

Extraction from Adjuncts and the Structure of Events*

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Abstract

This paper discusses a class of grammatical *A'*-extractions from untensed verbal adjuncts in English, which appear to contradict the generalisation that adjuncts are islands. Two subclasses are presented, one of *wh*-extraction from secondary predicates modifying accomplishments, and one from secondary predicates modifying certain classes of achievements. In the accomplishment case, the event denoted by the secondary predicate is interpreted as the cause of the matrix event, whereas in the achievement case, it is interpreted as an event immediately preceding the matrix event. In the corresponding declaratives, on the other hand, aspectual restrictions on the matrix predicate, and the interpretation of the relation between the two events, are freer. This provides evidence for a generalisation that extraction is permitted from a secondary predicate only if the event denoted by that predicate is identified with an event position in the lexicosemantic representation of the matrix verb. This condition predicts further restrictions on the telicity of the two events, and the directness of the causal and/or temporal relations holding between the two events.

Keywords: *Wh*-movement, locality, event structure, argument / adjunct distinction, secondary predication.

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1 Introduction

Since Ross (1967), adjuncts have been taken to be islands, predicting, among other things, that A' dependencies are not formed across their boundaries. The empirical support for this restriction is substantial: to give just one example, it can derive the contrast in (1).

- (1) a. Who cried after John hit Mary?
b. *Who did Mary cry [after John hit t]? (Huang 1982:503)

However, there are a cluster of cases in English where extraction from an adjunct (specifically, a secondary predicate) is grammatical, as in (2).¹

- (2) a. What did John arrive [whistling t]? (Borgonovo and Neeleman 2000:200)
b. What did John drive Mary crazy [trying to fix t]?

Given the copious evidence demonstrating the islandhood of adjuncts, it is simply not an option to explain cases such as (2) by claiming that adjuncts are not islands, and not

¹This paper will concentrate almost exclusively on adjuncts headed by gerunds, for reasons of space. Similar constructions are, however, possible with at least past participles, as in *What did John come back addicted to?*, and also with less closely related untensed adjuncts, such as purpose clauses, as in *Whose attention is John jumping up and down in order to attract?*. Equally, and again for reasons of space, this paper will focus on *bare adjuncts*, those not headed by an overt prepositional complementiser. The possibilities for extracting from a non-bare adjunct, such as *To whom did John leave without speaking?*, are beyond the scope of this paper, although the possibility of extensions to cover a wider a range of adjunct types is being addressed in ongoing research.

explain why they behave as such in the majority of cases. Instead, such examples raise the question of why the adjuncts contained in (2) should, exceptionally, fail to behave like islands.

This paper will present evidence that the unifying characteristic of this class of grammatical extractions from adjunct islands is a semantic one. The central claim, in a nutshell, is that, if the event denoted by the adjunct occupies an event position in the argument structure encoded in the matrix verb, then extraction of the complement from within that adjunct is possible.

This approach predicts two major subclasses of extraction from adjuncts, corresponding to the aspectually complex event classes *accomplishments* and *achievements*. Indeed, this is what we find: the interpretation of (2a) is such that a typical depictive relation holds between the matrix and secondary events, while in (2b), the secondary event is interpreted as the *cause* of the matrix event.² This latter construction is referred to below as a *causative secondary predicate*, or simply a *causative*, where no confusion will arise. The term *depictive* is reserved for the non-causal interpretation illustrated by (2a). *Secondary predicate* is used as a cover term for both causatives and depictives, disregarding resultatives, which are structurally quite different.³ Following Borgonovo and Neeleman (2000), I will refer to a secondary predicate allowing extraction as *transparent*. I claim that the relation between the event described by a causative

²Throughout this paper, I use *matrix event* and *secondary event* as shorthand terms for *event described in the matrix clause* and *event described in the adjunct predicate*, respectively.

³Causatives and depictives have a similar morphosyntactic form and height of attachment, while resultatives differ in being restricted to monomorphemic adjectives and possibly Goal PPs, and in being attached much lower within VP. For this reason, resultatives are largely ignored below.

secondary predicate and a matrix event is identical to that between causing and caused events in a standard decompositional analysis of Vendlerian accomplishments (see e.g. Dowty 1979), while the relation between the event described by a depictive and the matrix event is one where the depictive predicate describes a *preceding event*, that is, an event occurring immediately before the change of state described by an achievement. On certain assumptions about their truth-conditions, to be spelt out below, preceding events are a natural component of the semantic representation of a subclass of achievements.

The rest of the paper is structured as follows. Section 2 presents evidence that no purely syntactic condition could provide a satisfying description of the grammatical cases of extraction from adjuncts, and introduces the semantic generalisation sketched above. The details of this generalisation are formalised, and some of its predictions tested, in section 3. We find that this condition correctly predicts the patterns of extraction from, and interpretation of, transparent secondary predicates modifying accomplishments and many classes of achievements. Finally, section 4 compares these results to the distribution of secondary predicates in declarative sentences. We find that transparent secondary predicates are much more restricted than their declarative counterparts. Section 5 offers a conclusion and an outlook for future research.

2 The Limits of Syntax

Within the Principles and Parameters tradition, adjunct islands have always been treated as a structural phenomenon. This has its origin in the Condition on Extraction Domain (3) of Huang (1982), although the approach, if not the terminology, remains quite similar in minimalist accounts such as Uriagereka's (1999) approach to multiple Spell-Out, or

Johnson's (2002) Renumeration operation.

- (3) A phrase A may be extracted out of a domain B only if B is properly governed
(Huang 1982:505).

The CED has the effect of privileging the complement of a governing head, as opposed to an adjunct or subject, as the domain from which subextraction is possible in the general case. The purely syntactic nature of the CED is reflected in the absolute ungrammaticality of any CED violations. This makes adjuncts *strong islands*, in the terms of Cinque (1990), as opposed to weak islands, such as *wh-islands*, extraction of objects from which is marginally acceptable in certain circumstances.

One approach to the grammatical extractions from secondary predicates introduced in section 1 would be to attempt to formulate a purely syntactic successor to the CED in such a way that only the structures which allow grammatical extractions were predicted to do so. If such a condition were to exist, it would be possible to maintain a purely syntactic condition as the last word in terms of extraction from adjuncts.⁴ The aim of this section is to show that, short of pure stipulation, no such condition can exist, and

⁴By *purely syntactic*, I mean a condition making reference only to core syntactic notions such as phrase structure, case assignment, and possibly thematic structure and the lexical–functional divide, following the approach to locality in Chomsky (1986). This excludes other properties such as the aspectual structure of the verbs involved, which I take to have as its basis a semantic property of the lexical items in question, explored in detail below. To the extent that a syntactic treatment of the relevant aspectual notions, initially pursued in Lakoff (1970) and currently advocated by Ramchand (2002) and Borer (2005), among others, is viable, it is less clear that the data in this section militate strongly against a syntactic treatment. However, the integration of event-denoting, as opposed to individual-denoting, external arguments into the theories of Ramchand and Borer seems far from straightforward, and relatively little-studied. I will therefore

semantic factors must be taken into account in determining the grammaticality of extractions from adjuncts.

Granted, there are certain syntactic characteristics which are common to all cases such as those discussed in section 1. For instance, a transparent secondary predicate must be embedded within a clause containing an internal argument. This distinguishes unergative (4a) from unaccusative (4b) or transitive (4c–4d) matrix predicates.

