

Existential sentences without existential quantification

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1. Introduction

In a chapter¹ on existence statements in *Individuals: An Essay in Descriptive Metaphysics*, Strawson makes the following observation:

we can...admit the possibility of another formulation of existentially quantified statement[s], and, with it, the possibility of another use of the word ‘exists’...We can, that is to say, reconstrue every such quantified proposition as a subject-predicate proposition in which the subject is a property or concept and in which the predicate declares, or denies, its instantiation. (Strawson 1959:241)

In other words, there are two ways to express a proposition whose truth entails the existence of some token entity (or *particular*, to use Strawson’s terminology). Suppose we take the following *there*-existential sentence as an example:

(1) There was snow.

We might, modifying slightly the analysis in Barwise and Cooper 1981, interpret *There was* as an existence predicate and *snow* as an existential quantifier over particulars (represented logically in (2)):

(2) $\lambda P[\exists x[\mathbf{snow}(x) \wedge P(x)](\lambda y[\mathbf{exists}(y)])] = \exists x[\mathbf{snow}(x) \wedge \mathbf{exists}(x)]$

Alternatively, we might (essentially equivalently) interpret *There was* as if it were synonymous with the predicate *to be instantiated*, a predicate that holds of expressions interpreted as properties or as what Strawson calls *nonparticulars*, e.g. as in (3)a. Presumably, it would be true that the snow-property is instantiated iff some particular, one that is a quantity of snow, exists (i.e. iff (2) is true). In its treatment of the NP *snow*, the semantics for the existential construction represented in (3)a resembles Milsark’s 1974 proposal that *There be* be interpreted as an existential quantifier which takes a predicative NP as its argument, as in (3)b (see also Jenkins 1972, Safir 1987, McNally 1992, Blutner 1993 and Williams 1994 for related proposals):

(3) a. **is-instantiated**($\wedge \lambda x[\mathbf{snow}(x)]$)

b. $\lambda P[\exists x[P(x)](\lambda y[\mathbf{snow}(y)])] = \exists x[\mathbf{snow}(x)]$

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It has been claimed that this latter sort of analysis does not yield the correct truth conditions for existential sentences with NPs which appear not to be monotone increasing, such as those in (4) (see most recently Herburger 1997):

- (4) a. There were **at most ten children** at the party.
b. There were **exactly three pieces of cake** left.
c. There are **no pieces** left now.

Briefly put, the basic problem raised by (4)a and b is that simply asserting the instantiation of a set of individuals fitting the description *at most n N* or *exactly n N*, as would correspond to the use of (3)a, does not rule out the existence of more than *n* such individuals, contrary to intuition. And in the case of (4)c, it is not clear what it would mean to assert the instantiation of *no pieces*.

The purpose of this paper is to argue that, examples such as those in (4) notwithstanding, Milsark's basic intuition was correct and that the existential predicate in English should be interpreted essentially as in (3)a, with a property-type argument.² In particular, besides discussing the various positive arguments in favor of such an analysis, I will show that putative nonincreasing NPs do not present any obstacle.

The analysis to be proposed has two notable consequences. First, it indicates that while presupposition may play a role in accounting for the so-called definiteness restriction associated with the construction (see e.g. Lumsden 1988, Prince 1988, Zucchi 1995 and below), presupposition cannot account for all of the definiteness restriction facts – in fact, on the view defended here, the definiteness restriction facts cannot be explained by a single generalization. Second, it supports the view that the notions *weak* and *strong* should be redefined as suggested in Ladusaw 1994, where “weak” is essentially equated with “nonparticular-denoting.”

The paper is structured as follows. First, I present evidence that the existential predicate is interpreted as a property of nonparticulars rather than particulars.³ In section 3 I present a semantics for existential sentences and discuss the treatment of nonincreasing NPs. The assumptions about pragmatics that are needed to make the analysis complete are discussed in section 4. Section 5 contains some

²For the purposes of this paper I treat *There be* as an unanalyzed unit; I do this partly in order to simplify the discussion, which is primarily concerned with the semantic type of the argument that gets saturated by the postverbal NP, and partly because there is no decisive evidence concerning the individual semantic contributions of the individual words.

³I take the final predicative phrase often found in existential sentences (such as those italicized in (i)-(ii)) to be either a VP adjunct or a part of the postverbal NP; for this reason, I will ignore it in what follows:

- (i) There's a fly *in your soup*.
(ii) There are children *playing in the yard*.

See McNally 1992 for arguments that this final phrase is neither the head of a small clause complement to *be* (contra e.g. Stowell 1978) nor an independent argument of the existential predicate (contra e.g. Keenan 1987), and for further discussion.

brief comments on *there* sentences with verbs other than *be*, in light of the analysis proposed in sections 3 and 4. In the concluding section 6, I point out the implications of the analysis for the weak/strong distinction. Finally, in an appendix to the paper, I compare the way in which existential sentences derive their existential force on the present proposal with the technique used in Blutner 1993. Although Blutner’s analysis of the existential predicate is very similar to the one proposed here, I will argue that the mechanism he employs to capture the existential force associated with the construction is less successful than that employed here.

2. The existential predicate as expressing a property of nonparticulars

2.1. Evidence from the distributional restrictions on the postverbal NP

2.1.1. Sortal sensitivity

Relations routinely place restrictions on the semantic properties of their arguments; (5) illustrates this well-known fact. I will refer to such restrictions as “sortal,” intending “sort” to be interpreted for now in a nontechnical sense. (5)a is anomalous because the act of gathering requires a plurality or group of gatherers, and *a girl* does not denote a plurality or group.⁴ In contrast, (5)b and c are perfectly acceptable; (5)c additionally shows that the problem with (5)a is not simply that it is morphologically singular (“*” marks both syntactic illformedness and semantic anomaly; “#” indicates pragmatic anomaly):

- (5) a. *A girl gathered outside.
 b. The girls gathered outside.
 c. A crowd gathered outside.

Restrictions of this sort are, of course, also manifest under quantification: the subject argument of *gather* may serve as a target for quantification only if the restriction on the quantification ranges over sets of pluralities or groups, and not sets of single individuals, as the contrast in (6) clearly shows:

- (6) a. *Every girl gathered in a different square.
 b. Every crowd gathered in a different square.

A related manifestation of this restriction surfaces in the fact that a sentence like (7)a lacks a reading available to the minimally different (7)b: specifically, one on which the predicate is attributed distributively (for the same reason that distributive quantification fails in (6)a). However, it does, unlike (6)a, have a reading on which *four girls* denotes a plurality (see e.g. Link 1983 on plurals):

⁴One could perhaps take the position that (5)a is not semantically anomalous but simply always false. The important point is that whatever is wrong with this example is due to an incompatibility in the the lexical entailments associated with the NP and those associated with the verb.

- (7) a. Four girls gathered in the square.
b. Four crowds gathered in the square.

For example, (7)a will be true if Sally, Martha, Jane, and Clare together assemble in the square but cannot be construed as a claim about four individual girls on separate occasions. (7)b, however, is ambiguous between a reading which is true only if four crowds convene simultaneously on the square and one which is true e.g. if there are four (possibly temporally distinct) situations involving one crowd in the square.

The above examples underscore the fact that sortal restrictions on an argument manifest themselves in different ways depending on the⁵ determiner in the NP associated with that argument. If the determiner, and thus the NP containing it, is necessarily quantificational (as is the case with e.g. *each*, *every* in English, see e.g. Roberts 1987 for discussion), violation of a lexical semantic restriction will manifest itself as anomaly. If the determiner is *not* necessarily quantificational, yielding, for example, a plurality-denoting NP, such a violation will be manifest in the absence of a distributive reading for the sentence.

2.1.2. (Part of) the definiteness restriction as a sortal restriction

With this background in mind, I propose that part of the so-called definiteness restriction on existential sentences be reinterpreted as evidence of a sortal semantic restriction imposed by the existential predicate on the argument associated with the postverbal NP.

The term *definiteness restriction* is generally used to refer to the purported unnaturalness, anomaly, or ungrammaticality (depending on one's analysis) of definite NPs and certain quantificational NPs in existential sentences such as the following:

- (8) a. There was Fred outside.
b. There was the table in the garden.
c. There was each faculty member at the meeting.

I will not review the extensive literature on the definiteness restriction here (see e.g. Reuland and ter Meulen 1987 for references), other than to point out that virtually every analysis of the restriction has built on the premise that *all* of the facts should follow from a *single* generalization or principle. This is a reasonable null hypothesis if one assumes that all NPs denote quantifiers; however if one starts with the assumption—as I do here—that NPs can be divided semantically into those that are necessarily quantificational and those that are not or need not be (as in one line of research growing out of Kamp 1981, Heim 1982), then

⁵In saying “the” I am obviously ignoring determiners associated with possessor phrases, complements, or modifiers within the NP.

the need for a unified analysis of the definiteness restriction facts becomes less compelling.

Consequently, I will take the position that the restriction on necessarily quantificational NPs⁶ in the postverbal position in existential sentences are to be explained in a different manner than the restriction on definite NPs and proper names. Specifically, the behavior of necessarily quantificational NPs strongly suggests that their distribution is constrained by a sortal restriction on the existential predicate's postverbal argument.

To see this, consider the contrasts in (9) (to my knowledge, first pointed out in Lumsden 1988):⁷

- (9)
- a. *There was every doctor at the convention.
 - b. There was every kind of doctor at the convention.
 - c. *There were most books in his library.
 - d. There were most sorts of books in his library.
 - e. *There were both bottles for sale.
 - f. There were both varieties of wine for sale.
 - g. *There was each question on the exam.
 - h. There was each kind of question on the exam.

