

# Descriptions as Predicates

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## I

Although Strawson's main aim in "On Referring" was to argue that definite descriptions can be used referentially—that is, "to mention or refer to some individual person or single object . . . , in the course of doing what we should normally describe as making a statement about that person [or] object" (1950, p. 320)—he denied that definite descriptions are always used referentially. The description in 'Napoleon was the greatest French soldier' is not used referentially, says Strawson, since it is used not to mention an individual, but only "to say something about an individual already mentioned" (320). This is an example of what we may call a *predicative* use of a definite description, though such uses might be better illustrated by considering the false sentence

- (1) Washington was the greatest French soldier

and noting that, unlike

- (2) Washington met the greatest French soldier,

(1) is not about both Washington and someone else, but like

- (3) Washington was very short,

about Washington only. The description in (1) is not "used to mention an individual," but only to say something about Washington.

Strawson thought that predicative uses of definite descriptions would require a different account from referential ones. His reason presumably was this: if the description in (1) is used *just* to say something about Washington—to attribute a certain property to him—then (1) is false just in case Washington lacks that property. One way for Washington to lack the property attributed to him in (1) is for there to have been no greatest French soldier at all. If no-one was the greatest French soldier, then *a fortiori*, Washington was not the greatest French soldier, in which case (1) is false. But on Strawson's view, when a description is used *referentially*, an utterance of a sentence containing it has *no* truth-value if nothing satisfies the description. Since Strawson regarded the description in (1) as predicative, but would have regarded the description in (2) as referential, he would have regarded (1) as false, but (2) as valueless if there were no greatest French soldier.



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A proponent of Russell’s theory of descriptions, in contrast, will naturally want to extend application of his theory to sentences like (1). Russell explicitly did this—‘Scott is the author of *Waverley*’ is his example—and took his theory when applied to such sentences to solve certain puzzles about identity statements. According to Russellians, an un-negated sentence containing a definite description will be false if nothing satisfies the description. Since even Strawson seemed prepared to acknowledge that (1) will be false if there is no greatest French soldier, a Russellian might think not only that so-called “predicative” uses of descriptions require from him no special treatment, but even that they are *paradigms* of the sort of examples to which his theory applies.

One goal of this paper is to show that the preceding thought is wrong, that predicative uses of both definite and indefinite descriptions do present a problem for the Russellian. In particular, I argue that predicative definite and indefinite descriptions—as in ‘Washington was the first president of the U.S.’ and ‘Washington was an honest man’—should not be treated as quantified noun phrases, but rather as complex predicate expressions. The descriptions in such sentences are to be given predicate-type semantic values. In the second half of the paper I propose a theory of descriptions which treats them *uniformly* as having predicate-type semantic values, that is, even when they don’t occur as the complement of a ‘to be’ verb, and I show how the proposed theory enables us to give an attractive account of examples that tend to embarrass a Russellian—examples containing descriptions used to make generalizations: when they are used “generically,” as in ‘A tiger has stripes’ or when they interact with adverbs of quantification, as in ‘The owner of a Porsche usually owns more than one car’. The analysis is extended also to plural definite descriptions (‘the singers’), bare plurals (‘singers’), and mass descriptions (‘the gold’). Throughout, ‘the’ is treated as having an invariant semantic-value—a certain function from sets to sets.

## II

At this point we should try to get a bit clearer about what it means to say that a description is used predicatively in a sentence. While Strawson was correct to say that the description in ‘Napoleon was the greatest French soldier’ is being used not to mention an individual but to say something about an individual already mentioned, he could also have put his point by saying that the description is not an argument of a predicate, but, like the verb in ‘John smokes’, a predicate itself: the description *occurs* as a predicate *in the sentence*. What really underlies predicative uses of descriptions is not what they are used by speakers to do, but rather what the *argument structure* is of sentences containing them. By ‘argument structure’ I’ll just mean this: to say

what the argument structure of a sentence is, is to say which of its expressions are predicates, how many arguments the predicates take (or equivalently, how many argument positions they have), and which expressions are arguments (or equivalently, occupy the argument positions) of which predicates, where ‘argument’ is used here as a neutral term to include both subjects and objects of predicates. To say that the description in (1) is predicative, is to make a claim about the argument structure of the sentence.

I will not give necessary and sufficient conditions for being a predicate or an argument, in the sense indicated, but will instead leave these notions at an intuitive level. To say that the description in (1) is a predicate does, however, have an immediate consequence. If the description here is a predicate, then ‘Washington’ is in its argument position, from which it follows that the ‘to be’ verb here, like that in ‘Napoleon was short’, is not a relation expression; it is “the ‘is’ of predication” and not “the ‘is’ of identity.” This permits the following explication of the sense in which ‘Washington met the greatest French soldier’ is “about” two people, while ‘Washington was the greatest French soldier’ is about only one: the former contains a relation expression while the latter does not.

Another point is that when a description occurs predicatively in a sentence, it need not be used to say something about an individual *already* mentioned. Although in English one-place predicates are usually preceded by their subjects, this needn’t be the case, since English permits extraposition of predicates, as in ‘Tall, she is indeed’, or, in my view, as in ‘The love of my life, he is not’. Finally, I will add that it is not really *sentences*, but their syntactic representations that I am thinking of as having argument structures. Thus one could say that at the level of grammatical, or surface form of the sentence ‘Every man smokes’, the argument of the predicate ‘smokes’ is the quantified noun phrase ‘every man’, while at the level of logical form, the argument of the predicate ‘smokes’ is a bound variable. We will see that on my view as well as the Russellian’s (and also the referentialist’s), the same is to be said of the description in ‘The greatest French soldier smokes’.

### III

I said that I would argue that predicative descriptions pose a problem for Russell’s theory. The goal of this section is to develop an explicit statement of that theory for reference in the arguments to come. Two salient features of my presentation should be mentioned. First, I focus on an aspect of the theory that is rarely made explicit—namely, that one who holds the theory to be generally applicable makes a commitment concerning not just the logical form of sentences containing descriptions, but also their surface form. In particular, Russellians are committed to saying that at the level of surface form, de-

descriptions always occur in the argument position of predicates, and are never themselves predicates. Second, I offer an explicit proposal about the scope of descriptions. Russellians will typically be prepared to tell you what the truth-conditions of an English sentence are *if* the descriptions in it take such and such a scope; and given a particular sentence containing a description, they will typically be prepared to tell you what the scope possibilities are for the description in that sentence. But often they do not give general principles that yield predictions about what the scope possibilities of a description will be in a given sentence. Although no contemporary Russellian should accept the provisional statement of the theory I offer here, since it allows for too many scope possibilities for descriptions, my statement of the theory has the virtue of making it clear what form modifications of it should take.

In presenting his theory of “denoting phrases,” Russell systematically treats such phrases, which include ‘every man’, ‘some man’, ‘a man’ and ‘the man’, as occupying *argument positions* at the level of surface form. His account of the indefinite description ‘a man’, for example, is the following:

‘ $C$ (a man)’ means ‘It is false that “ $C(x)$  and  $x$  is human” is always false’. (Russell, 1905, p. 44)

In standard logical notation, the right-hand side would be written as

$$\neg(\forall x)\neg(C(x) \ \& \ x \text{ is human}).$$

The symbol ‘ $C$ ’ here is used schematically to stand for what Russell called a *propositional function*, which for our purposes may just be thought of as a predicate expression, perhaps a complex one. The expression ‘a man’ placed in parentheses on the left-hand side occupies the *argument position* of that propositional function (or predicate), to yield what Russell called a *proposition*, which for our purposes may just be thought of as a sentence. The sentence on the right-hand side of the analysis is said to give the *meaning* of that proposition; for our purposes it may be thought of as giving the *logical form* of the sentence on the left-hand side.

The switch from the expression ‘man’ on the left to ‘human’ on the right should strike one as odd. What Russell needs for his analysis is some way of predicating the common noun ‘man’, contained in the indefinite description on the left-hand side, of the bound variable ‘ $x$ ’ on the right-hand side. If this is possible to do at all in English, there is only one way:  $x$  is a man.<sup>1</sup> But this sentence itself contains the very indefinite description Russell is analyzing. Thus to include this sentence on the right-hand side would leave him with two options. He could treat ‘ $x$  is a man’ as itself a sentence with the surface form

<sup>1</sup> The reason is that singular count nouns in English must be preceded by a determiner, though *role* predicates are exceptions. For example: ‘Bill is president’, and perhaps also ‘I am wife’ (construed as making a claim about what my *role*, or *status* is), are fine.

$C$ (a man), where  $C$  in this case would be the predicate ' $x = \hat{y}$ '. (The ' $y$ ' with a hat over it represents the argument place of the predicate.) But this would be to treat indefinite descriptions after all as ineliminable constituents of propositions expressed by sentences containing them, which was something Russell was vehemently opposed to doing. Alternatively, he could treat ' $x$  is a man' as a sentence containing the simple predicate ' $\hat{x}$  is a man', in which the *to be* verb occurs as the 'is' of predication rather than identity. But to allow this would be to allow that Russell's analysis of indefinite descriptions would not be applicable to all sentences containing them, since his analysis applies only to denoting phrases occurring in argument position at the level of surface form. Since neither of these ways of including ' $x$  is a man' on the right-hand side could suit Russell, he needed to find some adjectival or verbal means of predicating 'man' of  $x$  on the right-hand side, that is, a means of predicating 'man' of  $x$  without using the indefinite article. But since no adjectival or verbal English expression synonymous with 'man' comes ready to mind, Russell *stipulates* that he is going to identify the class of men with "the class of objects having the predicate *human*" (1905, p. 43).

Why *does* Russell's analysis apply only to sentences containing denoting phrases in argument position at the level of surface form? While it is true that he always represents descriptions as occurring in the argument positions of (individual-level) propositional functions—by schematizing the sentences he is analyzing as ' $C$ (a man)', ' $C$ (the man)' and so on—might this not just be a superficial and dispensable feature of his analysis? Couldn't he have instead written:

'... a man ...' means ' $(\exists x)(\dots x \dots \ \& \ x \text{ is human})$ '

The idea here would be that the ellipsis dots are just stand-ins for strings, and would provide a way of schematizing sentences containing indefinite descriptions that is neutral with respect to their argument structure.

