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DEFINITE DESCRIPTONS AND QUANTIFIER SCOPE: SOME MATES CASES RECONSIDERED

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ABSTRACT

This paper reexamines some examples, discussed by Mates and others, of sentences containing both definite descriptions and quantifiers. It has frequently been claimed that these sentences provide evidence for the view that definite descriptions themselves are quantifiers. The main goal of this paper is to argue this is not so. Though the examples are compatible with quantificational approaches to definite descriptions, they are also compatible with views that treat definite descriptions as basically scopeless. They thus provide no reason to see definite descriptions as quantifiers. Even so, this paper shows that the examples do raise a surprising range of complex issues about how quantifier scope works, and where it occurs. Thus, a clear picture of how these examples work will help us to understand better where definite descriptions fit into the larger picture of quantifiers and related phenomena.

Key words: definite description, quantifier, scope, semantics, syntax.

My goal in this paper is to reexamine two sentences that have played a significant role in the discussion of definite descriptions:

(1) The mother of each girl waved to her.

(2) The woman every Englishman loves is his mother.

Sentences like these have been around for some time. Sentences like (1) have been discussed by Mates (1973), and by Evans (1979). Sentences like (2) were made prominent by Geach (1964, 1969), and were likewise discussed by Mates, and many others. More recent work of Neale (1990) has drawn attention to the importance of these sorts of examples for the theory of definite descriptions. (The particular formulations of these examples I use here are Neale's.)

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I shall reach a negative conclusion about these examples: they do not show as much about definite descriptions as they may have appeared to show. In particular, they do not provide good reasons for treating definite descriptions as quantifiers.

Along the way, I shall show how these examples raise a surprising range of complex issues; both philosophical, and as I shall concentrate on here, linguistic. This itself will show us something about the theory of descriptions. One might marvel, more than one hundred years after the appearance of Russell's "On Denoting" (1905), and with thousands of pages written on the topic since, how we can still be debating whether descriptions are quantifiers. The detailed and linguistically informed examination of examples (1) and (2) I shall offer here will shed some light on why this issue remains open. It will make vivid how deciding this issue requires answering some very difficult and fundamental questions. Particularly, it will make vivid how deciding it requires answering some difficult and fundamental questions about how quantifier scope works, and where it occurs. It is not at all surprising that we have not answered all these questions, and until we do, some issues about descriptions will remain elusive.

My discussion of examples (1) and (2) will proceed as follows. In section 1, I shall lay out what is at stake for the examples. In section 2, I shall present some background material on semantics, syntax, and the interpretation of descriptions we will need to examine them in detail. I shall then turn to the examples themselves. I shall discuss example (1) in section 3, and example (2) in section 4. Finally, in section 5, I shall return briefly to the general issue of what counts as taking scope.

1. Refining the issue

Sentences like (1) and (2) have frequently been taken to tell us something important about definite descriptions. To see why, consider Russellian accounts that treat definite descriptions as a kind of quantifier, including the refined version of Neale (1990) which treats them as restricted quantifiers. One might be skeptical about such theories, based on the following sort of observation.

One of the distinguishing features of quantifiers is their ability to take *scope* with respect to other quantifiers, i.e. to take *relative* scope. Indeed, it is a commonplace assumption in much of the literature in philosophical logic that quantifiers are quite *free* in their scope potentials with other quantifiers. In a sentence with multiple quantifiers, this in turn predicts there will be *scope* ambiguities. For instance, we expect to see two different readings for a sentence like:

(3) Someone loves everyone.

a. Surface scope: $\exists x \forall y L(x,y)$

b. Inverse scope: $\forall y \exists x L(x,y)$

Though it not uncontroversial, this certainly seems right. The sentence appears to be ambiguous, and the ambiguity appears to be the result of the quantifiers being able to enter into distinct scope relations with each-other.[1]

When we turn to definite descriptions, we see a strikingly different pattern. Similar sentences with definite descriptions do not appear ambiguous. Consider:

(4) a. Every man danced with the woman.
  b. The woman danced with every man.
  c. The woman danced with some man.
  d. The woman danced with the man.

In none of these cases do we detect any ambiguity. This is first and foremost a point of data. We simply do not perceive these sentences as ambiguous, as we do with (3). On this point, definite descriptions are not behaving the same way as canonical quantifiers. It is tempting to infer from such data that definite descriptions are not quantifiers.

Examples like (1) and (2) might be offered as a reason to reject this conclusion. In them, we see descriptions interacting with other quantifiers, in ways we do not in (4). In particular, as Neale (1990) stresses, we see definite descriptions appearing to take *narrow scope* with respect to other quantifiers which are below them in the surface forms of the sentence in which they occur. We seem to have *each girl* scoping over *the mother* and *every Englishman* scoping over *the woman*. From this, we might infer that definite descriptions enter into typical quantifier-scope behavior. Hence, we might conclude, definite descriptions look like quantifiers after all.

My main point in this paper is that cases like (1) and (2) do *not* show this. They show us lots of interesting things about quantifier scope; both where we see it, and where we do not. But they do not show us anything particularly interesting about the scoping behavior of definite descriptions themselves. As far as the status of quantificational accounts of definite descriptions go, they are not really helpful.

Before launching into my arguments for this conclusion, it is worth pausing to explore in some more detail what is at stake for our examples, and what my conclusions might really reveal.

First, let me make clear that my negative conclusion is only one about whether definite description take relative scope with respect to other quantifiers. This should be sharply distinguished from the issue of whether we can bind into the nominal of a definite description, as we see with another of Mates' examples:

[1] I shall not here seriously worry about whether this sentence is ambiguous. Virtually any discussion in philosophical logic will assume it is. A number of linguistic theories of quantifier scope will too, including such works as Aoun & Li (1993) and May (1985). Reasons to doubt it is really ambiguous have been offered by such works as Kempson & Cormack (1981) and Reinhart (1979, 1983). A careful critique of some of their arguments can be found in Chierchia & McConnell-Ginet (1990). Alternative reasons to cautious about claims of scope ambiguity can be found in Pietroski & Hornstein (2002).

(5) Every positive integer is the positive square root of some positive integer.

As Mates rightly notes, because the definite description contains a pronoun bound by the quantifier *every positive integer*, there is no single value of the definite description. Hence, we cannot think of it as simply an unstructured referring expression, picking out a single object. This is serious objection to the kind of view held by Strawson (1950), but it is not enough to convince us that definite descriptions are really themselves quantifiers.

Second, the examples in (3) and (4) provide data about scope interaction; especially, about the possibility of inverse scope readings. But such data is not by itself conclusive for questions of what counts as a quantifier. Not every quantifier in every position can take inverse scope. For instance, quantifiers like *few* in *object position* do not generally allow inverse scope readings. Consider:

(6) Three referees read few abstracts.

This sentence appears to be *un*ambiguous.[2] Hence, one might shrug off data like (4) as simply showing unusual scope potentials for definite descriptions.

Even so, I think there is a serious issue at stake, and appreciating just what sentences like (1) and (2) tell us will help to illuminate it. Examples like (4) hold out the prospect of treating definite descriptions as essentially scopeless, on par with proper names and deictic pronouns when it comes to scope. Examples like (5) remind us that we will have to allow some functional dependence in the values of definite descriptions, but do not really show us that we need to see definite descriptions themselves as taking scope. On the other hand, if scoping mechanisms really do have to apply to definite descriptions to make sense of examples like (1) and (2), then we have a conclusive refutation of any view which treats them as basically scopeless. As quantifiers are our best examples of scope-taking operators, we would thereby have strong support for the quantificational treatment of definite descriptions.

