

Scope or Pseudoscope? Are there Wide-Scope Indefinites?¹

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1. The starting point: Fodor and Sag

My story begins with a famous example by Janet Fodor and Ivan Sag ²:

The Fodor and Sag example

(1) Each teacher overheard the rumor that a student of mine had been called before the dean.

(1) has a reading where the indefinite NP a student of mine has scope within the that - clause. What the teachers overheard might have been: “A student of Angelika’s was called before the dean”. This reading is expected if indefinite NPs are quantifiers, and quantifier scope is confined to some local domain. (1) has another reading where a student of mine seems to have widest scope, scope even wider than each teacher. There might have been a student of mine, say Sanders, and each teacher overheard the rumor that Sanders was called before the dean. Fodor and Sag argue that this is not an instance of scope. If indefinite NPs seem to have anomalous scope properties, they are not true quantifiers. The apparent wide-scope reading of a student of mine in (1) is really a referential reading. Indefinite NPs, then, are ambiguous between quantificational and referential readings. If they are quantificational, their scope cannot exceed some local domain. If they are referential, they do not have scope at all. They may be easily confused with widest scope existentials, however.

Sentence (1) is important for Fodor and Sag’s argument since it offers a third scope possibility for the indefinite NP that doesn’t seem to be there. If indefinites were quantifiers that can freely violate scope constraints, we would expect sentence (1) to have a reading where a student of mine has intermediate scope, scope wider than the that - clause, but narrower than each teacher. There might have been different students of mine, say, Sanders, Monroe, and Wilson, and the science teacher overheard that Sanders was called before the dean, the math teacher overheard that Monroe was called before the dean, and the woodshop teacher overheard that it was Wilson who suffered that fate. (1) lacks this reading, thereby supporting Fodor and Sag’s proposal.

Fodor and Sag's examples and conclusions have been questioned³. The most serious challenge comes from a recent paper by Dorit Abusch.

2. The challenge: Abusch

Abusch (1993-1994) presents many cases of indefinite NPs that seem to have the intermediate scope readings that Fodor and Sag claim do not occur. By way of illustration, I want to look at two representative examples. Consider first Abusch's Professor example (2)⁴:

The Professor example

(2) Every professor rewarded every student who read some book he had recommended.

(2) has a reading where every professor picked some book out of all the books he had recommended, and rewarded every student who read that book. Different books might have been picked by different professors. The Professor of French might have picked Madame Bovary from the list of French novels he had recommended. The Professor of Italian might have chosen I Promessi Sposi. And the Professor of English might have insisted on The House of Mirth. If (2) is understood this way, the indefinite NP some book he had recommended cannot be referential. It does not refer to a particular book. But if it is quantificational, it must have been scoped out of a relative clause, violating a scope constraint. It is not that students were rewarded just because there was some recommended book they read. For every professor, there was a particular book that was singled out for a reward.

The second Abusch example I want to present is the Stuttgart example (3):

The Stuttgart example

(3) Every one of them moved to Stuttgart because some woman lived there.

(3) has a reading where everyone of them was attracted to Stuttgart by a possibly different woman. That is, neither was it necessarily one and the same woman who attracted everyone to Stuttgart, nor the fact that Stuttgart is not womenless. Here, too, the indefinite NP is not referential. And if it is quantificational, it must have been scoped out of the because-clause, violating again a scope

constraint.

Abusch concludes from such examples that indefinites do not have the same scope properties as true quantifier phrases, they need special treatment.

Discourse Representation Theory (Kamp (1981), Heim (1982)) is a theory that is based on the assumption that indefinites are indeed different from true quantifier phrases. What makes them different is that they do not have their own quantificational force. On Heim's proposal (adopted by Abusch), they introduce variables into the logical representation that can be bound by independent operators (existential closure operators, for example). This opens up the possibility that the variable introduced by an indefinite NP may be bound by a non-local operator. This possibility all by itself does not always give us the correct readings for apparent wide-scope indefinites, however. This is shown by the following example discussed in Heim (1982) and Abusch (1993-1994):

(4) If a cat likes a friend of mine I always give it to him.

We are interested in the reading of (4), where a friend of mine takes widest scope. I have that special friend, and whenever a cat likes her, I give it to her. Suppose the logical representation for (4) is the tree in figure (1), where the indefinite NP a friend of mine stays *in situ*, and the variable it introduces (represented by the index 2) is bound by a non-local (text-level) existential closure operator:

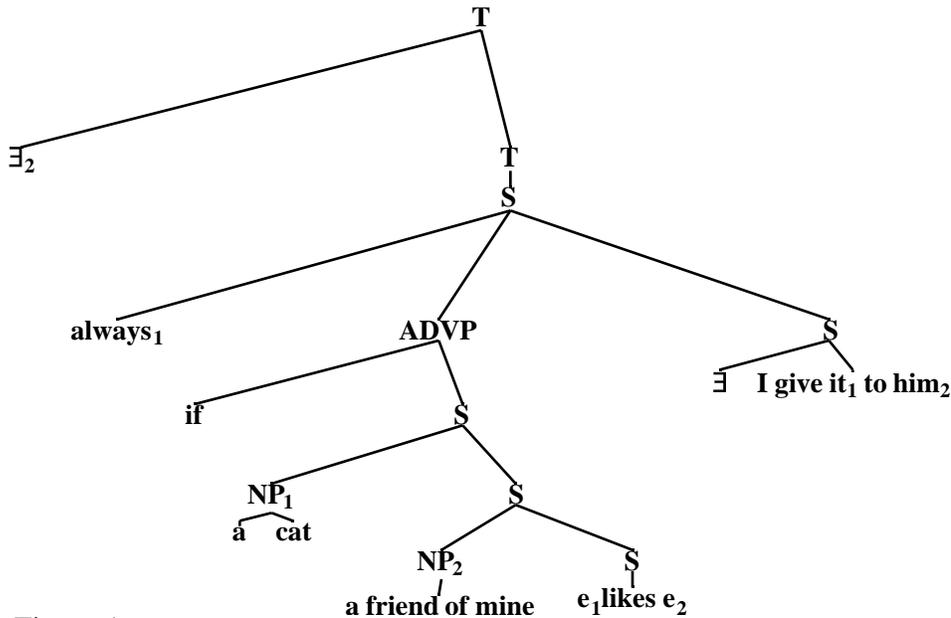


Figure 1

Given the interpretation mechanism assumed in Heim (1982), this logical representation does not yield the intended reading for (4). The mere existence of an individual that is not a friend of mine would make it true. To avoid this, Abusch proposes that indefinites are special not just in one, but in at least two respects. They may derive their quantificational force from a possibly non-local operator, and they use a storage mechanism that allows them to pass up their restrictive predicate until it meets its operator. In the logical representation of figure (1), then, processing of the restrictive predicate friend of mine would be delayed until the text-level co-indexed existential closure operator is processed. This gives us the effect of scoping without actual movement. As for the Professor and Stuttgart examples above, intermediate existential closure operators could be inserted and co-indexed with far away indefinites.

Abusch's storage mechanism duplicates the entire compositional interpretation procedure. We would want independent motivation for such a device. It should not just be there for indefinites. More importantly, we no longer have an account for the original Fodor and Sag example. Abusch's theory does not predict a difference between that example and the examples she discusses. Yet they are not all the same. Intermediate scope readings for indefinites are easy and uncontroversial in the Professor and Stuttgart examples, but impossible or hard to get in the Fodor and Sag example. This difference is not expected if we allow indefinites to escape from just any kind of island. On Abusch's proposal, the insertion of existential closure operators would have to be a scoping

mechanism that is constrained. But how?

One of the goals of this paper is to show that constraints on liberalized scoping mechanisms for indefinites would have to account for data that seem hopelessly slippery and chaotic. It is hard to see how a syntactic mechanism like the insertion of existential closure operators could be blocked in just the right class of cases. I will argue that a slightly modified version of the much more restrictive Fodor and Sag proposal is better equipped to deal with the facts. Indefinites can be quantificational or specific, and if quantificational, they behave like any other quantifier phrases. But indefinites can also produce pseudoscope effects, and this is what creates the apparent chaos.

3. A first case of pseudoscope: The Professor example and its cousins.

Comparing variations of the Fodor and Sag example and the Professor example, we see that the presence or absence of a bound variable pronoun makes a difference ⁵:

- (5) a. [Every professor]_i rewarded every student who read some book she_i had reviewed for the New York Times.
 b. Every professor rewarded every student who read some book I had reviewed for the New York Times.
- (6) a. [Each teacher]_i overheard the rumor that some student of his_i had been called before the dean.
 b. Each teacher overheard the rumor that some student of mine had been called before the dean.
- (7) a. [Every professor]_i got a headache whenever some student he_i hated was in class.⁶
 b. Every professor got a headache whenever some student Mary hated was in class.

For the (a)-sentences, it seems easy to get an intermediate reading for the indefinite NP, for the (b)-sentences it is hard or impossible. The only difference between the two types of sentences is that the (a)-sentences have a bound variable pronoun where the (b)-sentences have a referential pronoun or a proper name. Why should the presence of a bound variable pronoun in a relative clause

modifying an indefinite NP influence its scope possibilities? I can't see how we might answer this question within the approach to indefinites advocated by Abusch. I do see, however, how a slight modification of the Fodor and Sag proposal could solve this puzzle.