Such a change does not make the account any more neutral, however. Since the variable ' $x$ ' on the right-hand side can occur only in argument position, the position represented by the blank in ' $\dots \_\_\_ \dots$ ' must be an argument position. It is Russell's *analysis*, not just his representation of the analysandum, that renders that analysis applicable only to denoting phrases occurring in argument position. Accordingly, in the sentence

(4) Socrates is a man

there must be a predicate for the description here to be an argument of, if Russell's analysis is to be applicable. So the Russellian takes the 'to be' verb in (4) to be the 'is' of identity. Russell acknowledged that 'is' does not always express identity—that it does not, for example, in 'Socrates is human'—and declared it "a disgrace to the human race that it has chosen to employ the same word for these two entirely different ideas" (Russell, 1919, p. 172).

In “On Denoting” and chapter 16 of *Introduction to Mathematical Philosophy*, Russell presents his theory of descriptions as providing a systematic means of associating surface forms of English sentences with their logical forms. I say *surface forms* of English sentences to emphasize that application of the theory to a given sentence of English requires that the sentence be assigned an argument structure—it must be determined, before the theory can be applied, which expressions are propositional functions, how many arguments each propositional function takes, and which expressions are occurring in the argument positions of which propositional functions. Scope ambiguities arise when a sentence can be assigned more than one argument structure.<sup>2</sup>

The situation is quite different with Russell’s theory of singular definite descriptions as presented in *Principia Mathematica*, where definite descriptions are introduced as a defined symbol—of the form ‘ $(\iota x)(\Phi x)$ ’—of a formal language.

**\*14.01**  $[(\iota x)(\Phi x)]\Psi(\iota x)(\Phi x) =_{df} (\exists x)[(\forall y)(\Phi y \leftrightarrow y = x) \ \& \ \Psi x]$   
(Whitehead and Russell, 1925, p. 173)

The definition displays for us what the formation rules for the iota operator are to be. The sentence ‘ $\neg a = (\iota x)(\Phi x)$ ’ does not strictly count as well-formed; instead, we have ‘ $[(\iota x)(\Phi x)]\neg a = (\iota x)(\Phi x)$ ’ and ‘ $\neg[(\iota x)(\Phi x)]a = (\iota x)(\Phi x)$ ’ as formulas of the extended language. The occurrence of ‘ $(\iota x)(\Phi x)$ ’ in square brackets is a “scope indicator” that marks off the formula the description is to be eliminated from.

There is no straightforward sense in which the account of singular definite descriptions presented in *Principia* can be understood as providing an analysis of sentences of natural language. Since sentences of the extended formal language that contain iota operators have a strange form, unlike that of any natural language sentence, we cannot use the theory as a systematic means of associating logical forms with natural language sentences since we have no systematic means of associating a natural language sentence with formal language sentences containing the iota operator. It’s perhaps easy enough to see how this would be done. My point is merely that it would have to be done if we are to cull from the theory of descriptions in *Principia* any account of natural language.<sup>3</sup>

<sup>2</sup> On Russell’s view for example, in the sentence ‘If Suzy is smoking then a man is nearby’ the indefinite ‘a man’ can be taken to occupy the argument position of the propositional function ‘If Suzy is smoking then  $\hat{x}$  is nearby’ or it can be taken to occupy the argument position of the propositional function ‘ $\hat{x}$  is nearby’, which occurs as a proper constituent. In this way, the theory may assign more than one logical form to a single English sentence.

<sup>3</sup> I suppose one could make the same point about the theory of “On Denoting”, insofar as we cannot use that theory as a systematic means of associating logical forms with natural language sentences unless we have a systematic means of associating natural language sentences

Whitehead and Russell in fact seem to have been bothered by the strange form forced upon formulas containing the description operator. Despite the appearance of descriptions in square brackets as *sentential* operators, they clearly still wanted to think of descriptions in their formulas as singular terms, that is, as occupying argument positions, and of descriptions as they occurred in square brackets as *mere* devices for grouping, as dispensible as parentheses. Not only did they propose to drop the “scope indicators” when no ambiguity could arise, they also adopted various conventions to enable them to “omit explicit mention of the scope” (p. 173).<sup>4</sup>

In contrast with Whitehead and Russell’s attitude toward iota expressions occurring in square brackets, many commentators have adopted the reverse attitude, and taken the occurrence of iota expressions in argument position as the dispensible one—replaceable by a variable viewed as bound by the iota expression in square brackets, which is thus understood as a restricted quantifier.<sup>5</sup> Whereas before we had ‘ $[(\iota x)(\Phi x)]\Psi(\iota x)(\Phi x)$ ’, we would on the current suggestion have ‘ $[\iota x : \Phi x](\Psi x)$ ’. These restricted quantifiers may take wide or narrow scope with respect to other operators, so that we may distinguish between ‘ $\neg[\iota x : \Phi x](\Psi x)$ ’ and ‘ $[\iota x : \Phi x]\neg(\Psi x)$ ’. This suggestion makes even more clear that, from a contemporary perspective at least, formulas of *Principia* containing iota expressions should *already* be understood as representing logical forms of English sentences. What we don’t find in *Principia*, then, but did find in “On Denoting” and “Descriptions”, is a systematic means of assigning logical forms to sentences of English.

In order to combine the advantages of the different presentations of the theory, the Russellian could adopt the following:

$$(LF \ \iota) \quad \Psi(\iota x : \Phi x) \implies [\iota x : \Phi x](\Psi x)$$

with what I’ve been calling their surface argument structures. Thanks to Stephen Neale for helpful and interesting discussion on this point.

<sup>4</sup> In this connection it is interesting to note that Whitehead and Russell regarded their definitions in *Principia* as playing two distinct roles. On the one hand the definitions provide “mere typographical conveniences” (p. 11), useful for the purpose of shortening formulas. On the other hand, “when what is defined is . . . something already familiar . . . the definition contains an analysis of a common idea, and may therefore express a notable advance” (p. 12). It is arguable that Whitehead and Russell adopt their conventions for dropping the scope indicators precisely because they wanted their formulas containing the iota-operator to be more “familiar” than they would otherwise be. The double occurrence of ‘ $(\iota x)(\Phi x)$ ’ in \*14.01 is in fact a manifestation of the two roles Whitehead and Russell wished their definition to play. In the first role, ‘ $(\iota x)(\Phi x)$ ’ occurs in square brackets as an abbreviation for the complex quantifier phrase ‘ $(\exists x)[(\forall y)(\Phi y \leftrightarrow y = x) \ \& \ . . . x . . . ]$ ’. In the latter role, I take it that their definition of the iota operator was still thought in some way to function as assigning logical forms to sentences of English, in which definite descriptions, at the level of surface form at least, occur as subjects and objects of predicates, and never as sentential operators.

<sup>5</sup> See, for example, Sharvy (1969, p. 489, nt. 3), Sainsbury (1979, pp. 97f.), and Neale (1990).

(Def  $\iota$ )  $[\iota x : \Phi x](\Psi x) =_{def} \exists x(\Phi x \ \& \ \forall y(\Phi y \rightarrow y = x) \ \& \ \Psi x)$

(LF  $\iota$ ) is a rule of *quantifier-raising*<sup>6</sup> that enables us to assign one or more logical forms to surface forms of natural language sentences.<sup>7</sup> (Def  $\iota$ ), which is just a revision of \*14.01, may be understood as assigning *truth-conditions* to logical forms since we may think of the formula on the right-hand side as representing the truth-conditions assigned to it by a classical semantics. In effect, we now have two languages containing the iota-operator—the first, in which the iota-operator combines with open sentences to form terms, is used to represent the surface argument structure, as well as to preserve the ambiguities, of sentences of natural language; the second, in which the iota-operator combines with open sentences to form restricted quantifiers, is used to represent the logical form(s) of those sentences, and contains no ambiguities.

The Russellian thesis can then be stated provisionally as follows: when representing the surface argument structure of a sentence containing a definite description ‘the  $\Phi$ ’, the description is always to be represented by the expression ‘ $[\iota x : \Phi x]$ ’, which occurs only in argument positions. The sentence has whatever logical form(s) can be obtained by application of the rule (LF  $\iota$ ), and the truth-conditions of those logical forms are given by (Def  $\iota$ ).

Let’s go back now to (1):

- (1) Washington was the greatest French soldier.

According to the Russellian, the sentence has the following (a) surface form, (b) logical form, and (c) truth-conditions. (For convenience, I suppress the structure within ‘greatest French soldier’.)

- a. Washington =  $(\iota x : Gx)$
- b.  $[\iota x : Gx](\text{Washington} = x)$
- c.  $\exists x(Gx \ \& \ \forall y(Gy \rightarrow y = x) \ \& \ \text{Washington} = x)$

In order to accommodate Strawson’s suggestion that the description in (1) be treated as a predicate, we could, in the manner of Russell, introduce a new description operator ‘ $\Upsilon$ ’ (an upside-down lambda), which combines with open sentences to form *predicates*. Just as the iota description operator could be defined in a standard first-order language with identity, so can the lambda description operator:

<sup>6</sup> See May (1985).

<sup>7</sup> The formulas schematized in (LF  $\iota$ ) need not be literally understood as *being* the surface and logical forms of sentences of English, which I take to be syntactic structures, but just as *representations* of these forms in a particular formal language. The formulas of this language contain a bound variable *within* a definite description ‘ $[\iota x : \Phi x]$ ’, but in using these formulas to *represent* surface forms and logical forms of English sentences, there is no commitment to there being such bound variables within definite descriptions as they occur in syntactic structures.

