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A UNIFIED ANALYSIS OF THE ENGLISH BARE PLURAL*

ABSTRACT. It is argued that the English 'bare plural' (an NP with plural head that lacks a determiner), in spite of its apparently diverse possibilities of interpretation, is optimally represented in the grammar as a unified phenomenon. The chief distinction to be dealt with is that between the 'generic' use of the bare plural (as in '*Dogs* bark') and its existential or 'indefinite plural' use (as in 'He threw *oranges* at Alice'). The difference between these uses is not to be accounted for by an ambiguity in the NP itself, but rather by explicating how the context of the sentence acts on the bare plural to give rise to this distinction. A brief analysis is sketched in which bare plurals are treated in all instances as proper names of kinds of things. A subsidiary argument is that the null determiner is not to be regarded as the plural of the indefinite article *a*.

0. INTRODUCTION

This study deals with the English 'bare plural' construction, by which I mean plural Noun Phrases of English which exhibit no quantifier or determiner before the head noun (like 'dogs', 'ineffective arguments', or 'old white houses that have been painted dozens of times'). For ease of reference, however, I will speak of these NP's as containing a null determiner, and leave open the question of whether there is any determiner present at all. This construction has long posed a semantic puzzle for grammarians and philosophers alike, chiefly because of the diversity of its possible interpretations. Although there is no agreed-upon inventory of distinct uses, there seems to be a basic split between the 'generic' and 'existential' uses, with further subdivisions among the generic uses.

The generic is most naturally regarded as something like a universal quantifier, as would seem appropriate for representing the truth-conditions of (1a); however, in many cases this 'universal' admits of exceptions, and appears to have the force of 'most', as in the examples of (1b).

(1) a. Horses are mammals/creatures/material objects.
b. Horses are smart/larger than mules/good pets.

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These uses may be opposed to the use of the generic exemplified in (2), where it is clear that a universal quantifier or the quantifier 'most' would simply be inappropriate.

(2) a. Horses are widespread.
b. Horses are extinct.
c. Horses are indigenous to eastern Chile.

Perhaps other sorts of generic uses can be distinguished, but these examples should suffice to illustrate the variety of generic interpretations that arise.

There is another quite distinct use of the bare plural which has been commonly referred to as the 'indefinite plural', since in many cases it seems to be the semantic plural of the NP's determined by the singular indefinite article *a(n)*. This use of the bare plural lacks the universal flavor of the generics and seems to be most appropriately modeled by an existential quantifier having essentially the force of *some*. A few examples are given in (3).

(3) a. *Doctors* tried to save the dying boy.
b. Knute threw *rotten peaches* at the library.
c. *Mice* will come out of that wall if you pound on it.

It will be my chief contention here that these apparently distinct uses of the bare plural (henceforth referred to as ϕNP) are merely facets of a syntactically and semantically unified phenomenon, and that in all cases the differing interpretations can be attributed in an entirely predictable manner to some aspect of the context in which that particular instance of ϕNP occurs.[1] If this hypothesis is correct, and the null determiner is in fact unambiguous, then we can generate the ϕNP in a rather straightforward manner syntactically, assigning it a constant interpretaton in all instances.[2]

Though this goal of unification may seem desirable on general esthetic grounds, I wish to argue that a unified analysis is motivated by data uncovered in examining ϕNP; that is, a unified analysis is not only desirable, but necessary, if we are to have a complete account of this construction. I will proceed in a rather roundabout fashion, first attacking the notion that ϕ serves as the plural counterpart of *a*, and thereby elucidating some interesting semantic properties of ϕNP. I will then argue that the indefinite plural use of ϕNP is not distinct from the generic uses, and that the generic uses are

[1] This hypothesis appeared in two publications in the course of my work on this topic. See Schachter (1976) and Burton-Roberts (1976).

[2] Excluded from consideration are the predicate nominals, though an extension of the suggested analysis may be able to cover them as well.

not distinct from each other. I conclude by sketching a rather programmatic analysis of the semantics of the bare plural, one which allows for the seeming variety of interpretations but assigns a constant interpretation to all occurrences.