Like Fodor and Sag, I want to say that indefinite NPs are ambiguous between a specific and a quantificational interpretation. If they are quantificational, their scope is local, and they are interpreted as generalized quantifiers, like any other quantifier phrase. Unlike Fodor and Sag, however, I do not take specific readings to be referential. Instead, I want to explore the possibility that the specific reading for indefinites depends on a choice function. A proposal along those lines is made in Reinhart (1995) ⁷. Following Reinhart, I take certain indefinite articles to be pronominal elements denoting choice functions. Unlike Reinhart, however, I take these choice functions to be contextually determined, often intended by the speaker, but not revealed to the audience. This can be signaled by a pitch rise localized on determiners like some or one, followed by a falling pitch on the noun ⁸. Reinhart assumes that the choice function variables introduced by indefinite determiners can be bound by freely inserted existential closure operators. This would predict that indefinites that have a choice function interpretation can escape from just any kind of scope island. But then the presence of bound variable pronouns should not make a difference, and the complicated array of data discussed below (see especially sections 5 and 6) would be entirely unexpected ⁹.

A choice function is a (often very) partial function from sets of individuals that picks a unique individual from any non-empty set in its domain. For the specific interpretation of some book, for example, the context of use has to determine a choice function *f* as the denotation of some. Some book, then, denotes the book that *f* picks from the set of all books.

How could contextually supplied choice functions explain why the availability of apparent intermediate scope readings in examples (5) to (7) is influenced by the presence of a bound variable pronoun? Look again at 5(a) and 5(b).

- (5) a. [Every professor]_i rewarded every student who read some book she_i had reviewed for the New York Times.
- b. Every professor rewarded every student who read some book I had reviewed for the New York Times.

In 5(a), the restrictive clause for some contains a bound variable pronoun that is anaphorically related to every professor. Different choices of professors, then, may yield different restrictor sets for some, hence possibly different books to pick out for the choice function. This looks like an intermediate scope reading for the indefinite NP. In 5(b), on the other hand, different choices of professors cannot produce different restrictor sets for some, hence the earlier impression that an intermediate scope reading is missing.

But wait. This is too fast. Imagine two professors recommending the same set of books, for example ¹⁰. Could they have singled out different books for students to read in order to qualify for an award? Intuition says ‘yes’. Our present choice function approach says ‘no’, however. If the sets of books are the same, the choice function must pick the same book. I conclude that the intermediate scope reading of 5(a) is genuine. How come?

It will help to look at a determiner that only has a specific interpretation. Take a certain:

- (8) a. [Every professor]_i rewarded every student who read a certain book she_i had reviewed for the New York Times.
- b. Every professor rewarded every student who read a certain book I had reviewed for the New York Times.

In 8(a), we find the intermediate scope interpretation of the indefinite NP. This time, it is forced, not just facilitated by the presence of the bound variable pronoun. For 8(b), a referential interpretation is highly preferred. The semantic properties of a certain are quite well understood, thanks to the work of Hintikka (1986). Here is a possible way of arriving at a variant of Hintikka’s analysis.

We can think of the complex determiner a certain as a member of an interesting class of expressions discovered by Jonathan Mitchell (Mitchell (1987). See also Partee (1989)). One of the examples discussed by Mitchell is (9) ¹¹:

- (9) All these reporters are covering local athletes.

In (9), local can be interpreted with respect to the utterance situation, and relates then to the speaker’s region or to some other contextually salient place. But it can also have a quantified reading: Each of these reporters is covering athletes local to her newspaper’s or station’s area.

Local, then, seems to have an implicit argument that can receive a referential or a bound variable interpretation. Suppose now the same is true of the determiner a certain, and consider sentence (10) from Hintikka (1986). Assuming that a certain NPs are always specific, and that specific indefinites are interpreted with the help of choice functions, the first part of (10) would have the truth-conditions in (10’):

(10) Each husband had forgotten a certain date - his wife’s birthday.

(10’) $x(\text{husband}(x) \text{ had forgotten } (x, f_x(\text{date})))$

The complex determiner a certain is represented here as the free function variable f . Its implicit argument appears as a subscripted variable. Possible values for the variable f are (partial) functions that map individuals into choice functions. In this particular example, the contextually determined value for the variable f is a function that maps every husband into a choice function that is defined for just one argument, the set of all dates, and picks that man’s wife’s birthday from that set. This analysis is very close to Hintikka’s analysis of a certain¹², and shares all its welcome empirical consequences. If we thought of a certain NPs as quantifier phrases, their scope behavior would be erratic. There are some environments where we would have to assume that they could only take widest scope, as shown by the following examples from Hintikka:

(11) a. Is Richard dating a certain woman?

b. Is Richard dating a woman?

(12) a. Richard does not have time to date a certain woman, but he sends her flowers.

b. * Richard does not have time to date a woman, but he sends her flowers.

But then there are other contexts where a certain NPs do not necessarily have ‘widest scope’, as illustrated by (10) above. The present analysis based on choice functions and implicit arguments (parametrized choice functions) explains this behavior. In (10), the implicit argument of a certain can be anaphorically related to a quantifier phrase (every husband), hence can be interpreted as a bound variable. This creates the impression that the indefinite NP has narrow scope. (11) and (12) do not contain any quantifier phrases. A likely referent for the implicit argument of a certain in those sentences is the speaker. We have a (rather rudimentary) choice function that picks out a

woman that the speaker has in mind. Consequently, the indefinite NP receives a referential interpretation, and might give the impression of necessarily having widest scope.

It is revealing that Ruys (1992) explicitly employs the determiner a certain with a bound variable pronoun, and anaphoric adjectives like other and different to force intermediate scope readings. Here are some of his examples ¹³:

- (13) a. Every professor will rejoice if a certain student of his cheats on the exam.
 b. Every professor will rejoice if a different student cheats on the exam.
 c. Every student will rejoice if another student cheats on the exam.

A different and another resemble local in that they are ‘perspectival’ in the sense of Mitchell and Partee. They have implicit arguments that can have bound variable interpretations. For 13(b), the bound variable interpretation implies that for different professors x and y , we have different choice functions f_x and f_y that pick out different students. 13(c) says that every student x will rejoice if a student different from x cheats on the exam.

Let us now go back to sentences 8(a) and (b). In 8(a), the presence of a bound variable pronoun within the indefinite NP has the effect of almost eliminating the difference between a referential and a bound variable interpretation for the implicit argument of a certain. In both cases, different choices of professors may yield different restrictor sets as arguments for the choice function. And in both cases, plausible functions would establish a natural connection between professors and particular books they reviewed for the New York Times. Hence the impression that we are dealing with just one regular intermediate scope reading. The difference will only come out if we are pushed to think about far-fetched cases like different professors reviewing the same books. In 8(b), a referential interpretation for the implicit argument of a certain yields a referential interpretation for the whole indefinite NP. In the absence of an overt bound variable pronoun, this is the preferred interpretation. A bound variable interpretation of the implicit argument would yield the intermediate scope reading, a marginal option. Why is this option so dispreferred? Hintikka discusses a similar case, (14):

- (14) Everyone of these young men hopes to marry a certain woman.

He comments that “the function codifying young men’s choices of their prospective spouses is a

notoriously unpredictable one”. Hence the “functional interpretation” for a certain woman in (14) is “expectedly unnatural”¹⁴. Translated into our parametrized choice function framework, we would say that a bound variable interpretation for the implicit argument of a certain would ask us to supply a natural function connecting young men with women, and the sentence just doesn’t provide enough cues for coming up with a suitable function very easily. This is why a referential interpretation is picked. The implicit argument of a certain could then refer to the speaker, and the resulting choice function could pick a woman known to the speaker, but not revealed to the audience.

We are now ready to return to our earlier observation about some. Suppose that on its specific interpretation, some has the same denotation as a certain. But unlike a certain, some has a quantificational interpretation as well. We now correctly predict the available readings for (5) to (7). Take (5), repeated as (15), as an illustration:

- (15) a. [Every professor]_i rewarded every student who read some book she_i had reviewed for the New York Times.
- b. Every professor rewarded every student who read some book I had reviewed for the New York Times.

In 15(a), we observe an intermediate and a narrow scope reading for the indefinite NP. The narrow scope reading is provided by the quantificational interpretation. The intermediate scope reading¹⁵ is accounted for by the specific (choice function) interpretation. In 15(b), we have clear referential and narrow scope readings, and a very marginal intermediate scope reading. The referential and intermediate scope readings come from the specific interpretation of the indefinite NP. The narrow scope reading is due to the quantificational interpretation.

Even with the help of overt bound variable pronouns, intermediate readings are not possible for all indefinites. Look at the following variations of the Professor sentence.

- (16) a. Every professor rewarded every student who read some book he had recommended.
- b. Every professor rewarded every student who read a book he had recommended.
- c. Every professor rewarded every student who read books he had recommended.

- d. Every professor rewarded every student who read at least one book he had recommended.

The examples differ as to the kind of indefinite NP in them. 16(c) has a bare plural, and an intermediate scope reading is very hard to get, if not impossible. The same is true for 16(d), which has a modified numeral. As for 16(b), speakers differ. For some, an intermediate reading is fine, others have difficulties. For 16(a), an intermediate reading is uncontroversial. On the present proposal, we can say that not all indefinite NPs allow a specific interpretation, and that speakers may differ as to which NPs can be specific for them. Few speakers allow specific interpretations for bare plurals or modified numerals ¹⁶, and some do not allow specific interpretations for certain indefinites with the determiner a. But if an indefinite NP is not specific, it is quantificational ¹⁷, and the presence of a bound variable pronoun in its restrictive clause does not bring out an intermediate scope effect.