(Def  $\forall$ )  $(\forall x : \Phi x)(\alpha) =_{df} \Phi\alpha \ \& \ \forall x(\Phi x \rightarrow x = \alpha)$ <sup>8</sup>

We adopt the following vacuous (LF) rule for the lambda description operator:

(LF  $\forall$ )  $(\forall x : \Phi x)(\alpha) \implies (\forall x : \Phi x)(\alpha)$

Now if the description in (1) is a predicate, its surface form, logical form, and truth-conditions are these:

- a'.  $(\forall x : Gx)(\text{Washington})$
- b'.  $(\forall x : Gx)(\text{Washington})$
- c'.  $G(\text{Washington}) \ \& \ \forall x(Gx \rightarrow x = \text{Washington})$

It will be noted at this point that (c) and (c') are logically equivalent. In other words, whether we treat the description in (1) as a quantified noun phrase occupying an argument position at the level of surface form, or as a predicate, has no effect on the truth-conditions. There is a simple explanation for this, namely, the mutual implication between being identical to something that has a certain property and just having that property. The task of the remainder of this paper is to argue that, despite the lack of truth-conditional difference between a quantificational and predicative analysis of the description in (1), we nonetheless have good reason for treating the description here, and definite and indefinite descriptions more generally, as predicates.<sup>9</sup>

<sup>8</sup> We could also define the predicate directly, by means of lambda abstraction:  $(\forall x : \Phi x) =_{df} (\lambda y)(\Phi y \ \& \ \forall x(\Phi x \rightarrow x = y))$ . One finds such a definition of predicative definite descriptions in Partee (1987, pp. 116,125).

<sup>9</sup> It is unclear to me to what extent it is controversial to treat descriptions as predicates, when they occur to the right of 'to be' verbs at least, since in philosophical writings on descriptions, such constructions are not discussed as a matter of course. Russell did discuss such constructions ('Scott is the author of *Waverley*' and 'Socrates is a man'), and explicitly denied that the descriptions here are predicates. Strawson (1950), as I've already remarked, and Donnellan (1966, §II) mention as just a side comment that descriptions occurring to the right of 'be' are predicates, but offer little discussion of the matter. Geach (1962), who also thought descriptions in such positions to be predicates, extensively discusses the matter, in, e.g., §§29,36,74. Wiggins (1965, pp. 42–43), followed by Kim (1970, pp. 211f.), also takes descriptions in these constructions to be predicates, as does George Wilson, whose (1978) views about descriptions bear an especially close connection with those presented here. In contrast, Stephen Neale (1990, p. 164), who provides a good presentation and defense of the sort of Russellian approach I'll be attacking here, makes the bold claim that "there is no good reason to posit more than two classes of noun phrases, the class of (rigid) referring expressions and the class of (restricted) quantifiers," yet nowhere in *Descriptions* does he discuss the constructions in question. Of the linguistics literature on descriptions, one can also say that such constructions are not discussed as a matter of course. But there are also many explicit discussions. Higgins (1973, esp. ch. 5, §1.2), for example, holds that definite and indefinite descriptions occurring after 'be' are sometimes predicates, but not always. Williams (1983) and Partee (1986; 1987) hold that definite and indefinite descriptions after 'be' are always predicates. Higginbotham (1987) and Doron (1988) hold that after 'be' indefinite descriptions

## IV

One reason for taking descriptions in *predicative position* (as I will from now on call the position following the ‘to be’ verb) to be predicates rather than quantified noun phrases is that they can occur in the following sort of construction:

- (5) He is tall, handsome, and the love of my life.

The ‘to be’ verb in this sentence presumably cannot be a relation expression, but rather must be the ‘is’ of predication, since it is complemented by adjectives. On the assumption that ‘is’ must be interpreted univocally, since it only occurs once, ‘the love of my life’ must be of a semantic type that can combine with the ‘is’ of predication to form a one-place predicate. Quantified noun phrases (at least not higher-order ones) are not such expressions.

Another reason, I will argue, for taking descriptions in predicative position to be predicates rather than quantified noun phrases is that they do not have the scope-taking properties we would expect them to have if they were quantifier phrases. The familiar scope variation of quantified noun phrases and descriptions in argument position is illustrated in the following sentences:

- (6) Aristotle did not meet some politicians  
 (7) Aristotle did not meet a politician

Both (6) and (7) are ambiguous. On one reading, (6) means that Aristotle met no politicians; on the other just that there were some politicians he did not meet. The first reading is salient in the discourse, “Aristotle did not meet some politicians. In fact he was alone all day.” The other is salient in the discourse, “Aristotle did not meet some politicians. The ones he did meet, though, were very nice.” Similarly, there is a reading of (7) which means that Aristotle met no politicians; another which means just that there was at least one politician he did not meet.

We account for the two readings of (6) by representing its argument structure as follows:

- (6a)  $\neg$ Aristotle met (some  $x$  : politician  $x$ )

and adopting an LF rule of quantifier-raising analogous to that adopted by the Russellian for definite descriptions:

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are always predicates, while definite descriptions may, but need not be. It is my impression that many philosophers and linguists at this point just take it for granted that indefinite descriptions after ‘be’ are usually predicates, but there seems to be less of a consensus about definite descriptions.

(LF some)  $\Psi(\text{some } x : \Phi x) \implies [\text{some } x : \Phi x](\Psi x)$ ,

thereby associating the sentence with two logical forms:

(6<sub>1</sub>)  $\neg[\text{some } x : \text{politician } x](\text{Aristotle met } x)$

(6<sub>2</sub>)  $[\text{some } x : \text{politician } x](\neg \text{Aristotle met } x)$

The Russellian accounts for the ambiguity of (7) in just the same way. As with definite descriptions, the Russellian takes indefinite descriptions always to be quantifier phrases, occupying argument position at the level of surface form, and governed by the following rule:

(LF a)  $\Psi(\text{a } x : \Phi x) \implies [\text{a } x : \Phi x](\Psi x)$

The Russellian then accounts for the ambiguity of (7) by representing its argument structure as (7a), which is in turn associated by the rule (LF a) with two logical forms, according as the indefinite description takes narrow or wide scope with respect to negation:

(7a)  $\neg \text{Aristotle met } (\text{a } x : \text{politician } x)$

(7<sub>1</sub>)  $\neg[\text{a } x : \text{politician } x](\text{Aristotle met } x)$

(7<sub>2</sub>)  $[\text{a } x : \text{politician } x](\neg \text{Aristotle met } x)$

The truth-conditions of these logical forms are given by (Def a).

(Def a)  $[\text{a } x : \Phi x](\Psi x) =_{df} \exists x(\Phi x \ \& \ \Psi x)$

The provisional Russellian thesis does not in general hold good, however.

(8) Aristotle was not a philosopher

According to the Russellian, (8) is structurally just like (6) and (7), and should have the following argument structure and logical forms:

(8a)  $\neg \text{Aristotle} = (\text{a } x : \text{philosopher } x)$

(8<sub>1</sub>)  $\neg[\text{a } x : \text{philosopher } x](\text{Aristotle} = x)$

(8<sub>2</sub>)  $[\text{a } x : \text{philosopher } x](\neg \text{Aristotle} = x)$

But (8) is not ambiguous. It unambiguously has the truth conditions associated with (8<sub>1</sub>). There is no reading of the sentence which entails the existence of a philosopher, or, for that matter, of any person other than Aristotle.<sup>10</sup>

Along the same lines, consider a sentence with a definite description in predicative position:

(9) Max is not the owner

<sup>10</sup> The preceding argument, concerning an indefinite in predicative position, can be found in Wilson (1978, p. 51f.) and also in Higginbotham (1987), who attributes it to a lecture of Emmon Bach's.

According to the Russellian, (9) has the following argument structure and two logical forms:

- (9a)  $\neg \text{Max} = (\exists x : \text{owner } x)$   
 (9<sub>1</sub>)  $\neg[\exists x : \text{owner } x](\text{Max} = x)$   
 (9<sub>2</sub>)  $[\exists x : \text{owner } x](\neg \text{Max} = x)$

But again, (9) is not ambiguous, and only has the truth-conditions associated with (9<sub>1</sub>). The facts here are not as straightforward as in the case of indefinite descriptions, but I will argue that any appearance of a wide-scope reading for the definite description is better explained on other grounds. A wide-scope reading for the description in (9) would mean that the sentence could be used to assert not only that Max does not (uniquely) own the thing in question, but also that someone else does. If there is such a felt entailment of ownership by someone other than Max, then it is already well accounted for as a Gricean conversational implicature. Suppose the thing in question is the sort of thing that would be presumed to be unowned, as a sparrow or a snowflake would be. Then it would be inappropriate to utter (9) unless one did not share this presumption. This follows from one of Grice's maxims of *quantity*, which says "Do not make your contribution more informative than is required."<sup>11</sup> If in this situation someone does utter (9), he then implicates that he does not share the presumption that the thing in question is unowned, and hence that he has reason to believe that it is owned. In denying ownership by Max in this situation, the speaker implicates ownership by someone else.

Suppose now that the thing in question is the sort of thing that would be presumed to be owned, like an obviously occupied house or a recent-model Buick. In this case, an utterer of (9) who does not share this presumption, and who thus must have reason for not sharing this presumption, must follow up his utterance with a statement to that effect by the other of Grice's maxims of quantity: "Make your contribution as informative as is required." (He could follow up by saying, "No one owns that thing.") Thus one who utters (9) without a follow-up implicates that he shares the presumption of ownership. Consequently, if we think about (9) in isolation, our judgment of its truth-conditions can get clouded by the fact that if *uttered* in isolation (that is, without follow-up) in a typical situation in which it would be uttered at all, ownership by someone is implicated. Note that we get just the same effect with the sentence 'Max doesn't own it'. I know of no plausible semantics that would assign to this sentence an entailment of ownership by someone other than Max. Yet still if I were to utter 'Max doesn't own it' (without follow-up) in the two sorts of situations described, my audience could rightly infer that I believed that someone else did.