1. THE INDEFINITE PLURAL

The notion that the null determiner is the plural counterpart of *a* is bolstered by certain parallelisms in their distributions. For example, both *a* and ϕ have generic uses, as in (4).

(4) a. *A mammal* bears live young.
b. *Mammals* bear live young.

Both also appear as singular-plural counterparts in predicate-nominals, as in (5).

(5) a. Gerry is *an animal.*
b. Gerry and Muncie are *animals.*

Despite this rather inviting pattern, it has by no means been universally assumed that ϕ is the plural of *a*. Sweet (1898) and Stockwell *et al.* (1973), for example, posit the unstressed variant of *some* (often written 'sm') as the true indefinite plural. But a number of others have held that ϕ is the proper candidate.[3] In Chomsky (1965), for example, there is a base rule introducing Articles in the following way:

$$\text{Art} \rightarrow [\pm\text{Definite}]$$

The [+Definite] article is *the*, which occurs before both singulars and plurals. The [−Definite] article is *a*, which is deleted before plurals by transformational rule. Thus, the indefinite plural use of 'houses' is derived from the underlying NP 'a houses'.

1.1 *Anticipated Semantics*

If in fact ϕ serves as the plural counterpart of the indefinite article *a*, we would expect that the two would share all relevant semantic properties except for those attributable to the presence or absence of plurality.[4] Let us

[3] To mention but a few, Dowty (1972), Gough (1969), and Dougherty and Delorme (1972) worked under this assumption. I do not intend to claim that there necessarily *is* a plural counterpart for the indefinite article: only that if there is one, it is not the null determiner.

[4] That is, the differences we find in other singular-plural pairs such as *these-this*, *the* + sg and *the* + pl, *that-those*, *any* + sg, and *any* + pl (the quantifier, not the polarity item), and *some* + sg and *some* + pl (the quantifier).

agree to interpret the indefinite singular as an existential quantifier which also asserts singularity (represented here by 'Esg'), and the plural ϕ as an existential quantifier that also asserts plurality ('Epl'). Let us assume that 'singular' means 'one', and that 'plural' means 'two or more'. Both of these quantifiers range over the same set of objects. The relationship between semantic interpretation and syntactic form is presumed to be of the sort presented in Montague (1972). The crucial feature of this system for us is that quantifier scope phenomena are handled by syntactic rules "quantifying in" an NP and by associated rules of semantic interpretation which assign that NP scope in the semantic representation.[5]

Though the details of this analysis may be debatable, it gives reasonable semantic representations and should serve our purposes here for instance, the sentences of (6) would be represented semantically as the corresponding expressions in (7).

(6) a. A dog chased Marvin down the street.
b. Dogs chased Marvin down the street.
(7) a. (Esg x)(Dog (x) & x chased M. down the street)
b. (Epl x)(Dog(x) & x chased M. down the street)

We construe (7a) as true just in case there is at least one individual from the domain of objects such that the sentence following the quantifier is true when that individual is assigned as the value of x. (7b) is true just in case there are two or more distinct individuals from the domain such that the sentence following the quantifier is true that each of the individuals assigned

[5] The general prediction is that any NP in any context may get there either by direct introduction or by quantifying in, and if it makes a difference in the ultimate semantic representation, there will be an ambiguity. However, there are many cases where predicted ambiguities do not appear. Sometimes it depends on the nature of the NP itself:

(i) Bart wants to show Jennie *a good movie*.
(ii) Bart wants to show Jennie *a good time*.
(ii), unlike (i) does not appear to be ambiguous with respect to relative scope of the italicized NP. In other cases, the nature of the predicate is responsible.
(iii) Bart wants to have *a mistress*.

Note that (iii) is not ambiguous with any other NP's in place of the italicized expression either.

(iv) Bart wants to have $\left\{\begin{array}{l}\text{lots of}\\ \text{twenty}\\ \text{several}\\ \text{many}\\ \text{etc.}\end{array}\right\}$ mistresses.

I assume that certain predicates like 'have' require a lexical direct object, banning quantifying in, and that certain NP's, like 'a good time' cannot be quantified in. It is not clear to me how to state these restrictions formally.

as the value of x. Thus (7a) and (7b) do appear to represent closely the truth-conditions of (6a) and (6b), respectively.

