ON THE NOTION OF SUBJECT FOR SUBJECT-ORIENTED ADVERBS

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This article investigates the nature of predication of so-called subject-oriented adverbs in English. It is noted that there are both conceptual and empirical issues to be addressed. On the conceptual side, there is no consensus in previous studies on what exactly the notion of subject is for these adverbs and why these adverbs have an orientation to the subject. On the empirical side, there are circumstances in which some of the adverbs seem to be construed with the object argument of the verb. This article focuses on these problems through an examination of the adverbs occurring in locative, passive, unaccusative, and resultative constructions. It is argued that when these adverbs seem to be associated with the object, they are predicated of a phonetically empty pronoun that occurs as the subject of a small clause, controlled by the object. Moreover, it is indicated that subject-oriented adverbs occurring in different positions across different constructions are all parasitically predicated of DPs that are introduced by a functional head in primary predication. Given the proposal made in recent studies that predication relationships between lexical categories and their external arguments in general are mediated by a functional head, it is claimed that subject-oriented adverbs also need to be supported by such a head to be associated with DPs. Thus, it is concluded that the notion of subject for these adverbs and their orientation are derived from the general theory of predication.*

Keywords: adverb, locative, predication, resultative, small clause, subject

1. INTRODUCTION. English adverbs such as *willingly*, *reluctantly*, and *cleverly* are known to be predicative adverbs that have subject orientation. They are construed with either the so-called surface subject or the logical subject. For example, the active in 1a is interpreted as attributing reluctance to Joan, and not Mary, whereas its passive counterpart in 1b can attribute reluctance to either of the two arguments.

(1) a. Joan instructed Mary *reluctantly*.
    b. Mary was *reluctantly* instructed by Joan.

However, there seems to be no consensus among researchers on what exactly the notion of 'subject' is for these adverbs and why these adverbs are sensitive to subject. These are fundamental issues, particularly in current theories of syntax in which there is no unified notion of 'subject' or 'subject position'.

Moreover, as noted by Geuder (2004), there are circumstances in which a subclass of these adverbs can be interpreted as being predicated of the object. In particular, when those adverbs occur between the object and the PP complement of verbs denoting

change of location, as shown in 2, they can for some speakers be construed with either the subject or the object argument with some marginality.[1]

(2) a. (?)I watched how the police took a man *reluctantly* to the car.

(Geuder 2004:156)

    b. John sent Bill *willingly* to the doctor.
    c. Mary put Susie *contentedly* on the bed.

This fact calls for an account of why the adverbs can be associated with the object in this particular circumstance.

In this article, I investigate these problems and propose an analysis in the framework of the principles-and-parameters theory of generative grammar (Chomsky 1995). As for the constructions in 2, which I call locative PP constructions, it is argued that they involve a small clause complement consisting of the PP as the predicate and PRO as the subject, and PRO is controlled by the object, as illustrated in 3 (see Bowers 1993, Beck & Johnson 2004).

(3) a. John [$_{VP}$ sent Bill$_i$ [$_{SC}$ PRO$_i$ *reluctantly* to the doctor]]
    b. John [$_{VP}$ sent Bill$_i$ *reluctantly* [$_{SC}$ PRO$_i$ to the doctor]]

If the adverb occurs within the small clause, as shown in 3a, it is construed with the subject of the clause, that is, PRO. Since PRO is anaphoric to the object, the adverb is interpreted as if it were predicated of the object. By contrast, if the adverb occurs in the matrix clause, as illustrated in 3b, it is construed with the matrix subject.

Through an examination of subject-oriented adverbs occurring in these and other constructions, I draw the conclusion that these adverbs are always predicated of DPs introduced by a functional head in primary predication. Thus, I claim that 'subject' for these adverbs is the DP in the minimal domain of such a functional head. Furthermore, I argue that the sensitivity of the adverbs to the DP is attributed to the nature of predication. In particular, following recent studies claiming that a functional head mediates predication relations between lexical categories and their external arguments (see Bowers 1993, Baker 2003, den Dikken 2006), I propose that subject-oriented adverbs, being a lexical category, also need to be supported by such a head to be associated with DPs.

This article is organized as follows. A brief look at how the conception of 'subject' has shifted in the history of generative grammar is followed by a look at some previous studies of subject-oriented adverbs with respect to their semantic and syntactic properties (§§2 and 3). Next, I present the core examples of these adverbs occurring in locative PP constructions, examine the structure of the constructions, and propose an analysis of the interpretations of the adverbs. In §5, I argue that the analysis of the adverbs presented in §4 also accounts for the interpretations of those adverbs occurring in passive, unaccusative, and resultative constructions, and then conclude with some final remarks.

2. THE NOTION OF 'SUBJECT' IN GENERATIVE GRAMMAR. Different attempts have been made by linguists to define or derive the notion of subject in different grammatical

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[1] Geuder (2004) provides the example in 2a as a marginal instance of object orientation, but does not account for why it has such an interpretation. One of the English speakers I consulted, a linguist, found the example grammatically perfect with the object-oriented reading. Some speakers seem to find subject-oriented adverbs intervening between the verb and its complement parenthetical (as also indicated by a referee), whereas others do not. Geuder (2004:163, n. 7) also notes that there is variation among speakers in this respect and suggests the adverb's status as a nonrestrictive modifier in a destressed sentence position as a possible factor in causing the impression of being parenthetical. See also n. 6 for this point.

theories, which has caused a long-standing debate. Keenan (1976) presents thirty characteristic properties of subjects on the basis of data from a variety of languages and notes that no combination of these properties is found to be both necessary and sufficient to identify an NP in a sentence in any language as the subject of that sentence. In this section, we look at a brief history of controversies over the conception of subject within the broad tradition of generative grammar. It is concluded that those properties that have been assumed to define subjecthood in earlier theories are distributed across different syntactic positions, and there is no unified category of 'subject' or 'subject position' in the current theory.

In the Chomskyan approach, it has been consistently stated that grammatical functions such as subject and object are definable in terms of phrase structure configurations rather than primitives of grammatical theory. This position was first articulated in Chomsky 1965, where the subject is defined as the NP immediately dominated by S (i.e. [NP, S]). Under this conception of subjecthood, a broad range of different phenomena are assumed to be associated with the argument occupying the unique syntactic position, such as bearing certain kinds of thematic roles (typically the agent role), having prominence over other arguments in anaphoric dependencies, being the target of advancement transformations (e.g. passive and subject-to-subject raising), and being involved in the validation of morphosyntactic features (e.g. nominative case on the argument itself and agreement morphology on the finite verb).

However, though this phrase-structural notion of subject seemed to be tenable in some languages (such as English), its crosslinguistic generality became an issue in the development of relational grammar (Perlmutter 1983) and lexical-functional grammar (Bresnan 1982) in the 1970s and early 1980s. In particular, the manifestation of subjecthood in word order and morphology was found to vary significantly across languages, whereas those properties concerning structural prominence in anaphoric dependencies and advancement transformations are stable and robust. Then, the Chomskyan view that grammatical functions are derived from phrase structure was challenged, and analyses of those crosslinguistic regularities were proposed by utilizing the notion of subject and object as core primitives of the grammar. In these theories, phrase structure is assumed to be not very stable across languages and much less important in accounting for syntactic phenomena than in the Chomskyan approach.

The development of the IP structure within the Chomskyan theory in the early 1980s (Chomsky 1986) cleared the way for accommodating crosslinguistic variations regarding subjecthood. It was proposed that the sentence is a projection of the inflectional head conforming to the X-bar theory, and the specifier of the projection (i.e. [NP, IP]) became the new unitary conception of subject. This view of clausal organization under which a lexical layer is embedded within an inflectional layer further developed into the INTERNAL SUBJECT HYPOTHESIS in the late 1980s. It was proposed that lexical projections are the domain where arguments are generated and assigned thematic roles, whereas functional projections are the place where morphosyntactic features such as case and agreement are licensed. Then, subject arguments also originate within a lexical projection in all languages and move to the specifier of an inflectional projection if they bear morphosyntactic features to be checked there. Thus, under this view, clauses usually contain at least two subject positions that are derivationally linked, and the clustering subject properties that were attributed to a unique position in earlier models are deconstructed and distributed over distinct but derivationally related positions. This shift in the model has contributed significantly to widening the coverage of crosslinguistic variations with regard to subjecthood (see McCloskey 1997, Davies & Dubinsky

2001a). The division of function between the lexical and the functional layer has been blurred somewhat in later works in which external arguments are assumed to be generated within a functional projection immediately dominating a lexical projection (Bowers 1993, Chomsky 1995, Kratzer 1996). However, the basic insight of the internal subject hypothesis is maintained in the sense that subject arguments are assumed to be assigned thematic roles in a position lower than the position where their morphosyntactic features are licensed.

Holding the reductionist view of subjecthood discussed above, McCloskey (1997) argues that those properties that defined subjecthood in earlier models are distributed over at least three distinct syntactic positions. He then concludes that there is no unified notion of 'subject' or 'subject position' in the theory of grammar. The research carried out along this line of thought has led to further understanding of the nature of grammar and crosslinguistic variations (see McCloskey 2001, and other works in Davies & Dubinsky 2001b).

With this background, it is worthwhile to investigate subjecthood for subject-oriented adverbs. In particular, we need to examine whether the properties of these adverbs can be explained without referring to the notion of subject or subject position, which plays no formal role in the current theory of grammar. I claim that the characteristics of the adverbs are indeed accounted for by deriving the concept of subject from a theory of predication.

To summarize, we have seen that a broad range of phenomena involving the grammatical function of subject were associated with a unique syntactic position in earlier models of generative grammar and that the notion of subject has often been assumed to be definable in terms of phrase structure representations. Following the deepened investigation into crosslinguistic differences and the development in phrase structure theories, however, the clustering subject properties have been deconstructed and distributed over different positions. As a result, there is no unified notion of subject or subject position in the current theory of grammar. Thus, a formal analysis of subjecthood for subject-oriented adverbs is needed.

3. Previous studies of subject-oriented adverbs. This section considers what has been proposed in previous studies of subject-oriented adverbs, looking first at some of their semantic properties (§3.1) and then at syntactic conditions concerning their interpretations (§3.2).

3.1. Two subclasses of subject-oriented adverbs and their semantic properties. Ernst (2002) notes that there are two subclasses of subject-oriented adverbs in English: agent-oriented adverbs, and mental-attitude adverbs (see also Frey 2003). Although they are distinguished by some semantic properties, they share some characteristics particular to predicational adverbs. First, almost all of them are composed of an adjective plus -*ly*, such as *cleverly* and *willingly*, and represent gradable predicates. Second, they are two-place predicates taking an event and a participant in the event (see also Jackendoff 1972, McConnell-Ginet 1982, Zubizarreta 1982, Roberts 1986). The event is usually represented by the constituent the adverb immediately c-commands. We look at the two subclasses of adverbs with respect to these points in turn.

Agent-oriented adverbs. Representative examples of agent-oriented adverbs (hereafter AO adverbs) discussed by Ernst (2002:54–62) are given in 4.

    (4) AO adverbs: cleverly, stupidly, wisely, foolishly, rudely, intelligently, carefully

Ernst (2002) argues that these adverbs are represented as two-place predicates in their lexical templates: the two arguments are an event and the agent, as illustrated in 5.

>   (5) P_{ADJ} (e, Agent)
>   (P_{ADJ} is the property designated by the adjective from which the adverb is derived.)

Ernst notes that the relevant notion of agent does not correspond exactly to that of the Agent thematic role. More precisely, it denotes 'entities that can CONTROL the eventuality in question in that they can choose not to do some action, enter into a state, and so on' (Ernst 2002:55). For example, Jim is an agent in the thematic sense in 6a, which is not necessarily the case in 6b, where Jim might have been put down on the bed and chosen to stay there.

