INDEFINITE TOPICS

by

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Submitted to the Department of Linguistics and Philosophy
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy
in Linguistics

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

July 1995

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Abstract

In this dissertation I investigate the phenomenon of what have come to be known as 'specific' indefinites.

The atypical scope- and discourse-related properties of this kind of noun phrases have led researchers to posit a variety of recent analyses. I show that nothing special needs to be said about specific indefinites once we assume a pre-dynamic model of natural language which takes as a starting point the proposals of Kamp (1981) and Heim (1982) that indefinites are not inherently quantificational.

One core assumption of this dissertation is that indefinites that are interpreted as specific (or that otherwise exhibit atypical scopal properties) are always topic marked in the sense of von Fintel (1994) (but see also Diesing 1991). The phenomenon of topic marking is quite independent of specific indefinites

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and is generally the cause of existence presuppositions associated with quantificational noun phrases—which are argued not to be intrinsically presuppositional.

The presuppositions associated with topic marking are shown to follow the same projection patterns as standard presuppositional expressions; thus the semantic and pragmatic properties of specific indefinites are expected to exhibit a parallel behavior with respect to, e.g., presuppositions of the kind generated, by definite noun phrases. The model proposed thus subsumes the apparently puzzling scope-taking options of indefinites under an independently available theory of syntax, semantics, and pragmatics. No recourse to task-specific devices is assumed.

The model proposed assumes a maximally constrained theory of syntax. Thus it is compatible with theories which assume the clause-boundedness of quantifier raising, including those models which assume that there is no independently occurring quantifier raising operation.

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4. PRESUPPOSITION PROJECTION AND TOPICALITY

CHAPTER 1

INTRODUCTION

1. Are Indefinites Ambiguous?

Indefinite noun phrases (DP's)[1] have been studied quite extensively in the semantic literature. They present numerous puzzles that have led researchers to posit various kinds of ambiguities. Below I give a general overview of the kinds of issues involved.

Milsark (1977) originally introduced a classification of noun phrases into 'weak' vs. 'strong', to distinguish those DP's that can occur in the postcopular position of a *there be* _ sentence from those that can't. Typically, definite DP's and universally quantified DP's are labeled 'strong' because they cannot occur in such constructions, while indefinites would appear to be allowed in these environments, and would thus be classified as 'weak'. However, Milsark noted that an indefinite will not always behave as a weak DP in this sense. To support this observation, he discusses the contrast between unstressed *some*—notated '*sm*'—and certain readings of a fully stressed *sóme* (see also Postal 1966):

(1)　a.　*Sm* salesmen walked in.

　　　b.　Sóme salesmen walked in.

　　　c.　Some of the salesmen walked in.

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[1] I use the term 'noun phrase' to refer to any nominal constituent that can occupy an argument position of a predicate. In recent years, it has become common practice to label these constituents 'DP' (for 'Determiner Phrase'), following Abney (1987). The earlier label 'NP' will be reserved for any nominal subconstituent of DP, and will not in general be identified with the term 'noun phrase'.

(2) a. There are *sm* people in the bedroom.

    b. ± There are sóme people in the bedroom.

    c. * There are some of the people in the bedroom.

Milsark observes that while (1a) is simply a "statement that an act of entering has transpired, and that it was performed by some indeterminate but probably not large number of salesmen ... [(1b)] asserts that of the class of salesmen, some subset of appropriate size to be referred to as 'some' has performed the action of entering, and carries a strong suggestion that some other group, by contrast, remained outside ... In this reading, the sentence is very nearly synonymous with [(1c)]. [p. 18]" This is seen to correlate with a difference in grammaticality between (2a) and (2b), when (2b) is interpreted as in the ungrammatical (2c). Thus, he suggests, "The '*sm*' reading of *some* classes with the weak determiners, the '*sóme*' sense classes with the strong ones. [p. 20]"

This observation was later taken up by numerous authors, and the notion that indefinite noun phrases are ambiguous between a weak (or 'existential') reading and a strong (or 'partitive') reading has come to be widely acknowledged. In particular, Kratzer (1989b) and Diesing (1992) argue that weak readings contrast not only with 'partitive' (or 'specific') readings, but also with generic readings. These contrasts, in turn, are shown to be correlated with the readings associated with arguments of stage level vs. individual level predicates (in the sense of Carlson 1977),[2] and with scrambling in languages such as German and Dutch.

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[2] The stage/individual level distinction can already be found, under a different terminology, in Milsark (1974).

(3) a.   ... weil Professoren ja doch verfügbar sind.
    since professors 'indeed' available are

   '... since (in general) professors are available.'

  b.   ... weil ja doch Professoren verfügbar sind.
    since 'indeed' professors available are

   '... since there are professors available.'

(4) a.   ... weil Wildschweine ja doch intelligent sind.
    since wild boars 'indeed' intelligent are

   '... since (in general) wild boars are intelligent.'

  b. * ... weil ja doch Wildschweine intelligent sind.

    since 'indeed' wild boars intelligent are

The position of the subject with respect to the underlined adverb in the German examples above is taken to indicate whether scrambling has taken place. The generalization that emerges is that generic readings obtain when the relevant DP is scrambled, and in particular the subject of an individual level predicate must be scrambled—cf. the contrast in (4). On the other hand, existential readings obtain with subjects of stage level predicates when the DP is not scrambled. Diesing proposes that scrambled DP's are always 'strong', in Milsark's sense, and that (nongeneric) strong DP's are inherently quantificational. DP's that are not scrambled, on the other hand, are not quantificational, and must be bound by existential closure at the VP level; thus they cannot scramble. She further suggests that 'specific' DP's will pattern with the 'strong' category (see also de Hoop 1992), being associated with a presuppositional restrictive clause, just like true quantifiers. She discusses examples like the Dutch (5), adapted from Reuland (1988), and the Turkish (6), taken from Enç (1991):[3]

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[3] The glosses in (5) and (6) are as given by Reuland and Enç, respectively. Since I am not a native speaker of Dutch or Turkish, I cannot provide more detailed information on the meaning of these sentences.

(5) a. Fred denkt dat twee koeien op het dak liggen.
   Fred thinks that two cows on the roof lie
   'Fred thinks that two ('specific') cows are lying on the roof.'

   b. Fred denkt dat er twee koeien op het dak liggen.
   Fred thinks that there two cows on the roof lie
   'Fred thinks that there are two cows lying on the roof.'

(6) a. Ali bir kitab-i aldi.
   Ali one book-ACC bought
   'A book is such that Ali bought it.'

   b. Ali bir kitap aldi.
   Ali one book bought
   'Ali bought some book or other.'

The DP *twee koeien* 'two cows' in the Dutch examples is assumed to be in SpecIP in the case of (5a), and inside VP in the case of (5b), the reason being that the lexical item *er* 'there' occupies SpecIP in the latter case but not in the former. This, Diesing argues, indicates that this DP is scrambled in (5a) but not in (5b); and, as it turns out, in the first case this DP is interpreted as being a 'covert partitive' (in Reuland's terms), while in the second case it is interpreted existentially. With regard to the Turkish examples, the 'specific' vs. 'nonspecific' character of the object DP appears to be correlated with the presence of an overt accusative marker on this DP. Enç (1991) argues that accusative marking in Turkish is used to encode 'specificity', and correspondingly, a 'specific' DP is semantically interpreted as partitive. Diesing speculates that accusative marking on Turkish objects should also be correlated with some form of scrambling, plausibly in the LF component.

The generalization, then, is that indefinites are inherently ambiguous. So, in most cases, a given DP of this class will have two distinct translations: one where

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it corresponds to a true quantifier, and as such its descriptive content is associated with a presuppositional restrictive clause; and another where the indefinite is not inherently quantificational, and must end up bound by some unselective operator, such as VP-level existential closure. In all cases, any indefinite which does not receive an existential reading will scramble out of its VP, either in the syntax or at LF.

Now, this kind of ambiguity, if it exists, should presumably be attributed to lexical properties of determiners, and not of DP's. The idea of positing lexical ambiguity at the level of a constituent as large as a DP, it seems to me, is somewhat implausible. Once we postulate this kind of ambiguity, we have to wonder why it does not seem to obtain for other phrasal constituents—say, VP or CP. But even the assumption that indefinite determiners are lexically ambiguous may lend itself to criticism. There is a risk of overgenerating lexical entries that may not be attested as distinct morphological items in natural languages. And even when such items seem to be attested (consider, for instance, the case of the Dutch *sommige/enkele* pair—translatable roughly as *sóme* vs. *sm*, as suggested by de Hoop 1992), their behavior could be accounted for by means other than a general hypothesized quantificational/nonquantificational ambiguity.[4] After all, the English *all/every/each* trio also correlates with significant semantic distinctions, but these distinctions are usually not assumed to be due to such a basic notion as whether or not something is a quantifier.

Even aside from conceptual issues, the idea of treating strong or 'specific' indefinites as true quantifiers may be unsatisfactory on empirical grounds. Fodor and Sag (1981) argue at length that some indefinites—in fact those which are commonly referred to as 'specific'—differ substantially from run-of-the-mill

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[4] For instance, their different morphology could be correlated with a more or less marked tendency to raise, say, for Case-related reasons (see, e.g., Chomsky 1993). This might then correlate with the semantic properties associated with scrambling.

quantifiers in many respects. Their strongest argument against treating these kinds of DP's as quantifiers is that they appear to be capable of taking scope outside of constituents (like the *rumor*-phrase below) which behave as scope islands with respect to regular quantifiers:

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

b. Each teacher overheard the rumor that *every student of mine* had been called before the dean.

In (7a), the indefinite *a student of mine* can take scope outside of the *rumor*-phrase and above the matrix subject. In (7b), however, the quantificational noun phrase (QNP) *every student of mine* cannot take scope outside of this constituent, and much less above the subject. (7b) illustrates a typical case of the restrictions that certain constituents impose on the scope of QNP's. Since 'specific' indefinites regularly violate these constraints, perhaps they should not be treated as QNP's.

In any case, Fodor and Sag propose an ambiguity-based analysis of these facts, which is in some ways the opposite of what Diesing proposes. For them, there are two kinds of indefinites: those which take strictly narrow scope and never violate island constraints, which are analyzed as true QNP's; and those which take 'extra-wide' scope, which are analyzed essentially as referring expressions. Thus, on a purely conceptual level, this analysis is no more parsimonious than Diesing's. On an empirical level, there are some nontrivial problems that have been pointed out by numerous authors, including Diesing herself. I will not discuss these problems here, since these will be taken up in Chapter 2. What I wish to point out here is that Fodor and Sag's observations about contrasts like that in (7) should be taken seriously, if we wish to

understand the restrictions on quantifier scope. In this respect, Diesing's analysis will not help.

In this dissertation I will present an analysis of indefinites which assumes no form of lexical ambiguity at the DP level. In essence, my analysis is a version of those proposed by Kamp (1981) and Heim (1982), whereby indefinites are uniformly non-(inherently)-quantificational, and can be bound at a distance by a c-commanding quantifier. So, for instance, (7a) will be represented roughly as in (8)—an option which is not allowed for (7b).

(8) $\exists_i$ [Each teacher overheard [the rumor that [*a student of mine*]$_i$ ...]]

I will further argue that the weak/strong distinction can be captured by a mechanism of topic marking, in the spirit of von Fintel (1994). This analysis will also explain why these DP's enter into more scope configurations than regular QNP's. Thus, in general, the presuppositional character of scrambled DP's, as well as the possibility of 'specific' readings, will be argued to be a derived property, which is regulated by discourse-related factors and variable binding configurations which may affect these DP's.

As far as concerns the scope of this dissertation, I will concentrate my attention essentially on monotone increasing singular indefinite noun phrases. My analysis, I believe, can be extended with no great effort to plural (mon↑) indefinites, which exhibit the same general pattern as the singular ones; I will not deal with plurals here, however, since these DP's also exhibit a wealth of properties (e.g., distributive vs. collective ambiguities) which are relatively inconsequential to the analysis, yet would require an additional set of assumptions, taking us too far from the task at hand.

Monotone decreasing and non-monotone indefinites are a different case. They do exhibit a weak/strong ambiguity, but they don't (as far as I am aware) exhibit island escaping properties of the kind seen in (7a). I will simply assume that these DP's are regular quantifiers; thus I will deliberately intend to exclude these kinds of DP's when making generalizations about the class of indefinites that fall under my analysis.[5] Finally, I will also exclude English bare plurals from the discussion—although I believe my analysis is (or can be made) compatible with current theories of genericity.

This dissertation is organized as follows. In Chapter 2 I present an overview of the scope possibilities that indefinites have. I will discuss Fodor and Sag's paper and some of the problems it raises. I will then discuss a proposal by Abusch (1993), which is intended to account for the scope of indefinites by means of a variation on the Kamp/Heim model, as I myself advocate. Abusch's proposal, however, also assumes an added mechanism that lifts the descriptive content of an indefinite to a position strictly local to its binder, effectively making it into a restricted quantifier. This mechanism is argued to be necessary by the author, who illustrates a productive set of cases where the occurrence in a sentence of an indefinite bound at a distance by an existential closure operator causes the sentence to have intolerably weak truth conditions. I will argue, contra Abusch, that this extra mechanism is not immune from serious problems of its own, both conceptual and empirical (see Ch. 2, §3.2). As a result, I argue, the general Kamp/Heim approach should be retained, but without carrying out the indefinite description. This, of course, leaves me with the task of trying to show that the problem of weak truth conditions can be overcome in an alternative way. In Chapter 3 I explore three possible strategies, and conclude that the best by far

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[5] One may speculate, however, that mon↓ and -mon indefinites are quantificational by virtue of a combination of a regular 'Heimian' indefinite and an appropriate 'affective' operator, perhaps in SpecDP. So we may not need to posit an essential ambiguity even in these cases.

is to assume a version of von Fintel's topic marking mechanism, applied to scrambled indefinites. This general strategy entails a presuppositional treatment of the targeted indefinite, since topics by their nature presuppose their descriptive content. Furthermore, by explicitly adopting a Strawsonian notion of presupposition (whereby the assignment of a truthvalue to an assertion is contingent on its presuppositions being fulfilled), I eschew the opposite problem, i.e., generating expressions whose truth conditions are too strong—a problem that the alternative approach cannot avoid. Finally, in Chapter 4 I discuss in some detail the mechanics of presupposition projection, and tentatively propose a model roughly in the spirit of Belnap (1970), that generates presupposition/ assertion pairs of the appropriate kind. This model is significantly simplified compared to, e.g., the system proposed by Karttunen and Peters (1979).[6] Yet, as I will show, it can handle a variety of well known problems in the relevant literature, as well as all the cases that were problematic under Abusch's approach, as discussed in Ch. 2, §3.2.

2. Formalities

In general, I will be implicitly assuming a two-sorted type theory (cf. Gallin 1975) with notational conventions similar to those used by von Stechow (1993) and Heim and Kratzer (to appear). In other words, for any lexical item which is translated as a function of type $\langle s, \tau \rangle$ (for any type τ), the item is subscripted with its world variable at LF.[7] Thus, for instance, a sentence like *John met Mary* could be represented roughly by the LF in (9).

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[6] This is partly due to my conclusions in Ch. 3, section 1, that even quantifiers like *every* are not (inherently) presuppositional. Whether one can get away in all cases with the rather streamlined system I propose for presupposition projection is left for future research.

[7] Individuals are assumed to be of type *e* and, somewhat simplistically, to exist across possible worlds. Hence they are not annotated with a world variable at any level of representation.

(9)

IP

DP VP
John

V DP
met_w Mary
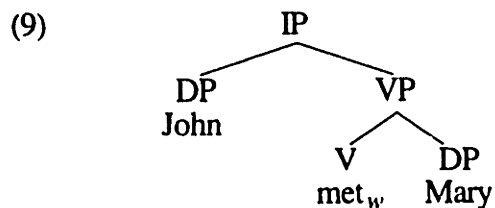
(9) is then translated as the expression met_w(**John, Mary**), which is short for **met**(w)(**Mary**)(**John**), and is true just in case John met Mary in world w.[8] Of course, nominal predicates (e.g., *cat, professor*) are also subscripted with a world variable. However, to anticipate a bit the arguments given in Chapter 2, this world variable will have different options from those assumed for world variables associated with verbal predicates. Without going into details, I assume the convention in (10).

(10)   World Variables

In LF, all predicates are annotated with a world-variable subscript. The world variable of a verbal predicate—notated w, w', w'', etc.—is bound by the closest intensional operator or C(omp). The world variable of a nominal predicate—notated $w\cdot, w\cdot', w\cdot''$, etc. may be bound or free. A world variable that remains free at the matrix IP level is assigned the default value w_0, the utterance world.

To illustrate (10), consider the sentence in (11a). We might associate this sentence with the LF in (11b), which, by (10), will be assigned the translation in (11c).

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[8] Temporal variables will be mostly ignored in this dissertation.

(11) a. Every cat meowed.

b.

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          IP
        /    \
      DP      VP
     /  \      |
    D    NP    V
  every  cat_{w•}  meowed_w
```
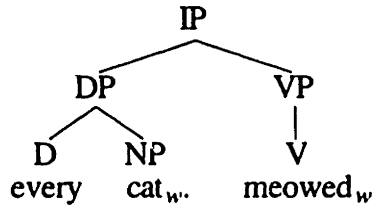
c. $(\forall x: \text{cat}_{w•}(x))\ \text{meow}_w(x)$

Since both $w•$ and w are free in (11c), they are both assigned the default value w_0. So (11c) is equivalent to (11d).

(11) d. $(\forall x: \text{cat}_{w_0}(x))\ \text{meow}_{w_0}(x)$

To illustrate a case of where the '$w•$' vs. 'w' difference might become relevant, consider (12a). This sentence could have an LF as in (12b), where the resolution of the *de re/de dicto* ambiguity of (12a) is left up to the option provided for in (10) to let the predicate $\text{cat}_{w•}$ end up having its world variable free or bound by the embedded Comp.[9] This means that the LF in (12b) actually corresponds to two LF's: one where $\text{cat}_{w•}$ is actually $\text{cat}_{w'}$, a predicate which is true of things that are cats in John's belief world(s); and another LF where $\text{cat}_{w•}$ is instead cat_w—ultimately cat_{w_0}, a predicate which is true of things that are cats in w_0. The two translations are given in (12c1) and (12c2), respectively.

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[9] I am not claiming here that these kinds of ambiguities simply boil down to a choice of world variable associated with embedded DP's. I believe, however, that the convention on (10) is relatively innocuous in these cases; and furthermore, as I will argue in Chapter 2, something like (10) appears to be necessary to account for various phenomena, not all of them involving indefinites.

(12) a. John thinks that every cat meowed.

b.
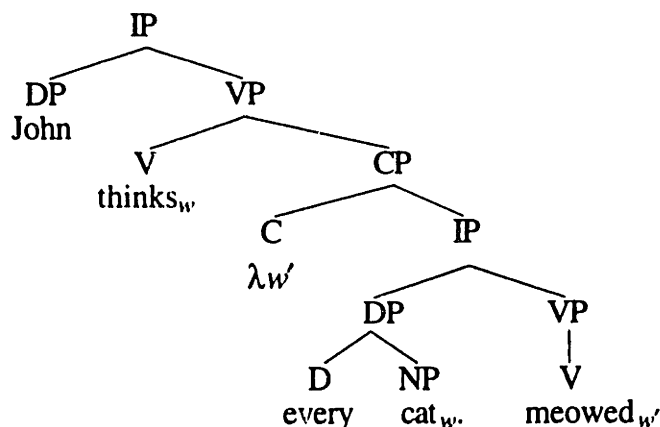
c1. $\textbf{think}_{w_0}\Big(\textbf{John}, \lambda w' \left[(\forall x: \textbf{cat}_{w'}(x))\ \textbf{meow}_{w'}(x)\right]\Big)$

c2. $\textbf{think}_{w_0}\Big(\textbf{John}, \lambda w' \left[(\forall x: \textbf{cat}_{w_0}(x))\ \textbf{meow}_{w'}(x)\right]\Big)$

The interpretation mechanism presupposes a compositional semantics which is guided by the following methodology (see also Bittner 1993):

(13)   Composition

A node whose two daughters translate as α and β (linear order irrelevant) translates as $\alpha \cdot \beta$, where

$\alpha \cdot \beta$ is a general abbreviation for any of the following: $\alpha(\beta)$, $\alpha(\hat{\ }\beta)$, $\check{\ }\alpha(\beta)$, $\check{\ }\alpha(\hat{\ }\beta)$; or, if both α and β are of type $\langle \tau, t \rangle$ (for any type τ): $\lambda v^{\tau}[\alpha(v^{\tau}) \wedge \beta(v^{\tau})]$, v^{τ} a variable of type τ.

Furthermore, since the semantics I utilize is read off of an LF syntax which assumes movement of constituents, I assume a modality of interpretation of movement structures as in (14) (see also Reinhart 1983, Rooth 1985, Heim 1993, Cresti 1995).

(14)   Movement Indices

Structures of the form $\widehat{XP_i \ YP}$ are rebracketed as $\widehat{i \ YP}$, and $\widehat{i \ YP}$ translates as $\lambda v_i.\alpha$, where α is the translation of YP and v_i is the same variable that was chosen for the translation of t_i inside YP.

These two principles are rather straightforward. I will briefly illustrate their application by reconsidering sentence (11a) under the VP-internal subject hypothesis:

(15) a.   Every cat meowed.

b.
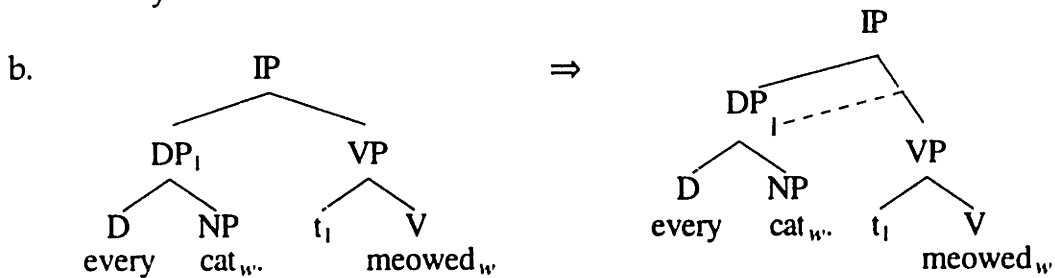
c. $\lambda Q\left[(\forall x.\ \mathbf{cat}(w^{\cdot})(x))\ Q(w)(x)\right]\left(\lambda w\lambda x_1.\mathbf{meow}(w)(x_1)\right) = (\forall x.\ \mathbf{cat}(w^{\cdot})(x))\ \mathbf{meow}(w)(x)$
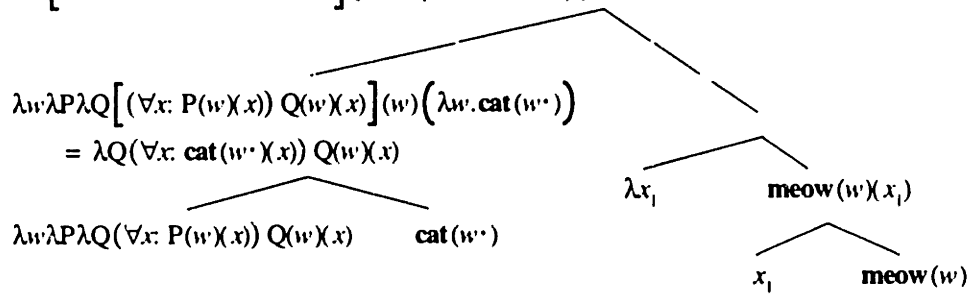
d. $(\forall x.\ \mathbf{cat}_{w^{\cdot}}(x))\ \mathbf{meow}_w(x) \quad \Rightarrow \quad (\forall x.\ \mathbf{cat}_{w_0}(x))\ \mathbf{meow}_{w_0}(x)$

In cases where only the extensional aspect matters, I will sometimes drop the world subscript. In such cases, all predicates are assumed to be evaluated in the utterance world w_0.

Finally, I introduce a device for interpreting DP's in their θ-positions. This device is not strictly necessary for the purposes of this dissertation, although it allows a more uniform interpretation of VP-internal and VP-external DP's. I will refer to this mechanism as 'Theta Grid Saturation'. Essentially, verb meanings are assumed to have their θ-grid filled by 'dummy' θ-roles, e.g., $\mathbf{sell}_w(\theta_{AGT}, \theta_{TH1}, \theta_{GOAL}, \theta_{TH2})$, the θ being 'placeholders' for constants or variables of the appropriate semantic type: type e for DP arguments, type $\langle s, t \rangle$ for CP arguments, etc. At each V^n node, a V 'expects' a DP meaning (or CP meaning, etc.) to fulfill the appropriate θ-role, thus behaving as a 1-place predicate, in the following manner:[10]

(16)   Theta Grid Saturation
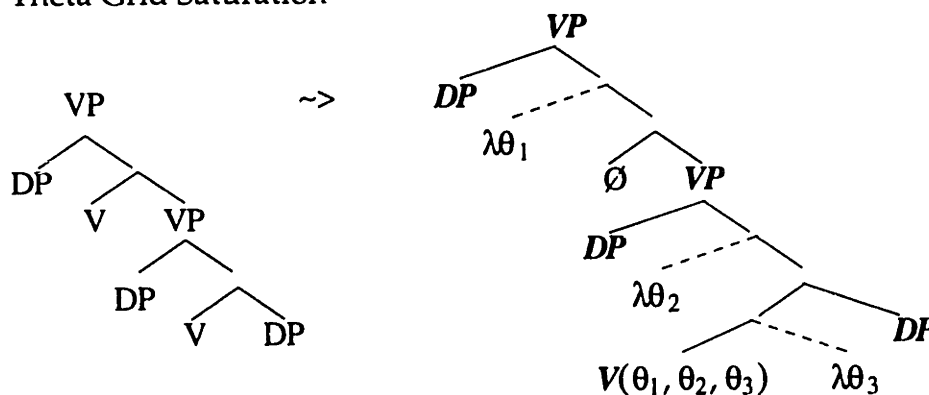
By the mechanism in (16), any DP—be it of type e or of type $\langle\langle s, \langle e, t \rangle\rangle, t\rangle$—can be interpreted directly in its base position. The derivation in (17) illustrates this fact:

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[10] Note, incidentally, that I have used the label '*VP*' as an abbreviation of 'the translation of VP', '*DP*' for 'the translation of DP', etc. I will be using this kind of abbreviation in various parts of this dissertation.

(17) a.   Al gave every hat to Sue.

b.

$$VP$$

DP
Al   V   VP
     gave$_w$
         DP
                t$_V$ DP
     every   hat$_{w'}$ (to) Sue
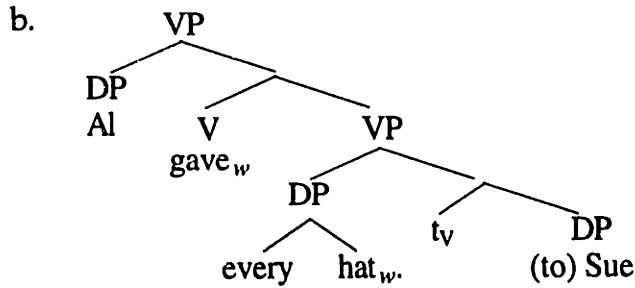
c. $\lambda\theta_1\left[(\forall x\colon \text{hat}_{w'}(x))\,\text{give}_w(\theta_1, x, \text{Sue})\right](\text{Al})$

     $= (\forall x\colon \text{hat}_{w'}(x))\,\text{give}_w(\text{Al}, x, \text{Sue})$

Al
    $\lambda\theta_1$

         $\lambda P\left[(\forall x\colon \text{hat}_{w'}(x))\,P_w(x)\right]\left(\lambda w \lambda\theta_2.\text{give}_w(\theta_1, \theta_2, \text{Sue})\right)$

           $= (\forall x\colon \text{hat}_{w'}(x))\,\text{give}_w(\theta_1, x, \text{Sue})$

$\lambda P\,(\forall x\colon \text{hat}_{w'}(x))\,P_w(x)$ $\lambda\theta_2$

            $\lambda\theta_3.\text{give}_w(\theta_1, \theta_2, \theta_3)(\text{Sue})$

              $= \text{give}_w(\theta_1, \theta_2, \text{Sue})$

                   Sue

     $\text{give}_w(\theta_1, \theta_2, \theta_3)$ $\lambda\theta_3$
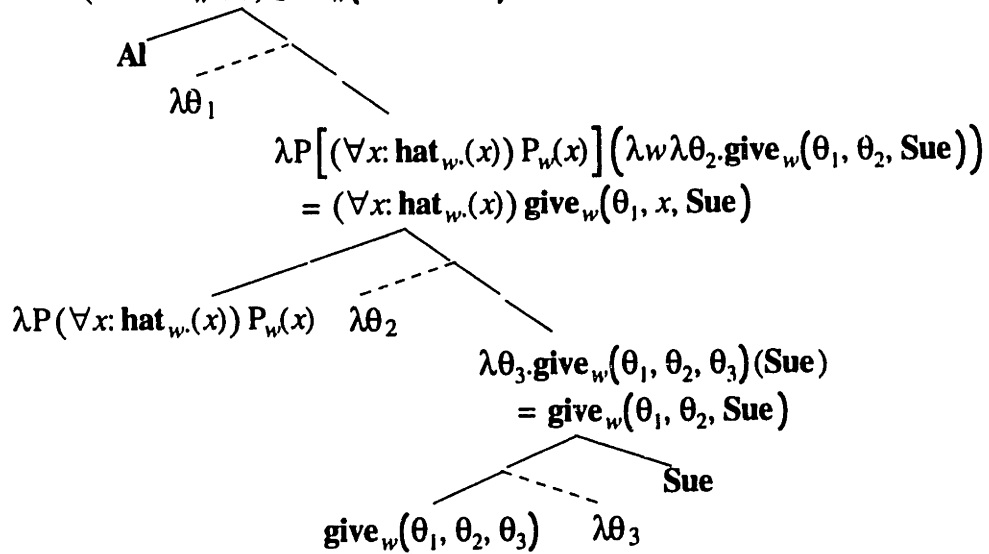
With this much in mind, let us move on to the interesting part of the dissertation.

CHAPTER 2

WIDE SCOPE INDEFINITES

1. Fodor and Sag (1981)

In a 1981 paper on indefinites, Janet Fodor and Ivan Sag (henceforth F&S) argue that certain kinds of singular indefinites—which are commonly referred to as 'specific'—are not to be treated as quantificational elements, but must be analyzed as directly referential in the sense of Kaplan (1989). Thus specific indefinites are likened to demonstratives, whose denotation depends exclusively on the context of utterance, and not on the structural position in which they occur.

F&S's argument is based on various observations to the effect that indefinites appear to have scope possibilities which are usually not allowed for regular quantifiers. Their 'critical' evidence comes from the ability of indefinites to escape scope islands, such as complex noun phrases like the *rumor*-DP in (1) and the antecedent clause of a conditional, as in (2).

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

b. Each teacher overheard the rumor that *every student of mine* had been called before the dean.

(2)   a.   If *a student in the syntax class* cheats on the exam, every professor will be fired.

        b.   If *any student in the syntax class* cheats on the exam, every professor will be fired.

In the (a) examples above, the italicized indefinite can be understood as having matrix scope, while the quantificational noun phrases in the (b) examples clearly cannot. For instance, while (1a) can be understood as stating that there is a (unique) student of mine such that every teacher heard the rumor that this student had been called before the dean, (1b) cannot mean that each of my students is such that John overheard the rumor—a different rumor for each student—that the student had been called before the dean. But more importantly, F&S argue, the indefinites in (1a)-(2a) do not exhibit the full range of scope relations that would be predicted by a theory that analyses these elements as quantificational. Such a theory would have to stipulate that indefinites are immune to island constraints, but at the same time it would have to explain why an indefinite, once it escapes from an island, is apparently only allowed to take maximal scope with respect to any operators outside the island. So, considering the examples above, F&S claim that (1a) cannot have the reading where *a student of mine* has scope outside the *rumor*-DP but within the scope of *every teacher*. And similarly, (2a) cannot have a reading where for each professor there is a (possibly different) student such that if that student cheats, that professor will be fired. Thus they conclude:

> This missing-reading observation is a clear indication that the 'island-escaping' interpretation of an indefinite is not in fact an instance of a quantifier that manages to escape the island, but is an instance of something

very like a proper name or demonstrative which does not participate in the network of scope relations between true quantifiers, negation, higher predicates, and the like... [A purely quantificational treatment of indefinites], even if it assumes that there can be island-escaping quantifiers, offers no explanation at all for the absence of the intermediate scope readings in such examples. The normal principles governing quantifier scope would have to be considerably complicated in order to account for this observation, and the fact that these complications correlate exactly with the properties of referential phrases would not be captured. [p. 375]

Unfortunately, the very argument that F&S consider decisive in motivating their referential treatment of wide scope indefinites does not hold up to a closer examination of the facts. It has been shown that intermediate readings of indefinites do exist. (3), for instance, is a variant of an example cited by Partee and Rooth (1982), who attribute it to Irene Heim:

(3)   Each teacher overheard the rumor that *a student of hers* had been called before the dean.

This sentence differs minimally from (1b). Here the pronoun *hers*, which can be construed as bound by *each teacher*, facilitates an intermediate reading where the italicized indefinite is interpreted outside of the *rumor*-phrase but under the subject. Another very clear case of an indefinite taking intermediate scope is an example due to Angelika Kratzer, quoted by Rullmann (1989) and by Diesing (1992):

(4)   Each writer overheard the rumor that she didn't write *a book she wrote*.

In the most salient reading of (4), the DP *a book she wrote* must have scope outside the *rumor*-DP, since the latter is not understood as a self-contradicting rumor; on the other hand, the indefinite must also be within the scope of *each writer*, because it contains a pronoun bound by that quantifier.

As a matter of fact, there are even counterexamples to F&S's claim that there can be no intermediate readings for an indefinite embedded in the antecedent of an *if*- or *when*- clause. Abusch (1993) provides the following examples:

(5) a. Every professor got a headache whenever *a student he hated* was in class.

    b. Every professor got a headache whenever there was *a student he hated* in class.

(5a) has a reading where for every professor, there is a student he hates such that whenever that student is in class the professor gets a headache. Under this reading the indefinite takes scope outside of the *whenever*-clause but within the scope *of every professor*. In contrast, *a student he hated* in (5b) can only take narrow scope. This is because the indefinite is not only inside the *whenever*-clause, it is also in the postcopular position of a *there be__* construction. It is known, at least since Milsark (1974), that indefinites in these positions cannot take wide scope. Hence, as Abusch notes, in a situation where some professor A—who hates students B and C—does not get a headache when B is in class, but does when C is in class, (5b) is understood as intuitively false but (5a) can still be true (depending on the state of affairs with respect to other relevant professors and students).

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The examples in (6) below,[1] which contain various kinds of sentential modifiers, are additional evidence that an indefinite can get an 'intermediate scope' reading of the kind F&S claim does not exist. In some of these cases the intermediate reading—where the indefinite takes scope outside of a relative clause island, but not outside of the modifier—is even the most prominent:

(6) a. In every town, every girl that *a boy* was in love with married an Albanian.

b. Usually, every penny *a shoesalesman* earns goes for paying bills.

c. In most respected institutions, every word that *a professor* speaks is promptly written down by her students.

d. In 80% of the experiments, every test that had been run by *a sleepy graduate student* had to be discarded.

e. During an earthquake, most heavy items belonging to *a household* must be left behind.

All these sentences have a reading where the italicized indefinite is within the scope of the temporal/locative/event adverbial, but takes scope outside of the DP which contains it. For instance, (6b) is naturally understood as meaning that in most situations involving a shoesalesman, every penny this individual earns is spent on bills; similarly, (6e) is easily understood as saying that in all situations (which fit certain prescriptions and) which involve an earthquake and a household, most heavy items belonging to that household are left behind. Sometimes the intermediate reading is not the most prominent, but it's still available. (6d), for instance, can mean that 80% of the experiments were such that some sleepy graduate was involved, whose tests had to be discarded.

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[1] (6a) is taken from Abusch (op. cit.).

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Schematically, these readings would seem to be derived from LF's such as those in (7), where the indefinite has moved out of the RC island:

(7) a. [In every town [a boy]$_i$ [$_{RC}$ every girl that t_i was in love with married an Albanian]]

b. [Usually [a shoesalesman]$_i$ [$_{RC}$ every penny that t_i earns idoes for paying bills]]

c. [In most respected institutions [a professor]$_i$ [$_{RC}$ every word that t_i speaks is promptly written down by her$_i$ students]]

d. [In 80% of the experiments [a sleepy graduate student]$_i$ [$_{RC}$ every test that had been run by t_i had to be discarded]]

e. [Must, during an earthquake [a household]$_i$ [$_{RC}$ most heavy items belonging to t_i be discarded]]

If we replace the indefinite in any of (6) with a quantificational DP, these 'intermediate' readings are lost:

(8) a. In every town, every girl that *noone* was in love with married an Albanian.

b. Usually, every penny *most shoesalesmen* earn goes for paying bills.

c. In most respected institutions, every word that *most professors* speak is promptly written down by their students.

d. In 80% of the experiments, every test that had been run by *every sleepy graduate student* had to be discarded.

e. During an earthquake, most heavy items belonging to *every household* must be left behind.

Compare, for instance, (8b) to (6b) above. This sentence might be expected to have a reading roughly paraphrasable as follows: in most situations, most shoesalesmen are such that every penny they earn is spent on bills. (8b), however, does not have this reading; rather, it has a somewhat odd meaning where the subject is understood approximately as 'every penny which is (collectively) earned by a majority of shoesalesmen'. In a similar way, (8e) does not have a reading which might be considered parallel to (6e), viz.: in all situations of a certain kind that involve an earthquake, and for every household (in this kind of situation): most heavy items belonging to that household are left behind; (8e) instead seems to be understood as having to do with heavy items that somehow belong to all households (collectively). Sometimes the intermediate reading is not the most prominent, but it's still available. In other words, the QNP's in (8) cannot take scope outside of the RC island, as shown below:

(9) a. * [In every town [noone]$_i$ [$_{RC}$ every girl that t_i was in love with married an Albanian]]

b. * [Usually [a shoesalesman]$_i$ [$_{RC}$ every penny that t_i earns idoes for paying bills]]

c. * [In most respected institutions [a professor]$_i$ [$_{RC}$ every word that t_i speaks is promptly written down by her$_i$ students]]

d. * [In 80% of the experiments [a sleepy graduate student]$_i$ [$_{RC}$ every test that had been run by t_i had to be discarded]]

e. * [Must, during an earthquake [a household]$_i$ [$_{RC}$ most heavy items belonging to t_i be discarded]]

The issue then is: even if we assume that some indefinites are directly referential, we still need to explain why indefinite DP's that are clearly not referential may also escape scope islands (as in (3)-(6)), whereas regular QNP's cannot. Presumably, once we've found an account of these latter facts, we can extend this account to cases like (1) and (2), thus making the referential treatment redundant. This is the project of the rest of this section.

2. Indefinites are Variables

Suppose we distinguish indefinite noun phrases from other noun phrases by treating them as expressions containing a free variable, in the spirit of Kamp (1981) and Heim (1982). On this approach, indefinites are not intrinsically quantificational, but they gain quantificational force by being indexed to quantifiers which c-command them.

In particular, an existential quantifier can be inserted at certain levels in the structure—what is known as existential closure. I will assume that this operation applies at least in two places: (a) at the 'text' level, which is by definition the highest node in a sentence (or string of sentences); and (b) right above VP (cf. Diesing 1992, Kratzer 1989b).[2] Scopal ambiguities are derived by means of different LF configurations, not necessarily obtained by Quantifier Raising (QR). So for instance, sentence (8) has two distinct readings: one where every man saw a (possibly different) cat, and one where a single cat is such that every man saw it.

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[2] Diesing and Kratzer only assume VP-level existential closure, and explicitly reject the text level option. This correlates with the observation that indefinites that are outside of VP (at LF) are never interpreted existentially. Thus VP-external indefinites should not be existentially quantified through ∃-closure; rather, they should be analyzed as providing their own quantificational force and their own presuppositional content. I will ignore these issues here, since ultimately the system I develop will account for strong readings of indefinites by different means.

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(10)   Every man saw a cat.

Both readings can be obtained in principle with no QR. The DP *a cat* remains inside VP, while *every man* is in the specifier of IP (=AgrsP). For the first reading, existential closure applies to the VP, yielding the LF in (11a), which is interpreted straightforwardly as in (11b).[3]

(11) a.

  b. $\left(\forall x_1: \text{man}(x_1)\right) \exists x_2\left[\text{cat}(x_2) \wedge \text{saw}(x_1, x_2)\right]$
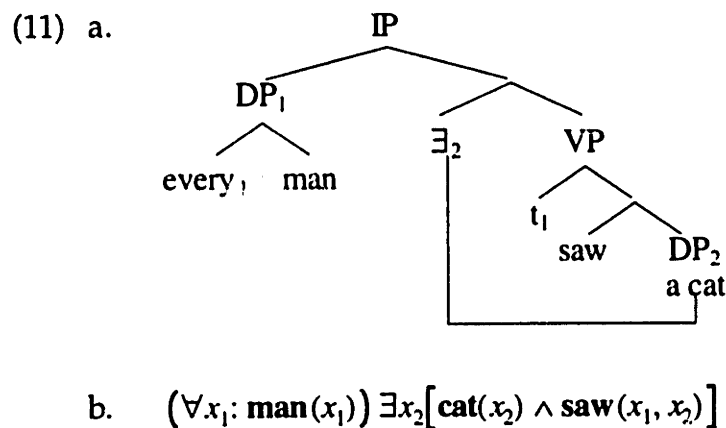
For the second reading, existential closure applies at the text level, yielding the LF in (12a). This LF is interpreted as in (12b).[4]

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[3] The structures in (11) and (12) are not exactly the same as those proposed by Heim, since she assumes that quantificational noun phrases and indefinites always undergo NP-Prefixing (i.e., a particular version of QR), for purposes of interpretation. Given the system outlined in Chapter 1, this movement is not necessary (at least not for the sake of interpretability), since all DP s of type $\langle\langle e, t\rangle, t\rangle$ can be interpreted in situ.

[4] That the equivalence in (12b) holds can be shown by the fact that, by existential instantiation, (12b) becomes an equivalence of the form $\left(\forall x: Fx\right)\left[P \wedge Gx\right] \Leftrightarrow P \wedge \left(\forall x: Fx\right) Gx$. This is one of the so-called *confinement laws* of predicate calculus.

(12) a.