- (4) a. *What does John dance [whistling t]?
(cf. John dances whistling hornpipes.)
- b. What_i did John_j arrive t_j [whistling t_i]?
- c. What did John enrage his neighbours [whistling t]?
- d. What did John drive Mary crazy [whistling t]?

Considerations such as this might be taken to suggest that a purely syntactic account of transparent secondary predicates is promising. Indeed, this is the line of inquiry of Borgonovo and Neeleman (2000) and, to a large extent, Demonte (1988). However, there are data which pose a significant problem for any such account. In particular, there are restrictions on the structure of the secondary predicate which run counter to the general pattern of syntactic locality effects. Specifically, (2b), repeated below as (5a), is significantly degraded if *trying to* is removed.

- (5) a. What did John drive Mary crazy [trying to fix t]?

refrain in this paper from speculation about the compatibility of these data with syntactic decompositional approaches.

- b. *What did John drive Mary crazy [fixing t]?

(*cf.* John drove Mary crazy fixing the plumbing.)

It seems as if there is a requirement such that extraction from a secondary predicate containing a form of the verb *fix* is only grammatical if that secondary predicate also contains some extra structure, as in (5a). This is, in itself, perplexing on a syntactic account. Disregarding anti-locality effects, as discussed in Grohmann (2003) and Abels (2003), which are irrelevant to the present case, the rule of thumb of syntactic locality theories is that intervening material can only make extraction harder, not easier, as intervening material can only provide further barriers to extraction. This is the exact opposite of what we find here, where an adjunct allows extraction only in the presence of some such extra structure.

There are further problems in relation to a syntactic analysis of the contrast between (5a) and (5b), however. Firstly, in cases with monoclausal secondary predicates, the effect is sensitive to the choice of verb in that secondary predicate, as can be seen by comparing the ungrammaticality of *fixing* in (5b) to the grammatical extractions from monoclausal *whistling* predicates in (4). Moreover, the effect is also sensitive to the choice of embedding verb in biclausal examples. (6) is an illustrative minimal pair.

- (6) a. What did John come home [trying to understand t]?

cf. John came home trying to understand how he'd lost his wallet.

- b. *What did John come home [beginning to understand t]?

cf. John came home beginning to understand how he'd lost his wallet.

We see here three cases where a syntactic theory, in the spirit of the CED, will not be able to make the necessary distinctions. Extraction patterns from secondary predicates containing embedded and unembedded tokens of the verb *fix* are the opposite of those predicted by the null syntactic hypothesis; the secondary predicates in (4b–4d) and (5b) contain verbs with identical core syntactic properties, but differ with respect to whether or not they permit extraction of their complement; and the examples in (6) show different extraction possibilities, despite having identical matrix clauses and syntactically identical control structures in the secondary predicate.

In this paper, I want to explore the validity of a *semantic* characterisation of this class of exceptions to the CED, one relying on notions of telicity, causation, and temporal relations among events. I propose the following.⁵

(7) Extraction from Adjunct Secondary Predicates:

Extraction of a complement from a secondary predicate is permitted only if the event denoted by the secondary predicate is identified with an event position in the matrix predicate.

If (7) is on the right track, the CED's prediction that extraction from a subject or adjunct is ungrammatical, is in conflict with a semantically determined class of exceptions found in English. It seems that extraction from verbal adjuncts is generally ungrammatical because although an adjunct's internal structure may permit extraction, the *semantic* relation an adjunct bears to events described in the matrix clause is not normally of the

⁵See Levin and Rappaport Hovav (1995:55) for similar observations concerning the interpretation of resultatives, in the absence of extraction.

correct nature to fall under generalisation (7). It is for this reason that such extractions are not generally legitimate.

To give one example, we would not expect (8) to be grammatical, as the relation between the matrix and secondary events is expressed by *while*, indicating roughly that the events occurred at the same time. Verbs, at least in English, do not express such a relation of simultaneity among events, instead expressing either simplex events or states, or relations of temporal precedence or causation among events and states. In that case, extraction from any adjunct introduced by *while* will be ruled out by condition (7).

(8) * What did John arrive [while whistling t]?

Of course, the existence of a class of grammatical extractions from adjuncts raises the wider question of the status of the CED in relation to (7). It is well-established that the CED is far from exceptionless in English, and some researchers (e.g. Levine and Sag 2003) have been led by the existence of such counterexamples to assume that the CED, or at least the subcase of the CED which prohibits extraction from adjuncts, should be abandoned.⁶ Generalisation (7) may also be seen as suggesting that strong islands are determined by semantic factors to a greater extent than is usually countenanced. The approach I will take in this paper is closer to this latter position. However, I will put off further discussion of the relation between (7) and the CED until the conclusion, as my first task is to describe the data, before turning to their theoretical significance. To this

⁶Extraction from subjects, the other major case addressed by the CED, is also not uniformly ungrammatical, as pointed out recently by Starke (2001), Sauerland and Elbourne (2002), Levine and Sag (2003) and Chomsky (2004). However, the class of subjects allowing extraction is relatively small, and the data still unclear, so I will put subjects aside for space reasons in this paper.

end, the following section sets out more explicitly what is meant by generalisation (7), relating the interpretation of secondary predicates to a characterisation of certain subsets of the verb classes of Vendler (1957).

3 Verb Classes and their Argument Structures

3.1 Aspectual verb classes

3.1.1 States and Activities

The starting point for this section is a decompositional recasting of Vendler's (1957) four verb classes, *activities*, *states*, *accomplishments* and *achievements*. I assume, following much research along these lines (e.g. Dowty 1979, Tenny 1987, Parsons 1990, Levin and Rappaport Hovav 1995) that activities and states denote single eventualities, distinguished by the fact that an activity predicate, roughly, indicates that its subject is engaged in something that takes time and occurs at a particular place, while a stative predicate is characterised as atemporal and not located spatially, at least for linguistic purposes (as van Voorst 1992:78 notes, 'states do not take place or do not happen'). A concrete reflex of this is the ready acceptability of progressive forms of activities, but not of states.

- (9) a. John is speaking French.
b. *John is knowing French.

However, activities and states are united by the fact that the internal argument of an activity or stative verb is not necessarily affected by the eventuality described by that

verb, while this is not true of accomplishments and achievements. Canonical activity verbs are represented in (10), while (11) illustrates the class of stative verbs.

(10) a. John kissed Mary.

b. John is working.

(11) a. John knows French.

b. John lives in Birmingham.

There are no clear grounds for decomposition of (10–11) into relations among multiple events. For example, it is inaccurate, or at least unhelpful, to paraphrase (10a) as anything like ‘An event involving John caused Mary to become kissed’. I assume that *kiss*, and other activity and stative verbs, cannot be decomposed in such ways.

On the assumption that at least a secondary predicate headed by a [+V] category describes an eventuality, as does a matrix predicate, the relation between matrix and secondary predicate can only be made to fit an activity or stative template if the events described in the two predicates can be jointly interpreted as a single event. It appears that it is only possible to meet this requirement if there is an asymmetry between the two events, such that the subject is “more agentive” with respect to one of the events than the other. Although the notion of “more agentive” is clearly in dire need of sharpening up, I will discuss two cases where it is quite plausible that it holds.