<sup>11</sup> See "Logic and Conversation" (p. 26) in Grice (1989)

A third possibility is that the thing in question is neither presumed to be owned nor presumed to be unowned. For example, you and I might be walking along a somewhat overgrown logging path when we come across an old Nova which clearly hasn't been driven in a good number of years. For all we know its owner is alive and well but just hasn't gotten around to taking the thing to the junk heap. For all we know its former owner is long gone, with no surviving heirs. (We have no idea whether in such a case a car would by law revert to state ownership.) The only reason I can see for uttering (9) in this third sort of situation is if it is actually under discussion whether the thing in question is owned, and the parties to the conversation are trying to see whether they can arrive at a negative conclusion by a process of elimination. In such a situation, an isolated utterance of (9) will not lead to the implicature. But equally, there is no feeling that one could utter (9) in such a situation to mean that someone other than Max does own the thing in question—at least not if the most natural intonation is used. The fact that a wide-scope reading seems ruled out in exactly the sort of situation in which there would be no implicature just lends further support to the claim that where a wide-scope reading seems possible, it is best accounted for as Gricean implicature.

There may, however, be another source of the feeling that (9) may entail ownership by someone other than Max, if one thinks of it as being uttered with contrastive intonation. If (9) is read as 'MAX is not the owner↑', with capitals used to indicate stress, and an arrow used to indicate a slight rise in pitch for the preceding syllable, then the sentence does seem to imply that someone other than Max is the owner. You would typically use this intonation if someone had just mistakenly asserted that Max is the owner, and you wanted not only to correct them, but also to convey that you know who the owner is. I do not here want to venture any claims about what exactly the status is of this last bit of information conveyed by the utterance with this intonation—in particular, whether or not any of it is part of the content of the utterance—but I'll use "implication" as sort of a catch-all phrase. The point I wish to make here is that the implication that someone other than Max is the owner, created by contrastive intonation, does not reflect a genuine scope ambiguity.

Note that if (8) is uttered with contrastive intonation as 'ARISTOTLE was not a philosopher↑', there is also an implication that someone other than Aristotle *was* a philosopher. Yet it would be obviously wrong to account for this implication by attributing a wide-scope reading to the indefinite description in this sentence. There clearly is no wide-scope reading of 'Aristotle was not a philosopher' for if there were, the sentence would on this reading actually be true.

Stressing the subject of a negated sentence seems always to carry with it an implication of the truth of the un-negated sentence for some other subject, not only with *descriptions* in predicative position, but with predicates generally:

- (10) ARISTOTLE did not have red hair $\uparrow$  (... Plato did)  
 (11) JOHN wasn't terrified $\uparrow$  (... Juan was)

Even more generally, stressing *any* expression in a negated sentence carries with it an implication of the truth of the un-negated sentence with some other expression put in for the stressed one:<sup>12</sup>

- (12) Max is not THE owner $\uparrow$  (... He's one of the owners, though.)  
 (13) Max IS not the owner $\uparrow$  (... He used to be, though.)

The importance of these examples for our purposes is that the implications resulting from contrastive intonation cannot in general be explained by appeal to ambiguities of scope. What is required is a single explanation for what seems to be a single phenomenon. Moreover, it is a phenomenon that *does not* distinguish descriptions in predicative position from other predicates.

The failure of sentences with descriptions in predicative position to have any readings other than that in which the description takes narrow scope, is well explained by the view that descriptions in such positions are not quantifier phrases, but predicates. Intuitively, predicates, unlike quantifier phrases, are not the kind of expressions that *have* scope, and so we wouldn't expect the descriptions, if predicates, to move to a position outside the scope of the negation operator. This is represented formally by the vacuousness of our LF rule for the lambda description operator, and of the analogous rule for indefinites. (I use a '*p*' subscript to indicate the predicate-forming indefinite article.)

$$(\text{LF } \forall) \quad (\forall x : \Phi x)(\alpha) \implies (\forall x : \Phi x)(\alpha)$$

$$(\text{LF } a_p) \quad (a_p x : \Phi x)(\alpha) \implies (a_p x : \Phi x)(\alpha)$$

The analysis of descriptions in predicative position as predicates correctly predicts that (8) and (9) are not ambiguous; that they each have only one logical form:

$$(8') \quad \neg (a_p x : \text{philosopher } x)(\text{Aristotle})$$

$$(9') \quad \neg (\forall x : \text{owner } x)(\text{Max})$$

Once we consider sentences in which there is more than one scope-taking operator for a description to interact with, the provisional Russellian thesis is committed to there being even more ambiguities to account for:

- (14) George might not have been a philosopher  
 (14<sub>1</sub>)  $\diamond \neg [a x : \text{philosopher } x](\text{George} = x)$

<sup>12</sup> The phenomenon illustrated here is *association of negation with focus*. See Dretske (1972) and Jackendoff (1972, esp. §§6.6–6.7) for related discussion. For a recent overview of subsequent literature on focus, see Rooth (1996).

(14<sub>2</sub>)  $\diamond [a x : \text{philosopher } x](\text{George} \neq x)$

(14<sub>3</sub>)  $[a x : \text{philosopher } x](\diamond \text{George} \neq x)$

But both (14<sub>2</sub>) and (14<sub>3</sub>) are consistent with its being impossible for George to have been anything but a philosopher—with his being a philosopher in every possible world. It suffices for the truth of (14<sub>2</sub>), for example, that there is a possible world in which George is not the only philosopher. And, given the necessity of identity, it suffices for the truth of (14<sub>3</sub>) that George is not in fact the only philosopher. But there are no readings of (14) that have these truth-conditions. The only available reading of the sentence has the truth-conditions given by (14<sub>1</sub>), which is logically equivalent to the one reading we would expect the sentence to have if the description were a predicate:

(14')  $\diamond \neg (a_p x : \text{philosopher } x)(\text{George})$

Similarly, (15) unambiguously has the truth conditions given in (15<sub>1</sub>).

(15) Schumer might not have been the winner

(15<sub>1</sub>)  $\diamond \neg [\iota x : \text{winner } x](\text{Schumer} = x)$

(15<sub>2</sub>)  $\diamond [\iota x : \text{winner } x](\text{Schumer} \neq x)$

(15<sub>3</sub>)  $[\iota x : \text{winner } x](\diamond \text{Schumer} \neq x)$

As with ‘Max is not the owner’, one may feel that there is a reading of the sentence on which the description takes wide scope with respect to negation, represented by (15<sub>2</sub>). But as before, the sense that (15) entails that someone other than Schumer might have been the winner is best accounted for as a Gricean implicature. Since in (15) we are talking about a senatorial election, and since senatorial elections typically have winners (they typically do not end in ties), one would typically not believe (15) unless one believed that someone other than Schumer might have won. Thus an utterer of (15), if he does not have this latter belief, must follow up his utterance with a statement to that effect, again by Grice’s maxims of quantity. (He might say, “Schumer might not have been the winner, but only because the election might have ended in a tie.”) Without such a follow-up, the possibility of someone else’s having been the winner is implicated. Note again, that we get just the same effect with ‘Schumer might not have won’. Note also, that the feeling of an intermediate-scope reading for the definite description disappears when we substitute a description associated with different background assumptions:

(16) Billy might not have been the hero.

With heroes, as opposed to election-winners, there is no presumption that there always has to be one. Accordingly, there is no feeling that (16) has an intermediate-scope reading. There is no reading of (16) that *entails* that it might have been that someone other than Billy was the hero.

Now what about a *wide*-scope reading for the description in (15), represented by (15<sub>3</sub>)? Given the necessity of identity, (15<sub>3</sub>) entails that someone other than Schumer is in fact the winner. It should be clear that there is no reading of (15) that has this entailment.<sup>13</sup>

## V

Suppose, then, that the Russellian grants that (8), (9), (14), and (15) are not ambiguous, but that the descriptions must remain within the scope of all other scope-taking operators. He then is in a position of having to retract his provisional thesis—the thesis being a conjunction of two claims: that indefinite and definite descriptions always occur in argument position at the level of surface form; and that sentences containing descriptions have whatever logical forms can be gotten from the appropriate LF rule. The thesis would have to be revised in any case, since it is well known that the scope of quantified noun phrases is not in general unconstrained. For example, the phrase ‘no student’ in (17) cannot take scope outside of the conjunction.

(17) Many professors are quitting smoking and no student is starting.

The question, then, for the Russellian is whether he can, *in a principled way*, modify the provisional thesis by adding that descriptions occurring after ‘to be’ must always take narrow scope. The first thing to consider is whether quantifier phrases more generally must also take only narrow scope when they occur in predicative position. It turns out, however, that other quantifier phrases cannot in general occur in predicative position at all.<sup>14</sup> Consider some examples.

- A. (18) \* Sam and Lisa are not few students
- (19) \* Dick and Jane might have been most children on the block
- (20) \* My friends are hardly any physicists

<sup>13</sup> The Russellian might respond, however, that such a reading is ruled out because any assertion of  $\lceil \alpha \text{ might not have been } \Phi \rceil$  carries with it an implication of the truth of  $\lceil \alpha \text{ is in fact } \Phi \rceil$ . Witness the appropriateness of B’s comment in the following dialogue:

A: George might not have been skinny.

B: George wasn’t skinny!

Correspondingly, ‘Schumer might not have been the winner’ has as an implication that Schumer was in fact the winner. Since this implication is inconsistent with (15<sub>3</sub>), the Russellian might claim that a wide-scope reading for the definite description is syntactically available, but ruled out on pragmatic grounds.

<sup>14</sup> This is noted by Wilson (1978), Williams (1983) and Doron (1988, §5).

- (21) \* My daughter is each mother
- B. (22) My daughters are each mothers  
 (23) Eric and Lora are both parents  
 (24) John, Paul, Ringo, and George are all musicians  
 (25) Dick, Jane, and Boris are not all children on the block
- C. (26) He could have been some cook  
 (27) Chomsky's not (just) any linguist  
 (28) My daughter is not most children
- D. (29) John is everything I despise  
 (30) At one time or another my house has been every color  
 (The examples in D. are from Williams (1983).)