>   (6) a. Jim *wisely* got out of bed.
>   b. Jim *wisely* lay on the bed.   (Ernst 2002:55)

The view that AO adverbs select an agent argument is supported by the fact that they impose selectional restrictions on the argument with which they are associated. For example, the AO adverb needs to be predicated of the subject in 7. The sentence in 7b, however, contrasted with that in 7a, is semantically anomalous because the referent of the subject cannot be agentive (see also McConnell-Ginet 1982, Zubizarreta 1982).

>   (7) a.   Bill *carefully* has picked the flowers.
>   b. #The flowers *carefully* have been picked by Bill.   (Travis 1988:306)

Thus, these examples indicate that there is a semantic relation between AO adverbs and an argument of the clause.

The content of the event that AO adverbs are assumed to take as an argument in 5 varies depending on their position in a sentence. In 8, the adverbs appear before the auxiliary position, having a clausal entity in their scope.

>   (8) a. *Rudely*, she left.
>   b. Alice *cleverly* has answered the questions.   (Ernst 2002:42, 57)

In these circumstances, the agent argument of the adverb is judged as having the property designated by the relevant adjective in 5 with respect to the entire event. That is, she is seen as rude because of the event of her leaving (compared to other things she could have done, such as not leaving) in 8a, and Alice is seen as clever for the event of having answered the questions in 8b. These are called clausal readings of the adverbs.

However, when the adverbs occur in the domain of V, they receive different interpretations, as illustrated in 9.

>   (9) a. She left *rudely*.
>   b. Alice has answered the questions *cleverly*.   (Ernst 2002:42, 57)

In these situations, the agent argument is judged on the basis of some property of the specific event of V-ing, typically, its manner. For example, she is seen as rude in the way she left (for example, she might have left without exchanging greetings) in 9a, and Alice shows cleverness in the manner she has answered the questions in 9b. These are referred to as manner readings.[2]

MENTAL-ATTITUDE ADVERBS. Next, let us look at representative examples of mental-attitude adverbs (hereafter MA adverbs) given in 10 (Ernst 2002:54, 62–68).

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[2] Noting that clausal/manner ambiguities are found with predicational adverbs in general, Ernst (2002) argues that the two readings are derived from the same adverb with a unique lexical entry referring to both an agent and an event, as shown in 5. See Ernst 2002:473, n. 24, for further comments on this matter.

(10) MA ADVERBS: reluctantly, calmly, willingly, anxiously, eagerly, gladly, sadly, contentedly

Ernst (2002) argues that these adverbs, like AO adverbs, are two-place predicates and take an event as one of the arguments. The other argument, however, is called the experiencer rather than the agent, as shown in 11.

(11) P_{ADJ} (e, Experiencer)
(P_{ADJ} is the property designated by the adjective from which the adverb is derived.)

Note that MA adverbs as well as AO adverbs impose selectional restrictions on the argument with which they are construed. For example, in 12, where the MA adverb must be predicated of the subject, a semantic anomaly arises in 12b, but not in 12a, because the subject does not refer to a sentient entity (see also Zubizarreta 1982).

(12) a. The hostages *unwillingly* will throw the rock.
     b. #The rock *unwillingly* will be thrown by the hostages.

(McConnell-Ginet 1982:148)

These examples support the view that there is a semantic relation between MA adverbs and an argument of the clause.

MA adverbs also have both clausal and manner readings, though sentence pairs involving each of the two interpretations seem to be very close in meaning. When the adverbs appear before the auxiliary position, as shown in 13, they have clausal readings.

(13) a. She *calmly* had left the room.
     b. *Willingly*, the sailors sang a few of the chanteys.   (Ernst 2002:63)

In these examples, the MA adverbs describe a mental state of the experiencer argument (the subject) that holds briefly before the designated event occurs or that persists through the event. For example, she is calm during the time that the leaving event holds in 13a, and the sailors are willing to enter into the event of singing in 13b.

By contrast, when the adverbs occur in the domain of V, they have manner readings, as illustrated in 14.

(14) a. She had left the room *calmly*.
     b. The sailors sang a few of the chanteys *willingly*.   (Ernst 2002:63)

In these examples, the adverbs express an overt manifestation of a mental state of the experiencer during the designated event even if the experiencer actually does not have the state in question. For example, she shows some overt sign of calm as she leaves in 14a. In this respect, manner readings of MA adverbs are distinguished from their clausal readings, under which the adverbs describe the actual mental state of the experiencer and it does not need to be overtly manifested. It is noted by Ernst (2002:68), however, that the two readings are almost synonymous since the manifestation of a feeling is normally expected to reflect an actual feeling.[3]

To summarize, the two subclasses of subject-oriented adverbs (agent-oriented and mental-attitude adverbs) are both two-place predicates taking an event and an individual, and the event is represented by the constituent the adverbs immediately c-command. The individual corresponds to an argument of the main predicate: it is interpreted as an agent for agent-oriented adverbs, whereas it is an experiencer for mental-attitude adverbs.

3.2. STRUCTURAL CONDITIONS ON THE INTERPRETATIONS OF SUBJECT-ORIENTED ADVERBS. In this section, structural conditions that have been proposed on the interpre-

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[3] Jackendoff (1972:49) also notes that while some adverbs exhibit discernible changes in meaning—that is, clausal or manner readings—depending on their positions in a clause, other adverbs do not.

tations of the two subclasses of adverbs are considered. Previous studies have claimed that these adverbs are typically predicated of the subject DP that c-commands them.

First, it has been noted in the literature that AO and MA adverbs are not construed with the object argument of the verb even if it refers to a sentient entity (McConnell-Ginet 1982, Déchaine 1993, Wyner 1998), as shown in 15.

(15) a. The doctor examined John *carefully*.   (Jackendoff 1972:83)
     b. John left Mary *sadly*.   (Geuder 2004:156)

The absence of an object-oriented reading in these examples has often been attributed to the semantic properties of the object: it does not count as controlling the eventuality (Ernst 2002, Geuder 2004) or having volitionality (Wyner 1998).

AO and MA adverbs, however, can be construed with the argument generated as the object if it becomes the subject of a passive, which is why they are called subject-oriented adverbs. For example, the adverbs occur immediately after the subject of a passive and are predicated of it in 16. Ernst (2002:107) notes that Debbie is interpreted as the agent of being hired by the contractor in 16b in that 'she brought this event about in some way or at least had the option of refusing'.

(16) a. John *cleverly* has been examined by the doctor.   (Jackendoff 1972:82)
     b. Debbie *willingly* was hired by the contractor.   (Ernst 2002:106)

A question arises as to why the subject of a passive, which is selected as the theme or patient argument of the verb, counts as the agent or experiencer argument of the adverbs. It has often been claimed in the literature that the surface subject of a passive is assigned a kind of secondary agenthood or volitionality by the passive auxiliary *be* (McConnell-Ginet 1982, Wyner 1998, Ernst 2002) or through coindexation between the subject, INFL, and VP (Roberts 1986).

Furthermore, AO and MA adverbs can be construed not only with the surface subject but also with the deep subject of a passive, that is, the agent argument of the main verb occurring as the passive participle. For example, in 17, where the adverbs occur between the passive auxiliary and the main verb, they can be associated with either the surface subject or the DP in the *by*-phrase.

(17) a. John was *carefully* examined by the doctor.   (Jackendoff 1972:83)
     b. Debbie was *willingly* hired by the contractor.   (Ernst 2002:106)

When the adverbs are construed with the deep subject, they are assumed to be predicated of the DP in the *by*-phrase (Roberts 1986) or an empty category (e.g. PRO) generated as the external argument of the main verb, coindexed with the DP in the *by*-phrase (see Fukui & Speas 1986, Bowers 2002, Ernst 2002).

Moreover, on the basis of the interpretations of AO and MA adverbs occurring in passives, it is proposed that a certain structural condition is imposed on the DP that these adverbs are predicated of. In particular, when these adverbs precede the passive auxiliary as in 16, they cannot be construed with the agent argument of the verb, in contrast with the adverbs occurring after the auxiliary as in 17. Ernst (2002) argues that this is because the adverbs in 16 are in a higher position than the agent, which is assumed to be lower than the passive auxiliary, and proposes the condition in 18.[4]

(18) Structural condition on subject-oriented interpretation: The DP (in an A-position) denoting a subject-oriented adverb's agent argument must c-command the adverb.   (Ernst 2002:107)

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[4] In Ernst 2002, the condition in 18 is meant to apply to experiencer arguments of MA adverbs as well.

A similar analysis is proposed for these adverbs by Frey (2003), who claims that what we call AO adverbs are subject to the constraint in 19 and what we call MA adverbs are subject to the constraints in 20.

(19) The base position of a subject-oriented sentence adjunct is c-commanded by an A-position of the subject it is semantically related to. (Frey 2003:196)

(20) The base position of a mental-attitude adjunct
    a. is minimally c-commanded by the base position of the highest-ranked argument of the main predicate, or
    b. c-commands the maximal projection of the main predicate and is c-commanded by the highest-ranked argument in the main predicate's extended projection. (Frey 2003:183)

Constraint 20a is supposed to apply to MA adverbs merged with a projection of the main verb, whereas 20b is supposed to apply to those adverbs occurring in the domain of auxiliary verbs and related to the subject of a passive, as we saw in 16b. It is correctly predicted under these conditions that AO and MA adverbs can be construed with the deep subject of a passive only when the adverbs occur below the passive auxiliary.

Note that some questions remain as to these conditions on the arguments associated with AO and MA adverbs. Ernst (2002) suggests that the notion of agent relevant to AO adverbs does not necessarily correspond to the Agent in thematic terms, as noted above. It is not stated, however, what arguments can then be agents for AO adverbs or experiencers for MA adverbs. This makes it difficult to predict which DPs these adverbs are predicated of. In contrast, Frey (2003) provides more explicit conditions on the arguments that are construed with these adverbs, that is, the subject or the highest-ranked argument. It is not explained, however, why these arguments in certain configurations are selected by the adverbs. In the next section, I propose an alternative condition on the arguments of these adverbs that can account for these problems.[5]

To summarize, some structural conditions proposed in previous studies to account for the interpretations of subject-oriented adverbs in active and passive sentences have been considered. Though these adverbs are assumed to be predicated of the subject or highest argument that c-commands them, there is no consensus on which argument counts as such or why the adverbs are construed with it.

4. Subject-oriented adverbs in locative pp constructions. We now consider the questions about subject-oriented adverbs raised in the last section through an examination of those adverbs occurring in locative PP constructions. First, we look at the core data concerning the relation between the positions of those adverbs and their interpretations (§4.1) and consider the syntactic structure of the constructions (§4.2). I then propose a theory of the predication of adverbs and an analysis of the data presented in §4.1.

4.1. Core data. As noted in §3, it is generally held that AO and MA adverbs are associated with the subject DP, which can be either the surface or deep subject. However, there is a circumstance in which MA adverbs seem to be associated with the object DP. When they appear between the object and the PP complement in locative PP constructions, they can be construed with either the subject or object. The PP can refer to the goal, the location, or the source of the object argument, as shown in 21. It should also be noted that the availability of object-oriented reading seems to be subject to vari-

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[5] The question of how the orientation of subject-oriented adverbs is determined is also left open for future research by Geuder (2004:157).

ation among speakers depending on the choice of adverbs and verbs, an issue to which we return in §4.3.[6]

    (21) a. John sent Bill *reluctantly* to the doctor.   (John/Bill)
        b. Mary put Susie *calmly* on the bed.   (Mary/Susie)
        c. Mary dragged her child *unwillingly* out of the bed.   (Mary/her child)

Although the existence of this kind of example is noticed in Geuder 2004 (see §1), why MA adverbs can have object-oriented reading in these particular circumstances is not accounted for. The ambiguous readings are also found when the adverbs occur after the PP, as illustrated in 22.[7]

    (22) a. John sent Bill to the doctor *reluctantly*.   (John/Bill)
        b. Mary put Susie on the bed *calmly*.   (Mary/Susie)
        c. Mary dragged her child out of the bed *unwillingly*.   (Mary/her child)

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[6] I thank Lisa Travis (p.c.) for first bringing to my attention the availability of object-oriented readings of MA adverbs in locative PP constructions. I consulted twenty English speakers about the interpretation of MA adverbs in the sentences in 21 or similar ones. Given the meanings of these adverbs discussed in §3.1, I asked them whose mental state or whose manifestation of a mental state the adverbs describe in the sentences. On the basis of their answers, the arguments with which the adverbs in question can or cannot be associated are shown in parentheses after the example sentences in the text. Among the twenty speakers, fifteen answered that the adverbs in 21, or at least one of them, can be construed with either the subject or the object, whereas five replied that they can only be construed with the subject. The grammatical statuses given to the examples in the text represent those for tolerant speakers. It was also noted by a referee that the reported pattern of interpretations of the adverbs in 21 and similar examples was not a robust one for five speakers (s)he consulted. Variations were also seen among the fifteen speakers who found the object-oriented reading available in 21 with respect to whether construal with the subject or the object is preferred in each example. Some possible factors causing these variations are discussed in §4.3.