The first case involves a class of activity verbs which come very close to denoting states, in that the subject need not really do anything, or be engaged in any activity, for the

predicate to hold. These include the “posture verbs” such as *sit*, *stand* and *lie*, as well as other verbs such as *wear*. As sitting, standing or lying require little, if any, effort on the part of the subject, it seems reasonable to claim that they also do not require an agentive subject. Correspondingly, they allow extraction from modifying untensed verbal adjuncts.

(12) a. What is John sitting there [eating t]?

b. What was John lying in bed [reading t] all day?

Furthermore, this acceptability remains if we switch the content of the matrix predicate and the adjunct.

(13) a. Which chair did John eat his breakfast [sitting on t]?

b. Which bed did John read *Finnegans Wake* [lying in t]?

The second case of extraction from an adjunct modifying an activity involves the particles *(a)round* and *about* modifying the matrix activity.⁷ Such particles are, to use the terminology of McIntyre (2004a), *atransitive*, in that a verb–particle unit resists a direct object, even if the verb in isolation allows one.

(14) a. John sang a song.

b. John sang along.

c. *John sang a song along.

⁷Thanks to the anonymous reviewers for focusing my attention on this class of examples.

- (15) a. John played a silly game.
 b. John played around.
 c. *John played a silly game around. (cf. McIntyre 2004a:528)

As a result of this atransitivity, we will not find the same symmetry that we observed in (12–13) with respect to the placement of the “less agentic” predicate. *Around* will not be acceptable in a transparent secondary predicate, as it blocks addition of a direct object, and so, by extension, blocks extraction of such a direct object by *Wh*-movement. However, there are a large class of examples where adding *around* to a matrix activity verb clearly improves the acceptability of extraction from a modifying verbal adjunct.⁸

- (16) a. Who are you prancing *(about) [trying to impress t]?
 b. What did she jump *(around) [singing t]?

I attribute the amelioration that we find with these particles to the effect they have on the meaning of the verb to which they attach. McIntyre characterises this as indicating ‘that the course of an event metaphorically lacks a goal (“gets nowhere”, so to speak), whence the intuition that *around* is a verb diminutive which portrays an event as aimless,

⁸I tested this for my own idiolect on McIntyre (2004b), a list containing 140 particle verbs formed with *(a)round* or *about*. Disregarding examples which were inadmissible for some reason (for example, they involved different uses of the particle in question, they were not in my idiolect, or the meanings of the verb with and without the particle were clearly different) left 53 cases where we may expect extraction from transparent adjuncts. Of these, 39 (74%) allowed extraction, and in every case, the extraction was more acceptable with the particle than without — marginally so in 8 of the 39 cases (21%), drastically so in 31 of the 39 cases (79%).

unplanned, ineffectual, etc.’ (McIntyre 2004a:531). If we can take it to be a key component of agentivity that the agent is acting deliberately, with some aim (no matter how small, or immediate) in mind, the aimlessness which *around* and *about* add to a verb meaning plausibly contributes to a less agentive interpretation of the subject of that verb, thereby giving the necessary asymmetry between the two predicates which allows extraction from the transparent adjunct.

In general, though, a combination of activity-denoting matrix VP with a secondary predicate will give two fully agentive events, and as such, extraction from a secondary predicate modifying an activity- or state-denoting matrix predicate is usually ungrammatical in English. The interrogative constructions in (17) are ungrammatical, in contrast to the corresponding declaratives in (18).⁹

- (17) a. *What does John work [building t]?
b. *Which of your magic hats do you know Georgian [wearing t]? (Annabel Cormack, p.c.)

- (18) a. John works building igloos.
b. I only know Georgian wearing *this* magic hat.

However, if the above is on the right lines, a better understanding of the conditions for extraction from adjuncts modifying activity verbs is contingent upon a better

⁹I postpone further discussion of declaratives until section 4. Anticipating the results of that section, however, the reader is invited to verify that cases of ungrammaticality discussed below are consistently limited to interrogative variants of such sentences.

understanding of agentivity, a subject on which I have little to offer at present. I will therefore largely ignore examples such as (12) and (16) in what follows, concentrating instead on those classes of predicate which express a relation between two eventualities.

3.1.2 Accomplishments

It is widely assumed that accomplishments encode just such a relation. Dowty (1979) proposes to analyse accomplishments in terms of the relation CAUSE, which takes two propositional arguments,¹⁰ the first of which is generally an activity, the other generally an achievement. This relation holds if the former is the direct cause of the latter. A canonical accomplishment verb is *draw*:¹¹ the decomposition of (19a), on its telic interpretation, in (19b) is true if some event involving John drawing directly causes a circle to come into existence.¹²

(19) a. John drew a circle.

b. $\exists e_1, e_2. (\text{draw}(j, e_1) \wedge \text{BECOME}(\exists x. (\text{circle}(x)), e_2) \wedge \text{CAUSE}(e_1, e_2))$ ¹³

¹⁰For a sketch of an event-based reformulation of Dowty's decomposition, see Parsons (1990).

¹¹As with most accomplishment verbs, however, *draw* also admits an atelic activity interpretation. This interpretation is to be ignored for the purposes of this paper.

¹²Following Dowty and Parsons, I analyse BECOME initially as a one-place relation over events.

However, the domain of applicability of such a representation will be altered in the course of the discussion of the event structure of achievements below.

¹³I assume, following Lewis (1973) and other philosophical works on causation, that causation, or for our purposes the linguistic representation of causation, is a relation holding among events (or their descriptions). This is in contrast to the influential investigations into lexical decomposition in Lakoff (1970) and subsequent work in the generative semantics tradition, where the 'causative pro-verb' (§5.1.6) takes (in today's terms) an individual-denoting subject and a sentential complement. As Geis (1973), an

As, on Dowty’s analysis, accomplishments encode relations between events, condition (7) leads us to expect to find cases of transparent secondary predicates involved in accomplishment-like event structures. Indeed, it seems that this is the relation encoded in (5a), repeated below with other examples, and their semantic representations.¹⁴

- (20) a. i. What did John drive Mary crazy [trying to fix t]?
 ii. $\lambda x.(\exists e_1, e_2.(\text{try}(j, \text{fix}(j, x), e_1) \wedge \text{BECOME}(\text{crazy}(m), e_2) \wedge \text{CAUSE}(e_1, e_2)))$
- b. i. What did John cut himself [carving t]?
 ii. $\lambda x.(\exists e_1, e_2.(\text{carve}(j, x, e_1) \wedge \text{BECOME}(\text{cut}(j), e_2) \wedge \text{CAUSE}(e_1, e_2)))$
- c. i. What did you turn the house upside down [hoping to find t]?
 ii. $\lambda x.(\exists e_1, e_2.(\text{hope}(\text{you}, \text{find}(\text{you}, x), e_1) \wedge \text{BECOME}(\text{upside down}(\text{house}), e_2) \wedge \text{CAUSE}(e_1, e_2)))$

However, not all accomplishments are equal in this respect. (19) specifies the nature of both the causing and the caused event: a drawing by John causes a circle to come into existence. Compare the event structure of the matrix verbs in (20), as illustrated in (21).

early attempt to reconcile the conclusions arrived at by syntacticians and philosophers, observes, ‘only an act or a state of affairs, and not a person or instrument per se, can cause something to happen or someone to do something.’ (Geis 1973:211–2). Although Lakoff’s position stays closer to the syntax of basic causative sentences, the philosophical position, and the proposal developed by Geis, where CAUSE takes a clausal subject, arguably stays truer to the semantics, and allows a more natural treatment of causative secondary predicates.