I shall argue here that as far as sentences like (1) and (2) go, we have no need for scoping mechanisms to applying to definite descriptions. Hence, they do not give support for quantificational views. This conclusion is quite limited for many reasons. First, there are any number of other reasons Russellians have offered for treating definite descriptions as quantifiers, so ruling out this one is hardly conclusive. I shall not, for instance, discuss at all the issues of scope interaction with modality or belief which have loomed so large in the literature on definite descriptions.[3] Second, there are some very delicate issues of just what counts as taking scope which examination of these sentences will not address. (I shall return to this issue briefly in section 5.)

[2] Examples like this are discussed by Beghelli & Stowell (1997), Liu (1997), and Szabolcsi (1997), among places.

[3] I do take up the issue of scope with negation in my (forthcoming).

Even so, I do think that focusing on these examples shows more than just that one data point in favor of Russellian views does not work out. The issues that are required to understand the ways the quantifiers work in sentences like (1) and (2) invoke a surprising amount of important and far-reaching theory. Understanding them involves understanding some very important aspects of quantifier scope, and of distinct phenomena that may appear to be quantifier scope. Thus, a clear picture of how these examples work will help us to understand better where definite descriptions fit into the larger picture of quantifiers and related phenomena.

2. Some background

The main task at hand is to examine (1) and (2) in detail. To do this, some tools and background assumptions will be necessary. Some of what we will need will be fairly technical ideas from linguistic theory. So, I shall now try to give a crash course in some key aspects of the syntax and semantics of quantifiers, and review some key ideas about the semantics of definite descriptions.

2.1. Semantic and syntactic assumptions

I shall adopt a reasonably standard approach to semantics in linguistic theory: the one represented by the textbook of Heim & Kratzer (1998). This will give us an off-the-shelf framework for semantic analysis. It is not the only one available, but I am broadly sympathetic to the framework of model-theoretic semantics in which they work.[4]

One of the hallmarks of contemporary model-theoretic semantics is reliance on the machinery of *type theory*. Types provide a classification of semantic values, which I shall rely upon here. (Actually, they provide much more than that, and where they do, their use is controversial.) We begin with a type e of individuals. 'e' names an entire type, whose elements are elements of the domain D_e of individuals. We also begin with a type of truth values t, whose elements are the two truth values 1 and 0. Hence, $D_t = \{1,0\}$.

Further types are built as types of functions between types already constructed. For instance, we have a type of functions from individuals to truth values, which is essentially the type of *sets* of individuals. This type is named $\langle e, t\rangle$, the angle brackets indicating functions from the left-hand type to the right-hand type. $\langle e, t\rangle$ is the type of elements of $D_t^{D_e}$. We can also consider more complicated types. $\langle\langle e, t\rangle, t\rangle$ is the type of functions from functions from individuals to truth values (i.e. sets) to truth values. It is thus essentially the type of sets of sets.

[4] The model-theoretic approach to semantics stems from Montague (e.g. Montague 1973). The leading alternative stems from Davidson (e.g. Davidson 1967). An alternative to Heim and Kratzer's textbook presentation, in the Davidsonian tradition, is Larson & Segal (1995).

The taxonomy of types corresponds to some basic grammar. Pronouns, proper names, and variables will be interpreted as of type *e*. Intransitive verbs are predicates, and are interpreted as of type $\langle e, t\rangle$. For a transitive verb, we have a simple syntax like:

(7) $[_S\,[_{DP}\,\text{John}]\,[_{VP}\,[_V\,\text{loves}]\,[_{DP}\,\text{Mary}]\,]\,]$

The sentence (S) is broken into a verb phrase (VP) and various arguments. Traditionally, these are though of as noun phrases, but current thinking tends to classify then as determiner phrases (DP). The type-theoretic representation of the verb *loves* reflects the way it combines with its arguments in this simple syntax. Order counts. It first combines with the object determiner phrase (DP) *Mary* to form the verb phrase (VP) *loves Mary*. This then combines with the subject to form a sentence. Hence, the semantic value of the verb needs to take an argument of type *e*, and result in a predicate, i.e. needs to be of type $\langle e, t\rangle$. The semantic value of a verb like *loves*, written [[*loves*]] is thus an element of type $\langle e, \langle e, t\rangle\rangle$.[5]

Quantified expressions in natural language are a species of determiner phrases (DPs). Among the determiners are some fairly uncontroversial quantifiers, including *every, most, few, no, some*, etc. These build quantified DPs by combining with a nominal, which may be a common noun, as in *every man* or something more syntactically complex, as in *most men who have been to California*.[6]

The standard semantics for quantified DPs makes them of type $\langle\langle e, t\rangle, t\rangle$. This incorporates the Fregean idea that quantifiers are interpreted as *sets of sets*. [[*Every man*]] is basically $\{X\colon \{y\colon \mathbf{man}(y)\} \subseteq X\}$. *Every man is happy* is true if and only if $\{y\colon \mathbf{happy}(y)\} \in$ [[*every man*]]. In type-theoretic parlance, this is a function which inputs sets, and outputs 1 if the input set includes every man. Hence, we have an element of type $\langle\langle e, t\rangle, t\rangle$. Quantifying determiners are functions from nominal inputs to quantifiers of type $\langle\langle e, t\rangle, t\rangle$. Hence, they are of type $\langle\langle e, t\rangle, \langle\langle e, t\rangle, t\rangle\rangle$.[7]

In this framework, the genuine arguments of predicates (e.g. Vs) are expressions of type *e*. This is built into the assignment of type $\langle e, t\rangle$ to an intransitive verb, for instance. We are assuming that such expressions as pronouns and proper names can occur as type *e*, and figure as arguments.

Quantifiers cannot generally figure as arguments, as they are not of type *e*. In particular, quantified DPs in object position cannot combine with a V. One reason they cannot is

[5] [[α]] is the semantic value of α (in a given context). I shall generally be somewhat lax about use and mention, and for instance, call a quantified expression like *every boy* and its semantic value [[*every boy*]] both quantifiers. Where I do need to keep more track of use and mention, I shall put linguistic expressions in *italics*. Specific semantic values will be in bold, so we have, for instance, [[*John*]] = **John**.

[6] I shall also be lax about referring both to a quantifying determiner and a DP built out of a quantifying determiner as 'quantifiers'.

[7] This approach to the semantics of quantifiers essentially goes back to Frege (e.g. Frege 1879), and has been developed extensively by Barwise & Cooper (1981), Higginbotham & May (1981), Keenan & Stavi (1986), and Montague (1973), among many others. A philosophically oriented survey of this literature is given in my (2006).

that their types do not match. A quantifier is of type $\langle\langle e, t\rangle, t\rangle$, while a V is of type $\langle e, \langle e, t\rangle\rangle$. Neither makes sense as the argument of the other, so we have no way to combine them.