    A few of the speakers I consulted about example 21 found the sentences anomalous because of the position of the adverbs, regardless of whether they are construed with the subject or the object. According to a referee, this intuition is also shared by some of the speakers (s)he consulted. Ernst (2002:206ff.) suggests that this form of sentence, having a noncanonical order with the PP complement preceded by an adjunct, is derived by rightward movement of the PP across the adverb. This analysis can be tested, given that an extraposed item constitutes an island for extraction (see Baltin 1984, Lasnik & Saito 1992, Frey 2003). I consulted four speakers about the examples in (i), where an MA adverb follows the PP (ia) or precedes it (ib) and extraction occurs out of the PP.

    (i) a. (*)Who did John send the boys to reluctantly?
       b. (*)Who did John send the boys reluctantly to?

    Two speakers found (ia) better than (ib). However, the other two found (ib) fine, and one of them even preferred (ib) to (ia). These results suggest that there is variation among speakers in whether the adverb-PP order in example 21 can be base-generated or must be derived by rightward movement. Moreover, it is noted by Ernst (2002:233) that extraposition of a complement is less favored compared with that of an adjunct. I speculate that some of those who need to apply such an operation in 21 find the order substandard. See also n. 1 for this matter.

    [7] I consulted ten English speakers about the examples in 22 or similar ones with MA adverbs in sentence-final position. Six of them replied that the adverbs, or at least one of them, can be construed with either the subject or the object, whereas four responded that they can only be construed with the subject. Some of the six speakers answered that object-oriented reading is easier to obtain when the adverb occurs between the object and the PP, as shown in 21. It is conceivable that the interpretations of these adverbs are affected by intonation. Geuder (2004) notes that the sentence-final adverb in (i) can be interpreted either inside or outside the scope of negation, depending on intonation. In particular, when the adverb has an accent of its own and is preceded by a comma, it takes wide scope.

    (i) John didn't kiss his wife(,) deliberately.   (Geuder 2004:136)

It is also noted by Emonds (1976:155) that postverbal adverbs preceded by a comma can only occur in the matrix clause. It seems possible that the adverbs in 22, being in sentence-final position, are more likely to be separated by a comma than those in 21.

These examples also look curious in light of the recent analyses of MA adverbs discussed in §3: these adverbs are assumed to be predicated of an experiencer argument (Ernst 2002) or the highest-ranked argument of the predicate (Frey 2003). The object arguments in locative PP constructions are usually not taken as experiencers. Nor are they the highest-ranked argument of the verb. Thus, these examples seem to be worth close examination in studying the nature of these adverbs.

MA adverbs are unambiguously construed with the subject when they occur in sentences involving simple (two-place) transitive verbs, as we saw in 15b. The pattern does not change even if an adverbial PP follows the object in these sentences: the MA adverb is still associated with the subject, and not with the object, as shown in 23.

    (23) a. Mary hit John (on the stage) *reluctantly* (on the stage). (Mary/*John)
        b. Mary kissed the child (for joy) *willingly* (for joy).   (Mary/*the child)

This fact suggests that the object-oriented reading of MA adverbs in locative PP constructions in 21 and 22 is tied to some relationship, such as predication, between the object and the following PP.[8]

Note that the object-oriented reading of MA adverbs also depends on their position in a clause. If they occur in clause-initial position or auxiliary position, that is, between the subject and the main verb, they can only be construed with the subject DP, as shown in 24 and 25.[9]

    (24) a. *Reluctantly*, John sent the boys to the doctor.   (John/*the boys)
        b. *Calmly*, Mary put her children on the bed.   (Mary/*her children)
    (25) a. John *reluctantly* sent the boys to the doctor.   (John/*the boys)
        b. Mary *calmly* put her children on the bed.   (Mary/*her children)

This fact indicates that the object-oriented reading of MA adverbs is syntactically conditioned: it is available only when the adverbs occur after the object.

Furthermore, AO adverbs, in contrast to MA adverbs, cannot be associated with the object even when they occur in postverbal position in locative PP constructions. As illustrated in 26 and 27, the adverbs are unambiguously construed with the subject argument regardless of whether they have the clausal or the manner reading discussed in §3.1.[10]

    (26) a. John sent Bill *cleverly* to the doctor.   (John/*Bill)
        b. Mary put Susie *stupidly* on the bed.   (Mary/*Susie)
        c. Bob dragged Fred *rudely* out of the room.   (Bob/*Fred)

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[8] The question of whether the predicative relationship between the object DP and the PP complement is mediated by the lexical verb has been an issue: in particular, whether the DP and the PP are selected as arguments by the verb. Larson (1988) and Hale and Keyser (1993) hold the view that they are, whereas den Dikken (1995, 2006) claims that they are not. We see evidence in §4.2 below that the DP is an argument of the verb. See n. 16 for comments on the status of the PP.

As we see in §5.2 below, some speakers allow MA adverbs to occur between the object and a resultative AP to a marginal degree and to be construed with either the subject or the object. This fact also supports the view that the object-oriented reading of these adverbs depends upon the presence of a predicative phrase after the object.

[9] MA adverbs in clause-initial position tend to have parentheticalization, which is indicated with a comma in 24, as noted by Ernst (2002:405). We return to these adverbs in §4.3.

[10] I consulted ten English speakers about the examples in 26 and 27 or similar ones involving AO adverbs. Given the semantic properties of these adverbs discussed in §3.1, I asked who is interpreted as having the property designated by the adjective related to the adverb, for example, *clever* or *stupid*, with respect to the entire event or the manner in which the person acts. All replied that the referent of the subject is understood as having the property in question and it is impossible or difficult for the referent of the object to be interpreted that way.

(27) a. John sent Bill to the doctor *cleverly*.   (John/*Bill)
    b. Mary put Susie on the bed *stupidly*.   (Mary/*Susie)
    c. Bob dragged Fred out of the room *rudely*.   (Bob/*Fred)

This difference between AO and MA adverbs has not been noted in previous studies, as far as I know. It seems to be important for the study of these adverbs, however, since the two subclasses are often not distinguished explicitly with respect to the arguments they are predicated of (McConnell-Ginet 1982, Ernst 2002).[11]

    To summarize, I have observed that there are systematic relations between the positions of the adverbs and their interpretations in locative PP constructions. MA adverbs are unambiguously construed with the subject when they occur in preverbal position, whereas they can be construed with either the subject or the object when they occur in postverbal position. In contrast, AO adverbs are always associated with the subject regardless of their position. These observations all call for an account.

4.2. The syntactic structure of locative pp constructions. It is argued in this section that locative PP constructions involve a biclausal structure, as illustrated in 3. First, I provide evidence that the object DP itself is the direct object of the verb rather than the subject of a complement clause. Next, it is proposed that the PP is contained in a small clause and predicated of a phonetically empty subject controlled by the object DP. It is also claimed that the small clause is headed by a functional category mediating the predication relation.

    The object dp as a direct object. Given that the object DP in locative PP constructions, unlike the object of simple transitive verbs, can be interpreted as the subject argument of MA adverbs, it is possible that the DP in the constructions occurs in a different structural position from ordinary direct objects. In particular, it is claimed in some studies (see den Dikken 1995, 2006) that the object DP and the locative PP in the constructions constitute a small clause like the standard small clause complements of verbs such as *consider*, as shown in 28.

(28) a. John considered [$_{SC}$ Bill honest]
    b. John sent [$_{SC}$ Bill to the doctor]

One might then claim that the object-oriented reading of MA adverbs in 21 and 22 can be accounted for under this analysis on the basis of the subject-oriented nature of the adverbs: the object DP is actually the subject of a small clause and the adverbs are predicated of the subject. In this section, I argue against such a view by considering two syntactic phenomena that are used to test whether a DP is the direct object of a verb: one is extraction and the other is nominalization. It is shown that the object DP in locative PP constructions behaves like a direct object with respect to these tests even when an MA adverb is construed with it.

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[11] Ernst (2002:66) gives *deliberately* and *intentionally* as examples of MA adverbs (see also Wyner 1998). I consulted seven speakers about the interpretations of these adverbs when they occur between the object and the PP in locative PP constructions, as shown in (i). Six speakers replied that they can only be construed with the subject, whereas one responded that *deliberately* can be associated with either the subject or the object but *intentionally* can only be with the subject.

    (i) a. John sent Bill *deliberately* to the doctor.   (John/(*)Bill)
       b. Mary put Susie *intentionally* on the bed.   (Mary/*Susie)

Thus, for most speakers consulted, the pattern of interpretations of these adverbs is similar to that of AO adverbs in 26 and 27. It is notable that they are semantically more comparable to AO adverbs than other MA adverbs: their argument is understood as more agentive, referring to an entity that can control the eventuality (see §3.1). These examples then suggest that the crucial difference between the adverbs that can receive object-oriented reading and those that cannot is concerned with agentivity rather than whether they describe a mental state or some quality related to such a state. See also §4.3 and n. 23 and n. 25 for these adverbs.

First, let us look at examples involving extraction. It is known that the subject of the standard small clause construction constitutes an island for extraction, exhibiting a so-called SUBJECT CONDITION effect, whereas a true direct object does not, as shown in 29 (see also Kayne 1984, Stowell 1991).

(29) a.   Who did you visit a friend of yesterday?
     b. *Who did you believe a friend of satisfied?   (Beck & Johnson 2004:102)

Note that in locative PP constructions, an element can be extracted from the object DP (see Beck & Johnson 2004) and an MA adverb can receive object-oriented reading at the same time, as shown in 30.

(30) a.   Who did you send a child of *reluctantly* to the doctor?
          (you/a child of whom)
     b.   Who did you put a child of *calmly* on the bed?   (you/a child of whom)

The examples in 30 indicate that the object-oriented reading of MA adverbs is available in locative PP constructions with the object generated as the direct object of a verb rather than as the subject of a small clause.

Next, we consider facts about nominalization. It is observed that in deverbal nominalizations, the direct object of a verb can appear as an *of*-phrase, as shown in 31a (Ross 1974, Kayne 1984). However, the subject of a small clause cannot surface inside an *of*-phrase, as illustrated in 31b.[12]

(31) a.   The devouring of vast quantities of junk food takes no time at all.
     b. *The considering of John crazy is widespread.

(see Carrier & Randall 1992:199, 203)

The object DP in locative PP constructions behaves like a direct object with respect to this phenomenon, too. The DP can appear as an *of*-phrase in nominalizations, as shown in 32 (see Kayne 1984). Moreover, notice that the MA adverbs occurring in the nominals can receive object-oriented reading.

(32) a. the sending of John *reluctantly* to the doctor   (the sender/John)
     b. the putting of the child *calmly* on the bed   (the putter/the child)

The examples in 32 provide further evidence that the object-oriented reading of MA adverbs is available when the object originates as the direct object of a verb rather than as the subject of a small clause. Thus, we cannot hold the view mentioned at the outset of this section that such an interpretation of the adverbs is possible in 21 and 22 because the object is generated as the subject of a small clause.