In this section, I have argued for a rather simple analysis of indefinites: They can be quantificational or specific. If specific, they are interpreted through a contextually determined choice function, and are perspectival in the sense of Mitchell and Partee. This analysis treats a large class of apparent intermediate scope readings (represented by Abusch's Professor example) as pseudoscope effects facilitated by the presence of a bound variable pronoun within a specific indefinite NP. The main virtue of the current proposal is that it allows different kinds of indefinites to behave differently in different environments, and it explains the variability and slipperiness of the data in this area.

4. Event quantification as a possible source of pseudoscope

In this section, I will look at certain variations of Abusch's Stuttgart example, and conclude that causal statements all by themselves can be a source of specificity for any indefinites they may contain. Let us start with (17):

- (17) You climbed Mount Greylock because some friend of mine did (climb Mount Greylock).

(17) is ambiguous between a specific reading 18(a) and a non-specific reading 18(b):

- (18) a. What mattered for your own climb was that some friend of mine (not any particular one) climbed Mount Greylock.
- b. What mattered for your own climb was that a particular friend of mine (e.g. Amanda) climbed Mount Greylock.

The ambiguity of (17) seems to be explained by the proposal I made above, as long as we can optionally interpret friend of mine as actual friend of mine, a possibility that is independently needed¹⁸. For reading 18(a), we would invoke the quantificational interpretation of a friend of mine, the choice function interpretation would be held responsible for 18(b). Unfortunately, this will not do.

Our present story does not yet offer an optimal explanation for the intermediate reading of the indefinite in (19), which is easily available:

- (19) Each of those women climbed Mount Greylock because some friend of mine did.

The NP some friend of mine, does not contain any overt bound variable pronoun. Hence the intermediate reading (which would have to come from the choice function interpretation) should be marginal, which it is not.

More importantly, in because clauses, specific readings are also possible for bare plurals and indefinites in there-insertion contexts:

- (20) a. You finished your project because friends of mine helped you.
- b. You finished your project because there was a friend of mine who helped you.

We have seen above that few speakers accept specific interpretations for bare plurals. Indefinites in there-insertion constructions are usually confined to narrow scope and don't like to be specific. The effortless availability of an intermediate reading for (19) and of specific readings for the indefinites in 20(a) and (b), then, suggest that there is another source of specificity in causal contexts. This conclusion is further supported by the behavior of the determiner 'one'.

Like 'some', 'one' can have a choice function interpretation, which is demonstrated by the easy availability of an intermediate reading in 21(b).

- (21) a. Every professor rewarded every student who read some book he had recommended.
- b. Every professor rewarded every student who read one book he had recommended.

But ‘some’ and ‘one’ differ in causal contexts. Look at the contrast between 22(a) and 22(b)¹⁹:

- (22) a. Everyone of them is moving to Stuttgart because some woman lives there.
- b. Everyone of them is moving to Stuttgart because one woman lives there.

The crucial difference between 22(a) and 22(b) is that 22(a) does and 22(b) does not (or only marginally) have an intermediate reading for the indefinite. If the indefinite ‘one woman’ is not understood as referential (denoting a particular woman), 22(b) implies that just one woman lives in Stuttgart. The contrast between 22(a) and 22(b), then, establishes that the intermediate scope effect we get with some in (19) or 22(a) cannot be due to the choice function interpretation. The same effect should then show up with ‘one’. Again, we are led to the conclusion that causal contexts all by themselves are a source of specificity.

In what follows, I will first identify a possible source for specificity in causal contexts, and then investigate whether it can be held responsible for apparent intermediate scope readings of indefinites in because clauses.

Davidson (1967) argues that the verb cause in certain causal statements expresses a relation between events. Let us take his sentence 23(a) as a starting point to illustrate his argument:

- (23) a. The fact that there was a fire in Jones’s house caused it to be the case that the pig was roasted.

Suppose cause expressed a relation between propositions. It would then be a rather unusual connective. It wouldn’t be truth-functional, since the sentences it connects can’t necessarily be replaced by extensionally equivalent ones *salva veritate*. Yet for extensionally equivalent singular terms within those sentences such substitution is always possible (as long as they are not in the scope of another intensional operator). If Jones’s house is the oldest building on Elm Street, then

23(a) and (b) have the same truth value:

- (23) b. The fact that there was a fire in the oldest building in Elm Street caused it to be the case that the pig was roasted.

An event analysis explains the range of possible *salva veritate* substitutions:

- (23') a. e (there was a fire in Smith's house (e) & e' (the pig was roasted (e')
& cause (e,e')))

In 23'(a), the sentential arguments of cause function as predicates for event variables. Sentences that have the same truth-value rarely describe the same events. But if Jones's house is the oldest building on Elm Street, then the sentence there was a fire in Jones's house describes the same actual event(s) as the sentence there was a fire in the oldest building on Elm Street.

At the end of Causal Relations, Davidson concedes that:

"... a host of statement forms, many of them strikingly similar, at least at first view, to those we have considered, challenge the account just given. Here are samples: 'The failure of the sprinkling system caused the fire', 'The slowness with which the controls were applied caused the rapidity with which the inflation developed', 'The collapse was caused, not by the fact that the bolt gave way, but by the fact that it gave way so suddenly and unexpectedly', 'The fact that the dam did not hold caused the flood'. Some of these sentences may yield to the methods I have prescribed, especially if failures are counted among the events, but others remain recalcitrant. What we must say in such cases is that in addition to, or in place of, giving what Mill calls the 'producing cause', such sentences tell, or suggest, a causal story. They are, in other words, rudimentary causal explanations. Explanations typically relate statements, not events. I suggest therefore that the 'caused' of the sample sentences in this paragraph is not the 'caused' of straightforward singular causal statements, but is best expressed by the words 'causally explains'."²⁰

According to Davidson, then, causal statements in English are not all of the same kind. Some fall within the scope of his analysis, and some don't. Causal statements can be understood in two ways. Sometimes, they express relations between events, and sometimes relations between propositions. Davidson calls the first kind 'singular causal statements', and the second kind 'causal

explanations'. Singular causal statements state that two events that have certain properties are causally related. Causal explanations state that two events that have certain properties are causally related in virtue of having those properties.

Let us return to because, and look at a couple of examples illustrating Davidson's distinction between singular causal statements and causal explanations. Suppose you are the principal of Chestnut Hill Middle School, and consider the following two sentences:

- (24) a. I fell because the principal did.
 b. I went to the pageant because the principal did.

24(a) evokes a scenario where the principal was walking behind me, fell, and knocked me down as well. Clearly, if I fell because the principal did, and you are the principal, then I fell because you did. 24(b) is different. That you were the principal might have been relevant for my decision to go. It seems, then, that 24(a) is a singular causal statement, and 24(b) a causal explanation. Does this mean that because expresses a relation between events in 24(a), but not in 24(b)? Does 24(a) merely claim that the principal's fall caused my fall without committing itself to any claim about the causal relevance of the descriptions that are used to pick out the two events? And is that an essential difference between 24(a) and (b)? Or are both 24(a) and (b) ambiguous in this sense, with one reading being prominent? Given that we can't do away with the propositional option, couldn't that be the only option? Haven't we known for some time that all predicates in an intensional context may have a transparent interpretation? The event option, then, is in need of justification. Transparency arguments alone are not sufficient to support it.

My strategy in this and the following section is to (temporarily) assume that there is ambiguity for because, and see what the consequences would be. This assumption will yield an important insight into possible sources for specificity effects for indefinites in because clauses. Section 6 will then incorporate this insight into a better motivated analysis of because.

Let us (temporarily) suppose, then, that there is both a transparent and an opaque because. In both cases because can be interpreted with the help of a relation of counterfactual dependence as proposed in Dowty (1979), who relies on Lewis (1973). Counterfactual dependence is a relationship between propositions. A causal dependence between events e and c , then, has to be stated as a counterfactual dependence between the proposition that e occurs and the proposition that

c occurs.

If there is a transparent because, we have an explanation of the facts illustrated by 20(a) and (b) above. If there is a particular event that has friends of mine in them that are helping you, and if this event is responsible for your finishing your project, it is these particular friends whose help caused your project to be finished. Talking about the particular helping event, then, implies talking about particular friends. The shape of the indefinites in 20(a) and (b) does not matter. They do not have to be specific in the grammatical sense that is related to a choice function interpretation.

Let us now examine what we would want to say about sentences like (25).

(25) Each of those children fell, because some friend of mine did.

(25) doesn't seem to be a causal explanation. Each of those girls fell because some other kid - who happened to be a friend of mine - bumped into her. Let us focus on the quantificational interpretation of the indefinite some friend of mine:

Assuming a Davidsonian analysis, (25) has the truth-conditions in (25')

(25') x (child (x) e (x 's fall (e) & e' (some friend of mine's fall (e') & because (occur(e), occur(e')))))

Note now that the existential quantifier within the first event predicate in (25') is exportable, that is, (25') and (25'') are equivalent²¹:

(25'') x (child (x) y (friend of mine(y) & e (x 's fall (e) & e' (y 's fall (e') & because (occur(e), occur(e')))))

On the transparent reading for 'because', then, the intermediate scope and narrow scope readings of (25) coincide. Interestingly, this collapse of the intermediate and narrow scope readings happens with very few quantifier phrases. Distributive plural indefinites are not exportable, for example²²:

(26) Each of those children fell because two friends of mine did.

