled out on semantic grounds, and, moreover, if the of-phrase is an adjunct, there are no obvious syntactic reasons why (30) should be ill-formed.

Let me state what the outcome of this section is. I have argued that Dowty's hypothesis, both in its blended and in its pure version, runs into some problems. I have also tried to show (with the exception of the problem raised in 3.2) that these problems do not arise, if we assume that the by-phrase and the of-phrase are arguments of the event-nouns with which they occur. The assumption that the by-phrase and the of-phrase in event nominals are arguments, however, raises a further question: how is their optionality to be accounted for? If the by-phrase and the of-phrase were adjuncts, we should expect them to be optional. Since I am arguing that they are arguments, I must provide some account of their optional character. I shall turn to this problem in the next section.

#### 4 Exploring the argument view

In this section, I want to consider an account of the optionality of the by-phrase and of the of-phrase that (a) assumes that they are arguments and (b) appeals to the existence of rules that satisfy implicitly their argument positions. Rules of this kind have been invoked independently in the Montague grammar literature (indeed, by Dowty himself), to account for the occurrence of the pattern in (40)

(40)a. John ate the apple  
b. John ate

First, I shall try to show that by assuming a suitable formulation of this kind of rules we may predict the optionality of the of-phrase and of the by-phrase and, at the same time, predict, the ill-formedness of (15). This part of the proposal, however, raises the question: why do the rules of implicit satisfaction work the

way they do? I shall address this issue in section 4.2. In the same section, I shall also point out further consequences of the proposal I am adopting.

#### 4.1 Implicit satisfaction rules

Consider again (40). Dowty (1981) has proposed to account for the optionality of the object NP of the verb eat by assuming that the object argument of eat may be implicitly quantified over by an existential quantifier. In the rules that I shall propose, the argument position corresponding to the of-phrase and to the by-phrase will also be implicitly quantified over by an existential quantifier.<sup>9</sup> More precisely, I shall assume the existence of two rules of implicit satisfaction for nouns such as destruction. One of these rules has the effect of satisfying in one shot all the arguments of the noun: it takes as input a noun that subcategorizes for an of-phrase and for a by-phrase, and it yields as output a one-place predicate of events. The other rule has the more limited function of satisfying the argument position of the by-phrase. To formulate these rules, I shall assume Extended Categorical Grammar. It seems to me that these rules may also be formulated in non-categorical frameworks, but I shall not try to show it here. I shall assume that the syntactic category of transitive common nouns like destruction (i. e. of nouns derived from transitive verbs) is specified as follows:

$$\text{destruction}_{(\text{CNP}/\text{PP}_{\text{by}})^1/\text{PP}_{\text{of}}^0}$$

The numbers above the slashes are used to keep track of the bar-levels. The need to distinguish between lexical categories and phrasal categories in categorial grammar has already been advocated by Flynn (1981), and Bach (1980). My use of the numerical notation to keep track of the bar-level may be seen as an extension of these proposals. The intended interpretation of the notation above is that destruction is an expression that combines with an of-phrase to produce a non-lexical expression that combines with a by-phrase, to yield an expression of category CN (determiners belongs to the category NP/CN). The semantic type of destruction is  $\langle\langle\langle 0, 1 \rangle, 1 \rangle, 1 \rangle$  (I am assuming that 1 is the type of entities, and 0 is the type of propositions. The most embedded argument indicated in the type of destruction is the event argument.) The alternation in

- (41)a. the destruction of the city by the enemy  
 b. the destruction

is accounted for by the following rule:

(42)

S. If  $a$  is an expression of category  $(CN/PP_{by})^1/PP_{of}^0$   
 $F(a)$  is an expression of category CN,  
 where  $F(a)=a$ .