THE PP AS THE PREDICATE OF A COMPLEMENT CLAUSE. In this section I argue that locative PP constructions involve a small clause in which the PP is predicated of a phonetically empty pronoun controlled by the object DP, as illustrated in 3. This analysis is supported by considering two kinds of data: the distribution of floating quantifiers (FQs) and the restitutive reading of the adverb *again*.

First, let us look at the data for FQs. In 33, the FQs *all* and *both* are interpreted as modifying the subject DP of the main clause (33a) or the embedded clause (33b).

(33) a.   The students have *all* read the book.
     b.   I believe the soldiers *both* to have left.

Following some recent studies (Doetjes 1997, Fitzpatrick 2006, Rooryck & Vanden Wyngaerd 2011), I assume that these FQs are quantified noun phrases, containing a phonetically empty pronoun that represents the domain of quantification. Moreover,

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[12] I owe the example in 31b to a referee.

FQs are generated in an adverbial position and bind an empty category in an argument position that is associated with the overt DP modified by the FQ, as illustrated in 34.[13]

    (34) [$_{DP_i}$ … [$_{XP}$ [$_{QP}$ Q pro$_i$] [$_{XP}$ … e$_i$ …]]]   (see Doetjes 1997:202)

The projection to which the FQ adjoins, that is, XP in 34, functions as the scope of the FQ. Under this analysis, *all* in 33a is adjoined to vP (or the maximal projection of the head introducing the subject argument) and binds a trace of the subject DP, as illustrated in 35.

    (35) The students$_i$ have [$_{vP}$ [*all* pro$_i$] [$_{vP}$ t$_i$ read the book]]

It has been observed that FQs in English cannot modify the object DP of a verb if no constituent occurs after the DP other than the FQ, as shown in 36, or just an adverbial element follows, as in 37 (see Maling 1976, Baltin 1995).

    (36) a. *I called the men *all/both/each*.   (Maling 1976:714)
          b. *He read the books *all*.   (Baltin 1995:210)
    (37) a. *I saw the men *all* yesterday.
          b. *She found the missing books *both* quickly.   (Maling 1976:716)

The ungrammaticality of these examples is also predicted given that the object DP remains in its original position and there is no empty category for the FQ to bind.[14]

    It has also been known that FQs can modify the object DP if the object is followed by a constituent having a predicative relation to it. The locative PP constructions are one such example, as illustrated in 38.

    (38) a. Mary put the books *all/both/each* on the proper shelf.   (Maling 1976:712)
          b. I gave the books *all* to the library.   (Baltin 1995:219)

Given that FQs cannot be associated with the object DP itself, as we have seen, these examples suggest the following: (i) there is an argument position related to the object below the object DP, and (ii) there is a projection above the argument position and below the object over which FQs can take scope. The structure of locative PP constructions can have these specifications if it involves a small clause in which the PP is predicated of a PRO controlled by the object, as illustrated in 3. The FQs in 38 are then assumed to be adjoined to the small clause and to bind PRO, as illustrated in 39 (see Bowers 1993:625).

    (39) [$_{vP}$ Mary put [$_{VP}$ the books$_i$ [$_{SC}$ [$_{QP}$ Q pro$_i$] [$_{SC}$ PRO$_i$ on the proper shelf]]]]

The FQ is interpreted as modifying the object since PRO is controlled by the object.

    Next, consider the data for interpretations of the adverb *again*. Beck and Johnson (2004) observe that locative PP constructions involving *again* can be ambiguous. For example, the sentence in 40 can be paraphrased as either 40a or 40b.

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[13] There have been two major approaches to FQs like those in 33 in the literature. One is called the stranding analysis, according to which FQs are adjoined to the DP they modify and are stranded by the movement of the DP (Sportiche 1988, Bošković 2004). The other is the adverbial analysis, which claims that FQs are middle-field adverbs, for example, VP-modifiers (Klein 1976, Dowty & Brodie 1984). I adopt the adverbial analysis here, given recent studies indicating that some examples of FQs are not explained under the stranding analysis (Fitzpatrick 2006, Rooryck & Vanden Wyngaerd 2011).

[14] If it is assumed that the object DP undergoes short object shift in English, the ungrammaticality of the examples in 36 and 37 would be attributed to the absence of a projection to which the FQ can adjoin to take scope. See Bowers 1993 for arguments that FQs can only be adjoined to propositional categories such as PredP and IP. It is known that FQs can occur after a pronominal object without being followed by any constituent.

    (i) I like them *all*.   (Maling 1976:711)

Maling (1976) argues that this kind of FQ is derived by a rule that applies only to pronouns. See Bošković 2004 for a different approach.

(40) Thilo sent the plane to Yubara again.
  a. Thilo sent the plane to Yubara, and that had happened before.   (repetitive)
  b. Thilo sent the plane to Yubara, and the plane had been in Yubara before.
                                            (restitutive) (Beck & Johnson 2004:117)

Following von Stechow (1996), Beck and Johnson (2004) assume that the semantic contribution of *again* is the same on both readings in 40, that is, to indicate repetition. The difference between the two readings is in what event is repeated. On the repetitive reading, the whole event including a causal and a development component is repeated. On the restitutive reading, however, only the result state of the event is repeated. Furthermore, Beck and Johnson argue with von Stechow that this difference in the interpretations derives from a difference in the adjunction site of *again* in syntactic structure. They propose that locative PP constructions like 40 involve a small clause in which the PP is predicated of a PRO controlled by the object, as I have argued above, and the small clause denotes the result state ('the plane is in Yubara' in 40). Then, they claim that the repetitive reading yields when *again* adjoins to the outermost VP, as shown in 41a. By contrast, when *again* adjoins to the small clause, as in 41b, the restitutive reading arises such that the entity referred to by PRO is restored to the location designated by the PP.

(41) a. $[[_{vP}$ Thilo sent $[_{VP}$ the plane$_i$ $[_{SC}$ PRO$_i$ to Yubara$]]]$ again$]$
  b. $[[_{vP}$ Thilo sent $[_{VP}$ the plane$_i$ $[_{SC}$ PRO$_i$ to Yubara$]$ again$]]]$
                                            (see Beck & Johnson 2004:118)

The same ambiguity about *again* that was seen in 40 is found in another example of locative PP constructions, as shown in 42.

(42) Mary put the baby on the bed again.
  a. Mary put the baby on the bed, and that had happened before.
  b. Mary put the baby on the bed, and the baby had been on the bed before.

Given that the object DP in locative PP constructions is the direct object of the verb rather than the subject of a complement clause, as argued above, the availability of the restitutive reading of *again* in these examples provides further support for the view that the constructions contain a small clause in which PP is predicated of a PRO anaphoric to the object.

THE STRUCTURE. It has been argued above that locative PP constructions involve a small clause in which the locative PP is predicated of a PRO controlled by the direct object of the verb. On the basis of these arguments, I present the syntactic structure of the constructions below.
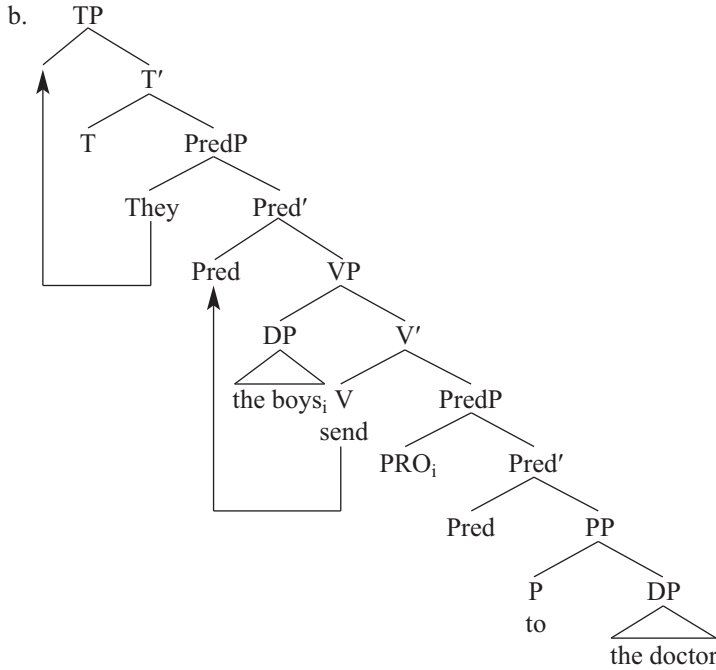
In arguing that the PP in locative PP constructions is the predicate of a small clause, I have not specified the category of the clause. It has been claimed in some previous works that PPs can generate their subject argument in Spec, P (Stowell 1983). However, Baker (2003:311–15) argues against such a view on the basis of their distribution and the cross-linguistic observation that PPs usually cannot be used as the primary predicate without the support of a truly verbal element. Given this, I assume with Bowers (1993, 2001) that a functional category called Pred (Pr for Bowers) mediates between the PP and PRO in locative PP constructions.[15] Bowers proposes that Pred constitutes a proposition by se-

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[15] Noting that PPs cannot be used as the primary predicate of a matrix clause with a copular element alone, Baker (2003:315) suggests that the presence of Pred is not enough to create predicates out of them in most languages. Since PPs occur as the predicates of simple copular sentences in English, however, I assume that it is sufficient for them to be selected by Pred in the language. I leave for future research the question of why English is different from other languages in this respect.

lecting a predicative expression of a lexical category as the complement and merging the subject in Spec, Pred. The category of the small clause in locative PP constructions is then considered to be PredP. Moreover, I assume with Bowers that the agent argument of the main verb is also merged in the specifier of a (higher) Pred that selects VP as its complement (cf. Chomsky 1995, Kratzer 1996). Given that the agent argument moves to Spec, T and V moves to Pred, the example of locative PP constructions in 43a is therefore assumed to have the structure in 43b.

(43) a. They sent the boys to the doctor.
     b.

Note that the object DP is generated as the direct object of the main verb in this structure, which is consistent with the analysis of the DP provided above.[16]

It is assumed that, as shown in 43b, the complement clause in locative PP constructions does not involve any inflectional categories. There are two pieces of evidence for this analysis. The first is concerned with the interpretation of time adverbials. In the complex causative construction with *make* as the matrix verb and another lexical verb,

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[16] A referee posed the question of why the verbs in locative PP constructions select a PredP rather than a bare PP as their complement. Although I have to leave detailed investigation of this matter for future research, it seems possible that PPs are not intrinsic arguments in the sense that they cannot receive theta-roles from verbs the way DPs can. This view is suggested by Baker (2003:311ff.), who notes that PPs are excluded from canonical argument positions across languages (including English) and occur as adjuncts or as the complement of some kind of copular verb. By contrast, PredP is assumed to be able to receive a theta-role from verbs (Baker 2003:149–50).

A referee also raised the question of why Pred selects a PP instead of a VP in the complement clause in locative PP constructions. It is noticeable that so-called resultative serial verb constructions found in West African and South East Asian languages are assumed to have the supposed structure in which a transitive verb combines with another verb as a secondary predicate. Baker (2003:227ff.) suggests that such constructions are not attested in Indo-European languages, including English, because verbal inflection cannot be realized in morphologically appropriate forms in their structure. The same problem would arise if locative PP constructions were converted to locative VP constructions.

the causing event and the caused event can be modified separately by two different time adverbials, as shown in 44 (see Rothstein 1999). It is impossible, however, for two such adverbials to cooccur in locative PP constructions, as in 45.

(44) a. John made Bill go to the doctor at 5:00 pm by talking to him at noon.
      b. John made the children be in bed at 9:00 pm by scolding them in the morning.
(45) a. *John sent Bill to the doctor at 5:00 pm by talking to him at noon.
      b. *Mary put the children in bed at 9:00 pm by scolding them in the morning.

Given that temporal adverbials modify an event variable in T (see Stowell 1982, 1991), this contrast suggests that the complement clause of the *make*-causative involves T, whereas that of locative PP constructions does not.