In (26), the indefinite NP cannot be exported. If you are one of those children and fell because two friends of mine (say, Amanda and Shaina) fell and knocked you over by bumping into you, it does not follow that you fell because Amanda did, and also because Shaina did. Amanda or Shaina's fall alone may not have been sufficient for you to fall as well. The event analysis captures this 'collective cause' reading of (26) nicely. (26') and (26'') are not logically equivalent.

(26') x (child (x) e (x 's fall (e) & e' (fall by two friends of mine (e') & because (occur(e), occur(e')))))

(26'') x (child (x) $\exists y$ (friend of mine (y) & e (x 's fall (e) & e' (y 's fall (e') & because (occur(e), occur(e'))))))

In (26''), each child's fall was collectively caused by the fall of two friends of mine, where different pairs of friends might have been responsible for different children's falls.

Browsing through collections of other quantifiers, we find hardly any that are exportable from because clauses. Quantifiers like no friend of mine, few friends of mine, or every friend of mine all fail the test. It is easy to see that the event analysis predicts this.

- (27) a. You finished your project because none of my friends finished hers.
 b. You finished your project because few of my friends finished theirs.
 c. You finished your project because each of my friends finished hers.

Let us now return to sentence (19), repeated as (28):

(28) Each of those women climbed Mount Greylock because some friend of mine did.

(28) is an action sentence, hence a transparent and an opaque interpretation for 'because' are both plausible. (28) may give the reason for the women's climb, hence provide a causal explanation. This would correspond to opaque 'because'. Alternatively, (28) may be interpreted as a mere causal statement, and this would require transparent 'because'. As far as its indefinite NPs are concerned, (28) has three observable readings: Specific, intermediate scope, narrow scope. The specific case is straightforward. It is due to the choice function interpretation of the indefinite²³. The other two readings, then, must be brought about by the quantificational interpretation. If because is

ambiguous, we have a promising analysis for those two readings. Remember that on the transparent interpretation, the narrow scope and intermediate scope readings of singular quantificational indefinites collapse. This means that on the transparent interpretation, we get an intermediate scope reading without actual scoping. This could be the source of the perceived intermediate scope reading of (28). On this reading, (28) says that each woman's climb was caused by a particular climb of Mount Greylock by some friend of mine. This is equivalent to saying that for each woman's climb e there was a particular friend of mine whose climb c caused e . If c hadn't occurred, e wouldn't have either. The perceived narrow scope reading of (28) would then be the result of combining the quantificational interpretation of the indefinite with the opaque interpretation of because. On this reading, (28) says that none of those women would have climbed Mount Greylock if there hadn't been a friend of mine (not any particular one) who climbed Mount Greylock. The three readings of (28), then, are accounted for without scoping some friend of mine from its clause. If there is NP scope, narrow scope is all there is.

The account I just outlined is intriguing since its gains are considerable. It would explain the intermediate scope reading of (28) without giving up the assumption that quantifier scope is local. It would correctly predict the range of quantifiers that can have such intermediate scope readings in the first place. And it would account for the fact that indefinites that are not specific in the grammatical sense may nevertheless be perceived as 'specific' in causal contexts. Attractive as it may be, this analysis is not yet right. If it were, we would expect that intermediate scope interpretations for indefinites should be incompatible with the opaque interpretation of because. And furthermore all quantificational indefinites within a because clause should show the same scope behavior. If one takes intermediate scope the other ones should, too. If one takes narrow scope, so should all the others. This prediction is clearly wrong.

My plan in what follows is to eventually propose an event analysis that will work for because. The benefits of such an analysis are too appealing to be dismissed. In section 6, a solution will emerge after discussing the semantics of attitude verbs. Before I start on this project, I will first pursue another intriguing consequence of the hypothesis that intermediate scope readings of indefinites in causal contexts are due to Davidsonian event quantification: It provides an explanation for the puzzling contrast between the determiners one and some in causal contexts. Remember that this contrast is an important one, since it shows that apparent intermediate scope readings for indefinites with the determiner some in causal contexts cannot be due to a parametrized choice function interpretation.

5. Event quantification and the determiner one

We have seen that not all singular indefinite NPs behave the same in causal contexts. Here are the relevant examples:

- (29) a. Everyone of them is moving to Stuttgart because some woman lives there.
 b. Everyone of them is moving to Stuttgart because one woman lives there.

Both some woman and one woman can have specific (choice function) interpretations. Both sentences can mean that there is a particular woman who attracted everyone of them to Stuttgart. We have also seen that if specific, both kinds of NPs can produce intermediate readings facilitated by the presence of bound variables:

- (30) a. Every professor rewarded every student who read some book he had recommended.
 b. Every professor rewarded every student who read one book he had recommended.

The important difference between 29(a) and 29(b) is that 29(a) does and 29(b) does not (or only very marginally) have an intermediate reading for the indefinite.

29(b) and 30(b) show that indefinites like one woman do not behave the same in all types of islands. This is a problem for theories that are built on the assumption that indefinites (or specific indefinites) can take any kind of scope. In this section, I want to show that the contrast between 29(a) and 29(b) follows from the hypothesis I proposed above, namely that the source of intermediate readings for indefinite NPs in because sentences could be the option of pairing a transparent interpretation for the cause argument with the quantificational reading of the indefinite. As background for my argument, I will have to review some issues from situation semantics.

Within the Davidsonian semantics I am assuming, sentences function as event predicates, that is, we have formalizations of the following kind:

(31) Amanda climbed Mount Greylock.

(31') e (Amanda's climb of Mount Greylock(e))

I will now give a situation semantics analysis to Davidsonian talk about events (like climbings of Mount Greylock by Amanda, for example), and I will do this by introducing technical talk about events exemplifying propositions²⁴. I mean the term situation to also cover events and other such partial entities. Sometimes, the term event exclude states, and Bach (1981) proposes eventualities as a more neutral term. Here are the main ingredients of the situation semantics of Kratzer (1989):

(32) **A Situation Semantics**

S The set of possible situations

D The set of possible individuals

$E = D_e$ S ∪ D, the set of entities

The part whole relation between entities:

The relation \sqsubseteq is a partial ordering on E satisfying at least the following additional condition: for all $e \in E$ there is a unique $e' \in E$ such that $e \sqsubseteq e'$ and for all $e'' \in E$, if $e' \sqsubseteq e''$, then $e'' = e'$.²⁵

W The set of possible worlds W is the set of maximal elements with respect to \sqsubseteq . For any possible situation s , w_s is the world of s .

D_t The set of propositions D_t is the power set of S.
A proposition p is true in a situation s iff $s \sqsubseteq p$.²⁶

Implication A proposition p logically implies a proposition q iff $p \sqsubseteq W \sqsubseteq q \sqsubseteq W$.

We are now ready to define the notion of an event(uality) that exemplifies a proposition. Intuitively, this should be a situation in which the proposition is true, and which is small enough so as not to contain anything that is irrelevant to its truth. Here is the definition:

(33) **Eventualities that exemplify propositions**

If s is any possible situation and p any proposition, then s is an eventuality that exemplifies p iff for all s' such that $s' \subseteq s$ and p is not true in s' , there is an s'' such that $s' \subseteq s'' \subseteq s$, and s'' is a minimal situation in which p is true.

Let us look at a few illustrations. Below is the picture of a situation s_1 that contains nothing but three horses (never mind I only drew their heads).

s_1

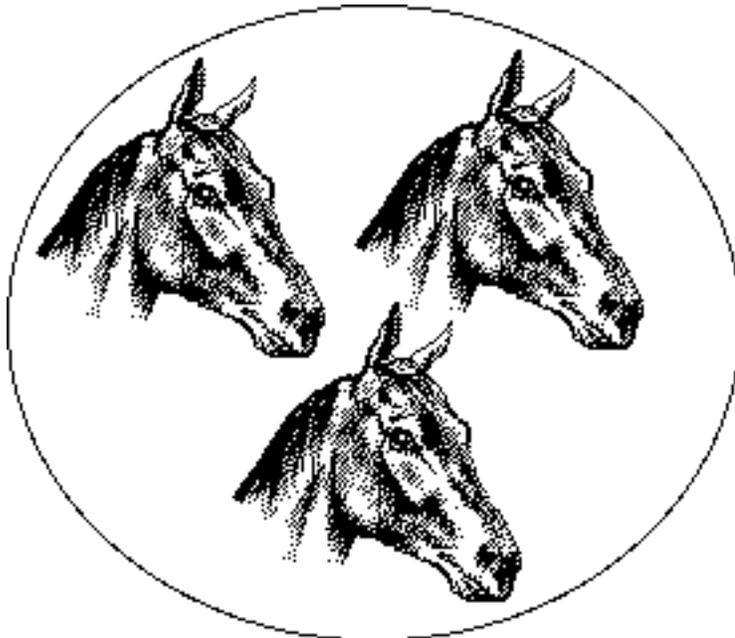


Figure 2

According to definition (33), s_1 is an eventuality that exemplifies the proposition expressed by the following sentence:

(34) There are horses.