¹⁴Questions are represented semantically here as λ -abstracts over *wh*-phrases for simplicity, as the points raised in this paper are independent of the question of the correct theory of the semantics of questions.

- (21) a. i. John drove Mary crazy.
 ii. $\exists e_1, e_2, P. (P(j, e_1) \wedge \text{BECOME}(\text{crazy}(m), e_2) \wedge \text{CAUSE}(e_1, e_2))$
- b. i. John cut himself.
 ii. $\exists e_1, e_2, P. (P(j, e_1) \wedge \text{BECOME}(\text{cut}(j), e_2) \wedge \text{CAUSE}(e_1, e_2))$
- c. i. You turned the house upside down.
 ii. $\exists e_1, e_2, P. (P(\text{you}, e_1) \wedge \text{BECOME}(\text{upside down}(\text{house}), e_2) \wedge \text{CAUSE}(e_1, e_2))$

When an accomplishment allows transparent secondary predicates, the nature of the causing event is generally unspecified. John could do anything to drive Mary crazy, and, so long as Mary becomes crazy as a result of John doing that something, (21a) would be true regardless. The same holds for the other examples in (21). This is in contrast to (19), which is only true if it is John's drawing which creates a circle. To put it differently, the occurrence of the drawing in (19) is independent of the question of whether or not that drawing created a circle, but there is no similarly independent component to the driving Mary crazy in (21a). Similar considerations to those discussed in section 3.1.1 lead us, in that case, to expect that the possibilities for transparent secondary predicates built around accomplishments such as (19) should be severely restricted in comparison to those illustrated in (20), as there is no event position left unspecified by the matrix verb in (19). Indeed, that is what we generally find, as shown by the following examples.¹⁵

¹⁵I am aware of a very few exceptions, such as *What did John draw a circle [using t]?*, the grammaticality of which is surprising in the context of the discussion in section 3.1.1. I suspect that *using* is behaving like a strandable preposition in this example, as its semantic contribution could equally well be carried by *with* in *What did John draw a circle with?*

(22) a. *What did John draw a circle [hoping to demonstrate t]?

b. *What did John draw that circle [planning t]?

This provides support for the assumption that transparent secondary predicates require identification of the event they denote with an event position in the matrix clause.¹⁶ Note that the identification requirement in (7) also captures the fact that it is impossible to *extend* the matrix event structure by adding the secondary event “on top” of the matrix event structure, rather than identifying it with an event position within that structure. I follow Dowty in assuming that accomplishments generally decompose into a relation between an activity and an achievement. It is clear, though, that we cannot create transparent secondary predicates with accomplishment-like interpretations from an achievement-denoting matrix predicate and an activity-denoting secondary predicate. Although examples such as (23) are grammatical, they lack the characteristic causative component of accomplishment semantics: we cannot interpret (23) in such a way that thinking about something made John come back, because achievements such as the matrix VP *come back* do not encode CAUSE. This shows that accomplishments cannot be generated from transparent activity predicates modifying achievements: transparent secondary predicates must instead be identified with a pre-existing matrix event position, as stated in (7).

¹⁶I will not offer an explicit theory of this identification process here. Numerous alternative paths of inquiry can be envisaged, along the lines of Kratzer’s (1996) Event Identification, Bittner’s (1999) causative type-shifting, Kratzer’s (2004) null causative affix, or, as suggested by Hiroyuki Uchida (p.c.), function composition applying to the two unsaturated constituents. Choosing between such possibilities would take us too far afield here.

(23) What did John come back thinking about?

3.1.3 Achievements

We have sketched treatments of states, activities and accomplishments with respect to (7). This leaves one major class of verbs, namely achievements, represented primarily by inchoatives such as intransitive *burn* and *break*,¹⁷ or verbs of appearance such as *arrive* or *come back*. On the influential formulation of Dowty (1979), achievements are distinguished by containing BECOME, but not CAUSE, where BECOME is a one-place operator, which takes a propositional argument ϕ and yields a proposition which is true at some interval of time i iff ϕ is both false at the beginning of i and true at the end of i , properties that do not both hold of any subinterval of i .¹⁸

As BECOME takes only one propositional argument, we so far expect that transparent secondary predicates should not generally participate in achievement-like relations. However, this would leave us with no account of examples such as (4b) or (23) above. Examples such as these are more achievement-like than anything else, as they describe a change of state (John arrives or comes back, respectively), where there is no causal relation between the arriving and the whistling events, and the matrix verb is a canonical

¹⁷For some speakers, including myself, transparent secondary predicates modifying intransitive forms of causative–inchoatives are, at best, marginal. The relevant examples are sentences such as *What did the pianola break playing t?*, with intransitive *break*. For a clear majority of my informants, however, such examples are acceptable, and even those who initially reject such examples find them improved by a more specific, disambiguating choice of *wh*-phrase, such as *Which sonata did the pianola break playing?*

Having said that, I will concentrate on the *arrive* class below, as the data are clearer and the judgments more uniform across speakers.

¹⁸Dowty's definitions of CAUSE and BECOME can be found in his English fragment (Dowty 1979:ch.7).

example of a certain class of achievements. Top priority for section 3, then, is a reformulation of the relevant classes of achievements as relations between two events. This is addressed in the next subsection. Following this, I will describe a further predicted limitation, concerning telicity, on the events involved in extraction from secondary predicates (section 3.3), before deriving the absence of transparent secondary predicates with certain other classes of achievements in section 3.4, and addressing the often-mentioned restriction that relations encoded in lexical items must be direct in section 3.5.

3.2 On BECOME

This section will identify certain classes of achievement, normally analysed only in terms of BECOME, as encoding a relation among events similar to the *telic pairs* of Higginbotham (1999). Telic pairs are structures, notated $\langle E, E' \rangle$, such that E' represents an event occurring at the endpoint of the event E . Higginbotham illustrates this with a variety of examples, some of which are generally considered to be accomplishments derived compositionally from activities modified by Goal PPs (24a), but others of which are canonical achievements (24b).

- (24) a. i. I flew my spaceship to the morning star
 ii. $\text{fly}(I, \text{my spaceship}, e) \ \& \ \text{to}(\text{the morning star}, (e, e'))$ (Higginbotham 1999:2)
- b. $\text{arrive}(x, e) \leftrightarrow (\exists p)[\text{at}(x, p, e) \ \& \ (\exists e')(e' \text{ is a journey by } x \ \& \ (e', e) \text{ is a telic pair})]$
 (Higginbotham 1999:4)

Evidently, the clause ‘*e* is a journey by *x*’ in (24b) is intended as a shorthand for whatever constraints *arrive* places on its preceding event, that is, on the event immediately before an arrival. Not everything arrives as the result of a journey, however (except possibly in a metaphorical sense): the package in (25a) arrives as the result of being delivered; the moment in (25b) arrives because of the passage of time; the baby in (25c) arrives by being born, and so on.

- (25) a. The package arrived this morning.
- b. The moment finally arrived.
- c. Our first grandchild arrived this morning, in good health and weighing 7lb 2oz.