The second piece of evidence for the absence of inflectional elements in the complement clause of locative PP constructions comes from the distribution of negation. Ritter and Rosen (1993) observe that two instances of *not* can appear in the complement of the *make*-causative, though some difficulty accompanies processing them, as shown in the second conjunct in 46. They claim that one is clausal negation, occurring as an inflectional head, and the other is adverbial negation, which is adjoined to some projection of V and stressed.

(46) ?(?)John didn't make Mary NOT choose an expensive present, but he didn't make her not NOT choose one either.   (Ritter & Rosen 1993:539)

Ritter and Rosen argue that this fact provides a piece of evidence that the complement clause of the *make*-causative is headed by an inflectional category, which is consistent with the analysis of the construction based on the examples involving time adverbials in 44. Now note that although adverbial negation can appear between the object DP and the PP in locative PP constructions, as shown in 47, it is impossible to have two consecutive *not*s there, as shown in 48.

(47) a. John sent Susie NOT to the doctor, but to the dentist.
      b. Mary put the children NOT on the bed, but on the sofa.
(48) a. *John didn't send Susie NOT to the doctor, but he didn't send her not NOT to the doctor either.
      b. *Mary didn't put the children NOT on the bed, but she didn't put them not NOT on the bed either.

Thus, these examples of negation provide further support for the view that locative PP constructions do not involve inflectional categories in the complement clause, as shown in 43b.

Before closing this section, let us look at examples indicating that the hierarchical relation between the object and the PP illustrated in 43b still holds even when an adverb intervenes. As shown in 49, when the object DP licenses a negative polarity item contained in the PP or binds a pronominal variable or anaphor in it, MA adverbs occurring between them can still be construed with either the subject or the object argument.[17]

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[17] A referee noted that the subject-oriented reading of the adverb in 49a, which involves negative polarity licensing, is difficult to obtain, though it is still marginally possible. This might be attributed to interference caused by negation when the MA adverb is interpreted as modifying the main verb across the negation in surface word order. It is also noted by Ernst (2002:421) that negation induces a disruption effect in the topicalization of adverbs. However, there seems to be variation among speakers in the degree of the effect. One of the speakers I consulted found no conspicuous difference in the availability of subject-oriented reading between examples involving negative polarity licensing as in 49a and examples without such polarity items.

(49) a. Mary sent no patient *reluctantly* to any doctor.   ((??)Mary/no patient)
      b. Mary put every child$_i$ *calmly* on his$_i$ bed.   (Mary/every child)
      c. Bill dragged the boys$_i$ *unwillingly* out of each other$_i$'s rooms.
          (Bill/the boys)

By contrast, the object of the preposition cannot license a negative polarity item contained in the object of the verb or bind a pronominal variable or anaphor in it with an intervening MA adverb, as shown in 50.

(50) a.   *Mary sent any patient *reluctantly* to no doctor.
      b. ??The doctor put her$_i$ baby *calmly* on every mother$_i$.
      c.   *Bill dragged each other$_i$'s owners *unwillingly* out of the houses$_i$.

Given that the dependent elements in these examples are required to be c-commanded by their licenser or binder, these observations suggest that the PP is in a lower position than the object of the verb in these constructions, as shown in 43b.

   To summarize, it has been argued first on the basis of facts about extraction and nominalization that the object DP in locative PP constructions is the direct object of the verb. Next, taking into account the distribution of FQs and the restitutive interpretation of *again*, it has been proposed that locative PP constructions involve a small clause in which the PP is predicated of a phonetically empty pronoun controlled by the object DP. Moreover, it has been claimed that the small clause is headed by a functional category that mediates the predication relationship between the PP and the empty pronoun.

   4.3. THE INTERPRETATIONS OF MA AND AO ADVERBS IN LOCATIVE PP CONSTRUCTIONS. Given the structure of locative PP constructions presented above, I now propose an analysis of the interpretations of MA and AO adverbs discussed in §4.1, arguing that their interpretations are predictable under a general locality condition on predication.
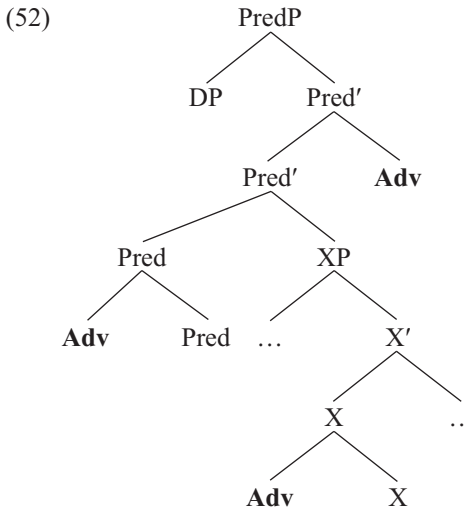
   THE STRUCTURE OF PREDICATION. As discussed in §3.1, both MA and AO adverbs are predicates that specify a relation between an event and a participant in it. It has been claimed in recent studies (Bowers 1993, 2001, Baker 2003, den Dikken 2006) that predication relationships in general are mediated by a functional category in phrase structure. Bowers (1993) proposes that a functional head Pr, labeled Pred here, selects the maximal projection of a lexical category serving as the predicate in the complement position and takes the subject DP in Spec, Pred, as illustrated in 51. It was noted in §4.2 that locative PP constructions are also assumed to involve this structure (see 43).

(51)   PredP
            /   \
          DP   Pred′
                  /   \
               Pred   XP   X = {V, A, N, P}   (Bowers 1993:595)
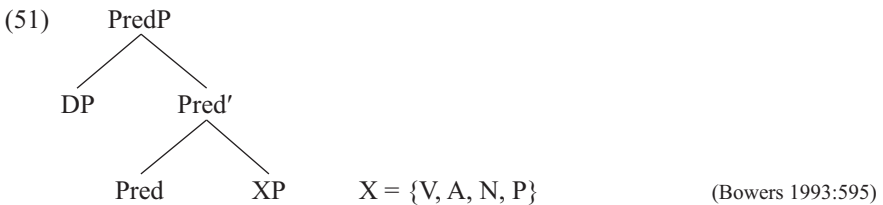
Baker (2003:36) suggests that Pred does not have its own theta-role, but creates a theta-role out of the projection of the lexical category, that is, XP in 51: the precise theta-role is a function of the semantic value of XP and that of Pred. Thus, the theory of predication illustrated here is an extension of the proposal that the external arguments of verbs are introduced by a functional category such as v (Chomsky 1995) and Voice (Kratzer 1996) and the theta-role of the arguments derives from the conjunction of the functional head and the projection of the lexical verb.

   It seems reasonable to assume that MA and AO adverbs, being lexical predicates, are also associated with DPs through the mediation of Pred. However, since they never

appear as independent predicates in sentences (*John was reluctantly/stupidly to spend all his money*), I propose that the predication of the adverbs is parasitically licensed by the Pred head selecting an independent predicate, that is, a primary predicate. In particular, I argue below that MA and AO adverbs in locative PP constructions are merged with structure by adjoining to one of three positions, as illustrated in 52: (i) the Pred head, (ii) a projection of Pred (right-adjunction of the adverbs in sentence-final position), or (iii) the lexical head of the complement of Pred. I claim that the adverbs in all of these positions enter into a predication relation to the DP in Spec, Pred.

(52)

```
                    PredP
                   /     \
                 DP       Pred′
                         /      \
                      Pred′      Adv
                     /     \
                  Pred      XP
                 /    \    /   \
              Adv    Pred …     X′
                              /    \
                             X      …
                           /   \
                         Adv    X
```

As discussed below, adjunction to each of these positions is justified either conceptually or empirically.

First, I assume that predication relationships are established in the local domain defined in 53, which is based on den Dikken 2006:12.[18]

(53) The locality of predication: The Pred accommodates the predicate and the subject in its minimal domain.

The notion of 'minimal domain' in 53 is defined in 54, based on Chomsky 1995:178 (see den Dikken 2006:252, n. 3).

(54) Suppose α is a head. Then:
   a. Max (α) is the least full-category maximal projection dominating α.
   b. The DOMAIN S(α) of α is the set of nodes contained in Max (α) that are distinct from and do not contain α.
   c. The MINIMAL DOMAIN Min (S(α)) of α is the smallest subset K of S(α) such that for any γ ∈ S, some β ∈ K reflexively dominates γ.

Given this, both of the adverbs adjoined to Pred or its projection and the DP in Spec, Pred in 52 are in the minimal domain of Pred. Thus these adverbs can be predicated of the DP.

Moreover, as for the adverb adjoined to the head of the complement of Pred, that is, the one adjoined to X in 52, I claim that it forms a kind of complex predicate with the

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[18] Den Dikken (2006) proposes that a predicate can be connected to its subject by any functional category if it is in the local domain of the category, as defined in 53. His view is different in this respect from the one held in Bowers 1993 and the present study, according to which there is a specific category called Pred that mediates predication (see den Dikken 2006:15).

lexical head. Since the maximal projection of the lexical head (i.e. XP) is in the minimal domain of Pred in 52, the adverb adjoined to X is also assumed to enter into a predication relation with the DP in Spec, Pred. Nishiyama (1998) argues that a similar kind of complex predicate relation is involved in serial verb constructions found in Kwa languages and V-V compounds in Japanese. He notes that in both constructions, more than one lexical verb appears in a simplex clause containing one subject and one tense value, without any overt marker of coordination or subordination, as shown in 55 (see Collins 1997b). The serial verb construction in 55a involves two transitive verbs, and the V-V compound in 55b consists of an unergative and a transitive verb.

(55) a. M-a da   nu   du.
       I-FUT cook thing eat
         'I will cook something and eat it.'   (Collins 1997b:490)
     b. John-wa zaisan-o   subete nomi-tubusi-ta.
       John-TOP fortune-ACC all   drink-use.up-PST
         'John drank his fortune away.'   (Nishiyama 1998:194)

Nishiyama argues that the two constructions fundamentally have the same syntactic structure. In particular, the two verbs appear as independent heads and merge with their internal arguments (if any) in their own projection, but the verbs share the same external argument introduced by a functional category above their projections (see Kratzer 1996: 119 for the same view on serial verb constructions). These constructions indicate that more than one lexical head (or its projection) stacked in the complement position of Pred can be predicated of a single DP in Spec, Pred.

Under this analysis, the lexical-semantic properties of AO and MA adverbs discussed in §3.1 (i.e. that they are two-place predicates taking an event and an agent or experiencer) are accounted for in the following way. First, following Kratzer's (1996) analysis of external arguments, I assume that both Pred and the lexical head X in 52 select an event argument, and the event arguments of the two heads are identified by a conjunction operation called EVENT IDENTIFICATION. Then, the event arguments of the adverbs in 52 are also assumed to be identified with the corresponding argument of the head (or its projection) to which the adverbs are adjoined. Moreover, I claim that the agent or experiencer role is created out of the adverbs by Pred through event identification and assigned to the DP in 52. Note that the role derived from the adverbs, which is called an adjunct theta-role in Zubizarreta 1982, is independent of the theta-role coming from the primary predicate. Thus, the DP in 52 is assumed to receive an ordinary theta-role from the primary predicate X and an adjunct theta-role from an adverb.

MA ADVERBS. Let us consider how the interpretations of MA adverbs in locative PP constructions are accounted for under the theory of predication introduced above. First, we look at the examples where the adverbs occur in postverbal position, that is, between the object and the PP, as shown in 56a, or after the PP, as in 56b. As seen in 21 and 22, the adverbs can receive either subject-oriented or object-oriented reading in these circumstances.

(56) a. John sent Bill *reluctantly* to the doctor.   (John/Bill)   [= 21a]
     b. John sent Bill to the doctor *reluctantly*.   (John/Bill)   [= 22a]

It is noted in the literature that adverbs in English cannot accompany post-head material when they occur in a preverbal position, as shown in 57.