[[34]], the proposition expressed by (34), is the set of all possible situations in which there are two or more horses. There are parts of s_1 in which [[34]] is not true. Subsituations with just one horse, for example. But any subsituation of s_1 in which [[34]] is not true is part of another subsituation of s_1 which is a minimal situation in which [[34]] is true.

Now look at the situation s_2 that has a rooster in addition to the three horses.

s_2

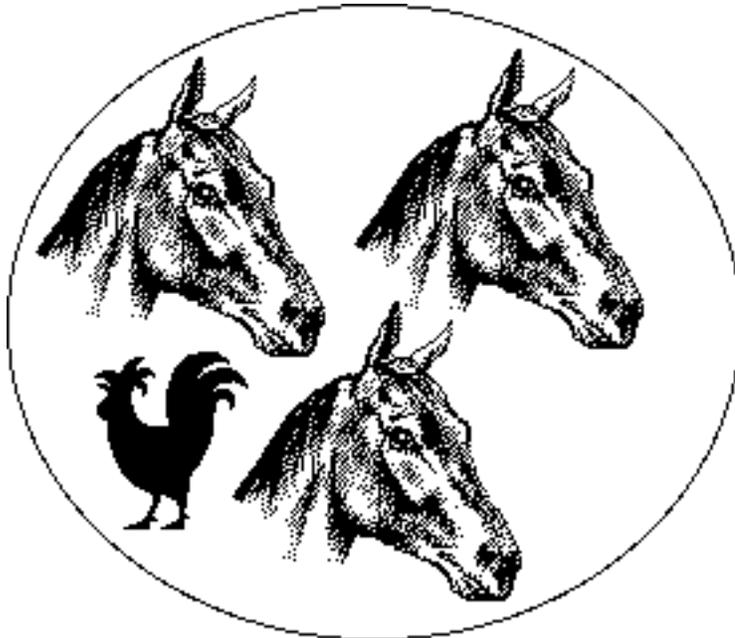


Figure 3

The situation s_2 is a situation in which [[34]] is true, but it shouldn't come out as an eventuality that exemplifies [[34]], since it contains the irrelevant rooster. Here is what the definition does. Look at the subsituation s_2' of s_2 that contains just the rooster. [[34]] is not true in s_2' . But s_2' can never be extended to a minimal situation in which [[34]] is true. Whenever the situation gets big enough to include more than one horse, you always have the superfluous rooster.

Finally, look at the situation s_3 , and the sentences that come with it:

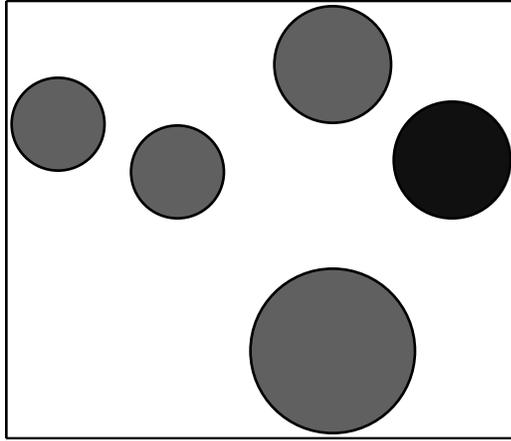
s₃

Figure 4

- (35) Some circle is striped.
 (36) One circle is striped.

Before we test our definition against this case, we have to think a bit about the truth-conditions of these sentences (assuming the quantificational interpretation of the indefinites). Here is a first attempt:

- (35') s [[**some circle is striped**]] iff some circle is striped in s.
 (36') s [[**one circle is striped**]] iff exactly one circle is striped in s.

(35') has the effect that all subsituations of s₃ that contain nothing but one, two, three, or four striped circles come out as eventualities that exemplify [[35]]. This doesn't seem quite right yet. It neglects number distinctions. If we describe an event as some woman's escape, for example, we seem to talk about events that involve just one woman who escapes. I think that this is due to a scalar implicature triggered by the use of the singular. Whenever some women escape some woman escapes, but not the other way round. Describing an event as some woman's escape, then, I convey that I am not in a position to make a stronger claim about some women's escape, hence implicate that only one woman was involved.²⁷

Next look at (36). The definition seems to pronounce any subsituation of s₃ that has

nothing but a single striped circle in it an eventuality that exemplifies [[36]]. This is wrong. [[36]] is not even true in s_3 , so it should not be exemplified by a situation within s_3 . In Kratzer (1989), I argue (using evidence from counterfactual reasoning) that propositions expressed by natural languages are persistent. A proposition is persistent if whenever it is true in a situation, it stays true in all of its supersituations. It turns out that (36') does not yield persistent propositions, hence (36') does not give the right truth-conditions for (36). One plausible way of achieving persistence is as follows²⁸:

(36'') s **[[one circle is striped]]** iff there is exactly one striped circle in s and w_s .

On this definition, [[36]] can only be true in a situation s if there is exactly one striped circle in the world of s . Consequently, no subsituation of s_3 is an eventuality that exemplifies [[36]]. If the circles of s_3 are all the circles there are in the world of s_3 , however, the subsituation of s_3 that has nothing but the dotted circle in it is an eventuality that exemplifies [[37]].

(37) One circle is dotted.

This is intuitively right, since s_3 is a situation in which [[37]] is true, and it contains nothing that is irrelevant to its truth. If I declare that one circle is dotted, this claim has to be evaluated by checking all the circles there are. If I make the more modest claim that some circle is dotted, finding one that is is enough.

Within a situation semantics, the restrictive predicate of a quantifier phrase does not have to be evaluated in the same situation as the main predicate²⁹. (35'') can have the 'non-attributive' interpretation (35'''), for example:

(35''') s **[[some circle is striped]]** iff something that is a circle in w_s is striped in s .

The difference between attributive and non-attributive interpretations is especially significant when we have more interesting restrictive predicates like woman who met my landlord in Florida.

Unlike French or German, English has a separate numeral one in addition to the indefinite

articles a and some. This might be responsible for the fact that (37) implies - rather than (con conversationally) implicates - that exactly one circle is dotted. 38(c) is a contradiction, 38(a) and (b) are not:

- (38) a. Pedro has a donkey. In fact, he has two.
 c. Pedro has two donkeys. In fact, he has three.
 b. Pedro has one donkey. In fact, he has two.

The quantificational readings of indefinite NPs with some and one, then, are quite different in kind. If it is true in a world that some circle is striped, there may be many eventualities of that world that exemplify this proposition. But if it is true in a world that one circle is striped, this proposition can only be exemplified by a single eventuality in that world. This leads to the solution for the contrast between 29(a) and 29(b) above.

- (29) a. Everyone of them is moving to Stuttgart because some woman lives there.
 b. Everyone of them is moving to Stuttgart because one woman lives there.

Remember that we are working under the assumption that the intermediate scope reading of sentences like 29(a) is brought about by combining the quantificational interpretation of the indefinite with the transparent interpretation for because. Let us now examine what this combination yields for 29(b). The reading we are after can be paraphrased as follows:

- (29') b. x (one of them (x) e (x 's moving to Stuttgart (e) &
 e' (one woman's living in Stuttgart (e') & because (occur(e), occur(e')))))

In 29'(b), the existential quantifier associated with one woman is not exportable: Unlike the exported version, 29'(b) implies that Stuttgart is inhabited by a single woman. This is so because if there is an eventuality in a world that exemplifies the proposition that one woman lives in Stuttgart, it must be true in that world that exactly one woman lives in Stuttgart. Moreover, if there is an eventuality in a world that exemplifies the proposition that one woman lives in Stuttgart, there can only be one such eventuality. But this means that 29'(b) implies that it is one and the same eventuality, and hence one and the same woman, that attracts everybody to Stuttgart. 29'(b) does not allow different women being responsible for different moves, and this contributes to the intuition that the intermediate scope reading is missing in 29(b).

Now look at what we get for 29(a), combining the quantificational interpretation of the indefinite and the transparent interpretation for because:

- (29') a. x (one of them (x) e (x's moving to Stuttgart (e) &
 e' (some woman's living in Stuttgart (e') & because (occur(e), occur(e')))))

The scalar implicature triggered by the use of the singular in some woman has the effect that we are only quantifying over those eventualities exemplifying the proposition that some woman lives in Stuttgart that have a single woman in them. Assuming a non-attributive interpretation of the indefinite, some woman is exportable in 29'(a). The difference between 29(a) and (b), then, is explained if intermediate readings of indefinites in because clauses are produced by combining the quantificational interpretation of the indefinite with the transparent interpretation of because.

There are variations of the Stuttgart example 29(b) where an intermediate scope reading seems to be more easily available:

- (39) Everyone of them went to Harvard because one professor there fascinated him.
 (40) Everyone of them died because one doctor from the hospital was on vacation (at the time).

Yet 29(b) is not a lonely exception either. There are other examples that are like it:

- (41) Everyone of them went to Harvard because one James brother was a professor there.
 (42) Everyone of them died because one doctor from the hospital is a quack.

In order to locate the difference between those examples, let us first inspect (41) and (42) a bit more closely.