Although (25) shows that the nature of the preceding event is not as fully determined by *arrive* as (24b) implies, I agree with Higginbotham’s intuition that an arrival must be preceded by *some* particular sort of event, over and above the minimal situation encoded in BECOME ϕ . The truth-conditions on BECOME ϕ require only that ϕ be preceded by $\neg\phi$, or, in other words, an arrival must be preceded by a state of not having arrived. Moving beyond this, however, it seems plausible that a major difference between *arrive* and *appear*, for example, can be stated in terms of what is acceptable as a further preceding event in such cases — certainly, the truth-conditions in terms of BECOME are the same for both verbs, in that *x arrives* and *x appears* are both true only if *x* is at a location where it previously wasn’t. The fact that *arrive* and *appear* are not synonyms suggests that the nature of a preceding event must be specifiable beyond the $\neg\phi$ required by BECOME. However, consideration of examples such as (25) leads to the conclusion that, as in the cases discussed in the previous section of accomplishments allowing

transparent secondary predicates, the nature of the preceding event of verbs of the *arrive* class remains underspecified to some extent.

I will assume, as is common in decompositional approaches, that only an accomplishment such as (24a), but not an achievement such as (24b), encodes CAUSE. However, Higginbotham's telic pair notation suggests an alternative way of looking at the semantics of many achievements, in terms of a relation of immediate temporal precedence holding between *two* events, distinguished from the accomplishment relation in being non-causal. Such an approach would then predict the possibility of transparent predicates modifying auxiliaries, and so give us a way of approaching examples such as (4b) or (23).

As this telic pair-like relation has little formally in common with the BECOME of Generative Semantics or of Dowty (1979), I will notate it as THEN, in order to avoid confusion. We have, then, two classes of verb which encode relations between pairs of events.¹⁹

¹⁹Note that both of these decompositions differ in non-trivial ways from the representations in Dowty (1979) and the Generative Semantics literature. In particular, I assume that CAUSE in accomplishments can be reformulated to incorporate the content of BECOME, without which CAUSE never appears in Dowty's English fragment. Equally, an explicit definition of THEN would make reference to a requirement for a salient event e_1 (or an event that can be accommodated as salient) immediately preceding the matrix event e_2 , as defined by Kamp's (1979) work on linguistic encoding of temporal relations, in addition to BECOME, which requires only that a proposition ϕ describing an event begins to hold over the interval in which BECOME ϕ is true. In effect, then, the content of BECOME is incorporated into these conceptions of CAUSE and THEN. These changes make several predictions concerning the interpretation of the classes of verb in question, which I believe are defensible. Spelling out the evidence is beyond the scope of this paper, however.

- (26) a. **Accomplishments**: e_1 CAUSE e_2 .
 b. **Many achievements**²⁰: e_1 THEN e_2 .

There is a clear parallel with the two classes of secondary predicate under consideration.

- (27) a. **Causative**: $e_{\text{secondary}}$ CAUSE e_{matrix} .
 b. **Depictive**: $e_{\text{secondary}}$ R e_{matrix} .

A major missing link, however, concerns the relation, notated as ‘R’ in (27b), between the two events in a depictive construction. Consideration of a sentence such as (28) might suggest that the relevant notion is temporal overlap.

- (28) John drives his car wearing sunglasses.

However, the parallelism between (26) and (27) leads us to investigate the possibility that depictives may, at least in some cases, be involved in a relation of immediate temporal precedence, that is, THEN. In fact, it seems that at least those cases where depictives modify achievements are accurately characterised by THEN. These are, as we saw above, exactly the same cases which encode THEN independently.

This representation is most clearly appropriate in the case of sentences such as (29).

- (29) a. John died whistling *Ode to Joy*.
 b. $\exists e_1, e_2. (\text{whistle}(j, \text{ode}, e_1) \wedge \text{dead}(j, e_2) \wedge \text{THEN}(e_1, e_2))$

²⁰We will return to some classes which constitute exceptions in section 3.4.

Temporal overlap is a clearly inappropriate characterisation of the relation between depictive and matrix events in this case, as dead men do not whistle. The only relation which makes sense is immediate temporal precedence. With this in mind, consider the following question.

(30) What did John come home [whistling t]?

It seems that, once again, the necessary and sufficient relation in this case is one of immediate temporal precedence. To see this, consider the following scenario.

(31) Every day, John walks home from school with his brother Bill, whistling as he walks. John's father knows this, but never hears which tune John whistles, because John stops the instant he opens the door of his family home. So every day, when the kids get home, the father asks Bill, 'Tell me, what did John come home whistling today?'

Even though John stops whistling the instant the result state of the predicate *come home* is reached, (30) is a perfectly acceptable question for John's father to ask in the context. This strongly suggests that, even in cases of questions with matrix verbs such as *come home*, immediate temporal precedence is the necessary and sufficient relation between the two events.

This does not entail that John must stop whistling the minute he gets home for (30) to be felicitous. Depending on our real world knowledge of the characteristics of certain actions, the normal interpretation of such relations is often, indeed, one where the depictive event continues through the time of the matrix event. This is normal in telic

pairs. A similar observation can be made in the case of the goal reading of (32), analysed by Higginbotham (1999) as a telic pair.

(32) a. The boat is floating under the bridge.

b. $[[\text{float-under } x]] = \lambda y \lambda e \lambda e' (\text{float}(y, e) \ \& \ \text{under}(y, x, e') \ \& \ \text{telic-pair}(e, e'))$

(Higginbotham 1999:2–3).

Although the *float* eventuality and the *under* eventuality form a telic pair, we do not assume that the boat must cease to float (i.e. sink) the instant it is under the bridge. Instead, the normal interpretation in this case is one where the floating continues after the boat has reached a position under the bridge. Again, though, this normal assumption can be cancelled, exactly parallel to the case of *come home whistling* in (30–31) above.

(33) The boat floated under the bridge, and then sank the second it got there.

I therefore propose an event structure for depictives modifying the relevant classes of achievements which exactly parallels the event structure of those achievements in isolation, just as we have an event structure for causatives modifying accomplishments which exactly parallels the event structure of accomplishments alone. The following summarises this proposal.²¹

²¹Ongoing research is aimed at addressing the extent of the validity of such templates as these. Certain other forms of extraction appear to fit quite neatly into these schemata, such as *Which book did he leave without signing?*, which consists of a protracted period of not signing the book in question, THEN an event of leaving. Equally, extraction from a purpose clause appears to require an intended or hoped-for causal relation between the events in the matrix clause and the purpose clause, as in *Whose attention was he*

(34) **Interpretation of Transparent Secondary Predicates:**

A matrix predicate may denote a relation between two events. Two possible such relations are:

(A) **Accomplishments:** e_1 CAUSE e_2

(B) **Many achievements:** e_1 THEN e_2

In these cases, a transparent secondary predicate denotes a property of the antecedent event e_1 . Therefore, (a) transparent secondary predicates modifying accomplishments are interpreted as causatives; and (b) transparent secondary predicates modifying non-causative achievements are interpreted as depictives.