```
            T
        ____/\____
      ∃₂          IP
              ____/\____
            DP₁          VP
           /\          __/\__
      every₁  man     t₁     \
                          saw   DP₂
                               a cat
```
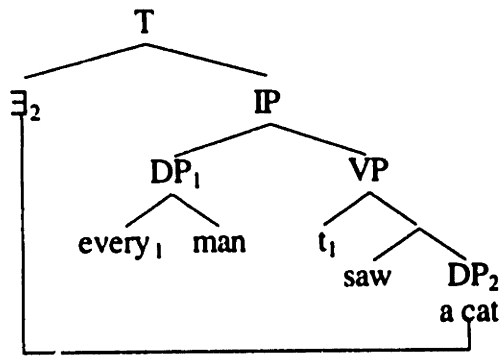
b. $\exists x_2\, (\forall x_1\colon \mathbf{man}(x_1))\, \big[\mathbf{cat}(x_2) \wedge \mathbf{saw}(x_1, x_2)\big]$

$\Leftrightarrow \exists x_2 \big[\mathbf{cat}(x_2) \wedge (\forall x_1\colon \mathbf{man}(x_1))\, \mathbf{saw}(x_1, x_2)\big]$

So the general proposal here is that indefinites are intrinsically different from true quantifiers, and that their apparent scope is determined by a mechanism of unselective binding that need not have the same properties as QR. I will show that this system can lend itself in a natural way to an analysis of the special behavior of indefinites. For purposes of illustration, let us suppose that—for some reason—the indefinite *a cat* in the example above is not allowed to raise over the subject. We may assume that the ambiguity of (10) is captured by the fact that there are two occurrences of '∃' in the LF of (10), and that each can optionally bind the indefinite, as in (13):

(13) a.

```
          T
       __/\__
     ∃        IP
          ___/\___
        DP₁         \
     every man    ∃₂    VP
                      __/\__
                    t₁     \
                        saw   DP₂
                             a cat
```

b.

```
           T
        __/\__
      ∃₂        IP
            ___/\___
          DP₁         \
       every man    ∃     VP
                        __/\__
                      t₁     \
                          saw   DP₂
                               a cat
```
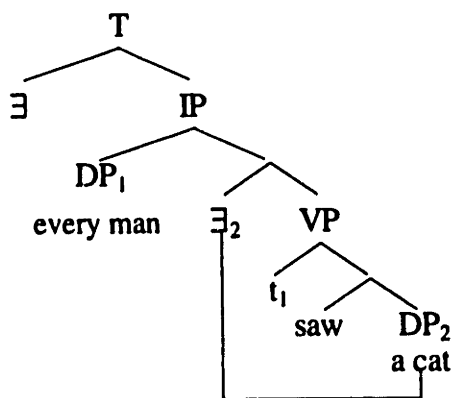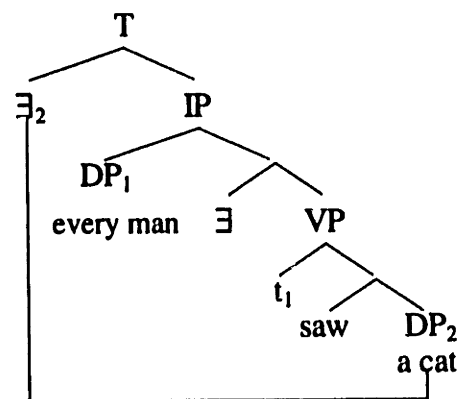
(13a), of course, is interpreted as in (11b), and (13b) is interpreted as in (12b).

Alternatively, we could assume that any $\exists$-closure operator must obligatorily capture all free variables in its c-command domain. In this case, we can still obtain a wide scope reading by letting the indefinite scramble minimally at LF to escape the V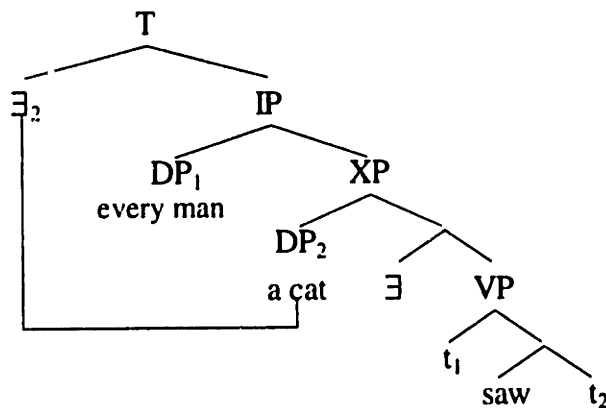P-level $\exists$-operator and again end up bound by the text level $\exists$-operator. So instead of (13b) we would have a structure as in (13c).

(13) c.

```
              T
       ┌──────────┐
      ∃₂         IP
       │      ┌───────┐
       │     DP₁      XP
       │   every man ┌──────┐
       │           DP₂    ┌────┐
       │          a cat   ∃   VP
       │                    ┌────┐
       └────────────────┐  t₁  ┌────┐
                                saw  t₂
```

As the reader can easily verify, the translation of (13c) is the same as that of (13b).

This methodology can be applied to the more complex cases involving scope islands. It must be kept in mind, however, that if we assume that $\exists$-closure is obligatory in the sense mentioned above, we will also have to postulate that scrambling applies not only to DP s but also to larger constituents, like CP complements of a verb (see later). I will then assume, for simplicity, that $\exists$-closure is optional, at least when it binds across a CP node.

Now, consider the following sentence, where an indefinite is embedded inside a CP complement of a factive:

(14)   Every cat forgot that a rat had been arrested.

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This sentence has at least three readings. One where *a rat* takes narrow scope; the meaning is roughly: for every x_1 that is a cat in the utterance world w_0, x_1 forgot that some rat or other had been arrested. This reading is easy to obtain on anyone s theory. In the current system, all we need is a structure like (15a), which is interpreted as in (15b).

(15)   Narrow scope of *a rat*:

a.

```
                    IP
           ┌────────┴────────┐
         DP₁                 VP
       every cat_w    ┌───────┴───────┐
                      V               CP
                   forgot_w    ┌───────┴───────┐
                               C               IP
                              λw        ┌───────┴───────┐
                                        e
                                           ┌───────────┴───────┐
                                          ∃₂                   VP
                                        ┌              ┌────────┴────────┐
                                        │            DP₂               V
                                        │          a rat_w       arrested_w
                                        └──────────────┘
```
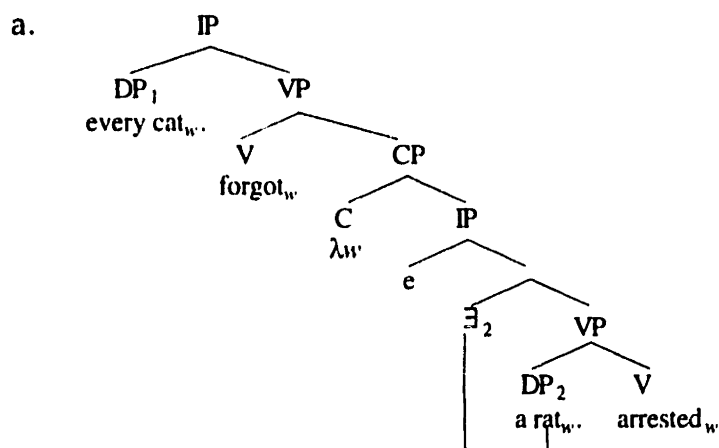
b. $(\forall x_1 : \mathbf{cat}_{w_0}(x_1))\ \mathbf{forget}_{w_0}\!\left(x_1, \lambda w \exists x_2 \big[\mathbf{rat}_w(x_2) \wedge \mathbf{arrested}_w(x_2)\big]\right)$

Next, there is a reading of (14) where *a rat* takes intermediate scope: for every x_1 that is a cat in w_0, there is an x_2 which is a rat in w_0, and x_1 forgot that x_2 had been arrested. To obtain this reading, we must make sure that the denotation of *a rat* is evaluated in the base world, w_0, even if the indefinite remains inside the embedded CP.[5] This should not be taken as a wild assumption. Consider, in fact, a situation where a QNP is blocked inside a typical scope island, such as the *rumor*-phrase below:

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[5] See Enç (1986) for arguments that DP denotations can be evaluated independently of the tense of their clause.

(16)   Meg heard the rumor that every one of her hats had gotten wet.

In (16) the DP *every one of her hats* clearly does not take scope outside the *rumor*-DP, i.e., (16) cannot mean that Meg heard a (possibly) different rumor for each of her hats. Nevertheless, the hats in question are Meg's hats in the utterance world, not 'rumored' hats or hats rumored to be Meg's. Hence (16) should get an interpretation roughly as in (17):

(17) $\mathbf{hear}_{w_0}\Big(\mathbf{Meg}_1, \text{THE}\, p: \mathbf{rumor}_{w_0}(p) \wedge p = \lambda w (\forall x_2\colon \mathbf{her}_1\text{-}\mathbf{hat}_{w_0}(x_2))\, \mathbf{wet}_w(x_2)\Big)$

Now, given this fact, we would actually predict two 'intermediate' readings for our sentence (14): one which is obtained from a structure such as (15a), but with *a rat* evaluated in w_0; and another which is obtained from a structure where *a rat* has scrambled outside of its VP and is captured by a higher $\exists$-closure operator. The difference, in principle, should be that in the first reading, there is a rat for every instance of forgetting, while in the second reading there is a forgetting event for every rat. The first reading is illustrated by (15c).

(15) c. $(\forall x_1\colon \mathbf{cat}_{w_0}(x_1))\, \mathbf{forget}_{w_0}\Big(x_1, \lambda w\, \exists x_2 \big[\mathbf{rat}_{w_0}(x_2) \wedge \mathbf{arrested}_w(x_2)\big]\Big)$

Admittedly, I'm not sure whether this particular reading exists. However, if we substitute the DP *a rat* in (14) with the plural *two rats*, the resulting sentence (*Every cat forgot that two rats had been arrested*) seems to be more easily understood as depicting a situation where every cat forgot one thing: namely, that two rats (in w_0) had been arrested. In any case, what we are interested in at this point is that there exists at least one 'intermediate' reading for (14), rather than none.

The second predicted reading is perhaps a more literal rendition of the prose description given right underneath (15b). A situation appropriate for this meaning is one where there are two cats, Fifi and Sally; Fifi forgot that a friend of his, the rat Sammy, had been arrested, while Sally forgot that her mortal enemy, the rat Slimey, had been arrested. This reading can be obtained by scrambling *a rat* outside of its VP so that its variable ends up bound by the $\exists$-operator on the matrix VP; and, of course, by evaluating its descriptive content at w_0:

(18)   Intermediate scope of *a rat*:

a.
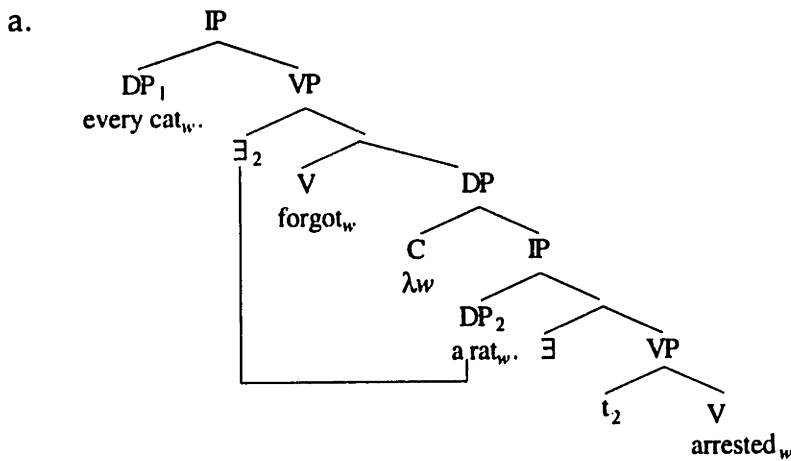
b. $(\forall x_1: \mathbf{cat}_{w_0}(x_1))\, \exists x_2\, \mathbf{forget}_{w_0}\Big(x_1, \lambda w\big[\mathbf{rat}_{w_0}(x_2) \wedge \mathbf{arrested}_w(x_2)\big]\Big)$

The question arises, at this point, as to whether (18b) accurately expresses the appropriate meaning of (14). In other words, is (18b) equivalent to the more conventional (19)?

(19) $(\forall x_1: \mathbf{cat}_{w_0}(x_1))\, \exists x_2\big[\mathbf{rat}_{w_0}(x_2) \wedge \mathbf{forget}_{w_0}(x_1, \lambda w.\mathbf{arrested}_w(x_2))\big]$

The issue here is rather delicate. For suppose that for everything that is a cat in w_0 there is an entity which is not a rat in w_0 e.g., the cat s supper dish. In this

case, the expression in (18b) will entail (20a), while the expression in (19) will entail (20b):

(20) a. $(\forall x_1: \mathbf{cat}_{w_0}(x_1))\, \exists x_2\, \mathbf{forget}_{w_0}\big(x_1, \lambda w[0 \wedge \mathbf{arrested}_{w}(x_2)]\big)$

$= (\forall x_1: \mathbf{cat}_{w_0}(x_1))\, \exists x_2\, \mathbf{forget}_{w_0}(x_1, \lambda w.0)$

b. $(\forall x_1: \mathbf{cat}_{w_0}(x_1))\, \exists x_2\big[0 \wedge \mathbf{forget}_{w_0}\big(x_1, \lambda w.\mathbf{arrested}_{w}(x_2)\big)\big] = 0$

In the above expressions, '0' represents a statement that is always false (under a given variable assignment), and '$\lambda w.0$' represents the impossible (i.e., false in all worlds) proposition. (20a), then, asserts that every cat forgot the impossible proposition, while (20b) is just false. This latter case is what we would expect, since it represents (an intermediate reading of) (14) under a variable assignment that does not satisfy the descriptive content of *a rat*, viz. $\mathbf{rat}_{w_0}(x_2)$. This simply reflects the character of existential quantification: clearly, there are assignments that don't satisfy $\mathbf{rat}_{w_0}(x_2)$, but presumably there are also assignments that do. So (19) cannot be falsified by the mere existence of things that aren't rats in w_0—though it will be evaluated as false if there exist no rats in w_0.[6] (20a), on the other hand, presents a problem. In fact, it shows us that (18b) will not be false under an irrelevant variable assignment. In other words, (18b) will be equivalent to the assertion that 'every cat forgot the impossible proposition' with respect to any object that does not satisfy $\mathbf{rat}_{w_0}(x_2)$. This is clearly not a desirable result. Fortunately, in this particular case we are dealing with the factive verb *forget*. Since factives presuppose their complement, we can assume that the subexpression $\big[\mathbf{rat}_{w_0}(x_2) \wedge \mathbf{arrested}_{w}(x_2)\big]$ in (18b) must be satisfied for some x_2

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6 One might find this fact slightly at odds with the intuitive meaning of (14), under an intermediate reading, since the e·   ·nce of a rat for every cat seems to be somehow taken for granted in this case. I will discuss ʈʜɪs kind of issue at some length in Chapter 3.

(and for some w). Hence x_2 must be a rat in w_0 for all relevant variable assignments. In this case, (18b) is indeed equivalent to (19).

Finally, there is a reading of (14) where *a rat* takes matrix scope: there is an x_2 which is a rat in w_0, and every cat heard the rumor that x_2 had been arrested. This reading is again obtained by scrambling *a rat* outside of its VP, but this time having it bound by text level existential closure, as in (21a).

(21)   Wide scope of *a rat*:

a.
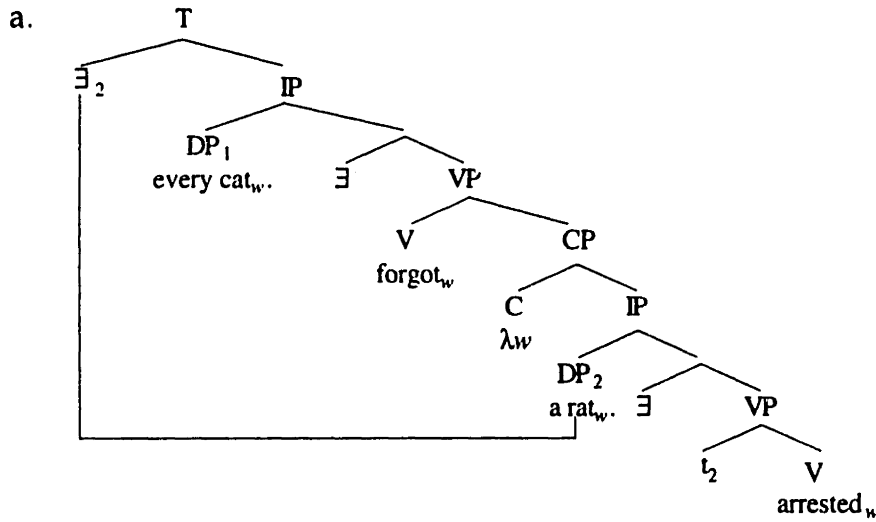
b. $\exists x_2 (\forall x_1 : \mathbf{cat}_{w_0}(x_1)) \mathbf{forget}_{w_0}\left(x_1, \lambda w\left[\mathbf{rat}_{w_0}(x_2) \wedge \mathbf{arrested}_w(x_2)\right]\right)$

Here, as with (18b) above, we need to consider whether (21b) is equivalent to an expression like the following:

(22) $\exists x_2\left[\mathbf{rat}_{w_0}(x_2) \wedge (\forall x_1 : \mathbf{cat}_{w_0}(x_1)) \mathbf{forget}_{w_0}\left(x_1, \lambda w.\mathbf{arrested}_w(x_2)\right)\right]$

If we assume that $\mathbf{rat}_{w_0}(x_2)$ must be satisfied due to the presuppositions associated with the factive predicate, then (21b) will be equivalent to (22). So all is well concerning this example. We will see later, however, that this kind of issue

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will emerge in a great variety of environments, most of which cannot be dismissed as easily as this particular case.

To recapitulate, in the intermediate and wide scope readings of (14), the descriptive content of the DP *a rat* is evaluated with respect to the utterance world, and not with respect to the 'forget' world(s). But since we are assuming that QR is restricted, and in fact presumably clausebounded, we do not want to raise the indefinite out of the embedded CP. In all cases, we have respected this constraint by interpreting the indefinite inside its CP, and the appearance of wide scope is determined by which existential operator ends up binding it.

It should be noted that, if we assume that $\exists$-closure obligatorily captures all free variables in its scope, the CP complement of *forget* must itself scramble in order to obtain the wide scope reading of *a rat* in (21), or the CP complement of *hear* in (23a) below will have to scramble to obtain the wide scope reading of *a rat*, as in (23b). If, on the other hand, we do not assume obligatoriness of $\exists$-closure we do not have to assume extensive applications of scrambling, but we will expect to find cases where one $\exists$-operator binds into the domain of another $\exists$-operator, as shown in (23c) below:

(23) a. Everyone heard from a friend of his that a (certain) rat had been arrested.

      b. $\exists_2$ Everyone$_1$ [$_{CP}$ ...[a rat]$_2$ ...]$_3$ $\exists_4$ [$_{VP}$ heard t$_3$ fr. [a friend of his$_1$]$_4$]

      c. $\exists_2$ Everyone$_1$ $\exists_4$ [$_{VP}$ heard [$_{CP}$ ...[a rat]$_2$ ...] fr. [a friend of his$_1$]$_4$]

Note that the VP-level $\exists$ in (23) cannot be omitted, since the indefinite *a friend of his* needs to be bound at that level. Yet we cannot allow this operator to bind the

indefinite *a rat* inside the CP, since the reading we are considering is one where this DP takes matrix scope. In any case, the optional vs. obligatory status of existential closure is not an issue which affects this general proposal in any important way, as far as I can see; so I will leave this issue open, for the time being.

This general approach would seem quite promising, up to this point: if it works, is will account for the attested interpretations are without violating any island constraint, and without assuming any kind of ambiguity in the interpretation of indefinite noun phrases. Furthermore, it will correctly predict that the scope possibilities represented by, e.g., the higher occurrences of $\exists x_2$ in (18) and (21) are unavailable to conventional quantificational noun phrases (QNP's). This is because conventional QNP's are true quantifiers; hence their scope is still determined by their position in the syntax of LF, where the standard constraints on QR apply.

So far, the system can elegantly account for the 'atypical' scopal properties of indefinites. No extra stipulations are needed to derive the attested readings. Unfortunately, there are some potentially severe problems with this approach. One of these problems is discussed at length by Abusch (1993). For Abusch, the system just described is just the beginning of a theory of indefinites. In the following subsections I will discuss this problem and the approach that she takes to overcome it.

3. The Problem of Weak Truth Conditions

In the preceding section I have presented a basic proposal that would allows us to account for the 'exceptional' scope taking properties of indefinite DP's, without burdening the grammar with ad hoc stipulations about putative

differences in QR patterns. This proposal simply consists in analyzing indefinites as unambiguously non-quantificational, and assuming that they may be bound by an a c-commanding quantifier, which could be text level existential closure, but can also be some other appropriate operator. This analysis, as presented above, relies on the idea that indefinites, as variables, can be bound at a distance by an unselective quantifier without having to actually raise outside of a scope island. Thus the descriptive content of an indefinite may be evaluated at quite a distance with respect to the site where its variable is introduced (by the unselective operator). Abusch shows that this nonlocal evaluation may cause unreasonably weak truth conditions for expressions with embedded indefinites.[7] She presents two sets of data to make this point.

The first case is illustrated by wide scope indefinites embedded in the antecedent of an *if*-clause:

(24) a. Things would be different if *every senator* had grown up to be a rancher instead.

 b. Things would be different if *a senator* had grown up to be a rancher
 ·   instead.

As already noted for the example in (2b), (24a) cannot have a reading where *every senator* is interpreted with wide scope with respect to the conditional. In other words, (24a) cannot mean that every senator is such that, if (s)he had grown up to be a rancher, things would be different. By contrast, (24b) can mean that there is a particular senator such that things would be different if that person had grown up to be a rancher.

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[7] This problem was already noticed by Heim in her dissertation (p. 149). Her solution, however, relies on a more liberal theory of movement than the one assumed by Abusch and myself.

According to the method sketched above, (24b) is predicted to have an extra possibility that (24a) does not have. This is because *every senator* in (24a) is a true quantifier, and—like any other DP—it cannot escape the *if*-clause island; on the other hand, the indefinite a senator in (24b) can be bound from outside of the island by text-level existential closure. Hence (24a) can be interpreted as in (25a), but not as in (25b), which would involve ∩ℝ'ing *every senator* out of the island:

(25) a. $\Big(\text{WOULD}_{w'}\colon \big(\forall x\colon \textbf{senator}_{w_0}(x)\big)\,\textbf{rancher}_w(x)\Big)$ **things–are–different**$_{w'}$

  b. # $\big(\forall x\colon \textbf{senator}_{w_0}(x)\big)\,\big(\text{WOULD}_{w'}\colon \textbf{rancher}_w(x)\big)$ **things–are–different**$_{w'}$

(24b), on the other hand, is predicted to have a narrow scope reading where the indefinite is bound by the modal operator as shown in (26a) below (as mentioned earlier, an indefinite can be bound by an operator other than existential closure); and it also has a wide scope reading where the indefinite is bound by text-level ∃-closure, as shown in (26b):

(26) a. $\Big(\text{WOULD}_{w',x}\colon \textbf{senator}_{w_0}(x) \wedge \textbf{rancher}_w(x)\Big)$ **things–are–different**$_{w'}$

  b. $\exists x \Big(\text{WOULD}_{w'}\colon \textbf{senator}_{w_0}(x) \wedge \textbf{rancher}_w(x)\Big)$ **things–are–different**$_{w'}$

Note that, as seen earlier, the property of being a senator is evaluated with respect to the base world w_0 in all the expressions above. This is because in all relevant readings of (24a-b) we are considering individuals who are senators in this world, not in any counterfactual world.

But now a problem arises. The problem is that in (26b) the indefinite description $\textbf{senator}_{w_0}(x)$ is buried inside the antecedent of a conditional, while its binder is outside of the conditional; this fact, Abusch points out, will cause (26b) to have inappropriate truth conditions. The reasoning goes as follows: in the

translations for (24), the *if*-clause is treated as the restriction of a quantifier (see Lewis, Kratzer, etc.). Under standard assumptions about restricted universal quantification, an empty restriction will cause the larger quantificational expression to be evaluated as (trivially) true. Thus, for instance, in a world (w_0) with no senators all of (25)-(26) will be evaluated as true. This is a result we can live with.

However, as Abusch notes, in (26b) the situation is not so easily tolerable. In (26b), in fact, the conditions under which the restriction of *would* is not satisfied are much more generalized, and in fact are quite independent of the existence of senators in the base world. We read (26b) as:

(27)   There is an x such that: in every counterfactual world w where [x is a senator in w_0 and x is a rancher in w] things are different in w.

Now, typically a base world (w_0) will contain a huge number of entities that are not senators, like this crack in the wall, this lamp, that cup of coffee. Now, any of these things will make a statement like (27) true when assigned as a value to x . So (27) would become, for instance: "This crack in the wall/lamp/cup of coffee is such that: in every counterfactual world w where [this crack/lamp/cup is a senator in w_0 and a rancher in w] things are different in w." Obviously, the first conjunct of the restriction is not satisfied by any of these entities, so the whole restriction is evaluated as false. Since the restriction is not satisfied, the conditional is evaluated as true. This is clearly an unacceptable result.

Abusch further observes that this problem is not restricted to intensional contexts. Consider the following examples:

(28)   Professor Himmel rewarded every student who read *a book he had recommended*.

We're interested here in the reading where Himmel recommended one particular book, and we're evaluating the truth of the statement that he rewarded every student who read this book. Again, our nonlocal binding approach would yield an expression where the indefinite is inside the restriction of a quantifier:

(29) $\exists x \left(\forall y: \text{stud}(y) \wedge \text{read}(y, x) \wedge \text{book}(x) \wedge \text{recomm}(H, x) \right) \text{reward}(H, y)$

This translation of (28) has exactly the same problem that (26b) had. For any object which we assign as a value to x, and which is not a book (or was not recommended by Himmel), (29) will come out true. The problem of weak truth conditions obtains exactly in those cases that we were originally hoping to account for;[8] thus the system proposed in section 2, as it stands, does not constitute a solution to F&S's scope puzzle.

To overcome this difficulty, Abusch argues that an indefinite description must always be interpreted in the vicinity of its binder, as if the DP had actually raised. She then proceeds to construct a mechanism that will achieve this result, which I will discuss below.

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[8] Some exceptions to this might be definite complex noun phrases, which could be assumed to presuppose their descriptive content, and hence be treated in a similar way as the factive case discussed earlier. In general, however, it is not the case that scope islands can be treated as presuppositional, as we will see in Chapter 3.

3.1. Abusch's proposal

The problem just outlined is potentially fatal to the proposal sketched above. Nevertheless, Abusch argues that the basic Kamp-Heim approach—roughly in the form illustrated above[9]—should not be given up. Since the problem of weak truth conditions is caused by the restriction of the $\exists$-closure operator being bound at a distance, Abusch proposes to add a device to the system that will derive local configurations from nonlocal ones. Clearly, in order to maintain the generalization that no noun phrase can QR out of a scope island, a mechanism different from QR must be used. So Abusch develops a variation on the Kamp-Heim method, as follows.

(I) the basic idea that indefinites are free variables, which gain quantificational force by being coindexed to unselective operators is retained; but at the same time (II) Abusch proposes that there is a mechanism which automatically passes up all variables—with their associated descriptions—along the tree, a mechanism roughly similar to the storage techniques commonly used in 'non-movement' frameworks (see in particular Cooper 1983). Finally (III), a general rule will determine the site of the interpretation of an indefinite when its description is local to a coindexed operator.

I will now give an idea of how Abusch's method works. The semantics for definite and indefinite noun phrases can be roughly deduced from the translations of the following sentences:

---

[9] Abusch apparently assumes that $\exists$-closure will only optionally capture free variables in its c-command domain. Hence in her system there is no need for scrambling, but presumably there are instances of quantifiers binding into each other's c-command domain (see discussion of ex. (23) above).

(30) a.   A man$_1$ arrived   ~>   **arrive**(x_1) : $\left\{ \langle x_1, \textbf{man}(x_1) \rangle \right\}$

      b.   The man$_1$ arrived   ~>   **arrive**(x_1) : $\{\ \}$

The LF's that Abusch uses are maximally similar to those in Heim (1982). The lowest S node in the LF's of (30a-b) are both interpreted as the open formula **arrive**(x_1) while the highest S node is interpreted as the pair φ:U, where φ is **arrive**(x_1) (viz., the conventional interpretation of the sentence minus its descriptive noun phrases), and U is a set that contains the pair $\langle x_1, \textbf{man}(x_1) \rangle$ in the case of (30a) and is empty in the case of (30b). Moving up the tree, the union of the U-sets of the relevant daughter nodes is inherited by the mother node, as stated in the appropriate composition rule. When an operator is found which binds some variable in U, the corresponding element is removed from the set and added to the expression φ. A simple example of how this works is illustrated in (31).

(31) a.   A man arrived and a woman left.
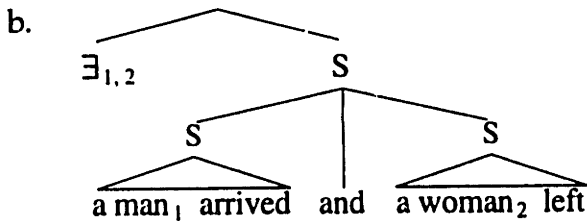
      b.

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c. $\exists_{1,2} \begin{bmatrix} \mathbf{man}(x_1) \wedge \mathbf{woman}(x_2) \\ \wedge \ \mathbf{arrive}(x_1) \wedge \mathbf{leave}(x_2) \end{bmatrix} : \left\{ \begin{array}{c} \langle x_1, \mathbf{man}(x_1) \rangle \\ \langle x_2, \mathbf{woman}(x_2) \rangle \end{array} \right\} - \left\{ \begin{array}{c} \langle x_1, \mathbf{man}(x_1) \rangle \\ \langle x_2, \mathbf{woman}(x_2) \rangle \end{array} \right\}$

$= \exists_{1,2} \Big[\mathbf{man}(x_1) \wedge \mathbf{woman}(x_2) \wedge \mathbf{arrive}(x_1) \wedge \mathbf{leave}(x_2) \Big] : \{ \ \}$

$\exists_{1,2} \qquad\qquad \mathbf{arrive}(x_1) \wedge \mathbf{leave}(x_2) : \left\{ \begin{array}{c} \langle x_1, \mathbf{man}(x_1) \rangle \\ \langle x_2, \mathbf{woman}(x_2) \rangle \end{array} \right\}$

$\mathbf{arrive}(x_1) : \big\{ \langle x_1, \mathbf{man}(x_1) \rangle \big\} \qquad \mathbf{leave}(x_2) : \big\{ \langle x_2, \mathbf{woman}(x_2) \rangle \big\}$
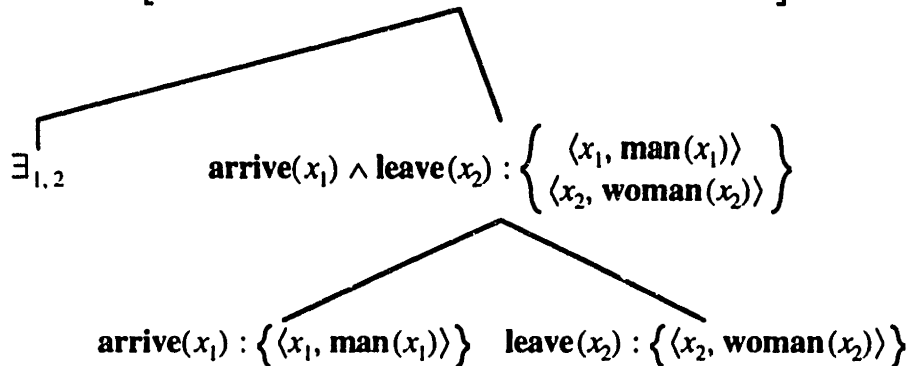
In (31b-c) the text level $\exists$ binds all variables free in its scope; hence the restrictions $\mathbf{man}(x_1)$ and $\mathbf{woman}(x_2)$ are brought up and 'discharged' in the vicinity of this operator. At the same time, they are removed from the U-set of the text node. This means that, had there been more structure above that node, these restrictions would not have been available to higher unselective binders. More generally, any elements of a U-set which are not (yet) in the vicinity of their binder are passed up beyond other operators, until the appropriate binder is found—i.e., the binder that bears the relevant indices. So this mechanism insures that all indefinites will be interpreted locally with respect to their binder.

Note that, even in Abusch's system, the existential quantifier is not the only operator that can target a free variable. In particular, a quantificational determiner can also have this effect. Consider the following example:

(32)   Every person who likes everyone who likes *a cat* likes the cat.

We are interested in the intermediate scope reading of *a cat*, viz. for every person *x* such that: there is a cat such that *x* likes everyone who likes this cat, *x* likes the

cat. Abusch obtains this reading by copying the index of *a cat* onto the higher *every*, as shown in (33).

(33)