These examples show two things. First, necessarily quantificational NPs are not categorically prohibited from existential sentences. This result is contrary to what most analyses of the definiteness restriction predict, insofar as these analyses attempt to explain the restriction solely in terms of some property of determiners. More importantly, the acceptability of a quantificational NP in postverbal position depends on the descriptive content of the NP. All and only those necessarily quantificational NPs whose descriptive content ranges over nonparticulars (e.g. kinds, sorts, varieties, etc.) are acceptable. This effect of descriptive content is exactly analogous to that observed with the verb *gather* in (7). *Gather* is compatible only with necessarily quantificational subject NPs whose descriptive content ranges over groups or pluralities in virtue of the fact that its subject argument must denote a group or plurality. We may similarly and straightforwardly explain

⁶As will be clear in the discussion below, I do not consider the determiners *no*, *few* to be necessarily quantificational in the relevant sense.

⁷Note that the facts in (9) are associated specifically with the postverbal position in the sentence and not with any property of the final predicative phrase in the sentence (if there is one), as seen in the fact that either type of quantificational NP is fully acceptable as the subject of a copular sentence whose predicate is identical to the final predicative phrase e.g.:

- (i) Every doctor was at the convention.
- (ii) Every kind of doctor was at the convention.

the fact that *There be* is compatible only with necessarily quantificational NPs whose descriptive content ranges over nonparticulars in virtue of the hypothesis that the argument of the existential predicate is sortally restricted to nonparticulars. I also observed above that *gather* generally accepts an NP as its subject just in case the NP *as a whole* can be interpreted as a group or plurality. We may analogously expect that *There be* should generally accept an NP as its argument just in case the NP *as a whole* can be interpreted as a nonparticular. I will argue below that this is in fact what we find.

In section 4 I will discuss the residue of the definiteness restriction facts, viz., those involving definite NPs and names, which do not fall under the sortal generalization described here.

2.2. Evidence from scope

Related evidence that the existential predicate expresses a property of nonparticulars comes from the scopal characteristics of the postverbal NP.⁸ It is widely claimed that this NP, unlike other VP-internal NPs, must take narrow scope with respect to clause-level operators such as negation; I will refer to this restriction as the *narrow scope restriction*. Thus, the ambiguity of (10)a contrasts with the unambiguous narrow scope interpretation for *some questions* in (10)b. However, to my knowledge it has not been previously observed that this restriction is not absolute; it is sensitive to the descriptive content of the postverbal NP. Specifically, wide scope for the postverbal NP is possible, but only if the descriptive content of the NP ranges over nonparticulars, as in the ambiguous (10)c:⁹

- (10) a. I would be surprised if the president didn't answer some questions.
 b. I would be surprised if there weren't some questions answered in the press conference.
 c. Sam would be upset if there weren't some kind of question he had expected on the exam.

These scope facts are perfectly sensible if they reflect a contrast in the sort of the postverbal argument positions in (10)a vs. b. If they do, then we expect that the scope possibilities for the postverbal position in the existential construction to depend on whether the descriptive content of the NP picks out particulars (as with *some questions*) or picks out nonparticulars (as with *some kind of question*). The former type of NP cannot be interpreted quantificationally in postverbal

⁸Milsark 1977 suggests that the scopal behavior of the postverbal NP indicates that it lacks inherent quantificational force, but does not discuss the full implications of this suggestion.

⁹See Baker 1970 on the ability of the positive polarity item *some* to take scope inside negation exceptionally in this context.

The condition that the descriptive content should range over nonparticulars is only necessary, and not sufficient, because determiners vary in their ability to take wide scope from a VP-internal position (see e.g. Liu 1990 for discussion). However, as this is an independent feature of determiners, I will factor it out in what follows.

position because such an interpretation would result in a violation of the sortal restrictions on that position, in exactly the same way that interpreting *four girls* quantificationally does in (7)a. The only alternative is to try to interpret *some questions* nonquantificationally. Although I will wait until section 3 to explain exactly how this is done, we at least can explain in principle, on the view defended here, the fact that the NP in (10)b does not behave like a scope-taking constituent, while those in (10)a,c do.

2.3. Evidence from morphology

Natural languages sometimes offer morphological clues to the semantic sort of NPs. In the case of the existential construction, this evidence is slim but worth mentioning. It involves the morphology of relative pronouns.

When a predicative NP position is the target of relativization, the relative pronoun *who* cannot be used ((11)a,c); if a relative pronoun is used at all, only *that* and, for some speakers, *which*, are acceptable, as in (11)b,d (examples (11)a,b are due to Jespersen):

- (11) a. *They dressed like the eccentric women who they were.
 b. They dressed like the eccentric women (that) they were.
 c. *I doubt that Terry is the genius who they consider her to be.
 d. I doubt that Terry is the genius (that) they consider her to be.

The impossibility of *who* is unsurprising given that the choice of relative pronoun is sensitive to the denotation of the gap in the relative clause, and that predicative NPs are interpreted as properties, which lack the semantic feature [+human] (to put it crudely) needed to license *who*; the fact that the relative head is compatible with the feature [+human] makes no difference. In contrast, when the denotation of the gap is consistent with the feature [+human], *who* is licensed just in case the denotation of relative head is also compatible with [+human]. Thus, the distribution of relative pronouns in relative clauses with potentially [+human] heads provides a good probe on the semantic sort of the relative clause gap.

It has long been observed that when the postverbal NP is relativized out of the existential construction, many speakers will accept only *that* as the relative pronoun, or a relative clause without any pronoun at all (see Carlson 1977a); for these speakers, *who* is unacceptable, despite the fact that the denotation of the head of the relative clause is compatible with the [+human] feature (“%” indicates a dialect split):

- (12) a. The party was sparsely attended, and...
 b. %...the few people who there were at the party were awfully boring.
 c. ...the few people (that) there were at the party were awfully boring.

While it is unclear why this constraint doesn't hold for all speakers, the data from at least one dialect group does support the claim that the postverbal argument cannot be saturated by a particular-denoting expression.

2.4. Similarities to copular sentences

Finally, if we take the position that the existential predicate expresses a property of a nonparticular, it becomes possible to develop interpretations for it and the copula *be*, both as used in (13) and as in examples with expletive subjects of the sort discussed in Carlson 1991 ((14)), which capture certain similarities between the two.

(13) Janet is a teacher.

- (14) a. Hi Kent, it's Mary
 b. This is Max.
 c. That was a friend of mine from college.
 d. These are some of my favorite people.
 e. Those were the Joneses.

Capturing these similarities is desirable in the case of English insofar as the predicate nominal argument appears to manifest the same sortal sensitivity as does the argument of the existential predicate.

First, the same pattern in the licensing of quantificational NPs discussed in section 2.1 holds for predicate nominal position as well, as pointed out in Williams 1983:

- (15) a. *Martha has been every doctor.
 b. Martha has been every kind of doctor.

Williams used these and other facts to argue that copular *be* selects for a property-like expression as its argument. The restriction also applies to copular sentences

with expletive subjects other than *there*:¹⁰

- (16)
- a. Look who's at the door! *It's each student in the class.
 - b. *Prof. Barros, this is every graduate student.
 - c. *That's each one of our children.
 - d. *These are both job candidates. (cp. These are the two job candidates)
 - e. *Those are most students in this university.

Second, NPs in predicate nominal position are subject to the same scopal restrictions as the argument to the existential predicate, as the behavior of the positive polarity item *some* shows. Although *some* is a licit determiner for a predicate nominal ((17)a), it cannot be used in conjunction with negation when the descriptive content of the NP ranges over particulars ((17)b). However, *some* can take wide scope when the NP's descriptive content ranges over nonparticulars, as in (17)c:

- (17)
- a. Hank is some lawyer I once knew.
 - b. ??Hank isn't some lawyer I once knew.
 - c. Hank isn't some kind of lawyer he once claimed he was, that is, he's not a divorce lawyer.

The failure of the NP to take wide scope in (17)b indicates that it cannot be interpreted quantificationally; however, its scopal properties are fully understandable on the assumption that *some lawyer* is interpreted as a property- or kind-like object. The wide scope afforded the NP in (17)c is also unsurprising—it is fully parallel to the licensing of quantification over nonparticulars in (15)b. The full range of expletive copular sentences is also subject to the narrow scope restriction.

¹⁰However, expletive copular sentences differ from both existentials and other copular sentences in not licensing quantificational NPs over kinds—substituting the postverbal NPs in (16) with NPs of the form *Det kind/type of N* does not ameliorate them:

(i) Look who's at the door! #It's each kind of student in the class.

The failure of expletive copular sentences to allow quantification over nonparticulars does not seem surprising given Carlson's proposal that the expletives *it*, *this*, *these*, etc. stand for a "spatio-temporal slice" of an individual, which is then identified via a description contributed by the postverbal NP. Intuitively, there is something pragmatically anomalous about quantifying over potential descriptions for an individual in a context in which that individual is being identified for the first time.

The fact that expletive copular sentences also do not allow for wide scope quantification over nonparticulars (in contrast to the copular sentences in (17) below) is also consistent with this account.

While nothing in principle requires that a single explanation be provided for these similarities between copular and existential sentences, the resemblance is strong enough to make such an explanation attractive.¹¹ The fact that a historical connection exists between existential and copular constructions (specifically, clefts, see Ball 1991:76ff.) is yet another reason to favor a parallel analysis of the two. Note, finally, that since the analysis informally advanced so far says nothing about definite NPs, the fact that definite NPs and names routinely appear in postverbal position in copular sentences does not present any problem at this point.

2.5. Weaknesses of alternative accounts of these facts

2.5.1. Purely pragmatic accounts

I close this section by arguing that analyses on which the existential predicate expresses a property of particulars (as in Barwise and Cooper 1981) cannot account for the facts mentioned in the preceding subsections without unnecessary or undesirable stipulations.

Suppose we try to combine such an analysis with a pragmatic explanation of the facts.¹² Pragmatic analyses of the distribution of NPs in the existential construction have generally focused on one of two issues: whether the postverbal NP introduces a new discourse referent (e.g. Ward and Birner 1995), or whether the existence of individuals fitting the descriptive content of the NP is presupposed (e.g. Zucchi 1995).