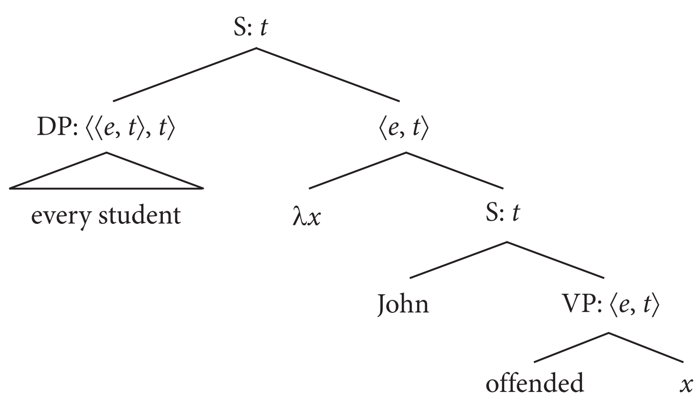
This is one of many reasons to posit underlying *logical forms* (LF) for sentences which look substantially different from surface syntax. The basic idea is to see quantifiers as binding a variable (as we do in standard logic). A variable, rather than the quantifier itself, occupies the argument position of a verb, while the quantifier has moved to the front of the sentence, and binds the variable. The LF of a sentence like *John offended every student* is then given by:

(8) a. John offended every student..

b. $[_S\ [_{DP}$ every student$]_x\ [_S$ John offended $x]\ ]$

The framework of Heim and Kratzer is very careful about the mechanism by which the variable is bound. Technically, binding is done by λ-abstraction. They propose that the process of moving a quantifier, which is exhibited by (8), introduces such a binder. The full LF for (8) in their framework is given by:

(9)



The types now match, and the sentence can be assigned a semantic value compositionally.[8]

The notion of logical form that is common in linguistics is importantly different from the one often used by philosophers. The idea that sentences have LFs with certain features is a substantial empirical hypothesis. The claim is not merely that we can make certain features of a sentence perspicuous by representing it with the apparatus of logic, but that the grammar itself generates such a structure, even if it is not the same as the

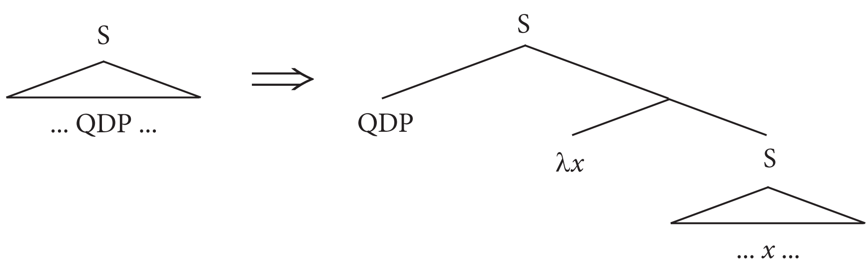
[8] I am abusing use and mention again here. Technically, we should have an index interpreted by λ-abstraction where I have simply a λ. The explicit presence of the λ-binder is a feature of Heim and Kratzer's system which is not common to all similar views of logical form. See Büring (2004) for further discussion of this apparatus.

apparent surface structure of the sentence. The need to repair type mismatches is one of many reasons that have been given over the years for positing such a level of linguistic representation.[9]

With the notion of logical form goes that of the syntactic process that generates logical forms: particularly, the syntactic process of *moving* a quantified DP. For instance, in (9) the quantifier is moved from its position in the surface form of the sentence to a sentence-initial position. This process is known as *quantifier raising* (QR). As LF is taken to be a genuine level of linguistic representation, QR is taken to be a genuine part of grammar.[10]

One of the important features of LF as we are considering it is that it makes scope a substantially syntactic matter. Arguments—non-scope-taking elements—are interpreted *in situ*. Quantifiers—canonically scope-taking—are generally interpreted after being moved by QR, leaving variables in genuine argument positions. QR generates a syntactic scope configuration. We see:

(10)



Scope positions are syntactic positions like these, where a quantified expression is adjoined by QR to a syntactic domain (plus a λ-binder). The syntactic structure to which it is adjoined is its scope. It is also the semantic scope of the λ-binder. We thus have syntactic notion of scope, and a syntactic operation that assigns scope.[11]

[9] The notion of logical form I shall appeal to, in keeping with my use of Heim & Kratzer (1998) as a basic framework, is very commonplace in linguistics. Commonplace does not mean universally accepted or uncontroversial. There is an active research program which does not accept it (e.g. Cooper 1983; Hendriks 1993; Jacobson 1999). A battery of arguments in favor of logical form as a level of linguistic representation may be found in the classic May (1985). For a somewhat more recent discussion, see Huang (1995).

[10] Not surprisingly, this idea has been challenged, especially by minimalist approaches to syntax (e.g. Hornstein 1995). Another alternative, developed by Beghelli & Stowell (1997), retains some but not all aspects of the QR approach. See Szabolcsi (2001) for a survey of these issues.

[11] The syntactic relation involved here is that of c-command. As pointed out by Reinhart (1979, 1983), this is the fundamental syntactic notion behind scope. It is controversial whether the right syntactic configuration fully determines scope; or whether, as argued by May (1985), it only constrains scope. I shall adopt the former as a working hypotheses, but really only for simplicity of exposition. It will not significantly affect the arguments I shall offer here.

The machinery that I have been reviewing indicates a clean and simple picture of the issues that will be at stake for us. We have a distinction between quantified expressions of type $\langle\langle e, t\rangle, t\rangle$ and non-quantified expressions of type *e*. *e*-type expressions occur in argument positions at LF. Quantified expressions, on the other hand, are moved to scope positions at LF. Their scopes are fixed (at least in part) by the syntactic properties of their scope positions. Hence, *e*-type expressions are essentially scopeless, while quantifiers are essentially scope-taking.

Unfortunately, the situation is not really as simple as this. At least, it is not at all clear that it is. There are any number of complications which might interfere with the clean and simple picture. I shall mention some of them.

First, deciding which expressions are genuinely of type *e* is not so straightforward. A moment ago I listed proper names as of type *e*. But it is possible to treat them quantifier type (following Montague 1973), and it is sometimes argued that we should.[12] Whether or not some pronouns should be interpreted as having quantifier type is a large issue in the anaphora literature.

Perhaps more importantly, the simple picture which has quantifiers as always moving to scope positions and *e*-type expressions never moving glosses over some significant issues. In fact, it is clear from (9) that quantifiers in *subject* position can be interpreted *in situ* in the Heim and Kratzer framework. This is allowed, as the semantic value of the VP of type $\langle e, t\rangle$ can be an argument of the semantic value of the quantifier of type $\langle\langle e, t\rangle, t\rangle$. This inverts the intuitive picture of what is argument and what is predicate, but it is allowed by the type-driven framework. Whether or not this right syntactically remains a difficult question.[13]

Likewise, the simple picture which has *e*-type expressions uniformly interpreted *in situ* is also an over-simplification. Though the type-driven framework of Heim and Kratzer allows such expressions to be interpreted *in situ*, it does not require it. Nothing in the framework precludes applying QR to *e*-type expressions, and in fact Heim and Kratzer allow it. Whether or not *e*-type expressions can or must move to scope positions also remains a difficult question. As I shall briefly touch upon in section 5, far more bears upon it than what is needed to fix relative quantifier scopes.

Even in light of all these complications, the clean and simple picture helps us to give substance to the question of whether or not descriptions are quantifiers. Whether or not we can interpret definite descriptions as type *e* remains a substantive question, and it is that question we will focus on here. Complications not withstanding, expressions of type *e* can typically occur as arguments, and obviate some requirements for

[12] One such argument is in effect given by Larson & Segal (1995).