```
                              S
              /               |               \
        every_{1,3}          NP_1             S
                          /      \          /    \
                       NP_1       CP       e_1    VP
                      /    \      /  \           /    \
                   —   person  who    S       likes  [the cat]_3
                                   /       \
                              every_2       NP_2              S
                                         /      \           /    \
                                      NP_2       CP        e_1    VP
                                     /   \      /   \            /    \
                                  —   one  who     S          likes   e_2
                                              /        \
                                          [a cat]_3   e_2 likes e_3
```
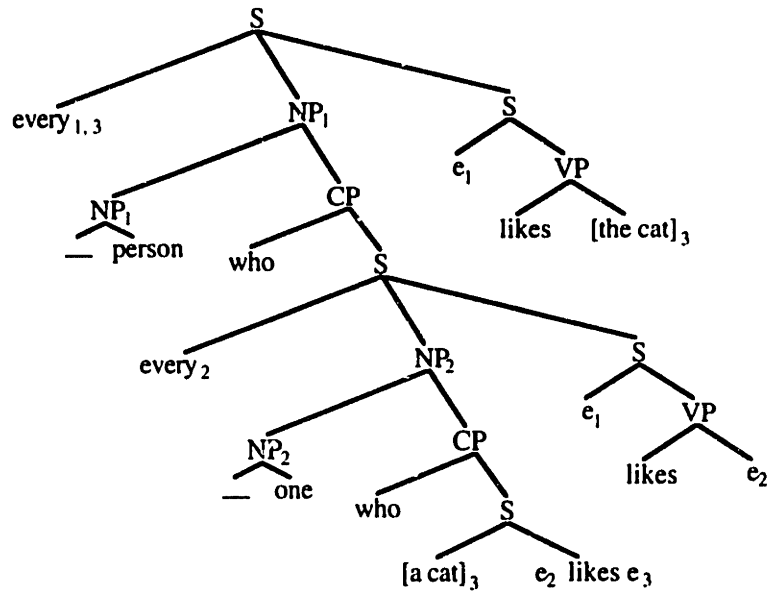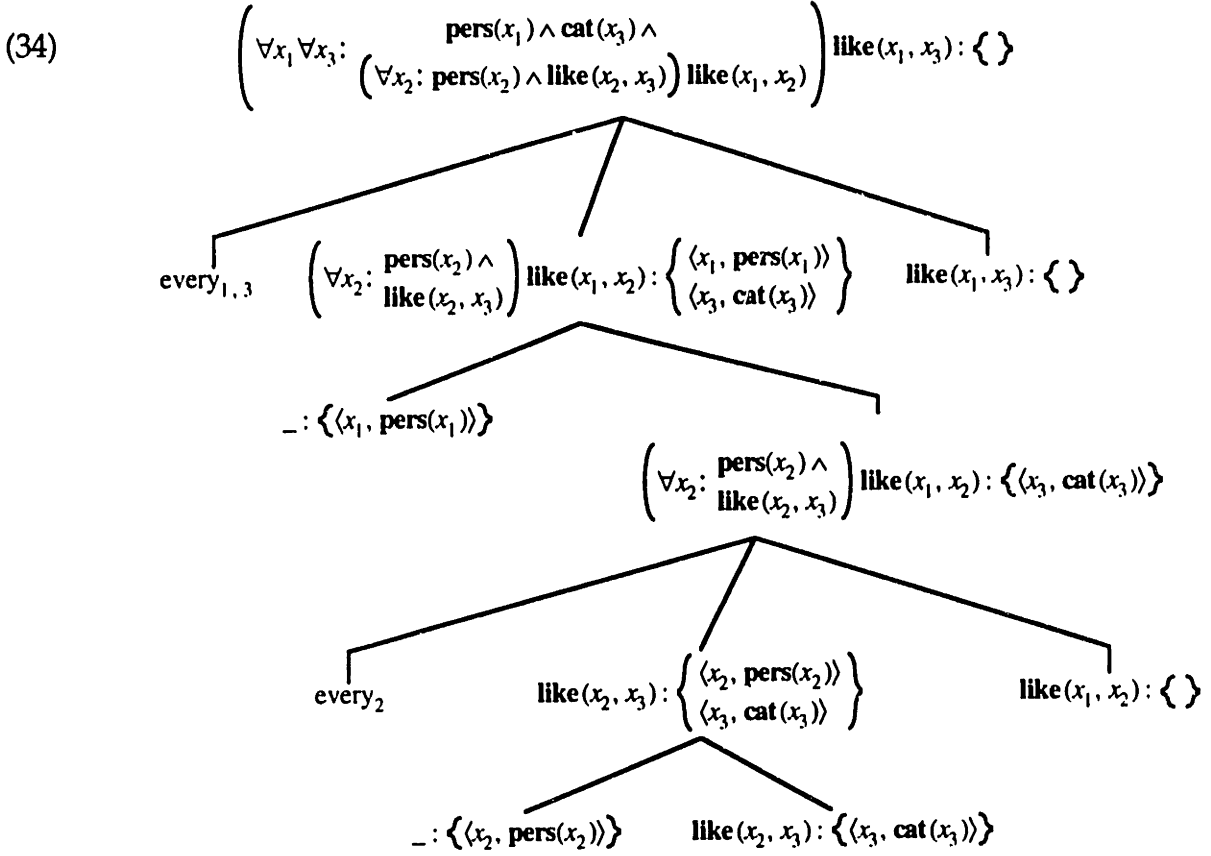
Another assumption that Abusch borrows from Heim (1982) is that a simple noun phrase out of which a quantifier has raised is interpreted in the same way as an indefinite; in Abusch's system, the translation of this constituent will also become an element of the U-set of its mother node. In particular, the (determinerless) head of a relative clause will undergo this treatment. Given this much, we can now see how (33) is interpreted in Abusch's system:

(34)

$$\left(\forall x_1 \forall x_3 : \dfrac{\text{pers}(x_1) \wedge \text{cat}(x_3) \wedge}{\left(\forall x_2 : \text{pers}(x_2) \wedge \text{like}(x_2, x_3)\right) \text{like}(x_1, x_2)}\right) \text{like}(x_1, x_3) : \{\,\}$$

$\text{every}_{1,3}$ $\left(\forall x_2 : \dfrac{\text{pers}(x_2) \wedge}{\text{like}(x_2, x_3)}\right) \text{like}(x_1, x_2) : \left\{ \begin{array}{c} \langle x_1, \text{pers}(x_1)\rangle \\ \langle x_3, \text{cat}(x_3)\rangle \end{array} \right\}$ $\text{like}(x_1, x_3) : \{\,\}$

$\_ : \{\langle x_1, \text{pers}(x_1)\rangle\}$

$\left(\forall x_2 : \dfrac{\text{pers}(x_2) \wedge}{\text{like}(x_2, x_3)}\right) \text{like}(x_1, x_2) : \{\langle x_3, \text{cat}(x_3)\rangle\}$

every_2 $\text{like}(x_2, x_3) : \left\{ \begin{array}{c} \langle x_2, \text{pers}(x_2)\rangle \\ \langle x_3, \text{cat}(x_3)\rangle \end{array} \right\}$ $\text{like}(x_1, x_2) : \{\,\}$

$\_ : \{\langle x_2, \text{pers}(x_2)\rangle\}$ $\text{like}(x_2, x_3) : \{\langle x_3, \text{cat}(x_3)\rangle\}$

In this example, the restriction $\text{cat}(x_3)$ is passed up all the way to the top tripartite quantificational structure (note the presence of the element $\langle x_3, \text{cat}(x_3)\rangle$ in all the U-sets of the subject of (34), going up from the bottom-most occurrence of $\text{cat}(x_3)$). On the other hand, the restriction $\text{pers}(x_2)$, for instance, is immediately captured by its quantificational deteminer, every_2. Hence every description ends up interpreted in a local configuration with its binder.

To see that this system is immune from the problem of weak truth conditions discussed above, it is sufficient to note that the problematic cases (24b) and (28), repeated below, will now receive the translations in (35) and (36), respectively:

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(24) b.　Things would be different if *a senator* had grown up to be a rancher instead.

(35)　$\exists x \left[\mathbf{senator}_{w_0}(x) \wedge \left(\mathrm{WOULD}_w : \mathbf{rancher}_w(x) \right) \mathbf{things\text{--}are\text{--}different}_w \right]$

(28)　Professor Himmel rewarded every student who read *a book he had recommended.*

(36)　$\exists x \left[\mathbf{book}(x) \wedge \mathbf{recomm}(\mathbf{H}, x) \wedge \left(\forall y : \mathbf{stud}(y) \wedge \mathbf{read}(y, x) \right) \mathbf{reward}(\mathbf{H}, y) \right]$

Recall that the problem with the translations in (21b) and (24) above was that the mere existence of an entity which didn't satisfy $\mathbf{senator}_{w_0}(x)$ or $'\mathbf{book}(x) \wedge \mathbf{recomm}(\mathbf{H}, x)'$ (resp.) would lead to excessively weak truth conditions. (35) and (36), however, will be evaluated as false for any assignment(s) to x which do not satisfy these restrictions. And if there is at least one assignment (in each case) which satisfies $\mathbf{senator}_{w_0}(x)$ or $'\mathbf{book}(x) \wedge \mathbf{recomm}(\mathbf{H}, x)'$, then the truth conditions will quite reasonably be evaluated with respect to what actually is the case concerning a certain senator, or a certain book recommended by Himmel.

It should be kept in mind that this treatment of determinerless NPs as variables will not allow regular quantifiers to escape scope islands, since in any case the relevant description will be eliminated from the U-set as soon as its associated quantificational determiner is encountered. On this issue, Abusch remarks:

> [W]e could say that scope of NP quantification is determined by the LF position of the quantificational determiner, without assuming (as Heim does) that a quantificational determiner and its source NP are sisters in LF. Since

this version of the theory would still assume movement of the determiner, islands predictions would presumably not be affected. [p. 29]

This theory then explicitly posits two distinct but simultaneous mechanisms for representing scope configurations. While some theories assume that such configurations are uniformly achieved by movement and others assume that they can be captured exclusively by means of a storage-and-percolation technique, the claim made here is that both mechanisms are operative at the same time; the difference between the two is that movement is sensitive to islands constraints, while percolation of noun phrase descriptions isn't. One might wonder whether there couldn't be a less costly way of constructing a theory of quantifier scope.

On the other hand, the interpretations obtained appear to be the correct ones (cf., e.g., (35) and (36)),[10] and the undesirable effects discussed at the beginning of this section are avoided. Yet, the general idea of lifting out the restriction of an indefinite is not immune to certain problems. These problems will be discussed in the following section.

3.2. Problems with Abusch's Proposal

In this subsection I will not be concerned with the details of Abusch's approach. I will rather take issue with what can be considered a family of approaches that would have the effect of carrying up all indefinite descriptions to a position local to their binder. I will call this general line of analysis the 'Locally Restricted Quantifier' (LRQ) approach. The question that I want to address now is the following: are the representations generated under an LRQ approach really the

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10 But see my discussion at the end of Chapter 3 for a criticism of the truth conditions of these expressions.

correct ones? I will argue that they aren't, and that the descriptive content of an indefinite must be interpreted within the clause from which it originates.

As I mentioned earlier, this 'restricted-movement' implementation of a Kamp-Heim analysis of indefinites seems attractive enough to maintain (in its unembellished form), even in the face of the problem of weak truth conditions discussed at the beginning of this section. In order to save this analysis one could proceed in either of two ways: (a) by assuming a presuppositional treatment of specific indefinites, or of certain constituents which may contain specific indefinites—typically, and for our purposes here, the restriction of a strong quantifier; or (b) by bringing the indefinite description closer to its binder. The latter approach is the one taken by Abusch. The former remains to be explored. In what follows, I will first give a number of arguments against the general approach of the (b) type, and then proceed to construct various attempts of a solution along the lines of (a), ultimately proposing an account that exploits the topical nature of specific indefinites. This account will be seen to overcome the problem of weak truth conditions, without invoking a semantics that has excessively strong truth conditions.

3.2.1. Indefinites and Weak Crossover

It has often been observed that specific indefinites do not behave like regular quantifiers with respect to Weak Crossover. The following examples are from Hornstein (1984, pp. 25-26):[11]

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[11] Hornstein actually speaks in terms of the Leftness Condition (cf. Chomsky 1976, Higginbotham 1980). This constraint states that a variable cannot be coindexed with a pronoun to its left.

(37) a. * His$_i$ being sent to the front doesn't bother every good soldier$_i$.

    b.   His$_i$ being sent to the front doesn't bother a (certain) good soldier$_i$.

    c. * That he$_i$ might be sent to the front doesn't bother every good soldier$_i$.

    d.   That he$_i$ might be sent to the front doesn't bother a (certain) good soldier$_i$.

Chierchia (1993) suggests that whatever constraints are responsible for WCO effects must be active at a level of the grammar which follows (semantic) reconstruction, i.e., presumably in the interpretive component. I cannot hope to do justice to Chierchia's (rather complex) set of arguments here. But one in particular is worth mentioning.
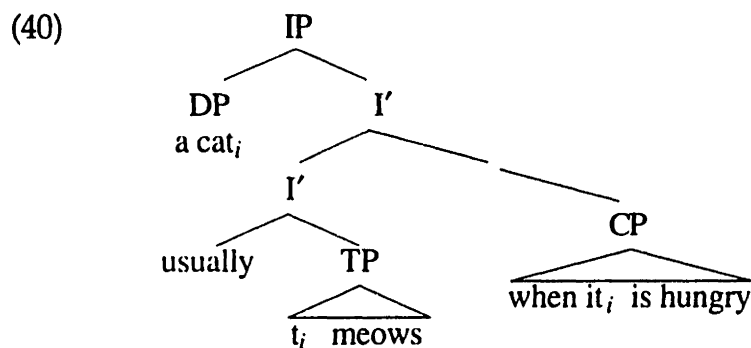
    Consider the following example:

(38)   When it$_i$ is hungry, a cat$_i$ usually meows.

Chierchia provides several arguments to show that this sentence must be assigned the structure in (39), where the *when*-phrase is generated right-adjoined to I' and has raised to left-adjoined to IP:
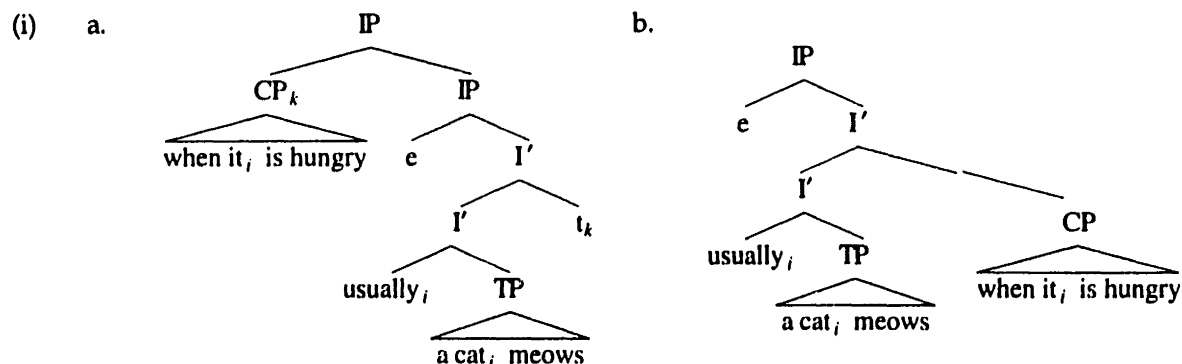
(39)
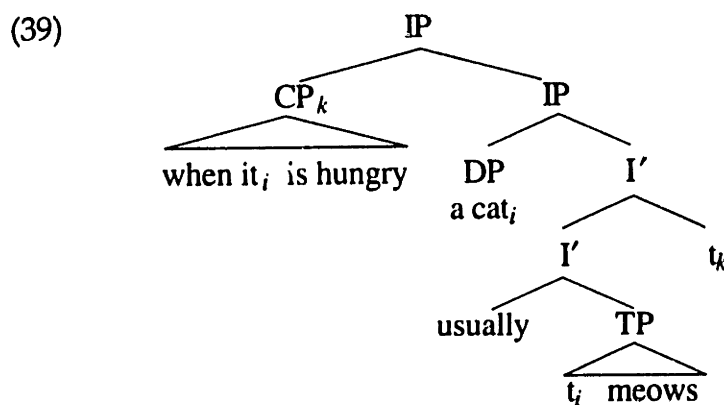
Thus (38)-(39) would appear to be a WCO/leftness condition violation. However, Chierchia argues, there is no violation if we assume that the relevant principle regulating WCO effects applies after reconstruction has taken place. Such reconstruction would 'correspond' to a structure as in (40).[12]

(40)

```
                IP
             /      \
          DP          I'
        a cat_i     /     \
                  I'        \
                /    \        CP
          usually    TP    /    \
                   /    \  when it_i is hungry
                 t_i    meows
```

But reconstruction, in Chierchia's system, is done by means of λ-conversion, hence it must apply not directly to the LF but to its translation. Consequently, WCO effects must be checked at that (post-syntactic) level.

If Chierchia is right, it is hard to see how Abusch's system would be able to discriminate between the illformed cases in (37a-c) and the grammatical cases in (37b-d). This is because the interpretations that her system would assign to these sentences would all fall under the same general format:

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[12] The same reasoning, at least as far as concerns the leftness condition, would apply if we assumed structures for (38) as in (i.a) and (i.b) in lieu of (39) and (40), respectively:

(i)   a.

```
                    IP
                 /      \
            CP_k          IP
          /    \        /    \
    when it_i is hungry  e     I'
                            /     \
                          I'       t_k
                        /    \
                 usually_i    TP
                            /    \
                       a cat_i  meows
```

b.

```
                IP
             /      \
            e         I'
                   /     \
                 I'        \
               /    \        CP
          usually_i  TP     /    \
                   /    \  when it_i is hungry
              a cat_i  meows
```

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(41) a. * $\Big(\forall x: \text{good-soldier}(x)\Big) \neg\text{bother}\Big(\hat{\ }\text{sent-to-the-front}(x), x\Big)$

b. $\exists x \Big[\text{good-soldier}(x) \wedge \neg\text{bother}\Big(\hat{\ }\text{sent-to-the-front}(x), x\Big)\Big]$

Note that even if Abusch had chosen to treat the subject clause of (37a-b) as a russelian definite description, she would not be able to discriminate between the two cases, since her translations in this case would presumably be as in (42).

(42) a. * $\Big(\forall x: \text{good-soldier}(x)\Big) \Big(\text{THE } \rho: \rho = \hat{\ }\text{sent-to-the-front}(x)\Big) \neg\text{bother}\big(\rho, x\big)$

b. $\exists x \Big[\text{good-soldier}(x) \wedge \Big(\text{THE } \rho: \rho = \hat{\ }\text{sent-to-the-front}(x)\Big) \neg\text{bother}\big(\rho, x\big)\Big]$

In my system, the indefinite does not have to be local to its binder. Hence, if Chierchia's generalization proves correct, I could easily account for the WCO facts by adopting a russelian analysis of definite descriptions in the context of my current proposal. In such case, my translation of (37a) would still be as in (42a), while my translation for (37b) would be as in (43).

(43) $\exists x \Big(\text{THE } \rho: \rho = \hat{\ }\text{sent-to-the-front}(x)\Big) \Big[\text{good-soldier}(x) \wedge \neg\text{bother}\big(\rho, x\big)\Big]$

Even aside from whether or not definite descriptions should be given a russelian analysis, it suffices for us to assume that their interpretation should reflect their structural position at LF. This issue will be taken up in Chapter 3.

3.2.2.   Functional Readings of Indefinites

Another problem for Abusch's account concerns situations where an indefinite must be decomposed in one way or another, so that one part of it needs to take

matrix scope, while another part must be interpreted in situ, since it contains a bound variable. The clearest cases of this kind are functional readings of indefinites. Hintikka (1986) illustrates the issue quite clearly. Consider the following sentence:

(44)   I know that every true Englishman adores *a certain woman*.

Under one reading of (44) it is understood that there is a certain woman (e.g. the Queen) that is such that I know every true Englishman adores her. In this reading the whole indefinite is interpreted as having matrix scope, which Hintikka represents roughly as in (45).

(45) $\exists x \left[\mathbf{woman}(x) \wedge \mathbf{know}\left(\mathbf{I}, \left(\forall y: \mathbf{true\text{--}Engl}(y) \right) \mathbf{adore}(y, x) \right) \right]$

But there is also one reading where *a certain woman* is interpreted as a function of *every true Englishman*. For instance, (44) can be understood as "I know that every true Englishman adores his mother." In this case, the indefinite must take scope outside of the epistemic predicate *know*, but within the scope of the universal quantifier, since the value of the function depends on it. But at the same time, the quantifier must be within the scope of *know*. This gives rise to an apparent linear paradox. Hintikka proposes to solve this paradox by existentially binding a function from individuals to individuals at the matrix level. The function applied to the variable of *every true Englishman* is then taken to be the interpretation of *a certain woman* in the embedded direct object position:

(46) $\exists f \, \mathbf{know}\left(\mathbf{I}, \left(\forall y: \mathbf{true\text{--}Engl}(y) \right) \mathbf{adore}(y, f(y)) \right)$

The issue applies more generally to monoclausal sentences like (47a), as well as in the—by now familiar—cases of conditionals and complex DPs, as in (47b-c-d).

(47) a. Every true Englishman adores *a certain woman*.

b. Things would be different if everybody would listen to *a certain voice inside his head* [e.g., the voice of his conscience].

c. Every city that has *a certain problem that afflicts its streets* [e.g., dogshit on the sidewalks] could adopt this program.

d. Everybody heard the rumor that *a certain relative of his* [e.g., his uncle] had won the Nobel Prize.

Let us adopt the technical part of Hintikka's proposal.[13] The functional reading of (47a) would then be represented as in (48) below.

(48) $\exists f \left(\forall y\colon \text{true–Engl}(y) \right) \text{adore}\left(y, f(y) \right)$

This expression depicts the appropriate scopal relations in the relevant reading of (47a), but it seems a bit impoverished. The fact that the range of f is restricted to women appears nowhere in (48). Clearly, we must allow the indefinite in (47a) to correspond to any kind of function—depending on context—from Englishmen to

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[13] There are some aspects of the discussion in Hintikka (1986) that have been criticized. In particular, Higginbotham (1994) argues that the notion that "*a certain* is used to indicate that [the identity of the thing or person in question] is known but not divulged [Hintikka 1986, p.335]" cannot be right. I agree with Higginbotham here. The example in (i) below is evidence that indefinites with *a certain*, even when they take matrix scope, can easily be used by a speaker even when she or he has no knowledge whatsoever of the identity of the object in question:

(i)   Everybody is convinced that things would be different if *a certain senator* had resigned from office, but I'm not sure which senator they're talking about.

This sentence can be uttered by someone who is aware that one particular senator is under discussion, but could not divulge this senator's identity because s/he simply does not have this knowledge.

women, but there can be no context where f (in the case of (47a)) can be understood as a function from Englishmen to, say, saltshakers. And to assume that there is another place in the grammar where all functions are appropriately restricted in their content seems not only more cumbersome for the grammar itself but uninsightful, since the descriptive content of the indefinite is overt and can be easily accomodated by our standard compositional semantics. For instance, (48) can be replaced by (49).

(49) $\exists f \left(\forall y: \textbf{true–Engl}(y) \right) \left[\textbf{woman}(f(y)) \wedge \textbf{adore}(y, f(y)) \right]$

(49) says that there is a function such that, for every true Englishman, this function yields a woman that this Englishman adores. This seems appropriate enough. Now, a theory of the LRQ kind would have to carry out the restriction $\textbf{woman}(f(y))$ in (49). This is not necessary for the sake of (49) itself, but rather because of the more general fact that an indefinite interpreted as a function will behave no differently from any other indefinite in cases like (47) with respect to the problem of weak truth conditions, as one can easily verify. So an LRQ theory might generate a representation like (50) below. The problem is, in this case the formula obtained is not wellformed, since the variable y in the restriction of the indefinite fails to be bound:

(50)   # $\exists f \left[\textbf{woman}(f(y)) \wedge \left(\forall y: \textbf{true–Engl}(y) \right) \textbf{adore}(y, f(y)) \right]$

In order to overcome this difficulty, the restriction on the indefinite would have to be manipulated by a rule that could 'look inside' it and universally bind a selected subset of its free variables. In the case at hand, we might obtain a (wellformed) representation as in (51).

(51) $\exists f \left[\forall x \big[\text{woman}(f(x)) \big] \wedge \big(\forall y\text{: }\textbf{true--Engl}(y)\text{;} \big) \textbf{adore}(y, f(y)) \right]$

(51) says that there is a function that maps everything onto something which is a woman, and every true Englishman adores the result of that function applied to him. This kind of translation is reminiscent of those used for functional questions in Engdahl (1986). For instance, Engdahl translates the sentence in (52a)—under a functional reading where every author recommends a different book, e.g., his latest book—essentially as in (52b):

(52) a. Which book did every author recommend?

   b. $\lambda p \, \exists f \left[\forall x \big[\textbf{book}(f(x)) \big] \wedge p = {}^\cap \big(\forall y\text{: }\textbf{author}(y) \big) \textbf{recommend}\big(y, (f(y))\big) \right]$

This general format is borrowed from Cooper's (1979) treatment of certain anaphoric pronouns, like the 'paycheck' pronoun in (53).

(53)   John gave his paycheck to his dog.

   Everybody else put *it* in the bank.

According to Cooper's proposal, the second sentence in (53) is translated as in (54), where the appropriate assignment function assigns John to u_0 and u's paycheck to S_0.[14]

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[14] Cooper's rule for interpreting these kinds of pronouns is as follows:

(i) $\lambda P \, \exists x \, \forall y \big[[\Gamma \Pi](y) \leftrightarrow y = x \big] \wedge P\{x\}$
   where P is a property-denoting expression
   containing only free variables and parentheses.

Cooper also proposes to use this treatment for donkey-pronouns, which under our current approach are already accounted for without any special rule.

(54) $\left(\forall u\text{: }\mathbf{person}(u) \wedge u \neq u_0\right) \exists x \left[\begin{array}{l} \forall y\big[[S_0(u)](y) \leftrightarrow y = x\big] \\ \wedge \text{ } \mathbf{put\text{-}in\text{-}the\text{-}bank}(u, x) \end{array}\right]$

(54), under the appropriate assignment, says that for every person u distinct from John, there is a unique x that is u's paycheck, and u put x in the bank. This idea constitutes a precedent for Engdahl's treatment of functional *wh*, and as a matter of fact Engdahl has some further arguments to justify interpreting the *wh*-restriction at the matrix level (and hence the necessity of this extra universal quantification).

First of all, Engdahl observes that separating off the restriction of a *wh*-phrase is not desirable from a compositional point of view, since "it involves semantically splitting up a constituent which syntactically behaves like a unit. [p. 250]"[15] Furthermore, she argues, if we interpret a *wh*-phrase description as part

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[15] Engdahl also argues that the decomposition approach will run into trouble exactly in those cases where we have a functional interpretation of a *wh*-phrase, as in (i.a), which she assumes would be translated as in (i.b):

(i)   a.   Which woman does *every Englishman* admire most?
            (*His* mother.)

     b. $\lambda p \exists F \big[p = {}^\cap(\forall x\text{: } \mathbf{Engl}(x)) \, (\forall y\text{: } F(\mathbf{woman})(y)) \, \mathbf{admire}(x, y)\big]$

Engdahl observes that (i.b) does not give us the required meaning, since the denotation of the common noun *woman* does not contain a variable bound by *every Englishman*; this means that F(woman) will pick out a fixed set of women, and (i.b) will be the set of propositions of the form "Every Englishman admires every y that is a member of a certain set of women."

This argument does not hold, however, if we translate the relevant reading of (i.a) as in (ii).

(ii) $\lambda p \exists f \big[p = {}^\cap(\forall x\text{: } \mathbf{Engl}(x)) \big[\mathbf{woman}(f(x)) \wedge \mathbf{admire}(x, (f(x)))\big]\big]$

But this, Engdahl argues, amounts to treating common nouns as "inherently [functional], containing one or more free individual variables [p. 251], but I see no independent motivation for this move." It will turn out, however, that Cooper's pronoun rule is not needed, and hence the rule no longer counts as 'independent motivation' for Engdahl's 'universally-quantified specification' approach. At this point, I see no harm in assuming that common nouns—or other parts of a DP—may in general contain (covert) free variables, rather than having the variables inserted by a rule.

of the propositions that constitute the question, we predict that a sentence like (55) should mean that John is wondering about a tautology:

(55)   John wondered which of the students were students.

In other words, if we don't interpret the entire content of the phrase *which of the students* outside of the embedded IP, we get a meaning which is roughly "John bears the *wonder* relation to a set of propositions of the form: for what x: x is a student and x is a student." Clearly, this is not the most salient reading of (55).

With respect to the first point, it has been shown by a number of authors (e.g., Higginbotham 1993, Cresti 1995a, 1995b) that *wh*-phrases (most notably *how many*-phrases) often need to be decomposed in order to yield correct interpretations; these are cases where the meaning of a significantly large subconstituent of these DP's must be reconstructed to a pre-movement position. As to the second point, we have seen in our discussion of the *rumor* examples in section 2 that a DP can be interpreted independently of the tense or world index of its clause, hence an 'in situ' interpretation of (55) would plausibly be more like the following: "John bears the *wonder* relation (in w_0) to a set of propositions (i.e., a set of sets of worlds w) of the form: for what x: x is a student in w_0 and x is a

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A potentially more serious problem for a 'decomposition' approach is mentioned by Engdahl in a footnote (and credited to Groenendijk and Stokhof 1981). Suppose a sentence like (iii.a) is assigned a translation as in (iii.b) or (iii.c).

(iii)   a.   Which picture of *herself* did *no girl* send in?

  b. $\lambda p\, \exists F\left[p = {}^\cap(\text{NO}x\colon \textbf{girl}(x))\, (\forall y\colon F(\textbf{pict-of-}x)(y))\, \textbf{send-in}(x, y)\right]$

  c. $\lambda p\, \exists f\left[p = {}^\cap(\text{NO}x\colon \textbf{girl}(x))\left[\textbf{pict-of-}x(f(x)) \wedge \textbf{send-in}\left(x, (f(x))\right)\right]\right]$

(iii.b) is a set of propositions of the form "No girl sent-in every y that is a member of a certain set of her pictures," while (iii.c) is a set of propositions of the form "There is an f such that for no girl x, $f(x)$ is a picture of herself and x sent-in $f(x)$." Clearly, neither of these translations is an appropriate rendition of the meaning of (iii.a). This general problem will be discussed in detail in section 4.

student in w." Now, this does not mean that John is wondering about a tautology. So the problem boils down to whether there is some other significant difference between expressions like (56a) and (56b) as candidate translations for the *de re* reading of (55), and if so, which one is a more appropriate translation of this reading:[16]

(56) a. $\mathbf{wonder}_{w_0}\Big(\mathbf{John},\ \lambda p\, \exists x\Big[\mathbf{student}_{w_0}(x) \wedge p = \lambda w.\mathbf{student}_w(x)\Big]\Big)$

b. $\mathbf{wonder}_{w_0}\Big(\mathbf{John},\ \lambda p\, \exists x\Big[p = \lambda w\Big[\mathbf{student}_{w_0}(x) \wedge \mathbf{student}_w(x)\Big]\Big]\Big)$

It seems to me that there is no crucial difference between (56a) and (56b). Neither has weak truthconditions of the kind discussed earlier, since as long as there exists one entity which is a student in w_0 the corresponding set will contain at least one (true) proposition. If, on the other hand, there exist no students in w_0, both (56a) and (56b) will be interpreted essentially as the assertion that John is wondering about the impossible proposition:

(57) a. $\mathbf{wonder}_{w_0}\Big(\mathbf{John},\ \lambda p\, \exists x\Big[0 \wedge p = \lambda w.\mathbf{student}_w(x)\Big]\Big)$

$= \mathbf{wonder}_{w_0}\big(\mathbf{John},\ \lambda p.0\big) = \mathbf{wonder}_{w_0}\big(\mathbf{John},\ \{\lambda w.0\}\big)$

b. $\mathbf{wonder}_{w_0}\Big(\mathbf{John},\ \lambda p\, \exists x\Big[p = \lambda w\big[0 \wedge \mathbf{student}_w(x)\big]\Big]\Big)$

$= \mathbf{wonder}_{w_0}\big(\mathbf{John},\ \{\lambda w.0\}\big)$

This result seems to be of no particular consequence, hence the motivations behind a choice of representations like (56a) over representations like (56b) can be considered sufficiently weak to not be decisive. In any case, it seems to me

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[16] The fact that sentences like (55) exhibit a *de re/de dicto* ambiguity is discussed in some detail by Groenedijk and Stokhof (1982), who actually propose structures more similar to (56b) than (56a).

that phrases like *which of the students* should be treated as presuppositional; thus student$_{w_0}(x)$ would have to be satisfied by some entity in order for (56a) or (56b) to have a truthvalue at all. Since this option will be discussed in great detail and in a more general setting in the next chapters, I will not comment further on it here.

It seems to me, then, that there are no strong reasons in favor of interpreting *wh*-phrase descriptions outside of their proposition. Although the purpose of this chapter is not to propose a particular analysis of questions, I think it is sufficiently clear at this point that a universal quantification device (as seen, e.g., in (52)) need not be invoked in these cases. So, a fortiori, it appears unnecessary to add this device to the interpretation of indefinites that have a (wide scope) functional reading. All we need to do in these cases (pace the problem of weak truthconditions) is bind a function variable at the appropriate level while leaving the indefinite description (nearly) in situ, as in (49).

Finally, it should be noted that the contribution of *certain* does not in and of itself guarantee maximal scope. Consider the following example:

(58)   Many ethnomusicologists claim that every person who is bitten by a tarantula will react to *a certain tune*, different from all others he or she has heard, by beginning to dance to that tune. (Of these ethnomusicologists,) some say that the tune is the one preferred by the particular tarantula which bit the victim and which allegedly possesses his body, while others say that the preference is latent in the victim's mind.

In (58) the contribution of *a certain* is to highlight the fact that there is some kind of 'preferential' relation between a victim of a tarantula bite and a (particular)

tune. It is also suggested that this salience relation is claimed to be the same for all victims. At the same time, however, there is disagreement among ethnomusicologists as to what salience relation is at stake. In other words, for any ethnomusicologist x_i (of the ones mentioned in (58)), the claim can be viewed as stating that there is a function f_i such that for every victim v_j, v_j will react to a particular tune identified by $f_i(v_j)$, i.e., the tune that is salient to v_j in accordance with the function f_i. Given the continuation of (58), we know that for some x_i, f_i is approximately equal to 'the tune preferred by the tarantula that bit v_j', while for other x_i, f_i is roughly 'the tune that v_j prefers (on some subconscious level)'. Hence in the first sentence of (58) the function variable does not take matrix scope; rather, we have a representation of the kind in (59):[17]

$$
(59) \qquad \left(\text{MANY} x\colon \text{ethnom}_{w_0}(x)\right) \exists f \left[\text{claim}_{w_0}\left(x, \lambda w \, (\forall v\colon \text{victim}_w(v)) \begin{bmatrix} \text{tune}_w(f(v)) \wedge \\ \text{react}_w(v, f(v)) \end{bmatrix}\right)\right]
$$

3.2.3. Specific Indefinites and Bound Variables

Aside from functional interpretations of indefinites, one can also find 'simple' wide scope indefinites which contain a pronoun bound by a quantifier within their scope. A few examples follow:

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[17] Although I treat *many* as a strong quantifier here, my proposal can be extended to plural indefinites; so eventually *many* should be analyzed as a cardinality predicate. In any case, my current argument is not affected by whatever treatment one chooses for *many*.

(60) a. If every Italian in this room could manage to watch *a certain program about his Country (that will be aired on PBS tonight)*, we might have an interesting discussion tomorrow.

b. No doctor believed the claim that *a (certain) member of her profession* had been arrested.

c. Everyone who used the bathroom between 2 and 4 pm was questioned about *a sink that he could have broken*.

In (60a) the indefinite can refer to a single program, in (60b) it can refer to a single person, and in (60c) it could refer to a single sink. Although the entity in question remains constant, its description tells us that one of its properties is 'quantified into' by the c-commanding subject. Suppose we have a simplified version of (60b):

(61)   No doctor respects *a (certain) member of her profession*.

Here a functional interpretation would be inappropriate, since the indefinite picks out just one individual. So now we have a puzzle: if we translate (61)— under the wide scope bound-pronoun reading—as in (62b), as Abusch would have it, we obtain an ill-formed logical representation where the variable y in the indefinite description is not bound; but if we translate (61) as in (62b), as I am proposing, we again obtain an expression that has excessively weak truthconditions:[18], [19]

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[18] This is so because any expression of the form *no φ ψ* is made true by a state of affairs where (in set theoretic terms) $\varphi' \cap \psi' = \varnothing$. Cf. the discussion of monotone decreasing quantifiers in Chapter 3.

[19] As mentioned earlier, DP's of the form *no CN* are best analyzed as true quantifiers.

(62) a. # $\exists x \left[\textbf{member--of--} y\textbf{'s--profession}(x) \wedge \left(\text{NO } y\text{: } \textbf{doctor}(y) \right) \textbf{respect}(y, x) \right]$

    b. $\exists x \left(\text{NO } y\text{: } \textbf{doctor}(y) \right) \left[\textbf{member--of--} y\textbf{'s--profession}(x) \wedge \textbf{respect}(y, x) \right]$

Here the indefinite description cannot be carried out over the scope of the quantifier—by any means—because the logical representation itself requires that the variable in the indefinite description be bound by this quantifier. So (62a) is hopelessly inadequate as a representation of the meaning of (61). What we need to do, then, is maintain a representation along the lines of (62b) and try to find a solution to the problem of weak truthconditions.

This issue, of course, is completely general. In the next chapter, I will discuss various options for interpreting indefinites approximately in situ while overcoming the problem of weak truthconditions. All these options rely on some kind of presuppositional account for the sentences involved. The first of these accounts will end up being too strong, and both the first and the second will be argued to not cover the whole range of attested possibilities. The third option will overcome the difficulties observed with the first two, and in addition will provide an interesting insight on the issue of why indefinite DP's appear to exhibit a 'weak'/'strong' ambiguity.

CHAPTER 3

CAN WIDE SCOPE INDEFINITES BE INTERPRETED IN SITU?

1. Hypothesis 0: Quantifier Restrictions Cannot be Empty

Having concluded that the LRQ approach is not satisfactory, we are left with the problem of weak truth conditions discussed in section 3 of the previous chapter. Recall that the problematic examples were of the general tripartite form (where RC = 'Restrictive Clause', NS = 'Nuclear Scope'):

(1)   *every* *would*   RC   NS   or, equivalently: *every* *would*   RC   NS
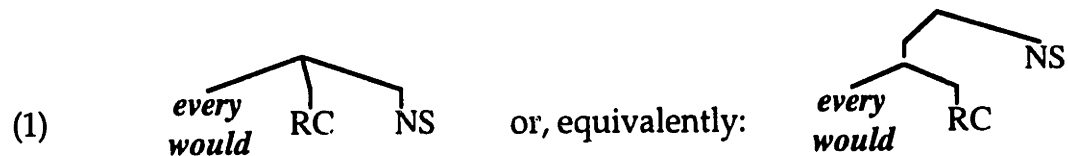
If we follow the general strategy of analyzing quantifier meanings as relations between sets, we obtain maximally simple definitions where the universal quantifiers like *every* and *would* express a relation of inclusion, in which the restrictive term may or may not be the empty set; at the same time, existential quantifiers are explicitly defined as relations between nonempty sets:[1,2]

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[1] (2a) are essentially the definitions of Barwise and Cooper (1981); (2b) roughly correspond (in set theoretic notation) to the definitions of the '□↦' and '◇↦' operators of Lewis (1973).

[2] The relational definition of *some* cannot be used (compositionally) in a system where existential closure is not adjacent to its restriction. But this need not bother us here, since the definitions in (2) are only used for illustrative purposes.

(2) a. $[\![\,every\,]\!] = \Big\{ \langle X_{RC}, X_{NS} \rangle \in \wp(E) \times \wp(E) \mid X_{RC} \subseteq X_{NS} \Big\}$

cf. $[\![\,some\,]\!] = \Big\{ \langle X_{RC}, X_{NS} \rangle \in \wp(E) \times \wp(E) \mid X_{RC} \cap X_{NS} \neq \varnothing \Big\}$

b. $[\![\,would\,]\!] = \Big\{ \langle \omega_{RC}, \omega_{NS} \rangle \in \wp(W) \times \wp(W) \mid \omega_{RC} \subseteq \omega_{NS} \Big\}$

cf. $[\![\,might\,]\!] = \Big\{ \langle \omega_{RC}, \omega_{NS} \rangle \subseteq \wp(W) \times \wp(W) \mid \omega_{RC} \cap \omega_{NS} \neq \varnothing \Big\}$

This means that the universal quantifiers in (24) and (21b) from sect. 3—repeated here as (3) and (4) resp.—will contain pairs of which the first member is the empty set; i.e., *every* in (3) will contain the pair $\langle \varnothing, \{ y: \mathbf{reward}(H, y) \} \rangle$, and *would* in (4) will contain the pair $\langle \varnothing, \{ w: \mathbf{things\text{-}are\text{-}different}_w \} \rangle$:

(3) $\exists x \Big(\forall y: \mathbf{stud}(y) \wedge \mathbf{read}(y, x) \wedge \mathbf{book}(x) \wedge \mathbf{recomm}(H, x) \Big) \, \mathbf{reward}(H, y)$

$\underbrace{\qquad\qquad\qquad\qquad\qquad\qquad}_{RC} \quad \underbrace{\qquad\qquad}_{NS}$

(4) $\exists x \Big(\mathrm{WOULD}_w: \mathbf{senator}_{w_0}(x) \wedge \mathbf{rancher}_w(x) \Big) \, \mathbf{things\text{-}are\text{-}different}_w$

$\underbrace{\qquad\qquad\qquad\qquad}_{RC} \quad \underbrace{\qquad\qquad}_{NS}$

So, if $\{ y: \mathbf{stud}(y) \wedge \mathbf{read}(y, x) \wedge \mathbf{book}(x) \wedge \mathbf{recomm}(H, x) \} = \varnothing$ because, say, x is not a book, the tripartite structure in (3) will be (trivially) satisfied; and similarly for (4), if $\{ w: \mathbf{senator}_{w_0}(x) \wedge \mathbf{rancher}_w(x) \} = \varnothing$ because x is not a senator in w_0.

The first idea that comes to mind is to treat restrictions on (universal) quantifiers as presuppositional, i.e., to disallow altogether pairs like $\langle \varnothing, \{ y: \mathbf{reward}(H, y) \} \rangle$ in (3) or like $\langle \varnothing, \{ w: \mathbf{things\text{-}are\text{-}different}_w \} \rangle$ in (4). In other words, we could treat *every* and *would* as quantifiers which express the same relations as in (2) above but are only defined for $X_{RC} \neq \varnothing$ and $\omega_{RC} \neq \varnothing$, respectively. This way, expressions like (3) and (4) would only be evaluated for values of x which satisfy the RC expressions; hence they would never be true for

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irrelevant entities such as this cup of coffee, and the problem of weak truth conditions would not arise. The question that arises now is: can we independently justify this presuppositional treatment of (universal) quantifier restrictions?

1.1. A Strawsonian Approach

The idea that subject descriptions in general are presuppositional is originally found in Strawson (1950, 1952). In an effort to elucidate—and perhaps reconcile—the discrepancies between modern formal logic and "the logical features of ordinary discourse [1952, Pref.]," Strawson engages in a defense of traditional (Aristotelian) logic, which is argued to be more consonant with natural intuitions than its modern counterpart. In particular, Strawson discusses the Aristotelian laws of the Square of Opposition, which modern logic rejects. According to Aristotelian logic, the following holds:

(5)   For any predicates φ, ψ:

    a. $\underbrace{Every\ φ\ is\ ψ}_{A}$ and $\underbrace{No\ φ\ is\ ψ}_{E}$ is a contradiction;

    b. $\underbrace{Some\ φ\ is\ ψ}_{I}$ or $\underbrace{Some\ φ\ is\ not\ ψ}_{O}$ is a tautology;

    c.   A entails I;

    d.   E entails O.

In general, our 'uneducated' intuitions about sentences taking these forms would seem to confirm the statements in (5). So, for instance, (6a) below is understood

as a contradiction, (6b) is understood as a tautology, and the inferences from (6c) to (6c′) and from (6d) to (6d′) are judged valid.

(6) a. Every philosopher is hungry and no philosopher is hungry.

b. Some cats are black or some cats are not black.

c. Every student is stressed out.

c′ Some student is stressed out.

d. No elephant is a carnivore.

d′ Some elephants are not carnivores.

But a modern logician would point out that, on a formal level, this cannot be correct, and that our judgements are simply misguided, perhaps because we naturally fail to consider all possible models in which these statements can be evaluated. In fact, the modern logician says, it is always the case that in a model where the subject term of A, E, I, or O is not satisfied, (5) does not hold. For instance, in a world with no philosophers (6a) is true; in a world with no cats (6b) is false; in a world with no students (6c) is true but (6c′) is false, and similarly for (6d-d′) when evaluated in a world with no elephants. In other words, (5) is incorrect exactly in those cases where—as we would say in the context of this chapter—the restrictions of its subject terms (i.e., the φ's) are empty.

However, Strawson objects, one must be careful not to force this observation onto natural language; it is rather the (modern) logical system that fails to account for our intuitions about subjects of sentences, and hence must be modified:

Suppose someone says "All John's children are asleep." Obviously he will not normally, or properly, say this, unless he believes that John has children (who

are asleep). But suppose he is mistaken. Suppose John has no children. Then is it true or false that all John's children are asleep? Either answer would seem to be misleading. But we are not compelled to give either answer. We can, and normally should, say that, since John has no children, the question does not arise. ... The more realistic view seems to be that the existence of children of John's is a necessary precondition not merely of the truth of what is said, but of its being *either* true *or* false. ... What I am proposing, then, is this. There are many ordinary sentences beginning with such phrases as 'All...', 'All the...', 'No...', 'None of the...', 'Some...', 'Some of the...', 'At least one...', 'At least one of the...' which exhibit, in their standard employment, parallel characteristics to those I have just described in the case of a representative 'All...' sentence. That is to say, *the existence of members of the subject class is to be regarded as presupposed* (in the special sense described) by statements made by the use of these sentences; to be regarded as a necessary condition, not of the truth simply, but of the truth or falsity, of such statements. [1952, pp. 173-176; e.a.]

Along the same lines, Belnap (1970) argues that the subject-predicate relation is in general not symmetrical, because the subject of a sentence is always presupposed. He observes that the sentences in (7a-b) do not have the same truth conditions, despite the fact that *some* is usually assumed to express a symmetrical relation:

(7) a.   Some unicorns are animals.
     b.   Some animals are unicorns.

While (7a) is, in Belnap's terms, 'nonassertive', since the descriptive content of its subject cannot be satisfied by any individual (in a given world), (7b) is just plain false.

The general claim, then, is that subjects are presuppositional. If this is true, it could be a good starting point for beginning to treat quantifier restrictions as presuppositional. However, while on one level it does more work than we need for our present purposes—since we only need to show that universal (or strong) quantifier restrictions are presuppositional, on another level it does not do enough. This is because the claim is only made about subjects;[3] hence the proposal, as it stands, would not cover cases like (23) of the previous chapter, where the DP *every student...* is in object position. Furthermore, we need to explicitly justify extending this idea to adverbs of quantification like *would*. For our present purposes, we should try to show—at the very least—that all universal quantifiers generate a presupposition that their restriction is not empty.

With respect to the first point, a promising strategy could be to try to show that certain quantificational determiners are inherently presuppositional. An early attempt at this kind of generalization is found in Hausser (1973, 1976) (see also van Fraassen 1968). Hausser argues that a certain class of determiners is in general presuppositional, independently of the syntactic position of the noun phrases in which they occur. He proposes that this property can be tested by means of the conventional strawsonian test for presupposition (viz., 'p presupposes q iff both p and its negation entail q'), with one proviso: that the environments tested contain the appropriate noun phrase and are otherwise 'neutral' with respect to presuppositional content. This, according to Hausser,

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[3] More precisely. Strawson (1952) and Belnap (1970) only take into consideration the subject-predicate relation; thus they make no claim at all about nonsubjects. But see Strawson (1964), where it is argued that presuppositionality is associated with topical noun phrases.

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ought to insure that the existence presupposition is generated by the noun phrase itself, and in fact by its determiner. For instance, consider the pairs in (8) and (9).

(8) a. John watched *every video* at the party.

b. John didn't watch *every video* at the party.

(9) a. John watched *a video* at the party.

b. John didn't watch *a video* at the party.

(10)   There were videos at the party.

According to the test, the determiner *every* is presuppositional, since both (8a) and (8b) entail (10), and (supposedly) no other element in these sentences could be held responsible for the entailment. On the other hand, Hausser argues, the determiner *a* is not presuppositional, since (9b) (under one reading) does not entail (10).

Crucially, the claim made here is that presuppositionality is not merely a property of canonical subjects, since, e.g., *every video* in (8) is not in subject position. Rather, Hausser argues, it is a (lexical) property of determiners like *every* that their restriction must be nonempty. Hence we are justified in adding this stipulation to the lexical entry for the meaning of these determiners. So Hausser's meaning for *every* is roughly as follows:

(11)   For any variable assignment g:

$$\left[\hspace{-0.2em}\left[\; \underset{every_x \quad \Phi}{\overbrace{}}\hspace{-0.2em}\Psi \;\right]\hspace{-0.2em}\right]^g$$

= 1   iff   there is at least one x-alternative g' of g

such that $[\![\Phi]\!]^{g'}=1$, and for all g' such that

$[\![\Phi]\!]^{g'}=1$, $[\![\Psi]\!]^{g'}=1$;

= 0   iff   there is at least one x-alternative g' of g

such that $[\![\Phi]\!]^{g'} = 1$ and $[\![\Psi]\!]^{g'} = 0$;

undefined otherwise.

The very first clause of (11) will ensure that an expression like (3) is not made true when the restriction of *every* is not satisfied, since for any variable assignment that would cause this to happen, the quantificational expression would fail to receive a truthvalue.

There are several problems with this approach, however. First of all, the test is not well suited to 'negative' noun phrases of one kind or another, since we usually don't find a productive alternation between a sentence and its negation in these cases:

(12) a. * John watched *any videos* at the party.

b.   John didn't watch *any videos* at the party.

(13) a.   John watched *no videos* at the party.

b. # John didn't watch *no videos* at the party.[4]

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[4] Unless otherwise noted, I assume judgements to be given for the variety of English called 'Standard American English' (as I believe Hausser was assuming). In this dialect, (13b) is only grammatical (with certain focus patterns) under a 'double negation' reading.

In any case, (12b) and (13a) do not entail that there were videos at the party; in view of this fact, Hausser concludes that *any* and *no* are non-presuppositional.[5] But the determiner *no* (or the adverb *never*) can easily participate in problematic 'weak truthconditions' cases like those seen above; in fact, the problems with negative quantifiers and monotone decreasing environments are even more acute than those noted for universal quantifiers. In the next section I will illustrate the problems related to *no*, *never*, and *not*.

In any case—and whatever approach we choose to analyze negative quantifiers—it is not even clear that *every* itself is inherently presuppositional. Consider the sentences below, uttered in a world where there are no purple frogs:

- (14)   a.   Every purple frog is smart.

    b.   Every purple frog visited me yesterday.

    c.   John offended every purple frog.

    d.   John saw every purple frog last night.

    e.   Every purple frog is absent/missing.

The judgements for these sentences are less than uniform. (14a) and, to some extent, (14e), are judged by some speakers to be vacuously true, while (14b), (14c) and (14d) are variously judged neither true nor false, or even, as a matter of fact, false.[6] If *every* were invariably presuppositional, we would not expect such a

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range of judgements. But there are cases where one can truthfully utter a universally quantified sentence without necessarily expecting the restriction of the quantifier to be satisfied. In some of these cases one may attribute these effects to the presence of an (implicit or explicit) modal operator, as in the following examples:

(15) a.   All eligible freshpersons should apply for this grant.

b.   This is the best Vodka Martini I've ever had.

Quite reasonably, (15a) can be uttered truthfully in a context where there happen to be no eligible freshpersons; and (15b) is an actual utterance I've heard from a person who had never before had a Vodka Martini. In the first case, there is obviously a modal element; Diesing and Kratzer have argued that cases like this are indeed presuppositional, but because of the modal context the presuppositions do not involve existence in the actual world. The second case arguably involves universal quantification over Vodka Martinis the speaker has had, other than the one he is referring to (see Heim 1994). Here it might still be claimed that there is an implicit 'modal' element, or—even more simply—that the failure of presupposition is exactly what accounts for the ironic character of

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presuppositional') treatment of definite descriptions. Data like those in (19) are reminiscent of the facts observed by Strawson (1964) and Lappin and Reinhart (1988):

(i)   The exhibition was visited yesterday by the King of France.   [Str.]

(ii)   A: What are some examples of famous contemporaries who are bald?   [Str.]
           B: The King of France is bald.

(iii) a.   Every American King appeared at my party.   [L&R]
       b.   Lucie was introduced to every American King.

The examples above are often judged to be false, rather than undefined (or true, in the case of (iii)). The authors argue that this lack of presupposition failure might be due to topic-focus considerations. The idea here, very roughly speaking, is that a focused DP somehow 'implies' the assertion that the set it lives on is not empty—an assertion that may be true or false.

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the assertion. In other cases, however, it seems less clear that there is any modality involved. Consider the following examples:

(16) a.   Everyone who needed a tetanus shot came in yesterday.

b.   I did all the work I had to do.

(16a) can be truthfully uttered in a situation where nobody came in the day before, but in fact nobody needed a tetanus shot; and (16b) can also be true in a situation where the speaker didn't have any work to do, at a given time. Here we would be hard pressed to try to explain what kind of 'modality' is involved. It seems to me that there is no irony involved in (16a) and (16b), which seem rather to convey, quite matter-of-factly, whether some routine task was (even trivially) fulfilled at a given time. For instance, suppose I utter (16b) on the evening of May 24, 1995. On this day, the 'work-I-have-to-do' consists of doing a certain amount of laundry, fixing the toilet, and making some progress on this dissertation. Since I completed the first two tasks, but spent the rest of the day worrying about the dissertation rather than making any progress on it, I will have made a false statement by uttering (16b) at the end of the day. But suppose I make the same statement on the evening of July 24, 1995, which I have consecrated as my personal 'nothing-to-do' day. Thus, whatever I do on this day, I can truthfully assert (16b)—no irony here.

I think these cases are actually quite productive in real life. Another 'task'-situation could be the following: suppose a certain doorperson has the duty to check everybody's identification at the entrance to a building. If nobody entered the building during a certain time period, the doorperson can confidently claim to have done her duty by answering 'yes' to the question: "Did you check everybody (who entered)'s ID during that time period?" Clearly, an affirmative

statement can be made in this context regarding an actual time period, an actual checking, and the actual people who entered. Or, also, suppose I make a promise: "I will do everything I can to help." If, at the relevant future time there happens to be nothing I can do to help, and hence I do nothing, I believe it is reasonable to say that I did not break my promise.

These observations indicate that we would probably do better not to treat quantifiers as intrinsically presuppositional. This leaves us with the task of explaining why in some cases they generate existence presuppositions, and in other cases they don't. But perhaps this task should be taken up at a different level. The claim here is that the lexical content of quantifiers need not be burdened with stipulations about effects that may be essentially pragmatic in nature (see Grice 1968, Lappin and Reinhart 1988).

Another problem with a presuppositional treatment of quantifier restrictions is whether it can be extended to modals and quantificational adverbs in general. If this were possible, we would of course be able to treat cases like the senator example from the previous chapter on a par with 'extensional' examples like the 'Professor Himmel' example, as suggested earlier. In other words, we could treat (17b) like (17a), in virtue of the similar inclusion relations they express, as discussed at the beginning of this chapter.

(17) a. Professor Himmel rewarded every student who read *a book he had recommended*.

$\exists x \, (\forall y: \textbf{stud}(y) \land \textbf{read}(y, x) \land \textbf{book}(x) \land \textbf{recomm}(\textbf{H}, x)) \, \textbf{reward}(\textbf{H}, y)$

b. Things would be different if *a senator* had grown up to be a rancher instead.

$\exists x \, (\textbf{WOULD}_{w}: \textbf{senator}_{w_0}(x) \land \textbf{rancher}_{w}(x)) \, \textbf{things--are--different}_{w}$

Indeed, if in order to avoid excessively weak truthconditions in (17a) we assume that $X_{RC} = \left\{ y\colon \mathbf{stud}(y) \wedge \mathbf{read}(y, x) \wedge \mathbf{book}(x) \wedge \mathbf{recomm}(\mathbf{H}, x) \right\}$ cannot be empty, then we should be inclined to apply the same reasoning to (17b), and similarly stipulate that $\omega_{RC} = \left\{ w\colon \mathbf{senator}_{w_0}(x) \wedge \mathbf{rancher}_w(x) \right\}$ cannot be empty. For the latter case, this corresponds to the requirement that the antecedent of a conditional must always be made true in some world accessible from the utterance world.

But it is far from obvious that this would be a desirable move. Stalnaker (1968) assumes that a conditional whose antecedent cannot be made true (in any possible world) is evaluated with respect to an 'absurd world' λ, "the world in which contradictions and all their consequences are true. [p. 103]"

Lewis (1973) also explicitly addresses this issue, in a section entitled "Impossible Antecedents" [pp. 24-26]. His particular definitions of the meanings of *would* ($\square\!\!\rightarrow$) and *might* ($\Diamond\!\!\rightarrow$) are worked out so that the two operators are interdefinable, in analogy with $\forall$ and $\exists$ (respectively). The former is thus allowed to be vacuously true, while the latter is not. Whether this is a correct move is not entirely clear, however. Lewis himself notes that the same considerations that enter into the choice of allowing impossible antecedents for *would* can be reproduced for *might*.

> There is at least some intuitive justification for the decision to make a *would* counterfactual with an impossible antecedent come out vacuously true. Confronted by an antecedent that is not really an entertainable supposition, one may react by saying, with a shrug: If that were so, anything you like would be true! [p. 24]

But later he observes that his reasons are "less than decisive", and discusses two different operators— '□⇒' for *would* and '◇⇒' for *might*—of which the latter but not the former can be vacuously true:

> One might perhaps motivate this weakened *might* in much that same way as I motivated the original, weak *would*: confronted with an antecedent that is not really entertainable, one might say, with a shrug: If that were so, anything you like *might* be true! [p. 25]

So, if there exist real life situations where we can appropriately (and truthfully) assert a counterfactual (of either kind) that contains an impossible antecedent,[7] then we cannot claim that *would* or *might* are inherently presuppositional.

A decisive verdict on this issue is rather difficult to reach, due to the complex nature of conditionals. The notion of accessibility also plays an important role, here. A counterfactual conditional will generally be easier to evaluate when the counterfactual worlds set up by the restriction are more accessible to the actual world. Consider, for instance, the pair in (18):

(18) a.   If I had gone to Med School, I would be making more money than I am making now.

b.   If I had gone to Med School, I would be making less money than I am making now.

In this case (assuming that *I* refers to Diana Cresti, linguist), most people would agree that (18a) is true while (18b) is false. But now consider the pair in (19):

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7 Lewis suggests that this may be the case with *reductio* arguments, where a counterfactual is asserted whose antecedent must be considered "... not only false but impossible. [p. 24]" A possible example could be *If there were a largest prime*, ...

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(19) a.   If cats could talk, they would criticize us.

      b.   If cats could talk, they would praise us.

We may imagine that worlds where cats talk are less accessible to our base world than worlds where I have gone to Med School. The evaluation of these sentences might thus be expected to be more difficult, presumably dependent on people's different opinions about cats. Now consider the following:

(20) a.   If this keyhole puncher were made of light, it would be more efficient.

      b.   If this keyhole puncher were made of light, it would be unusable.

. I would guess that worlds where keyhole punchers are made of light are significantly more difficult to access than worlds where I went to Med School, or even than worlds where cats can talk. It might be the case that my imagination cannot be stretched far enough to access any of these worlds. Thus I would have to admit to having no opinion about the truth or falsity of these sentences; or perhaps I could concede that either of them might be true. How do we decide whether 'having no opinion' is best represented as accepting that the counterfactual is vacuously true or as not assigning it a truthvalue at all? We may want to reserve the undefinedness account for cases that are more seriously illformed than the examples in (20).

    Clearly, the last word on the nature of conditionals has not been said, and it is not my purpose here to provide a detailed analysis of these issues. I hope, however, that this brief discussion can serve to highlight potential problems with a presuppositional treatment of quantificational elements, be they adverbs or determiners. I will thus maintain the more cautious view that, in general,

quantifier restrictions can be empty. In the next subsection we will see that in any case, even if we were to assume that quantifier restrictions are presuppositional, we would still not be safe from the problem that we set out to solve.

2. Indefinites in Downward Monotone Environments

We have seen that the problem of weak truth conditions of indefinites embedded in the restriction of a quantifier could be overcome by assuming that natural language quantifiers—or at least strong quantifiers—are presuppositional, in the sense that they must have non-empty restrictions. But we have also seen that this assumption may ultimately be too strong.

The case of negative quantifiers, however, is more decisive in showing that the presuppositional approach is inadequate with respect to the problem at hand. Consider the following examples:

(21) a. Nobody who had spoken to an old friend of mine called Ed was impressed with him.

b. Nobody was impressed with an old friend of mine called Ed.

(22) I never get bored, when a friend of mine called Ed shows up at a party.

Now, a relational theory of quantifiers would plausibly include definitions like the following, for *no* and *never*:

(23) a. $[\![no]\!] = \left\{ \langle X_{RC}, X_{NS} \rangle \in \wp(E) \times \wp(E) \mid X_{RC} \cap X_{NS} = \varnothing \right\}$

b. $[\![never]\!] = \left\{ \langle \zeta_{RC}, \zeta_{NS} \rangle \in \wp(T) \times \wp(T) \mid \zeta_{RC} \cap \zeta_{NS} = \varnothing \right\}$

Here, the quantificational expression will be satisfied whenever the RC or the NS are empty. This means that our current interpretations for the sentences in (21) and (22) are extremely easy to make true. And the problem does not merely affect the restrictions of these quantifiers:

(24) a. $\exists x \left(\text{NO} y: \underbrace{\begin{bmatrix} \textbf{person}(y) \wedge \\ \textbf{f.o.m.}(x) \wedge \textbf{call.Ed}(x) \\ \wedge \textbf{spoken-to}(y, x) \end{bmatrix}}_{\text{RC}} \right) \underbrace{\textbf{impressed}(x, y)}_{\text{NS}}$

b. $\exists x \left(\text{NO} y: \underbrace{\textbf{person}(y)}_{\text{RC}} \right) \underbrace{\left[\textbf{f.o.m.}(x) \wedge \textbf{call.Ed}(x) \wedge \textbf{impressed}(x, y) \right]}_{\text{NS}}$

(25) $\exists x \left(\text{NEVER}_i: \underbrace{\textbf{f.o.m.}_{w_0}(x) \wedge \textbf{call.Ed}_{w_0}(x) \wedge \textbf{show-up}_{w_i}(x)}_{\text{RC}} \right) \underbrace{\textbf{get-bored}_{w_i}(\mathbf{I})}_{\text{NS}}$

Consider, as usual, a situation where x is assigned an individual that is not a friend of mine called Ed. In this case, the X_{RC} and ω_{RC} terms in (24a) and (25) (resp.) will be empty, thus satisfying the conditions for truth for *no-* and *never-* expressions given by (23). Worse yet, the X_{NS} term of (24b)—in the situation considered—will also be empty; and since the definition of *no* in (23a) is intersective, we will have the same exact problem as we had in (24a) and (25). The only difference is that these latter cases could be saved by a stipulation to the effect that all quantifier restrictions are presuppositional, while in the case of (24b) such a stipulation will have no effect. And it seems to me that it would be undesirable to require nuclear scope denotations to be nonempty, since in such case we would fail to assign truthconditions to simple sentences that are

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intuitively easy to evaluate (e.g., a sentence like *Nobody is immortal* would be predicted to have no truthvalue if the set of things that are immortal is empty).

Aside from the case of negative quantifiers, there is at least one other context where the problem of weak truth conditions may arise. Consider the following sentence:

(26) a. John does not assume that I convinced Sue to speak to *a (certain) professor*.

b. John does not assume that I convinced Sue to speak to *every professor*.

(27) a. Nobody believes that I have seen *a certain Buñuel movie*.

b. Nobody believes that I have seen *most Buñuel movies*.

We can assume that in (26a) the indefinite *a (certain) professor* has not raised over the matrix negation, since a QNP like *every professor* in (26b) appears unable to QR in that way. Nevertheless the indefinite can take matrix scope. According to our current assumptions, we would assign the following interpretation to (26a):

$$
(28) \qquad \exists x \, \neg \mathbf{assume}_{w_0}\!\left(\mathbf{John}, \lambda w.\mathbf{convince}_w\!\left(\mathbf{I}, \mathbf{Sue}, \lambda w'\!\left[\begin{array}{l} \mathbf{prof}_{w_0}(x) \wedge \\ \mathbf{speak}_{w'}(\mathbf{Sue}, x) \end{array} \right] \right) \right)
$$

$$
(29) \qquad \exists x \, (\mathbf{NO}\, y\colon \mathbf{person}(y)) \, \mathbf{believe}_{w_0}\!\left(y, \lambda w \left[\mathbf{Bu\tilde{n}uel\text{-}movie}_{w_0}(x) \wedge \mathbf{seen}_w(\mathbf{I}, x) \right] \right)
$$

Literally, (28) states that there is an x such that: it is not the case that: John assumes that I convinced Sue$_i$ [PRO$_i$ to speak to x and x is a professor in w_0]. So, if there exists something which is not a professor in w_0—e.g., this sheet of paper, that pen over there—then from (28) it will follow that

(30) $\neg \text{assume}_{w_0}\left(\text{John}, \lambda w.\text{convince}_w(\text{I}, \text{Sue}, \lambda w'.0)\right)$

where $\lambda w'.0$ is the impossible proposition (cf. discussion in Chapter 2). Now, our dilemma earlier on was that if these kinds of situations are allowed to occur, e.g., if someone could be convinced of the impossible proposition, (30) would come out true in a situation where (there exists something which is not a professor in w_0 and) John does not assume that I convinced Sue of the impossible proposition—a very likely situation, of course. If, on the other hand, we assume that the lexical meaning of *convince* does not allow its sentential complement to be $\lambda w'.0$, we may suppose that the complement of *assume* could also be $\lambda w.0$— i.e., from (30) it would follow that $\neg \text{assume}_{w_0}(\text{John}, \lambda w.0)$. Concomitantly, we may suppose that someone cannot *assume* the impossible proposition;[8] thus it could turn out that the value 'true' is assigned to the assertion that John does not assume $\lambda w.0$. And this in turn would put expressions like (28) at a risk of having excessively weak truthconditions. What we would need to do would be to stipulate that both *convince* and *assume* (and presumably a good number of other CP-embedding verbs) are undefined for a sentential complement which is translated as $\lambda w.0$.

A similar situation arises with the expression in (29). This expression, at least according to our definition (23a) above, asserts that the intersection of the set of people with the set of entities that believe [that I've seen x, x being a Buñuel movie in w_0], is empty. Now, if there exists an x which is not a Buñuel movie in w_0, from (29) it will follow that

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[8] This example, which involves negation attached to a CP-embedding verb, highlights a potential problem with a semantics that requires meanings that are everywhere defined. If, for instance, the statement 'a cannot *assume* $\lambda w.0$' is interpreted as meaning 'the expression $\text{assume}(a, \lambda w.0)$ can never be true', we automatically predict that the negation of such an expression, $\neg \text{assume}(a, \lambda w.0)$, will always be true.

(31) $(\text{NO } y\colon \textbf{person}(y))$ **believe**$_{w_0}(y, \lambda w.0)$

Again, in a situation where the set of entities that believe the impossible proposition is empty (rather than nonexistent) (29) will be evaluated as true (with respect to any irrelevant object which does not satisfy the indefinite description).

This situation clearly generalizes to a significant number of cases where a wide scope indefinite has its restriction embedded inside a monotone decreasing environment. Here, unfortunately, we can no longer appeal to a partially defined quantificational structure since the indefinite description is apparently not inside the restriction of any quantifier:

(32) a.   Indefinite in the RC of a strong QNP: $\exists x \dots (\forall\colon [_\Phi \dots Px \dots]) [\dots]$

    b.   Indefinite in the scope of negation: $\exists x \dots \neg [_\Phi \dots Px \dots]$

    c.   Indefinite in the NS of a mon$\downarrow$ QNP: $\exists x \dots (\text{NO}\colon \dots) [_\Phi \dots Px \dots]$

Even if we could maintain that expressions of the kind in (32a) must have a non-empty Φ, we could not extend this idea to expressions of the kind in (32b), for the very simple reason that the F constituent in these structures needs to be evaluated as false whenever its negation is true. For instance, (26a) can clearly be true in some situations, but if the VP headed by *assume* we stipulated to be either true or undefined, we would never be able to derive the truth of (26a).

Yet it is not obvious that the Φ constituents in (32b) and (32c) are entirely non-presuppositional. Is it safe, for instance, to assume that negation is unrestricted? In the next few sections I will explore the possibility that, under certain conditions, an expression which is embedded in a monotone decreasing environment could be analyzed as forming a tripartite quantificational structure.

If this possibility turns out to be viable, we may be able to argue that all indefinite descriptions of the kind we are interested in are indeed embedded in a presuppositional restrictive clause, thereby saving H_0 from the shortcomings noted in this section.

3. Hypothesis 0.1: Association with Focus

It has been observed, at least since the late sixties,[9] that focus effects must be taken into consideration when evaluating the truthconditions of a sentence. An example commonly used to illustrate this comes from Rooth (1985):

(33) a.   I only introduced BILL to Sue.

      b.   I only introduced Bill to SUE.

Essentially, (33a) says that the only person I introduced to Sue is Bill, while (33b) says that the only person I introduced Bill to is Sue. As Rooth observes, in a scenario where I introduced Bill and Tom to Sue, and no other introductions took place, (33a) is false and (33b) is true.

On the level of discourse, focus marking corresponds to new information. In particular, there is a clear division of labor between focused and non-focused elements question-answer pairs; for instance:

(34)   A: Who did you invite to the party?

           B: I invited BILL to the party.

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[9] Some early discussions of the semantic effects of focus can be found in Fischer (1968) and Bowers (1969). A more commonly cited source is Jackendoff (1972).

As exemplified by the exchange in (34), a question typically triggers a reply where the *wh*-constituent of the question is replaced by a focused phrase of the same category. This phrase clearly corresponds to new information; the surrounding material can be thought of as old information.
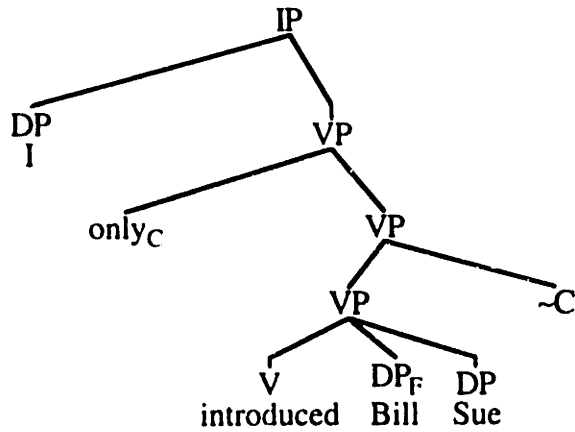
According to Rooth, an expression φ will have, in addition to its ordinary semantic value—notated $[\![\varphi]\!]^o$, a focus semantic value, notated $[\![\varphi]\!]^f$, which is the set of alternatives to $[\![\varphi]\!]^o$ with whatever focused element it contains replaced by a variable of the appropriate type. For instance, the VP in (33a) will have as its ordinary semantic value the property $\lambda x.\mathbf{introduce}(x, \mathbf{Bill}, \mathbf{Sue})$; and, since *Bill* in this VP is focused, the focus semantic value of this VP will be a set of properties of the form $\lambda x.\mathbf{introduce}(x, y, \mathbf{Sue})$—one for each individual y that may be contrasted with Bill in a given context. This will allow (33a) and (33b) to be distinct in their focus semantic values, as shown below:

(35) a. $[\![\text{introduced BILL to Sue}]\!]^o = \lambda x.\mathbf{introduce}(x, \mathbf{Bill}, \mathbf{Sue})$

   $[\![\text{introduced BILL to Sue}]\!]^f = \left\{ \lambda x.\mathbf{introduce}(x, y, \mathbf{Sue}) \mid y \in E \right\}$

   b. $[\![\text{introduced Bill to SUE}]\!]^o = \lambda x.\mathbf{introduce}(x, \mathbf{Bill}, \mathbf{Sue})$

   $[\![\text{introduced Bill to SUE}]\!]^f = \left\{ \lambda x.\mathbf{introduce}(x, \mathbf{Bill}, z) \mid z \in E \right\}$
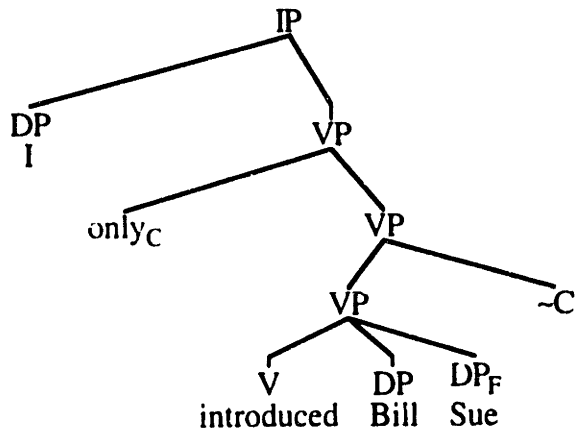
The focus semantic value is associated with an anaphoric element, introduced by a two-place operator, ~ (cf. Rooth 1992). In the case of (33a) and (33b), this anaphor is adjoined to the VP, and has its antecedent in the domain[10] of the adverb *only*:

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10 For *only* the relevant domain is generally provided by the context of utterance.

(36) a.