Ward and Birner 1995 propose that an NP is licensed in the postverbal position just in case it introduces a “hearer-new” referent in the sense of Prince 1988. Prince’s notion of hearer new is cognitively, rather than formally, based; however, those NPs that introduce hearer-new referents are essentially those that, in the sense of Heim 1982, carry neither the presupposition that their referent is familiar, nor that their descriptive content is satisfied by some entity whose existence is already entailed by the discourse model.

This sort of analysis is insufficient for several reasons. First, it does not directly speak to the behavior of necessarily quantificational NPs. Necessarily quantificational NPs do not introduce persistent discourse referents at all, and though they may be viewed as introducing referents into quantificationally subordinated domains, those referents qualify as novel for technical reasons (see Heim 1982 for details). Consequently, a Ward/Birner style analysis would appear to make either no prediction at all concerning necessarily quantificational NPs, or else the

¹¹A further similarity between existential and other copular sentences with expletive subjects is that the final predicative phrases frequently found in the full range of copular sentences with expletive subjects obey the same predicate restriction familiar in existential sentences; roughly, the phrase must be what Carlson 1977b referred to as a “stage level” predicate:

- (i) It’s the mail carrier at the door/*a friend of ours.
- (ii) That’s Max in a stroller/*a baby.
- (iii) Those are my students protesting/*clever.

¹²Let me emphasize that the purpose of this discussion is not to deny the relevance of a pragmatic condition on the licensing of NPs in existential sentences (see section 4). Rather, my purpose is simply to argue that such a condition is not sufficient.

incorrect prediction that all necessarily quantificational NPs should be licensed. Neither result is desirable.

Second, simply requiring that the existential construction introduce a hearer-new discourse referent offers no means of capturing the fact that the conditions on the licensing of quantificational NPs correlate with the scopal properties of the postverbal position, since there is no necessary connection between introducing a hearer-new referent and taking obligatory narrow scope—on the contrary, indefinite NPs quite routinely have the option of wide scope.

Third, the analysis fails to capture the similarity of the restrictions on the NPs appearing in existential and ordinary copular constructions, since the discourse anaphoric properties of the two constructions are different: the predicate nominal does not regularly license the introduction of a discourse referent corresponding to a particular. Consider, for instance, the anaphoric possibilities in (18) (coindexation here and throughout the discussion indicates the syntactic antecedent for the pronoun, and is not intended to necessarily represent real coreference):

- (18) a. [Clinton and Dole]_i are [candidates for president]_j.
 b. They_{i/*j} will participate in the New Hampshire primary.

The pronoun in (18)b can refer to Clinton and Dole, but not to a set of candidates for president properly including the two.¹³ In contrast, the indexed pronoun in (19)b *does* refer to the five candidates for president.

- (19) a. There are now [five candidates for president]_i.
 b. They_i will participate in the New Hampshire primary.

Thus, a pronoun cannot stand in the same kind of anaphoric relation to the predicate nominal as it can to the postverbal NP in existential sentences. Consequently, those restrictions on postverbal NPs in existential sentences that are shared by the predicate nominal cannot be given a common explanation in terms of conditions on discourse referent introduction, because the two types of NPs differ in their discourse anaphoric characteristics.

In sum, an analysis in terms of reference to hearer newness is not sufficient to account for the facts and cannot substitute for an analysis on which the existential predicate selects for a non-particular as its argument—although as will be seen in

¹³However, the predicate nominal *can* license discourse anaphora to NPs that are interpreted intensionally or as nonparticulars:

- (i) Clinton is [the president]_i.
(ii) S/he_i (i.e. the president) always participates in the New Hampshire primary.
(iii) Clinton and Dole are [candidates for president]_i.
(iv) They_i (i.e. presidential candidates) always participate in the New Hampshire primary.

section 4, a Ward/Birner-style analysis may be appropriate for explaining the distribution of definites and proper names in the construction.

The analysis in Zucchi 1995 is similar to Ward and Birner’s in that it tries to account for all of the peculiarities of the existential predicate’s argument NP in pragmatic/dynamic semantic terms (for present purposes the distinction is not crucial), specifically via appeal to presupposition. Zucchi (1995:76) proposes the felicity condition in (20) for existential sentences, which I have simplified in inessential ways for the sake of clarity:

(20) $\llbracket \textit{There be} \llbracket_{NP} D N' \rrbracket XP \rrbracket^{M,g,c}$ is defined only if the common ground of the context c entails *neither*

- that $\llbracket XP \rrbracket^{M,g,c}(\llbracket V \rrbracket^{M,g,c}) \cap \llbracket N' \rrbracket^{M,g,c}$ is empty,
- *nor* that $\llbracket XP \rrbracket^{M,g,c}(\llbracket V \rrbracket^{M,g,c}) \cap \llbracket N' \rrbracket^{M,g,c}$ is *not* empty.

In other words, this condition requires the common ground to be neutral as to whether the domain of the context, circumscribed by the denotation of the predicative XP, contains any individuals fitting the descriptive content of the postverbal NP. Intuitively, the functional rationale for such a condition is to prevent existential sentences from having a vacuous effect on the common ground, the idea being that it is not informative to assert the existence in some restricted domain of entities known to exist in that domain, nor to deny the existence of entities known not to exist.

Zucchi makes the additional, relatively uncontroversial assumption that definite and necessarily quantificational determiners carry presuppositions that their N' complements must have a non-null intersection with the domain of discourse at the time of utterance (for instance, the use of *each formula* presupposes the existence of a non-empty set of formulae to be quantified over). This presupposition associated with the determiners conflicts with the felicity condition on existential sentences, effectively blocking definite and necessarily quantificational determiners from existential sentences.

This proposal improves on a Ward/Birner-style analysis insofar as it makes clear (if incorrect) predictions about necessarily quantificational NPs. It also suggests a possible way to explain why the postverbal NP usually has narrow scope: If we could associate not just necessarily quantificational NPs but *all* wide scope taking NPs with presuppositions concerning their domains,¹⁴ we could attribute the general ban on wide scope readings for the NP to the conflict such readings would create with (20).

However, (20) also faces some problems. First, it fails to account for the cases discussed in section 2.1 in which necessarily quantificational NPs are acceptable

¹⁴I will not go into the issue here of whether such a move would actually work in the end, but note that it is in the spirit of Milsark’s (1974) and Diesing’s (1990) respective associations of the notion “strong NP” with partitivity and presupposition.

in existential sentences; it incorrectly predicts that all such examples should be bad. The felicity conditions on the use of the determiner *every* should be the same no matter what the content of its N' complement, and thus should interact with the existential construction in the same way.

Note that it does not seem possible to avoid this problem by treating NPs such as *every kind of X* as covert indefinites equivalent to NPs of the form *an X of every kind*, as suggested in e.g. Wilkinson 1991. Although in existential sentences the two sorts of NPs do not yield different truth conditions, it is not the case that the two are generally interchangeable. For instance, (21)a does not entail (21)b, even though (21)b is perfectly sensible.

- (21) a. We liked every style of house.
b. We liked a house of every style.

If there were a systematic equivalence between the two types of NPs, one would expect to find both readings available in cases like (21)a, contrary to fact. Consequently, it seems more likely that the truth conditional equivalence of sentences of the form *There was every kind of X* and *There was an X of every kind* is accidental, rather than reflective of a real covert indefinite reading for the quantificational NP (see also McNally 1992, Ch. 3, for further discussion).

Second, the analysis in (20), like all treatments of the definiteness restriction that attempt to account for the facts under a single generalization, also fails to predict the asymmetrical behavior of necessarily quantificational NPs and definites in the construction, both within English and cross-linguistically. The asymmetry within English can be seen in contexts in which existential sentences are used to enumerate elements in a list, as in (22). In such contexts, definite NPs are known to be routinely licensed ((22)a); necessarily quantificational NPs, however, are not ((22)b):

- (22) a. What shall we dig up this year?—Well, there are the peonies.
b. What shall we dig up this year?—*Well, there is each tree.

An analysis that treats the definiteness restriction as a uniform phenomenon is at a loss to explain this difference between definites and quantificational NPs. In contrast, the asymmetry is unsurprising on an analysis which takes the existential predicate to express a property of a nonparticular, since definite NPs routinely show up in argument positions associated with nonparticular-like interpretations, such as predicate nominal position.

Unified treatments of the definiteness restriction such as that in (20) also fail to predict that, to the extent that one finds cross-linguistic variation in the constraints on the distribution of noun phrases in existential sentences, we expect to find an asymmetry in the pattern of variation (assuming the existential construction is interpreted in the same way as it is in English). Specifically, given

that the behavior of necessarily quantificational NPs reflects the sortal sensitivity of the construction, these languages should behave consistently in licensing such NPs according to the pattern of licensing found in English: quantification over particulars should be blocked; quantification over nonparticulars should be licensed. In contrast, if the constraints on the distribution of definites do not follow from the semantics of the construction, but rather from some other (as yet unexplained) fact, we might expect to find cross-linguistic variation in the distribution of definites.

I have not investigated this prediction in any depth, but at least one language does bear it out. Catalan is known to differ from English in that there is no constraint on the licensing of definites in its existential construction. Nonetheless, the distribution of necessarily quantificational NPs is exactly as it is in English (compare (23)b vs. c):

- (23) a. Hi havia la Joana a la festa.
 There was the Joan to the party.
 ‘Joan was at the party.’
- b. *Hi havia cada cotxe a la cursa.
 There was each car at the race.
- c. Hi havia tota classe de cotxes a la cursa.
 There was every class of cars at the race.
 ‘There were all kinds of cars in the race.’

A unified treatment of the definiteness restriction such as the presupposition-based account in (20) thus seems undesirable in light of facts like those in (22) and (23).