[13] For instance, in May (1985), a version of the θ-Criterion requires all quantifiers to move at LF. In contrast, in Hornstein (1995), minimalist principles allow at least weak determiner phrases to be interpreted *in situ* (inside the VP shell).

movement to scope position, while quantified DPs typically cannot be arguments, and typically must move to scope positions to produce interpretable structures. Hence, examining whether an expression may be interpreted as type e and left *in situ* is a good way to explore whether it really behaves like a quantifier. With this in mind, at least for simplicity of exposition, I shall frequently pretend the clean and simple picture holds as we explore our examples (1) and (2).

2.2. Semantics for definite descriptions

With this background in place, we may consider some alternatives for interpreting the definite article *the* of English.

A number of theses surrounding the interpretation of descriptions need to be distinguished. One thesis is about the truth conditions of sentences with descriptions. Compare:

(11) a. The F is G

b. $\exists x\,(F(x) \wedge \forall y\,(F(y) \rightarrow x = y) \wedge G(x))$

Russell argued that the truth conditions of (11a) are given by (11b). At least when it comes to *proper* definite descriptions, for which there is a unique F, this is widely accepted, and I shall not challenge it.

Russell's own view of definite descriptions made them syncategorematic: there is no constituent in the logical form of a sentence corresponding to the definite article according to Russell.[14] Modern neo-Russellian theories of descriptions, such as those of Sainsbury (1979), Sharvey (1969), and most prominently Neale (1990), generally do not accept this. Neale (1990), for instance, proposes logical forms involving *restricted quantifiers* for sentences containing descriptions. The logical form of (11a) is given by:

(12) [the x: $F(x)$] $G(x)$

The truth conditions of this form are still as they are given in (11b).

This idea fits entirely naturally with the framework I just sketched. Restricted quantifiers are just quantified DPs. The truth conditions given in (11b) can be captured by:

(13) $[[\textit{the } F]] = \lambda X \in D_{\langle e,\, t\rangle}\,[|F| = 1 \wedge |F \setminus X| = 0]$

On this view, *the* is a quantifying determiner, with the same semantics of type $\langle\langle e, t\rangle, \langle\langle e, t\rangle, t\rangle\rangle$ as any other quantifying determiner. I shall take this to encapsulate the treatment of definite descriptions as quantifiers.

[14] Russell (1905, 1919) offers a theory which associates a sentence with a logical form that does not contain any constituent directly corresponding to the definite article. In Whitehead & Russell (1927), descriptions are directly introduced as defined symbols of a formal language.

Especially in the linguistics literature, the quantificational approach to definite descriptions is one among several competitors. Most of the alternatives have the feature of making DPs headed by the definite article of the same semantic type as pronouns and variables (with the notable exception of Graff 2001). In light of the background theory I sketched in section 2.1, we can say that these theories make definite descriptions of type *e*, and treat them as basically scopeless.

I shall present one such theory, for comparison's sake. The one I shall present is in some ways similar to the quantificational treatment. It treats *the F* as a semantically structured phrase, whose nominal *F* is interpreted as a predicate in the usual way. But instead of making the phrase of type $\langle\langle e, t\rangle, t\rangle$, of quantifier type, it makes it of type *e*, simply picking out an individual. The way to do this is to make *the* of type $\langle\langle e, t\rangle, e\rangle$:

(14)

$$[[the\ F]] = \begin{cases} \text{the unique element of } F & \text{if } |F| = 1 \\ \text{undefined} & \text{otherwise} \end{cases}$$

It is important to stress that for proper definite descriptions, where there is exactly one *F*, (13) and (14) give exactly the same truth conditions to *The F is G*. But they do so in different ways. On the Russellian treatment of (13), the DP *the F* is treated as a quantified DP, of quantifier type $\langle\langle e, t\rangle, t\rangle$. On the treatment of (14), it is of type *e*, on par with proper names and pronouns. Unlike proper names and pronouns, however, it is semantically structured (and non-rigid). It results from the composition of $the_{\langle\langle e, t\rangle, e\rangle}$ and $F_{\langle e, t\rangle}$.

As DPs with the definite article are interpreted as of type *e*, we may call this the *e-type theory*. The *e*-type theory of definite descriptions in (14) is one of several that are much-discussed in the linguistics literature. Another category of approaches relies on dynamic logic or discourse representation theory (DRT), as in the seminal works of Groenendijk & Stokhof (1991), Heim (1982), and Kamp (1984). The hallmark of these sorts of theories is the treatment of both definites and indefinites as free variables, which are bound by an existential closure operation which functions outside of clausal domains. It is by no means my goal here to argue that the *e*-type theory is superior to DRT-based approaches. That is a large issue, with a literature all its own. The *e*-type theory is structurally similar to the quantificational one, and so it facilitates comparison. As I mentioned, these all have the feature of making definite descriptions of a semantic type suitable for occupying an argument position. Hence, descriptions on these views can be interpreted without moving them to scope positions. They are thus, as I have been saying, basically scopeless.[15]

[15] The *e*-type theory is is so-called because of the type assigned to definite descriptions. It should be distinguished from E-type anaphora, even though some accounts of E-type anaphora do assume it (e.g. Heim 1990). It is also sometimes called the 'Fregean' theory, e.g. by Heim (1991), Heim & Kratzer (1998), Elbourne (2005), and my (forthcoming). The idea does essentially go back to Frege (1893). I prefer to simply call it the *e*-type theory, as many philosophers assume a 'Fregean' theory involves Fregean senses.

2.3. Presupposition

The *e*-type analysis of descriptions I gave in (14) makes the semantic value of *the F* undefined if there is no unique *F*. This makes definite descriptions carry a *presupposition* of existence and uniqueness. Whether definite descriptions carry such presuppositions is highly controversial. Even so, I do not think this controversy significantly affects the issues at stake here, for two reasons.

First, and most importantly, virtually everything I shall say here about descriptions and scope is independent of what we say about presupposition. The important issues about scope appear with proper definite descriptions, where the quantificational analysis (13) and the *e*-type analysis (14) agree on truth conditions.

Second, though the simple way of presenting an *e*-type analysis I opted for in (14) makes definite descriptions carry presuppositions, this can be avoided. One way to do so is to fix that *The F is G* is *false* if the description is improper.[16] Conversely, it is not difficult to write semantic presuppositions into the interpretations of quantifiers, and we could do so for a quantifier which otherwise functions like (13).[17] Thus, both quantificational and *e*-type approaches can have either either presuppositional or non-presuppositional meanings for *the*. This makes the issue of presupposition largely orthogonal to the ones we will explore here.

Bearing this in mind, I shall generally try to avoid issues of presupposition in the discussion to follow. Though I am inclined to believe that the presuppositional analysis is correct, it will not be at issue here.[18]

3. The inverse linking case

We now have a rather heavy bag of machinery at our disposal. Let us use it to see how sentences (1) and (2) may be analyzed, and how the *e*-type approach to definite descriptions fares in them.

I shall start with (1). As I shall discuss more in a moment, this is an instance of the phenomenon discussed in the linguistics literature under the name of 'inverse linking'.

[16] Just how to do this involves some technical complications, but as I am avoiding issues of presupposition as much as possible, I shall not pause to pursue them. They are discussed, for instance, in some of the literature on choice functions, including Reinhart (1997) and Winter (1997). (This literature, of course, is generally more concerned with indefinite than definite descriptions.) Also, van Eijck (1993) makes extensive comparisons between presuppositional and non-presuppositional treatments of descriptions, from the point of view of dynamic semantics.