(57) a. He has (much more) carefully (*than anyone else) analyzed it.
     b. He has (much less) often (*than I thought) rehearsed it.   (Haider 2000:99)

The restriction also applies to MA adverbs occurring between the object and the PP in lo-
cative PP constructions, as shown in 58, but not to those appearing after the PP, as in 59.

(58) a. John sent Bill *so reluctantly* (**that everyone noticed*) to the doctor.
      b. Mary put Susie *so calmly* (**that no one noticed*) on the bed.
(59) a. John sent Bill to the doctor *so reluctantly* (*that everyone noticed*).
      b. Mary put Susie on the bed *so calmly* (*that no one noticed*).

I assume that this reflects a difference in the level of the projection of the adverbs in these
two positions. Specifically, the one after the PP in 56b/59 can be a phrase, whereas the
one between the object and the PP in 56a/58 must be a head (*so* is assumed to be a head
adjoined to the adverb).[19]

Given that the adverb in 56a is a head and that a head always left-adjoins to another
head, the adverb could be adjoined to one of the three heads between the object of
the verb and the object of the preposition in the structure of locative PP constructions
shown in 43b—that is, V, (the lower) Pred, and P. It seems unlikely, however, that
the adverb is at P. As shown in 60, MA adverbs cannot precede the PP when the PP
occurs in the focus position of cleft sentences, which indicates that those adverbs
cannot adjoin to P.

(60) a. *It was *reluctantly* to the doctor that John sent the boys.
            cf. It was to the doctor that John sent the boys *reluctantly*.
          (John/the boys)
      b. *It was *calmly* on the bed that Mary put the children.
            cf. It was on the bed that Mary put the children *calmly*.
          (Mary/the children)

The adverb in 56a is therefore assumed to be adjoined to V[20] or (the lower) Pred,[21] as
shown in 61.

[19] It is observed by Jackendoff (1977) that adverbs, unlike their related adjectives, cannot take comple-
ments regardless of their position in a clause, as shown in (i).

(i) a. Tiredly (*of the noise), John left the room.
          cf. Tired (of the noise), John left the room.
     b. John grimaced expressively (*of his needs).
          cf. The manner in which John grimaced was expressive (of his needs). (Jackendoff 1977:25)

Given this, Travis (1988) argues that these adverbs do not project to a phrasal category and remain as heads at
any position. Although I claim in the text that the adverbs occurring after the PP can be a phrase, they may
therefore be a projection of a degree head like *so* rather than one of the adverb itself, to be exact. This view
seems reasonable since the post-head material accompanying the adverbs after the PP in 59 is selected by the
degree head. See Baker 2003 for degree expressions that occur with adverbs and adjectives.

[20] The higher adverb in 61b is adjoined to V, and then the host head V moves up, stranding the adverb.
Roberts (1991) argues that a similar structure to this is created in verb movement by what he calls excor-
poration. See Baker 1996:479ff. for other constructions that are assumed to involve the same structure. I
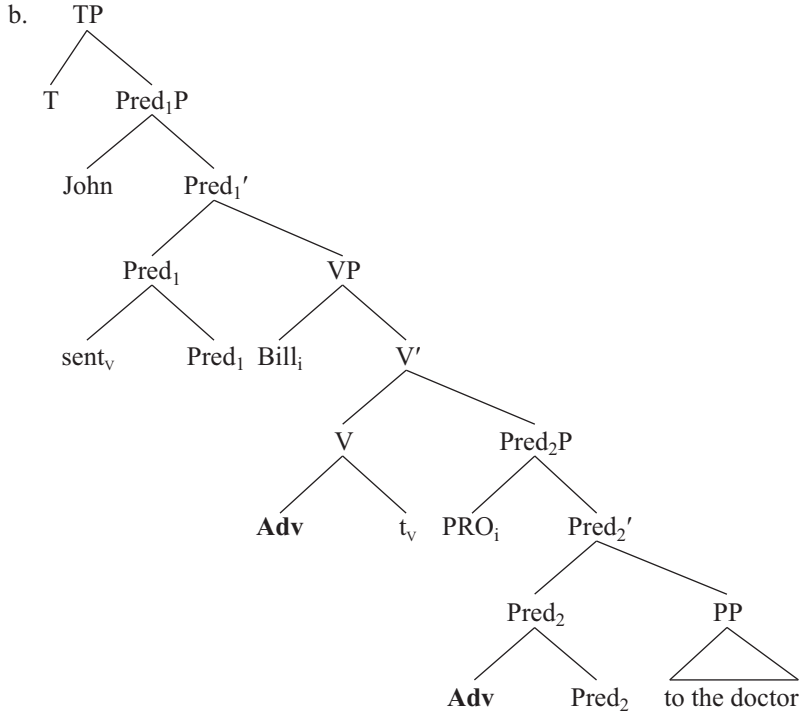thank Yuji Takano (p.c.) for bringing this point to my attention.

[21] When MA adverbs are adjoined to the lower Pred in 61b (i.e. Pred$_2$), they are contained in the PredP as
a small clause involving the PP. The cleft sentences in 60a,b, where the adverbs and the PP appear together in
the focus position, however, are still predicted to be ungrammatical given that only DPs and PPs can be
focused (Jackendoff 1977). Other small clauses that are assumed to be PredP (cf. Bowers 1993) cannot occur
in the focus position either, as shown in (i).

(i) a. *It is the boys honest that John considers.   (cf. John considers the boys honest.)
     b. *It is John a nice person that Mary found.   (cf. Mary found John a nice person.)
     c. *It is Tom off his ship that Bill expects.   (cf. Bill expects Tom off his ship.)

(61) a. John sent Bill *reluctantly* to the doctor.   [= 56a]

b.

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                        TP
                      /    \
                     T    Pred₁P
                         /      \
                      John    Pred₁′
                             /      \
                         Pred₁      VP
                        /    \     /  \
                   sentᵥ  Pred₁ Billᵢ  V′
                                      /    \
                                     V    Pred₂P
                                   /  \    /     \
                                Adv  tᵥ PROᵢ  Pred₂′
                                              /      \
                                          Pred₂      PP
                                         /    \      /  \
                                      Adv  Pred₂  to the doctor
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Given the theory of predication of adverbs proposed above, the adverbs in the two positions are predicated of different DPs. The one adjoined to V is construed with the DP *John* in Spec, Pred in the matrix clause, indicated as $Pred_1$, because the adverb forms a complex predicate with V, and its maximal projection (i.e. VP) is in the same local domain of predication as the DP under the condition in 53. The DP then raises to Spec, T and becomes the subject of the sentence. Thus, the subject-oriented reading of the adverb arises. By contrast, the adverb adjoined to the lower Pred, indicated as $Pred_2$, is in the same local domain of predication as PRO in Spec, $Pred_2$ in the complement clause. Since PRO is controlled by the object of the verb, the object-oriented reading of the adverb is therefore derived. It should be noted that the adverb in either position in 61b cannot be predicated of the object DP *Bill* itself because the DP is not in the minimal domain of any Pred head, according to 54.

The analysis of the adverb in 56a based on the structure in 61b gains support from the following examples involving FQs. When the object DP in locative PP constructions is modified by an FQ, an MA adverb that immediately follows the FQ receives object-oriented reading unambiguously, as shown in 62.

(62) a. John sent the boys all *reluctantly* to the doctor.   (*John/the boys)
          cf. John sent all the boys *reluctantly* to the doctor.   (John/the boys)
     b. Mary put the children all *calmly* on the bed.   (*Mary/the children)
          cf. Mary put all the children *calmly* on the bed.   (Mary/the children)

Given the analysis of FQs presented in §4.2, the FQs in 62a,b are assumed to be adjoined to $Pred_2P$ in 61b. The MA adverbs following the FQs must then be adjoined to $Pred_2$, as illustrated in 63.

(63) John sent the boysᵢ [$_{Pred_2P}$ *all* [$_{Pred_2P}$ PROᵢ *reluctantly*-$Pred_2$ to the doctor]]

Since PRO is the only DP that is in the same local domain of predication as the adverb in this structure, the adverb must be predicated of it and receive object-oriented reading.

Thus, the examples in 62 can provide strong support for the claim that the predication of the adverb must be established in a local domain, as proposed in 53.[22]

Returning to the adverb in 56b, that is, the one occurring after the PP, we saw above that it is regarded as having a phrasal status, and can therefore be right-adjoined somewhere in the structure in 61b. Since it cannot follow the PP when the PP occurs in the focus position of cleft sentences, as shown in 64, it is assumed not to be merged with the PP.

(64) a. *It was to the doctor *reluctantly* that John sent the boys.
 b. *It was on the bed *calmly* that Mary put the children.

Instead, I assume that the adverb in 56b is right-adjoined either to $Pred_1'$ or to $Pred_2'$. If it is at $Pred_2'$, it is predicated of PRO in Spec, $Pred_2$ and receives object-oriented reading. By contrast, if it is at $Pred_1'$, it is predicated of the DP in Spec, $Pred_1$ and subject-oriented reading yields.

We have seen that the interpretations of MA adverbs occurring in postverbal position in locative PP constructions are derived from the theory of predication presented above. Now let us look at examples in which MA adverbs appear in preverbal position in these constructions. As we saw in 25, partly repeated as 65, when the adverbs appear in auxiliary position, that is, between the subject and the main verb, they receive subject-oriented reading unambiguously.

(65) John *reluctantly* sent the boys to the doctor.   (John/*the boys)   [= 25a]

MA adverbs occurring in this position as well as those between the object and the PP cannot accompany post-head material, as shown in 66.

(66) a. John *so reluctantly* (**that everyone noticed*) sent Bill to the doctor.
 b. Mary *so calmly* (**that no one noticed*) put Susie on the bed.

Given this, I assume that the adverb in 65 is also a head and adjoined to $Pred_1$, to which V raises, in 61b. The adverb is then predicated of the DP in Spec, $Pred_1$, which is the subject of the matrix clause.

Next consider the examples in which MA adverbs occur in clause-initial position. As we saw in 24, partly repeated as 67, the adverbs in this position also receive subject-oriented reading unambiguously.

(67) *Reluctantly*, John sent the boys to the doctor.   (John/*the boys)   [= 24a]

Given that the subject of the matrix clause moves to Spec, T, the adverb occurring to the left of the subject in 67 does not seem to be in the minimal domain of any Pred head in 61b. The question then arises as to why the adverb can be construed with the subject. Ernst (2002) argues that any (semantically appropriate) adverbial adjuncts may be moved by topicalization and adjoined to TopP in English. However, they cannot undergo long-distance topicalization across a clause even if it is a small clause, as illustrated with an AO adverb in 68.

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[22] If MA adverbs could occur between the object DP and an FQ associated with it in locative PP constructions, they would be assumed to be adjoined to V and predicated of the DP in Spec, $Pred_1$ in 61b, yielding subject-oriented reading unambiguously, as shown in (i). Most of the speakers I consulted, however, indicated that the word order is more marginal than that in 62a,b, where the adverbs follow the FQs.

(i) a. ?John sent the boys *reluctantly* all to the doctor.   (John/??the boys)
 b. ?Mary put the children *calmly* all on the bed.   (Mary/*the children)

According to three speakers who were more favorably disposed to these sentences than the other speakers, however, the adverbs in (i) are more likely to receive subject-oriented reading than the adverbs in 62a,b.

(68) a.   Carefully, he eased the violin out of its case.
     b. *Carefully$_i$, they saw [him ease the violin out of its case t$_i$].
     c. *Carefully$_i$, they said [that he eased the violin out of its case t$_i$].

<div align="right">(Ernst 2002:411)</div>

With this in mind, the MA adverb in 67 is assumed to be generated somewhere in the minimal domain of Pred$_1$ in 61b and moved to the left periphery. It could not originate in the domain of Pred$_2$ in the complement clause: the adverb would then need to undergo long-distance topicalization and would be ruled out in the same way as 68b,c. This accounts for why the adverb in 67 has the subject-oriented reading unambiguously. Furthermore, this analysis of the example, if on the right track, provides further support for the present proposal that object-oriented reading of MA adverbs in locative PP constructions only derives when the adverbs occur in the complement clause.