T.  $F(a)$  translates as  $\lambda x \exists y \exists z a'(y)(z)(x)$

What this rule does is take a transitive noun and create a Complex Noun whose argument positions corresponding to the of-phrase and to the by-phrase have been implicitly saturated by being existentially quantified over. To account for the alternation

- (43)a. the destruction of the city by the enemy  
 b. the destruction of the city,

I propose the following rule:

(44)

S. If  $a$  is an expression of category  $(CN/PP_{by})^1$   
 $F(a)$  is of category CN, where  $F(a)=a$ .

T.  $F(a)$  translates as  $\lambda x \exists y a'(y)(x)$ .

The rule above applies to transitive nouns whose of-argument has already been saturated by an of-PP and it produces a CN in which the argument position corresponding to the by-phrase has been implicitly existentially quantified over. Notice that, if we specify the syntactic category of destruction in the way proposed above and assume these rules, we should expect (15) to be ill-formed:

(15) \* the destruction by the enemy

If we specify the syntactic category of destruction in the way above, the by-phrase can be combined with the noun destruction, only if destruction has been combined with an of-phrase. Moreover, by assuming these rules of implicit satisfaction, we are not allowed to satisfy implicitly the argument corresponding to the of-phrase, without satisfying the argument corresponding to the by-phrase.

#### 4.2 Motivating the rules

##### 4.2.1 The stipulative character of the proposal

We proposed to rule out (15) in the previous section by assigning a convenient subcategorization frame to the noun destruction and by assuming that the rules of implicit satisfaction work either by saturating in one shot all the

arguments of the noun or by saturating the argument corresponding to the by-phrase. This move, however, raises a number of questions. First of all, the rules of implicit satisfaction might have been formulated differently. In particular, we might have formulated them in such a way that (15) is incorrectly predicted to be well-formed. So, one question that arises is: why should these rules work the way I assumed they do? There is more. The account in the previous section depends essentially on assuming that the subcategorization frame of the noun destruction is such that this noun can combine with an of-phrase only if the noun has been combined with a by-phrase. But why should that be? If this did not follow from any more general requirement, we might expect it to be an idiosyncratic fact about the subcategorization frame of the noun destruction. In this case, we might expect that other event-nouns in English might not have this subcategorization frame, and we might expect that in other languages, the translation of (15) could be well-formed. But it is not clear that these predictions are borne out. Nouns that may combine with an of-phrase and with a by-phrase in English seem to disallow the string N by-NP, and (15) seems to be ill-formed also in other languages. In Italian, for example, (45) is ill-formed:

(45) \* la distruzione da parte del nemico.

Unless some answer is given to these questions, therefore, the proposal in the previous section is open to the charge of being stipulative. Williams (1987) has proposed to regard the by-phrase occurring with event nouns like destruction as an ergative case marker, and the of-phrase as an absolutive case marker. It seems to be a property of ergative case across different languages that a phrase can bear ergative case only in presence of a theme in the absolutive case.<sup>10</sup> If this is correct, then the fact that we do not find nouns with the subcategorization frame [-- PP<sub>by</sub>] would follow from a general restriction on the assignment of ergative case. Moreover, the fact that one cannot implicitly satisfy the arguments of destruction in such a way that (15) is allowed may also be seen as a consequence of the requirement that a phrase can bear ergative case only when a theme in the absolutive is present. It is conceivable that this requirement might act as a sort of well-formedness condition constraining the kinds of implicit satisfaction rules that may be used: only those rules of implicit satisfaction, among the ones that are possible, may be used that do not generate outputs violating this condition. I am not suggesting that spelling out in detail how case marking principles and relation-reducing rules of the kind proposed above interact is a trivial task. But these considerations seem to me to provide some evidence that an account that assumes the rules of implicit satisfaction proposed in the previous section doesn't necessarily have to be stipulative in nature, and that many of the assumptions on which that account is based may follow from general properties of ergative markers.

#### 4.2.2 The optionality of the by-phrase

Rappaport (1983), Lebeaux (1986), and Grimshaw (1986) have observed that there are a few exceptions to the optionality of the of-phrase:

- (46) a. the handing of the letter/\*the handing  
 b. the sending of the parcel/\*the sending  
 c. the felling of trees/\*the felling

However, there are no known exceptions to the optionality of the by-phrase occurring with event-nouns. This fact, one might say, is evidence that the optionality of the by-phrase is to be accounted for by a different device than the optionality of the of-phrase. And, one might add, the lack of exceptions to the optionality of by-phrase provides also a reason in favour of treating the by-phrase as an adjunct, rather than as an argument. Indeed, Grimshaw (1988) has pointed out that the lack of exceptions to the optionality of the by-phrase is the main reason to regard the by-phrase as an adjunct:

...the primary problem with treating the by-phrase as an argument is a very simple one -- the fact that it is systematically optional, and optionality is certainly not a characteristic of arguments in general.