Imagine a group of friends who all went off to Harvard together. Some of them wanted to become writers, and they went to Harvard because Henry James was a professor there. The others were interested in the philosophy of Pragmatism or in psychology and functionalism, and they went to Harvard because of William James. In such a situation, (41) seems false since two James brothers taught at Harvard at the time. If (41) had a (prominent) true intermediate scope reading, however, it would be judged true in the situation just described. Everyone of them was indeed

attracted to Harvard by one of the James brothers.

Imagine next that last night, several patients died in the Angell Memorial Hospital. Some of them required the care of the hospital's cardiologist. But being a quack, she couldn't even read an EKG. The others were operated on by the hospital's surgeon. But since he is a quack as well, the patients died before they left the recovery room. (42) seems false in the situation described. Again it should be true if it had a (prominent) genuine intermediate scope reading.

Now look at (39). (39) appears to have a (non-marginal) intermediate scope reading, but it still isn't a genuine one. Imagine that the students who went to Harvard were fascinated by different professors, but not necessarily by just one. Take the case of Sanders, who found two Harvard law professors fascinating. He knew that one professor's attractiveness would be very beneficial to his studies, and this was what he went to Harvard for. As for the other, he was scared of his own fascination with him. He knew it would impede his work, and decided to avoid his classes. This situation is sufficient to falsify (39). This shouldn't be so, if there was a (non-marginal) true intermediate scope reading. But it is exactly what is expected on the event analysis. This analysis implies that none of those Harvard students should be fascinated by more than one professor there. Why, then, did we perceive an intermediate scope reading in (39)? Here is what the event analysis says: (39) has a bound variable pronoun, and this makes a difference, even though it doesn't appear within the indefinite NP. The pronoun has the effect that every student x is paired with an eventuality that exemplifies the proposition that one professor at Harvard fascinates x . Consequently, different students are paired with possibly different particular professors that attracted them to Harvard, and this creates the impression of an intermediate scope reading.

Finally, look at (40). Imagine first that we are talking about patients who died at different times. One needed the attention of the hospital's cardiologist in January, for example, but died since she was skiing in Colorado. Another patient needed emergency surgery in July, and died because the hospital's only surgeon was vacationing in the Berkshires. This is the kind of scenario that helps us perceive an intermediate scope reading in (40). But now change the scenario slightly. Suppose that all of those patients died last night. The hospital's cardiologist was on Cape Cod, and some patients died because of her absence. The other ones couldn't get the surgery they needed because the hospital's surgeon was still in the Berkshires. In this situation, (40) is false. At the time of the patients' death, at least two doctors were on vacation, and not just one. This shows that (40) doesn't have a (prominent) true intermediate scope reading either. The event analysis captures this

case correctly. It requires for every patient - and hence for every patient's death - an eventuality that exemplifies the proposition that one doctor was on vacation at the time of the death. If the patients die at different times, different doctors can be responsible for different deaths. If they all die at the same time, a single vacationing doctor must be the culprit.

Sentence (40) taught us to watch out for hidden temporal links. This insight can now be used to account for the remaining variability of judgements about (41). For (41), an apparent intermediate scope reading pops up if we imagine Harvard students in different years. Some went to Harvard when Henry taught there, and some did during William's tenure, and the two teaching appointments didn't overlap. Initially, such a scenario was just a bit less likely.

We now understand what it is that makes it possible to get apparent intermediate readings for the sentences we have been discussing in this section. There has to be some kind of anaphoric link in the because clause whose value changes depending on the value of a variable associated (in a direct or more indirect way) with the quantified subject of the matrix clause. One such possible link is a non-overt temporal adverbial. We have also seen that the apparent intermediate scope readings are not genuine. They differ slightly from the ones we would obtain by scoping the indefinite NP or by using parametrized choice functions. These readings are also different from the referential and narrow scope readings. Hence we have to find an account for them. The event analysis does just that.

The examples in this section would be an utter nightmare for any theory that would attempt to explain them by syntactic conditions on NP scope. On an event quantification approach, however, they all fall into place very gracefully. The observed variability of judgements is explained, and no special assumptions about the scope of NPs have to be made.

6. Event quantification and attitude ascriptions

In this section, I will show that event quantification is involved in attitude ascriptions as well. This will then open up a new perspective for because clauses. For reasons of space, all I can do here is briefly address the main issues. A longer paper would be needed to do full justice to the topic. Look at sentence (43):

(43) Everyone of them suspected that some (actual) doctor from the hospital was a quack.

(43) has the familiar three readings. The narrow and apparent wide scope readings are unproblematic. As in because clauses, it is the easy availability of an intermediate reading that needs to be explained. (43) has no overt bound variable pronouns, so with a choice function interpretation for some, the intermediate reading should be absent or marginal, contrary to fact. This is a first indication (admittedly not more than a first indication, though) that attitude contexts, too, might provide an independent source of specificity. In what follows, I will show that there is quite a bit of further support for this hypothesis. I will first identify a source of specificity, and then argue that the intermediate readings of indefinites in attitude contexts are slightly different from the intermediate readings that could be produced by scoping or parametrized choice functions. Moreover, we will look at some constraints on the availability of intermediate readings that would not be expected on scoping or choice function accounts.

Quantifier phrases are not the only source of *de re* readings. Just about any kind of phrase embedded under an attitude verb can be interpreted *de re*. Here is a story that illustrates this point:

The butler and the judge

Suppose the judge fell into a ditch, drunk, head first. A passer-by pulled him out, took him to the hospital, and disappeared. The judge was unconscious, and had no recollection of the incident. The hospital staff gave only a vague description of the man who saved the judge's life. Miles away, not knowing about the mishap, the judge's butler reads a false report on the financial situation of his master. Close to bankruptcy, he had allegedly approached a wealthy man (whose name was not disclosed) to help him out, threatening that he would commit suicide if the financial collapse couldn't be avoided. The report closed by mentioning that some public figure saved the judge from financial ruin, and thereby saved his life. The butler suspected that it was Milford. Returning to his village, the butler meets a group of men discussing the judge's accident. Not paying much attention, the butler thinks the men are talking about the judge's financial traumas. He eventually mentions his suspicion that Milford saved the judge's life.

The next day, when everybody was speculating about who had taken the judge to the hospital, and thereby saved the judge's life, somebody reported that the butler suspected that it was MILFORD who saved the judge's life.

We are interested in the last sentence:

(44) The butler suspected that it was MILFORD who saved the judge's life.

There is a reading of (44) on which it does not express an attitude ascription that is true, given the scenario above. The butler's suspicion was not about the event everybody was talking about. If this fact can make (44) false, then (44) has a reading where it is understood *de re* with respect to a particular event. In (44), the name Milford is focused, and this creates the potential presupposition that somebody saved the judge's life. On the intended reading, the *res* of the attitude ascription in (44) is some particular event that exemplifies this presupposition. The butler is claimed to have suspected of that event that it exemplifies the proposition that Milford saved the judge's life. But this claim is wrong, given our story.

(44) and the story of the butler and the judge show that it must be possible for attitude ascriptions to be *de re* about events. Some attitude ascriptions mention their *res* explicitly, as the one in (45):

(45) Ralph suspects of someone that he is a spy.

In (45), the verbs suspect has an additional argument position for the *res* of the attitude ascribed. If pragmatically acceptable, the that-clause contains a pronoun that is bound by the *res*-argument.

(45), then, can be paraphrased as (45'):

(45') x (person(x) & Ralph suspects of x that x is a spy).

Suppose now that attitude verbs can quite generally have a non-overt *res* argument filled by a definite or indefinite event pronoun. If the pronoun is indefinite (an event quantifier analogous to something), (44) can be paraphrased as (44'):

(44') e (the butler suspected of e that saving of the judge's life by Milton (e))

In its event *de re* use, the verb suspect has three (semantic) arguments denoting the holder of the suspicion, the event that is the *res*, and a proposition p respectively. (44) is true iff the butler suspects of the *res* that it exemplifies p . This means roughly that all the possible events that could be the *res* (as far as the butler's beliefs go) exemplify p .

Our next task is to explain how the presuppositions of the sentential complement of (44) can furnish additional restrictions for the event quantifier in (44'). This has been done for us in von Stechow (1993, 1995). Being propositions, presuppositions can be shifted into the corresponding sets of situations that exemplify them, and are then properties of eventualities. These properties can now be linked to implicit additional restrictions for the event quantifier in (44') by being anaphoric to the very same discourse topic that provides those restrictions. The outcome of this pragmatic process of presupposition accommodation is (44'')

(44'') e (saving of the judge's life by somebody (e) & the butler suspected of e that saving of the judge's life by Milton (e))

To accommodate presuppositions of all kinds (see below for examples), we should have the possibility to obtain the *de re* readings from (44) as follows:

(46) e (..... (e)..... & the butler suspected of e that e' (e e' & saving of the judge's life by Milton (e')))

Let us now try to derive the *de re* readings of existential quantifiers in attitude contexts. By way of illustration, look at the following sentences, and disregard the specific readings of the indefinite NPs, since they do not yield much for our argument:

- (47) a. Everyone of them suspected that some Vermeer painting was stolen from the Isabella Stewart Gardner collection.
 b. Everyone of them suspected that one Vermeer painting was stolen from the Isabella Stewart Gardner collection.