Note that (34) states that a transparent secondary predicate may only specify a property of the first event position, e_1 , in such relations. That is, a transparent secondary predicate can specify the nature of a causing, or a preceding, event, but not a consequent, or following event. I wish to claim that this fact can be derived from a consideration of the event structures denoted by the classes of verb in question, that is, the finite main verb, and the progressive *V-ing* form in the secondary predicate. Roughly as suggested in Moens and Steedman (1988) and van Lambalgen and Hamm (2005), finite accomplishment and achievement verbs, which have been shown above to allow transparent secondary predicates in some cases, can be characterised as consisting of a jumping up and down in order to attract?. However, other examples fit less neatly, such as *This is the kind of food you should cross yourself before eating* (thanks to an anonymous reviewer for this example). The temporal relations in that sentence are the opposite of those predicted by (34). Such cases lead me to believe that a more general theory of extraction from adjuncts will ultimately require greater flexibility in the relations between subevents than the cases discussed in this article.

preparatory phase which leads to a change of state, which we assume subsequently to hold, in the absence of evidence to the contrary. We have, then, three component parts of such complex events: temporally extended preparatory and consequent phases, surrounding an instantaneous change of state.^{22,23} Furthermore, that the consequent state holds is arguably not a core part of the verb's meaning, so much as a default inference, in the absence of evidence to the contrary. This leaves two core parts to the semantics of accomplishments and the relevant classes of achievements: a temporally extended preparatory eventuality, followed by a punctual change of state.

Now, note that the progressive forms of verbs can be taken as specifically suited to describing the preparatory phase, but not the change of state, while finite matrix verbs can describe either stage. Van Lambalgen and Hamm distinguish the two phases, by defining the former as a *fluent* (an eventuality which holds over a period of time), and the latter as an *event* (which happens at a certain instant). A similar distinction has been drawn in accounts of the contrast between the French *passé simple* and *imparfait* (e.g. Kamp 1979, 1981), where sequences of the former are interpreted as describing a temporal succession of events, while sequences of the latter describe co-occurring,

²²It may be objected that the change of state is not necessarily instantaneous. In the accomplishment predicate *build a house*, for example, the house becomes gradually more complete, and so more prototypically a house, throughout the building period. I will follow van Lambalgen and Hamm (2005), however, in claiming that, at a certain instant, a speaker will be willing to admit that the house is built.

This moment, I claim, can be thought of as an instantaneous change of state.

²³I intend *instantaneous* along the lines of the *instants* of Kamp (1979), that is, periods of time defined by sets of pairwise overlapping events. The intuition is that, although an instant may, objectively speaking, be a non-point-like period of time, it is, in some sense, atomic, as no salient events take place, start or stop within that period.

temporally extended fluents. Crucially, *passé simple* forms, but not those in the *imparfait*, can move a narrative forward. It is natural to claim that, like the *imparfait*, English progressive verb forms canonically describe fluents, but not events, as multiple progressive verbs are also naturally interpreted as temporally extended, and as not moving a narrative forward. In that case, it follows that transparent secondary predicates can only describe the extended preparatory fluent, rather than the change of state or the consequent state, and so only fill the e_1 position in (34). I will now explore a further consequence of this claim, regarding telicity.

3.3 Telicity

Both classes of verb under consideration here, accomplishments and achievements, are telic. This is intuitively clear from the fact that both classes encode a single change of state, namely the event denoted by e_2 in (34). Telicity can be analysed, as a broad first pass, as requiring just such a change of state. In work building on Dowty's fragment, BECOME can be seen as a major, and possibly the only, lexical source of telicity.

Certainly, all and only the canonically telic verb classes contain BECOME, which entails a change of state, normally affecting the internal argument. On the reformulation sketched in the previous section, this would be equivalent to proposing that only operators such as CAUSE and THEN introduce telicity.

There is a further requirement on transparent secondary predicates with respect to telicity, namely that the secondary event be *atelic*. Once more, this follows naturally from inspection of the relevant verb classes. Accomplishments, and the non-causative class of achievements analysed above, both encode a relation between an activity and a

change of state which marks its endpoint, but no verb class describes a succession of bounded events. This amounts to a claim that, for example, the basic meaning of *hop* is equivalent to ‘perform a single hop’, and that there could be no verb whose basic meaning corresponds to the iterative ‘perform multiple successive hops’. On the assumption that only operators such as CAUSE and THEN introduce telicity, this is equivalent to saying that there are no verbs describing structures such as the following.

(35) * (e₁ {CAUSE/THEN} e₂) {CAUSE/THEN} e₃

Equivalently, the antecedent event e₁ in (34) must be, as stated, a simplex event. As, on standard decompositional analyses, all simplex events are atelic, the requirement that the antecedent event in an accomplishment or a non-causative unaccusative be atelic follows. This leads to the following generalisation concerning transparent secondary predicates and telicity.

(36) All transparent secondary predicates must be atelic, and must modify telic predicates.

We can see the validity of this claim by testing the four possible combinations of matrix and secondary event with respect to the property of telicity.

(37)

	Matrix event	Secondary event	Example	Grammatical?
a.	Atelic	Atelic	What did John work whistling?	No
b.	Atelic	Telic	What did John work noticing?	No
c.	Telic	Telic	What did John arrive noticing?	No
d.	Telic	Atelic	What did John arrive whistling?	Yes

(36) provides an account of the surprising extraction pattern noted in (5) above, whereby the secondary predicate *trying to fix* allows extraction of its complement while *fixing* does not. The crucial observation is that, while *fix*, on its standard, completed, reading, is telic,²⁴ *trying to fix* is atelic: the subset of control verbs including *try*, *hope*, *expect* represent one means of deriving an atelic predicate from a telic predicate embedded beneath them. (36) then correctly predicts the grammaticality of (5a) and the ungrammaticality of (5b). This surprising pattern comes about because the addition of extra syntactic structure serves to simplify the event structure, creating an activity out of an accomplishment. Strikingly, the mismatch between syntactic complexity and complexity of event structure in this case teases apart the approach advocated here from purely geometric approaches to strong islands.

3.4 Other Classes of Achievement

Extraction of the complement of a secondary predicate is predicted to be possible just in case the matrix and secondary predicate are related in a way which parallels the event structure of a possible lexical verb. We have seen that this predicts the grammaticality of extraction from secondary predicates modifying the intransitive form of causative–inchoatives, and achievements of the *arrive* class. These classes, however, form only part of the full spectrum of achievements. In this section, I want to spell out the predictions concerning secondary predicates modifying two further classes of achievements, namely verbs such as *appear* and transitive verbs of perception such as *notice*. In each case, extraction is impossible on the intended reading.²⁵

²⁴To the extent that *fixing* in (5b) can be coerced into an atelic, activity reading, (5b) is acceptable.

²⁵However, (39), at least, is grammatical on an alternative parse, with *his brother looking through t* taken as an event-denoting small clause complement of *notice*, rather than *looking through* as a secondary

(38) * What did John appear whistling?

(39) * What_j did John_i [notice his brother] [looking through t_j]_i

I propose to derive this ungrammaticality from further consideration of the aspectual structures of the matrix predicates involved. Note, firstly, that verbs such as *notice* or *appear* have no clear evidence for a causative component to their meaning. In that case, the relation between *notice* or *appear* and the event denoted by a secondary predicate would have to be mediated by THEN, rather than CAUSE. But, unlike cases such as *arrive*, there is no evidence that a preceding event has any part in the lexical semantics of *notice* or *appear*. Intuitively, the meaning of *arrive*, as well as causative–inchoatives such as *burn*, seems to encode a path progressing toward the result state. On the other hand, *appear* and *notice* are purely punctual, in that preceding events are potentially completely irrelevant to an appearing or noticing event. It appears, then, that the lexical semantics of *notice* and *appear* are adequately captured by the one-place operator BECOME, rather than CAUSE or THEN. This absence of a second event position in the argument structure of *notice* and *appear* explains the ungrammaticality of transparent secondary predicates modifying these classes of verb.

predicate modifying the VP *notice his brother*. Secondary predication is represented here by cosubscripting of the predicate and its subject — the intended, but unavailable, reading, is the one in which *looking through* is predicated of *John*.