```
                              IP
              _____/ \
         DP /                  VP
         I                   /  \
              only_C        /    VP
                          /     /  \
                        VP     /    ~C
                       /  \   /
                      V   DP_F  DP
                  introduced  Bill  Sue
```

b.

```
                              IP
              _____/ \
         DP /                  VP
         I                   /  \
              only_C        /    VP
                          /     /  \
                        VP     /    ~C
                       /  \   /
                      V   DP  DP_F
                  introduced  Bill  Sue
```

The function of the ~ operator is to specify that a certain relation holds between the anaphor and the semantic values of its sister. What is of particular interest here is that this operator generates certain presuppositions, as shown in (37c).

(37) a. $[\![\varphi \sim C]\!]^o = [\![\varphi]\!]^o$ (no effect on assertion)

    b. $[\![\varphi \sim C]\!]^f = \{ [\![\varphi]\!]^o \}$ (closes off focus)

    c. Presuppositions: i. $[\![C]\!]^o \subseteq [\![\varphi]\!]^f$

                  ii. $[\![\varphi]\!]^o \in [\![C]\!]^o$

                  iii. $\exists \xi \left(\xi \in [\![C]\!]^o \land \xi \neq [\![\varphi]\!]^o \right)$

In the case of (35a), (37c) says that (i) the ordinary semantic value of C, viz. $[\![C]\!]^o$, is a subset of the set of properties of introducing someone to Sue; (ii) the property

of introducing Bill to Sue is a member of $[\![C]\!]^0$; and (iii) there is at least one property in $[\![C]\!]^0$ that contrasts with the property of introducing Bill to Sue. In the case of (35b), $[\![C]\!]^0$ must be a subset of the set of properties of introducing Bill to someone, etc. When the meaning of *only* is fleshed out, the full translations of (35a) and (35b) become:

(38) a. $\forall P \Big[P \in [\![C]\!]^0 \wedge P(I) \rightarrow P = \lambda x.\text{introduce}(x, \text{Bill}, \text{Sue}) \Big]$

  where $[\![C]\!]^0 \subseteq \big\{ \lambda x.\text{introduce}(x, y, \text{Sue}) \,|\, y \in E \big\}$

  b. $\forall P \Big[P \in [\![C]\!]^0 \wedge P(I) \rightarrow P = \lambda x.\text{introduce}(x, \text{Bill}, \text{Sue}) \Big]$

  where $[\![C]\!]^0 \subseteq \big\{ \lambda x.\text{introduce}(x, \text{Bill}, z) \,|\, z \in E \big\}$

(38a) says that any property of introducing something to Sue that applies to the speaker is the property of introducing Bill to Sue, while (38b) says that any property of introducing Bill to something that applies to the speaker is the property of introducing Bill to Sue. So, ignoring additional restrictions on C that may be contributed by the context, we can rewrite the expressions in (38) as follows:

(39) a. $\big(\forall y\!: \text{introduce}(I, y, \text{Sue}) \big) \, \text{introduce}(I, \text{Bill}, \text{Sue})$

  b. $\big(\forall z\!: \text{introduce}(I, \text{Bill}, z) \big) \, \text{introduce}(I, \text{Bill}, \text{Sue})$

According to this particular implementation of Rooth's system, a focus sensitive operator is associated with a tripartite quantificational structure. If we can extend this idea to other putatively focus sensitive operators, we might be able to analyze certain semantic constituents, such as certain parts of the monotone decreasing environments discussed earlier, as associated with a restrictive clause of some kind. With some luck, we might be able to argue that H_0—the hypothesis

that quantifier restrictions are presuppositional—applies exactly in those cases of indefinites embedded in monotone decreasing environments that seemed problematic in our earlier discussion.

Kratzer (1989a) employs a quantificational treatment of association with focus in her treatment of negation. She argues that negation can be treated as an operator that associates with focus (see also Jackendoff 1972):

[W]e should quite generally conceive of negation as an operator which is intimately connected to focus. ... Consider now representations iike [40a] and [40b].

(40) a. Paula isn't registered in PARIS.

b. PAULA isn't registered in Paris.

Preserving the spirit of previous analyses of focus while emphasizing the similarity with restricted quantifier structures, we are led to the following logical forms for [40a] and [40b].:

(41) a. (Not: x is a place and Paula is registered in x) Paula is registered in Paris.

b. (Not: x is a person and x is registered in Paris) Paula is registered in Paris.

If this analysis of negation is correct, we may attempt to extend our presuppositional account of quantifier restrictions to cases like those discussed in section 2. What follows is not a treatment of negation that either Rooth or Kratzer advocate. The hypothesis that nonfocused material is presuppositional is in

general too strong (see, e.g., Rooth 1995). But the purpose of adopting it here is to show that, even in this strong form, this idea will not solve our problem of weak truthconditions.

I will assume that negation c-commands all (reconstructable) material in its clause at LF, including subjects. For concreteness, suppose that in a structure like (42a) below the Ψ constituent is copied into a position adjoined to *not* (see Chomsky 1993 on the notion of movement as a copying process), and the focused element ψ_F in the adjoined copy is replaced with an empty category, e_i, which is coindexed with *not*. This yields the structure in (42b):

(42) a.

b.
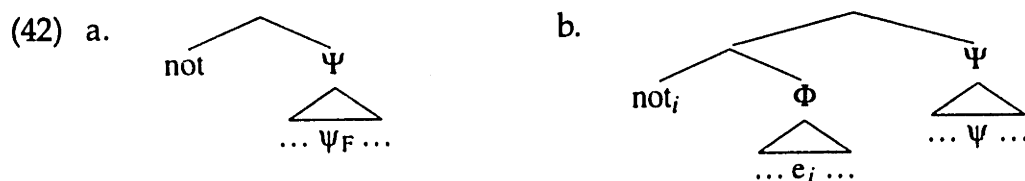
So Φ in (42b) is identical to Ψ, with the exception that ψ is replaced by e_i. This empty category is translated as v_i—a variable of the same type as $[\![\psi]\!]$. So Φ, which corresponds to the unfocused part of the clause, is taken to be the restriction of *not*. We can now construct a rule for the interpretation of structures like (42) which encodes the stipulation that the restriction of *not* must be non-empty, as in (43).

(43)   For any variable assignment g:

$$\left[\begin{array}{c} \Psi \\ not_v \quad \Phi \end{array}\right]^g = 1 \quad \text{iff} \quad \text{there is at least one v-alternative } g' \text{ of g such that } [\![\Phi]\!]^{g'}=1, \text{ and } [\![\Psi]\!]^g = 0;$$

$$= 0 \quad \text{iff} \quad \text{there is at least one v-alternative } g' \text{ of g such that } [\![\Phi]\!]^{g'} = 1, \text{ and } [\![\Psi]\!]^g = 1;$$
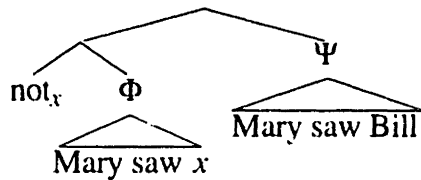
undefined otherwise.

According to the definition above, the following focused sentences will have the meanings assigned by the paraphrases given:

(44) a.   Mary didn't see BILL.

Of all the things Mary saw, none were Bill.

b.   MARY didn't see Bill.

Of all the individuals who saw Bill, none were Mary.

c.   Mary didn't SEE Bill.

Of all the relations holding between Mary and Bill, none are the relation of seeing (i.e. of the former seeing the latter).

d.   MARY DIDN'T SEE BILL.

Of all the things that occurred, none are an occurrence of Mary seeing Bill.

All these sentences entail that Mary didn't see Bill, provided that their presuppositions are satisfied. To see that this is in fact the case—even with our focus-sensitive treatment of negation—consider the structures that are assigned to (44a) and (44b):

(45) a.

```
        ╱‾‾‾‾‾╲
      ╱╲      Ψ
   not_x  Φ   ╱‾‾‾‾‾╲
        ╱‾‾‾╲  Mary saw Bill
      Mary saw x
```

b.

```
        ╱‾‾‾‾‾╲
      ╱╲      Ψ'
   not_y  Φ'  ╱‾‾‾‾‾╲
        ╱‾‾‾╲  Mary saw Bill
       y saw Bill
```
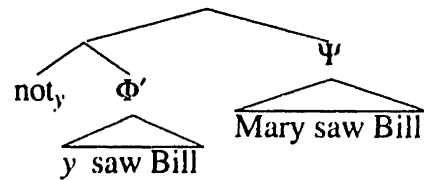
(45a) will be evaluated as true just in case Mary saw something, and for all values of x such that Mary saw x, it is not the case that Mary saw Bill. (45b) will be true just in case someone saw Bill, and all values of y such that y saw Bill, it is not the case that Mary saw Bill. So (45a) and (45b) will have different presuppositions, which, given (43), will affect the truth conditions of sentences (44a) and (44b). For instance, if Mary saw Ann, Tom, and Michael, but not Bill, and nobody in fact saw Bill, (44a)-(45a) will be true, but (44b)-(45b) will fail to receive a truthvalue. At the same time, (45a) entails that Mary didn't see Bill. Thus (43) is almost reducible to classical negation—at least when all presuppositions are satisfied. The difference between (43) and classical negation, then, is that *not* is treated like a restricted, presuppositional quantifier.

Clearly, one can utter *Mary didn't see Bill* without presupposing that Mary saw anything at all, or that Bill was seen by anybody, or that any relation exists between Mary and Bill. In this case, we assume that the whole sentence is focused, viz., *Mary didn't see Bill* is interpreted as in (44d). This corresponds to a structure like (46).

(46)