[17] Examples of quantifying determiners which fairly clearly seem to carry presuppositions include *both* and *neither*.

[18] It should be clear that assuming a presuppositional analysis of *the* is not to endorse all aspects of the theory of Strawson (1950). Among the many issues that have been controversial for presuppositional approaches is just what a realistic *uniqueness* presupposition should look like. The literature on the uniqueness of definites is huge. Some snapshots are to be found in Abbot (2004) and Kadmon (2001), among many places.

To get an analysis of it, we should start with a rough (very rough indeed!) approximation of what the surface syntax of our target sentence is like. Closely enough, we can treat it as:

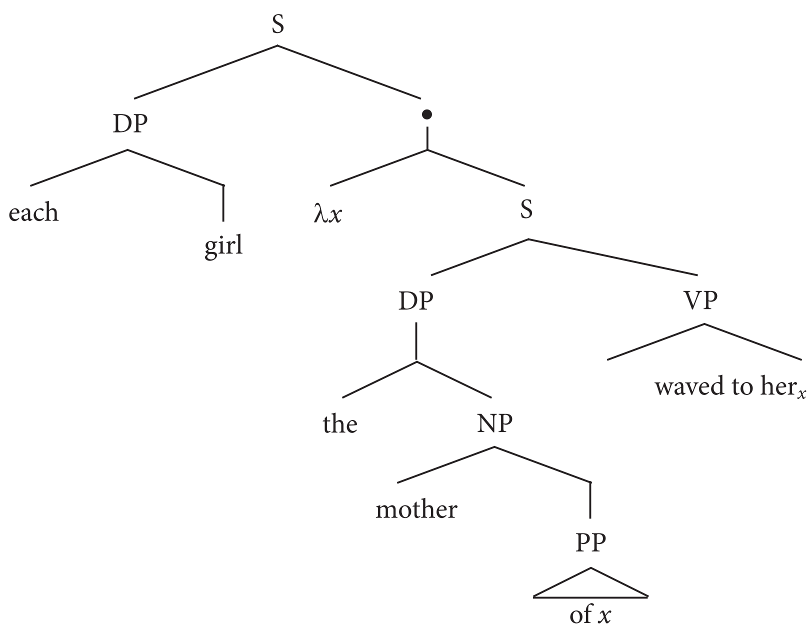
(15) $[_{S}\,[_{DP}$ the $[_{NP}$ mother $[_{PP}$ of each girl]]] $[_{VP}$ waved to her]]

Working with this structure, how are we to interpret the sentence?

Let us begin with the NP *mother of each girl*. *Mother* is a two place relation $[[\mathit{mother}]]_{\langle e, \langle e, t\rangle\rangle}$. The PP *of each girl* appears as an argument of the relation *mother*. Hence, the preposition *of* is semantically vacuous, and the PP contributes the quantified DP $[[\mathit{each\ girl}]]_{\langle\langle e, t\rangle, t\rangle}$. We thus have a type mismatch: the values of *mother* and *of each girl* cannot compose to give us the semantic value of the NP *mother of each girl*.

As I mentioned in section 2.1, this triggers a process of *moving* the quantified DP *each girl*, resulting in a logical form for the sentence which looks different from its surface form. Let us begin with the assumption that the quantified DP moves to a sentence-initial position, as I discussed in section 2.1. The resulting LF looks like:

(16)



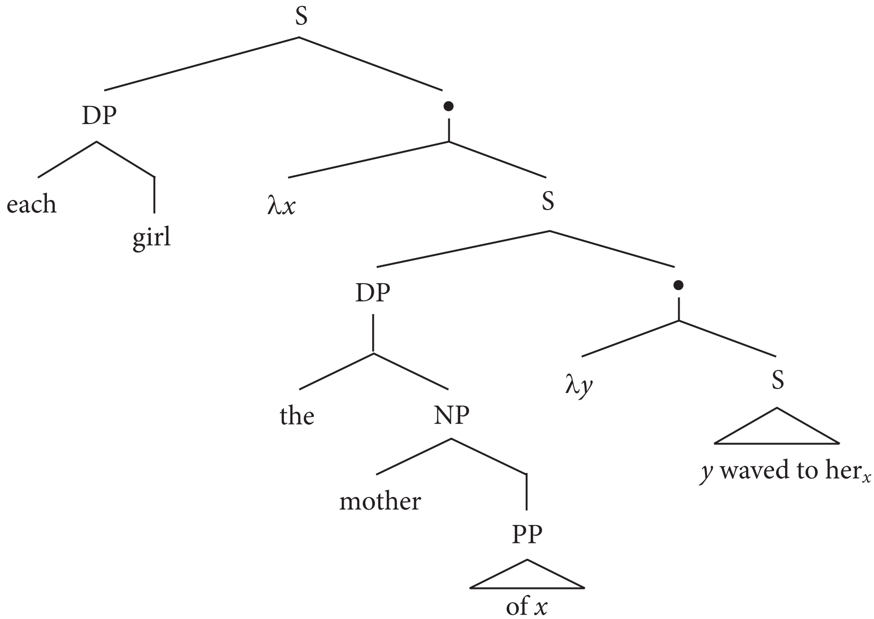
This is an interpretable structure. In fact, it is interpretable regardless of whether we interpret the definite *the mother of x* as of type *e* or of type $\langle\langle e, t\rangle, t\rangle$. If [[*the mother of x*]] is of type *e*, it combines with the VP of type $\langle e, t\rangle$ to form a sentence of type *t*. λ-abstraction then binds the variables in the sentence, resulting in a predicate which can combine with the quantified DP. The interpretation is given by:

(17) $\textbf{each girl}_{\langle\langle e, t\rangle, t\rangle}\,(\lambda x\,(\textbf{the mother of}\ x\ \textbf{waved to}\ x)_{\langle e, t\rangle})$

We get an interpretable structure for this sentence, by leaving the definite description *in situ*, and moving the quantifier *each girl* to a scope position. We have thus had to apply our scoping mechanism QR to the embedded quantifier, but not the definite description.

What we have shown so far is that we can analyze this example using the *e*-type analysis, without assigning scope to the definite description. Of course, none of this shows that we cannot move the description to a scope position, nor that the descriptions is not really a quantifier after all. We could move the definite to a scope position, getting a structure like:

(18)



This assigns the definite description *the mother of x* narrow scope with respect to the quantifier *each girl*. It makes no sense to assign the description wide scope, but narrow scope is sensible, and results in the same truth conditions as the non-scoping interpretation.

This is also an interpretable LF. In fact, in the Heim and Kratzer framework, it is interpretable even if we leave the definite description at type *e*. The λ-bound node λ*y* (*y waved to her*$_x$) is of type ⟨*e*, *t*⟩. The definite description *the mother of x* is of type *e*, so they combine. They do so in a different way than we see with quantified DPs in scope position. Quantified DPs are functions of type ⟨⟨*e*, *t*⟩, *t*⟩, which take as input the λ-bound elements of type ⟨*e*, *t*⟩. But so long as we allow sister nodes [α β] to combine either by α being an input to β, or vice-versa, we have interpretable structures here. (If we take a stricter approach to semantic composition, we might have to adjust the type of the description to quantifier type $\langle\langle e, t\rangle, t\rangle$. Frameworks which allow *type-shifting* (e.g. Partee 1986) do this easily.)