It seems to me, however, that assuming that the by-phrase is an adjunct does not guarantee that its optionality should be exceptionless. In English we may find expressions that act as adjuncts in some contexts and as arguments in others. For example, adjectives may plausibly be analyzed as adjuncts to nouns when they occur preminally, but, at least according to certain analyses of the construction in (15), they may also be arguments of the predicate consider

- (47) the silly boy  
 (48) John considers Bill silly

So, even if the by-phrase were an adjunct when it occurs with certain nouns, this would not exclude the possibility that it could be an argument of other nouns. Nonetheless, the question remains: how is the lack of exceptions to the optionality of the by-phrase to be accounted for? Here, let me suggest that the proposal I am considering does not necessarily wipe out the difference between the of-phrase and the by-phrase, with respect to the issue of exceptions. Notice that, while the rule accounting for the alternation (41) may be regarded as a lexical rule, since it may apply to a lexical category, the rule accounting for the optionality of the by-phrase, i. e., the rule accounting for the alternation in (43) can only be taken as a syntactic rule, since



it applies to a non-lexical category. Dowty (1978) has proposed that the distinction between syntactic rules and lexical rules should account for the distinction between rules that admit lexical exceptions and rules that don't (or, at least, are relatively free of lexical exceptions). Namely, lexical rules, according to Dowty, would be rules we might expect to allow lexical exceptions, but syntactic rules would not. If this were correct, then the lack of exceptions to the optionality of the *by*-phrase would follow from the fact that the rule accounting for the alternation (43) is a syntactic rule, while the one accounting for the well-formedness of (41)b. is a lexical rule.

-- Notes --

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2. According to Dowty, the Thematic-Role method of argument association is also employed to associate verbs with their adjuncts. For the purposes of the present discussion, I think one may ignore this part of Dowty's hypothesis.

3. Before concluding this section, a historical note is in order concerning Dowty's proposal. As Dowty himself points out, Rappaport (1983) formulates a proposal similar (but not identical) to Dowty's (1986) proposal concerning the PPs occurring with event-nouns. In Rappaport's view, as in Dowty's view, PPs occurring with event-nouns are not syntactically subcategorized by the noun. However, Rappaport, unlike Dowty, holds the view that the set of arguments an event-noun will take is encoded into the lexical entry of the noun. It should also be mentioned that some observations in Higginbotham (1983) seem to suggest a view similar to the one Dowty proposes in his (1986) paper.

4. This example has been suggested to me by E. Williams.

5. J. Higginbotham (public communication) has suggested that one could account for the ill-formedness of (11) by assuming a constraint according to which an *of*-phrase adjunct may combine with an event-noun, only if the noun isn't already specified for some other preposition. The acceptability of NPs such as the dining on snails would then suggest that the noun dining is independently specified for the preposition on, and thus it could not combine with an *of*-phrase, in virtue of the constraint proposed above. It seems to me that Higginbotham's suggestion

amounts to assuming that an of-phrase may combine with an event-noun, only if the noun does not subcategorize for another preposition. But, if the of-phrase is an adjunct, and is not subcategorized by the noun, why should the subcategorization frame of the noun matter to whether the noun may combine with the of-phrase or not? The stipulation of a constraint of the kind Higginbotham proposes seems to me to raise for a grammatical theory more problems than it solves. Notice, by the way, that, if indeed the example in (i) is well-formed, the contrast in (11)-(i) poses no particular problem for the claim that the of-phrase is subcategorized by event-nouns.

(i) the dining on snails

(11) \* the dining of the apple.

All we have to say is that the noun dining subcategorizes for the preposition on, but not for the preposition of. The noun in this case would simply preserve the subcategorization frame of the verb dine.

6. Grimshaw and Selkirk differ, in this respect from Salvi.

7. Cf, for example, Chomsky (1970), and Wasow & Roeper (1972).

8. Additional evidence to this effect concerning English gerundive nouns may be found in Vendler (1967).

9. Due to space limits, I am unable to address here the issue of whether we should not assume instead that the argument position of the of-phrase and of the by-phrase is implicitly satisfied by a contextually interpreted variable. I discuss this issue in Zucchi (forthcoming).

10. Cf. Dixon (1979).

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