1.2 *Opacity Phenomena*

In the presence of an opacity-inducing operator or predicate, the indefinite singular exhibits a rather clear ambiguity. Consider (8) as an example.

(8) Minnie wishes to talk with a young psychiatrist.

On one reading, there is some particular young psychiatrist that Minnie has in mind, and she wishes to speak with *him*. Let us, following Quine (1960), call this the transparent reading. On the other reading, the opaque reading, Minnie's desires are fulfilled by talking to anyone, so long as that person is a young psychiatrist. The transparent reading is most readily modeled by having the existential quantifier outside the scope of the opacity-inducing predicate 'wish', while the opaque reading is conventionally rendered by a formula having the existential quantifier within its scope. Thus, (8) may have at least the following two semantic structures associated with it.

(8′) a. (Esg x) (young psych. (x) & M. wishes M. talk with x)
b. M. wishes (Esg x) (young psych. (x) & M. talk with x)

We would therefore expect the indefinite plural to show the same ambiguity. That is, we should find the readings of (9a) and (b), corresponding to (8a) and (8b), for sentence (10).

(9) a. (Epl x) (young psych. (x) & M. wishes M. talk with x)
b. M. wishes (Epl (x) (young psych. (x) & M. talk with x)
(10) Minnie wishes to talk with young psychiatrists.

However, (10) does not have both of these readings; the transparent reading represented by (9a) is absent. This is most clearly seen if (10) is compared with (11), which does exhibit both readings of (9).

(11) Minnie wishes to talk with sm young psychiatrists.

For some reason, the reading of (10) with a wide-scope quantifier is ruled out, although the parallel reading, (8′a), is allowed for sentence (8) containing the indefinite singular.

It is clear that the responsibility for this state of affairs cannot rest solely with the plurality marker, for witness again (11), which contains a plural NP. Or substitute for *sm* the quantifiers *many*, *all*, *twelve*, and others that take a

plural head noun. All the resulting sentences exhibit a similar scope ambiguity.

(12) Minnie wishes to talk with { many / all / twelve / a few / most / etc. } psychiatrists.

Neither can some cranky property of the verb *wish* be held accountable, for virtually any opacity-inducing operator has the same effect: the singular with *a* shows an opaque-transparent ambiguity, but the plural with ϕ gives rise to only an opaque reading. Compare the following pairs of sentences, where the opacity-inducing predicate is italicized.

(13) a. Max *believes* a Commie to have robbed Macy's.
b. Max *believes* Commies to have robbed Macy's.
(14) a. A drunk is *likely* to win the annual potato-sack race.
b. Drunks are *likely* to win the annual potato-sack race.
(15) a. Max is *seeking* a unicorn.
b. Max is *seeking* unicorns.
(16) a. Gerald *must* talk to a congressman before noon today.
b. Gerald *must* talk to congressmen before noon today.
(17) a. *If* a woman were sent to the Supreme Court, busing would end.
b. *If* women were sent to the Supreme Court, busing would end.

These facts are clearly not predicted by any analysis which analyzes ϕ as the plural counterpart of *a*.

1.3 *Narrow Scope Phenomena*

A related set of facts comes to light when we examine the relative scope properties of ϕ in the presence of negation and other quantified NP's. Consider the following argument.

(18) A cat is in this room.
A cat is in the next room.

Therefore: A cat is in this room and a cat is not in this room.

The conclusion of (18) is an ambiguous sentence. One reading is a contradiction, being of the form A & $-A$.

(18') (Esg x) (cat (x) & x is in this room) & $-$(Esg x)
(cat (x) & x is in this room)

This reading arises when the existential quantifier is within the scope of the negative. A more likely way of saying (18′) in English would be (19).

(19) There is a cat in this room and there isn't a cat in this room.

However, (18) on another reading seems to be a reasonable argument. This reading has the existential quantifier outside the scope of the negative, and the resulting formula is not of the form $A \& -A$ (nor equivalent to it), and thus is not a contradiction. Its representation would be (18″).

(18″) (Esg x) (Cat (x) & x is in this room) &
(Esg x) (Cat (x) & −(x is in this room)

A clearer rendering of (18″) would be (20).