3.5 Immediate Precedence

Already in Lakoff (1970), it is clear that at least a pre-theoretical distinction between *direct* and *indirect* causation can be drawn, as illustrated by the following examples.²⁶

- (40) a. **Direct causation:** John opened the door by turning the doorknob.
- b. **Indirect causation:** John opened the door by increasing the air pressure in the room to 200 atmospheres. (Lakoff 1970:41)

Fodor (1970) used this distinction to elucidate a difference between causative lexical items, and causatives formed periphrastically with main verbs *cause* or *bring about*. Taking a diagnostic of indirect causation to be that the causing and caused events can occur at distinct times, such as on different days, Fodor shows that only periphrastic causatives can describe relations of indirect causation, as seen in the following contrast.

- (41) a. Floyd caused the glass to melt on Sunday by heating it on Saturday.
- b. *Floyd melted the glass on Sunday by heating it on Saturday. (Fodor 1970:432–3)

Importantly for our purposes, then, the only type of causation which can be lexically encoded in verbs is *direct* causation. Following the approach of Lewis (1973) and Bittner

²⁶A reviewer notes the surprising ungrammaticality, given (40a), of **What did John open the door turning?*. Furthermore, this appears to be related to the fact that (40a) is also degraded if *by* is omitted: ??*John opened the door turning the key*. Unfortunately, I have nothing to offer concerning the reason for this intriguing further restriction on transparent secondary predicates.

(1999), *causation* can be defined as a relation holding between two events e_1 (a cause) and e_2 (an effect), such that, in the closest possible worlds to the real world where e_1 does not occur, e_2 also does not occur. Orders of causally related events, such that an event e_1 causes e_2 , which in turn causes e_3 , and so on, are referred to by Lewis as *causal chains*, and direct causation can be seen more formally as corresponding to a single link in a causal chain, that is, a causal relation where no salient events intervene between cause and effect in the causal chain.

In the light of such a definition, it seems that direct causation is also the appropriate characterisation of the relation holding between English causative secondary predicates and the matrix predicates they modify. We can see this by examining the only two cases in which events fail to stand in a relation of direct causation. In these cases, either e_1 is a cause of e_2 , but there are intermediate events in the causal chain, or e_1 is not a cause of e_2 . There are two subcases of the latter: either there is simply no causal relation whatsoever that involves the two events, or they occupy the same position in a causal order — that is, they are caused by the same events, and /or cause the same events, but neither is a cause of the other (such a situation could arise if one event is a proper subpart of the other, for example). The following examples show that in each of these three cases, a causative interpretation of a secondary predicate is excluded.

Consider, firstly, (42).

(42) John made himself angry trying to fix the radiator.

The most salient interpretation of this sentence is that John was trying to fix the radiator, and this activity caused him to become angry. This is a relation of direct causation.

However, situations with an intermediate event intervening in the causal chain can also be described by (42), for example, if John was trying to fix the radiator, trying to fix the radiator caused him to miss his favourite TV programme, and missing his favourite programme made him angry. In this latter scenario, however, the secondary predicate is interpreted depictively, rather than causatively (such that, roughly, John made himself angry *while*,²⁷ rather than *by*, trying to fix the radiator). Given that the matrix predicate in (42) is an accomplishment, we then expect the latter interpretation to be unavailable in related interrogatives. The dialogues in (43) confirm this.

(43) A: What did John make himself angry [trying to fix t]?

B: The radiator. It just really got to him.

B': # The radiator. But it wasn't because he was trying to fix the radiator that he made himself angry, it was that he happened to be trying to fix it while his favourite programme was on.

This shows that causative interpretations of secondary predicates will not admit intermediate salient events intervening between causing event and caused event. A similar point can be made in relation to cases where there is simply no causal relation between matrix and secondary predicates, such as (44).

(44) ? John hurt himself having a neatly mown lawn.

²⁷This description disregards, for simplicity, the points raised in section 3.2 concerning the interpretation of depictives.

Such a sentence is conceivably rescuable, given an unusual context and a depictive interpretation of the secondary predicate.²⁸ It is impossible, however, to construe the secondary predicate as causative, presumably because possession of something does not directly cause physical pain. This predicts that corresponding interrogatives should again be ungrammatical.

(45) * What did John hurt himself having / owning?

The final case is that of two events occupying the same position in a causal order. Once again, (46) is acceptable on a depictive interpretation of the secondary predicate, but, as dipping a quill in an inkwell is a subpart of the activity of writing a letter, the two events stand in a relation of causal overlap, and it is intuitively incorrect to claim that the two events in (46) can be interpreted as standing in a causal relation.

(46) John wrote a letter dipping his quill in the inkwell.

The absence of a causal relation predicts, correctly, that the secondary predicate is not transparent:

(47) a. * What did John write a letter [dipping his quill in t]?

b. * What did John write a letter [dipping t in the inkwell]?

²⁸Suppose that someone claims that keeping your lawn in immaculate condition makes you invulnerable to physical pain. You could point out that this is wrong by saying ‘Well, John hurt himself having a neatly mown lawn, so you must be mistaken.’

All of this strongly suggests that direct causation is the relation encoded in English causative secondary predication. Furthermore, the temporal relation encoded by depictives is also direct: while (48) may be judged true if John stopped whistling more or less immediately before he arrived home, it would certainly be judged false if there were any salient events intervening in the temporal order between his stopping whistling and his arriving at home.

(48) John came home whistling a mournful slow air.

That immediate temporal precedence can also be encoded by a lexical item can be seen in Higginbotham's (1999) representation of *arrive*, repeated from (24b). As one event in a telic pair represents the endpoint of the other, the temporal relation between the two is necessarily one of immediate precedence.

(49) $arrive(x, e) \leftrightarrow (\exists p)[at(x, p, e) \ \& \ (\exists e')(e' \text{ is a journey by } x \ \& \ (e', e) \text{ is a telic pair})]$
 (Higginbotham 1999:4)

In that case, immediate temporal precedence is also encoded in the relevant class of achievements. I am unaware of any verbs which encode non-immediate temporal precedence: that is, there is no verb *arrive'*, such that *x arrive' at y* is true at time *t* iff there was a journey by *x* in the distant past, and *x* is at *y* at time *t*.

The above shows that the directness of the causal and temporal relations holding among events in secondary predication constructions directly parallels that which we find in complex event structures encoded by lexical items. This is, again, as predicted by

condition (7).²⁹

4 Secondary Predicates in Declarative Constructions

All the conditions proposed so far have made reference exclusively to *transparent* secondary predicates. The assumption has been that *wh*-movement out of the secondary predicate is responsible for the necessity of the cluster of interpretive properties described above. This section aims to justify that assumption, by showing that most properties prohibited by the conditions in preceding sections are in fact permitted in declarative secondary predicate constructions. Section 3.5 showed that although the directness of causal and temporal relations holds independently of whether the sentence is declarative or interrogative, the interpretation of a secondary predicate in a given environment is subject to variation in declarative environments, but fully determined in interrogative cases. The following sections will illustrate a similar pattern with respect to the telicity restriction of section 3.3, as well as the non-punctuality requirement discussed in section 3.4. In each case, the constraints apply only in the interrogative case, leading to the conclusion that it is extraction from the secondary predicate that is

²⁹However, it may be that the directness requirement is independently imposed, because it is not overtly expressed by any lexical item. This is predicted by the following generalisation from Bittner (1999).