Finally, like the Ward and Birner analysis, that in (20) fails to capture the observed similarities between existential and copular sentences. Insofar as definite NPs and names, unlike quantificational NPs, are not infelicitous in copular sentences, copular sentences cannot be subject to (20).

In sum, pragmatic analyses of the restrictions on postverbal NPs in the existential construction which fail to take the apparent sort sensitivity of the construction into account suffer from a variety of inadequacies.¹⁵

2.5.2. Syntactic/semantic filters

As an alternative to a purely pragmatic account of the existential construction’s special characteristics, one could try to combine the claim that the postverbal argument corresponds to a particular with a special syntactic or semantic filter. The most interesting such proposal along these lines can be extrapolated from Heim 1987. Heim proposes (24):

¹⁵I have not discussed Barwise and Cooper’s 1981 pragmatic analysis of the definiteness restriction, which excludes NPs from the postverbal position just in case the resulting existential sentence is tautologous or contradictory, because the problems it faces have already been pointed out several times in the literature (see e.g. Keenan 1987, McNally 1992, Blutner 1993, Zucchi 1995).

(24) **There be x*, where x is an individual variable. (Heim 1987:23)

She notes that this filter, when coupled with the assumption that quantifier raising (QR) is optional, accounts for the obligatory narrow scope interpretation of NPs in postverbal position. In order for the postverbal NP to take scope over other elements in the sentence, it will have to undergo QR; if it does so, it will leave a trace that violates (24). The optionality of QR allows for an in situ interpretation that does not violate (24).

Since Heim does not explicitly discuss the sortal properties of the postverbal argument position, in principle her proposal could (perhaps with minor adjustments) be interpreted in two ways. On one view, the filter in (24) follows directly from the claim that the existential predicate expresses a property of a nonparticular, and not a particular, under the assumption that *individual variable* is taken to be synonymous with *variable ranging over particulars*. In this case, it would not seem necessary to state the filter explicitly in the grammar of English insofar as the facts would fall out from the independently needed semantics assigned to the existential predicate.

However, her proposal could also be compatible with the claim that the existential predicate expresses a property of a particular, and it is this construal (which should *not* necessarily be attributed to Heim) that I will discuss.

The analysis can be extended to account for the possibility of wide scope for quantifiers over nonparticulars by appealing to syntactic reconstruction as shown in the syntactic logical form roughly sketched in (25)b.

- (25) a. There was every kind of doctor at the convention.
b. every kind x of doctor [There was x -kind of doctor at the convention]

To the extent that reconstruction can be independently motivated, the analysis fares well with these facts.

While more successful than a pragmatically grounded account of the facts, this account also has some weaknesses. First, if we take the position that the existential predicate applies to particular-type expressions, it is not clear why the filter in (24) should hold; it amounts to an idiosyncratic ban on QR out of a type of argument position that otherwise can be freely quantified over. In contrast, the filter makes perfect sense if the argument is not particular-denoting. Second, the filter does not capture in any obvious way the similar behavior of the postverbal NP and predicate nominals, unless a similar stipulation is made for the latter.

To summarize, I have presented evidence that the postverbal argument of the existential predicate is interpreted as a nonparticular. I now consider how this nonparticular feeds into the interpretation of the construction as a whole.

3. Analysis

3.1. Modeling Nonparticulars as Properties

In order to keep the analysis as simple as possible, I will assume a relatively standard set-theoretic semantics in which nonparticulars are treated as properties, and properties in turn are treated as sets of individuals or pluralities of individuals,¹⁶ where a plurality of individuals will be treated as a sum, following e.g. Link 1983. Like Link, I will assume that the domain of the model has the structure of a Boolean algebra. I will also assume a simple categorial syntax for English accompanied by type-driven composition (see e.g. Klein and Sag 1985); consequently, I will not make specific syntactic rules explicit unless necessary.

Finally, I follow Partee and Rooth 1983, Partee 1987 in positing that NPs in English are, at least in principle, assigned families of denotations, rather than a single denotation. Partee 1987 assigns every NP in English a quantifier-type denotation ($\langle \langle e, t \rangle, t \rangle$), and then posits a series of “type shifting” functions, the definitions of which determine whether an NP will have a well-defined interpretation in one of two other types—the property type ($\langle e, t \rangle$) and the entity type (e).¹⁷ For example, the NP *the bicycle* in a model in which **b** is the only bicycle will have the following three denotations (Here and throughout, the variables x , y , and z range over both atomic and sum individuals):

- (26) a. $\{P | \mathbf{b} \in P\}$
 b. $\{x | x = \mathbf{b}\}$
 c. **b**

Among the various functions Partee discusses, the only one relevant for our purposes is BE , which determines the property-type denotation for an NP based on its quantifier-type denotation:

$$(27) \quad BE(\alpha) = \lambda x[\alpha(\lambda y[y = x])], \alpha \text{ a set of sets of atomic or sum individuals.}$$

The analysis to be presented below predicts that an NP will be licit as the argument to the existential predicate only if it has a well-defined property-type denotation or denotes a quantifier over properties; thus, it will be crucial to the analysis that not every NP have such a denotation. And indeed, Partee points

¹⁶I am thus leaving intensionality aside, an obvious oversimplification in light of the intuitive intensionality associated with the notion of a nonparticular. However, since intensionality will play no crucial role in the analysis, and since it can be straightforwardly introduced, I see no reason to complicate the analysis further than necessary. See also McNally 1992, Ch. 3, for an earlier formulation of essentially the same analysis within a version of Chierchia and Turner’s (1988) property theoretic semantics.

¹⁷I take the various functions Partee proposes to be constitutive of a theory of NP ambiguity, rather than as operations actively exploited in the semantic composition of a sentence in order to transform one NP denotation into another. Thus, the term “shifting” should not be taken overly literally here.

out that *BE* does not yield interesting outputs for all types of inputs.¹⁸ Notably, those NPs denoting proportional quantifiers, except for the filters with singleton generator sets (what Dowty, Wall, and Peters 1981 termed the *individual sublimations*), will lack well-defined property-type denotations because those quantifiers will never contain the singleton sets that *BE* calls for (see Partee 1987:127). More intuitively, these NPs lack such denotations because their determiners are fundamentally relational and therefore cannot be treated as one-place properties of (atomic or sum) individuals; consequently, their descriptive content cannot be used to identify an individual. In contrast, the NPs denoting individual sublimations and almost all of those classified as *existential* in Keenan 1987¹⁹ always yield nontrivial results as the input to *BE* and consequently will have well-defined property-type denotations. For example, NPs with cardinal determiners such as *two bicycles* will have the property-type denotations of the general form in (28)a, which will be equivalent to that in (28)b:²⁰

- (28) a. $\lambda x[\mathbf{Det}_{card}\mathbf{-N}(\lambda y[y = x])]$
 b. $\lambda x[\mathbf{N}(x) \wedge \mathbf{Det}(x)]$
 c. $\lambda x[\mathbf{two-bicycles}(\lambda y[y = x])]$
 d. $\lambda x[\mathbf{bicycle}(x) \wedge \mathbf{two}(x)]$

Let us now see what this theory of NP ambiguity entails for certain other classes of NPs of interest.

(All) the, this, that, these, those N, and definite possessive NPs:²¹ These NPs always denote individual sublimations (assuming their generator set

¹⁸For those quantifiers containing no singleton sets, *BE* yields the empty set as its output. I will assume that such an output, while obviously mathematically well defined, is of no interest from a communicative perspective. That is, I posit that a quantifier which yields the empty set when *BE* is applied to it will not have a well-defined property-type denotation.

¹⁹Keenan (1987:291) defines an *existential* function as follows: A function f from properties to sets of properties is existential iff for all properties $p, q, p \in f(q)$ iff $1 \in f(q \wedge p)$ (where 1 is the universal property).

²⁰Although the general complexity of comparative expressions such as *more Catalans than Galicians* or *more Catalan than Galician speakers* precludes discussing them in detail here, I see no reason why they cannot be incorporated into this general line of analysis as well. Allowing for the fact that such comparatives involve elided material that needs recovering via some mechanism, (i) illustrates just one way of analyzing sentences such as *There are more Catalans than Galicians* while maintaining a property-type analysis of the complement to the existential predicate (see e.g. Klein 1981, Gawron 1995 on the treatment of this sort of comparative):

(i) $\exists d[\mathbf{There-be}(\lambda x[\mathbf{Cat-speaker}(x) \wedge \mathbf{CARD}(x, d)]) \wedge \forall d'[\mathbf{There-be}(\lambda y[\mathbf{Gal-speaker}(y) \wedge \mathbf{CARD}(y, d')]) \rightarrow [d > d']]]$

It should therefore be unsurprising that comparatives are licensed in existential sentences. In this respect, the analysis defended here has an advantage over that in Zucchi 1995, which cannot account for the acceptability of comparatives in existential sentences.

²¹Perhaps controversially, I will treat proper names and pronouns in exactly the same fashion as these definites.

can contain either an atomic or nonatomic individual). Consequently, they will have interesting property type denotations and are predicted in principle to be licit in existential sentences. As noted previously, and as will be further discussed in section 4, I consider this prediction desirable despite the fact that such NPs are generally taken to be unacceptable in existential sentences.

Most, both N: Since these NPs are proportional but do not denote filters of the relevant sort,²² they will lack property-type denotations. They are therefore correctly predicted to be prohibited from existential sentences unless they denote quantifiers over properties (i.e. nonparticulars).

Each, every, all N: These proportional NPs differ from the previous class in that they can denote individual sublimations; however, they do so only under special circumstances, namely, when the extension of their head nominal is a singleton set. But Partee (1987:127) points out that the use of these NPs is typically disfavored in precisely these circumstances: if the speaker is aware that the extension of the nominal is a singleton, there is strong pragmatic pressure to use a definite NP (note the general infelicity of quantification over singleton set domains, perhaps most easily seen in the examples of adverbial quantification such as #*When the baby is born, it cries.*). Consequently, we might expect these NPs to lack property-type denotations as well, and therefore to pattern with *both/most N* in existential sentences. This expectation is generally borne out, although we will see some exceptions below.