We can thus apply our syntactic scoping mechanism QR to the definite description interpreted as type *e*. Of course, we can also simply treat *the* as a quantifying determiner, semantically on par with *each*. We now have three viable options: treat the definite description as type *e* and do not assign it scope, treat it as type *e* but assign it scope anyway, or treat it as a quantifier. All are viable. The main moral so far is that the first option is just as viable as the others, insofar as this example goes. The example gives us no reason to opt for the scoping over the scopeless options.

There might be some general considerations which suggest taking the first—scopeless—option, if it is available. General parsimony considerations might do this. We might prefer theories which only apply mechanisms like QR for a good reason, and we might prefer theories which give expressions lowest-possible type values. If so, then our scopeless option looks like the best option, as far as this example goes. But this is only one example. Indeed, I shall discuss some other issues in section 5 which might make us doubt we can apply parsimony considerations so easily. But nonetheless, the example itself does not require the definite description to take scope.

So far, we have seen that in examples like (1), we have to move the embedded quantifier *each girl* to a scope position, but need not move the definite description (if we do not want to). But actually, the situation is more complex than this makes it seem. How to handle the quantifier is complicated in this case. Though it will not really change our view of the behavior of the definite description, it is worth pausing to see why.

In looking at this question, it is worth noting that examples like (1) have been discussed at length in the literature on logical form, especially by May (1977, 1985), under the name 'inverse linking'. A typical example is:

(19) Someone from every city despises it.

May noted that the dominant reading (and the only plausible one) of (19) is the inverse scope reading; a fact which he used in arguing for LF as a level of linguistic representation. To explain these cases, some theory which explains how a quantifier can take scope outside of the PP complement of a DP is needed. In cases like (19), this scopes the embedded quantifier outside of another quantifier, as it would if we treat definite descriptions as quantificational in (1). But if we opt for the *in situ* treatment of the definite, the issue of the scope of the embedded quantifier remains the same.

Assigning scope to this quantifier raises a syntactic problem. The analysis I sketched above (which is in effect the analysis of inverse linking of May 1977) requires movement of the quantifier *each girl* out of a subject DP. This sort of movement is generally barred by syntax. At the very least, overt movement of this sort leads to ungrammaticality, as we see if we try a similar movement with a *wh*-phrase:

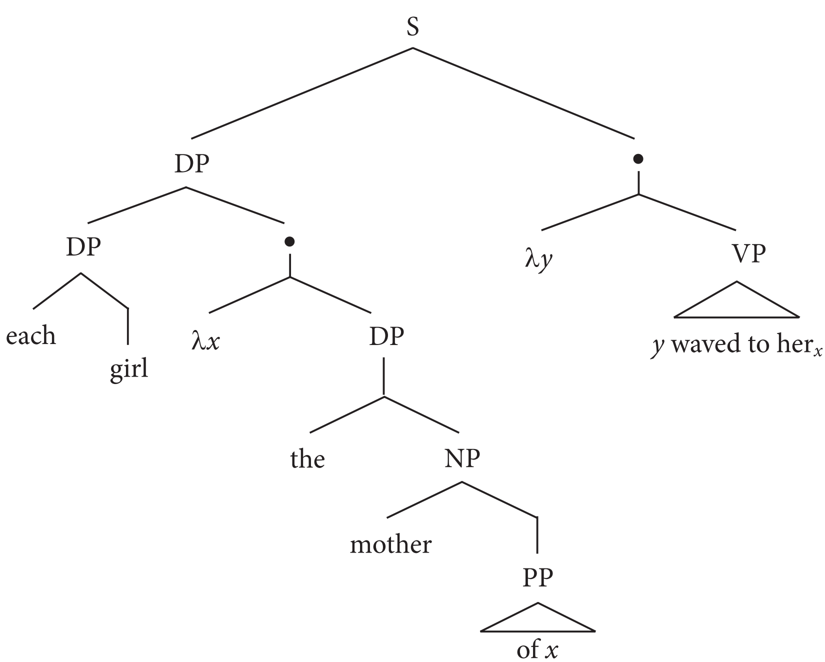
(20) *Which girl$_1$ the mother of t_1 waved to her.

Though it is a rather technical point in linguistics, this might be a reason to doubt the details of the analysis I offered in (16).

Two preliminary points should be made about this worry. First, the technical issue does not undercut the force of my argument that the *e*-type analysis, combined with off-the-shelf tools from linguistics, handles examples like (1). The technical problem applies equally to quantificational and *e*-type approaches. Both approaches need to assign the embedded quantifier wide scope, and doing so in a linguistically acceptable way is a problem independent of whether the definite description itself takes scope. Second, and perhaps more importantly, whether or not QR—our syntactic scoping mechanism—obeys the same syntactic restrictions as overt movement is a hotly debated topic. So, the worry itself hangs on some extremely difficult and far-reaching issues in linguistic theory.[19]

Bearing in mind that the issue before us is too technical to resolve here, let me briefly sketch one way to approach it. One option for avoiding extraction out of the DP, explored by May (1985) and by Larson (1985) and Heim & Kratzer (1998), is to assign the quantifier scope over the DP, rather than the whole sentence. If extraction out of the DP is barred for syntactic reasons, perhaps we should move the embedded quantifier to a scope position within DP. Assuming we then apply QR to the larger DP, the result would be something like:

(21)



[19] See May & Bale (2005) for a survey of work on inverse linking. For overviews of some issues about syntactic constraints on LF movement, see Huang (1995), Reinhart (1997), and Szabolcsi (2001).

There may be some good syntactic reasons to prefer this sort of structure (see May (1985) and May & Bale (2005) for discussion). Interestingly, it obviates the question of whether the definite description itself it moved to a scope position. The embedded quantifier takes scope over DP, and the whole larger DP structure might scope as well. No further question of quantifier scope remains, for the reading in question.

Even so, this proposal raises a number of semantic problems. The first problem is how to interpret the higher DP. How are we to understand a quantifier taking scope over a DP? This question is underscored by the fact that we have a type mismatch. On the *e*-type analysis of the definite description, the lower λ-bound DP is of type $\langle e, e \rangle$, which does not combine with the quantified DP of type $\langle\langle e, t\rangle, t\rangle$. We face a similar problem on a quantification treatment of the definite description. Something needs to adjust the types within the higher DP, if we are to make semantic sense of it. The natural suggestion, made by Heim and Kratzer, is to invoke some type-shifting mechanism in the semantics. Another option is, as always, is to see further syntactic structure at LF which has the same effect. Much as we have already seen, such options could be implemented whether we opt for an *e*-type or quantificational treatment of the definite description.

There is a second problem as well. By the lights of many view of the syntax of scope, (21) does not allow the quantifier *each girl* to bind the pronoun *her*. Thus, any analysis along the lines of (21) will have to say something far-reaching about the syntax of scope, or about pronouns.

This brief glance at the complexities of inverse linking is enough to remind us that cases like (1) are very delicate indeed. Resolving how the embedded quantifier takes scope leads us to a surprising range of difficult problems in the syntax and semantics of quantifiers, of scope, and of binding.

With this in mind, we may leave example (1) with a guarded conclusion. It shows us some hard and interesting things about scope, but they are about the scope of the embedded quantifier. It is compatible with many treatments of the definite description, including basically scopeless ones. Thus, it fails to establish that definite descriptions enter into the same sorts of quantifier scope interactions as other quantifiers; though in the longer run, it is not enough to answer the question of whether definite descriptions take scope. I suspect that one of the reasons it has been hard to resolve the question of whether definite descriptions take scope is that it is often hard to get a satisfactory account of how other elements take scope in examples like (1).