Concealed Causative Semantics

If a causal relation is syntactically concealed (only its arguments are overtly expressed), then it is semantically direct (no intermediate causes). (Bittner 1999:2)

Although Bittner's generalisation is only concerned with causal, and not temporal, relations, we may well expect similar constraints to apply to both, which would independently derive the directness requirement on temporal and causal relations.

responsible for imposing this cluster of properties.

4.1 Telicity

Table (37) showed that the only configuration allowed by transparent secondary predicates with respect to telicity is an atelic secondary predicate modifying a telic matrix predicate. The requirement for an atelic secondary predicate remains in declarative constructions, presumably related to the permitted aspectual and morphological shapes of secondary predicates, but declaratives with atelic matrix verbs are quite unremarkable, and much less constrained than the few exceptional cases discussed in section 3.1.1 of extraction from secondary predicates modifying activities. (50) gives one example where the declarative, but not the interrogative, form is fully grammatical.

- (50) a. I work listening to music.
b. *What do you work [listening to t]?

4.2 Perception Verbs and *Appear*

It was reported in section 3.4 that perception verbs and verbs like *appear* do not allow transparent secondary predicates. Both classes of verb do, however, allow secondary predicates in declarative constructions, as the following examples show.³⁰

- (51) a. John appeared wearing a beautiful bespoke suit.

³⁰There is admittedly a continued preference for low attachment of *coming* as an object-oriented depictive in (51b). However, construal as a subject-oriented depictive remains available in this case.

- b. John noticed the heavy traffic coming back from the shops.

Of course, interrogative versions of the two sentences are ungrammatical on the relevant interpretations.

- (52) a. *What did John appear [wearing t]?
b. *What_i did John_j [notice the heavy traffic] [coming back from t_i]_j?

Overall, the conclusion must be that the restrictions on secondary predicates discussed in section 3 are largely due to *wh*-movement out of the adjunct in question. Other aspectual structures allow identical secondary predicates in corresponding declarative sentences, but this is systematically excluded in the interrogatives.

5 Conclusion

This paper has proposed a semantically-based approach to a class of exceptions to the well-motivated claim that adjuncts are strong islands for extraction. The intuitive basis for the proposal is the condition (7), repeated below.

(53) **Extraction from Adjunct Secondary Predicates:**

Extraction of a complement from a secondary predicate is permitted only if the event denoted by the secondary predicate is identified with an event position in the matrix predicate.

The notion of ‘the same structure’, spelled out more explicitly, is shown to predict restrictions on the telicity of matrix and secondary predicates (section 3.3), and on the

directness of the relation between the two predicates (section 3.5). Furthermore, section 3.4 derives the prediction that transparent secondary predicates are ungrammatical when modifying achievements with no preceding event, such as *appear* or *notice*.

The fact that corresponding declarative constructions do not obey the restrictions detailed in section 3 indicates that these restrictions arise as a result of *wh*-extraction from the secondary predicate. This makes (7), in effect, a generalisation about locality, albeit one couched in less strictly phrase-structural terms than usual. Indeed, (7) describes a class of exceptions to the Condition on Extraction Domain with respect to English, consisting of many cases of grammatical extraction from adjuncts.

This line of thought raises the more general question of the status of (7) with respect to the CED. In principle, at least three different approaches can be envisaged to the tension between these data and the CED. We may firstly wish to claim, as Levine and Sag (2003) implicitly do, that at least the adjunct case of the CED is simply falsified.³¹ Although the existence of such counterexamples does offer support for this view, simply discarding the CED without adopting something like (7) would raise the question of how to account for the ungrammaticality of examples which fail to meet that generalisation, such as

* *What does John work building?*

One approach to this problem would be to attempt to generalise maximally the semantic nature of (7). Such an approach may claim, for example, that, in a given clause, only

³¹Note, in connection with this, that the examples standardly used to motivate the CED with respect to adjunct islands involve tensed adjuncts, such as (1b) above. As noted by Szabolcsi (2006), tense is known to inhibit extraction independently, and grammaticality judgments concerning extractions from adjuncts in general become much more gradient once this is controlled for.

constituents denoting arguments of the predicate denoted by V allow subextraction. Such an approach would subsume (7), and, moreover, correctly predict the grammaticality of extraction from complement clauses, and many complement DPs. However, this approach appears too general, in that, at least in cases without transparent secondary predicates, the subject is clearly an argument of the verbal predicate, yet external subjects, and most internal subjects, strongly resist subextraction, as the following examples illustrate.

- (54) a. *Who did [a friend of t] visit you?
b. Who did you visit [a friend of t]?

We are left, then, requiring a compromise. It appears that a purely geometric approach to adjunct islands is untenable, as (7) divides grammatical and ungrammatical A'-movement in a way which appears irreducible to phrase structure geometries. On the other hand, an approach based solely on event and argument structure will struggle to include extraction from transparent secondary predicates, while excluding extraction from subjects in the general case.

A preliminary sketch of the form of this compromise would look as follows. The import of (7) is, essentially, that argumenthood is a precondition for extraction out of transparent secondary predicates. That is to say, if the identification required by (7) takes place, the proposition derived by applying the secondary predicate to the subject is an argument of the verb. This is all that distinguishes those cases that (7) allows from those it rules out. This relation is very similar to that holding between a standard subject and a verb, in the absence of a secondary predicate, so a semantic distinction between

extraction from subjects and from transparent secondary predicates will, most likely, not be forthcoming. We need to look to other factors to make this distinction. For example, it may be possible to claim that a transparent secondary predicate is VP-internal, given the low position of depictives generally, plus the special argumental status of transparent secondary predicates. The correct generalisation would then be as follows.

(55) Subextraction is only permitted from VP-internal arguments of V.

Another potentially relevant factor is linear order. Note that secondary predicates, like complements, occur to the right of the verb in English, whereas subjects occur to the left. There is an intuitive link between this observation and theories which assume government is sensitive to linear order. If there is anything in this, we should instead adopt a condition such as the following:

(55') Subextraction is only permitted from arguments of V linearised to the right of V.

Determining the validity of such formulations is beyond the scope of this paper, however. For example, any such line of inquiry must take account of the fact that there is a large amount of cross-linguistic variation with respect to transparent secondary predicates, while the CED is often taken to be universal. French, Dutch and Italian do not allow them at all (Alain Kihm, Ad Neeleman, Raffaella Folli and Gennaro Chierchia, p.c.) while Spanish allows extraction from depictives obeying syntactic and semantic restrictions distinct from those applying to English (Demonte 1988), and Norwegian is similar to, though perhaps slightly more liberal than, English in this respect (Øystein Nilsen, p.c.). Such patterns pose a severe challenge to the project of formulating a universally valid successor to the CED.

Another unexplored area concerns the restriction that only complements may be extracted from secondary predicates. This is stipulated in (7), but ideally, the restriction would be derived from one of two sources. Either this could be a property of gerundive clauses in certain environments, or it could indicate that secondary predicates here are weak, but not strong, islands, in the terminology of Cinque (1990), as weak islands also only allow extraction of their complements.

The preceding paragraphs have shown that there remain a great many directions for future research to follow. This paper has, however, aimed to establish that a class of adjunct island violations can only elegantly be described in terms relating to their interpretation, rather than to their phrase structure properties.

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