```
          ╱‾‾‾‾‾╲
        ╱╲      Ψ
    not_p  Φ    ╱‾‾‾‾╲
          │   Mary saw Bill
          p
```
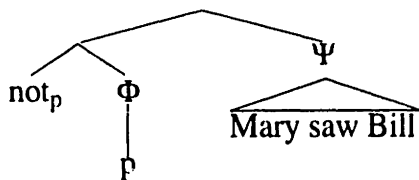
(46) will be evaluated as true iff whatever is the case, it is not the case that Mary saw Bill. The only requirement on the restriction of *not* is that there be some true proposition in the domain of discourse.

It is important to observe that, while in regular quantificational structures the quantifier typically binds a variable in both its restrictive clause and its nuclear scope, in the structures above *not* only binds a variable in its restriction. This is at odds with Kratzer's (1989b) Prohibition Against Vacuous Quantification, which states that every quantifier must bind an occurrence of some variable both in its restrictive clause and in its nuclear scope.[11] This may not be an insurmountable problem, however. We know that association with focus is not like run-of-the-mill quantificational structures, since the restriction on a focus-sensitive operator is not straightforwardly obtained from the syntax. I will leave this issue open for now, and move on to the problem at hand.

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[11] The reason why we may want to assume that the variable needs to be bound in both the RC and the NS comes from Kratzers' (1989b) account of the following facts:

(i) a. * When Mary knows French, she knows it well.
     b.   When a Moroccan knows French, she knows it well.
     c.   When Mary knows a foreign language, she knows it well.
     d.   When Mary speaks French, she speaks it well.
     e. * When Mary speaks French, she knows it well.
     f. * When Mary knows French, she speaks it well.

(ii) a. * (ALWAYS: knows(Mary, French)) knows–well(Mary, French)

     b.   (ALWAYS$_x$: morocc(x) $\wedge$ knows(x, French)) knows–well(x, French)

     c.   (ALWAYS$_y$: foreign–lg(y) $\wedge$ knows(Mary, y)) knows–well(Mary, y)

     d.   (ALWAYS$_\ell$: speaks(Mary, French, ℓ)) speaks–well(Mary, French, ℓ)

     e. * (ALWAYS$_\ell$: speaks(Mary, French, ℓ)) knows–well(Mary, French)

     f. * (ALWAYS: knows(Mary, French)) $\exists_\ell$ [speaks–well(Mary, French, ℓ)]

The illformedness of (iia), (iie) and (iif) is explained as a violation of the prohibition against vacuous quantification in all cases. In (iia) the quantifier ALWAYS has no variable to bind at all. In (iid) ALWAYS binds a spatiotemporal variable—which is assumed to be present in the θ-grid of stage-level predicates like **speak**; in (iie) and (iif), this same variable is not available in both the RC and the NS, hence Kratzer's principle is still violated. In this respect, the *not*-structures discussed in the main text are parallel to the (e) cases above.

Can this general approach help us in dealing with cases like (26a)? Perhaps one of the verbs in (26a) is focused, as in (47):

(47) a.   John does not ASSUME that I convinced Sue to speak to *a (certain)* *professor.*

b.   John does not assume that I CONVINCED Sue to speak to *a (certain)* *professor.*

c.   John does not assume that I convinced Sue to SPEAK to *a (certain)* *professor.*
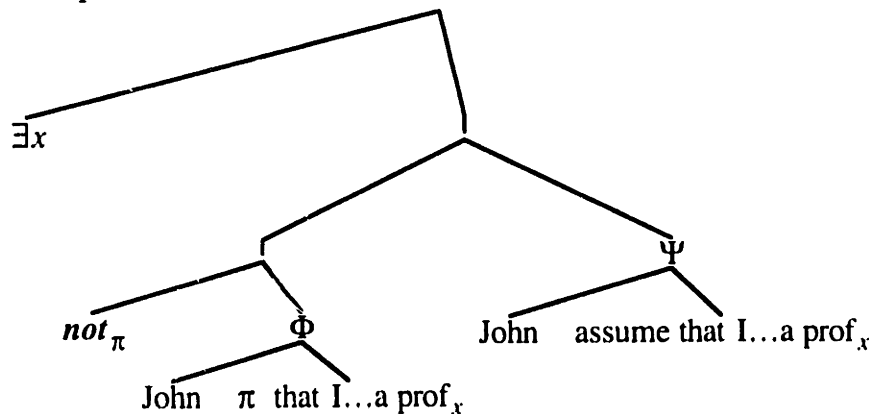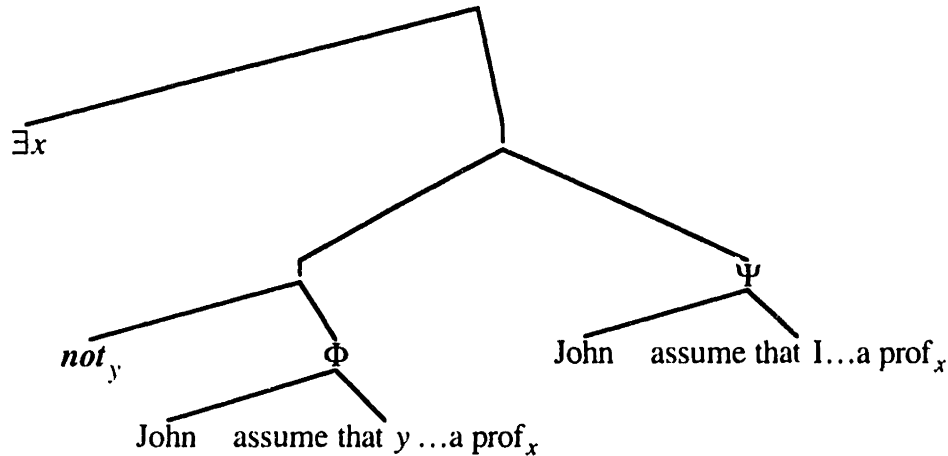
Or maybe *I* or *Sue* is focused, as in (48):

(48) a.   John does not assume that I_F convinced Sue to speak to *a (certain)* *professor.*

b.   John does not assume that I convinced SUE to speak to *a (certain)* *professor.*

According to our current assumptions, this sentence would be assigned the structure in (49).

(49) a.   Interpretation of (47a):

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b. Interpretation of (48a):

$$\exists x$$

$$not_y \qquad \Phi \qquad \qquad \Psi$$

John assume that y ...a prof$_x$

John assume that I...a prof$_x$

(49a) presupposes that John bears some relation to the proposition that the speaker convinced Sue to talk to a certain professor, and asserts that this relation is not one of assuming the proposition in question; (49b) presupposes that John assumes that someone convinced Sue to talk to a certain professor, and asserts that this person is not the speaker. In other words, the constituent Φ in both of (49) must be satisfied for some value of x; hence the DP *a professor*, which is inside Φ, must also be satisfied (for some value of x).[12] The same holds, with minor modifications, for the interpretations of (47b-c) and (48b).

But, unfortunately, this is not enough to guarantee a correct treatment of indefinites in mon$\downarrow$ environments. Intuitively, it does not seem that (47) and (48) exhaust the entire range of readings for (26a). In particular, there is one reading of (26a), perhaps the most natural one, which does not appear to involve any major subconstituent focus. Rather, it would seem that the entire sentence—or

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[12] Here, as with other CP embedding verbs, we need to assume that the lexical meaning of, say, *convince* is such that its propositional complement should not contain the impossible proposition. In other words, in both cases in (49) we would have a formula of the kind $\exists x \ldots \textbf{convince}(y, \textbf{Sue}, \lambda w \, [\textbf{prof}_{w_0}(x) \wedge \textbf{speak}_w(\textbf{Sue}, x)])$, which becomes $\exists x \ldots \textbf{convince}(y, \textbf{Sue}, \lambda w.0)$ if x is not a professor in w_0. If we were to allow for this possibility, then—despite our current presuppositional treatment of the restriction of *not*—we would still end up with inappropriate truthconditions for (49a-b), due to irrelevant values of x.

the negation itself—is focused. (26a) could be uttered, for instance, during the following exchange:

(50)   A: I've heard stories that you always try to get people to do things for

you. Of course, I don't believe these stories, but I'm sure John does.

B: Oh, don't think so. For instance, I know that John does not assume

that I convinced Sue to speak to *a (certain) professor* (on my behalf).

He knows I spoke to this person directly.

What B is doing here is denying the proposition that John assumes that B convinced Sue to speak to a certain professor. In other words, in an exchange like (50), the entire content of the proposition expressed by (26a) is focused. As with (46) above, (26a) would have a structure where it is only presupposed that some proposition must be true:

(51)
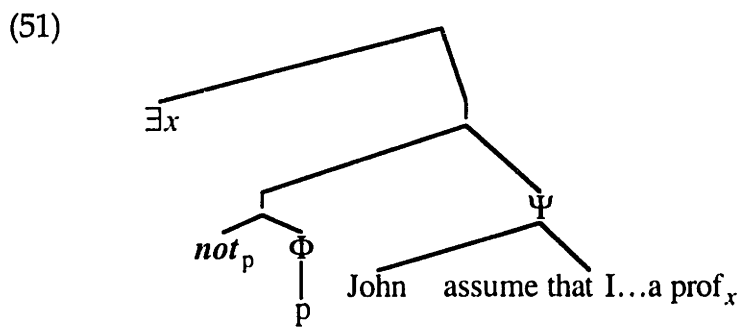
In this case, there is nothing to guarantee that the indefinite description will be satisfied, so the problem of weak truth conditions is not solved.

Notice that it is not uncommon to find a wide scope indefinite occurring inside a focused constituent:

(52)   A: What happened?

B: Bill didn't see a rock that was sitting in the middle of the road, and

hit it.

(53)   A: What did you do yesterday?

B: Well, I did the laundry and worked on my paper, but I didn't get

around to killing a big weed in the far corner of my backyard.

Here, again, in B's answers above the focused constituent contains the indefinite noun phrases. In (52) the whole sentence is focused, and in (53) the VP's are focused.[13] This means that, according to our system so far, the indefinites in (52)-(53) are in the nuclear scope of negation. Thus they are not part of a logical constituent that must be made true.

To recapitulate, we have seen that a presuppositional treatment of quantifier restrictions may not be as desirable as one would hope. And furthermore, even if this treatment were to be adopted and extended to the analysis of negation, it is not possible to guarantee that a wide scope indefinite will always be interpreted inside a presupposed constituent. Nevertheless, it still seems plausible that an indefinite which is bound at the text level ought to be treated as generating an existential presupposition. To see that this should be the case, let's extend the dialogue in (50):

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[13] Of course, it may be the case that these exmples contain nested foci, so there could be more presuppositional structure than meets the eye. It seems to me, however, that (50), at least, cannot be analyzed as having any combination of sub-foci that would sound natural in that context.

(54) A: I've heard stories that you always try to get people to do things for you. Of course, I don't believe these stories, but I'm sure John does.

    B: Oh, don't think so. For instance, I know that John does not assume that I convinced Sue to speak to *a (certain) professor* (on my behalf). He knows I spoke to this person directly.

    A: Well, THAT's not true. In fact, neither you nor John know any professors.

As a denial of (26a), A's last utterance seems a bit odd, roughly on a par with denying the existence of something satisfying the content of a definite description occurring in the place of *a (certain) professor*. According to Abusch's analysis, A's reply should sound completely natural. Yet there is a whole body of literature (e.g., Groenendijk and Stokhof 1980, and to some extent Ludlow and Neale 1991, Higginbotham 1994) which tries to show that these 'specific' indefinites must be analyzed from a pragmatic point of view, in that specificity correlates with an existential presupposition (at least in the mind of the speaker).

In the next subsection I will show that, in order to overcome the problem of weak truth conditions, it is sufficient to assume that just those indefinite descriptions which are associated with wide scope existential closure are presuppositional. This result will not be stipulated but rather derived from the topical status of these DP's.

4. Hypothesis 1: Wide Scope Indefinites are Topics

Consider again B's reply to the *what-happened*-question in (52), repeated here as (55):

(55)   Bill didn't see a rock that was sitting in the middle of the road, and hit it.

In order for the DP *a rock...* to be interpreted as 'specific' it needs to be associated with text level existential closure.[1] As suggested in Ch.2, section 2, we may want to assume that, at any given level, existential closure must obligatorily capture all free variables in its scope. For sentence (55), this means that the DP *a rock...* must scramble over the VP-level ∃ operator, and perhaps over negation. This latter operation is not strictly necessary to guarantee that the indefinite be interpreted as presuppositional. However, it seems most plausible in view of that fact that in a language like German, which has overt scrambling, a sentence like (55) does indeed involve raising of the indefinite over negation:

(56) a.   Bill hat einen Stein in der Straßenmitte <u>nicht</u> gesehen,
              Bill has a   stone in the street-middle not   seen

      b. # Bill hat (<u>nicht</u> einen > keinen) Stein in der Straßenmitte gesehen,
              Bill has not   one   stone in the street-middle seen

        und hat ihn angefahren.
        and has it   on-driven

Diesing (1992) argues that, in this respect, German essentially "wears its LF on its sleeve," while English, which does not have overt scrambling, must achieve the same LF covertly. In other words, English (55) will look like German (56a) at LF.

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[1] This will also insure that the pronoun *it* in the second conjunct will be properly bound, without recourse to an E-type pronoun analysis.

Furthermore, scrambling in any language correlates with a presuppositional reading of the scrambled constituent.[2] But why exactly should this correlation hold? Von Fintel (1994) suggests that scrambling is a symptom of topichood. He thus incorporates Diesing's 'partitioning' effects into a more general theory of topic (and focus) articulation. Specifically, the presuppositional quality of a scrambled constituent is derived from a topic marking mechanism applied to this constituent. This mechanism consists of an operator, $\approx$, adjoined to a topic, which introduces a discourse anaphor C in the form of a set of propositions 'about' the topic. The operator $\approx$ carries the presupposition that the value of C is constrained to be a subset of the set of all propositions about the topic.

(57) a. $[\![\varphi \approx C]\!]^o = [\![\varphi]\!]^o$ (no effect on assertion)

   b. $[\![\varphi \approx C]\!]^f = [\![\varphi]\!]^f$ (no effect on focus)

   c. Presupposition:

   $[\![C]\!]^o \subseteq \left\{ p\colon \exists \pi \left(p = [\![\varphi]\!]^o \bullet \pi \right) \right\}$,   with π of the lowest type such that

   $[\![\varphi]\!]^o \bullet \pi$ (i.e., either $[\![\varphi]\!]^o(\pi)$ or $\pi([\![\varphi]\!]^o)$ is of type $\langle s, t \rangle$.

Von Fintel's theory is constructed to be compatible with Rooth's 'alternative semantics' illustrated above. In particular, "[t]he ~ and $\approx$ operators are not supposed to interfere with each other [p. 53]," and may or may not be associated

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[2] This is what Diesing refers to as "semantic partition(ing)". For Diesing, the dividing line between presuppositional and nonpresuppositional material is the VP. Other authors have argued that this may be incorrect: Krifka (1992) proposes that semantic partition is determined by focus; Tsai (1994) proposes that it is determined by predication, in the sense of Williams (1980). All authors agree, however, that some form of scrambling or topic-marking is involved. I will follow Diesing's line when it comes to illustrate instances of scrambling, although clearly what is important is that presuppositional elements must be outside of whatever constituent corresponds to nonpresuppositional material.

with the same discourse anaphor. Consider, for instance, the simple example in (58):

(58)   A: How does John get to school?

        B: [He]$_T$ usually [WALKS]$_F$.

A's question above sets up a discourse topic, C, which acts as a restriction on the adverb *usually*. C, in this case, is a set of propositions of the form 'John gets to school in manner x,' i.e., a subset of the set of all propositions about John. At the same time, C is the focus anaphor for B's reply, as the reader can easily verify. Thus we have:[3]

(59) a.   Discourse Topic: C = {p: $\exists x$ [p = John gets to school in manner x] }

      b.
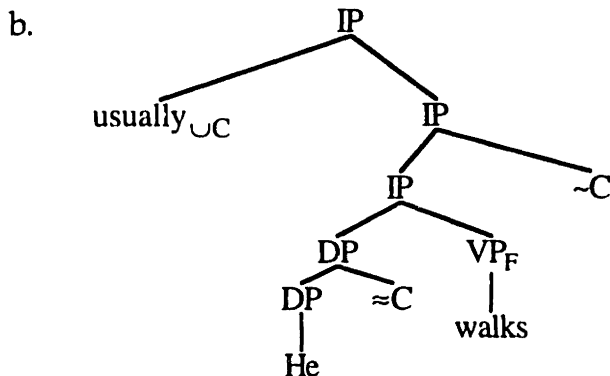
In other cases, the topic anaphor may be shared with one or none of the focus anaphors of a sentence. An example of this is taken from L. Carlson (1983):

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[3] The notation '∪C' on *usually* indicates that the adverbial quantifier is restricted by the set theoretic union over C, since C is a set of propositions (i.e., a set of sets of worlds/situations), while *usually* needs a restriction which is a set of situations. See Rooth (1985).

(60) a. [THESE$_F$ examples]$_T$ I found [in GUNDEL]$_F$.

b. Where did I find which example?

Where did I find these examples?   Where did I find the others?

These examples I found in Gundel.
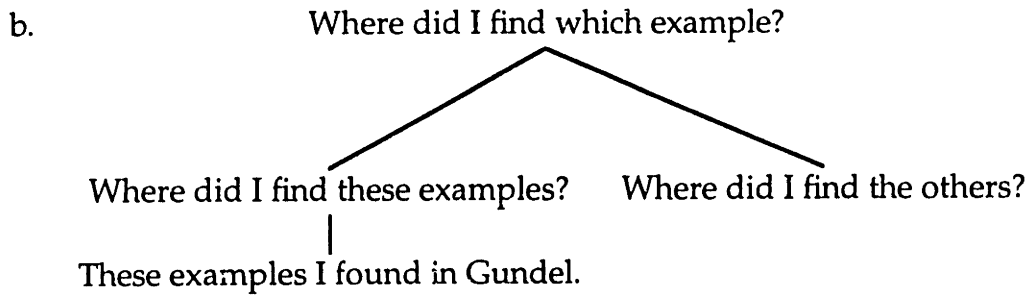
(60a) could be uttered in a context like (60b). This context suggests that *THESE* is contrastively focused; in this case, there would be a DP-adjoined focus anaphor of the form '*x*(-kind) examples' which contrasts the examples demonstrated with other contextually salient examples; furthermore, at the sentential level there is another focus anaphor of the form 'I found these examples in/at *y*'. The topichood of *THESE examples* is presumably related to a set of propositions of the form 'These examples have some property,' or more specifically, as suggested by (60b), a set of propositions of the form 'These examples (have the property that) I found (them) in/at *y*.' Hence the topic anaphor would be the same as the sentential focus anaphor:

(61)

IP
├─ IP
│ ├─ DP
│ │ ├─ DP
│ │ │ ├─ DP$_I$
│ │ │ │ ├─ D$_F$ (these)
│ │ │ │ └─ NP (examples)
│ │ │ └─ ~C$_7$
│ │ └─ ≈C$_9$
│ └─ IP
│   ├─ DP (I)
│   └─ VP
│   ├─ V (found)
│   ├─ t$_i$
│   └─ PP$_F$ (in Gundel)
└─ ~C$_9$

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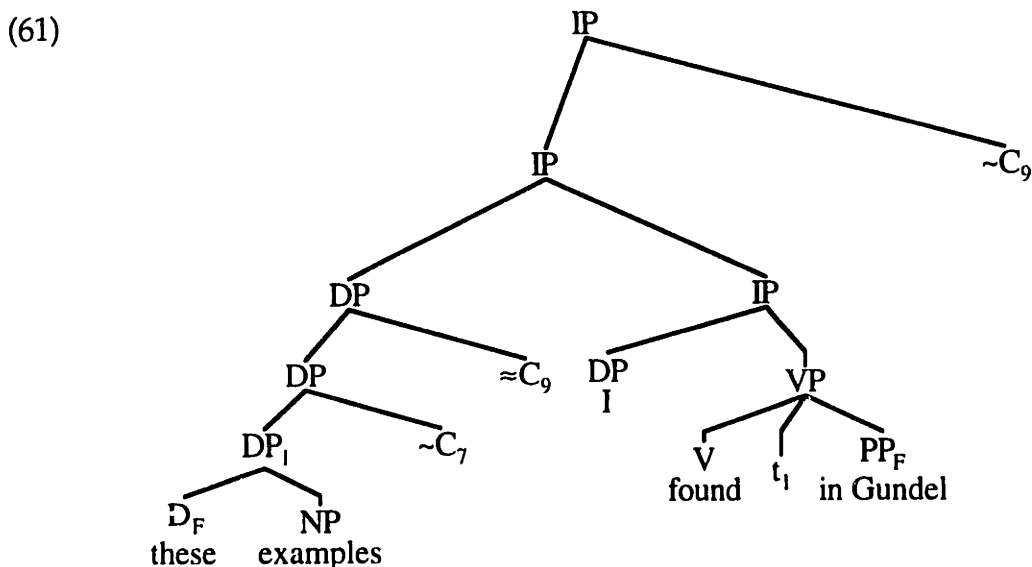
Alternatively, the focus value of (60a) could be a set of propositions of the form 'I found x examples in/at y,' while the topic anaphor would remain as above:

(62)

```
                              IP
                             /    \
                           IP      ~C₁₁
                          /  \
                        DP       IP
                       /   \    /   \
                    DP₁   ≈C₉  DP    VP
                   /  \         I    /  \
                 D_F  NP            V  t₁  PP_F
                these examples    found  in Gundel
```
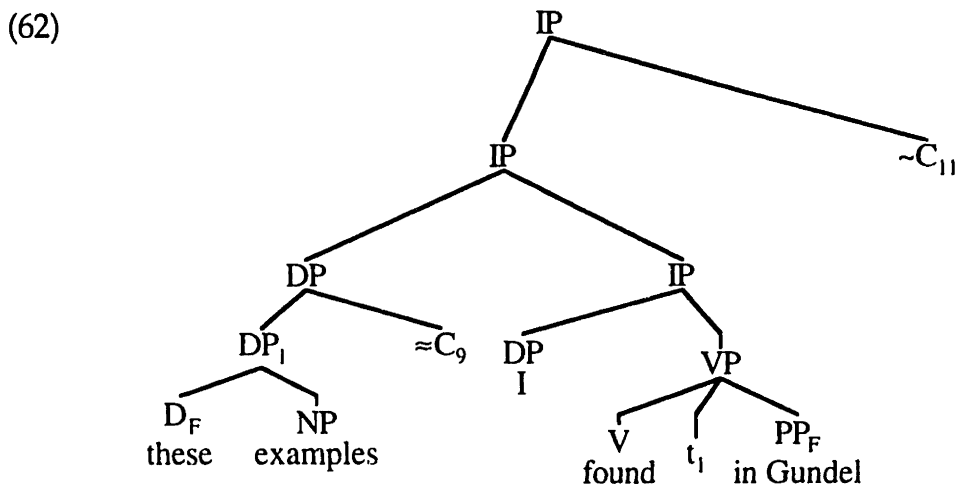
Now, we may easily assume that C_9 in the examples above is anaphoric: its antecedent can be found in a fragment of discourse such as (60b). But what about the cases that we are interested in, those sentences which contain specific indefinites? Sentence (55), as it appears in the context in (52), is—by hypothesis—entirely composed of new information. In particular, the fact that there is a rock (in the middle of the road) is also new information. How can there be a set of propositions about this rock already present in the discourse?

Clearly, the topichood of *a rock* in this case is somehow introduced by this particular utterance of (55). The 'anaphor' C, in this case, is not supposed to have an antecedent in prior discourse, so it must in some sense 'generate' one at the top of the LF for (55), where the *rock*-variable is introduced. The situation we are looking at is as follows:[4]

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[4] I am assuming, for illustrative purposes, that the scrambled indefinite in this case ends up underneath the sentential negation. This is in all likelihood incorrect—cf. the German example (51a), but it is a simple case to start with. The point is to show that the topic marking of *a rock* is sufficient to circumvent the problem of weak truthconditions even when the negation is not bypassed by scrambling.

(63) a. John didn't see a rock (that was sitting in the middle of the road).

b.
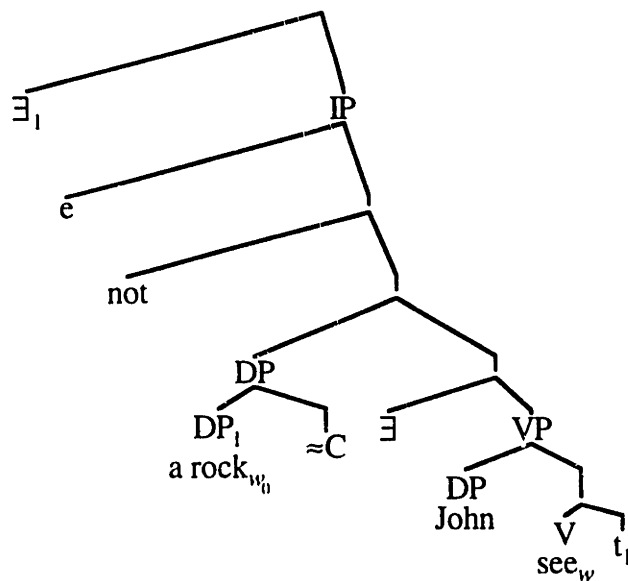
c. New Discourse Topic (at IP level):

$$C \subseteq \left\{ p: \exists \pi \, [p = \text{that } x_1 \text{ is a rock in } w_0 \text{ and } x_1 \text{ has property } \pi] \right\}$$

What we see in (63c) is that our topic anaphor must be a set of propositions 'about' x_1, where x_1 is a variable which is free within the matrix IP. At the point where x_1 is existentially bound, we would like to 'activate' our presupposition with respect to an appropriate variable assignment, so that in a situation where (63a) is true, we find ourselves discussing that particular rock that makes this sentence true. In other words, suppose the entity r is that particular rock that makes (63a) true. Then C would be a set of propositions of the form $C \subseteq \left\{ p: \exists \pi \, [p = \text{that } r \text{ has property } \pi] \right\}$. So C could be viewed as the result of applying a function from entities to discourse topics, which, in the case at hand, would have the form: $C = J(r)$.

This idea also brings to light the interaction between components of C that are bound by operators such as ∃, and the strictly anaphoric component. For instance, (63b) would now be represented as in (63b'):

(63) b'.
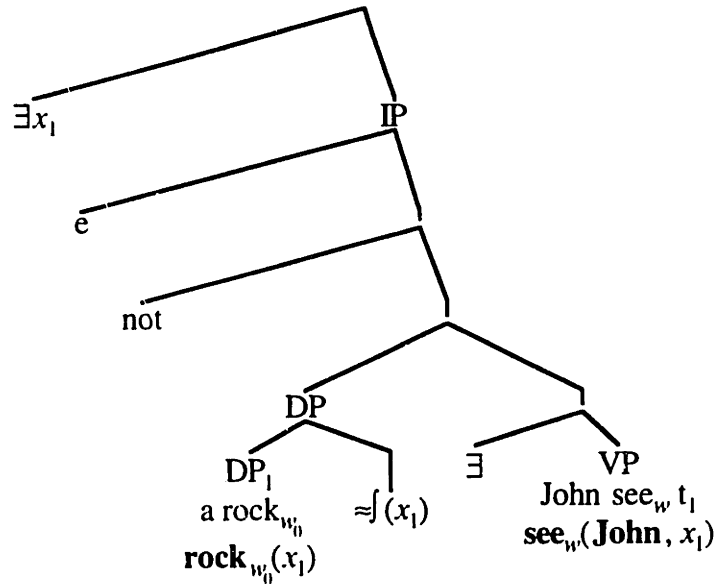
Clearly, in (63b'), the x_1 component of $C = \int(x_1)$ is a bound variable; but the $\int$ component is free. So von Fintel's (57c), which in this case takes the form (63c), is actually a statement of the form

(63) c'.   New Discourse Topic (at IP level):

$$\int(x_1) \subseteq \left\{ p: \exists \pi \left[p = \lambda w [\mathbf{rock}_{w_0}(x_1) \wedge \pi_w(x_1)] \right] \right\}$$

Since x_1 is bound by existential closure at the text level, we arrive at an apparent paradox: according to (63b'), $\int(x_1)$ must be a set of propositions about (properties of) a rock that is newly introduced in the discourse; but since $\int$ is free, it needs to be evaluated somehow, and if the discourse does not provide an antecedent for it, this antecedent must be accommodated in one way or another.

One might think, at this point, that this puzzle arises from the 'fact' that indefinites cannot be topics. But, as Prince and Ward (1991) have shown, indefinites <u>can</u> be topics, though their relation to prior discourse is not straightforward. In some cases they are clearly partitive in character, as in the following:

(64)　　A:　What did you do with those books I gave you?

　　　　B:　Well, one (book) I read immediately, another (book) I decided to save for my upcoming trip, and a third one I found really boring ...

In other cases, the topic appears to have no relation whatsoever to prior discourse:

(65)　　Have you seen a guy with a blue hat that was standing outside of the pharmacy? And if so, in which direction did he go?

Apparently, indefinite DP's of the kind we've been looking at are more similar to the case in (65) than to that in (64). In any case, examples like (65) show that we need to account for topics which lack an antecedent in the discourse. To make matters simple, suppose that when an antecedent for a (component of a) topic anaphor $\int$ is not found, there is a default rule that generates topics, of the following form:

(66)　　$\int$ is that function from individuals to discourse topics such that,

　　　　for any x, $\int(x) = \left\{ p: \exists \pi [p = \text{that } x \text{ has property } \pi] \right\}$

Given this rule, the anaphor $J(x_1)$ in (63c') will acquire an antecedent of the following form:

(67) $J(x_1) = \left\{ p: \exists \pi [p = \lambda w.\pi_w(x_1)] \right\}$

Is this an appropriate antecedent for our discourse topic? Given that (67) does not seem too disturbing on a conceptual level, the answer will depend on whether it does any work for us. So, let's consider the predictions the system makes: note first that, for any x_1, if x_1 is a rock in w_0 its topic anaphor $J(x_1)$ will satisfy (63c'). In fact we have:

(68) $\left\{ p: \exists \pi [p = \lambda w.\pi_w(x_1)] \right\} \subseteq \left\{ p: \exists \pi \left[p = \lambda w [\mathbf{rock}_{w_0}(x_1) \wedge \pi_w(x_1)] \right] \right\}$

where $\left\{ p: \exists \pi \left[p = \lambda w [\mathbf{rock}_{w_0}(x_1) \wedge \pi_w(x_1)] \right] \right\}$

$= \left\{ p: \exists \pi \left[p = \lambda w [1 \wedge \pi_w(x_1)] \right] \right\}$

$= \left\{ p: \exists \pi [p = \lambda w.\pi_w(x_1)] \right\}$

The notation '1' above represents a statement that is always true. As shown in (68), $J(x_1)$—which is assigned the value $\left\{ p: \exists \pi [p = \lambda w.\pi_w(x_1)] \right\}$ by the default rule (66)—turns out to satisfy the requirement of being a subset of the relevant set of propositions.

Now, suppose that there is some x_1 which is not a rock in w_0. In this case $J(x_1)$ will be a set of propositions about whatever x_1 is, and since $\mathbf{rock}_{w_0}(x_1)$ in this case is not satisfied, the set $\left\{ p: \exists \pi \left[p = \lambda w [\mathbf{rock}_{w_0}(x_1) \wedge \pi_w(x_1)] \right] \right\}$ will contain only the impossible proposition. In fact, when $\mathbf{rock}_{w_0}(x_1)$ is not satisfied we have:

$\left\{ p: \exists \pi \left[p = \lambda w [\mathbf{rock}_{w_0}(x_1) \wedge \pi_w(x_1)] \right] \right\} = \left\{ p: \exists \pi \left[p = \lambda w [0 \wedge \pi_w(x_1)] \right] \right\} = \{ \lambda w.0 \}$.

At this point we must ask ourselves if (63c′) is satisfied in this latter case. In other words, when x_1 is not a rock in w_0 (63c′) will be equivalent to the requirement $\int(x_1) \subseteq \{\lambda w.0\}$, which essentially means either that $\int(x_1)$ is the singleton set containing the impossible proposition ($\int(x_1) = \{\lambda w.0\}$), or that $\int(x_1)$ is the empty set ($\int(x_1) = \varnothing$). This in turn would mean that $\int(x_1)$ contains no true propositions. But since the value of $\int(x_1)$ is provided by our default rule (66), which supplies sets of propositions about objects in the universe of discourse, it is strongly implausible that it wouldn't contain any true propositions.[5] Therefore, von Fintel's topic marking mechanism, combined with our default rule (66) that generates new topics, provides us with a way of generating the appropriate presuppositions for topic marked indefinites.

To reiterate, the idea of treating certain indefinite DP's as topic marked seems quite promising, since it brings us closer to the particular presuppositions that we need, and does not require excessively strong assumptions about quantifier restrictions, focus articulation, etc. At the same time, however, it needs to be supplemented by a few additional requirements on topic anaphors, as mentioned above. To get an idea of where we are right now, let's consider in detail the entire derivation of our rock example. Below I give an LF for this example, as we would currently have it:

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[5] The only way that $\int(x_1)$ could be $\{\lambda w.0\}$ or $\varnothing$ would be to assume an ontology that includes 'absurd' objects, objects with only contradictory properties or with no properties at all. I see no need for this kind of assumption.

(69)
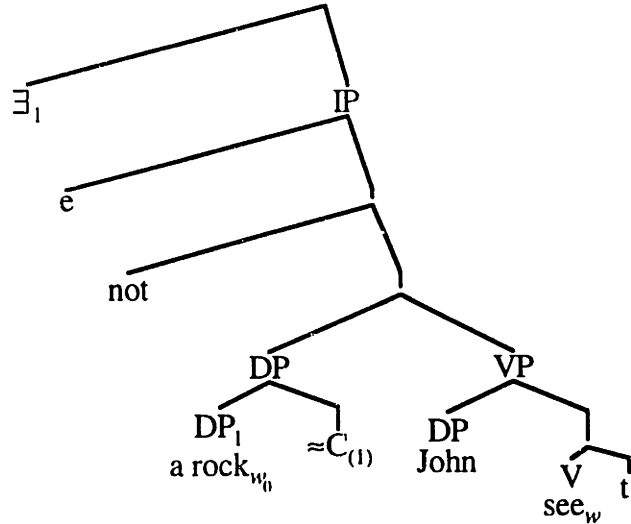
The notation '$C_{(1)}$' indicates that the topic anaphor in (67) is translated as a function of the variable x_1 (or, more generally, $C_{(1,...,n)} \leadsto \int(x_1, ..., x_n)$). In accordance with (57), we have the following:

(70)
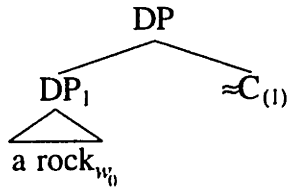
(71) a. $[\![(58)]\!]^0 = [\![[a\ rock_{w_0}]_1]\!]^0 = \lambda P[\mathbf{rock}_{w_0}(x_1) \wedge P(x_1)]$ (no effect on assertion)

b. $[\![(58)]\!]^f = [\![[a\ rock_{w_0}]_1]\!]^f$ (no effect on focus)

c. Presupposition:

$$[\![C_{(1)}]\!]^0 \subseteq \left\{ p: \exists \pi \left(p = \lambda w [\![[a\ rock_{w_0}]_1]\!]^0 \bullet \pi_w \right) \right\} =$$

$$\int(x_1) \subseteq \left\{ p: \exists \pi \left(p = \lambda w [\lambda P[\mathbf{rock}_{w_0}(x_1) \wedge P(x_1)] (\pi_w)] \right) \right\} =$$

$$\int(x_1) \subseteq \left\{ p: \exists \pi \left(p = \lambda w [\mathbf{rock}_{w_0}(x_1) \wedge \pi_w(x_1)] \right) \right\}$$

I assume that the presupposition in (71c) is projected up to the IP level in (69) (see Chapter 4 on how this can be accomplished). We get:

(72) The 'current' variable assignment satisfies

    a.   Assertion: $\neg\big[\mathbf{rock}_{w_0}(x_1) \wedge \mathbf{see}_{w_0}(\mathbf{John}, x_1)\big]$

    b.   Presupposition: $\int(x_1) \subseteq \Big\{ p\colon \exists\pi \big(p = \lambda w[\mathbf{rock}_{w_0}(x_1) \wedge \pi_w(x_1)]\big)\Big\}$

At the same time, $\int(x_1)$ does not have a 'true' antecedent, so rule (66) will provide as a value for $\int(x_1)$ the set $\Big\{ p\colon \exists\pi \big(p = \lambda w.\pi_w(x_1)\big)\Big\}$. So (72) becomes:

(73) The 'current' variable assignment satisfies

    a.   Assertion: $\neg\big[\mathbf{rock}_{w_0}(x_1) \wedge \mathbf{see}_{w_0}(\mathbf{John}, x_1)\big]$

    b.   Presupposition:

$$\Big\{ p\colon \exists\pi \big(p = \lambda w.\pi_w(x_1)\big)\Big\} \subseteq \Big\{ p\colon \exists\pi \big(p = \lambda w[\mathbf{rock}_{w_0}(x_1) \wedge \pi_w(x_1)]\big)\Big\}$$

Suppose the 'current' variable assignment assigns some entity $\mathbf{x}_1$ to x_1. (73a) clearly does not require that $\mathbf{x}_1$ be a rock in w_0; (73b), however, will supply this requirement, since

(74) a.   Case: $\mathbf{x}_1$ is a rock in w_0: $\mathbf{rock}_{w_0}(\mathbf{x}_1) = 1$

$$\Big\{ p\colon \exists\pi \big(p = \lambda w.\pi_w(\mathbf{x}_1)\big)\Big\} \subseteq \Big\{ p\colon \exists\pi \big(p = \lambda w[\mathbf{rock}_{w_0}(\mathbf{x}_1) \wedge \pi_w(\mathbf{x}_1)]\big)\Big\}$$

$$\Rightarrow \Big\{ p\colon \exists\pi \big(p = \lambda w.\pi_w(\mathbf{x}_1)\big)\Big\} \subseteq \Big\{ p\colon \exists\pi \big(p = \lambda w[1 \wedge \pi_w(\mathbf{x}_1)]\big)\Big\}$$

$$\Rightarrow \Big\{ p\colon \exists\pi \big(p = \lambda w.\pi_w(\mathbf{x}_1)\big)\Big\} \subseteq \Big\{ p\colon \exists\pi \big(p = \lambda w.\pi_w(\mathbf{x}_1)\big)\Big\}$$

$$\Rightarrow 1;\ \text{(73b) is satisfied.}$$

b. Case: x_1 is not a rock in w_0: $\mathbf{rock}_{w_0}(x_1) = 1$

$$\left\{ p: \exists \pi \left(p = \lambda w.\pi_w(x_1) \right) \right\} \subseteq \left\{ p: \exists \pi \left(p = \lambda w [\mathbf{rock}_{w_0}(x_1) \wedge \pi_w(x_1)] \right) \right\}$$

$$\Rightarrow \left\{ p: \exists \pi \left(p = \lambda w.\pi_w(x_1) \right) \right\} \subseteq \left\{ p: \exists \pi \left(p = \lambda w [0 \wedge \pi_w(x_1)] \right) \right\}$$

$$\Rightarrow \left\{ p: \exists \pi \left(p = \lambda w.\pi_w(x_1) \right) \right\} \subseteq \{\lambda w.0\}$$

$$\Rightarrow 0; \quad (73b) \text{ is not satisfied.}$$

As we can see above, for any given variable assignment, the requirement that

$J(x_1) \subseteq \left\{ p: \exists \pi \left(p = \lambda w [\mathbf{rock}_{w_0}(x_1) \wedge \pi_w(x_1)] \right) \right\}$ will potentially fall under two

cases. Case (i): the object assigned to x_1 is a rock in w_0; in this case this expression

will be equivalent to $\mathbf{rock}_{w_0}(x_1) \wedge J(x_1) \subseteq \left\{ p: \exists \pi \left(p = \lambda w.\pi_w(x_1) \right) \right\}$. Or Case (ii): the

object assigned to x_1 is <u>not</u> a rock in w_0; in this case the same expression will be

equivalent to $\neg\mathbf{rock}_{w_0}(x_1) \wedge J(x_1) \subseteq \{\lambda w.0\}$. We can then rewrite these two cases as

a disjunctive statement, and (72b) becomes:

$$(75) \qquad \left[\mathbf{rock}_{w_0}(x_1) \wedge J(x_1) \subseteq \left\{ p: \exists \pi \left(p = \lambda w.\pi_w(x_1) \right) \right\} \right]$$
$$\vee \left[\neg\mathbf{rock}_{w_0}(x_1) \wedge J(x_1) \subseteq \{\lambda w.0\} \right]$$

and, since we know that $J(x_1)$ cannot be a subset of $\{\lambda w.0\}$ (see discussion

above), (75) reduces to

$$(75') \qquad \mathbf{rock}_{w_0}(x_1) \wedge J(x_1) \subseteq \left\{ p: \exists \pi \left(p = \lambda w.\pi_w(x_1) \right) \right\}$$

So in fact the combined import of (72a) and (72b) becomes essentially the

assertion that John didn't see (the entity assigned to) x_1, where it is presupposed

that x_1 is a rock and properties of x_1 are under discussion. If (72b)=(75') is

projected at the IP level, x_1 will be presupposed to be a rock at that level, and (63)

will not be subject to the problem of weak truthconditions discussed in previous sections.

To simplify things a little, in what follows I will only make reference to the first conjunct of presuppositions like (75′), since the other is inconsequential for our present purposes. Nevertheless, technically (75′) cannot be reduced to its first conjunct, so the reader should keep in mind that these presuppositions are always present wherever there is a 'descriptive' presupposition such as $\mathbf{rock}_{w_0}(x_1)$ in (75′).

Now I would like to discuss whether the presuppositions associated with a topic-marked indefinite are effectively always projected up to the vicinity of the binder of the indefinite. If it turns out that they are, we will have, in some sense, obtained presuppositional structures that are similar to Abusch's regular semantic structures. There would still remain an important difference, however: namely, that we do not posit any special semantic mechanism for obtaining the assertive content of our LF's, since in our translations, indefinite expressions are evaluated in their LF position. In our system, a topic marked indefinite will generate an existence presupposition that is available at the appropriate level, in accordance with the general rules that govern presupposition projection. As we will see, there are no special inheritance rules for presuppositions associated with topic marking, as the principles we will exploit for all the cases considered here have been proposed in earlier literature, quite independently of von Fintel's proposal or my own.

Thus we maintain a more streamlined semantics; and, as I will show in Chapter 4, we do not encounter the problems associated with indefinites containing bound variables, as discussed in Ch.2, §3.2.

Furthermore, we predict that in general, (an utterance of) a sentence containing a specific indefinite cannot be denied on the grounds that no object

fulfilling the indefinite description exists (in a given context); rather, if the indefinite fails to pick out an object in the appropriate context, we would predict the sentence to be truthvalueless, due to presupposition failure. Abusch's analysis, on the other hand, would predict such denials to be perfectly acceptable. To see this, consider the general format of a sentence containing an indefinite interpreted as specific, as translated by Abusch vs. in our system. The former is given in (76a), and the latter in (76b).

(76)   Suppose we have a sentence S which contains an indefinite DP that is interpreted as 'specific'. If S translates as ψ, and DP translates as $\varphi(x)$ (or $\hat{P} [\varphi(x) \wedge P(x)]$), and x is free in ψ, then the truthconditions for any utterance of S are:

a.   Abusch: $\exists x: \varphi(x) \wedge [_{\psi}...x...]$

There is an object x such that $\varphi(x)$ and ψ.   (Assertion)

b.   DMC: $\exists x: [_{\psi}...[\varphi(x) \approx C]...]$

There is an object x such that: ψ Assertion

$\varphi(x)$ Presupposition

Thus for Abusch any sentence of the kind in (76) will be false in situations where there is no object satisfying the indefinite description. For our system, on the other hand, in the same situations there will be a presupposition failure at the level of the sister of the $\exists$ operator. As I will argue in the next chapter, this results in the absence of a truthvalue for the whole utterance.

What do our intuitions tell us, concerning these different predictions? Let's consider again the exchange in (52), augmented as in (77).

(77)   A: What happened?

         B: Bill didn't see a rock that was sitting in the middle of the road, and
             hit it.

         C: That can't be true! There were no rocks sitting in the middle of the
             road!

Here it is not so clear that our predictions are better than Abusch's. C's denial of B's assertion, in this case, seems rather plausible. I think this is because B's assertion, in this context, is an answer to a *what happened*-question; thus it is focused in its entirety (i.e., we have a situation as in (44d)-(46) above). The way the conversation proceeds in (77), I believe, is as follows: A's utterance sets up a set of propositions of the form: 'something is true', or 'something happened'. B's reply is then roughly: 'What happened was: Bill didn't see a rock that was sitting in the middle of the road, and hit it.' And C's contribution is: 'No, that's not what happened: (the reason that's not what happened is that) there were no rocks sitting in the middle of the road!'

If this rendition of what's going on in (77) is correct, then the reason why C's denial of B's statement seems natural is that C is denying that <u>what 'happened'</u> is as B says. The fact that there were no rocks sitting in the middle of the road is used as circumstantial evidence that B's statement cannot be true, and not as a direct denial of this statement. In other words, the indefinite *a rock...* in (77) can be thought of as a 'local' topic, in the sense that its presuppositional content is not outside of the set of propositions introduced by A. There is no notion that, whatever happened, there has to be a rock that was sitting in the middle of the road in the context of (77).

Now, clearly this line of reasoning is rather weak. At best, we can conclude that (77) does not provide evidence for or against our approach (as opposed to

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Abusch's). What we need is cases that are a bit more clear than this one. So consider the senator example from Chapter 2, augmented as in (78).

(78)   A: Things would be different if a (certain) senator had grown up to be a rancher instead.

B: I don't think so. In fact, there are no such senators.

In this case it seems rather difficult to accept B's reply as a plausible denial of A's utterance. Yet Abusch's system would predict just this. So the discourse in (78) ought to sound perfectly felicitous. Again, the difference between her system and mine is not in the LF, but in the semantic and pragmatic manipulations undergone by the indefinite. (79) then is the basic structure associated with A's . utterance in (78):

(79)
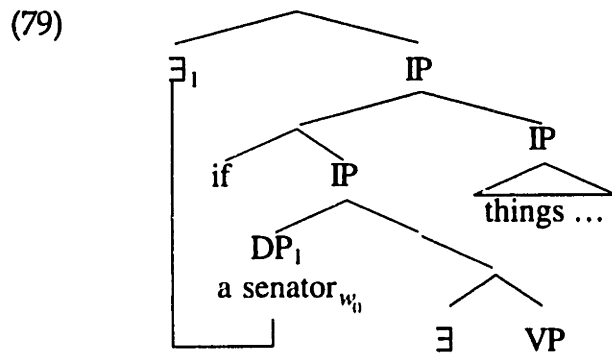

From (79), Abusch derives the expression in (80) by means of her percolation mechanism:

(80) $\exists x_1 \left[\text{senator}_{w_0}(x_1) \wedge \left(\text{WOULD}_{w}: \text{rancher}_{w}(x_1) \right) \text{things-are-different}_{w} \right]$

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(80), of course, will be false if there are no senators in w_0. Thus B's reply to A's utterance in (78) should be quite natural in a world where there are no senators (the reader may try replacing *senator* with their favorite fictitious entity in the dialogue in (78), to get a better feel for the issue at hand). I think it is pretty clear that this prediction is too strong for this case.

In the system advocated here, we also obtain the LF in (79)—except that, by assumption, the DP *a senator* is topic marked. Given what we've said so far, this would correspond to a local structure of the kind in (81).

(81)
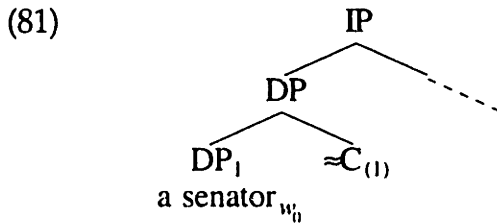
This adjoined operator actually has no effect on the regular semantic value of its sister (and in fact the extra structure will be eliminated in the next chapter). So basically (79) is interpreted as we would expect, viz., as in (82).

(82) $\exists x_1 \left(\text{WOULD}_w\colon \text{senator}_{w_0}(x_1) \land \text{rancher}_w(x_1) \right) \text{things–are–different}_w$

But on a presuppositional level, $\approx C_{(1)}$ requires that x_1 be a senator in w_0:

(83) $C_{(1)} \leadsto J(x_1)$

$$J(x_1) \subseteq \left\{ p\colon \exists \pi \left(p = \lambda w \left[\llbracket [a\ senator_{w_0}]_1 \rrbracket \cdot \pi_w \right] \right) \right\}$$

$$\Leftrightarrow J(x_1) \subseteq \left\{ p\colon \exists \pi \left(p = \lambda w \left[\text{senator}_{w_0}(x_1) \land \pi_w(x_1) \right] \right) \right\}$$

$$\Leftrightarrow \text{senator}_{w_0}(x_1) \land J(x_1) \subseteq \left\{ p\colon \exists \pi \left(p = \lambda w.\pi_w(x_1) \right) \right\}$$

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Furthermore, assuming that this presupposition can be inherited at the matrix IP level of (79), and ignoring all but the descriptive part of (83) we will obtain the following complete meaning for this structure:

(84)   There is an entity x_1 such that:

$\text{senator}_{w_0}(x_1)$ Presupposition

$$\left(\text{WOULD}_w: \begin{array}{c} \text{senator}_{w_0}(x_1) \\ \wedge \; \text{rancher}_w(x_1) \end{array} \right) \text{things--are--different}_w$$ Assertion

(There is an entity x_1 such that: it is presupposed that x_1 is a senator in w_0, and it is asserted that in all worlds w where x_1 is a senator in w_0 and a rancher in w, things are different in w).

According to (84), A's assertion in (78) can only get off the ground if there is a senator in w_0 which can be made salient; so B's reply is expected to sound odd, since the lack of senators in w_0 would inhibit A's utterance from having any assertive content, and thus from being confirmed or denied.

Is this an accurate rendition of what's going on, on an intuitive level, with the dialogue in (78)? Of course, the most 'natural' way to deny a conditional statement is to deny the consequent from within a situation where the antecedent is true. So perhaps there is no 'natural' way of evaluating our intuitions for the particular situation(s) where there are no senators. However, note that Abusch would make a straightforward prediction in this case, a prediction which seems not to be borne out. The system advocated here at least avoids this result.
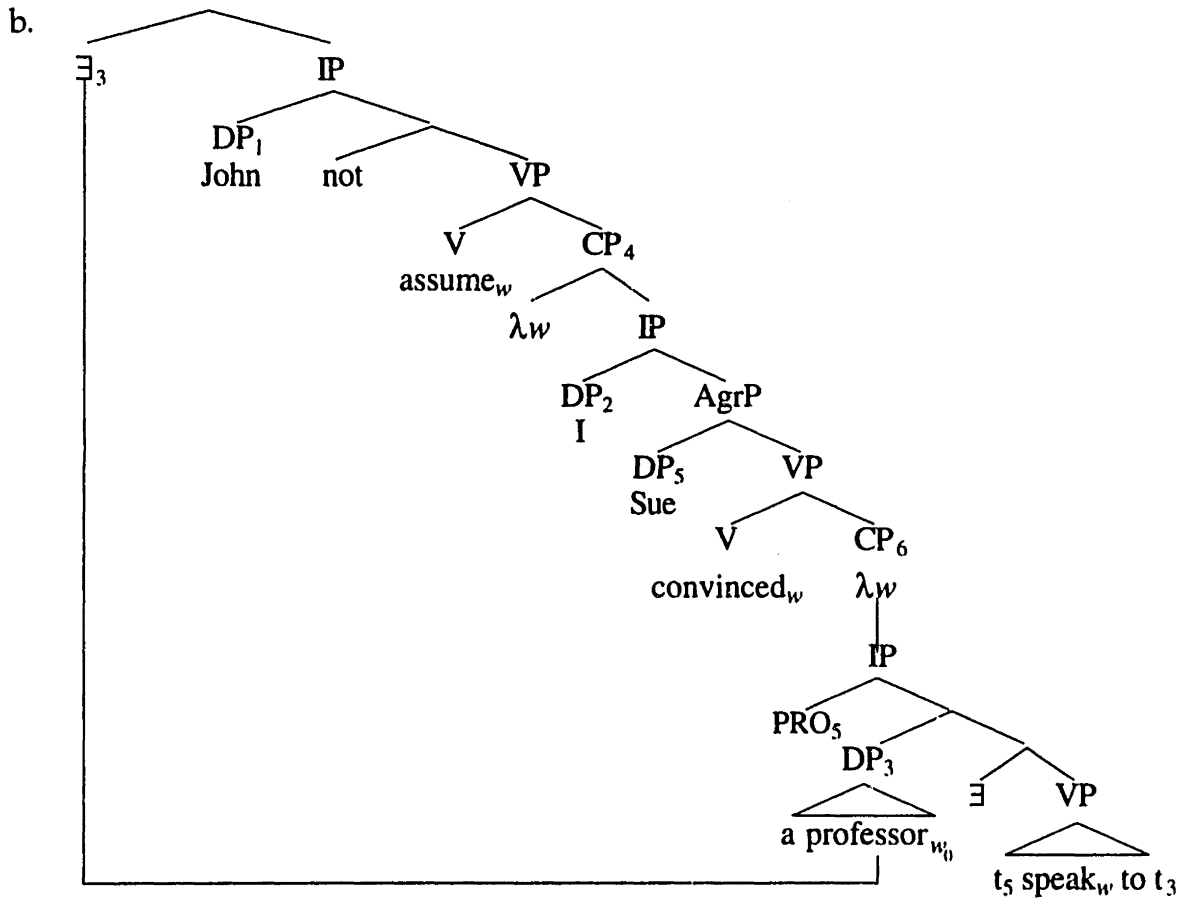
Let's consider another kind of example. As argued earlier, the exchange in (54)—repeated here as (85)—also seems odd:

(85)   A: I've heard stories that you always try to get people to do things for you. Of course, I don't believe these stories, but I'm sure John does.

            B: Oh, I don't think so. For instance, I know that John does not assume that I convinced Sue to speak to *a (certain) professor* (on my behalf). He knows I spoke to this person directly.

            A: Well, THAT's not true. In fact, neither you nor John know any professors.

Here B is bringing up one of the 'stories' that A heard, which involves a particular professor. A then tries to deny the truth of the second sentence in B's utterance on the grounds that there are no professors in the relevant context. Again, it seems to me that this denial is not appropriate. In a situation where there are no professors, A would probably dismiss B's statement as irrelevant to the issue at hand. This, again, suggests that the descriptive content of the indefinite is presuppositional.

The LF associated with the relevant part of B's utterance, repeated below as (86a), can be taken to be roughly as in (86b).

(86) a. John does not assume that I convinced Sue to speak to *a (certain)* *professor.*

b.