Partitive NPs: Partitive NPs fall into two groups: those with proportional determiners (e.g. *most/the majority of the students*, and those with existential determiners in the sense of Keenan 1987 (e.g. *two of the students, many of the students*).²³ I assume the analysis of partitives in Ladusaw 1982, on which the only difference between partitive and nonpartitive NPs is that the former presuppose the familiarity of the set that serves as the effective semantic argument to the determiner. This presupposition does not affect the basic semantics of the NP; consequently, whether or not an NP is partitive should not affect whether or not it

²²See Ladusaw 1982 for arguments that *both* is not semantically identical to *the two*.

²³Keenan treats *many* and *few* as cardinal determiners with a nontransparent value judgment component to their semantics, and I will do the same here. Although Herburger 1997 claims that these expressions have a distinct proportional reading in existential sentences, I do not find her crucial examples convincing (Herburger 1997:64, where capital letters indicate intonational focus):

(i) There are many speakers of Basque THAT ARE CITIZENS OF SPAIN.

(ii) There are many citizens of Spain THAT ARE SPEAKERS OF BASQUE.

Herburger claims that if *many* is cardinal, (i) and (ii) should be truth conditionally equivalent. She then claims that (i) is true while (ii), “despite the relative vagueness of *many*,...seems false to most people” (ibid.), and concludes that *many* must have a proportional interpretation in these existential sentences. In fact, I am not sure I agree with her judgments, but let us assume they are correct. In any event, the premise of her argument is flawed: if *many* is a vague cardinal determiner, it could be that what counts as many speakers of Basque in some context is simply a different cardinality than what counts, even in the same context, as many citizens of Spain, in which case the two sentences could differ in truth conditions. Thus, I do not believe that these facts require a proportional treatment of *many*.

can have a property-type denotation. Rather, the family of denotations assigned to the NP should depend on the nature of the determiner alone. Thus, partitive NPs with proportional determiners such as *most* are predicted to lack property-type denotations and therefore to be illicit in existential sentences; partitives with existential determiners *are* predicted to have such denotations and therefore to be licensed in existential sentences. This prediction also turns out to be only partially correct, but the exceptions can be rationalized, as will be seen shortly.²⁴

Indefinite possessives (e.g. *someone's book*) and NPs of the form *the N Prep NP[indef]* (e.g. *the mother of a student*): Although these cases involve slightly different types of determiners, they are similar in two respects. First, they differ from other definites and possessives in not identifying a unique individual with respect to the context. Instead, the uniqueness typically associated with definites and possessives is relativized to a choice of value for the indefinite expression within the NP. Thus, while each student, for example, will have only one mother, there will be potentially as many mothers of students as there are students. This fact is no doubt connected with the fact that, as the reader can verify, such NPs do not carry a familiarity presupposition. Second, at least according to my intuitions, both types of NPs fail Keenan's test for existentiality. Interestingly, however, both can straightforwardly be assigned a property type interpretation, and although not existential, both are perfectly natural in existential sentences, as in (29):

- (29) a. There was someone's book lying on the desk.
 b. There was the mother of a student waiting outside.

Such examples join those involving quantification over kinds (see section 2.1) in highlighting the fact that the definiteness restriction cannot be explained solely in terms of determiner semantics. Again we see that the denotation of the NP as a whole is crucial.

Zero N: NPs of the form *zero N* are the only expressions classified as existential by Keenan which cannot plausibly be assigned a property-type denotation.²⁵

²⁴The exceptions all involve cases where partitives with proportional determiners are unexpectedly good in existentials. Unlike Milsark 1974 and certain others following him, I find partitive NPs with existential determiners generally acceptable in existential sentences and have found many examples of them in everyday speech. Thus, unlike some analyses, the present one does not set out to exclude partitive NPs as a class from existential sentences.

²⁵These NPs do yield a non-empty output on the type shifting function *BE*: the set of individuals which are not *N*. However, this output does not appear to correspond to a property in any intuitive sense, as seen in the unacceptability of *zero N* as a predicate nominal in (i), nor is it compatible with any version of the analysis of existential sentences to be developed in the next section.

(i) ??They are zero friends of mine.

Interestingly, despite the fact that *BE* assigns the same output to NPs of the form *no N*, such NPs are acceptable as predicative expressions:

(ii) They are no friends of mine.

The problem is that the cardinality zero can only be ascribed to the empty set, and it is both odd from a conceptual standpoint (and problematic from a logical standpoint, as pointed out by an anonymous reviewer) to ascribe properties such as that of being a set of students to the empty set.

The analysis developed in this paper does not account for the apparent acceptability in existential sentences of examples with *zero*. However, there are at least three reasons to think that this fact should not be considered a problem.

First, it appears that *zero* occurs very, very rarely as a determiner in naturally occurring speech and writing: A pilot search of 59 texts constituting a representative sample of the British National Corpus yielded not one single example of *zero* as a determiner in any linguistic context.²⁶

Second, we can entertain the hypothesis that the use of *zero* as a determiner is not, strictly speaking, semantically licensed in English. That is, rather than interpreting sentences containing putative determiner uses of *zero* (such as (31)a and b below) according to empirically motivated semantic rules of English, it is possible that they are interpreted only heuristically. In fact, there appear to be other cases of syntactically well-formed sentences which, while apparently understandable, seem not to be interpretable according to any justifiable semantic rules. Two such examples appear in (30):

- (30) a. More people have been to New York than I have.
 b. Snow White was 1000 times more beautiful than her stepmother.

The problem with (30)a is that it is impossible to compare the number of people who have been to New York with the extent to which I have been to New York, which is what the compositional rules for the sentence would require. And indeed, this is not the interpretation people assign to the sentence when asked: rather, they interpret it as “Other people besides me have been to New York” or “More people have been to New York than I” (thus apparently ignoring the presence of the *have* at the end of the sentence). Similarly, if we assume that beauty, unlike e.g. height or length, cannot be discretely measured, even if degrees of beauty can somehow be compared, then (30)b cannot be semantically well-formed. In order for something to be x times more beautiful than something else, it must be possible to define a discrete unit of beauty. Nonetheless, one often hears sentences such as this in colloquial speech, and the x times more is easily understood as equivalent to the nondiscrete *very much more*.

If such effects are possible with sentences such as those in (30), it could well be that speakers simply treat *zero* as if it were *no*, which will be discussed in the next section.

I take the contrast between (i) and (ii) to argue for treating *no* N differently from *zero*, as discussed below.

²⁶Note that the familiar *zero tolerance* does not involve the use of *zero* as a determiner since *tolerance* is not a count noun in this use, as determiner *zero* would require.

A final reason to leave *zero* out of the analysis is that, unless the quantity zero is being explicitly contrasted with some other quantity, as indicated by intonational prominence on *zero*, the determiner in fact sounds very unnatural. That is, there is a contrast between the following two examples (and indeed, even in the second example it sounds rather ironic):

- (31) a. ??I walked by the exhibit yesterday afternoon, and there were zero people there.
- b. **A:** Have you eaten all my chocolates?
B: I think there are three left.
A: No, there are ZERO left.

Although it is not clear why focus on the determiner be necessary, one possibility is that in when speakers use *zero*, they sacrifice speaking precisely and naturally for pragmatic effect.²⁷

3.2. Truth conditions for existential sentences

Given these basic assumptions about NP interpretation, I propose the following semantics for existential sentences, adopting Strawson’s suggestion to interpret the construction “as a subject-predicate proposition in which the subject is a property or concept and in which the predicate declares, or denies, its instantiation.” *There be* is treated semantically as a 1-place property of properties corresponding to the predicate *to be instantiated*; in order to serve as its argument, the postverbal NP will thus have to be interpretable as a property or a quantifier over properties. The standard compositional rule for a sentence consisting of a 1-place predicate and its argument will require that an existential sentence of the form *There be NP* (abstracting away from tense and modality) be true with respect to a Model M and variable assignment g iff $\llbracket NP \rrbracket^{M,g} \in \llbracket There\ be \rrbracket^{M,g}$.

However, the interesting question is: under what conditions should it be the case that an NP is in the extension of the existential predicate? The following condition seems obvious:

- (32) For all models M , $\llbracket NP \rrbracket^{M,g} \in \llbracket There\ be \rrbracket^{M,g}$ iff $\llbracket NP \rrbracket^{M,g}$ is nonempty.

Thus, the sentence *There is one even prime number* will be true iff the domain contains at least one individual in the set of even prime numbers. (*One even prime number* can be interpreted as a property because its denotation yields a non-empty output for the function *BE*—the set of individuals drawn from the singleton sets in the quantifier denotation of the NP.)

Now let us consider the quantificational half of the so-called definiteness restriction facts. On the analysis defended here, those NPs lacking a property-type

²⁷I am grateful to Manfred Krifka and Veerle Van Geenhoven for discussion of *zero* and to Manfred Krifka for suggesting the relevance of the example in (30)b.

denotation are not as a rule excluded from postverbal position; their distribution is simply limited by very natural sortal restrictions. Consider, for example, (33):

(33) *There was every book on display at the LSA.

As noted in the previous subsection, NPs like *every book* lack a property-type denotation; they denote only quantifiers. Consequently, the NP could combine with the existential predicate only if it denoted a quantifier over the sort of object the existential predicate usually takes as its argument, viz., properties. However, *every book* denotes a quantifier over particulars, specifically, books. The fact that the quantifier ranges over a domain that is incompatible with the existential predicate is responsible for the anomaly of the sentence.