(20) There is a cat in this room and there is a cot not in this room.

If ϕ is the plural counterpart of a, then we would expect the conclusion of (21) to exhibit a similar ambiguity.

(21) Cats are in this room.
Cats are in the next room.
Therefore: Cats are in this room and cats aren't in this room.

The conclusion of (21) has only the contradictory reading. Apparently there is no semantic structure that may be associated with the conclusion of (21) that is like that of (18″), where the existential quantifier has wider scope than the negative. Only a narrow-scope reading is allowed, which is the contradictory reading parallel to that of (18′).[6]

A further example of the scope restriction on ϕ, assuming it to be an existential, is illustrated by the following facts. (22) is ambiguous with respect to the relative cope of the existential and universal quantifiers.

(22) Everyone read a book on caterpillars.

On the reading where the universal quantifier has wider scope than the existential each individual need not have read the same particular book. However, on the reading where the existential has wider scope than the universal, it is the same book that every person read. These readings appear as (22′a) and (22′b) respectively.

(22′) a. (∀x) (Person (x) → (∃y) (Book (y) & x read y))
b. (∃y) (∀x) (Book (y) & (Person (x) → x read y))

[6] The sentence 'there aren't cats in this room' is really quite awkward, if not ungrammatical. I believe this stems from the fact that the negative here negates the quantifier on the subject NP and not the whole sentence. If there is no quantifier present, as may be the case with ϕNP, this result is expected.

We would therefore expect (23) to be similarly ambiguous.

(23) Everyone read books on caterpillars.

(23) however has no reading in which the existential quantifier has wide scope with respect to the universal.

This is a general phenomenon. (24a)–(28a) all contain occurrences of *a* and all exhibit a scope ambiguity with respect to some other quantifying expression (indicated by italics) in the sentence. The corresponding (b) sentences have the bare plural in place of *a* but exhibit no such scope ambiguity.

(24) a. John saw a dog on his lawn *at* 3, 4:30, 6, *and* 7:15.
b. John saw dogs on his lawn *at* 3, 4:30, 6, *and* 7:15.
(25) a. A goat did*n't* run across my lawn.
b. Goats did*n't* run across my lawn.
(26) a. A whale has attacked this ship *on twelve occasions.*
b. Whales have attacked this ship *on twelve occasions.*
(27) a. Max saw an actor *in every scene.*
b. Max saw actors *in every scene.*
(28) a. A movie was seen by *most people.*
b. Movies were seen by *most people.*

In none of these is there a reading of the ϕNP which would be appropriately represented by use of an existential quantifier having wide scope. This is not predicted by any analysis holding that ϕ is the plural couterpart of *a*.

One could conceivably maintain that ϕ is 'really' the indefinite plural article, but that some idiosyncratic property of its semantics restricts it to having narrow scope only. It is not clear how a defense of this nature might proceed, but in any case it becomes untenable when we examine the next set of data, where the scope possibilities of *a* and ϕ are differentiated, and it is not the case that one exhibits simply a subset of the readings allowed by the other.

1.4 *Differentiated Scope Phenomena*

Under certain circumstances ϕNP can have narrower scope than the indefinite singular possibly can, assuming that we continue to model ϕ as an existential. Consider (29).

(29) A dog was everywhere.

It is my clear intuition that (29) has only a bizarre reading, in which the same dog pops up in every location. There is no reading in which the universal

quantifier of the predicate has wider scope than the existential of the subject (which reading is clearly possible in 'There was a dog everywhere'). However, (30) does have the reading that would be represented by the universal having wide scope. Entirely missing is the reading analogous to (29), in which it is the same group of dogs in every place.

(30) Dogs were everywhere.

Here is a case where the singular and plural have no readings in common. The plural cannot have narrower scope than is possible for the singular, and this is different from the previous examples, where plurality seemed to restrict the ϕNP to a subset of the possibilities already present in the singular.

A similar phenomenon is seen in the difference perceived between (31) and (32), which serves to raise yet another difficulty for the hypothesis under consideration.

(31) An accident happened today at 3, 4 : 30, and 6.
(32) Accidents happened today at 3, 4:30, and 6.