4. The copular sentence case

So far, we have looked closely at example (1), and seen that it shows us some interesting things about quantifier scope, but nothing which particularly supports scoping over non-scoping theories of definite descriptions. It also reminded us that accurate accounts of scoping behavior can be difficult indeed. What about our next example (2)?

It is tempting to group it as on par with (1), as simply showing us a description taking narrow scope at LF with respect to a quantifier which appears inside it in the surface form of the sentence. But upon closer inspection, it turns out that (2) raises a number of distinct issues. First of all, though it contains a definite description with an embedded quantifier, as (1) does, it is importantly different structurally. It is a copular sentence, with form [DP *is* DP], and it contains a relative clause. As we will see, this leads to a very different analysis than we gave for (1). In this case, the issues are not simply about where and how a quantifier may take scope, but whether we are looking at a scope phenomenon at all. In the end, I shall argue that this example is equally compatible with scoping and non-scoping accounts of the definite description. But along the way, we will see how difficult it is to spot whether it is the scope of a quantifier that is at issue at all.[20]

Even though (2) differs from (1) in some ways, we might begin by trying to apply the same mechanisms we used to account for (1) to (2). Following the proposal in (16), we might simply move the embedded quantifier to a sentence-initial scope position. This does not resolve the question of whether the definite also scopes, but it does get the right truth conditions.

In the inverse linking case, we confronted syntactic reasons to be wary of moving the quantifier this way. For (2), this problem is all the more pressing. We would have to move the quantifier *every Englishman* out of the relative clause *(who) every Englishman loves*. But generally, quantifiers do not scope out of relative clauses. For instance, as noted by Rodman (1976):

(22) Guinevere has a bone that is in every corner of the house.

This sentence does not seem to allow the sensible reading on which Guinevere (the dog, presumably) has, for each corner of the house, a different bone in it. The sentence only seems to allow the impossible reading where the bone is in every corner of the house, which leaves the scope of the quantifier *every corner of the house* within the relative clause *that is in every corner of the house*. As I mentioned in section 3, it is highly contentious exactly which constraints the operation QR of moving quantifiers at LF obeys. But we should be cautious with any analysis of (2) which scopes a quantifier out of a relative clause.[21]

In the case of (1), we considered ways to scope an embedded quantifier outside a definite description which do not violate syntactic constraints on scope. Thus, we retained the assumption that the issue is the scope of the quantifier, but tried to refine our account of how it scopes. It is doubtful this is the right approach to cases like (2). For one reason,

[20] There is some discussion about whether the phenomenon at work in cases like (2) is restricted to sentences involving *identity*, as well as a certain sort of relative clause. Sharvit (1999*b*) discusses non-identity examples from Hebrew, and notes some exceptions for English as well.

[21] I should note that there is a large literature on whether *indefinites* obey these sorts of scope constraints, and whether they should be uniformly treated as quantifiers, including Abusch (1994), Fodor & Sag (1982), King (1988), Kratzer (1998), Reinhart (1997), Ruys (1992) and Schwarzschild (2002).

though scoping the embedded quantifier out of the relative clause would work for (2), it does not appear to be a general account of sentences of this form. With other embedded quantifiers, scoping them out (whether allowed or not) does not get the right truth conditions. For instance, scoping out the embedded quantifier does not get the right reading of (23), on either the *e*-type or quantificational approach to the definite description:

(23) The woman that no Englishman will invite to dinner is his mother.

a. (*e*-type) [no Englishman]$_x$ [the woman that *x* will invite for dinner is his$_x$ mother]

b. (Quantificational) [no Englishman]$_x$ [the woman that *x* will invite for dinner]$_y$ [*y* is his$_x$ mother]

(This example is discussed in Hornstein (1984), Jacobson (1994) (who cites Dahl 1981), and Sharvit (1999*b*) (who cites von Stechow 1990).)

Sentences like (2) and (23) have a kind of functional identity reading. For (2), there is a salient function from people (Englishmen) to a woman they will invite to dinner. Sentence (2) says that for the domain of Englishmen, that function is the *mother of* function. Hence, for every Englishman, the value of the function is his mother. For (23), there is a salient function from people to women they will not invite to dinner. On at least one reading, (23) says that on the domain of Englishmen, that function is again the *mother of* function. On these readings, (2) can be understood as saying that the inviting function and the mother of function on the relevant domain are identical, and (23) says the same about the non-inviting function.

Neither analysis (23a) nor (23b) can capture this functional reading. Take a situation where there is a salient non-inviting function: say that of being the *mother-in-law of* rather than that of being the *mother of*. But assume also that every Englishman does invite many salient women, including his neighbor and his boss. Intuitively on the reading in question, (23) is false. The quantificational analysis predicts it is true, as there is no Englishman such that the unique salient woman he invites to dinner is his mother. The *e*-type analysis predicts it is a presupposition failure (or it is true, if we take a non-presuppositional variant), and so fares no better.

It so-happens that (2) can be given the right truth conditions by scoping out the embedded quantifier, on either the quantificational or *e*-type analysis of the definite description (so long as we work the right salience condition into the uniqueness clause/presupposition). The cost is scoping out of a relative clause, and that is a problem for both analyses. But examples like (23) lead us to think that the underlying issue here is not one of the scope of the embedded quantifier at all. Rather, it is one of capturing the functional readings of these sentences.[22]

[22] Of course, that is not the only problem. It also needs to be explained how the embedded quantifier can bind the post-copular pronoun, for instance. But as our concern is with relative scope between the quantifier and the

There are a number of proposals for how to do this. I shall mention two recent ones, which are fairly typical of the options available. One sort of proposal, developed by Jacobson (1994) and Sharvit (1999*a*, 1999*b*), tries to implement the functional reading directly. The details are quite technical, and use very different apparatus than we have been exploring here. But the basic idea is that relative clauses are given genuinely functional readings. The definite article still picks out the relevant thing, but in this case, it is a function rather than an individual. The whole sentence (2) then winds up saying something like:

(24) $\mathbf{the}\, f_{\langle e,\, e\rangle} [\forall x\, (\mathbf{woman}\, (f(x))) \wedge \forall x\, (\mathbf{Englishman}(x) \rightarrow \mathbf{love}(x, f(x)))] = \mathbf{mother\text{-}of}_{\langle e,\, e\rangle}$

To flesh this out, we will have to make heavy use of devices of type-shifting. In particular, we have to change the type of *the* to take a functional input of type $\langle\langle e, e\rangle, t\rangle$, and output the function of type $\langle e, e\rangle$. This is a significant step, and indeed, according to Jacobson this sort of apparatus implicates a drastically different approach to issues of scope and binding than the one I have been assuming here. But for our purposes, we may simply note that the hard work is done by the functional account of the relative clause. Though some changes need to be made to the semantics of *the*, they are changes about what types of things it picks out.

Thus, if we take this approach, we can still give the definite description a basically scopeless treatment. It need not be a quantifier; rather, it can pick out the unique object of the right sort. In this case, that object will be of higher type, rather than type *e*. On the other hand, if we like, we can still give the definite a quantificational treatment. But as we have seen, assigning scope to the definite is not important to the account sketched in (24). In this case, scoping the embedded quantifier outside of the definite description is not part of the solution either. According to the proposal we have just glanced at, (2) does not really show us anything about quantifier scope interactions at all.