This problem obviously does not arise when the postverbal NP denotes a quantifier ranging over appropriate arguments for the existential predicate. Consider (34):

(34) There was every kind of book (on display at the LSA).

The denotation of *kind of book* includes such nonparticulars as the textbook, the grammar, the festschrift, etc. These are exactly the sorts of individuals the existential predicate expresses a property of.²⁸ Consequently, the sentence is acceptable, and it will be true iff every property in the extension of *kind of book* is in the extension of the existential predicate—that is, if for every kind of book, an instance of that kind of book can be found in the domain.

This same pattern of (un)acceptability is generally found for all NPs identified in the previous subsection as lacking a property-type denotation. However, there are some exceptions that deserve mention. First, it has been claimed that proportional partitive NPs with e.g. *most* (see e.g. Comorovski 1991) and *a majority of* (McCawley 1981:425ff.) can appear in existential sentences under certain circumstances:

- (35) a. There are most of the problem sets left to be graded.
b. There is a majority of Americans who distrust politicians.

Interestingly, Doron 1983 offers evidence that these NPs can be used nonquantificationally to describe entities (for instance, they can serve as subjects to group

²⁸I assume here that *kind* denotes a property of properties, which entails a certain amount of polymorphism in the system as a whole (for example, *every* must be able to range over both properties of individuals or properties of properties). This treatment of *kind* could be improved upon to the degree that it leaves open the question of what differences, if any, there are between properties and (intuitive) kinds. In McNally 1992, I took nouns like *kind* to denote the individual correlates of properties in a semantic framework following Chierchia and Turner 1988 and adjusted the proposed semantics of existential sentences accordingly. I have avoided doing the same here to keep the exposition simple.

predicates, unlike other proportional quantifiers). The behavior of the pronoun *everyone* is extremely similar:

- (36)
- a. *Most students gathered in front of the Dean's office.
 - b. *Every student gathered in front of the Dean's office.
 - c. Most of the students gathered in front of the Dean's office.
 - d. A majority of the students gathered in front of the Dean's office.
 - e. Everyone gathered in front of the Dean's office.

If Doron's reasoning is correct, these NPs would be exceptional not in their ability to appear in existential sentences, but rather in their general interpretive possibilities.

The second class of exceptions involves *every* NPs which contain a modalized modifier (e.g. *every reason to leave*). I do not have an explanation for these cases, though it is worth pointing out that they appear to involve only the determiner *every*, which seems to be unique among the universal distributive determiners in being amenable to uses similar to that of the definite article (cp. its behavior in amount relatives (Carlson 1977a) and the behavior of *everyone* mentioned above.) To the extent that *every* shares characteristics with nonquantificational definite determiners, we might expect it to be that much more likely to appear in existential sentences, which as I have already noted are not categorically excluded from the construction on the present analysis.

(32) is a quite successful and indeed unoriginal way to characterize the truth conditions for the existential predicate. However, it appears to be problematic.

3.3. Nonincreasing NPs

The problem with (32) is that it seems to get the truth conditions wrong for sentences in which the postverbal NP has a nonincreasing determiner, such as those in (37):

- (37)
- a. There are exactly three empty seats left on the plane.
 - b. There were at most seven students enrolled.
 - c. There were few people on board.
 - d. There are no cookies left.

Let us take (37)a as an example. Given the assumptions about NP interpretation described in the previous section, the property-type denotation for *exactly three empty seats* would be the set of sums of empty seats with exactly three atomic parts. Under the truth conditions in (32), a sentence like (37)a would therefore

be true as long as there was at least one such sum in the domain of discourse. But these truth conditions are compatible with the existence of more than one such sum of exactly three empty seats – the sentence would, for instance, be predicted to be true if there were ten empty sets left on the plane. This result runs counter to intuition.

This problem also arises for NPs of the form *at most n N* and *few N*. However, these NPs and those of the form *no N* also run into another difficulty—the same one faced by *zero N*. Sentences like (37)b and c are generally held to be true when there are no students enrolled or people on board, and of course the truth of (37)d is compatible only with the absence of cookies. Thus, it would appear that on the analysis developed here, *at most seven students*, *few people*, and *no cookies* would have to be able to denote properties applicable to the empty set or null individual. However, as noted above in connection with *zero*, this is both conceptually odd and problematic from a logical standpoint.

Despite these problems, it does not follow that we must or should abandon the hypothesis that the existential predicate takes a property-type argument. Instead, I argue we should reconsider the assumption which underlies both problems, namely, that *at most n*, *exactly n*, *few*, and *no* should be treated as simple cardinality predicates. The alternative I will offer divides these expressions into two categories: *at most n* and *exactly n* on the one hand, and *few* and *no* on the other. I now consider them in turn.

3.3.1. *Exactly n and at most n*

*At most n*²⁹ and *exactly n* cease to be problematic for the analysis of existential sentences proposed above as soon as we stop treating them as unanalyzed determiners. In fact, there is good reason to treat *at most* as an adverbial modifier like *only* or *even*, and while the evidence in favor of doing so for *exactly* is somewhat less abundant, I see no obstacle to handling it the same way. Once *at most* and *exactly* are factored out, the analysis of sentences such as (37)a and b will be in the relevant respects just like that of sentences containing increasing NPs.

Let us first consider the evidence in favor of treating *at most* as an adverbial expression. First, it can appear in a variety of places in the sentence with the same semantic import; all of the sentences in (38) share a reading:

- (38)
- a. There were at most three books on the table.
 - b. At most, there were three books on the table.
 - c. There were three books, at most, on the table.
 - d. There were three books on the table at most.

Second, *at most* can modify NPs with non-numeric determiners, those lacking

²⁹I am indebted to Manfred Krifka for suggesting the basic line of analysis presented in this subsection, though he should not be held responsible for any shortcomings in my particular implementation of it.

determiners altogether, and indeed other types of expressions:

- (39) a. You will get cooperation from the first year grad students at most.
 b. At most John and Sally will have read the book.
 c. It shouldn't be difficult to substitute for me during the exam; at most, you might have to answer some questions, but you probably won't have to do even that.

The behavior of *at most* in (38) and (39) is reminiscent of that of *only* and *even*, and shows that we independently need a means of composing an interpretation for sentences synonymous with (38)a which does not involve treating *at most three* as an unanalyzed determiner. Presumably there is no reason not to use the same mechanism in (38)a as well.

For simplicity, I will assume that *at most* scopes out and applies only to proposition-denoting expressions; it could and indeed probably should be given a cross-categorical semantics similar to Rooth's (1985) semantics for *only*. Like *only*, *at most* will combine only with those propositions that have associated with them a set of alternatives; however, unlike *only*, *at most* requires that this set be ordered. I assume that the membership of this alternative set as well as its ordering is determined by contextual and other general pragmatic/common sense factors. Applying *at most* to an expression amounts to the claim that that expression denotes the highest ranked true proposition in the relevant alternative set. Thus, the semantics for *at most* can be treated as follows (where α is a proposition, $C(p)$ means that p is a member of the ordered alternative set in question, and $\alpha \leq \beta$ iff α is ranked at least as high as β according to the relevant ordering):

$$(40) \quad \llbracket at\ most \rrbracket(\alpha) = \forall p[[C(p) \wedge \mathbf{true}(p)] \rightarrow [\alpha \leq p]]$$

All of the sentences in (38), and crucially (38)a, will thus be given the logical representation in (41):

$$(41) \quad \llbracket at\ most \rrbracket(\llbracket There\ are\ three\ books\ on\ the\ table \rrbracket) = \forall p[[C(p) \wedge \mathbf{true}(p)] \rightarrow [\llbracket There\ are\ three\ books\ on\ the\ table \rrbracket \leq p]]$$

It would seem to be quite plausible both pragmatically and given the fact that *at most* is syntactically adjacent to the postverbal NP to consider the ordered alternative set associated with *There are three books on the table* to be that set informally characterized as $\{p | \exists n[\text{There were } n \text{ books on the table} = p]\}$, ordered so that propositions reflecting higher values of n will be ranked correspondingly higher. Thus, (41) will be true just in case, if any proposition in the alternative set is true at all (and perhaps none is), it will one such as that corresponding to e.g. *There were two books on the table* but not e.g. *There were four books on the table*.

(41) thus avoids both problems raised by *at most n* NPs. It will be false if there are more than three books on the table, and it will be true if there are none on the table, without requiring the computation of the existential sentence for $n=0$.³⁰

The same general kind of analysis can be given to *exactly*, which is of course morphologically an adverb. Although it is somewhat more restricted in its distribution than *at most*, the examples in (42)b-d, and in particular the synonymy of (42)a and b, show that *exactly* cannot simply be part of a complex determiner. Those in (43) show that, again like *at most*, it can modify non-numeric expressions as well:

- (42)
- a. There is exactly ten dollars in the cash register.
 - b. There is ten dollars exactly in the cash register.
 - c. The journey took three hours exactly.
 - d. We had thirty-four seats on the bus to fill, and fortunately we managed to find thirty-four people exactly who wanted to go.
- (43)
- a. Stay exactly where you are.
 - b. How exactly do you intend to raise so much money?
 - c. I would have done exactly the same thing if I were in your position.
 - d. The hole needs to go exactly in the middle of the board.
 - e. You are exactly right.

The semantics of *exactly* is similar to that of *at most* in that it involves selecting from a set of contextually salient, ordered alternatives. However, in this case the alternatives are ranked on a scale of precision. The presence of *exactly* signals that the speaker is offering a maximally precise description of some situation, with respect to a parameter identified by the constituent that *exactly* modifies syntactically.³¹ In addition, *exactly* differs from *at most* in entailing the truth of its complement: for example, $\llbracket \textit{exactly} \rrbracket(\llbracket \textit{There are ten dollars in the register} \rrbracket)$ entails that there are ten dollars in the register. Thus, we can represent the interpretation of *exactly* as in (44), where α and C are as above, and $\alpha \leq_s \beta$ iff α is a more precise description of s than β .³²

³⁰Unless the expression under consideration is *at most zero*, which will reduce to a special case of the exceptional *There are zero N* discussed in section 3.2.