In (31), we are asked to imagine a recurring accident, one which happens three times on the same day. (32), on the other hand, might be used by a local radio announcer to report the happenings of the afternoon. In this latter case, we are not asked to imagine recurring accidents. The semantic formulae for (31) and (32) would be of the following approximate forms.

(31′) $(\exists x)$ (Accident (x) & x happened at, 3, 4:30, and 6).
(32′) At 3, 4:30, and 6 $((\exists x)$ (Accident (x) & x happened)).

Here again the plural can have narrower scope than the singular.

In this particular example we see further that the notion of plurality fails us. (32) could very easily be used to report the occurrence of *one* accident at each of the times mentioned, although the possibility of more is left open. But this ought not to be a possible state of affairs if ϕ carried the information of 'two or more', as would seem to follow from any analysis that treats ϕ as the plural of *a*.[7]

A particularly interesting construction is given much attention in Dowty (1972), where *for* time adverbials are analyzed in some depth. An example of this construction is seen in (33).

(33) Marge sat on the couch *for nine hours*.

[7] This fact conflicts with our feeling that 'cats are here' means that more than one cat is here. At this time, I think it *means* one or more, but implies more than one; if you knew there was just one there, you'd say so.

Dowty's analysis treats *for* time adverbials as a universal quantification ranging over a given range of time points. Roughly, the semantics of (33) would be that of (33′).

(33′) $\forall t: t \in$ 9 hrs (AT (Marge sat on the couch, t))

(33′) asserts that (33) is true just in case 'Marge sits on the couch' is true for each (relevant) time-point in some nine-hour period.

One of the more puzzling facts about these adverbials is that they are quite strange with a certain class of verbs ('achievement' verbs), unless the subject or direct object of the verb is a bare plural or an unquantified mass noun. For example, (34) appears to describe a rather unusual state of affairs, while (35) has a much more natural reading.

(34) Max discovered a rabbit in his yard for two hours.

(35) Max discovered rabbits in his yard for two hours.

If we use Dowty's analysis, the readings of (34) and (35) could be represented by the following.

(34′) $(\exists x)$ (Rabbit (x) & $\forall t: t \in$ 2 hrs
(AT (M. discover x in his yard, t)))

(35′) $\forall t: t \in$ 2 hrs. ($\exists x$(Rabbit (x) &
AT (M. discover x in his yard, t)))

(34′), the reading in which the existential has wider scope,[8] asserts that the same rabbit is discovered and rediscovered, which would be a strange state of affairs. In (35′), however, we find no such assertion. The universal has wider scope than the existential, so the same rabbits need not (but, of course, may) be discovered time and again. So once more ϕ appears to be capable of narrower scope than *a*.

There are a number of other time adverbials which behave in much the same fashion, allowing ϕ to have narrower scope than is possible for the putative singular counterpart. The following (a) examples indicate a strange state of affairs, while the (b) examples need not. In each case, we can attribute the difference to the narrow-scope possibilities of ϕ.

(36) a. Kent killed a mouse *until Raidman arrived.*
b. Kent killed mice *until Raidman arrived.*

(37) a. Chester killed a fly *repeatedly* last night.
b. Chester killed flies *repeatedly* last night.

(38) a. Leon has killed a cow *since before the depression.*
b. Leon has killed cows *since before the depression.*

[8] The fact that the existential must hold wider scope is not predicted by Dowty's analysis, and any adequate analysis of *for* time adverbials should reflect this observation. Perhaps *for* time adverbials are verb modifiers and not VP or sentence modifiers.

Aspectual verbs appear to play much the same role, and the examples pattern similarly.

(39) Harvey continued to kill $\left\{\begin{matrix}\text{a rabbit}\\ \text{rabbits}\end{matrix}\right\}$.

(40) The North American Bread Eater tends to eat $\left\{\begin{matrix}\text{a roll}\\ \text{rolls}\end{matrix}\right\}$.

And even the morphologically simple 'generic' statements seem to have the same characteristics.

(41) Abner repairs $\left\{\begin{matrix}\text{a car}\\ \text{cars}\end{matrix}\right\}$ for a living.