On their quantificational readings, the indefinites in 47(a) and (b) can optionally be associated with presuppositions stating that there is an entity satisfying their restrictive predicate³⁰. Take 47(a). On the intended reading, it says:

(47') a. x (x is one of them e (existence of a Vermeer painting (e) & x suspected of e that e' (e e' & theft of some Vermeer painting from the Isabella Stewart Gardner museum (e'))))

Assuming that the eventualities that exemplify the proposition that a Vermeer painting exists coincide with the Vermeer paintings themselves, we have obtained a reading for 47(a) where everyone of them has a *de re* suspicion about a (possibly different) Vermeer painting. Note that (given the scalar implicature associated with singular indefinites), any eventuality that exemplifies the proposition that a Vermeer painting exists contains just one Vermeer painting. And in any of its (or its counterparts) extensions that exemplify the proposition that some Vermeer painting was stolen from the museum, it must be that very same painting (or its counterpart) that was stolen. Those extensions cannot have two paintings in them without one being superfluous in the sense determined by definition (33). Now consider the truth-conditions for 47(b):

- (47') b. $\exists x (x \text{ is one of them } \wedge \exists e (\text{existence of a Vermeer painting } (e) \ \& \ x \text{ suspected of } e \text{ that } e' (e = e' \ \& \ \text{theft of one Vermeer painting from the Isabella Stewart Gardner museum } (e'))))$

This reading is like the genuine intermediate scope reading (the result of scoping the NP) in that it allows different people to have different *de re* suspicions about different Vermeer paintings. But it is not quite like the scoped reading, since it implies that in the worlds that are compatible with each person's suspicions, just one Vermeer painting was stolen from the Isabella Stewart Gardner collection. I think that the event analysis makes again the correct predictions here. Suppose you and I are among those people whose suspicions 47(b) describes. Suppose further that both of us suspect that all in all three Vermeer paintings were stolen, but each of us has a *de re* suspicion about just one. For you it's the The Concert, for me the Lady Seated at a Virginal. This situation is not compatible with 47(b), but it should be if 47(b) had a prominent intermediate reading produced by scoping or parametrized choice functions.

If existential presuppositions associated with quantificational NPs are responsible for their apparent intermediate scope readings in attitude contexts, non-presuppositional indefinites should not have those readings. This is so, as demonstrated by the following example:

- (48) Everyone of them suspected that there was a painting missing from the Isabella Stewart Gardner collection.

Moreover, it is now not surprising that few quantifier phrases have readings that correspond

to true intermediate scope readings in attitude contexts. In most cases, the event analysis cannot fully mimick the results of NP scoping.

There is a variation of the original Fodor and Sag example that allows an intermediate reading much more readily. Compare 49(a) - the original example - and 49(b):

- (49) a. Each teacher overheard the rumor that a student of mine had been called before the dean.
 b. Each teacher overheard a rumor that a student of mine had been called before the dean.

Our approach to attitude ascriptions allows us to reduce the difference between 49(a) and (b) to the difference between 50(a) and (b):

- (50) a. Each teacher heard the rumor about a former student of mine.
 b. Each teacher heard a rumor about a former student of mine.

For reasons discussed by a number of scholars³¹, definite and indefinite NPs differ in their ability to allow extraction from them. 50(b) does, but 50(a) does not allow scoping of a former student of mine. If the noun rumor can have a *de re* argument that might be realized by an empty indefinite pronoun, then this pronoun can be scoped from its NP in 49(b), but not in 49(a). Consequently, the existential presupposition triggered by of a student of mine has to be accommodated within the scope of rumor in 49(a), but not in 49(b).

De re readings are subject to locality constraints. This is shown by (51):

- (51) Everyone of them thought that Maria suspected that some Vermeer painting was stolen from the museum.

In (51), some Vermeer painting can be understood *de re* with respect to Maria's suspicion, but not with respect to everyone's thoughts. (51) does not have a reading that says that for everyone x there was a possibly different painting y such that x thought that Maria suspected that y was stolen from the museum. The event analysis explains this. A particular Vermeer painting can be part of an

eventuality that exemplifies the proposition that some Vermeer painting was stolen from the museum, but it cannot be part of an eventuality that exemplifies the proposition that Maria suspected that some Vermeer painting was stolen from the museum. It would be pronounced superfluous by definition (33). We see from this example that the accommodation of presuppositions into event quantifiers is a process that is highly constrained.

The analysis of *de re* attitude ascriptions arrived at in this section presupposes that we have independent mechanisms to account for the transparent characterization of the propositional content of the attitude ascribed. Look at the following sentence and the scenario that comes with it:

(52) Ann believes that a friend of mine is moving towards Camp V.

Scenario

Ann, who is located in camp II, is looking through her binoculars and sees a small figure moving slowly and steadily over an ice slope towards Camp V. Ann forms appropriate beliefs about what she sees, but has no idea about who she is watching. The person she is watching is in fact Jill, a friend of mine.

Sentence (52) should come out true in such a situation, provided that the NP a friend of mine is understood *de re*. Here is what our analysis says:

(52') e (existence of a friend of mine (e) & Ann believes of e that e' ($e = e'$ & a friend of mine is moving towards Camp V (e'))).

For (52') to be true in, say, the actual world, there has to be an actual friend of mine x such that all the possible individuals that could be x , for all Ann believes, are part of possible eventualities that exemplify the proposition that a friend of mine is moving towards Camp V. For this statement not to imply that Ann believes that the person she is watching is a friend of mine, we have to have the possibility to evaluate the predicate friend of mine as actual friend of mine. This possibility is independently needed. Fodor (1970) observes, for example, that sentences of the following kind have two different *de dicto* readings ('non-specific' readings in her terminology) for a hat like his teachers ³².

(53) They wondered whether anybody would want to wear a hat like his teacher's.

The two non-specific readings

- (a) They wondered whether anybody would want to wear the same hat as his teacher's, whatever kind it might be.
- (b) They wondered whether Jim (whose teacher actually wears a fedora) wanted to wear a fedora, whether Joe (whose teacher actually wears a Stetson) wanted to wear a Stetson, and whether Jack (whose teacher actually wears a bowler) wanted to wear a bowler.

If we evaluate (53) with respect to the actual world, for example, then reading (a) comes about by evaluating some part of the predicate hat like his teacher's with respect to the current evaluation world. For reading (b) the same part would be evaluated in the actual world.

Ever more complex examples like Fodor's above have led to the conclusion that we need intensional languages that have the power of languages with explicit quantification over times and worlds. The original arguments come from the semantics of tense³³, parallel arguments for world indices and proofs for common intensional languages are given in Cresswell (1990)³⁴. Adapting these results to a situation semantics, we would rely on logical representations that have explicit quantification over situations. All predicates, then, have situation arguments, and can be evaluated with respect to situations other than the current evaluation situation. The reading of (52) that we are interested in can now be represented as (54).

(54) $w \ e \ (e \ w \ \& \ s \ x \ (\text{friend of mine}_s(x)) \ (e) \ \& \ \text{believes}_w \ (\text{Ann}, e, \ s \ e' \ (\ s \ e' \ \& \ s' \ x \ (\text{friend of mine}_e(x) \ \& \ \text{moving}_s \ \text{towards Camp V}(x))) \ (e'))))$

(54) is an expression of a two-sorted type theory³⁵. It uses the situation variables w, e, e', s, s' and the individual variable x . Situation arguments appear as subscripts on their predicates. The atomic sentences in which predicates occur are evaluated in the situation that is the value of the subscripted variable. $_s$ is an operator that shifts any proposition into the characteristic function of the set of eventualities that exemplify it. $_s \ (\text{climb}_s \ (\text{Amanda}, \text{Mount Greylock})) \ (e)$, then, says that e exemplifies the proposition that Amanda climbs Mount Greylock, or that e is a climb of Mount Greylock by Amanda. Note that this cannot be expressed by $\text{climb}_e \ (\text{Amanda}, \text{Mount Greylock})$, which means that e is a situation *in* which Amanda climbs Mount Greylock. Not all of those

situations are climbs of Mount Greylock by Amanda. The important feature of (54) is that the situation variable on the second occurrence of friend of mine is bound by the event operator that introduces the existential presupposition that there is a friend of mine. We may assume that this coindexing follows from general principles regulating the relationship between a presupposition trigger and the presupposition triggered.

I have argued that *de re* attitude ascriptions involve event quantification. The analysis preserves the assumption that quantifier scope is strictly local. It explains the existence of *de re* readings that are not triggered by NPs, the connection between the presuppositionality of an indefinite and its ability to be understood *de re*, and the locality constraints for *de re* NPs. Moreover, it accounts for missing intermediate scope readings in some constructions, and predicts which quantifiers can appear to have wide scope in attitude contexts.

We are now ready to return to because. We have learned from attitude ascriptions that presupposed parts of sentential complements may be accommodated into a higher event quantifier. Presuppositionality or ‘partial factivity’, then, is a source of specificity for indefinites sitting in attitude contexts. This insight can now be carried over to because sentences. Because sentences presuppose the truth of both their component sentences. This suggests that here, too, it is factivity represented as event quantification that provides an extra source of specificity for indefinites. Look at sentence (55):

(55) You went to the pageant because there was a friend of mine who did.