³¹That is, a sentence like *There were exactly three people in the room at 10 a.m.* commits the speaker to precision with respect to the number of people in the room, but not with respect to e.g. the time at which they are asserted to have been there.

³²In order to keep the exposition simple, I am treating *exactly* as a sentence modifier, in

$$(44) \quad \llbracket \textit{exactly} \rrbracket(\alpha) = [\alpha \wedge [\forall p[C(p) \wedge \mathbf{true}(p) \rightarrow [\alpha \leq_s p]]]]$$

The representation for (42)a will therefore be as in (45):

$$(45) \quad \begin{aligned} \llbracket \textit{exactly} \rrbracket(\llbracket \textit{There is ten dollars in the cash register} \rrbracket) &= \\ \llbracket \llbracket \textit{There is ten dollars in the cash register} \rrbracket \wedge [\forall p[[C(p) \wedge \mathbf{true}(p)] \rightarrow & \\ \llbracket \llbracket \textit{There is ten dollars in the cash register} \rrbracket \leq_s p]]] & \end{aligned}$$

It should be obvious that (45) guarantees that *There is exactly ten dollars in the cash register* correctly entails that there is ten dollars in the register. Crucially, it also ensures that there will not be more than ten dollars. Let us see how in detail. We first need to determine the relevant set of ranked alternatives in the context. This choice of alternatives will be constructed as it was in the case of *at most* and will presumably include propositions corresponding to the sentences *There is \$10.50 in the cash register*, *There is \$9.75 in the cash register*, and so on.

Now, suppose that instead of \$10, there is \$10.50 in the register and the speaker utters (42)a. In this case, *There is ten dollars in the cash register* will be true, but it will not be the most precise proposition that could be asserted with respect to the situation under description. Thus, in this situation, (42)a correctly comes out false. Note also that the truth of (42)a (again correctly) does not preclude the truth of *There is nine dollars in the cash register*.

In sum, while these analyses of *at most* and (particularly) *exactly* need to be developed in greater detail, it should be clear how existential sentences containing them can be accounted for on the analysis presented above. Let us now consider the other problematic determiners, *few* and *no*.

3.3.2 *Few and no*

The problem raised by *no* is easily solved if the NPs containing it are analyzed as indefinites which must appear in the scope of a clausal negation. Such an analysis for negative concord dialects of English is motivated on independent grounds in Ladusaw 1992; in Ladusaw 1994, he suggests allowing it as an option in standard English, alongside the quantificational interpretation generally assigned to *no*. In the latter case, the clausal negation licensing *no* is obviously not morphologically manifest; Ladusaw introduces it via an abstract, semantically potent feature.

Let us assume, then, that the denotation of negative indefinite *no* is as in (46):

$$(46) \quad \llbracket \textit{no } N \rrbracket = \llbracket N \rrbracket, \text{ with the morphosyntactic licensing condition that it appear in the scope of a clausal [NEG].}$$

As soon as the negation is teased apart from the descriptive content of the NP and assigned clause-level scope, sentences such as that in (37)d repeated below, can be appropriately analyzed as negative existential claims, as represented in (47)b.

parallel with *at most*. A more detailed analysis would have it combine directly with whatever expression it modifies syntactically.

- (47) a. There were no cookies (left).
 b. $\neg[[\textit{There-be}]]([\textit{cookies}])]$

As noted in Barwise and Cooper (1981:208) and Klein 1981, among other places, the determiner *few* can also be analyzed in this way, as the equivalent of a *many* which is licensed only under a clausal negation. This is the treatment I will adopt here. The analysis of (37)c, repeated below, can thus be represented as in (48)c:

- (48) a. There were few people (on board).
 b. $[[\textit{few N}] = [[\textit{many N}]]$, with the morphosyntactic licensing condition that it appear in the scope of a clausal [NEG].
 c. $\neg[[\textit{There-be}]]([\textit{many people}])]$

This sort of analysis of *few* has been criticized as unattractive (see e.g. Herburger 1997:59), but I know of no empirical argument against it.³³ Moreover, the fact that we need it only for *few* and *no*, and not for any other nonincreasing expression (contrary to what Herburger assumes), reduces its unattractiveness.

We have now seen how the analysis developed so far is compatible with the behavior in existential sentences of a full range of indefinite and quantificational NPs. It remains only to discuss the definiteness restriction facts involving definite NPs.

4. The pragmatic aspect of the definiteness restriction

As mentioned previously, nothing in the proposed semantics for existential sentences excludes definite NPs from the postverbal position. However, as noted above, this is a good result because definite NPs *do* many times appear in existential sentences (see Ward and Birner 1995 for a comprehensive typology of examples), and because in some languages (e.g. Catalan, discussed in section 2.5.) they are not excluded from the construction at all. Such sentences must be interpretable and therefore should be semantically well-formed. Consequently, I follow Prince (1981, 1988) and others (Lumsden 1988, Zucchi 1995, Ward and Birner 1995) in maintaining that the existential predicate carries a linguistic pragmatic (i.e. not truth-conditional but linguistically conventionalized) condition that its argument license the introduction of a novel, as opposed to familiar, referent into the (relevant subdomain of the) common ground of the conversation. This referent is a token individual bearing the property contributed by the postverbal NP. This requirement can be treated as a felicity condition on the use of the predicate, similar to the familiar felicity conditions associated with e.g. the definite and indefinite articles in analyses like Heim's.

³³Presumably there must also be another interpretation for *few* for cases such as *a few people* or *their few friends* which, unlike the *few* under discussion here, is not a negative polarity item licenser. And see Klein 1981 for a proposal to ensure that *not...many* implies a small number as opposed to the absence of a large number.

I do not have anything to say which improves upon the felicity condition Prince and others propose as it applies to definite NPs, names and pronouns; however, I will say a few words about how discourse anaphora must work given the semantic analysis assumed here. The crucial point is that the novel discourse referent that is typically introduced in virtue of uttering an existential sentence is *not* directly associated with the postverbal NP. The latter denotes a property, whose identity is presumably familiar; the new referent is the particular individual whose existence supports the truth of the existential claim. Thus, there is nothing in the existential sentence itself that specifically introduces this referent; rather, it must be licensed by inference (perhaps an inference that is so strong as to be conventionalized), although the postverbal NP plays an essential, if somewhat indirect, role in describing it. Such inferences are attested in other areas of natural language; for instance, the similar phenomenon of anaphoric licensing by an element within a word (“outbound anaphora”), illustrated in (49), is treated as a case of licensing by inference in Ward, Sproat, and McKoon 1991:

- (49) a. John *bled* so much *it* (= the blood emitted during his bleeding) soaked through his bandage and stained his shirt.
(WSM 1991:443, attributed to Tic Douloureux 1971:46)
- b. GW: Excuse me, sir, but what’s the *tray* situation?
CW: I’ll bring *them* (= the cafeteria trays) right out.
(WSM 1991:468)
- c. Most *PC* owners I know bought *them* (= the PCs they own) via mail order.

While the general principles governing the acceptability of such inferences are complex and still remain to be fully elucidated, in the case of the existential construction it is probable that the three main contributing factors to the licensing of a particular-type discourse referent by the postverbal NP are: (1) the fact that the descriptive content of the NP can be used to identify the referent in subsequent discourse; (2) the fact that existential sentences entail the existence of the individual corresponding to this particular-type referent (if sometimes with respect to modally or quantificationally subordinated domains); and (3) the fact that the existential predicate has no other argument which could serve as a potential anaphoric licenser for the pronoun corresponding to the referent.

With all that said, the felicity condition associated with the existential predicate could be stated as in (50):

- (50) The use of *There be* is felicitous in a context *C* only if the NP α serving as its argument carries the condition that any discourse referents it licenses be novel.

In order for the felicity condition in (50) to work appropriately, we must assume that there is a correlation between the (in)definiteness of the postverbal NP when

interpreted as a nonparticular and the condition it carries on the familiarity of the inferred particulars that it licenses discourse anaphorically. Specifically, a definite NP interpreted as a property must inferentially license only a familiar individual bearing the property, and not a novel one, while an indefinite denoting a property must license only a novel individual bearing the property.

Given that (50) is a felicity condition, we might expect there to be cases where it can be acceptably violated, just as there are cases where the felicity condition on the use of definite NPs is violable (e.g., when the referent of the definite is accommodatable). Since the felicity condition intuitively corresponds to a restriction on using the construction vacuously, that is, to introduce individuals that are already part of the domain of discourse, we might expect the condition to be violable when (re)introducing an already familiar individual would have an informative effect. Ward and Birner 1995 mention several such types of cases, and in McNally 1992, Chapter 5, I argue that list existentials are constrained both in form (they cannot be negated or questioned, nor do they allow a final predicative phrase) and in the contexts in which they can be used precisely so that the speaker can exploit the vacuity of their contribution to the common ground for pragmatic effect.³⁴

5. A note on the use of *there* with other predicates

Before concluding, I want to comment briefly on “presentational-*there*” sentences such as the following:

- (51) a. There followed a great commotion in the streets.
 b. There appeared before us a small green man in pointed boots.