Similar results are obtained when the NP in question is in subject position. Consider the pairs of sentences in 42–44. In the (a) versions, where the subject is the indefinite singular, the existential quantifier is interpreted as being outside the scope of the time adverbial, and thus it is the same object that is spoken of at all time-points in that period. In the (b) versions, the 'indefinite plural' is apparently interpreted as being within the scope of the quantifying expression implicitly present in the time adverbial, and thus the objects need not remain constant over the period of time.

(42) a. A dog hung around my valet all last year.
b. Dogs hung around my valet all last year.
(43) a. A cat has been here since Columbus landed.
b. Cats have been here since Columbus landed.
(44) a. An epileptic ruled Serenia for 200 years.
b. Epileptics ruled Serenia for 200 years.

The quantifier need not in all cases arise from a time adverbial. One rather intriguing type of sentence is exemplified in (45); the (a) version has no reasonable reading, but the (b) version has a quite normal interpretation.

(45) a. A wolf gets bigger as you go north from here.
b. Wolves get bigger as you go north from here.

While (45a) asserts that a wolf in the back seat of your car will grow if you head a certain direction, (45b) asserts that northern wolves are larger than southern wolves (and it has an interpretation similar to that of (45a) as well). Though I do not pretend to understand (45), its readings are clearly not predicted by any analysis that posits ϕ as the plural counterpart of a.

One final example of differentiated scope may be drawn from cleft sentences. (46a) lacks the reading of (46b) which allows each person to eat his own tomato. In (46a) the tomato is shared by all.

(46) a. It was a tomato that everyone ate.
b. Everyone ate a tomato.

With ϕNP matters are different, and (47a) and (47b) are virtually synonymous.

(47) a. It was tomatoes that everyone ate.
b. Everyone ate tomatoes.

So far the contrast in differentiated scope has been between ϕ and *a*. But there is a deeper, and more important, distinction to be made here. As matters turn out, differentiated scope sets apart ϕ not only from *a*, but from *all* other quantifiers and determiners, with the uneven exception of *the* and the unstressed demonstratives in some cases. I cite one example from many to illustrate the point. Recall that with *for* time adverbials, *a* yields a strange reading in sentences like (34), but ϕ doesn't. If we substitute other quantifiers and determiners into this context, we find that they, too, pattern like *a* in giving only strange readings. This puts ϕ virtually in a class by itself.

(48) Max discovered { several / lots of / those / many / all / most / twenty / few / sm / etc. } rabbits in his yard for two hours.

All the other examples of differentiated scope yield similar results. I further note that ϕ is the only quantifier or determiner among the indefinites that fails to exhibit scope ambiguities or opaque-transparent distinctions. If ϕ is an indefinite, it is a special one indeed.

The ϕ 'indefinite plural' then, is semantically not the parallel of the singular form *a*. Though there is a great deal of semantic overlap between the two, it is clearly not the case that their semantics are coextensive up to differences that can be attributed to the presence or absence of plurality.

1.5 *Anaphoric Processes*

A sentence such as (49), as has been mentioned before, is ambiguous between transparent and opaque readings.

(49) Kelly is seeking a unicorn.

In the larger context of (50), however, the ambiguity disappears, in spite of the fact that (49) is wholly contained within (50). This lack of ambiguity can be traced to the definite pronomial form found in the second conjunct, here assumed to refer to the object NP of the first conjunct.[9]

(50) Kelly is seeking a unicorn, and Millie is seeking *it*, too.

In (50), Kelly and Millie must both be seeking the same unicorn. There is no reading in which each is looking for different unicorns, nor is there a reading in which both are engaged in some general activity of unicorn-seeking. Such readings are allowed in (51), where the pro-form 'one' serves as the pronoun.

(51) Kelly is seeking a unicorn, and Millie is seeking *one*, too.

Neither of the readings of (51) are found in (50).

We would expect that the ϕNP in this position would not allow any definite pronominalization to take place in a subsequent conjunct, since we have seen that ϕNP allows only an opaque reading in such contexts. Since only the transparent reading of (49) is found in the context of (50), not the opaque reading, and since ϕ rules out a transparent reading, it should be impossible to obtain a reading for the following sentence (with *them* meaning 'unicorns').

(52) Queenie is seeking *unicorns*, and Phil is seeking *them*, too.