What we find is that none of the sentences in the A. group is grammatical. The sentences in the B. group are all grammatical, but not if the strings 'each mothers', 'both parents', 'all musicians', and 'all children on the block' are taken to be semantic units. The sentences in the C. group are grammatical, but only if 'some', 'any' and 'most' are not given their usual quantificational interpretations. The sentences in the D. group are grammatical, but here it is not individuals but *properties* that are being quantified over. The conclusion is that quantifier phrases (other than definite and indefinite descriptions) cannot in general occur in predicative position at all.<sup>15</sup> A plausible explanation of the facts in (18)–(30) is that the 'to be' verbs in these sentences cannot be interpreted as a relation expression, but only as the 'is' of predication, and therefore cannot combine with a quantifier phrase, at least not one ranging over individuals, to form a one-place predicate. To the extent that this explanation is a good one, we have strong support for the view that the quantifier phrases in (18)–(30) together with descriptions do not form a unified semantic category, and that descriptions, at least as they occur in predicative position, ought to be classed semantically with predicates.

## VI

But what are we to say about descriptions when they don't occur in predicative position? Take the sentence 'Smith's murderer smokes'. The description,

<sup>15</sup> One fact that I should acknowledge, though I'm not sure quite what to make of it, is that partitive constructions do seem able to occur in predicative position: 'Eric and Lora are both of the actors' and 'Dick, Jane, and Boris are most of the children on the block' are both fine. In light of this, we might want to pursue the idea that partitives are predicates or that they involve higher-order quantification.

it seems, cannot be a predicate in this sentence, for then we would have a sentence consisting of two one-place predicates with no arguments to complete them. If we want to maintain that descriptions in predicative position are predicates, then, it seems at first blush that we will be forced into accepting a hybrid view. The Russellian in contrast, is able to extend his analysis to descriptions in predicative position, by taking ‘to be’ verbs to be relation expressions.

Nevertheless, sticking steadfast to the Russellian position would not clearly be better than adopting a hybrid view. In extending his analysis to descriptions after ‘to be’ verbs, the Russellian has to adopt a seemingly *ad hoc* constraint in order to account for the unavailability of any but narrow scope readings for descriptions in such position. Moreover, he is committed to positing a counter-intuitive ambiguity in the meaning of ‘is’. If we take descriptions in predicative position to be predicates, then we may say that ‘is’ in ‘Sam is a cat’ has the same meaning as ‘is’ in ‘Sam is cute’. The Russellian, though, may not say this; he must take ‘is’ to be the ‘is’ of identity in the one case, and the ‘is’ of predication in the other. On a related front, the Russellian is still under some pressure to explain why quantifier phrases other than descriptions cannot in general occur in predicative position at all.

Yet if we want to maintain that descriptions in predicative position are predicates, a hybrid view is not the best we can hope for. The goal of this section is to show that this is so by providing the beginnings of a unified account of descriptions as predicates. In the next section I offer reasons for rejecting the Russellian account of definite and indefinite descriptions, even when they occur in argument position—reasons stemming from the widespread *variability of quantificational force* of descriptions. The following section extends my account of descriptions as predicates to account for these facts.

First, let me say what it will mean to give a *unified* analysis of descriptions as predicates. This involves a shift from the syntactic notion of *predicate* that I have so far been using to a semantic notion. Descriptions can occur both in predicate position (‘Jones is Smith’s murderer’) and in argument position (‘Smith’s murderer is cunning’) at the level of surface form. I will propose that descriptions are nevertheless always to be interpreted as having a *predicate-type semantic value*, which for the purposes of this essay, we may take to be the set of entities the predicate is true of.

Let’s consider four different types of noun phrases: indefinite descriptions, bare plurals, singular definite descriptions, and plural definite descriptions. I am going to take bare plurals to be plural indefinite descriptions,<sup>16</sup> and treat

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<sup>16</sup> Carlson’s (1977a; 1977b) view that bare plurals are not plural indefinites, but names that rigidly refer to kinds, has been very influential. But more recently, it seems that consensus has shifted toward the direction of treating bare plurals as plural indefinites. See, for example, Kratzer (1988), Gillon (1990) Wilkinson (1991) and Diesing (1992).

these four types of noun phrase uniformly as predicates, and say that they are in the class of expressions called *predicate nominals*.

- (31) Liz is a singer
- (32) Liz and Tracy are singers
- (33) Mick is the singer
- (34) John, Paul and George are the singers

Common nouns such as ‘singer’ also have a predicate-type semantic value. As a working hypothesis I will take it that ‘singer’ in the singular has as its extension the set of individual singers; while ‘singers’, in the plural, has as its extension the set of “sums” of individual singers, and that conjoined names such as ‘Liz and Tracy’ and ‘John, Paul and George’, as well as some occurrences of plural pronouns such as ‘they’, denote such sums.<sup>17</sup> We may then say that the indefinite article combines with a singular common noun to yield a predicate that has the same extension as the common noun. (We could also say that the indefinite article combines with plural common nouns as well, without getting pronounced, but I won’t place any store in this.)

I’ll take it that *definite* descriptions, singular and plural, involve uniqueness, and so have either singleton or empty extensions.<sup>18</sup> This is achieved in the following way. We let “sums” of individuals be ranked by a *parthood* relation that partially orders sums. We then take the definite article to combine with a common noun, singular or plural, to yield a predicate whose extension

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<sup>17</sup> The extension of plural predicates with collective interpretations may contain sums of individuals that do not themselves individually have the property in question. For a more extended formal treatment of plurals using sums, see Link (1983). Link seems to worry that sums might be philosophically suspect, but holds that “Our guide in ontological matters has to be language itself” (303f.). I disagree with him on both counts, on the former, because very little need be assumed about sums to employ them in formal semantics. For example, one needn’t hold that the relation of *part* that my fingernail bears to my finger is the very same relation that Liz bears to Liz and Tracy.

<sup>18</sup> A couple of points about the uniqueness condition for definites: First, I ultimately would not want to take this as an essential feature of the proposal, since, although I wouldn’t want to throw it out wholesale, I’m fairly sure it must be modified at least in the case of genitive definite descriptions, whether they begin with a possessive, or begin with ‘the’ and contain an ‘of’ construction. For example, having sisters does not preclude one from being the daughter of a farmer. Second, I am going to completely ignore in this paper the problem of *incomplete* descriptions, such as in ‘the table is covered with books’, since this is no less a problem for the Russellian than it is for me, and since I take it that some version of quantifier domain restriction is correct and can be adapted to the case of predicative definite descriptions. (For interesting and helpful recent discussion of quantifier domain restriction, see Stanley and Szabó (2000).) Moreover, the fact that the definite article requires some form of domain restriction does not in and of itself provide evidence for putting it in a semantic class with determiners such as ‘every’ and ‘no’, since there are other noun modifiers, such as superlative adjectives, which typically get interpreted with respect to a restricted domain.

contains the *highest-ranked* member of the extension of the common noun. The extension is empty if there is no highest-ranked member.<sup>19</sup>

This proposal for the interpretation of definite and indefinite descriptions assigns these extensions to the following noun phrases, when the domain is restricted to the Beatles. I'll suppose, perhaps counterfactually, that Ringo is not a songwriter. (There's a difficult and interesting question concerning how many songs one must write to be a songwriter.)

- 'a songwriter': {John, Paul, George}
- 'the songwriter':  $\emptyset$
- 'the drummer': {Ringo}
- 'songwriters': {John, Paul, George, John+Paul, John+George, Paul+George, John+Paul+George}
- 'the songwriters': {John+Paul+George}

When predicate nominals occur in predicative position at the level of surface form, as in (31–34), there is no special problem for the interpretation of such sentences, and we adopt a vacuous LF rule as before:

$$(\text{LF}_1 \text{ PN}) \quad \text{PN}(\alpha) \implies \text{PN}(\alpha)$$

Here '*PN*' represents an arbitrary predicate nominal and ' $\alpha$ ' represents an arbitrary noun phrase in its argument position. (Note that if  $\alpha$  is itself a quantified noun phrase, as in 'No man is an island', a separate LF rule governing  $\alpha$  must be applied.) To account for predicate nominals when they occur in *argument* position at the level of surface form, as in:

- (35) A man is on the roof
- (36) Workers are on the roof
- (37) The drummer is on the roof
- (38) The philosophers are on the roof

I'll provisionally propose the following rule:

$$(\text{LF}_2 \text{ PN}) \quad \Phi(\text{PN}) \implies [\exists x : \text{PN}(x)](\Phi x)$$

What is going on here? Since predicate nominals have predicate-type semantic values on my proposal, they cannot occur in an argument position at logical form, since then logical forms would be uninterpretable. So by the rule (LF<sub>2</sub> PN), they move out of argument position in the derivation of

<sup>19</sup> This proposal is similar to Sharvy's (though Sharvy takes descriptions to be quantified noun phrases), and can be extended to descriptions containing mass nouns as well as count nouns.

logical form, leaving behind a variable, and move into the restrictor position (represented by the blank) of a restricted existential quantifier ‘ $[\exists x : \_\_\_ (x)]$ ’, which then binds the variable left behind as a trace. The gappy restricted existential ‘ $[\exists x : \_\_\_ (x)]$ ’ is not contributed by any of the expressions in the sentence, but rather by the structure itself.

Let’s apply the rule to derive the logical form for (37). The sentence contains two definite descriptions in argument position, so we will need to apply the rule twice. First, we apply it to the predicate nominal ‘the drummer’, letting  $\Phi$  be ‘is on the roof’. The result is (37<sub>1</sub>). (Since it is easier to read, I write ‘ $x$  is the drummer’ instead of ‘The drummer ( $x$ )’. The ‘is’ here is, of course, the ‘is’ of predication.)

$$(37_1) \quad [\exists x : x \text{ is the drummer}](x \text{ is on the roof})$$

Now in applying the rule to ‘the roof’, we have a choice to make depending on what we take  $\Phi$  to be. The results of the two choices are these:

$$(37_2) \quad [\exists x : x \text{ is the drummer}][\exists y : y \text{ is the roof}](x \text{ is on } y)$$

$$(37_3) \quad [\exists y : y \text{ is the roof}][\exists x : x \text{ is the drummer}](x \text{ is on } y)$$

The truth-conditions of these logical forms are the same, for the familiar reason that the order of existential quantifiers does not matter. If the extension of ‘the drummer’ is {Ringo}, and the extension of ‘the roof’ is {Slate}, (let ‘Slate’ be the name of a particular roof), then (37<sub>2</sub>) and (37<sub>3</sub>) are true just in case there is an  $x$  in {Ringo} and a  $y$  in {Slate} such that  $x$  is on  $y$ .