The other sort of proposal which we might apply to (2) seeks to preserve the kinds of assumptions we have been making here about scope and binding, and to avoid the heavy use of type-shifting operations. For instance, Schlenker (2003) suggests an analysis in terms of 'questions in disguise'. The sorts of functional readings we are concerned with go very naturally with certain sorts of questions (as observed by Engdahl 1986):

(25) Who is the woman every Englishman loves?

His mother.

With this in mind, Schlenker's analysis of (2) proposes a logical form which looks very roughly like:

(26) The woman every Englishman loves is his mother.

a. Answer to [who is the woman every Englishman loves] = [~~every Englishman loves~~ his mother]

definite description, I shall not discuss this further.

b. ?x [[woman every Englishman loves](x)] = [~~every Englishman loves~~ his mother]

The crossed-out material is elided. ?x is a concealed *wh*-operator, like *what* or *who*.[23]

Obviously, quite a bit of syntactic work is needed to derive this sort of logical form. Again, I shall skip the details. For our purposes, it will suffice to note that like the previous analysis, Schlenker's does not indicate a quantificational treatment of the definite article. Schlenker specifically proposes that in environments like that of (2), *the* spells out the definiteness feature of the concealed *wh*-operator ?x. When DPs are functioning as questions, according to Schlenker, *the* has no place in logical form independently of ?x. This tells us nothing in particular about the semantics we should apply to *the* when it occupies a D-position in logical form, and gives us no reason to prefer a quantificational analysis over an *e*-type analysis.

Regardless of which sort of analysis of sentences like (2) is correct, we are safe to conclude that they do not give us evidence for a scope-taking analysis of descriptions. Both analyses we have looked at, in fact, use non-quantificational treatments of the definite article. We have stumbled upon a hard case, but not about descriptions, quantifiers, and scope, so much as about the structure of certain copular sentences, and the role of relative clauses or concealed questions in them. No defense of a quantificational view of definite descriptions will be found here. Neither analysis we have considered of our copular sentence case clearly precludes a quantificational treatment of definite descriptions (at least, when they appear in D-positions in logical form), but neither gives us any reason to prefer a quantificational over an *e*-type analysis. Indeed, we have seen that the underlying issue for the copular sentence case is not one of relative scope between quantifiers, or quantifiers and descriptions, at all.[24]

Even more so than with (1), our brief detour into what is needed to account for (2) makes vivid just how complicated cases like these can be. Cases like (2) and (23) confront us with not so much a technical problem about the conditions on scope-taking, but a very hard problem of how to generate functional readings. Both approaches we glanced at go to extreme measures to solve the problem. I noted that these accounts do not make any use of quantificational treatments of definite descriptions, and so they

[23] Using a Groenendijk and Stokhof-inspired semantics for questions, Schlenker avoids the *answer to* operator in logical form. The idea that there is a connection between some DPs and questions finds support in examples like these (from Heim 1979):

(i) a. John knows the capital of Italy.
  b. They revealed the winner of the contest.

In the second sentence, for instance, what is revealed is who the winner of the contest is.

[24] One other surprising aspect of sentences like (2) is that the embedded quantifier seems able to 'bind' across sentence boundaries:

(i) a. The woman that every Englishman loves is his mother. He dotes on her.
  b. The woman no Englishman would invite to dinner is his mother. He would not be caught in the same room with her.

This is similar to the phenomenon of *telescoping* noted by Roberts (1989, 1996). It differs in two respects. Canonical examples of telescoping have a universal quantifier with scope over the whole initial sentence. Perhaps more importantly, telescoping is often taken to be possible only with universal quantifiers.

will not give us any evidence in favor of such treatments. But they do show us how difficult a full account of definite descriptions can become. Deciding how to analyze the definite descriptions in these examples requires deciding some difficult issues of how to understand functional relative clauses, or concealed functional questions. Even deciding what, if anything, these examples show us about definite descriptions and scope requires deciding these difficult and far-ranging issues.

5. Scope or no scope?

I have now defended my rather narrowly drawn main point: examples like (1) and (2) do not support a quantificational account of definite descriptions over an *e*-type account. They do not support the view that definite descriptions are basically scope-taking over a view which interprets them *in situ*, making them basically scopeless. I have been careful to keep this conclusion guarded. Though they do not favor the quantificational account, these examples do not preclude quantificational analyses that move definite descriptions to narrow scope positions.

Along the way, I have also taken pains to point out where our analyses of (1) and (2) relate to more general issues in linguistic theory. We have seen that they engage difficult questions about quantifier scope and about functional readings of copular sentences. As I mentioned at the outset, this goes some way towards showing why the theory of definite descriptions has remained a disputed one. It connects with such a wide range of complex issues that it resists simple and definitive treatment.

In section 2.1, I sketched a 'clean and simple' picture according to which *e*-type expressions are 'basically scopeless'—interpreted *in situ* as arguments—while quantifier-type expressions are moved to scope positions by QR. I have shown here that examples (1) and (2) allow such a 'basically scopeless' analysis of definite descriptions. When it comes to the relative scope of the description and the quantifier in these examples, we do not need to assign the description scope. But as I mentioned in section 2.1, the clean and simple picture is ultimately too clean and too simple. There are lots of reasons to wonder if the *e*-type analysis really makes descriptions scopeless, touching on other matters than relative quantifier scope. In keeping with the observation that a wide range of theoretical issues are at stake in the study of descriptions, I shall close by pointing out a very different sort of reason to be cautious about uniformly treating definite descriptions as arguments.

There are a number of reasons we might think that definite descriptions might be subject to QR, even if it is not needed for our examples (1) and (2). One is that descriptions pattern with quantifiers in a very different sort of environment than the ones we have been examining here: antecedent-contained deletion. Consider:

(27) a. Dulles suspected everyone who Angleton did.

b. Dulles suspected the person who Angleton did.

c. *Dulles suspected Philby who Angleton did.

It has been argued by May (1985) that a proper account of ellipsis for case like this requires QR to move the embedded quantifier phrase at LF. The ungrammaticality of (27c) is thus predicted, assuming QR does not apply to names. But then, the grammaticality of (27b) indicates that QR moves the embedded description. Hence, we might have to treat definite descriptions as being assigned scope by QR in some environments after all. This leaves open whether they may be treated as *e*-type expressions that are moved to scope positions, or whether they genuinely have to be of quantifier-type. But, it indicates they may be subject to QR regardless.[25]

In keeping with our moral that deciding whether definite descriptions take scope always, sometimes, or never requires understanding a wide range of linguistic phenomena, the case of antecedent-contained deletion asks us to consider syntactic constraints on ellipsis, not just the interactions of definite descriptions and quantifiers. It gives us reason to move very cautiously around questions of whether descriptions take scope, regardless of whether they get interpreted as of *e*-type or quantifier-type.

All this goes to remind us that issues of scope are wide-ranging. Looking at relative quantifier scope is not enough to resolve them. But, I have argued, a close look at it in cases (1) and (2) shows that the *e*-type theory remains a viable option.

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[25] Related arguments can be found to show that other elements we think of as canonically non-scope-taking can undergo QR. For instance, Heim (1998) argues that bound variable pronouns can undergo QR. On the other hand, it has been suggested by von Fintel & Iatridou (2003) that there might be two substantially different sorts of QR: one applying in antecedent-contained deletion cases, and one applying to resolve scope.

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