    Given the above analysis of MA adverbs in locative PP constructions, we can understand why these adverbs occurring with simple transitive verbs unambiguously have subject-oriented reading, as we saw in 15b and 23, partly repeated as 69.

(69) Mary hit John (on the stage) *reluctantly* (on the stage).   (Mary/*John)   [= 23a]

Since only the simplex clause is projected with these verbs, the subject is the only DP that occurs in the minimal domain of a Pred head. Therefore, it is the only DP of which MA adverbs can be predicated.

    AO ADVERBS. Now let us consider the interpretations of AO adverbs in locative PP constructions. As we saw in 26 and 27, partly repeated as 70, AO adverbs, unlike MA adverbs, cannot have object-oriented reading even when they occur in postverbal position.

(70) a.   John sent Bill *cleverly* to the doctor.   (John/*Bill)   [= 26a]
     b.   John sent Bill to the doctor *cleverly*.   (John/*Bill)   [= 27a]

If these adverbs occurred in the complement clause, being adjoined to Pred$_2$ or Pred$_2'$ in 61b, they would be predicated of PRO and construed with the object. The absence of object-oriented reading then suggests that AO adverbs cannot occur there.

    The examples in 71 provide support for this view. They show that AO adverbs cannot occur between an FQ modifying the object and the PP in locative PP constructions.

(71) a.   *John sent the boys all *cleverly* to the doctor.
       cf. John sent all the boys *cleverly* to the doctor.   (John/*the boys)
     b.   *Mary put the children all *stupidly* on the bed.
       cf. Mary put all the children *stupidly* on the bed.   (Mary/*the children)

Given the analysis of FQs discussed in §4.2, the FQs in 71a,b are assumed to be adjoined to Pred$_2$P in 61b, that is, the complement clause. Then, the ungrammaticality of the examples indicates that AO adverbs cannot occur within the complement.

    As discussed in §3.1, it has been claimed in previous studies that AO adverbs as well as MA adverbs modify the event denoted by the constituent they adjoin to. In what follows, I argue that AO adverbs cannot occur in the complement clause of locative PP constructions because they are semantically incompatible with the event expressed in it. It was noted by Quirk and colleagues (1985) that some subject-oriented adverbs have difficulty modifying predicates that disallow a dynamic interpretation, as illustrated in 72.[23]

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[23] As mentioned in n. 11, although the adverbs *intentionally* and *deliberately* occurring in 72 are given as examples of MA adverbs in Ernst 2002, they are comparable to AO adverbs in that their subject arguments are interpreted as controlling the eventuality. See also n. 25 for these adverbs.

(72) a. *He is wealthy/foolish *intentionally*.
          cf. He is being foolish *intentionally*.
     b. *He is an adult *deliberately*.
          cf. He is being a nuisance *deliberately*.   (Quirk et al. 1985:575)

It seems that the AO adverbs under discussion are also sensitive to this property in the predicates they modify. These adverbs do not fit in with typical stative predicates, as shown in 73.

(73) a. *He is wealthy *cleverly/stupidly*.
     b. *John *cleverly/stupidly* owns a house.
     c. *Mary *cleverly/stupidly* inherited the property.

The stativity of these predicates or lack of dynamic interpretation with them can be seen, for example, in the fact that they usually do not occur in the imperative form, as shown in 74.

(74) a. *Be wealthy.
     b. *Own a house.
     c. *Inherit the property.

As discussed in §3.1, Ernst (2002) claims that the DP argument of AO adverbs, which he calls Agent, designates an entity that controls the eventuality. It is therefore conceivable that the predicates modified by AO adverbs are required to describe a controllable event. If this holds true, we can understand why AO adverbs are not compatible with the predicates in 73, which usually denote states that are out of one's direct control, as indicated with the examples in 74.

Now recall that as we saw with restitutive *again* in §4.2, the complement clause in locative PP constructions only denotes the result state of the event described in the sentence. I claim that this is the reason why AO adverbs cannot occur within the constituent of these constructions, as indicated in 70 and 71. That is, because AO adverbs selectively modify predicates of dynamic or controllable events, they are semantically incompatible with the predicates in the complement clause.

Note that compared with AO adverbs, MA adverbs are more suited to the stative predicates in 73 and 74, as shown in 75.

(75) a. He is wealthy *reluctantly/unwillingly*.
     b. John *gladly/unwillingly* owns a house.
     c. Mary *reluctantly/unwillingly* inherited the property.

I propose that this characteristic of MA adverbs underlies the fact that they can receive object-oriented reading in locative PP constructions. In particular, they can occur in the complement clause in locative PP constructions, as argued above, because they are semantically compatible with the result state denoted in the clause. It is also notable that the acceptability of the examples in 75 varies to some degree among speakers depending on the choice of adverb and the main predicate. This is reminiscent of the variations found among speakers with respect to the availability of object-oriented reading of MA adverbs in locative PP constructions, which was noted at the beginning of §4.1. Given that the semantic differences between AO and MA adverbs are small, as noted by Ernst (2002), the DP arguments of some MA adverbs may also be assumed to have some control over the event denoted by the predicate modified by the adverbs.[24] Thus, it is

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[24] Ernst (2002:473, n. 28) indicates that some MA adverbs can function as AO adverbs as well because of their lexical meanings. He notes that the distinction between the two is very small: they assert either that a sentient entity experiences a certain mental state (MA adverbs) or that this entity manifests a quality related to some mental state (AO adverbs).

conceivable that, depending on the degree of control by the arguments or controllability of the event, the compatibility between an adverb and a predicate may vary to some extent among speakers.[25]

Furthermore, the present proposal seems to be tenable in light of Kratzer's (1996) analysis of event arguments. She claims that event arguments of predicates may be distinguished by whether they express a function defined for actions, states, or events proper, and that selectional restrictions can apply to those aspects of event arguments when two predicates are conjoined by event identification (Kratzer 1996:122). If we assume, as discussed above, that the modification relationship between subject-oriented adverbs and primary predicates is also established by event identification, it is predictable that AO adverbs have the selectional restrictions we have seen here.

To summarize, I have proposed that both MA and AO adverbs are predicated of DPs in accordance with a general locality condition on predication, which requires the predicate and the subject to appear in the minimal domain of a functional category that mediates their relationship. Given this, I have argued that the interpretations of both MA and AO adverbs observed in §4.1 are accounted for on the basis of the structure of locative PP constructions presented in §4.2. In particular, MA adverbs receive subject-oriented reading if they occur in the matrix clause in the constructions, whereas they have object-oriented reading if in the complement clause. By contrast, AO adverbs, which cannot occur in the complement clause because of their semantic properties, appear only in the matrix clause and receive subject-oriented reading unambiguously.

5. Extensions. It is argued in this section that the analysis of AO and MA adverbs proposed in the last section also accounts for the interpretations of these adverbs occurring in passive, unaccusative, and resultative constructions. To the extent that the application of the analysis counts as successful, it provides independent support for the present approach to the adverbs.

5.1. Subject-oriented adverbs in passives and unaccusatives. In this section, we first examine AO and MA adverbs occurring in passives involving multiple auxiliaries, where they receive different interpretations depending on their position in a clause. Then, we look at these adverbs found in unaccusative constructions.

To begin with, let us consider the structure of passives. It has often been noted in previous studies that passives can involve an argument that corresponds to the subject of their active counterparts, that is, the deep subject, even when a *by*-phrase is not present. Evidence for positing such an argument, which is often called an implicit argument, comes from the fact that subject-oriented adverbs and purpose clauses can occur in passives without an overt DP serving as their subject argument or controller (which is contrasted with the situation in middles), as shown in 76.

(76) a. The book was sold deliberately.   (cf. *The book sold deliberately.)
     b. The book was sold to make money. (cf. *The book sold to make money.)

<div align="right">(Roberts 1986:31)</div>

I assume that the implicit argument is PRO and merged in the same position as the external arguments of actives, that is, Spec, Pred (Fukui & Speas 1986, Bowers 2002, Ernst 2002).

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[25] It seems that MA adverbs that attribute weaker agentivity to their subjects, such as *reluctantly* and *unwillingly*, are more likely to be compatible with stative predicates like those in 72 and 73, compared with those denoting stronger agentivity, such as *deliberately* and *intentionally*. This tendency has also been found with respect to the feasibility of their receiving object-oriented readings in locative PP constructions and resultative AP constructions, which is discussed in §5.2.

With this in mind, I propose that passives in English involve the structure in 77. Following Bowers (2002), I propose that the auxiliary *be* occurs as an overt realization of Pred, indicated as $Pred_1$, and moves to T if no other element occupies the position. $Pred_1$ selects as its complement the maximal projection of another Pred, indicated as $Pred_2$, which introduces PRO as the external argument of the passive participle, that is, the deep subject. $Pred_2$ selects VP headed by the participle as its complement, and the participle moves to $Pred_2$. The surface subject is generated in VP as an internal argument of the participle and moves to Spec, T.[26]

(77) a. John was examined.

b.
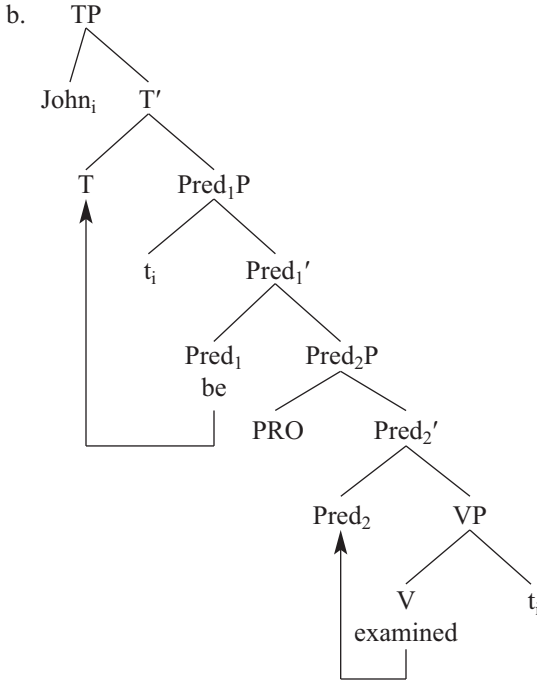
In what follows, we consider AO and MA adverbs occurring in four different positions in passives involving multiple auxiliaries. It is argued that differences in their interpretations are predictable given the structure of passives in 77b and the locality principle of predication proposed in §4.3.

First, let us consider examples in which AO or MA adverbs appear between the subject and the auxiliary *be*. As discussed in §3.2, the adverb can only be construed with the surface subject, whether the sentence involves only *be* or multiple auxiliaries, as is shown in 78.

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[26] Bowers (2002) notes that the structure of passives as illustrated in 77b is problematic because PRO should cause a violation of the minimal link condition (Chomsky 1995) when the subject moves across it. This problem can be circumvented if it is assumed that DPs adjoin to vP, which corresponds to PredP under the present study, in the course of A-movement, as argued by Sauerland (2003). If the subject adjoins to $Pred_2P$ on its way to Spec, T in 77b, it can count as being closer than or equidistant with PRO to the target of movement, depending on the definition of closeness. Sauerland suggests that the intermediate adjunction to vP can be seen as an operation to satisfy the phase impenetrability condition proposed in Chomsky 2001. This analysis can also be applied to the structure in 77b given Legate's (2003) proposal that the verb phrase in English passives constitutes a phase.