The truth-conditions of (37), on this proposal, are exactly those assigned to it by the Russellian. To see this, we may replace ‘ $x$  is the drummer’ in (37<sub>1</sub>) with its first-order expansion (given by (Def  $\forall$ )) to get:

$$[\exists x : \text{drummer}(x) \ \& \ (\forall y)(\text{drummer}(y) \rightarrow y = x)](x \text{ is on the roof})$$

We may then go further and eliminate the restricted existential according to the definition:  $[\exists x : \Phi x](\Psi x) =_{df} (\exists x)(\Phi x \ \& \ \Psi x)$ .

$$(\exists x)(\text{drummer}(x) \ \& \ (\forall y)(\text{drummer}(y) \rightarrow y = x) \ \& \ x \text{ is on the roof})$$

The same procedure applied to (37<sub>2</sub>) and (37<sub>3</sub>) yields precisely the standard Russellian expansions:

$$(\exists x)[\text{drummer}(x) \ \& \ (\forall z)(\text{drummer}(z) \rightarrow z = x) \ \& \ (\exists y)(\text{roof}(y) \ \& \ (\forall z)(\text{roof}(z) \rightarrow z = y) \ \& \ x \text{ is on } y)]$$

$$(\exists y)[\text{roof}(y) \ \& \ (\forall z)(\text{roof}(z) \rightarrow z = y) \ \& \ (\exists x)(\text{drummer}(x) \ \& \ (\forall z)(\text{drummer}(z) \rightarrow z = x) \ \& \ x \text{ is on } y)]$$

So far, then, we have no semantic means of distinguishing this proposal from one that treats definite and indefinite descriptions as systematically ambiguous—as having predicate-type semantic values when occurring

in predicate position, and as having quantifier-type semantic values when occurring in argument position.<sup>20</sup>

## VII

Reasons for preferring some version of (LF<sub>2</sub> *PN*) to the Russellian's (LF  $\gamma$ ) emerge, however, once we consider the way in which definite and indefinite descriptions vary in their quantificational force in a way that quantified noun phrases such as 'every man', 'some man' and 'most men' do not.<sup>21</sup>

The following examples illustrate that each of the types of noun phrases I am discussing may have either an existential reading (the a. sentences) or a generic reading (the b. sentences) when they occur in subject position.

- (39) a. A tiger has escaped  
b. A tiger has stripes
- (40) a. Models are coming to the party  
b. Models are tall
- (41) a. The owner of a Porsche is waiting outside  
b. The owner of a Porsche keeps his car in good condition
- (42) a. The parents of twins want to have us over for dinner  
b. The parents of twins have little time for relaxation

The contrast illustrated in the examples below (43–46) show that the quantificational force of definite and indefinite descriptions is not limited to existential and generic. Unlike names and quantified noun phrases, they may also derive their quantificational force from adverbs of quantification—such as 'never', 'rarely', 'sometimes', 'usually', and 'always'—occurring in the sentence.

<sup>20</sup> This in essence is what Partee (1987) does. She provides a set of "type-shifting" operations that convert predicate-type, quantifier-type and referential-type semantic values from one to another.

<sup>21</sup> Since Heim's 1982 influential work, it has been common among semanticists to treat indefinite and definite descriptions as being in a different semantic class from quantified noun phrases, as not having any quantificational force of their own. Though Heim was concerned in large part to account for facts about anaphora, more recent proposals in this vein, such as Kratzer's, Wilkinson's and Diesing's, as well as Heim's own proposal, are explicitly concerned to deal with the varying quantificational force of *indefinites*, as illustrated by the examples provided below. While the proposal I offer here has much in common with these proposals, it differs in important respects: first, my proposal allows descriptions to have a uniform semantic interpretation whether occurring in argument position or predicative position at the level of surface form; second, I treat definite descriptions as on a par with indefinites, not just because they both occur in predicative position, unlike quantified noun phrases, but also because they seem to exhibit the same range of variability in quantificational force as indefinites, which seems to me to have been underappreciated.

- (43) a. The owner of a Porsche is often smug  
 b. Some men are often smug  
 c. John is often smug  
 d. John is smug

The adverb of quantification ‘often’ can only be interpreted in sentences (43b) and (43c) as having a temporal reading. (43c) unambiguously means that John often manifests smugness, and similarly, (43b) unambiguously means that some men are such that they often manifest smugness. (43a), however, is three-ways ambiguous. The adverb of quantification here can receive a temporal reading, as in (43b–43c), with the definite description ‘the owner of a Porsche’ receiving either an existential reading, (in which case (43a) says that some Porsche owner is such that he often manifests smugness), or a generic reading, (in which case (43a) says that Porsche owners in general are such that they often manifest smugness). But the definite description here can also get its quantificational force from the adverb of quantification. In this case, ‘smug’ remains unmodified, as in (43d),<sup>22</sup> and the sentence says that it is often true of an object in the extension of ‘the owner of a Porsche’ that it possesses smugness as a *characteristic*, or more simply, that many Porsche owners are smug. Note that on this reading it is the definite description ‘the owner of a Porsche’, and not the indefinite description ‘a Porsche’, that is getting its quantificational force from the adverb of quantification. In other words, we do not get the intended interpretation that many Porsche owners are smug by assigning the following truth-conditions to the sentence: it is often true of an object in the extension of ‘a Porsche’ that the owner of it possesses smugness as a characteristic. This does not yield the desired truth-conditions since it may be true if one smug man owns a disproportionate number of the world’s Porsches.

Plural definite descriptions also exhibit the same range of quantificational variability.

- (44) a. The parents of twins seldom awake before dawn  
 b. Few runners seldom awake before dawn  
 c. Caesar seldom awoke before dawn  
 d. Caesar awakes before dawn

Although it is unclear whether we should say that the adverb ‘seldom’ in (44b) and (44c) is receiving a temporal reading (quantifying over days) or not

<sup>22</sup> Many people writing on generics consider a sentence like (43d) to be itself a generic sentence, since unlike ‘John is being smug (now)’, (43d) expresses a *generalization* about John’s behavior. I do not in this paper address the genericity exhibited in these “characterizing sentences.” For recent overviews of the literature on generics, see Krifka et al. (1995) and Koslicki (1999).

(quantifying over awakenings),<sup>23</sup> it is at least clear that these sentences are unambiguous, (at least when uttered with their most natural intonation). In (44c), we are saying that Caesar had a certain property *P*—the property of seldom awaking before dawn—and in (44b), we are saying that few runners have that property *P*. But again, the sentence (44a), with the plural definite, is three-ways ambiguous. It could be used to attribute the property *P* to *some* mother and father of twins; it could be used to attribute *P* to parents of twins *in general*; it could also be used to say that *few* parents of twins have the property, attributed to Caesar in (44d), of *characteristically* awaking before dawn. More explicitly, (44a) can have these truth-conditions: it is seldom true of objects in the extension of ‘the parents of twins’ that they have the characteristic of awaking before dawn. (Remember that we are allowing the extension of plural definites to contain “sums” such as Lora+Eric.) As before, it is the plural definite ‘the parents of twins’ and not the bare plural ‘twins’ that is getting its quantificational force from the adverb of quantification, since it could be that a particular late-rising mother and father are parents to a disproportionate number of the worlds twins.

Analogous remarks may be made about the indefinite descriptions in the following.

- (45) a. A dog rarely eats vegetables
- b. Most dogs rarely eat vegetables
- c. Fido rarely eats vegetables
- d. Fido eats vegetables
- (46) a. Philosophers sometimes smoke
- b. All philosophers sometimes smoke
- c. John sometimes smokes
- d. John smokes

The b. and c. sentences here are unambiguous, while the a. sentences are at least two-ways ambiguous. For example, (45a), may mean that it is *generally* true of an object in the extension of ‘a dog’ that it has the property attributed to Fido in (45c); or it may mean that it is *rarely* true of an object in the extension of ‘a dog’ that it has the characteristic property attributed to Fido in (45d). It does seem that the indefinites in the a. sentences here cannot be interpreted as having existential force, but the existential reading may become preferred, if not required, when a modifier is added, as in:

- (47) A dog I know rarely eats vegetables (Equivalent to: there is a dog I know that rarely eats vegetables.)
- (48) Philosophers I know sometimes smoke (Equivalent to: there are philosophers I know who sometimes smoke.)

<sup>23</sup> Cf. Lewis (1975, p. 6).

### VIII

To handle the variable quantificational force of definite and indefinite descriptions, I propose additional rules, which generalize (LF<sub>2</sub>), to govern predicate nominals occurring in argument position at the level of surface form:

- (LF<sub>2</sub> *PN*)  $\Phi(PN) \implies [\exists x : PN(x)](\Phi x)$   
 (LF<sub>3</sub> *PN*)  $\Phi(PN) \implies [Gen x : PN(x)](\Phi x)$   
 (LF<sub>4</sub> *PN*)  $Adv\Phi(PN) \implies [Adv x : PN(x)](\Phi x)$

The rules (LF<sub>2</sub> *PN*) and (LF<sub>3</sub> *PN*) say that if a predicate nominal *PN* occurs in the argument position of a predicate  $\Phi$  (which may itself contain an adverb of quantification), then the predicate nominal may slot into either ‘ $[\exists x : \_\_ x]$ ’ or ‘ $[Gen x : \_\_ x]$ ’ to form a restricted quantifier with scope ‘ $\lceil \Phi x \rceil$ ’. The rule (LF<sub>4</sub> *PN*) says that if a predicate nominal occurs in the argument position of a predicate  $\Phi$  that is modified by an adverb of quantification *Adv*, then the predicate nominal may slot into ‘ $\lceil [Adv x : \_\_ x] \rceil$ ’ to form a restricted quantifier with scope ‘ $\lceil \Phi x \rceil$ ’. It’s conceivable that we might find reason for subsuming the rules (LF<sub>2</sub> *PN*) and (LF<sub>3</sub> *PN*) under the single rule (LF<sub>4</sub> *PN*) by taking  $\exists$  and *Gen* to be unpronounced adverbs of quantification. Though I like the idea, I won’t pursue it here. All predicate nominals must be moved out of argument position by application of one of these rules.