We have seen that in *de re* attitude ascriptions, the sentential complement might have two jobs to do : Via presupposition accommodation, it provides a description for the event that is the *res* of the attitude, and through the regular semantic interpretation process, it characterizes the content of the attitude ascribed. Suppose that the sentential complements in because clauses do double duty as well. They provide descriptions for events and state a counterfactual relationship between propositions. They thus combine the features of both transparent and opaque because. Spelling this out, we would get the following analysis for (55):

(55') $w e_1 (e_1 w \ \& \ s (\text{went}_s \text{ to the pageant (you) }) (e_1) \ \& \ e_2 (e_2 w \ \& \ s \ x (\text{friend of mine}_s (x) \ \& \ \text{went}_s \text{ to the pageant (x) }) (e_2) \ \& \ \text{because}_w (\ s (\text{went}_s \text{ to the pageant (you) }), \ s \ x (\text{friend of mine}_s (x) \ \& \ \text{went}_s \text{ to the pageant (x) }))))$

(55') accounts for the non-specific interpretation of a friend of mine. A tiny change will produce the specific interpretation. We only have to alter the situation index on the second occurrence of friend of mine, which is now bound by one of the two wide scope event quantifiers:

(55'') $w e_1 (e_1 w \& s (went_s \text{ to the pageant (you) }) (e_1) \& e_2 (e_2 w \& s x (friend \text{ of mine}_s(x) \& went_s \text{ to the pageant (x) }) (e_2) \& because_w (s (went_s \text{ to the pageant (you) }), s x (friend \text{ of mine } e_2(x) \& went_s \text{ to the pageant (x) }))))$

In this way, we obtain specific interpretations for indefinites, including those that do not have a choice function interpretation. If there are several indefinite NPs in the because clause, specific and non-specific interpretations can be freely combined. It is all a matter of indexing. Our new because introduces event quantification, like transparent because. But it also expresses a relation between propositions, like opaque because. Like transparent because, it accounts for the range of quantifiers that can have apparent intermediate scope readings in causal contexts. And it shares its predictions about the behavior of NPs with the determiner one. In the end, then, there is only one because.

7. Conclusion

We have seen that many examples of apparent wide-scope indefinites are instances of pseudoscope. Indefinites are ambiguous between a (parametrized) choice function and a quantificational interpretation³⁶. If quantificational, they obey the usual scope constraints. Specific indefinites often appear to be scoped, especially if there are bound variable pronouns in their restrictive clause. Quantificational indefinites produce pseudoscope phenomena in interaction with event quantification. Since there is the possibility of pseudoscope, we stand no chance of understanding scope phenomena without digging deep into the semantics of the constructions in which those phenomena occur. That's why this work is so hard.

Notes

1. This paper owes an obvious debt to Dorit Abusch, whose work on wide-scope indefinites pushed my earlier thoughts on pseudoscope into a new direction. I also want to thank Andrea Bonomi, Paolo Casalegno, Gennaro Chierchia, Kai von Fintel, Irene Heim, and Sandro Zucchi for detailed and helpful comments (the ones from Italy were all conveyed by Gennaro Chierchia). I am

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2. Fodor and Sag (1982).

3. See e.g. King (1988), Ludlow and Neale (1991), Ruys (1992). An earlier important reference is Farkas (1981).

4. Examples (2) and (3) are from Abusch (1993-1994), except for the choice of indefinite. My examples use the determiner ‘some’ where Abusch uses ‘a’. I found that some speakers cannot get the intermediate readings we are after with the determiner ‘a’.

5. Thanks to Satoshi Tomioka for pointing this out to me. That bound variable pronouns facilitate intermediate readings is also observed in Ruys (1992), and in fact used by him to bring out intermediate scope readings more clearly.

6. The example is due to Abusch, except for the choice of indefinite article.

7. See also the papers in Egli and von Heusinger (1995), which explore the formal consequences of interpreting indefinites with the help of choice functions.

8. More specifically, the rise on the determiner is an instance of a L*+H pitch accent followed by a H* pitch accent and a L boundary tone on the noun. Thanks to Lisa Selkirk for this diagnosis.

9. I think my deviation from Reinhart’s proposal is still compatible with her analyses of *wh in situ* and sluicing, which provide strong arguments for the choice function approach.

10. Thanks to Kai von Stechow and P. Casalegno (via G. Chierchia) for suggesting scenarios of

this kind.

11. Mitchell (1989 : 76).

12. For Hintikka, the logical representation of (10) would be

$$\exists f \ x(\text{husband}(x) \ \text{had forgotten} (x, f(x))),$$

where f is a variable ranging over functions mapping individuals into individuals. A related proposal is made in Engdahl (1980, 1986), who uses the same kind of function variables in the representation of personal and interrogative pronouns.

13. Ruys (1992: 114).

14. Hintikka (1986), p. 334.

15. Actually, there are two different, but very close intermediate readings, depending on a referential versus bound variable interpretation for the implicit argument of some. See the discussion of a certain above.

16. See Rullmann (1989) for bare plurals, and Beghelli (1993) for modified numerals.

17. This may not be the right approach for bare plurals. Without affecting the thrust of my argument, we may assume that they do not have their own quantificational force. They may then acquire existential force through an existential closure operator introduced at the VP level, as proposed in Diesing (1992). Alternatively, we may assume that bare plurals are names for kinds as argued in Carlson (1977). Existential quantification over realizations of kinds may then come in through the semantics of the verb or a non-overt partitive operator.

18. See Cresswell 1990. For similar arguments supporting the temporal independence of NPs see Enç 1981. The issue is taken up again in section 6.

19. This contrast was pointed out to me by Barbara Partee.

20. Davidson (1967). Quoted from Davidson (1980: 161).
21. Section 5 will address this issue in a more formal way by defining the notion of an event that exemplifies a proposition. Exportability arguments are used in Barwise (1981) to argue that the perception verbs in naked infinitive perception reports express relations between individuals and situations. See also Higginbotham (1983), which argues for an individual-events analysis of those constructions.
22. Ruys (1992) observes that distributive plural indefinites are not exportable from a variety of syntactic environments. See also Beghelli, Ben Shalom, and Szabolcsi (1993, to appear) for discussion of related issues.
23. The transparent and the opaque interpretation of because actually produce two slightly different specific readings, but they are too close to be distinguished by normal speakers' intuitions.
24. See Barwise (1981) for a similar approach to the semantics of naked infinitive perception sentences. The central notion of his theory is the notion of a situation supporting the truth of a sentence.
25. This clause implies that nothing can be part of more than one world. Things may have counterparts in other worlds, however, as argued in Lewis (1968, 1986).
26. As is common practice, I will later on construe propositions as characteristic functions of sets of possible situations without further warning.
27. I think it was Matthew Stone who first alerted me to possible problems that definition (33) faces with respect to number distinctions.
28. See Kratzer (1989) for discussion of alternatives and their consequences. The situation semantics I have in mind provides a pool of plausible types of truth-conditions for quantified statements as well as filters (like the persistence constraint) that rule out some possibilities in certain cases.

Here is another case where we have to be careful about the truth-conditions we want to

assign.

Definition (33) seems to imply that there cannot be an eventuality that exemplifies the proposition expressed by the following sentence:

(i) There are infinitely many parasites.

This is indeed true if (i) has the following truth-conditions:

(i') s [[**There are infinitely many parasites**]] iff there are infinitely many parasites in s .

Whenever [[i]] would be true in a situation s , then s has parts in which it is not true. Situations with five or six fleas, for example. But these situations are not part of any minimal situation in which [[i]] is true.

But (i) does not have to have the truth-conditions in (i'). Suppose that in addition to the persistence constraint requiring that all propositions expressed by utterances in natural languages be persistent, we have another constraint requiring that whenever a proposition is true in a world, there must be an exemplifying eventuality in that world. This eliminates (i'). Possible truth-conditions for (i) could then be (i''), for example:

(i'') s [[**There are infinitely many parasites**]] iff all the parasites of w are part of s and there are infinitely many parasites in s .

On this proposal, [[i]] can only be true in a situation s if it is big enough to contain all the parasites in the world of s . Implicit domain restrictions can then weaken this requirement, of course.

29. See Barwise and Perry (1983).

30. See e.g. Milsark (1974), Diesing (1992), and Heim & Kratzer (forthcoming), chapter 6 for more discussion.

31. See e.g. Diesing (1992).

32. The account of *de re* attitude ascriptions proposed here follows Fodor in separating the *de re/de dicto* distinction from the transparent/opaque distinction:

"...there seems to be an implicit assumption in many discussions of opacity, that the failure of substitutivity and the failure of existential generalization are necessarily connected. The idea is apparently that if existential generalization is valid, then this means that the sentence expresses a proposition about a particular individual. But if something is true of a particular individual, it should be true of him whatever description is used to refer to him, and therefore substitutivity must be valid. What I am suggesting, on the other hand, is that there are two quite independent questions. (a) Does the sentence predicate something of a particular individual? (b) Under what description of that individual does it do so? The claim that these questions are independent is not, I think, logically incoherent. But the idea that something might be true of an individual though only under some descriptions of him, does require recognizing that a single noun phrase may have two distinct functions in a sentence - - to pick out, refer to, an individual, and to provide a particular description of him. Any co-extensive phrase could equally well fulfill the first of these functions, but this is obviously not so of the second, which is why substitutivity is not generally valid."

Fodor (1970, 1979: 229).

33. See Kamp (1971), Vlach (1973), van Benthem (1977), Saarinen (1979), Enç (1981).

34. See also Zimmermann (1989).

35. See Gallin (1975), Muskens (1989).

36. But see note 16.