I have left these sentences out of the analysis for two reasons. First, the data discussed in both Breivik 1990 and Ball 1991 suggest that this construction may not be historically related to the canonical existential construction with *be*. As mentioned briefly above, Ball (1991:76ff.) considers it likely that there is a historical relationship between existential and cleft sentences. Although she does not discuss presentational sentences, it is very unlikely, given their structure and semantics, that they would also be related to clefts. Moreover, she observes that existential sentences, like clefts, have appeared with several different expletive subjects in English over the centuries, and indeed continue to be constructed with the expletive *it* in e.g. African-American Vernacular English. In contrast, I know of no evidence that presentational sentences have shown an analogous variability in the use of the expletive subject in contemporary English. (The number of

³⁴Recent work by Abbott (1997) raises the possibility that perhaps even the sort of stipulated pragmatic condition suggested in this section is unnecessary (and in fact incorrect), and that perhaps it is possible to account for the behavior of definites in existential sentences with non-linguistic pragmatic principles such as the Gricean maxims alone. Although I cannot explore this possibility here, note that if indeed this were the case we would have still further support for the analysis proposed here, since the analysis predicts that there should be no difference between the acceptability of definites and indefinites in existential sentences.

examples of presentational sentences cited in Breivik's study of the evolution of expletive *there* is too few to permit generalizations about earlier English, a fact which in itself is perhaps significant.) Thus, perhaps we should not make too much of the fact that both existential and presentational sentences have an expletive *there* subject in standard English.

Second, there is a vast difference in the frequency and context of use of the two types of sentences in contemporary English. While Breivik found 2638 examples of existential sentences in the corpus of 750,000 words he studied, with significant use in both spoken and written language, he found only 20 examples of presentational-*there* sentences, only 3 of which appear in speech (1990:159). The rarity of presentational sentences correlates significantly, in my opinion, with the high degree of insecurity and disagreement about linguistic intuitions involving the presentational construction. For example, it is extremely difficult to make generalizations about the degree to which presentational sentences are associated with the definiteness restriction, and it is unclear to me that such generalizations are truly possible with such an unproductive construction. Rather than try to broaden the semantic analysis, at the risk of unnecessary complexity, to include a set of facts which are perhaps not historically related and which are of marginal productivity in modern English, it seems more prudent at this point to assume that the two constructions are semantically distinct and to look for an understanding of any similarities between them in more general facts about their context of use.

6. Conclusion

To summarize, I have argued that there is good reason to interpret the postverbal argument of the existential predicate as a nonparticular, formalized here as a property. The existential force associated with existential sentences is due to the lexical entailments of the predicate, in exactly the same way that Carlson (1977b) derived the existential force of existentially interpreted bare plurals. One particularly notable consequence of the analysis is that the definiteness restriction is not given a unified account, but rather is treated as partially semantic and partially pragmatic.

The analysis also has implications for the definition of the weak/strong classification of NPs. Milsark (1974) originally proposed this classification to characterize those NPs licensed in and prohibited from postverbal position in existential sentences (weak and strong, respectively). Barwise and Cooper (1981) subsequently proposed defining the classification in terms of the semantics of determiners; since then, other definitions have been proposed (see e.g. Diesing 1990, de Hoop 1992, Ladusaw 1994). If we continue to assume that the existential construction is a diagnostic for this distinction, it should be clear that the distinction cannot be based solely on the semantics of determiners since, in fact, no determiner is completely excluded from existential sentences. Definite determiners (and NPs) are licensed under certain pragmatic conditions, and necessarily quantificational determiners/NPs are licensed as well, as long as they quantify over properties. The

only NPs categorically excluded from existential sentences are those which cannot denote properties or quantifiers over them. This raises the possibility that to be weak is simply to be property-denoting, and that the strong NPs are those which do not denote properties. On such a view, quantifiers over properties would be admitted in existential sentences not because they are weak (by this definition they would not be), but because they are in their own way compatible with the semantic characteristic that defines weakness and that the existential construction is sensitive to. Interestingly, Ladusaw 1994 proposes exactly such a redefinition of the weak/strong distinction based on an entirely different set of considerations, and McNally 1995 and Van Geenhoven 1996 offer further evidence in favor of this move.

Finally, the data show that the apparent discourse functional properties of an NP can be misleading: The fact that the postverbal NP appears to serve as a discourse antecedent to particular-denoting expressions is not a reliable indicator of its interpretation. Morphological, syntactic, and compositional semantic considerations are more reliable. While this should come as no surprise, I think it is fair to say that many of the previous shortcomings in analyses of the existential construction have derived from insufficient appreciation of this fact.

Appendix: On deriving existential force

In the analysis presented in this paper, the existential force associated with existential sentences is due to a lexical entailment of the existential predicate. However, Blutner 1993 advocates a rather different way of deriving the existential force of the construction while maintaining the claim that the postverbal NP is interpreted as a property. Blutner, making use of Dynamic Montague Grammar, proposes that the postverbal NP is inherently quantificational and introduces its own (dynamic) existential quantifier. A dynamic version of the type shifting operator *BE* allows the NP to be interpreted as a property rather than as a quantifier. The verb *be* combines with this property-type expression, making no contentful contribution of its own. The expletive has a denotation essentially the same as that of a pronoun – it denotes a quantifier consisting of the set of properties of some discourse referent. This discourse referent is stipulated to be novel. Blutner’s analysis is intended to achieve dynamic existential binding of that discourse referent, so that it is licensed for reference in subsequent discourse. The (simplified) composition of a basic existential sentence on this analysis appears in (52) (“E” represents dynamic existential quantification; “;”, dynamic conjunction; “↑” converts static formulas to dynamic ones. The reader is referred to Blutner’s article for a brief introduction to Dynamic Montague Grammar, and to Groenendijk and Stokhof 1990 for further details):

- (52)
- a. There is a student.
 - b. $\llbracket there \rrbracket = \lambda \mathbf{P}[\mathbf{P}(d_i)]$, d_i a discourse marker that is new with respect to the context.
 - c. $\llbracket a\ student \rrbracket = \lambda \mathbf{P}[\text{Ed}_i[\uparrow \mathbf{student}(d_i) ; \mathbf{P}(d_i)]]$
 - d. $BE(\mathcal{P}) = \lambda u[\mathcal{P}(\lambda v[\uparrow \tilde{v} = \tilde{u}])]$, where u, v are of type \hat{e} , and \mathcal{P} is a dynamic generalized quantifier.
 - e. $\llbracket be\ a\ student \rrbracket = \lambda u[\text{Ed}_i[\uparrow \mathbf{student}(d_i) ; \uparrow d_i = \tilde{u}]]$ (type shifting of (c) via BE ; $\llbracket be \rrbracket$ is the identity function)
 - f. $\llbracket there\ be\ a\ student \rrbracket = \text{Ed}_i[\uparrow \mathbf{student}(d_i) ; \uparrow d_i = d_i]$

The appeal to a type-shifted interpretation for the postverbal NP accounts for the fact that the NP generally takes narrow scope. The type-shifted interpretation will not be subject to the composition rules that yield wide scope for quantificational NPs; consequently, the NP will combine directly with *be*, preventing any other operators in the sentence from taking scope inside the dynamic existential quantifier embedded in the translation of the NP.

Blutner points out that part of the attractiveness of his proposal is that it captures the fact that the existential construction generally is used to introduce a discourse referent; dynamic existential quantification makes that possible. However, the analysis loses much of its appeal when examples where the postverbal NP takes wide scope are considered, e.g. (53):

- (53) There was every kind of linguist at the LSA.

The interesting thing about such examples is that, to the extent that one wants to say that there is existential quantification in them, that quantification is over instances of whatever is in the extension of the nominal head of the postverbal NP. For instance, the most natural paraphrase of (53) is that, for every kind k such that k is a linguist-kind, *there was an instance of that kind of linguist* at the LSA.

Without modification, Blutner’s analysis only allows dynamic existential quantification over those individuals in the extension of the nominal head of the postverbal NP (yielding a reading which is in principle possible, but not the one that is generally most salient). Thus, unless we can show that an NP like *every kind of linguist* can denote a set of properties of instances of kinds of linguists, this analysis will not be able to yield the “existential quantification over instances” reading that it should.

It turns out, however, that there is no plausible type shifting function that could yield the sort of denotation Blutner’s analysis needs. Putting it in non-procedural terms, there is no consistent relationship between the “quantified

nonparticular” denotations of NPs and their “quantified particular” denotations. Consideration of just the universal vs. existential cases will show that this is so. For simplicity’s sake I will revert to a nondynamic semantics, since the issue of dynamicity is orthogonal. Consider (54)a first; assume it can have a denotation represented by the formula in (54)b. We need to relate that denotation to the one represented by (54)c (As above, I assume that *kind* denotes a property of properties):

- (54) a. every kind of linguist
 b. $\lambda P[\forall Q[\mathbf{linguist-kind}(Q) \rightarrow P(Q)]]$
 c. $\lambda P[\forall Q[\mathbf{linguist-kind}(Q) \rightarrow [\exists y[Q(y) \wedge P(y)]]]]$

That is, we need a function that first takes each member of the generator set for (54)b (which will include e.g. “semanticist”, “syntactician”, “typologist”, etc.); then finds all the instances of that member (e.g. all of the individuals currently identifying themselves as semanticists) and forms an existential quantifier from those instances; and then finally takes the intersection of all the existential quantifiers formed in this fashion.

The process is different for e.g. *some kind of linguist*. In this case, we must find all the singleton sets in the quantifier corresponding to (55)b (i.e. all the individual linguist-kinds), repeat the process of generating existential quantifiers from the instances of each kind, and then take the *union* of those existential quantifiers.

- (55) a. some kind of linguist
 b. $\lambda P[\exists Q[\mathbf{linguist-kind}(Q) \wedge P(x)]]$
 c. $\lambda P[\exists Q[\mathbf{linguist-kind}(Q) \wedge [\exists y[Q(y) \wedge P(y)]]]]$

As mentioned above, Partee’s theory of type shifting is intended to be constitutive of a theory of NP ambiguity. The attractiveness of her theory comes from the fact that the relations between the various types of NP denotations are systematic (i.e. describable by the various type- and sort-shifting functions). There is no consistent function that will relate the denotations of the NPs in (54)b and c, and (55)b and c. Thus, to license (54)c and (55)c as denotations for (54)a and (55)a, respectively, would weaken the theory in an undesirable way.

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