To get a feel for how this works, let’s apply it to sentence (43a), repeated here:

(43a) The owner of a Porsche is often smug

The description ‘the owner of a Porsche’ may be moved out of argument position in one of three ways:

- $[\exists x : x \text{ is the owner of a Porsche}](x \text{ is often smug})$   
 $[Gen x : x \text{ is the owner of a Porsche}](x \text{ is often smug})$   
 $[Often x : x \text{ is the owner of a Porsche}](x \text{ is smug})$

From each of these, the description ‘a Porsche’ may be moved out of argument position to yield the three logical forms assigned to the sentence:

- $[\exists x : [\exists y : y \text{ is a Porsche}](x \text{ is the owner of } y)](x \text{ is often smug})$   
 $[Gen x : [\exists y : y \text{ is a Porsche}](x \text{ is the owner of } y)](x \text{ is often smug})$   
 $[Often x : [\exists y : y \text{ is a Porsche}](x \text{ is the owner of } y)](x \text{ is smug})$

It seems to me that ‘The owner of a Porsche is often smug’ is associated with just the three sets of truth-conditions represented here, which may be glossed as follows: ‘Some Porsche owner is often smug’, ‘Porsche owners in general are such that they are often smug’, and ‘Many Porsche owners are smug’. The question then arises whether the LF rules I proposed for descriptions in argument position generate more logical forms than these three. In particular, we want to know why the indefinite description can only receive existential force, and why it cannot take wide scope.

A first point to note is that (LF<sub>4</sub> PN) does *not* permit the indefinite description ‘a Porsche’ to occupy the restrictor position of ‘[Often  $x$  : \_\_\_  $x$ ]’. The reason for this is that ‘often’ in (43a) modifies the predicate ‘smug’, but ‘a Porsche’ does not occupy the argument position of that predicate. I laid it down as a rule that a predicate nominal can only move into the restrictor position of an adverb of quantification if it is an argument of the predicate modified by that adverb at the level of surface form.<sup>24</sup> The expression ‘a Porsche’ does not satisfy this condition, since ‘often’ modifies ‘smug’, but ‘a Porsche’ is not in the argument position of the predicate ‘smug’ (no *Porsche* is being claimed to be smug), so a logical form such as

(49) [Often  $y$  :  $y$  is a Porsche]([ $\exists x$  :  $x$  is the owner of  $y$ ])( $x$  is smug)

is *not* generated by these rules, which is as it should be. The upshot of this is that adverbs of quantification are not being treated as unselective, contrary to what Lewis (1975) proposed.<sup>25</sup>

But what do we do with cases when an adverb of quantification modifies a predicate with more than one argument? Consider a sentence in which an adverb of quantification is modifying a transitive verb:

(50) The owner of a Porsche rarely speaks to the owner of a Camaro

It seems to me that the sentence is actually nine-ways ambiguous, representing each of the possible combinations of generic, existential, and ‘rarely’

<sup>24</sup> Rooth (1995, p. 265) provides a sentence which, if he is right about its interpretation, would be a counterexample to the principle that a predicate nominal can only restrict an adverb of quantification if it is an argument of the predicate modified by that adverb. His sentence is this:

- At least one person an AIDS victim works with is usually misinformed about the disease

His claim is that this sentence can have the interpretation that most AIDS victims work with at least one person who is misinformed about the disease, even though ‘an AIDS victim’ is embedded in the subject of the sentence. Rooth’s sentence sounds strange to me, however, while

- An AIDS victim usually works with at least one person who is misinformed about the disease

does not, and clearly has the interpretation Rooth intends.

<sup>25</sup> My proposal concerning the restriction on adverbs of quantification may have the same effect as Kadmon’s (1987) distinction between “boss” and “dependent” NPs.

force for the two definite descriptions. But we cannot account for the reading of the sentence on which both definite descriptions have the quantificational force of ‘rarely’ by assigning the following logical form:

- (51) [Rarely  $x : x$  is the owner of a Porsche][Rarely  $y : y$  is the owner of a Camaro] ( $x$  speaks to  $y$ )

since this sentence is true just in case few Porsche owners are such that there are few Camaro owners to whom they speak, which is clearly not equivalent to any reading of (50). Instead, we need to allow restricted quantifiers to contain more than one restrictor, as follows:

- (52) [Rarely  $x, y : x$  is the owner of a Porsche;  $y$  is the owner of a Camaro] ( $x$  speaks to  $y$ )

The truth-conditions of (52) would be:

- (53) Few pairs  $\langle x, y \rangle$  that are in  $\{x|x \text{ is the owner of a Porsche}\} \times \{y|y \text{ is the owner of a Camaro}\}$  are in the extension of ‘speaks to’

A second issue to contend with is why the indefinite ‘a Porsche’ in (43a) only receives existential, and not generic, force. Why don’t we have the following, for example, as an available logical form for (43a):

- (54)  $[\exists x : [Gen y : y \text{ is a Porsche}](x \text{ is the owner of } y)](x \text{ is often smug})$

The truth-conditions of (54) could be glossed as ‘Some person is such that: in general, if something is a Porsche he is the owner of it, and he is often smug’. This is a crucial question, but a difficult one, and I will not address it here, but just restrict myself to the the general claim that while all indefinite descriptions (singular or plural) can receive generic or existential force, they cannot always receive either in any sentence in which they occur.<sup>26</sup>

The third issue to contend with is why the indefinite ‘a Porsche’ cannot take wide scope. Why, for example, do we not have the following as an available logical form for (43a):

<sup>26</sup> The fact that the choice of quantificational force is not always unconstrained has been the focus of much recent work on the topic of generics. For example, in ‘The owner of a Porsche is waiting outside’ and ‘Dogs are barking’, existential readings are preferred, while in ‘Dogs bark’ it seems that only a generic reading is available. It is commonly thought that the difference in available quantificational force derives from the difference in the occurrence of what Carlson (1977a) called a stage-level versus an individual-level predicate, which is supposed to accord roughly with the distinction between temporary and permanent properties. But the facts are not that simple, since bare plurals, for example, may sometimes receive generic force with a stage-level predicate, as in ‘Students are staying up late tonight to protest the bombing’. Diesing (1992) holds that indefinite *objects* (as opposed to subjects) of transitive verbs can in general only receive existential force. It is unclear to me whether ‘owns’ is supposed to be a stage-level or an individual-level relation expression, but since ‘a Porsche’ is occurring as its object rather than its subject in (43a), the fact that it can only receive existential force could perhaps be explained on Diesing’s view.

(55)  $[\exists y : y \text{ is a Porsche}]([\text{Often } x : x \text{ is the owner of } y](x \text{ is smug}))$

Ideally, the inability of the indefinite ‘a Porsche’ to take wide scope in this sentence would be explained on syntactic grounds, perhaps deriving from the fact that it is already embedded in the definite description ‘the owner of a Porsche’.<sup>27</sup> But there is, however, also a semantic explanation. An important feature of the *definite* descriptions getting generic or adverbial readings in the examples I’ve provided is that they can be true of more than one object. The predicates ‘the owner of a Porsche’ and ‘the parents of twins’ may contain more than one thing in their extension, despite the uniqueness condition on the definite article, since each contains an embedded noun phrase. Uniqueness of ownership in ‘the owner of a Porsche’ is relativized to particular Porsches, and uniqueness of parentage in ‘the parents of twins’ is relativized to particular pairs of twins. It is only because ‘the owner of a Porsche’ and ‘the parents of twins’ may be true of more than one thing that it even makes sense to make *generalizations* about things having these properties. If the indefinite ‘a Porsche’ receives wide scope as in (55), however, this crucial feature is lost. If Sparky is a particular Porsche, then it is inappropriate at best to say that *many* of the things in the extension of ‘the owner of Sparky’ are smug, since at most one thing can be in the extension of this predicate. Similarly, it would be inappropriate at best to say that there is *a* Porsche *y* which is such that *many* of the things that are *the* owner of *y* are smug. If a predicate nominal can be true of at most one thing, then it will not sensibly combine with ‘generally’, ‘many’, ‘few’, etc.

This leads us to another question concerning generic definite descriptions, namely, how is the generic force of *simple* definite descriptions to be handled on the present view? Consider these sentences:

(56) The tiger is growling

(57) The tiger is striped

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<sup>27</sup> One might think that facts about anaphora would force one to accept that an embedded indefinite, like ‘a Porsche’ in ‘the owner of a Porsche’, must be able to take wide scope. The thought would go like this. The pronoun ‘it’ in ‘The owner of a Porsche usually washes it on Sunday’ can be interpreted as anaphoric on the noun phrase ‘a Porsche’. But the pronoun will not be in the *scope* of this noun phrase (or on my view: in the scope of the restricted quantifier containing this noun phrase) unless the indefinite ‘a Porsche’ moves *out* of the noun phrase in which it is embedded. This thought cannot be right, however, since we cannot get the right truth-conditions for the sentence if we permit the indefinite description ‘a Porsche’ to take wide scope. The sentence ‘Usually a Porsche is such that the owner of it washes it on Sunday’ is not equivalent to ‘The owner of a Porsche usually washes it on Sunday’ for the reason that they are sensitive in different ways to what *proportion* of the world’s Porsches are owned by individual Porsche owners. Because we face a proportion problem when we let the embedded indefinite ‘a Porsche’ take wide scope, we should conclude that in ‘The owner of a Porsche usually washes it on Sunday’ we have a case of unbound anaphora.

On my proposal, ‘the tiger’ can be true of at most one object, and since there are many tigers in the world, the predicate can only be true of something if the domain of discourse is in some way contextually restricted. Assuming this can be done, we can easily account for the truth-conditions of (56) by assigning it the following logical form:

(58)  $[\exists x : x \text{ is the tiger}](x \text{ is growling})$

But what about (57)? We can use the sentence (57) to make a claim, not about an individual tiger, but about an entire species. Given that ‘the tiger’ can be true of at most one object, we do *not* get the desired truth-conditions for (57) by assigning it the following logical form:

(59)  $[Gen x : x \text{ is the tiger}](x \text{ is striped})$

As we noted already, definite descriptions that do not contain embedded noun phrases can be true of at most one thing, and hence cannot sensibly receive other than existential quantificational force. Accordingly, I will maintain that the difference illustrated in (56–57) does not derive from a difference in the quantificational force of the definite description, but rather from an ambiguity in the common noun ‘tiger’.