```
∃₃
    IP
   DP₁      VP
   John  not   V        CP₄
             assume_w
                    λw    IP
                       DP₂      AgrP
                        I
                          DP₅      VP
                          Sue
                              V        CP₆
                          convinced_w    λw
                                          IP
                                      PRO₅
                                       DP₃          ∃    VP
                                   a professor_w₀        t₅ speak_w to t₃
```

The interpretation that Abusch would assign to this structure—after her percolation of U-sets—is given in (87a); the one obtained according to my method is as in (87b).

(87) a. Abusch:

$$\exists x_3 \left[\begin{array}{c} \mathbf{prof}_{w_0}(x_3) \wedge \\ \neg\mathbf{assume}_{w_0}\left(\text{John}, \lambda w.\mathbf{convince}_w\left(\text{I}, \text{Sue}, \lambda w'.\mathbf{speak}_{w'}(\text{Sue}, x_3)\right)\right) \end{array} \right]$$

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b. DMC:

$$\exists x_3 \, \neg \text{assume}_{w_0}\left(\text{John}, \lambda w.\text{convince}_w\left(\text{I}, \text{Sue}, \lambda w'\begin{bmatrix}\text{prof}_{w_0}(x_3) \wedge \\ \text{speak}_{w'}(\text{Sue}, x_3)\end{bmatrix}\right)\right)$$

The expression in (87a) will turn out false when there exist no professors in a certain context. Thus the dialogue in (85) should be felicitous. The expression in (87b) will not have this drawback, but as it stands it is too easy to make true. On the other hand, (87b) is not assumed to convey the entire meaning of (86a). The presuppositional component of this sentence determines that the DP *a professor*—which is scrambled and hence topic-marked—will have an anaphor adjoined to it, which requires the variable indexed 3 to be a professor:

(88) a.
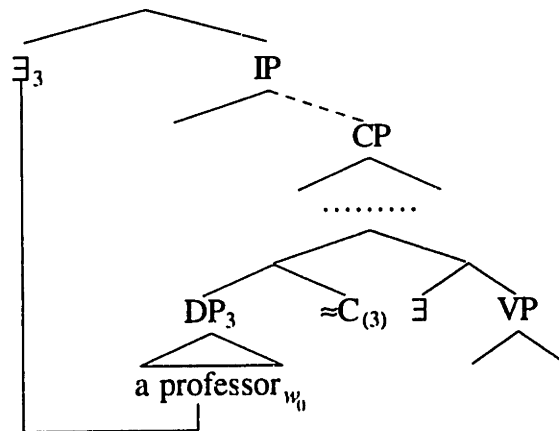
where $C_{(3)} \leadsto J(x_3)$

b. Presupposition(s): the current variable assignment satisfies

$$J(x_3) \subseteq \left\{ p: \exists \pi \, (p = \lambda w\, [\text{prof}_{w_0}(x_3) \wedge \pi_w(x_3)]) \right\}$$

$$\Leftrightarrow \text{prof}_{w_0}(x_3) \wedge J(x_3) \subseteq \left\{ p: \exists \pi \, (p = \lambda w.\pi_w(x_3)) \right\}$$

As we will see later in more detail, the presupposition associated with $J(x_3)$ is preserved at the CP_6 and CP_4 levels in (86b) (I encourage the reader to verify that

this is intuitively correct), and ends up being evaluated at the matrix IP level. From (87b) and the presupposition in (88b) inherited at the text level we derive:

(89) There is an entity x_3 such that: it is presupposed that x_3 is a professor in the utterance world ($\text{prof}_{w_0}(x_3)$), and it is asserted that John does not assume that you convinced me to speak to x_3 [and x_3 is a professor in w_0].[6]

Now I will turn to the examples with quantificational noun phrases. The challenge there was to obtain truthconditions that aren't too weak, while at the same time maintaining a conventional (i.e., nonpresuppositional) treatment of QNP's. I will show that for these cases the topic marking approach will yield truth conditions that are neither too strong nor too weak.

What we want to derive, for instance, is the fact that intuitively the sentences in (90) can be evaluated as true in a situation where I had no work to do (cf. (90a) = (19b) of the previous chapter), or where Ann didn't ask me to do any work (90b-c), but are not assigned a truthvalue if there is nobody called Ann in the domain of discourse.

(90) a. I did all the work I had to do.

b. I did all the work Ann asked me to do.

c. I did all the work (that) a friend of mine called Ann asked me to do.

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[6] I.e., it is asserted that $\neg \text{assume}_{w_0}\left(\text{John}, \lambda w.\text{convince}_w\left(\text{I}, \text{Sue}, \lambda w'\left[\begin{array}{c}\text{prof}_{w_0}(a) \wedge \\ \text{speak}_{w'}(\text{Sue}, a)\end{array}\right]\right)\right)$.

For the first two sentences there isn't much to say. The relevant interpretations are roughly as in (91).[7]

(91) a. $\left(\forall z\colon \mathbf{work}(z) \wedge \mathbf{had\text{-}to\text{-}do}(\mathbf{I}, z)\right) \mathbf{did}(\mathbf{I}, z)$

b. $\left(\forall z\colon \mathbf{work}(z) \wedge \mathbf{asked\text{-}to\text{-}do}(\mathbf{Ann}, \mathbf{me}, z)\right) \mathbf{did}(\mathbf{I}, z)$

At this point we are not assuming a presuppositional analysis of quantifier restrictions. All we need is a general compositional principle to the effect that if any node in a tree lacks a truthvalue,[8] then every node dominating it will also lack a truthvalue. This principle must override any other composition rule. So, for instance, the definition of the truthconditions for *all /every* will not require an extra clause which stipulates that the restriction of this quantifier must be - non-empty—cf. (11) at the beginning of this Chapter:

(92)   For any variable assignment g:

$$\left[\begin{array}{c} \overbrace{} \\ all_x\ \ \Phi\ \ \ \Psi \end{array} \right]^{g} = 1 \text{ iff } \text{ for all } x\text{-alternatives } g' \text{ of } g \ \ \text{s.th.} \ \ [\![\Phi]\!]^{g'}=1,$$

$$[\![\Psi]\!]^{g'}=1;$$

$$= 0 \quad \text{otherwise.}$$

Thus in (91a) and (91b), if there is no z which satisfies $\mathbf{had\text{-}to\text{-}do}(\mathbf{I}, z)$ or $\mathbf{asked\text{-}to\text{-}do}(\mathbf{Ann}, \mathbf{me}, z)$ (resp.), the expressions will be evaluated as (trivially)

---

[7] For simplicity I am ignoring the import of the definite determiner in these sentences. Furthermore, I am treating the noun *work* as a count noun, roughly meaning 'task'. The reader can easily verify, with the aid of the apparatus in Chapter 1, that the results obtained in this section are not affected by this choice. It is also inconsequential for my present purposes that I treat *have-to-do* and *ask-to-do* as unanalyzed predicates.

[8] We can say that a node receives a truthvalue if its presuppositions are fulfilled; i.e., for any node α, which translates as α' and is associated with presupposition(s) p_{α}, α' has a truthvalue only if $p_{\alpha}=1$. I assume that a node which does not itself contribute (or inherit) any presuppositions is associated with a 'tautological' presupposition.

true. This seems appropriate enough. If, however, **Ann** in (91b) fails to denote (an individual), we may assume that the expression **asked–to–do(Ann, me, z)** simply cannot be evaluated, hence (91b) would lack a truthvalue.

The interesting case, now, is (90c). We want the constituent *a friend of mine called Ann* to be associated with text level existential closure. Since this DP is already in the subject position of its clause, we just need to raise the universally quantified DP outside of its VP, an assumption which is usually made independently of our present concerns. We obtain the structure in (93a), with the presuppositional content (93b) and the assertive content (93c).

(93) a.

where $C_{(3)} \sim> J(x_3)$
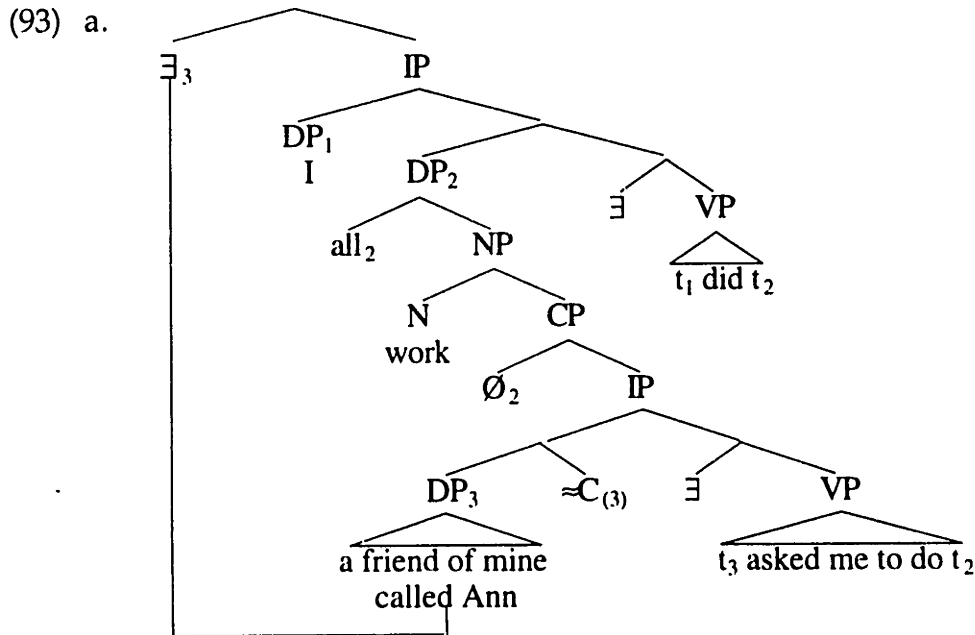
b. Presupposition(s): the current variable assignment satisfies:

$$\textbf{f.o.m}(x_3) \wedge \textbf{call .Ann}(x_3) \wedge J(x_3) \subseteq \left\{ p: \exists \pi \left(p = \lambda w.\pi_w(x_3) \right) \right\}$$

c. $\exists x_3 \left(\forall x_2: \begin{array}{l} \textbf{work}(x_2) \wedge [\textbf{f.o.m.}(x_3) \wedge \textbf{call .Ann}(x_3)] \\ \wedge \textbf{asked–to–do}(x_3, \textbf{me}, x_2) \end{array} \right) \textbf{did}(\textbf{I}, x_2)$

The indefinite DP$_3$ is outside of the scope of all ∃-operators except the text level one. In particular, it is outside of its VP; thus, by hypothesis, it is topic marked. The topic anaphor is adjoined to DP$_3$, hence the presupposition that x_3 is a friend of mine called Ann. Again, we assume without discussion that the presupposition associated with $J(x_3)$ is inherited at the matrix IP level. So we end up with a complete interpretation for (90c) along the lines of (94).[9]

(94)   There is an entity x_3 such that: it is presupposed that x_3 is a friend of mine (**f.o.m**(x_3) ∧ **call.Ann**(x_3)), and it is asserted that I did all the work that x_3 told me to do [and x_3 is a friend of mine called Ann].

Since the descriptive part '**f.o.m**(x_3) ∧ **call.Ann**(x_3)' is not only asserted but presupposed, it cannot be evaluated as false—or (93c)::(94) will lack a truthvalue. However, if for instance there is no y such that 'y is work that x_3 asked me to do,' (94) will be evaluated as trivially true (cf. the definition of *all / every* in (92)), which is the result we want.

However, an LRQ approach of the kind that Abusch advocates would make the excessively strong prediction that (90c) should be true in a situation where there is no work that Ann asked me to do, but false in a situation where I have no friend called Ann, since the translation assigned to (90c) would be an existential statement of the form in (95).

(95) $\exists x_3 \left[\begin{array}{c} \textbf{f.o.m.}(x_3) \wedge \textbf{call.Ann}(x_3) \wedge \\ \left(\forall x_2 \colon \textbf{work}(x_2) \wedge \textbf{asked-to-do}(x_3, \textbf{me}, x_2) \right) \textbf{did}(\textbf{I}, x_2) \end{array} \right]$

---

[9] I am assuming that this example is completely extensional, so everything is (understood to be) evaluated in the utterance world.

An even more interesting example where a presuppositional treatment of QNP's would not work was (27a) above, which is repeated below as (96).

(96)   Nobody believes that I have seen *a certain Buñuel movie*.

The problem here was that an expression of the form $\lfloor no\ X_{RC}\ X_{NS}\rfloor$ can only be evaluated as true when the intersection of X_{RC} and X_{NS} is empty:

(97) $[\![no]\!] = \left\{ \langle X_{RC}, X_{NS}\rangle \in \wp(E)\times\wp(E) \mid X_{RC} \cap X_{NS} = \varnothing \right\}$

If we were to treat *no* as presuppositional, we would add a clause that requires X_{RC} to be nonempty: certainly we cannot require X_{NS} to be nonempty, for the reasons mentioned earlier. But in (96) the indefinite DP is in the X_{NS} constituent, so we have no way of guaranteeing appropriate truthconditions for this sentence under a presuppositional treatment of QNP's.

Fortunately, our topic marking mechanism allows us to eschew this problem entirely. Let's assume that (96) has an LF as in (98a), where the topic marker $\approx C_{(3)}$ induces the presupposition in (98b), and otherwise the assertive content of (96) is simply as in (98c):

(98) a.

where $C_{(3)} \rightsquigarrow J(x_3)$
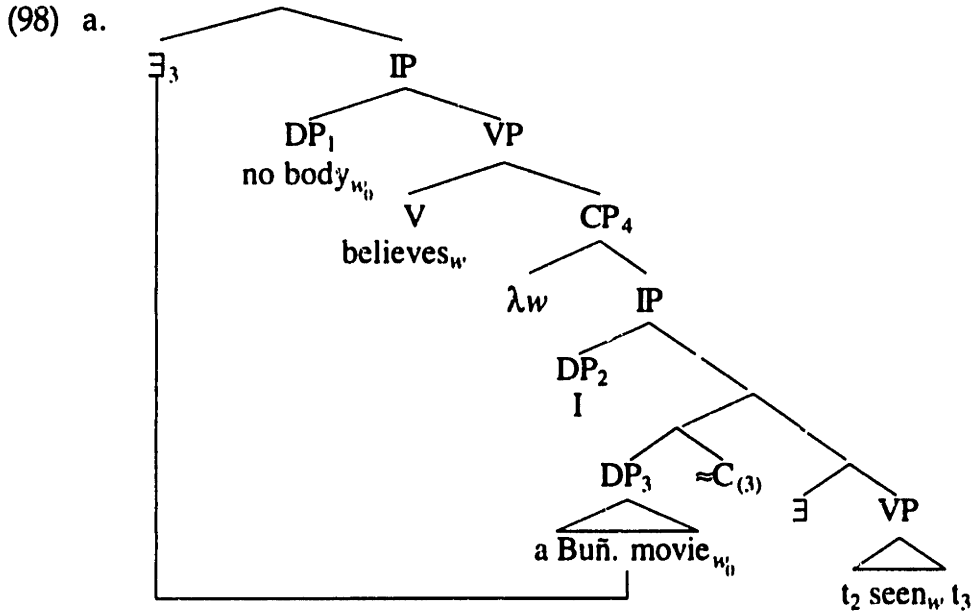
b. Presupposition(s): the current variable assignment satisfies:

$$\textbf{Buñuel-movie}_{w_0}(x_3) \wedge J(x_3) \subseteq \left\{ p : \exists \pi \left(p = \lambda w.\pi_w(x_3) \right) \right\}$$

c. $\exists x_3 \left(\text{NO} x_1 : \textbf{person}_{w_0}(x_1) \right) \textbf{believe}_{w_0} \left(x_1, \lambda w \left[\begin{array}{c} \textbf{Buñuel-movie}_{w_0}(x_3) \\ \wedge \textbf{seen}_w(\textbf{I}, x_3) \end{array} \right] \right)$

The presuppositions in (98b) are projected up beyond CP_4 and the VP headed by *believe*, and over the QNP *nobody*. Thus (98b) is evaluated as a sister of $\exists_3$. So the 'complete' interpretation of (96) is as in (99).

(99) There is an entity x_3 such that: it is presupposed that x_3 is a Buñuel movie in the utterance world ($\textbf{Buñuel-movie}_{w_0}(x_3)$), and it is asserted that nobody believes that I have seen x_3 [and x_3 is a Buñuel movie in w_0].

If we check this result against the relational definition of *no* in (97), we see that the truthconditions of (99) are still appropriate. (99) essentially corresponds to

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(98c) restricted to values of x that make $\textbf{Buñuel-movie}_{w_0}(x_3)$ true. This means that the intersection of the set of people with the set of entities x_1 of which $\textbf{believe}_{w_0}\big(x_1, \lambda w.\textbf{seen}_w(\textbf{I}, x_3)\big)$ is true—i.e., the set of entities who believe that I've seen a particular Buñuel movie—is empty. In other words, the set of people who believe I've seen that movie is empty.

To reiterate the point made for the other examples, Abusch's theory would predict that an utterance of (96) could be appropriately denied by saying that there exist no movies by Buñuel, since in her system (96) would presumably receive a translation as in (100).

$$
(100) \qquad \exists x_3 \left[\begin{array}{c} \textbf{Buñuel-movie}_{w_0}(x_3) \wedge \\ \big(\textsc{no}x_1\colon \textbf{person}_{w_0}(x_1)\big)\, \textbf{believe}_{w_0}\big(x_1, \lambda w.\textbf{seen}_w(\textbf{I}, x_3)\big) \end{array} \right]
$$

In our current system, an appropriate denial of (96) could only be some statement to the effect that the set of people who believe that I've seen this particular Buñuel movie is not in fact empty, but contains, say, Martha.

Having said this much, we need to turn to the question of how presuppositions are projected, where they are blocked, and whether topic anaphors can be shown to behave like presuppositions in general. This will be the topic of the next chapter.

CHAPTER 4

PRESUPPOSITION PROJECTION AND TOPICALITY

1. Introduction

The system outlined so far promises to achieve optimal interpretations for sentences involving indefinites, by means of a Heim-inspired treatment of these DP's combined with von Fintel's topic marking mechanism (which is correlated with scrambling, either at s-structure/spellout or at LF). Topic marking on an indefinite is assumed to generate the presupposition that the descriptive content of the indefinite is satisfied by the variable assignment that is 'current' at any given node; furthermore, this presupposition is claimed to be projected up to the appropriate node (e.g., the text level for 'specific' indefinites) by mechanisms that regulate the inheritance of presuppositions in general.

If this latter claim is correct, then the existential closure/topic marking approach advocated here can be considered a substantial improvement over an LRQ account, on the grounds that: (a) the LRQ analysis must either stipulate that indefinites are immune to the well known constraints on QR, or posit an additional mechanism (with respect to QR and existential closure) to achieve the attested scope configurations (cf., for instance, Abusch's percolation mechanism); and (b) the LRQ analysis predicts truthconditions that are too strong, as argued in the previous chapter.

Although point (b) might be subject to dispute, point (a) is a plain matter of fact. If we can account for the same range of data without adding extra stipulations or grammatical operations to our model, general methodological and

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learnability considerations will compel us to prefer the more streamlined model. The question, then, is whether the claim that presuppositions associated with topics are projected exactly in the same way as any other presupposition—which amounts to saying that there are no special rules to be added to our current model—can be shown to be correct. The purpose of this chapter is to show that this is indeed the case.

2. Cancelability and Other Anti-Presuppositional Effects

The task we have on our hands is not as simple as it might seem at first. The existing literature on presupposition projection has hardly produced a uniform terminology (see below), let alone answered the question of whether certain kinds of inferences can or cannot survive in a given environment.

We must be aware that even some prototypical kinds of presuppositions can be canceled in the appropriate environment. Consider, for instance, the case of factives, like *regret*, and definite descriptions. Sentence (1a) is generally assumed to presuppose (1b), and sentence (2a) is usually taken to presuppose (2b):

(1) a.   John regrets failing.
    b.   John failed.

(2) a.   The king of France stole my wallet.
    b.   There is a (unique) king of France.

However, as argued, e.g., by Gazdar (1979), these presuppositions can be canceled in cases like the following:[1]

(3)   John doesn't regret failing, because, in fact, he passed.

(4)   Since he doesn't exist, it really isn't possible for the king of France to have stolen your wallet.

As pointed out by Gazdar, sentence (3) clearly does not presuppose (1b), and similarly sentence (4) doesn't presuppose (2b). I will not have much to say about cases like these, except for the following. It seems to me that sentences like (3) and (4) involve some very particular focus patterns. We have seen earlier that focused constituents are in general nonpresuppositional; and in fact, it might be the case that some kinds of focus (perhaps what is called 'contrastive focus') could somehow have an 'anti-presuppositional' effect. Of course, this latter consideration is very speculative and shouldn't be taken as anything more than a hunch. Nevertheless, I think that intuitively sentence (3) has a peculiar quality, that I can best explain as follows: this sentence seems to be understood as involving some kind of 'quotation' of a previously uttered sentence. An example of this could be the exchange in (5) below, where the constituent in quotes is, in some sense, brought into focus:

(5)   A: John really regrets failing!

        B: What are you talking about?! John doesn't «regret failing», because, in fact, he passed!

---

[1] Sentence (3) is taken verbatim from Gazdar; sentence (4) is a modification of another of his examples (see Gazdar 1979, p. 110).

If this observation is correct, what is being denied is somehow the whole quoted proposition *(John) regrets failing*—including whatever presuppositions it may have.[2]

Sentence (4) is somewhat more complex. As already mentioned in footnote 6 of the previous chapter, definite DP's may not be uniformly presuppositional in the first place. Of course, focus articulation may also play a role here, but it is not entirely clear how this occurs. Another factor that seems to influence the presuppositions generated by definite descriptions seems to be the kind of predicate they combine with. Compare (2a) and (4) with the examples in (6).

(6)   a.   The king of France is very old.

       b.   Since he doesn't exist, it really isn't possible for the king of France to be very old.

Sentence (6a) presupposes (2b) just as much as (2a) does. But, unlike (4), sentence (6b) seems a bit odd. We may agree that a predicate like *old* cannot be applied to nonexistent entities; but (6b) seems to suggest that if something like the king of France does exist (in the actual world), then it must be young. I will not dwell on what's going on in these cases, though see Percus (???). It is worthwhile to note, however, that if the presuppositions generated by a definite description can be canceled in environments such as (4), we might expect that the presuppositions generated by topic marked indefinites are also susceptible to these kinds of phenomena. One such case might be that of the exchange in (77) of the previous chapter, repeated here as (7).

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[2] This, I believe, is the essence of what some authors have referred to as 'external negation'. See Rooth (1994) for an interesting perspective on this.

(7)   A: What happened?

        B: Bill didn't see a rock that was sitting in the middle of the road, and
           hit it.

        C: That can't be true! There were no rocks (sitting in the middle of the
           road!.

Compare the discourse in (7) with a similar exchange involving a definite DP:

(8)   A: What happened?

        B: Bill didn't see the little Buddha in the lower righthand corner of
           Leonardo's *Last Supper*, and now he's very disappointed.

        C: That can't be true! There is no Buddha in the lower righthand
           corner of Leonardo's *Last Supper*!

It seems to me that (8) is just as acceptable as (7). On the other hand, compare our
example (90c) from the previous chapter—repeated below as (9a)—with a
parallel case involving a definite DP:

(9) a.   I did all the work (that) a friend of mine called Ann asked me to do.

     b.   I did all the work (that) my friend Ann asked me to do.

In both cases, a reply such as (10) seems equally inappropriate.

(10)   That's false! You don't have any friends called Ann.

These latter examples seem to indicate that topic marked indefinites are not significantly different from definites, as far as concerns the 'strength' of the presuppositions they generate.

In general, it appears that the defeasibility of presuppositions is a rather complex and heterogeneous phenomenon. I will not be able to deal with these facts in a satisfactory manner in this dissertation. But I think that, in any case, we should be able to control for these cases so that the example sentences which contain indefinite topics are of the kind that has a uniform effect on other presuppositions. In what follows, I will show that the presuppositions associated with indefinite topics do not behave differently from typical presuppositional expressions.

3. Presupposition Projection: the Data

Let's consider the various cases that were claimed to allow inheritance of the presuppositions associated with an indefinite topic. Since, by hypothesis, these presuppositions are akin to those generated by definite descriptions, factive predicates, and lexical items like *stop* (or *quit*), *yet*, *too*, we should expect that wherever these better known kinds of presuppositions are inherited, a topic anaphor is inherited as well.

3.1. Object of a Transitive Verb

The first case we consider is whether the presuppositions generated by an object DP are in general affected by its predicate. If we look at the case of definite DP's, we see that their presuppositions appear to be inherited at the sentence level:

(11) a. Yesterday I washed my car.

   b. The speaker has a car.

The definite *my car* generates the presupposition in (11b). Clearly (11a) also presupposes (11b). Thus we could say that the presuppositions associated with object DP's are not affected by their verb.

However, once we assume that object DP's can scramble we might expect their presuppositions to be unaffected anyway by the verb, since the presuppositions themselves are generated outside VP. Perhaps a more meaningful question would be whether any presuppositions associated with VP-internal DP's can get out of VP. I'm afraid I won't be able to do justice to this question. But let me simply observe that, under the assumption that a DP in an existential construction is blocked inside VP, we might be lead to conclude (along with Diesing and many other authors) that VP-internal DP's cannot be presuppositional—cf. (12a); and furthermore, that presuppositional DP's cannot remain inside VP—cf. (12b).

(12) a. There is a CD on the floor.

   b. * There is my favorite CD on the floor.

So perhaps the question of whether the presuppositions associated with an object DP can 'get out' of VP does not really make sense.

In any case, since an indefinite object may or may not be topic marked, it should give rise to an ambiguity. According to our model, this ambiguity ought to correlate with the presuppositional/outside VP vs. nonpresuppositional/ /inside VP status of the indefinite. Now, if we consider a sentence like (13) below, we might be somewhat skeptical about the claim that it is ambiguous:

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(13)   Yesterday I found a pen.

Yet a good number of authors have argued that, at the very least, there are two different uses of a sentence like (13). For instance, Higginbotham (1994) argues that:

> [T]here is a distinction between
>
>> The speaker represents himself as believing that
>>
>> [e.g.: $\exists x [pen(x) \wedge found(I, x)]$]
>
> and
>
>> The speaker represents himself as believing that
>>
>> [e.g.: $pen(\alpha) \wedge found(I, \alpha)$]
>
> for some sense α put for x. [pp. 18-19]

This distinction allows Higginbotham to account for the possibility of an ambiguity in sentences like (13) that is not, according to the author, truth-conditional. In our system, these perceived 'intentions of the speaker' could be thought of as being encoded in the topic marking mechanism. However, our mechanism does predict a truthconditional difference between the two (potential) readings of (13). Aside from the arguments in favor of this prediction made in Chapter 3, there is another general scenario where this truthconditional difference shows up. Consider the following exchange:

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(14)   A: Do you (happen to) have a blue pen?

        B: Sure. In fact, I have a whole bunch over here.

        A: No, I mean a particular blue pen; the one that is usually sitting in the living room.

        B: Oh! No, I'm afraid I don't have it.

The dialogue in (14) is a case of speaker B's misunderstanding A's initial inquiry, due to the fact that A's question is ambiguous (at least in English). Although A intended the referent of the object DP to be topical, B understood it as being non-topical. Thus, B's initial reply, basically "Yes, I have a blue pen" is later amended to "No, I don't have a (particular) blue pen". Since B's situation with respect to having this particular pen (namely, he doesn't have it—though he does have other blue pens) does not change during the conversation, we must conclude that an utterance of *I have a blue pen* on the part of B is true under one reading but false under the other reading.

3.2. Negation

The question of whether presuppositions can survive negation is somewhat circular. This is especially true if we use a Strawsonian notion of presupposition, viz.:

(15) α presupposes p_α iff   the truth of p_α is a prerequisite for the truth or falsity of α .

Thus, by definition, if α presupposes p_α then $\neg\alpha$ also does.[3] To test the adequacy of (15), we simply need to check triplets of the form $[\alpha, \neg\alpha, p_\alpha]$, and make the inverse deductions from the ones Hausser made, as discussed in Chapter 3. In other words, if we know α and p_α, and we find that $p_\alpha = p_{\neg\alpha}$, then we can conclude that negation is 'transparent' with respect to p_α. What we find is that, at least in 'simple' cases like those below, the presuppositions involved are unaffected by negation.

(16) a.   Jeanie regrets having visited Katmandu.

b.   Jeanie does not regret having visited Katmandu.

c.   Jeanie visited Katmandu.

(17) a.   George has quit smoking.

b.   George hasn't quit smoking.

c.   George has smoked in the past.

In all these examples, the (a) sentences represent α, the (b) sentences $\neg\alpha$, and the (c) sentences p_α. Examples (16) and (17) illustrate the behavior of presuppositions associated with *regret* and *quit*. Examples (18) and (19) illustrated the behavior of presuppositions associated with definite DP's:

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[3] (15) can be schematized in Kleene's three-valued logic, as given in (i). Note that when p_α is false, α is neither true nor false.

(i)

α	p_α
1	1
0	1
#	0

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(18) a. Sue came to the party that I had organized in her honor.

 b. Sue didn't come to the party that I had organized in her honor.

 c. There was a party that I organized in Sue's honor.

(19) a. Al saw the movie that I had recommended to him.

 b. Al didn't see the movie that I had recommended to him.

 c. There is a movie that I recommended to Al.

In all the cases above, the (c) sentences are assumed to be true given the truth of either the corresponding (a) sentence or the corresponding (b) sentence. Now, compare the triplet in (18) to that in (20), and the triplet in (19) to the one in (21):

(20) a. Sue came to a party that I had organized in her honor.

 b. Sue didn't come to a party that I had organized in her honor.

 c. There was a party that I organized in Sue's honor.

(21) a. Al saw a movie that I had recommended to him.

 b. Al didn't see a movie that I had recommended to him.

 c. There is a movie that I recommended to Al.

The inferences that can be drawn from the triplets in (20)-(21), under a topical reading of the indefinites involved, are exactly parallel to those in (18)-(19). Insofar as the (a) sentences in (20)-(21) are felt to presuppose the corresponding (c) sentences, their negations are felt to yield the same presuppositions. Thus we could conclude (i) that negation is transparent to presupposition projection, and (ii) that topic anaphors associated with indefinite DP's behave like any other presupposition with respect to negation.

Some authors, however, have argued that negation cannot be treated as uniformly transparent to presupposition projection, on the basis of examples like (3) and (4) above. Recall that in these cases the presuppositions associated with *regret* and the definite DP are explicitly denied by means of a particular use of negation. Authors such as Karttunen and Peters (1979—henceforth K&P) have proposed that there are two kinds of negation: one 'internal', which is essentially the kind of negation relevant in (15), and one 'external', which is the kind involved in sentences like (3) and (4).

This idea has been criticized, particularly on conceptual grounds, by authors such as Gazdar (1979). Furthermore, a good number of facts that have been used as evidence for the need of these two types of negation have recently been analyzed, quite satisfactorily, as scope phenomena, thus leaving us with a dwindling body of data that would require an ambiguity based account of negation. With respect to cases like (3) and (4), we have already observed that these 'external negation' effects might be due to particular focus patterns. So hopefully these kinds of environments shouldn't worry us too much.

Perhaps more important to note is the fact that all of the examples in (16) through (21) could be analyzed as involving scrambling of the constituent that generates (or is associated with)[4] the presupposition over the negation. In such case, we haven't shown that negation is transparent to presupposition projection, since the presuppositions are external to the scope of negation at LF. Since we have seen that scrambling in German generally bypasses negation, this observation is of crucial importance. What we need to do, then, is to find examples where a presuppositional constituent is embedded far enough under

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[4] This argument might be harder to make for (16) and (17), since the presuppositions involved are controlled by the verbs (*regret* and *quit*, resp.). I will not dwell on this issue here.

negation that even after scrambling it is still within the scope of this operator. One such case was our professor example from Chapter 3:

(22)   John does not assume that I convinced Sue to speak to *a (certain) professor*.

This example presupposes the existence of a particular professor. This presupposition was claimed to be generated within the most embedded clause (since scrambling of the indefinite is clause-bound) and to then bypass the various CP nodes, and finally the matrix negation, and finally surface at the text level. Is this a property of other presuppositions? Let's consider again the case of a definite DP:

(23) a.   John does not assume that I convinced Sue to speak to *my Math professor*.

   b.   There exists an individual who is the speaker's Math professor.

Intuitively, (23a) presupposes (23b). No significant difference seems to obtain, in this respect, between (23a) and (22). Another example is taken from Gazdar (1979):

(24) a.   The repairman didn't tell me that my camera was suitable for color too.

   b.   Speaker has a camera.

   c.   Speaker's camera is suitable for something other than color.

Here, as well, the presupposition associated with the definite *my camera*—cf. (24b)—is unaffected by the matrix negation. Furthermore, there is a

presupposition associated with *too* (under one reading of (24a)), as expressed in (24c). This kind of presupposition is also immune to the effects of negation in the matrix clause.

Of course, there are other components of these latter sentences that are bypassed by these presuppositions—most notably the non-factive verbs *assume* in (22)-(23a) and *tell* in (24a). Since there has been some dispute in the literature as to whether verbs like these are transparent, opaque, or semi-opaque[5] to presupposition projection, I will devote the next subsection to a more detailed discussion of these and other CP-embedding verbs.

3.3. *Assume, Believe, Convince*

The question of which CP-embedding verbs let through the presuppositions we're interested in is by no means trivial. What we need to do here is keep in mind exactly what we mean by 'presupposition'. K&P, who have made explicit claims about these verbs, prefer to not use the term 'presupposition' at all. Following Grice (1975), they argue that we should distinguish between varieties of implicatures, notably 'conversational' implicatures vs. 'conventional' implicatures. The former are highly dependent on the context of utterance, while the latter are considered to be, in essence, part of the lexical properties of certain words or grammatical constructions. Accordingly, conversational implicatures are easily cancelable, while conventional implicatures are not. K&P discuss examples such as those in (25) and (26) below to illustrate this point:

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[5] Or, using terminology from Karttunen (1974), wether they are 'holes', 'plugs', or 'filters'.

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(25) a.   John criticized Harry for writing the letter.

b.   Harry is responsible for writing the letter.

c.   John criticized Harry for writing the letter. Since the letter was actually written by Mary, it was quite unfair of John.

The verb *criticize* seems to facilitate an inference from sentence (25a) to (25b). But clearly, K&P argue, it cannot presuppose (25b), because in a fragment of discourse like (25c) it does not license this same inference. Thus the relation between (25a) and (25b) must be one of conversational implicature. By contrast, the inference from (26a) to (26b) below is argued to be an instance of a conventional implicature, triggered by the presence of *even* in (26a). This can be seen by the fact that the sentence in (26c)—which might be expected to destroy the inference (26b)—is perceived to underlie a contradiction:

(26) a.   Even Bill likes Mary.

b.   Other people besides Bill like Mary.

c.   Even Bill likes Mary but no one else does.

The property of (non)cancelability is then taken as a discriminating factor in their model. Essentially, whatever is correlated with the presence or the inheritance of conventional implicatures is encoded directly in the grammar, whereas anything connected with conversational implicature is left to be taken care of by principles of cooperative conversation and the like.

Given these assumptions, K&P opt to treat a good number of CP embedding verbs as opaque or semi-opaque with respect to presupposition projection. For instance, verbs like *believe, hope, suspect* are treated as items that allow conventional implicatures to be filtered up in a much weakened form; and verbs

like *say*, *claim*, *tell* are treated as killing these implicatures alltogether. Their argument goes as follows. Consider the cleft construction in (27a):

(27) a.   It wasn't Bill who tapped Mary's phone.

b.   Someone tapped Mary's phone.

The inference from (27a) to (27b) is considered a standard example of a conventional implicature. Now, what happens to this implicature when the clefted clause is embedded? Three cases are presented:

(28) a.   John forgot that it wasn't Bill who tapped Mary's phone.

b.   John hoped that it wasn't Bill who tapped Mary's phone.

c.   John told Sue that it wasn't Bill who tapped Mary's phone.

In the case of (28a) the inference (27b) is inherited at the matrix level. This is not surprising, given that *forget* is a factive predicate. But in the other two cases, K&P claim, (27b) is blocked; or, more precisely, it can only survive as a conversational implicature. This claim is motivated by the fact that the implicature (27b) is "clearly cancelable in connection with [28b] and [28c] [p. 20, fn. 8]". This difference in cancelability can be illustrated by the following:

(29)   John mistakenly believed that Mary's phone was tapped, and ...

a. # ... he forgot that it wasn't Bill who tapped it.

b.   ... he hoped that it wasn't Bill who tapped it.

c.   ... he told Sue that it wasn't Bill who tapped it.

Since (29b) and (29c) in this context do not presuppose (27b), their CP embedding verbs cannot be treated as transparent with respect to conventional implicatures. In particular, verbs like *tell* are treated in K&P's model as blocking all inferences (hence the name 'plug' for these verbs).

This argument is criticized by Gazdar (1979), who points out that, for instance, K&P's classification will not adequately account for the properties of verbs like *realize* or *discover*. These verbs seem to pattern with *forget* or *regret* in cases such as (30), but they diverge from these predicates in other cases.

(30) a. Louis didn't realize that Boris was after him.

   b. If Arthur discovers that I mangled his car, then I shall be ruined.

   c. # John mistakenly believed that Mary's phone was tapped, and he realized/discovered that it wasn't Bill who tapped it.

The patterns above seem to indicate that realize and discover are factive and should be treated as 'holes'. But in the following cases, these verbs clearly do not sustain the inference in (31d) at the matrix level. This contrasts with the behavior of *regret* in (31c), where the inference goes through:[6]

(31) a. If I realize later that I have not told the truth, then I will confess it to everyone.

   b. If I discover later that I have not told the truth, then I will confess it to everyone.

   c. If I regret later that I have not told the truth, then I will confess it to everyone.

   d. I have not told the truth.

---

[6] The antecedent of a conditional is classified as a 'hole' by K&P. See § 3.4 for further discussion.

These facts suggest that the criterion of cancelability by itself is too coarse grained to capture between lexical (i.e., 'conventional') and conversational implicatures. If cancelability is what guides us in deciding whether to encode presuppositional content in the semantics, we are left with a model that does not have much to say about our intuitions with regard to what sentences presuppose. Furthermore, as Gazdar points out, it is not clear how something which is classified as a conventional implicature in (27a) can be 'transformed' into a conversational implicature when (27a) is embedded, as for instance in (28c). It might be more insightful to simply admit that what K&P call 'conventional implicatures' are context dependent after all. In fact, it seems difficult to understand why a more impoverished context, as in (28c), would give rise to a conversational implicature, while a richer one, as in (29c), would bring out the 'true nature' of (a verb that cancels) conventional implicatures. Consider another (slightly modified) example from Gazdar:

(32) a.   Harry claims that even Fred likes your car.

b.   Addressee has a car.

c.   Fred is the least likely person to like addressee's car.

In K&P's system, (32a) conventionally implicates neither (32b) nor (32c). Thus our intuitions about this sentence have to be explained by some special pragmatic theory of some kind. But why this extra burden, just to explain an inferential pattern that would seem rather simple? The fact of the matter is that (32a), in its most out-of-context reading, presupposes both (32b) and (32c)—which were argued to be exactly the conventional implicatures associated with the lexical meanings of definite DP's and of the word *even*. How does the verb

claim, all by itself, first cancel these presuppositions and then 'regenerate' them by some extragrammatical mechanism? I agree with Gazdar, here, that it seems preferable to have a semantics which generates the above presuppositions and treats cancelability as a 'special' phenomenon.

Of course, this argument holds for earlier examples as well. In the same unmarked context, sentence (24a) above is naturally understood as presupposing (24b) and (24c); and similarly (23a) seems to straightforwardly presuppose (23b).

In view of our present concerns, I will then assume that verbs like *tell, claim, assume* do let through presuppositional material. In particular, they allow the inheritance of presuppositions associated with definite descriptions; and where this is the case, we also find that the presuppositions associated with a topic marked indefinite behave like those of a definite DP:

(33) a. Suzie did not say/claim/assume that I could calculate the square root of π in my head.

b. Sophia did not say/claim/assume that I could calculate a particularly complex square root in my head.

(34) a. George says/claims/assumes that Francesca trusts his friend Pat more than she trusts him.

b. George says/claims/assumes that Francesca trusts a friend of his called Pat more than she trusts him.

The same can be said about verbs like *believe, fear, hope*:

(35) a. Marty believes/fears/hopes that I will introduce him to my best friend.

b. Marty believes/fears/hopes that I will introduce him to a certain friend of mine.

(36) a. Nobody believes that I have seen Buñuel's first movie.

b. Nobody believes that I have seen a certain Buñuel movie.

Under the most natural readings of these sentences, the DP's in question are interpreted *de re*. Given what we've said in earlier chapters, this is simply analyzed as the DP description being evaluated in the utterance world, e.g.:

(37) a. $\neg \text{say}_{w_0}\Big(\text{Suzie}, \lambda w\big[(\text{THE}x: \text{sqrt.of}.\pi_{w_0}(x))\ \text{calc}_w(\text{I}, x)\big]\Big)$

b. $\exists x \neg \text{say}_{w_0}\Big(\text{Sophia}, \lambda w\big[\text{compl.sqrt}_{w_0}(x) \wedge \text{calc}_w(\text{I}, x)\big]\Big)$

(38) a. $\text{hope}_{w_0}\Big(\text{Marty}, \lambda w\big[(\text{THE}x: \text{best.fr}_{w_0}(x, \text{me}))\ \text{introd}_w(\text{I}, \text{Marty}, x)\big]\Big)$

b. $\exists x\ \text{hope}_{w_0}\Big(\text{Marty}, \lambda w\big[\text{certn.fr}_{w_0}(x, \text{me}) \wedge \text{introd}_w(\text{I}, \text{Marty}, x)\big]\Big)$

In this system, then, the presuppositional DP does not actually move out of its CP. Its presuppositions, however, are inherited at the text level. Whatever theory regulates this inheritance, it will have to do so for any presuppositional DP—or any other presuppositional constituent, for that matter. Under such theory, the presuppositions associated with topic marked indefinites will receive no special treatment, since they do not exhibit any atypical behavior in this respect.

Before leaving this subsection, I should briefly mention that there seems to be no controversy concerning the inheritance properties of control verbs like

convince, which appears in sentence (23a) above. Aside from differences in what kinds of presuppositions are contributed by each particular control predicate, the presuppositions of its complement are generally 'passed up' even in K&P's system. With respect to indefinites, in any case, it is well known that there exist *de dicto/de re* ambiguities—cf. the famous *Mary wants to marry a Swede* examples.

3.4. Restriction of a Quantifier

In this subsection I will discuss universal quantifier restrictions of two kinds: basic 'extensional' restrictions and conditional/modal restrictions.

Recall that these were among the earliest cases we talked about. They are typical scope islands, but at the same time they are known to allow indefinites to 'scope out' of them:

(39) a.   Professor Himmel rewarded every student who read a book he had recommended.

b.   Things would be different if a senator had become a rancher instead.

These cases are perhaps the ones that our theory handles most elegantly. For instance, it is not particularly controversial that the antecedent of a conditional is transparent to presupposition projection. K&P state this point very clearly with regard to cases such as the following:

(40)   If JOHN drinks too, then the bottle is empty.

To see what implicatures are inherited, recall that [the sentence] *JOHN drinks too*, where *too* focuses on *John*, conventionally implicates that there is

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someone else who drinks besides John. Sentence [40] clearly commits the speaker to this proposition just as much as [*JOHN drinks too*] does. This is a consequence of what appears to be the general rule that a conditional sentence inherits all the conventional implicatures of its antecedent clause. [p. 35, e.a.]

Similarly, the restrictive clause of a universal quantifier like *every* is generally assumed to let presuppositions through. In K&P's system, if an expression ζ is associated with conventional implicature(s) ζ^i, then a quantificational structure of the form [(*every* ζ) ψ] will have conventional implicatures that include a statement of the form '$\exists x \zeta^i(x)$'. In general, whether or not these presuppositions are existentially quantified, there seems to be no problem projecting them out of the restriction of *every*:

(41) a. I did all the work (that) my friend Ann asked me to do.

　　 b. I did all the work (that) a friend of mine called Ann asked me to do.

　　 c. I have a friend called Ann.

(42) a. Every article relating to the issue of specific indefinites has been put in that box.

　　 b. Every article relating to an issue that I've been working on for the last two years has been put in that box.

　　 c. There is an issue: the issue of specific indefinites/the issue that I've been working on for the last two years.

If we consider the original problem introduced in Chapter 2, as described by Fodor and Sag, we arrive at the conclusion that, under our account, there is no

such problem. Scope islands are just what they are; in fact, perhaps they are merely a subcase of the clauseboundedness of QR. But presupposition projection is not QR, and the apparent 'atypical' behavior of indefinites is actually a subcase of presupposition projection. Therefore, any presuppositional indefinite that is bound at the text level is expected to exhibit exactly the behavior that Fodor and Sag observed.

3.5. Nuclear Scope of a Quantifier

The case of what happens to presuppositions that come from the nuclear scope of a quantifier is rather complex. In K&P's system, the general rule of thumb is that these kinds of presuppositions are 'filtered' through the regular semantic value of the quantifier plus its restriction. Since K&P use a nonquantificational analysis of conditionals (and other adverbial/modal constructions), their projection rules seem to diverge in the two cases of QNP's vs. QAdverbs. However, if we abstract from their general framework we can see that their rules for these operators are essentially the same:

(43) a. K&P rule for *every*:

For any α of the form $(every_x: \varphi)\ \psi$, where φ carries presuppositions p_φ and ψ carries presuppositions p_ψ, $p_\alpha = \exists x[p_\varphi \wedge \varphi] \wedge (\forall x: \varphi)\, p_\psi$

     b. K&P rule for *if*-clause:[7]

For any α of the form *if*–φ–*then*–ψ, where φ carries presuppositions p_φ and ψ carries presuppositions p_ψ, $p_\alpha = p_\varphi \wedge [\varphi \rightarrow p_\psi]$

---

[7] K&P's actual rule for *if*-clauses is slightly more complex than (43b). Cf. their (54), p. 36.

In both cases, the presuppositions associated with the 'ψ' constituent are made dependent on (the truth of) the regular semantic value of the 'φ' constituent. We can easily see that, if we assume a more current semantics where conditional sentences are analyzed as tripartite quantificational structures, rule (43b) will become equivalent to rule (43a). Let's imagine, then, that we have a generalized methodology for filtering presuppositions through quantifiers, with a rule for any kind of universal quantifier as in (44).

(44)   For any α of the form $(\forall \sigma : \varphi) \psi$, where σ is a sequence of one or more variables, and φ and ψ carry presuppositions p_φ and p_ψ, respectively,

$$p_\alpha = \exists \sigma [p_\varphi \wedge \varphi] \wedge (\forall \sigma : \varphi) p_\psi$$

Notice that if there are any variables that are part of σ above, and that are free in p_ψ, the filtering effect of the quantifier will be felt on the component of p_α that relates to p_ψ. Otherwise, p_ψ will surface unchanged (in p_α). To see that this is the case, let's consider a range of examples.

In (45) below I reproduce Hintikka's 'Englishman' example, together with a couple of comparison examples:

(45) a.   Every Englisman₁ adores [a certain woman]₂.

   b.   Every Englisman₁ adores [his₁ wife]₂.

   c.   Every Englisman₁ adores [the Queen]₂.

As observed earlier, (45a) is ambiguous. A person uttering this sentence could be intending to express a meaning similar to that in (45b), which corresponds to a functional reading of a certain woman; or (s)he could be intending to express a

meaning more similar to (45b), where the indefinite simply takes wide scope, either by QR or by text-level existential closure.

Now, the definite DP in (45b) generates a presupposition of the form he_1 *has a (unique) wife*. Clearly, since the pronoun he_1 is bound by *Every Englishman*$_1$, this presupposition does not surface unscathed at the text level. However, our K&P-style rule (44) will predict that (45a) presupposes that every Englishman has a wife. This prediction, of course, is not immune to criticism. As numerous authors have observed, it seems more intuitively correct that the presupposition he_1 *has a wife*. should somehow be 'absorbed' into the restriction of *every*, so as to yield a meaning for (45b) that is closer to 'Every Englishman <u>who has a (unique) wife</u> adores his wife.'[8] On the other hand, as argued e.g. by von Fintel (1995), once we take into consideration contextual restrictions on *every*, for a given utterance of (45b), the presupposition predicted by K&P turns out to be more palatable: in a well-behaved conversation it should be easy to accommodate into the restriction of *every* in this case that a subset of Englishmen is under consideration, and it is this subset that is expected to satisfy the presupposition in question.

Consider now (45c). Here the DP *the Queen* generates the presupposition that there is a (unique) Queen.[9] Since this presupposition contains no variables bound by the c-commanding QNP (*pace* fn. 9), rule (44) will essentially have no effect on it, and it will surface undisturbed; in other words, (45c) presupposes that there is a (unique) Queen.

Now, we can easily verify that sentence (45a) behaves exactly like (45b) under its functional reading, and exactly like (45c) under its non-functional, 'wide scope' reading. Insofar as we can infer from (45b) that every Englishman (from a contextually relevant set) has a wife, we can deduce from (45a), under its

---

[8] For recent arguments in favor of this view, see Beaver (1994), Berman (1989, 1991).
[9] Again, note that we have no difficulty accommodating the notion that the uniqueness of the Queen in this presupposition is relative to England.

functional reading, that every Englishman (from a contextually relevant set) is associated with a particular woman to whom he bears some (contextually salient) relation. Under its non-functional reading, the one similar to (45c), (45a) presupposes the existence of a particular woman—which, it is asserted, every Englishman adores.

Thus it seems that the presuppositions associated with topic marked indefinites behave like any other presupposition in this respect as well. More examples from the previous chapter are given below as further evidence for this claim:

(46)   'Unbound' **p** from NS of mon↓ QNP:

    a.   Nobody believes that I have seen Buñuel's first movie.

    b.   Nobody believes that I have seen a certain Buñuel movie.

    c.   Nobody believes that even Meg likes pasta.

    d.   Nobody was impressed with my friend Ed.

    e.   Nobody was impressed with an old friend of mine called Ed.

    f.   Nobody was impressed with Bill's regretting having failed.

(47)   'Bound' **p** from NS of mon↓ QNP:

    a.   No doctor (from Clinic X) believed the claim that her boss had been arrested.

    b.   No doctor (from Clinic X) believed the claim that a certain member of her profession had been arrested.

   c.   No doctor (from Clinic X) believed the claim that Sandra regretted taking her advice.

(48)   'Unbound' **p** from NS of universal quantifier:

a.   Everybody loved the haircut that I got last year.

b.   Everybody loved a particular haircut that I got last year.

c.   Everybody loved the idea of buying a gift even for Sally.

d.   If you can't help me carry the groceries, I'll have to ask my friend Patsy to do it.

e.   If you can't help me carry the groceries, I'll have to ask a friend of mine that I really don't want to see right now (to do it).

f.   If you can't help me carry the groceries, I'll be even more crabby than I am being now.

(49)   'Bound' **p** from NS of universal quantifier:

a.   If every Italian in this room would stop bragging about his Country's food, we would/might have a more interesting culinary discussion.

b.   If every Italian in this room could manage to watch a certain program about his Country, we would/might have an interesting discussion tomorrow.

c.   Everyone who used the bathroom between 2 and 4 pm was questioned about his actions during that time.

d.   Everyone who used the bathroom between 2 and 4 pm was questioned about a sink that he could have broken.

In all these cases, the 'unbound' presuppositions are projected at the text level, while the 'bound' ones may surface only in a modified form, depending on the meaning of the quantifier that binds them.

In what follows, I will present a sketch of a theory of presupposition projection. The purpose of this is to give an impression of how the system could be put together, given all the assumptions we have adopted so far.

4. A Maximally Simplified Model

In the previous chapter I introduced the idea that specific indefinites are topics in the sense of von Fintel (1994). According to this idea, an indefinite topic is scrambled at LF, and a topic anaphor is adjoined to it, as in (50).

(50)

$$\exists_i \quad [\text{DP} \quad [\text{DP}_i \quad \approx C_{(i)}]]$$
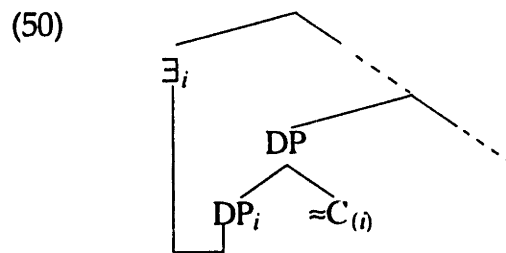
This anaphor is translated as a set of propositions, which may be a function of one or more variables; the '$\approx$' operator requires this anaphor to have a certain presuppositional content—something like 'properties associated with DP_i are under discussion'. In particular, assuming that DP_i in (50) translates as $\lambda P[\varphi(x_i) \wedge P(x_i)]$ (or even simply as $\varphi(x_i)$), and that $C_{(i)}$ translates as $\int(x_i)$, the presuppositions associated with this DP, by virtue of this topic marking mechanism, will include a statement of the following kind:

(51)   The current variable assignment satisfies

$$\varphi(x_i) \wedge \int(x_i) \subseteq \left\{ p \colon \exists \pi \, [p = \lambda w.\pi_w(x_i)] \right\}$$

More in general, I assume that a topic marked DP may have zero or more free variables in it, and that the topic anaphor associated with it may or may not find an antecedent. If the antecedent is not provided by the discourse, it will be generated by our default rule (66) of Chapter 3, in the form $J(x_i) = \left\{ p\colon \exists \pi\, [p = \lambda w.\pi_w(x_i)] \right\}$. So our notation would have to encode a dependence on any number of variables which are free within the DP (e.g., an array of the form $x_0, \ldots, x_n$ for $n \geq 0$), plus a dependence on a possible antecedent, which I assume to be expressed by an index on the functional component of the topic anaphor, J. Thus we have the following situation:

(52) a.

$$
\begin{array}{c}
\text{DP} \\
\diagup \quad \diagdown \\
\text{DP}_i \qquad \approx C_{k\,(i)}
\end{array}
$$

where $\approx C_{k\,(i)} \;\leadsto\; J_k(x_i)$

b. (52a) $\leadsto$ **DP$_i$** ;

Presupposition(s):

$$
J_k(x_i) \subseteq \left\{ p\colon \exists \pi \left(p = \lambda w [\boldsymbol{DP_i} \cdot \pi_w] \right) \right\}
$$

As we can see in (52b), which is a generalization of (51), the adjunction structure in (52a) (or in (50), for that matter) does not really affect the regular semantic value of the DP. On the other hand, since topic marking is associated with a presupposition which is generated derivationally (i.e., the DP's themselves don't 'come with' the presuppositions associated with topic marking), we can try to employ this structure to derive a 'complete' meaning (viz., a meaning which includes both assertive content and presuppositional content) for the higher DP node in (52a) by assigning an appropriate meaning to the '$\approx$' operator. But first we need to introduce a way of interpreting 'complete' meanings in a compositional manner.

Since our goal here is to show that topic anaphors behave like any typical presupposition, we may want to adopt a system which employs a more generalized notation for presuppositions of all kinds. I will use the slash-notation introduced by Belnap (1970) for this purpose. In Belnap's system, the label $\mathbf{p}_\alpha/\alpha$ is used to annotate the translation of a node XP_α that has (regular) semantic value α and carries presupposition(s) $\mathbf{p}_\alpha$. When α and $\mathbf{p}_\alpha$ are of type t, a node that translates as $\mathbf{p}_\alpha/\alpha$ (under a given variable assignment) will only be defined when $\mathbf{p}_\alpha$ is true (for that variable assignment). Thus, depending on the truth of $\mathbf{p}_\alpha$, the composite $\mathbf{p}_\alpha/\alpha$ will have whatever truthvalue α has:

(53)　　For any variable assignment g, any expressions α, $\mathbf{p}_\alpha$ of type t :

$$\llbracket \mathbf{p}_\alpha/\alpha \rrbracket^g \ = 1 \quad \text{iff} \quad \llbracket \mathbf{p}_\alpha \rrbracket^g = 1 \text{ and } \llbracket \alpha \rrbracket^g = 1;$$
$$= 0 \quad \text{iff} \quad \llbracket \mathbf{p}_\alpha \rrbracket^g = 1 \text{ and } \llbracket \alpha \rrbracket^g = 0;$$
$$\text{undefined} \quad \text{otherwise.}$$

(53), however, is not sufficient to describe the function of this '/' operator entirely—at least given the way we want to use it. Let us say that for any $\alpha = \mathbf{p}_\beta/\beta$, α, β, and $\mathbf{p}_\beta$ must all be of the same semantic type.[10] Next we add the following rule to our interpetive component:

(54)　　For any variable assignment g, any α of type τ_α, v of type τ_v:

$$\llbracket \lambda v.\alpha \rrbracket^g \text{ is the partial function } f$$
$$\text{whose domain is } \left\{ v \in D_{\tau_v} \mid \llbracket \alpha \rrbracket^{g^{v/v}} \text{ is defined} \right\},$$
$$\text{and for all } v \text{ in the domain of } f, \quad f(v) = \llbracket \alpha \rrbracket^{g^{v/v}}$$

---

[10] Thus '/' can be thought of as a function of type $\langle \tau, \langle \tau, \tau \rangle \rangle$ for any (appropriate) type τ.

With this much in mind, let's go back to our rule (52) above. This rule must be reformulated so that it yields a composite semantic value that utilizes Belnap's slash notation. As mentioned earlier, I will place the burden of this task on the '$\approx$' operator:

(55) a.

$$\text{DP} \quad \rightsquigarrow \quad J_k(x_i) \subseteq \left\{ p : \exists \pi \left(p = \lambda w [DP_i \bullet \pi_w] \right) \right\} / DP_i$$

with tree:
$$\text{DP}_i \quad \approx \quad C_{k(i)} \qquad\qquad DP_i \quad \approx \quad J_k(x_i)$$

b. $\quad \approx := \lambda \Gamma \lambda \wp \lambda P \left[\Gamma \subseteq \left\{ p : \exists \pi (p = \lambda w. \wp \bullet \pi_w) \right\} / \wp \bullet P \right]$
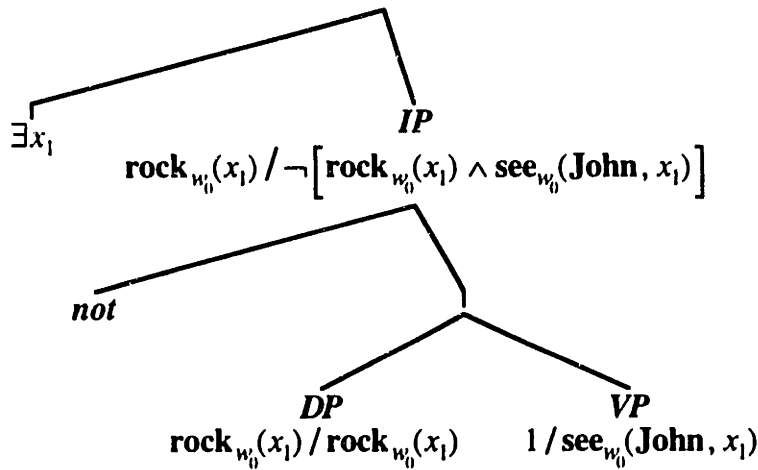
Next I propose the following interpretation rules for $\exists$ and $\forall$:

($\exists$)   For any variable assignment g (where σ is a sequence of n $\geq$ 1 vbls):

$$\left[\exists_\sigma \phi \right]^g \quad \text{is defined iff there is a } \sigma\text{-alternative } g' \text{ of } g \text{ such that}$$
$$\llbracket \phi \rrbracket^{g'} \text{ is defined;}$$

if defined, $\left[\exists_\sigma \phi \right]^g$ = 1   iff there is a g' such that $\llbracket \phi \rrbracket^{g'} = 1$;
=0   otherwise.

(∀)   For any variable assignment g (where σ is a sequence of n ≥ 1 vbls):

$$\left[\!\!\left[\begin{array}{c} \forall_\sigma \quad \phi \quad \psi \end{array} \right]\!\!\right]^g$$

= 1   iff   there is a σ-alternative g′ of g such that

$[\![\varphi]\!]^{g'}$ is defined, and

for all g′ such that $[\![\varphi]\!]^{g'} = 1$, $[\![\psi]\!]^{g'} = 1$;

= 0   iff   there is a g′ such that $[\![\varphi]\!]^{g'} = 1$ and

$[\![\psi]\!]^{g'} = 0$;

undefined   otherwise.

Let's first consider a simple example, like our rock example from the previous chapter:

(56) a.   John didn't see a rock (that was sitting in the middle of the road).

b.

c.

$$\exists x_1$$
$$\text{rock}_{w_0}(x_1) \,/\, \neg\big[\text{rock}_{w_0}(x_1) \wedge \text{see}_{w_0}(\text{John}, x_1)\big]$$

IP

not

DP
$$\text{rock}_{w_0}(x_1)\,/\,\text{rock}_{w_0}(x_1)$$

VP
$$1\,/\,\text{see}_{w_0}(\text{John}, x_1)$$

In accordance with ($\exists$), (56c) will have the following meaning:

(57)   For any variable assignment g, $[\![(56c)]\!]^g$ is defined iff there is an entity x_1 such that $[\![IP]\!]^{g\,^{x_1}/x_1}$ is defined; in such case, $[\![(56c)]\!]^g = 1$ iff $[\![IP]\!]^{g\,^{x_1}/x_1} = 1$; otherwise $[\![(56c)]\!]^g = 0$.

Now, $[\![IP]\!]^{g\,^{x_1}/x_1}$ is defined just in case $\text{rock}_{w_0}(x_1) = 1$, i.e., just in case x_1 is a rock in the utterance world. So the truth or falsity of $[\![(56c)]\!]^g$ will depend exclusively on the value of $\neg\big[\text{rock}_{w_0}(x_1) \wedge \text{see}_{w_0}(\text{John}, x_1)\big]$. Thus (57) becomes:

(58)   For any variable assignment g, $[\![(56c)]\!]^g$ is defined iff there is an entity x_1 such that $\text{rock}_{w_0}(x_1) = 1$; in such case, $[\![(56c)]\!]^g = 1$ iff $\neg\big[\text{rock}_{w_0}(x_1) \wedge \text{see}_{w_0}(\text{John}, x_1)\big] = 1$; otherwise $[\![(56c)]\!]^g = 0$.

Now let's consider a slightly more complex example that uses both ($\exists$) and ($\forall$), like the 'extensional' example (90c) from Chapter 3—repeated here as (59a).
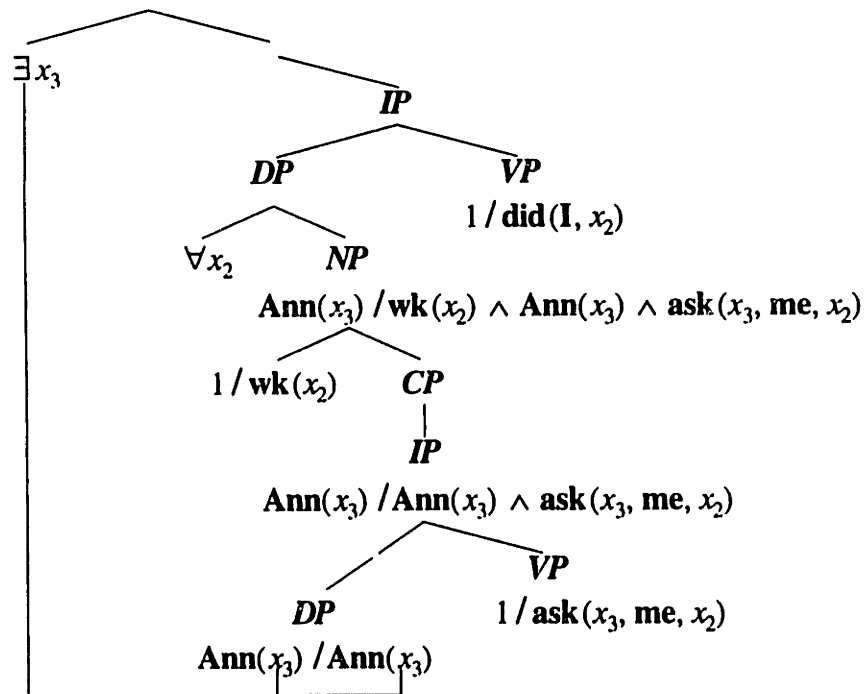
(59) a. I did all the work (that) a friend of mine called Ann asked me to do.

b.

$\exists_3$ — IP

DP$_1$ = I

DP$_2$

$\exists$ VP

all$_2$ NP

t_1 did t_2

N CP
work

$\emptyset_2$ IP

$\approx\!\int_3 / DP_3$

$\exists$ VP

a friend of mine
called Ann

t_3 asked me to do t_2
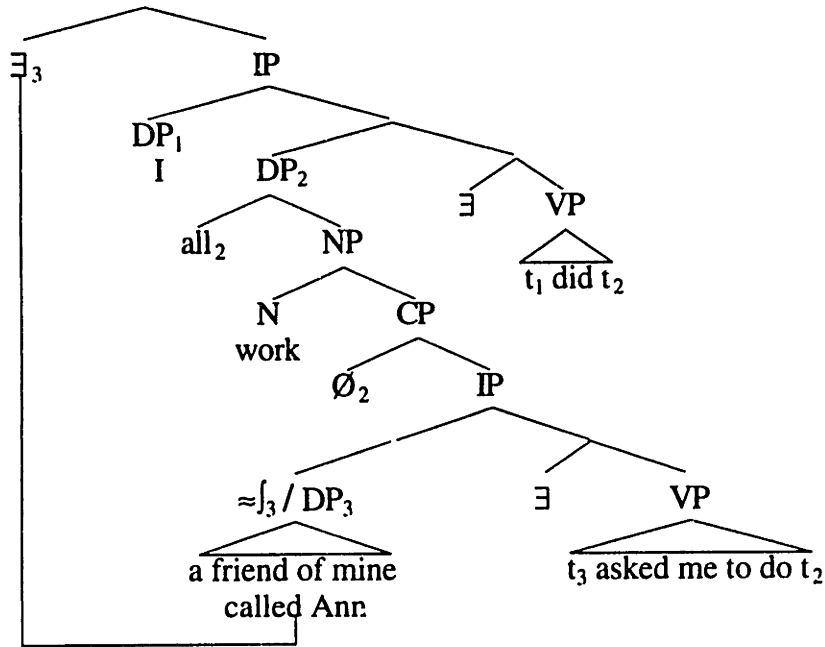
For the sake of space, I will simplify the translations of the constituents in (59b) to the bare minimum. We get the following representation:

(59) c.

$\exists x_3$ — IP

DP   VP
      $1 / \text{did}(I, x_2)$

$\forall x_2$ NP

$\text{Ann}(x_3) / \text{wk}(x_2) \wedge \text{Ann}(x_3) \wedge \text{ask}(x_3, \text{me}, x_2)$

$1 / \text{wk}(x_2)$ CP
                       |
                       IP

$\text{Ann}(x_3) / \text{Ann}(x_3) \wedge \text{ask}(x_3, \text{me}, x_2)$

DP   VP
      $1 / \text{ask}(x_3, \text{me}, x_2)$

$\text{Ann}(x_3) / \text{Ann}(x_3)$

(60) a. For any variable assignment g, $[\![(59c)]\!]^g$ is defined iff there is an entity x_3 such that $[\![IP]\!]^{g^{x_3}/_{x_3}}$ is defined; in such case, $[\![(59c)]\!]^g = 1$ iff $[\![IP]\!]^{g^{x_3}/_{x_3}} = 1$; otherwise $[\![(59c)]\!]^g = 0$.

b. $[\![IP]\!]^{g^{x_3}/_{x_3}} = 1$ iff there is an x_2 such that $[\![NP]\!]^{(g^{x_3}/_{x_3})^{x_2}/_{x_2}}$ is defined, and

for all x_2 such that $[\![NP]\!]^{(g^{x_3}/_{x_3})^{x_2}/_{x_2}} = 1$, $[\![VP]\!]^{(g^{x_3}/_{x_3})^{x_2}/_{x_2}} = 1$;

$[\![IP]\!]^{g^{x_3}/_{x_3}} = 0$ iff there is an x_2 such that $[\![NP]\!]^{(g^{x_3}/_{x_3})^{x_2}/_{x_2}} = 1$ and $[\![VP]\!]^{(g^{x_3}/_{x_3})^{x_2}/_{x_2}} = 0$;

$[\![IP]\!]^{g^{x_3}/_{x_3}}$ is undefined otherwise.

Now, $[\![VP]\!]^{(g^{x_3}/_{x_3})^{x_2}/_{x_2}}$ is always defined (because it has no non-tautological presuppositions), and the definedness of $[\![IP]\!]^{g^{x_3}/_{x_3}}$ depends on the definedness of $[\![NP]\!]^{(g^{x_3}/_{x_3})^{x_2}/_{x_2}}$—viz. on the truth of $Ann(x_3)$. Therefore $[\![(59c)]\!]^g$ is defined just in case there is an x_3 such that $Ann(x_3) = 1$. The truthconditions of $[\![(59c)]\!]^g$ then depend on the assertive content of $[\![NP]\!]^{(g^{x_3}/_{x_3})^{x_2}/_{x_2}}$ and $[\![VP]\!]^{(g^{x_3}/_{x_3})^{x_2}/_{x_2}}$. So (60) can be rewritten as follows:

(61) a. For any variable assignment g, $[\![(59c)]\!]^g$ is defined iff there is an entity x_3 such that $Ann(x_3) = 1$; in such case, $[\![(59c)]\!]^g = 1$ iff

for all x_2 such that $[wk(x_2) \wedge Ann(x_3) \wedge ask(x_3, me, x_2)] = 1$, $did(I, x_2) = 1$; otherwise $[\![(59c)]\!]^g = 0$.

Now, how does our system deal with cases where a presupposition seems to be 'absorbed' by its environment? Consider the pair in (62).

(62) a. John's child is happy.

b. If John has a child, his child is happy.

The definite DP in (62a) generates a presupposition for the entire sentence that there exists someone called John, and that this person has a child. However, if (62a) is embedded in a conditional statement like (62b), the presupposition that John has a child disappears. Van der Sandt argues that the presupposition is not somehow 'canceled' by the embedding conditional; rather, it is bound by the conditional operator.

Suppose sentences (62a) and (62b) have the LF's in (63a) and (63b) (respectively), with every DP bearing an index as shown:
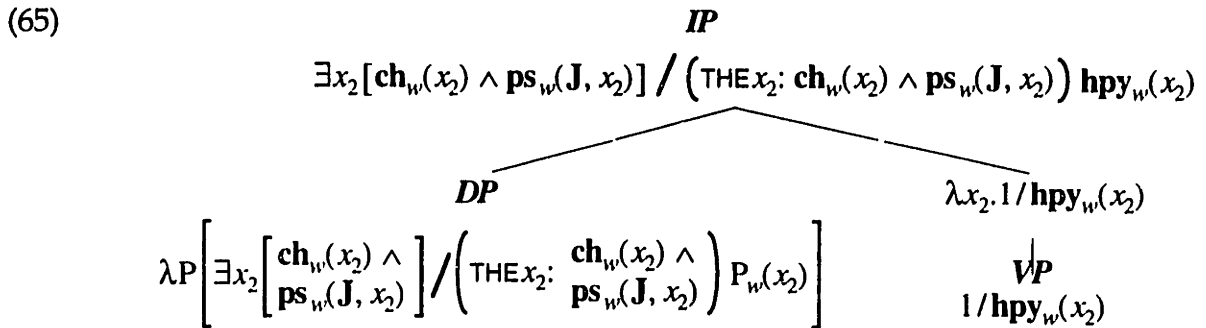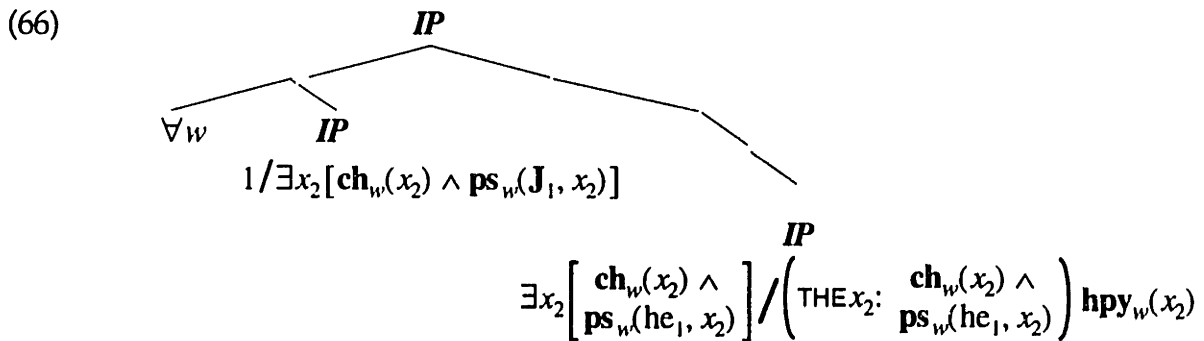
(63) a.
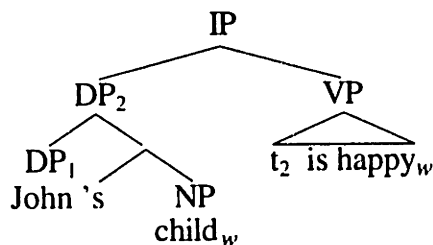
b.
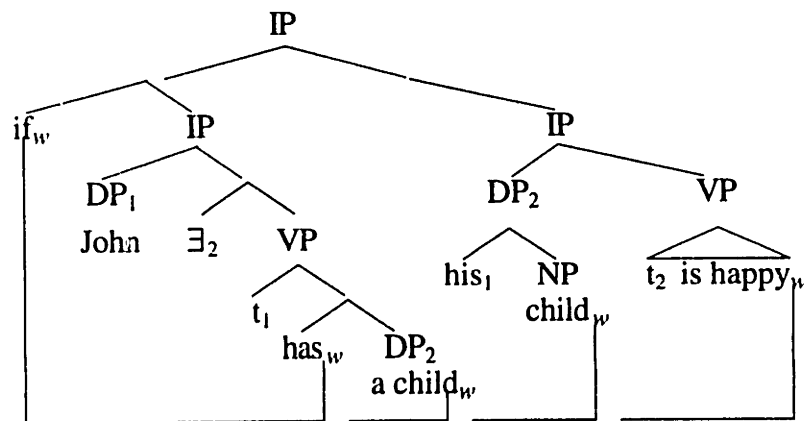
The possessive morpheme is analyzed as presupposing the descriptive content of its sister NP and a two-place possession relation:

(64)   *DP$_i$'s child$_w$*   carries the presupposition: $\exists x[\mathbf{ch}_w(x) \wedge \mathbf{ps}_w(DP_i, x)]$

Now, in the case of (63a) these presuppositions will surface at the text level, giving us a representation essentially as in (65).

(65)

$$IP$$

$$\exists x_2[\mathbf{ch}_w(x_2) \wedge \mathbf{ps}_w(J, x_2)] \Big/ \Big(\mathrm{THE}x_2\colon \mathbf{ch}_w(x_2) \wedge \mathbf{ps}_w(J, x_2)\Big) \mathbf{hpy}_w(x_2)$$

$$DP \qquad\qquad \lambda x_2.1/\mathbf{hpy}_w(x_2)$$

$$\lambda P\left[\exists x_2\begin{bmatrix}\mathbf{ch}_w(x_2) \wedge \\ \mathbf{ps}_w(J, x_2)\end{bmatrix}\right] \Big/ \left(\mathrm{THE}x_2\colon \begin{matrix}\mathbf{ch}_w(x_2) \wedge \\ \mathbf{ps}_w(J, x_2)\end{matrix}\right) P_w(x_2)\right] \qquad VP$$

$$1/\mathbf{hpy}_w(x_2)$$

Now consider the case of (63b). In this case, the presupposition associated with the possessive in the consequent clause will not be able to project beyond the conditional operator, because it is an existential statement which is dependent on the value(s) of w (cf. (64)), which in the case of (63b) is bound by the conditional operator. This is illustrated in (66):

(66)

$$IP$$

$$\forall w \qquad IP$$

$$1/\exists x_2[\mathbf{ch}_w(x_2) \wedge \mathbf{ps}_w(J_1, x_2)]$$

$$IP$$

$$\exists x_2\begin{bmatrix}\mathbf{ch}_w(x_2) \wedge \\ \mathbf{ps}_w(he_1, x_2)\end{bmatrix}\Big/\left(\mathrm{THE}x_2\colon \begin{matrix}\mathbf{ch}_w(x_2) \wedge \\ \mathbf{ps}_w(he_1, x_2)\end{matrix}\right)\mathbf{hpy}_w(x_2)$$

Given our ($\forall$) rule, (66) will come out essentially as follows:

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(67) For any variable assingment g:

a. $[\![(66)]\!]^g = 1$ iff there is a world w where '1'; and for every world w such that ('1' and) $\exists x_2[\mathbf{ch}_w(x_2) \wedge \mathbf{ps}_w(J_1, x_2)]$, $\exists x_2[\mathbf{ch}_w(x_2) \wedge \mathbf{ps}_w(he_1, x_2)]$ and $\left(\text{THE}x_2\colon \mathbf{ch}_w(x_2) \wedge \mathbf{ps}_w(he_1, x_2)\right) \mathbf{hpy}_w(x_2)$;

$[\![(66)]\!]^g = 0$ iff there is a world w such that (1 and) $\exists x_2[\mathbf{ch}_w(x_2) \wedge \mathbf{ps}_w(J_1, x_2)]$ and $\exists x_2[\mathbf{ch}_w(x_2) \wedge \mathbf{ps}_w(he_1, x_2)]$, and it is not the case that $\left(\text{THE}x_2\colon \mathbf{ch}_w(x_2) \wedge \mathbf{ps}_w(he_1, x_2)\right) \mathbf{hpy}_w(x_2)$;

otherwise—i.e., if there is a (contradictory) world w, where both $\exists x_2[\mathbf{ch}_w(x_2) \wedge \mathbf{ps}_w(he_1, x_2)]$ and $\neg\exists x_2[\mathbf{ch}_w(x_2) \wedge \mathbf{ps}_w(he_1, x_2)]$—$[\![(66)]\!]^g$ is undefined.

b. $[\![(66)]\!]^g$ is true iff in every world where John has a child, John has a child and his child is happy; false if there is a world where John has a childand his child is not happy; undefined only in a contradictory world, as in (a).

Note that the assertive content of (67) is simply a statement to the effect that if John has a child, it (=John's child) is happy. Among the presuppositions that surface at the 'top level' of (67) there is one concerning children that John may have. But this presupposition is a trivial one. As we can see, all that is presupposed is that in all worlds where John has a child, John has a child.

Another suggestive case that lends itself to this kind of treatment is the problem of 'requantification' first noticed by K&P. This problem is illustrated below.

It is known that certain lexical elements, like *stop*, *start*, *manage*, etc. generate presuppositions associated with their sentential complement. (68a), for instance, presupposes (68b).

(68) a. John managed to open the door.

b. It took John some effort to open the door.

Suppose that *manage* contributes the following meaning: a sentence of the form X *managed to Y* is associated with the assertive content X *Y'd* (in a given world), and the presuppositional content *it was not easy (in that world) for X to Y*—for short $\neg easy_w(X, Y)$ (see later for details). So (68a) will simply be asserting that John opened the door, and presupposing that it took him some effort to do so, as stated in (68b).

So far, so good. However, K&P observed, if the subject of a sentence like (68a) is an indefinite DP, the procedure outlined above for encoding the relevant presuppositions will produce inappropriate results. Consider the following example:

(69) a. Someone managed to succeed George V (on the throne of England).

b. It took someone some effort to succeed George V (on the throne of England).

(69a) presupposes that whoever actually succeeded George V on the throne of England had to go through some effort to do so. But this is not what (69b) says. For (69b) to be satisfied, it is sufficient that some random individual had tried, with some effort, to succeed George V on the throne of England. And this individual need not necessarily be the same person who actually did succeed George V on the throne of England. Yet (69b) is seemingly constructed by the same method used to produce (68b). Clearly, something has gone wrong.

Intuitively, what we need to do in this case is to establish some sort of connection between the subject of (69a) and the subject of (69b). In our system,

this can be accomplished rather easily (see also Van der Sandt 1992). In fact, once we assume that presuppositions may contain bound variables, we simply need to allow the quantifier associated with *someone* in (69a) to bind the presupposition associated with *manage*.

For concreteness, I'll assume that a CP selected by a control verb like *manage* is translated as a property (rather than a proposition), with PRO_i being translated simply as λx_i:
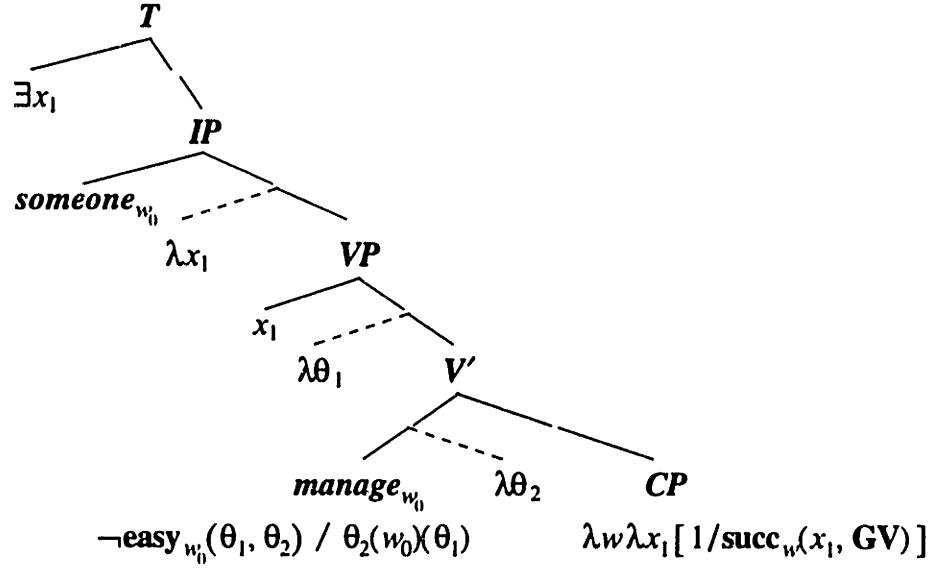
(70)
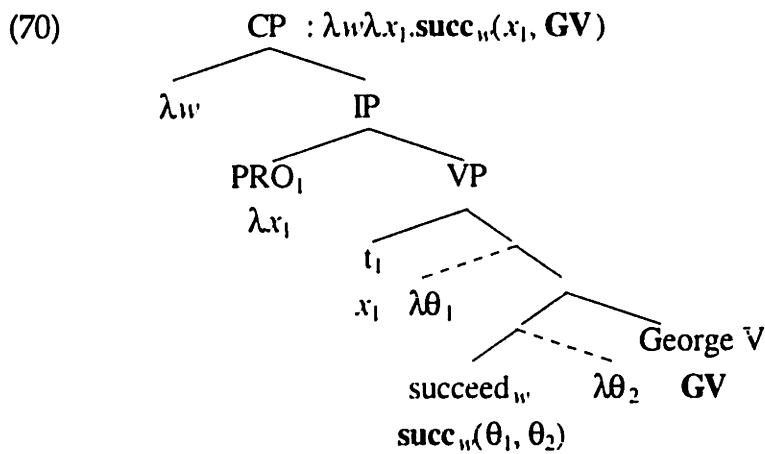
Furthermore, I'll assume that the CP in (70) does not contribute any presuppositions. Thus, as mentioned earlier, the full translation of this node will actually be $\lambda w \lambda x_1[\,1/succ_w(x_1, GV)\,]$ since, given our definitions above, we know that for any α, $1/\alpha \Leftrightarrow \alpha$. I will also assume, for simplicity, that the DP *someone* in (69a) does not contribute any presuppositions of its own. This way, we only have to deal with the presuppositions associated with *manage*. The meaning of this verb is assumed to be as in (71).

(71) $manage_{w_i}$ ~> $\neg easy_{w_i}(\theta_1, \theta_2)\ /\ \theta_2(w_i)(\theta_1)$

Our computation of the full meaning of (69a) then proceeds as in (72).

(72)

$$\exists x_1 \quad T$$