Surprisingly, (52) does have a perfectly legitimate reading, although it is not the reading to be found in (50), but rather one of the readings of (51), the opaque reading. There is no sense in which Phil and Queenie are seeking the same group of unicorns. It seems to mean only that they are both engaged in some general activity of unicorn-seeking, despite the definite pronominalization in the second conjunct. I must hasten to point out that this result is not due to any difference between *them* and *it* beyond plurality; rather it is due to the nature of the antecedent. As the reader may have noticed, mass nouns with ϕ determiners behave almost identically to ϕNP with respect to the

[9] This is discussed in Montague (1972), Partee (1970) and references cited.

phenomena noted.[10] In (53) we find pronominalization resulting in the definite pronoun *it*, but here, in contrast to (50), the opaque reading of the first conjunct remains. Cedrick and Hiram need not be seeking the same articles of furniture.

(53) Cedrick is seeking furniture, and Hiram is seeking *it*, too.

If *it* can have this property in (53) then why not in (50)? The answer is simply that it is the nature of the antecedent, and not the form of the pronoun, which gives rise to this property.[11]

It appears that this particular set of facts does not depend on the presence of an opaque context. In (54), the italicized NP's are not in opaque or intensional contexts, but still Harriet need not catch the same rabbits as Ozzie, nor must I drink the same beer Dad did.

(54) a. Harriet caught *rabbits* yesterday, and Ozzie caught *them* today.
b. Dad drank *beer* slowly, and I drank *it* fast.

Compare (54a) and the following.

(55) Harriet caught *a rabbit* today, and Ozzie caught *it* yesterday.

Here again we see ϕ behaving in a manner quite different from *a*.

Similar sorts of results are obtained when deletion occurs in coordinate structures, rather than pronominalization. First let us consider the case with the indefinite singular *a*.

(56) *A building* will collapse in Berlin tomorrow, and *a building* will burn down in Boston the day after.

Clearly, (56) leaves the impression that two different buildings are being spoken of. However, if the subject of the second conjunct is deleted 'on identity with' the subject of the first, a stranger tale is told in which the same building will collapse and burn in two different places. This is the only reading of (57).

(57) A building will collapse in Berlin tomorrow, and ____ will burn down in Boston the day after.

[10] Unquantified mass nouns exhibit unambiguously opaque readings, narrow scope, and differentiated scope as well.

(i) Jack believes that *furniture* is kept in Nell's attic.
(ii) Everyone drank *water that was fluoridated*.
(iii) *Chlorine gas* was everywhere.

[11] This problem is discussed in Cartwright (1965).

Using the 'indefinite plural', we find that (58) means something very close to (56). The difference arises when we remove the subject of the second conjunct, and find that it *still* means the same as (58). (59) need not denote an extremely unusual state of affairs, and hence it is like (56) rather than (57).

(58) Buildings will collapse in Berlin tomorrow, and buildings will burn in Boston the day after.

(59) Buildings will collapse in Berlin tomorrow, and _____ will burn in Boston the day after.

A somewhat different phenomenon, which has much the same flavor as those just discussed, involves reference to the complement of a set. To illustrate what I mean, let us examine (60).

(60) Jack is hunting for a unicorn, and Frank is looking for another/some more/some others.

NP's like *another* and *some more*, in (60), involve some notion like 'one of the unicorns that Jack is not looking for', or 'some unicorns beyond those that Jack is already seeking'. There is at least an implicit reference to the unicorns that Jack is *not* seeking. We find that in (60), there is no opaque reading for the first conjunct, in spite of the fact that the first conjunct in isolation exhibits the transparent/opaque distinction quite clearly. One apparently cannot refer to the complement set of something that is 'down in' an intensional context, a fact which seems to make clear intuitive sense. Since the ϕNP only to opaque readings in opaque contexts, we would naturally anticipate that sentences such as (61) would be ill-formed. And indeed, (61) lacks an interpretation where Jack and Frank are seeking different unicorns.

(61) Jack is hunting for unicorns, and Frank is hunting for ??another/??others/??some more/??some others.