It is frequently noted that some common nouns can vary in their interpretation, sometimes serving as predicates true of individual animals, for example, while at other times serving as predicates true of *kinds* of animal.

(60) I breed three dogs: Lassie, Chelsea, and Camden

(61) I breed three dogs: Collies, Retrievers, and Weimaraners

The interpretation of ‘dog’ in (61) is called its “taxonomic” interpretation. If we allow that common nouns such as ‘dog’ and ‘tiger’ can be interpreted not only as predicates true of individual dogs and tigers, but also as predicates true of breeds and subspecies of dogs and tigers, then there is no reason not to allow that they may also be interpreted as predicates each true of just one “thing,” the entire dog and tiger species. The three different interpretations of the common noun ‘tiger’ are exhibited in the following sentences taken from a single paragraph of the *Encyclopædia Britannica* (vol. 11, p. 767):

(62) The size and the characteristic colour and striped markings of the tiger vary according to locality and race. (Entire species)

(63) Tigers of the south are smaller and more brightly coloured than those of the north. (Subspecies)

(64) There are a few black and white tigers, and one pure white tiger has been recorded. (Individuals)

The truth-conditions of (57) are accounted for by giving the common noun ‘tiger’ its *most inclusive* taxonomic interpretation, and assigning the definite description existential force:

(57')  $[\exists x : x \text{ is the tiger}](x \text{ is striped})$

## IX

One reason I like the account offered here, as contrasted with a Russellian theory of descriptions, is that it preserves Strawson's intuition that while 'Washington met the greatest French soldier' is in some sense about *two* people, 'Washington was the greatest French soldier' is about just one. By far the greater advantage, however, is that on my proposal neither predicative uses of descriptions, nor plural uses of descriptions, nor the variable quantificational force of descriptions, requires us to posit that the definite and indefinite articles just happen to be ambiguous in exactly the same ways. On my proposal, they are not ambiguous at all. Moreover, unlike with Russell's theory, on my proposal the semantics of descriptions does not require us to posit a counter-intuitive ambiguity in 'to be'. Whether we can retain an unambiguous 'be', however, depends on what we say about sentences such as 'Cicero is Tully', and whether we are prepared to assign proper names predicate-type semantic values. Technically, it would be a simple matter to incorporate proper names as yet another type of predicate nominal. Tyler Burge (1973) has actually proposed, for unrelated reasons, that we should take names to be predicates. I am uncertain at this point about whether we should follow his lead.

A number of other semantic issues remain open. The most glaring of these is that while I have said what the semantic values of predicate nominals are to be, I have not assigned truth-conditions to all sentences containing them. Predicate nominals receiving existential force are easy to deal with. We say that  $\lceil \exists x : \Phi x \rceil (\Psi x)$  is true just in case the extensions of  $\Phi$  and  $\Psi$  have a non-empty intersection. It is unlikely that we could use such precise mathematical notions to give truth conditions for sentences with adverbs of quantification, however, since adverbs of quantification are usually vague. The generic quantifier I've helped myself to presents special problems of its own. Whether a sentence  $\lceil Genx : \Phi x \rceil (\Psi x)$  is true is not just a matter of the number or proportion of things in the extension of  $\Phi$  that are in the extension of  $\Psi$ . The generic quantifier is used to make *law-like* generalizations. Other well-known problems are presented by sentences like 'Guppies give live birth', or 'Dutchmen are good sailors'. For these sentences to be true, it is not required that it be generally true of a guppy that it gives live birth, or that it be generally true of a Dutchman that he is a good sailor, but only that it be generally true of a guppy that gives birth that it gives live birth, and that it be generally true of a Dutchman that is a sailor that he is a good one.<sup>28</sup>

<sup>28</sup> It may be that the problems presented by the sentences 'Guppies give live birth' and 'Dutchmen are good sailors' can be accounted for by treating these as cases of quantifier

On the syntactic side, many issues remain as well. Although I take logical forms and surface forms to be syntactic structures, I have provided no such structures here. Instead, I have used a particular quasi-formal language as a stand-in, to represent these structures. This has enabled me to side-step the issue of where exactly in the syntax the unpronounced entities I posit—‘ $[\exists x : \text{--- } x]$ ’ and ‘ $[Gen x : \text{--- } x]$ ’—are located. To conclude, though, I do want to make a brief comment about the restricted quantifier notation I’ve been using to represent logical forms—a comment about why it’s not an ideal notation, and how it in fact obscures an important syntactic feature of my proposal.

In the notation I’ve been using, a determiner such as ‘some’ and ‘no’ is marked with an index and combines with an open formula, binding free variables matching the index in that formula, to form a restricted quantifier, which then is itself a variable binder. So a quantified noun phrase such as ‘some man’ gets represented as ‘ $[\text{some } x : \text{man } x]$ ’ and the logical form of a sentence like ‘some man smokes’ gets represented as

(65)  $[\text{some } x : \text{man } x](x \text{ smokes})$

Here the ‘ $x$ ’ in ‘man  $x$ ’ is bound by the simple quantifier ‘some  $x$ ’, while the ‘ $x$ ’ in ‘ $x$  smokes’ is bound by the restricted quantifier ‘ $[\text{some } x : \text{man } x]$ ’. Quantified noun phrases are thus represented as having more structural complexity than they actually seem to have in English, since determiners such as ‘some’ combine with *noun phrases*, not open sentences. Moreover, while we may say that the variable ‘ $x$ ’ in ‘ $x$  smokes’ is a trace resulting from movement, where are to say that the ‘ $x$ ’ in ‘man  $x$ ’ comes from? If we took (65) to actually *be* the logical form of ‘some man smokes’, we would be left saying that the contribution made to the logical form of the sentence by the determiner ‘some’ would be ‘ $[\text{some } x : \text{--- } x]$ ’, which is, to use Russell’s phrase, “broken up.”

The point I want to emphasize is that the extra structural complexity of quantified noun phrases in the notation I’ve been using is completely dispensable. The two occurrences of ‘ $x$ ’ in ‘ $[\text{some } x : \text{man } x]$ ’ are serving only to indicate which variable is bound by the entire restricted quantifier. The logical form of ‘Some man smokes’ could just as well be represented as (65’):

(65’)  $[\text{some} : \text{man}]_x(x \text{ smokes})$

In this alternative notation, restricted quantifiers consist of a determiner and a one-place predicate and get marked with a subscript to indicate what variable they bind.

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domain restriction—perhaps along the lines of the account offered by Stanley and Szabó (2000)—in which case we need *not* view such cases as presenting a special problem for the interpretation of the generic quantifier.

The alternative notation is preferable since it better matches the structural complexity of English expressions. The new notation also makes it more clear that adverbs of quantification, at least when restricted by overt predicate nominals, are being treated on my proposal as semantically like determiners.

Using the alternative notation, my own proposal for descriptions could be stated as follows: when a description (definite or indefinite, singular or plural) occurs in an argument position at the level of surface form, it moves out of argument position, leaving behind a variable as a trace, to combine with an invisible *determiner*  $\exists$  or *Gen*, or an overt adverb of quantification, to form a quantified noun phrase that binds the variable left behind as trace. Now the logical forms of ‘A runner rarely smokes’, for example, are represented as follows:

(66)  $[\exists : \text{a runner}]_x(x \text{ rarely smokes})$

(67)  $[\text{Gen} : \text{a runner}]_x(x \text{ rarely smokes})$

(68)  $[\text{rarely} : \text{a runner}]_x(x \text{ smokes})$

An important point, however, is that in adopting the new notation, and getting rid of some of the structural complexity within quantified noun phrases, we end up decreasing the number of embedded formulas in the representation of the logical form of a sentence like ‘Some man smokes’. (65) contains two embedded formulas (‘man  $x$ ’ and ‘ $x$  smokes’) while (65’) contains just one (‘ $x$  smokes’). The result is that there are fewer *sentences* for quantified noun phrases to adjoin to, so that we’ll need restricted quantifiers to combine not only with open sentences to yield sentences, but also in some cases to combine with open predicates to yield predicates. As an example, let’s reconsider (43a), repeated here:

(43a) The owner of a Porsche is often smug

Moving the definite description out of argument position by (LF<sub>4</sub> *PN*), but using the new notation, get us:

(69)  $[\text{Often} : \text{the owner of a Porsche}]_x(x \text{ is smug})$

Now to get the reading of the sentence which we glossed as ‘Most Porsche owners are smug’, the indefinite description ‘a Porsche’ must not take wider scope than ‘often’, yet there is no sentence *within* the restricted quantifier for the indefinite to adjoin to. An application of (LF<sub>2</sub> *PN*) (repeated here) will only yield the desired result if we let  $\lceil \Phi(PN) \rceil$  stand not just for a *sentence* containing a predicate nominal in argument position, but also for a *predicate* containing a predicate nominal in an argument position.

(LF<sub>2</sub> *PN*)  $\Phi(PN) \implies [\exists x : PN(x)](\Phi x)$

For (69) we need  $\lceil \Phi(PN) \rceil$  to be ‘the owner of (a Porsche)’, because we need a rule that generates a logical form such as the following:

(70) [Often :  $[\exists : \text{a Porsche}]_y(\text{the owner of } y)]_x(x \text{ is smug})$

Here the restricted quantifier  $[\exists : \text{a Porsche}]_y$  is combining with the open monadic predicate ‘the owner of  $y$ ’ to yield a monadic predicate that is true of an individual  $x$  just in case there is a Porsche of which  $x$  is the owner. I won’t here undertake more of an elaboration than this, but only wish to point out that the structural complexity found within restricted quantifiers can be dispensed with in favor of the new notation, but only at the expense of requiring more permissive LF rules.<sup>29</sup>

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