```
                    T
                  /  \
            ∃x₁      \
                      IP
              someone_w₀'  ___---
                     /         \
                   λx₁          VP
                        x₁  ___---
                            /      \
                          λθ₁       V'
                               _____---___
                              /           \
                     manage_w₀    λθ₂       CP
```

$$\neg\mathbf{easy}_{w_0'}(\theta_1, \theta_2) \;/\; \theta_2(w_0)(\theta_1) \qquad \lambda w \lambda x_1 [\, 1/\mathbf{succ}_w(x_1, GV)\,]$$

For illustrative purposes, I will go through the derivation of (72) step by step;

(73) a.
$$V' = \lambda\theta_2 \big[\neg\mathbf{easy}_{w_0'}(\theta_1, \theta_2) \;/\; \theta_2(w_0)(\theta_1)\big] \big(\lambda w \lambda x_1 [\,1/\mathbf{succ}_w(x_1, GV)\,]\big)$$

$$= \neg\mathbf{easy}_{w_0'}\big(\theta_1, \lambda w \lambda x_1 [\,1/\mathbf{succ}_w(x_1, GV)\,]\big) \;/$$

$$\lambda w \lambda x_1 [\,1/\mathbf{succ}_w(x_1, GV)\,](w_0)(\theta_1)$$

$$= \neg\mathbf{easy}_{w_0'}\big(\theta_1, \lambda w \lambda x_1.\mathbf{succ}_w(x_1, GV)\big) \;/\; \mathbf{succ}_{w_0}(\theta_1, GV)$$

$$VP = \lambda\theta_1 \big[\neg\mathbf{easy}_{w_0'}\big(\theta_1, \lambda w \lambda x_1.\mathbf{succ}_w(x_1, GV)\big) \;/\; \mathbf{succ}_{w_0}(\theta_1, GV)\big](x_1)$$

$$= \neg\mathbf{easy}_{w_0'}\big(x_1, \lambda w \lambda x_1.\mathbf{succ}_w(x_1, GV)\big) \;/\; \mathbf{succ}_{w_0}(x_1, GV)$$

$$IP = \neg\mathbf{easy}_{w_0'}\big(x_1, \lambda w \lambda x_1.\mathbf{succ}_w(x_1, GV)\big) \;/\; \mathbf{succ}_{w_0}(x_1, GV) \;\wedge\; 1/\mathbf{pers}_{w_0}(x_1)$$

$$= \neg\mathbf{easy}_{w_0'}\big(x_1, \lambda w \lambda x_1.\mathbf{succ}_w(x_1, GV)\big) \;/\; \mathbf{pers}_{w_0}(x_1) \;\wedge\; \mathbf{succ}_{w_0}(x_1, GV)$$

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b. For any variable assignment g:

$[\![(72)]\!]^g$ is defined iff there is an a such that

$$\neg \text{easy}_{w_0}\big(a, \lambda w \lambda x_1 . \text{succ}_w(x_1, GV)\big)$$

$[\![(72)]\!]^g = 1$ iff there is an a' such that

$$\neg \text{easy}_{w_0}\big(a', \lambda w \lambda x_1 . \text{succ}_w(x_1, GV)\big) \text{ and}$$

$$\text{pers}_{w_0}(a') \wedge \text{succ}_{w_0}(a', GV)$$

$[\![(72)]\!]^g = 0$ otherwise.

The meaning calculated in (73) is adequate enough as a rendition of (69a), at least insofar as it does not have the problem of 'requantification' observed by K&P.

What we see, then, is that the general model I propose is indeed independently applicable to presuppositional material unrelated to topic marking. If this approach turns out to be correct, then it would seem to corroborate the idea introduced in the previous chapter that topic anaphors, which essentially introduce presuppositional material, may be treated as descriptions containing variables, along with other kinds of presuppositions. To make this point even further, let us recall that this general analysis was proposed to deal not only with 'specific' indefinites, but with all indefinites. It was shown in Chapter 2 that these DP's have exceptional scope-taking properties even when they are not interpreted as specific. So, at this point, I would like to show that the class of indefinite topics is larger than the class of specific indefinites. Let us say that an indefinite topic is felt to be 'specific' when—in our current terms—it is bound by an existential closure operator at the text level, and when the presupposition(s) associated with it are inherited at that level. Given this informal definition of a 'specific' indefinite, we note that nothing in our model prevents an indefinite from being topic marked but not 'specific'. And in fact, my

claim is that topicality may very well obtain at a more embedded level, and that an indefinite topic, together with its topic anaphor, cen be bound from a position lower than the text level. As we will see in the next section, topic marking and binding at an embedded level is not just an abstract possibility, but has clearly visible effects.

Consider now our examples (39) and (51) from Chapter 2. Recall that these were the cases that were shown to be problematic for Abusch's model. For instance, (39a), repeated here as (74a), was assumed to have the assertive content expressed in (74b):

(74) a.   Every true Englishman adores a certain woman.

  b. $\exists f\, (\forall x\colon \mathbf{Engl}(x))\, \big[\mathbf{woman}(f(x)) \wedge \mathbf{adore}(x, f(x))\big]$

The issue here was that the indefinite description $\mathbf{woman}(f(x))$ should be c-commanded by the universal quantifier, that needs to bind x. But at the same time, if the indefinite is interpreted inside certain environments, we run into the usual problem of weak truthconditions: any function we pick would make such cases true.
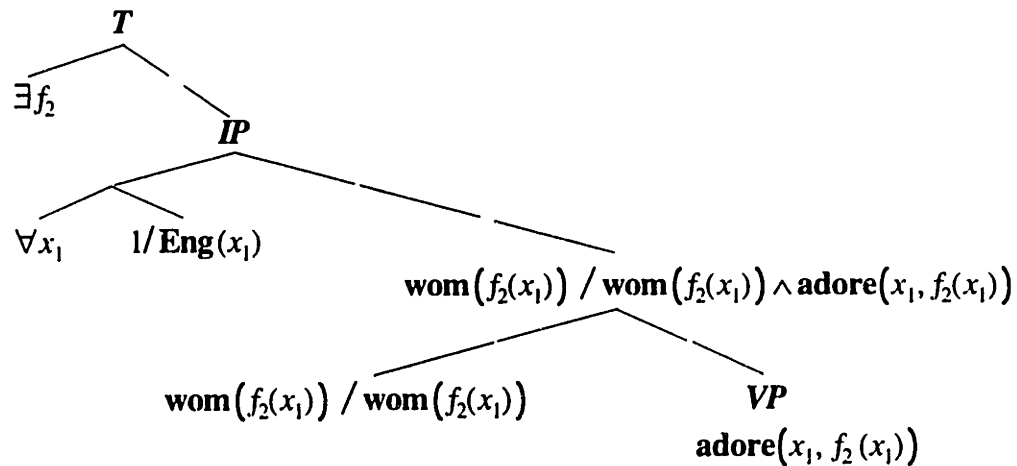
Our solution, once again, will be to assume that *a certain woman* in (74a) is topic marked, and is thus associated with the presupposition $\int(f(x)) = \mathbf{woman}(f(x))$ which should be projected at the text level, where f is bound. But of course, $\int(f(x))$ is subject to the same binding restrictions that affect the assertive content of the indefinite, viz., x must remain bound by the universal quantifier.

The derivation involved in this case is shown below:

(75) a.

$$T$$

$$\exists_2 \qquad IP$$

every $\text{Eng}_{w'}$

$\approx C_{(2)}$ a woman$_{w'}$.

XP

2

VP

t_1 adores t_2

b.

$$T$$

$$\exists f_2 \qquad IP$$

$\forall x_1 \qquad 1/\text{Eng}(x_1)$

$$\text{wom}\big(f_2(x_1)\big) \; / \; \text{wom}\big(f_2(x_1)\big) \wedge \text{adore}\big(x_1, f_2(x_1)\big)$$

$$\text{wom}\big(f_2(x_1)\big) \; / \; \text{wom}\big(f_2(x_1)\big)$$

$$VP$$

$$\text{adore}\big(x_1, f_2(x_1)\big)$$
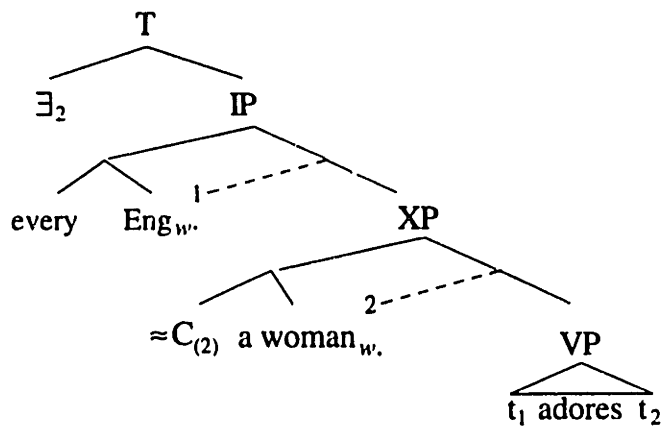
The meaning we get, according to (75b), is roughly as follows. $[\![(75b)]\!]^g$ is defined iff there is an f such that: for every Englishman x, f picks out a woman $f(x)$; if defined, $[\![(75b)]\!]^g$ is true iff there is an f such that: for every Englishman x, f picks out a woman $f(x)$ and x adores $f(x)$. Thus the presupposition that surfaces at the matrix level is, appropriately, as expected—given our discussion in the previous section.

Now let's consider the examples in (51) from Chapter 2. I repeat them here as (76).

(76) a. If every Italian in this room (could manage to) watch *a certain program about his Country (that will be aired on PBS tonight)*, we might have an interesting discussion tomorrow.

   b. No doctor believed the claim that *a (certain) member of her profession* had been arrested.

   c. Everyone who used the bathroom between 2 and 4 pm was questioned about *a sink that he could have broken*.

The argument made in Chapter 2 was that in a sentence like (76a), the indefinite *a certain program about his Country* contains a variable bound by the QNP *every Italian (in this room)*; and since this QNP cannot escape the *if*-clause island, the indefinite description must also remain inside the island.

Next I showed that an indefinite DP can be topic marked, thus generating a presupposition that its description is satisfied, and this presupposition can project out of the island, thus yielding appropriate truthconditions for the sentence.

But in the case of the sentences in (76), we run the risk of falling back into the original trap of weak truthconditions, if we cannot lift (some version of) the presupposition associated with the indefinite up beyond the QNP that binds into it. Again, our rules for ($\exists$) and ($\forall$) allow us to avoid this problem:

(77) a.
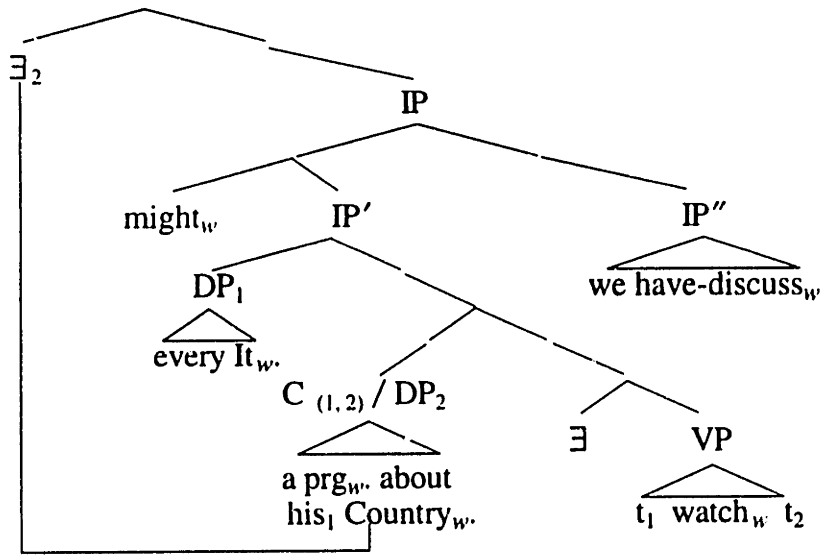
b.
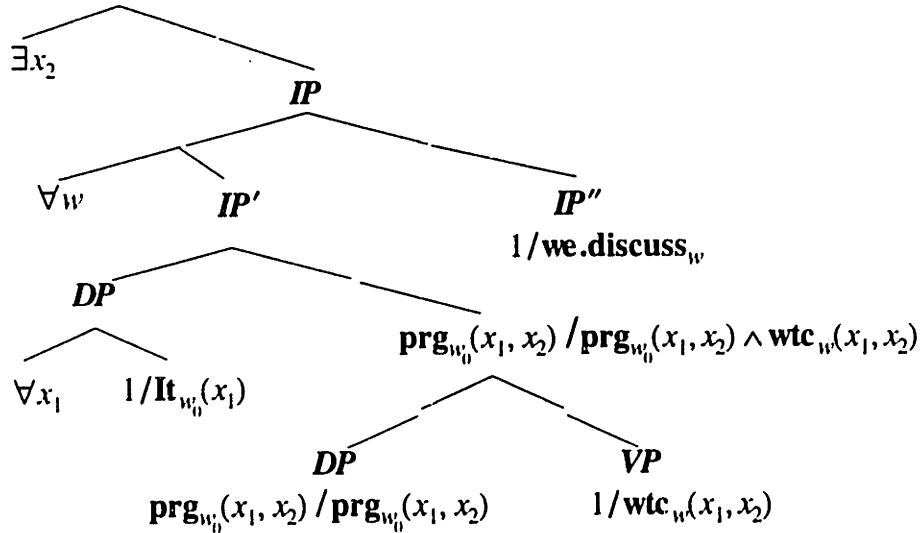
(78) For any variable assignment g:

a. $[\![IP']\!]^g$ is true iff there is an x_1 such that '1', and for all x_1 such that ('1'

and) $It_{w_0}(x_1)$, $prg_{w_0}(x_1, x_2)$ and $[prg_{w_0}(x_1, x_2) \wedge wtc_w(x_1, x_2)]$;

$[\![IP']\!]^g$ is false if there is an x_1 such that $It_{w_0}(x_1)$ and $prg_{w_0}(x_1, x_2)$ and it

is not the case that $[prg_{w_0}(x_1, x_2) \wedge wtc_w(x_1, x_2)]$;

otherwise—i.e., if there is an x_1 such that $It_{w_0}(x_1)$ and $\neg prg_{w_0}(x_1, x_2)$—

$[\![IP']\!]^g$ is undefined.

b. $[\![IP']\!]^g$ is true iff for all Italians (in w_0) x_1, x_2 is a program about x_1's Country in w_0 and x_1 watches x_2 in w; false if there is an Italian x_1 (in w_0) and x_2 is a program about x_1's Country in w_0 and x_1 does not watch x_2 in w; undefined if there is an Italian x_1 (in w_0) such that x_2 is not a program about x_1's Country (in w_0).

(79) For any variable assignment g:

a. $[\![IP]\!]^g$ is true iff there is a world w such that $[\![IP']\!]^g$ is defined—i.e., a world such that for no x_1, $\text{It}_{w_0}(x_1)$ and $\neg\,\text{prg}_{w_0}(x_1, x_2)$—and for every w such that [for every x_1 s.t. $\text{It}_{w_0}(x_1)$, $\text{prg}_{w_0}(x_1, x_2)$ and $\text{wtc}_w(x_1, x_2)$], $[\![IP'']\!]^g$ is true—i.e., ('1' and) **we.discuss**$_w$;

$[\![IP]\!]^g$ is false if there is a world w such that [for every x_1 s.t. $\text{It}_{w_0}(x_1)$, $\text{prg}_{w_0}(x_1, x_2)$ and $\text{wtc}_w(x_1, x_2)$], $[\![IP'']\!]^g$ is false—i.e., ('1' and) $\neg$ **we.discuss**$_w$;

otherwise—i.e., if $[\![IP']\!]^g$ is not defined ($\Rightarrow$ there is an x_1 s.t. $\text{It}_{w_0}(x_1)$ and $\neg\,\text{prg}_{w_0}(x_1, x_2)$) or $[\![IP'']\!]^g$ is not defined (which cannot happen, since $[\![IP'']\!]^g$ has no nontautological presuppositions).

b. $[\![IP]\!]^g$ is true iff there is no Italian x_1 (in w_0) such that x_2 isn't a program about x_1's Country (in w_0), and for all worlds w such that [for all Italians x_1 (in w_0), x_2 is a program about x_1's Country (in w_0) and x_1 watches x_2 in w], we have a discussion in w; false if there is a world w such that [for all Italians x_1 (in w_0), x_2 is a program about x_1's Country (in w_0) and x_1 watches x_2 in w], we don't have a discussion in w; undefined if, for some Italian x_1 (in w_0), x_2 is not a program about x_1's Country (in w_0).

Finally, at the text level we have:

(80) For any variable assignment g:

    a. $[\![(77b)]\!]^g$ is defined just in case there is an x_2 such that $[\![IP]\!]^g$ is defined;

        if defined, $[\![(77b)]\!]^g$ is true iff there is an x_2 such that $[\![IP]\!]^g$ is true, and false otherwise.

    b. $[\![(77b)]\!]^g$ is defined just in case there is an x_2 such that for no Italian x_1 (in w_0), x_2 isn't a program about x_1's Country (in w_0)—i.e., if there are Italians in w_0, x_2 must be a program about these people's Country;

        if defined, $[\![(77b)]\!]^g$ is true iff there is an x_2 such that for all worlds w where [for all Italians x_1 (in w_0), x_2 is a program about x_1's Country (in w_0) and x_1 watches x_2 in w], we have a discussion in w ; false otherwise.

In conclusion, I hope to have proven that indefinite topics are not a particularly strange creature, and that they can be analyzed as unambiguous with respect to their ability to generate presuppositions. In essence, indefinite DP's (and perhaps other kinds of DP's as well) are never lexically associated with any kind of presuppositions, but they may (and must) acquire presuppositional content when they are topic marked.

References

Abney, Steven (1987). *The English Noun Phrase in Its Sentential Aspect*. Ph.D. Dissertation, MIT.

Abusch, Dorit (1993). "The Scope of Indefinites." *Natural Language Semantics* 2: 83-135.

Barwise, Jon, and Robin Cooper (1981). "Generalized Quantifiers and Natural Language." *Linguistics and Philosophy* 14: 1-38.

Beaver, David (1994). "Accomodating Topics." *ILLC Research and Technical Notes Series, LP-94-17*. University of Amsterdam.

Berman, Steve (1989). "An Analysis of Quantificational Variability in Indirect Questions." *MIT Working Papers in Linguistics* 11.

Berman, Steve (1991). *On the Semantics and Logical Form of Wh-Clauses*. Ph.D. Dissertation, University of Massachusetts at Amherst.

Belnap, Nuel (1970). "Conditional Assertion and Restricted Quantification." *Noûs* 4: 1-12.

Bittner, Maria (1993). *Cross-Linguistic Semantics*. Ms., Rutgers University.

Bowers, John (1969). *Surface Structure Interpretation in English Superlatives*. Ms., MIT.

Carlson, Greg (1977). *Reference to Kinds in English*. Ph.D. Dissertation, University of Massachusetts, Amherst.

Carlson, Lauri (1983). *Dialogue Games: An Approach to Discourse Analysis*. Reidel, Dordrecht.

Chierchia, Gennaro (1992). "Anaphora and Dynamic Binding." *Linguistics and Philosophy* 15: 111-183.

Chierchia, Gennaro (1993). *Extensions of Dynamic Binding: Reconstruction, Topicalization and Crossover*. Ms., University of Milan.

Chomsky, Noam (1976). *Essays on Form and Interpretation*. North Holland, Amsterdam.

Chomsky, Noam (1993). "A Minimalist Program for Linguistic Theory." In In Hale and Keiser, (eds.), pp. 1-52.

Cooper, Robin (1979). "The Interpretation of Pronouns." In F. Heny and H Schnelle (eds.) *Syntax and Semantics* **10**. Academic Press, New York, pp. 61-92.

Cooper, Robin (1983). *Quantification and Syntactic Theory*. Reidel, Dordrecht.

Cresti, Diana (1995a). "Extraction and Reconstruction." *Natural Language Semantics* **3**: 79-122.

Cresti, Diana (1995b). "Economy and the Scope of Amount Phrases." To appear in *Proceedings of WCCFL 14*.

Diesing, Molly (1992). *Indefinites*. MIT Press, Cambridge, MA.

Enç, Murvet (1986). "Towards a Referential Analysis of Temporal Expressions." *Linguistics and Philosophy* **9**: 405-426.

Enç, Murvet (1991). "The Semantics of Specificity." *Linguistic Inquiry* **22**: 1-25.

Engdahl, Elisabet (1986). *Constituent Questions*. Reidel, Dordrecht.

Fintel, Kai von (1994). *Restrictions on Quantifier Domains*. Ph.D. Dissertation, University of Massachusetts, Amherst.

Fintel, Kai von (1995). *Presupposition Accomodation and Quantifier Domains: Comments on Beaver's "Accomodating Topics"*. Ms., MIT.

Fischer, Susan (1968). *Cleft Sentences and Contrastive Stress*. Ms., MIT.

Fodor, Janet, and Ivan Sag (1982). "Referential and Quantificational Indefinites." *Linguistics and Philosophy* **5**: 355-398.

Fraassen, B. van (1968). "Presupposition, Implication, and Self-Reference." *Journal of Philosophy* **65**: 000-000.

Gallin, D. (1975). *Intensional and Higher-Order Modal Logic*. North-Holland, Amsterdam.

Gazdar, Gerald (1979). Pragmatics: *Implicature, Presupposition, and Logical Form*. Academic Press, New York.

Grice, Paul (1968). *Studies in the Way of Words*. Harvard University Press, Mass.

Grice, Paul (1975). "Logic and Conversation." In D Davidson and G. Harman (eds.), *The Logic of Grammar*. Dickenson, Encino, CA, pp. 64-75.

Groenendijk, Jeroen, and Martin Stokhof (1980). "A Pragmatic analysis of Specificity." In F. Heny (ed.) *Ambiguities in Intensional Contexts* Reidel, Dordrecht, pp. 153-190.

Groenendijk, Jeroen, and Martin Stokhof (1981). *Engdahl's Two Problems*. Ms., University of Amsterdam.

Groenendijk, Jeroen, and Martin Stokhof (1982). "A Semantic Analysis of *Wh*-Complements." *Linguistics and Philosophy* **5**: 175-233.

Hale, Kenneth and Samuel Jay Keyser, eds. (1993). *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*. MIT Press. Cambridge, Mass.

Hausser, Roland (1973). "Presuppositions and Quantifiers." In *Papers from the Ninth Regional Meeting, Chicago Linguistic Society*, 192-204. Chicago Linguistic Society, University of Chicago.

Hausser, Roland (1976). "Presuppositions in Montague Grammar." *Theoretical Linguistics* **3**: 245-280.

Heim, Irene (1982). *The Semantics of Definite and Indefinite Noun Phrases*. Ph.D. Dissertation, University of Massachusetts, Amherst.

Heim, Irene (1987). "Where Does the Definiteness Restriction Apply? Evidence from the Definiteness of Variables." In Eric Reuland and Alice ter Meulen (eds.) *The Representation of (In)definiteness*. MIT Press, Cambridge, MA.

Heim, Irene (1993). "Anaphora and Semantic Interpretation: A Reinterpretation of Reinhart's Approach." SfS-Report 07-93, *Tübingen Working Papers*. University of Tübingen.

Heim, Irene (1994). [paper on superlatives]

Heim, Irene, and Angelika Kratzer (to appear). [textbook]

Higginbotham, James (1980). "Pronouns and Bound Variables." *Linguistic Inquiry* **11**: 000-000.

Higginbotham, James (1993). "Interrogatives." In Hale and Keiser, (eds.), pp. 195-228.

Higginbotham, James (1994). *Priorities in the Philosophy of Thought*. Ms., Oxford University.

Hintikka, Jaakko (1986). "The Semantics of *A Certain*." *Linguistic Inquiry* **17**: 331-336.

Hoop, Helen de (1992). *Case Configuration and Noun Phrase Interpretation*. Ph.D. Dissertation, Rijksuniversiteit Groningen.

Hornstein, Norbert (1984). *Logic as Grammar*. MIT Press, Cambridge, Mass.

Jackendoff, Ray (1972). *Semantic Interpretation in Generative Grammar*. MIT Press, Cambridge, Mass.

Kamp, Hans (1981). "A Theory of Truth and Semantic Representation." In Jeroen Groenendijk, Theo Janssen, and Martin Stokhof (eds.) *Formal Methods in the study of Language*. Amsterdam: Mathematical Centre.

Kamp, Hans, and Uwe Reyle (1993). *From Discourse to Logic. Introduction to Modeltheoretic Semantics of Natural Language, Formal Logic and Discourse Representation Theory*. Kluwer, Dordrecht.

Kaplan, David (1989). "Demonstratives." In J. Almog et. al. (eds.), *Themes from Kaplan*. Oxford University Press. [Circulated as a manuscript since 1977]

Karttunen, Lauri (1974). "Presupposition and Linguistic Context." *Theoretical Linguistics* 1: 181-194.

Karttunen, Lauri, and Stanley Peters (1979). "Conventional Implicature." In C.-K. Oh and D. Dinneen (eds.) *Syntax and Semantics 11: Presupposition*. Academic Press, New York, pp. 1-56.

Kratzer, Angelika (1989a). "An Investigation of the Lumps of Thought." *Linguistics and Philosophy* 12: 607-653.

Kratzer, Angelika (1989b). "Stage-Level and Individual-Level Predicates." In Emmon Bach, Angelika Kratzer, and Barbara Partee (eds.), *Papers on Quantification*. University of Massachusetts at Amherst. [To appear in G. Carlson et. al. (eds.), *The Generic Book*]

Krifka, Manfred (1992). [paper on focus and Mapping Hypothesis]

Lappin, Shalom and Tanya Reinhart (1988). "Presuppositional Effects of Strong Determiners: a Processing Account." *Linguistics* 26: 1021-1037.

Lewis, David K. (1973). *Counterfactuals*. Harvard University Press, Cambridge, MA.

Lewis, David K. (1979). "Scorekeeping in a Language Game." *Journal of Philosophical Logic* 8: 339-359.

Ludlow, Peter, and Steven Neale (1991). "Indefinite Descriptions: In Defense of Russell." *Linguistics and Philosophy* 14: 171-202.

Milsark, Gary (1974). *Existential Sentences in English*. Ph.D. Dissertation, MIT.

Milsark, Gary (1977). "Toward an Explanation of Certain Peculiarities of the Existential Construction in English." *Linguistic Analysis* 3: 1-30.

Partee, Barbara, and Mats Rooth (1982). "Conjunction, Type Ambiguity, and Wide Scope *or*." in Daniel P. Flickinger, Marlys Macken, and Nancy Wiegand (eds.), *Proceedings of WCCFL 1*, Stanford, CA, pp. 353-362.

Postal, Paul (1969). "On So-Called 'Pronouns' in English." In *Georgetown University Monograph Series on Languages and Linguistics, Vol. 19.* Francis Dinneen (ed.) Georgetown University Press, Washington, DC, pp. 177-206. [Reprinted in D. Reibel & S. Schane (eds.), *Modern Studies in English: Readings in Transformational Grammar*. Prentice-Hall, Englewood Cliffs, NJ (1969), pp. 201-224]

Prince, Ellen, and Gregory Ward (1991). "On the Topicalization of Indefinite NPs." *Journal of Pragmatics* **16**: 167-177.

Reinhart, Tanya (1983). *Anaphora and Semantic Interpretation*. Croom Helm, London.

Reuland, Eric (1988). "Indefinite Subjects." In *Proceedings of NELS 18*, GLSA, University of Massachusetts, Amherst, pp. 375-394.

Rooth, Mats (1985). *Association with Focus*. Ph.D. Dissertation, University of Massachusetts, Amherst.

Rooth, Mats (1992). "A Theory of Focus Interpretation." *Natural Language Semantics* **1**:75-116.

Rooth, Mats (1994). *Focus*. To appear in handbook edited by S. Lappin.

Rullmann, Hotze (1989). "Indefinite NPs in Dutch." In *Papers on Quantification*. NSF grant Report, Department of Linguistics, University of Massachusetts, Amherst.

Sandt, Rob van der (1992). "Presupposition Projection   Anaphora Resolution." *Journal of Semantics* **9**: 333-377.

Stalnaker, R. (1968). "A Theory of Conditionals." In N. Rescher (ed.) *Studies in Logical Theory*. Blackwell, Oxford.

Stechow, Arnim von (1993). "Die Aufgaben der Syntax." In J. Jacobs, A. von Stechow, and Th. Vennemann (eds.) *Syntax. And International Handbook of Contemporary Research*. De Gruyter, Berlin.

Strawson, P.F. (1950). "On Referring." *Mind* **59**: 320-344.

Strawson, P.F. (1952). *Introduction to Logical Theory*. Methuen, London.

Strawson, P. F. (1964). "Identifying Reference and Truth Values." Theoria 30: 96-118. Reprinted in P. F. Strawson (1974) *Logico-Linguistic Papers*. Methuen, London, pp. 75-95.

Tsai, Wei-Tien Dylan (1994). *On Economizing the Theory of A-bar Dependencies*. Ph.D. Dissertation, MIT.

Williams, Edwin (1980). "Predication." *Linguistic Inquiry* **11**: 203-238.