(78) a. John *cleverly* has been examined by the doctor. (John/*the doctor) [=16a]
                                                                (Jackendoff 1972:82)
    b. Vince would have *willingly* been examined by Catherine.
        (Vince/*Catherine)   (Ernst 2002:108)
    c. Joe *reluctantly* was examined by the doctor.   (Joe/*the doctor)
                                                                (Haumann 2007:217)

Given that these adverbs occurring in clause-internal positions are heads (see §4.3), the adverbs in 78 are considered to be adjoined to the following auxiliary verb: for example, *cleverly* is adjoined to *has* in 78a and *willingly* to *been* in 78b. Assuming that the verb *have* is a functional item that mediates between a predicative constituent and an argument, as argued by Ritter and Rosen (1997), the auxiliary *have* as well as *be* is regarded as a Pred head in these examples. Then, when the surface subject moves to the specifier of the auxiliary, the adverb adjoined to the auxiliary is predicated of the subject in accordance with the locality condition in 53. I assume that when the adverb is adjoined to a finite auxiliary, as in 78a,c, it is also moved to T with the auxiliary after the predication relationship is established. Although PRO is assumed to be generated as the external argument of the passive participles in 78, it cannot be construed with the adverbs, not being in the minimal domain of the auxiliary to which the adverbs are adjoined. Note also that passives can occur in the imperative form, as shown in 79.

(79) a. Be examined by the doctor.
    b. Be instructed by the teacher.

This indicates that predicates in passives can describe a controllable event, which seems to satisfy the selectional restrictions imposed by AO adverbs (see §4.3) and to allow the adverbs to be predicated of the subjects of passives, as shown in 78a.[27]

   Second, look at examples in which adverbs follow the participle, as shown in 80. In contrast with 78, the adverbs can only be associated with the deep subject.

(80) a. John was examined *carefully* by the doctor.   (*John/the doctor)
                                                                (Jackendoff 1972:83)
    b. Vince would have been examined *willingly* by Catherine.
        (*Vince/Catherine)   (Ernst 2002:108)
    c. Joe was examined *reluctantly* by the doctor.   (*Joe/the doctor)
                                                                (Haumann 2007:217)

The adverbs in these examples are assumed to be adjoined to V, from which the participle has been moved to the Pred selecting VP, that is, $Pred_2$ in 77b, stranding the adverbs. They then form a complex predicate with V and are predicated of PRO as the deep subject, which is in Spec, $Pred_2$ in 77b. Although the surface subject is assumed to be generated within VP, it cannot be construed with the adverbs, not being in the minimal domain of $Pred_2$.[28]

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[27] It is noted by Quirk and colleagues (1985:827) that passives with the auxiliary *be* usually occur in the negative imperative, and they are less common in the positive counterpart. This might be related to the observation made in Lasnik & Fiengo 1974 that some speakers do not allow the intention denoted by the adverbial *on purpose* to be attributed to the subject of the *be*-passive in (i).

   (i) Cowens was fouled by Kareem Jabbar *on purpose*.
        cf. Cowens got (himself) fouled by Kareem Jabbar *on purpose*.   (Lasnik & Fiengo 1974:554)

They note, however, that there are also speakers who find such an interpretation available (Lasnik & Fiengo 1974:554, n. 10).

[28] If the surface subject of passives is assumed to adjoin to $Pred_2P$ on its way to Spec, T in 77b, as suggested in n. 26, it counts as being in the minimal domain of $Pred_2$ in the course of derivation according to the defi-

Third, consider examples in which adverbs occur between *be* in the finite form and the participle. As discussed in §3.2, they can be construed with either the surface subject or the deep subject, as shown in 81.

(81) a. John was *carefully* examined by the doctor.   (John/the doctor)   [=17a]
             (Jackendoff 1972:83)
     b. Debbie was *willingly* hired by the contractor.   (Debbie/the contractor)
             [=17b] (Ernst 2002:106)

Given that *be* has been moved to T in this situation, the adverbs in 81 are assumed to be adjoined either to the original position of *be*, that is, $Pred_1$ in 77b, or to the Pred head to which the participle has been moved, that is, $Pred_2$ in 77b. If they are at $Pred_1$, they are predicated of the surface subject moved to Spec, $Pred_1$. By contrast, if they are at $Pred_2$, they have a predication relationship to PRO in Spec, $Pred_2$.

Fourth, look at examples in which adverbs occur between *be* in the nonfinite form and the participle. In contrast with 81, the adverbs seem to be construed only with the deep subject.[29]

(82) a. [I have] my own suspicions that my father has been *deliberately* poisoned.
        (*my father/PRO)   (Haumann 2007:217)
     b. Mary would have been *cleverly* instructed by Joan.   (*Mary/Joan)
     c. Vince would have been *willingly* examined by Catherine.
        (*Vince/Catherine)

If we assume that *be* remains at the original position, that is, $Pred_1$ in 77b, the adverbs in 82 are considered to be at the Pred head to which the participle moves, that is, $Pred_2$ in 77b. The adverbs can then only be predicated of PRO in Spec, $Pred_2$.

Finally, let us consider AO and MA adverbs found in sentences having unaccusative or nonagentive verbs. As noted in §3.1, the adverbs can be construed with the subjects of these verbs, as shown in 83.

(83) a. Jim *wisely* lay on the bed.   [= 6b] (Ernst 2002:55)
     b. John rolled down the hill *voluntarily*.   (Zubizarreta 1985:248)

I claim that the adverbs in these examples are predicated of the subjects in the same way that they are associated with the derived subjects of passives. In particular, I assume with Bowers (2002) (see Collins 1997a for a similar proposal) that the VP headed by an unaccusative verb is selected by a Pred head, though no external argument is generated in Spec, Pred. The subject originates as an internal argument of V and moves to Spec, T by way of Spec, Pred. The example in 84a is then given the structure in 84b.

(84) a. Jim *wisely* lay on the bed.
     b. [$_{TP}$ Jim$_i$ T [$_{PredP}$ t$_i$ [$_{Pred}$ wisely-[$_{Pred}$ lay$_V$-Pred]] [$_{VP}$ t$_i$ t$_V$ [$_{PP}$ on the bed]]]]]

The adverb is adjoined to the Pred head (or Pred′ in 83b) and predicated of the subject moved to Spec, Pred. Note that the unaccusative verbs under discussion can occur in the imperative form, as shown in 85.

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nition of the domain in 54 (see Chomsky 1995:178). The interpretations of the adverbs in 80, however, indicate that the adverbs must be predicated of PRO in Spec, $Pred_2$, and not of the surface subject. The correct results can be derived if we assume that adverbs (and predicates in general) establish the predication relationship with the DP that is merged first in the minimal domain of Pred. Then, given that PRO is merged in Spec, $Pred_2$ before the subject is moved, the adverbs in 80 are predicted to be construed only with PRO, as desired. The same line of analysis is proposed by Saito (2009) to derive the subject orientation of the reflexive *zibun* in Japanese.

[29] The English speakers I consulted noted that the interpretations of the adverbs in 82 are less clear compared with those in 80 or 81.

This is similar to the pattern of interpretations we have seen with MA adverbs occurring in postverbal position in locative PP constructions. Moreover, AO adverbs that appear between the object and the resultative AP can only be associated with the subject, as shown in 87.

(87) a. ?John washed the boys *cleverly* clean.   (John/*the boys)
    b. ?Mary wiped her children *stupidly* dry.   (Mary/*her children)
    c. ?Bill shook Fred *wisely* awake.   (Bill/*Fred)

This is also the same pattern that was seen with AO adverbs in locative PP constructions.

Bowers (1993, 2001) proposes that these resultative AP constructions have the same structure as locative PP constructions: they involve a small clause in which the resultative AP is predicated of a PRO controlled by the object, and the predication relationship is mediated by Pred, as illustrated in 88.

(88) a. John washed the boys clean.
    b. [$_{TP}$ John$_i$ T [$_{Pred_1P}$ t$_i$ washed$_V$-Pred$_1$ [$_{VP}$ the boys$_j$ t$_V$ [$_{Pred_2P}$ PRO$_j$ Pred$_2$ [$_{AP}$ clean]]]]]

This analysis gains support from the fact that resultative AP constructions also have the core properties on the basis of which we provided the structure for locative PP constructions in §4.2. First, extraction out of the object DP is possible and the DP can appear as an *of*-phrase in nominalizations, as shown in 89, indicating that the object DP is the direct object of a verb rather than the subject of a small clause.

(89) a. the boat (that) I sanded the bottom of as smooth as glass
    b. The watering of tulips flat is a criminal offence in Holland.

<div align="right">(Carrier & Randall 1992:201, 207)</div>

Second, the object DP in resultative AP constructions can be modified by FQs, as shown in 90, suggesting that there is an empty category associated with the object between the object and the AP.

(90) a. John washed the boys *all* very clean.
    b. Mary wiped her children *both* very dry.   (see Bowers 1993:624)

Third, the adverb *again* occurring in resultative AP constructions can have either the repetitive or the restitutive reading, as shown in 91, providing evidence that they involve a small clause denoting a result state of the event.

(91) Sally hammered the metal flat again.
    a. Sally hammered the metal flat, and that had happened before.   (repetitive)
    b. Sally hammered the metal flat, and the metal had been flat before.

<div align="right">(restitutive) (Beck & Johnson 2004:108)</div>

Furthermore, given Baker's (2003) study indicating that the subject arguments of adjectives in general originate outside the AP, the predication relation between the resultative AP and the PRO in the small clause needs to be supported by a functional head like Pred, as proposed in Bowers's structure in 88b.[32]

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[32] Bowers (1997) observes that resultative constructions can have an AP and a PP conjoined as resultative phrases, as shown in (i).

    (i) She pounded the dough [$_{AP}$ flat as a pancake] and [$_{PP}$ into the shape of a heart] (Bowers 1997:55)

This example looks puzzling given that in general, only phrases of the same category can be conjoined in coordination. Bowers notes, however, that this is predictable if resultative phrases are contained in PredP, as discussed in the text. That is, the example is analyzed as involving a conjunction of PredPs, as illustrated in (ii).

    (ii) She pounded the dough$_i$ [$_{PredP}$ PRO$_i$ [$_{AP}$ flat as a pancake]] and [$_{PredP}$ PRO$_i$ [$_{PP}$ into the shape of a heart]]

If resultative AP constructions are assigned the structure in 88b, the interpretations of the adverbs in 86 and 87 are accounted for in the same way as those of the adverbs in locative PP constructions, which we saw in §4.3. The MA adverbs in 86 are assumed to be adjoined either to V in the matrix clause or to the Pred head in the complement clause, that is, Pred$_2$ in 88b. If adjoined to V, they are predicated of the subject DP in Spec, Pred in the matrix clause, yielding subject-oriented reading. If adjoined to Pred$_2$, by contrast, they are predicated of PRO in Spec, Pred$_2$, deriving object-oriented reading. However, the AO adverbs in 87 must be adjoined to V and predicated of the subject in the matrix clause. They cannot be adjoined to Pred$_2$ because the predicate in the complement clause denotes a result state, and not a controllable event, which is incompatible with the selectional restrictions imposed by AO adverbs. Thus, it is correctly predicted that the AO adverbs in 87 unambiguously have subject-oriented reading.

To summarize, we have observed that MA adverbs occurring in postverbal position in resultative AP constructions can receive object-oriented reading for some speakers, whereas AO adverbs appearing in such a position cannot. It has been argued that these observations are accounted for under the present analysis of these adverbs by assuming that these constructions involve the same small clause complement as locative PP constructions.

6. CONCLUSION. In this article, I have investigated the nature of predication of subject-oriented adverbs through an examination of these adverbs occurring in locative, passive, unaccusative, and resultative constructions. It has been argued that these adverbs are parasitically predicated of DPs in the minimal domain of a functional head involved in primary predication. Given the hypothesis proposed in recent studies that predication relationships in general are mediated by such a functional head, I have claimed that the orientation of the adverbs is subsumed under the theory of predication. This seems to be a natural outcome in the current theory of grammar, in which the clustering functions of subject have been deconstructed and distributed over distinct canonical positions that are associated with each of the functions.

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Thus, this kind of example may serve as a piece of evidence that the complement clause in these constructions involves the projection of a functional category like Pred above that of a lexical category. I thank a referee for bringing Bowers's (1997) example in (i) to my attention.

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