This result is expected. What is unexpected is that similar results are obtained with ϕNP even when it appears in extensional contexts. The sentences of (62) are all strange in the same way as (61), yet none of the underlined NP's are in opaque or intensional contexts.

(62) a. ??Max trapped *beavers* last night, and fed (some) others.

b. ??*Dogs* just ran across may lawn, and some more found their way into my kitchen.

c. ?? George walked down the street with *kittens*, and Henry David walked down the street with (some) others.

Compare (62) with (63), where the NP's differ in their determiners. I vastly prefer the sentences of (63) to those of (62).

(63) a. Max trapped $\left\{\begin{matrix}\text{sm}\\ \text{a}\end{matrix}\right\}$ beaver(s) last night, and fed $\left\{\begin{matrix}\text{(some) others}\\ \text{some more}\end{matrix}\right\}$.

b. $\left\{\begin{matrix}\text{A dog}\\ \text{Sm dogs}\end{matrix}\right\}$ just ran across my lawn, and (some) others found their way into my kitchen.

c. George walked down the street with $\left\{\begin{matrix}\text{sm kittens}\\ \text{a kitten}\end{matrix}\right\}$, and Henry David walked down the street with $\left\{\begin{matrix}\text{(some) others}\\ \text{some more}\end{matrix}\right\}$.

None of these facts are predicted by any analysis that assumes ϕ to be the plural counterpart of the indefinite singular *a*.

1.6 *Status of the 'Indefinite Plural'*

The facts presented above indicate that ϕ simply cannot be the plural of *a* in any semantically relevant way.[12] I therefore conclude that ϕ should be stricken from the list of candidates for this position, if in fact there is such a slot in the grammar. The unstressed variant of 'some' appears to be the most likely candidate, but I will leave the matter unresolved here as it is not at all germane to the point of this study. I will continue to allow myself the liberty of referring to this use of ϕNP as the 'indefinite plural', but merely as a convenient label without theoretical significance.

Let us here sum up some of the properties of ϕNP that have been noted so far. First of all, we noted that it had only opaque readings in opaque contexts, never transparent ones. Then it was shown that ϕNP does not participate in quantifier scope ambiguities, but always seems to take narrowest scope. We then found that ϕNP could actually achieve semantically narrower scope than the other determiners and quantifiers. In matters of pronominalization and anaphora, we found that things were also different from what might be expected. Definite pronominalization and coordinate

[12] One reader noted that it would be possible to assign scope after the translation from the object language into the language that is to be interpreted, and that is would be possible then for the singular and plural *a* and ϕ to participate in different scope-assignment rules, but remain singular and plural counterparts nonetheless. I mean to exclude this logical possibility as violating the very assumption I started out with, that singular and plural should behave alike up to those differences that can be attributed to plurality. Attributing differential scope behavior to plurality *per se* is not possible, since so far as I know it has no independent motivation elsewhere in the grammar. The differential scope behavior would then be reduced to some arbitrary property of the bare plural, and not simply the fact that it is a plural.

deletion, rules which normally have quite strict coreference restrictions, behaved more like 'identity of sense' anaphora (*one*-pronominalization or VP-Deletion). I think all these properties can be summarized by one short statement about the indefinite plural use of ϕNP: it fails to pick out a *group* that persists through time and space in its membership. Yet, this doesn't seem quite right, either, since in sentences like (64) it seems that a group really is in some sense, being set up and referred to. Otherwise, we would simply have no understanding of why *some* gives us such a nice paraphrase.

(64) Arlene found { *squirrels* / *some squirrels* } in her attic.

2. GENERICS AND THE 'INDEFINITE PLURAL'

Now that we have determined that ϕ cannot be the plural of *a*, its relationship to the rest of the grammar becomes much less clear. We must ask once again what it is related to, and how this relationship is represented in the grammar.

A certain amount of evidence indicates that the indefinite plural use of ϕNP is not to be distinguished from its generic uses. Let us for the moment consider the hypothesis that there are at least two distinct determiner elements of English, both of which just happen to be pronounced 'ϕ'. The first is like an existential quantifier (but not quite), and accounts for the 'indefinite plural'; the second is like a universal (but not quite) and accounts for at least one of the 'generic' uses of ϕNP (there may be a number of generic determiners, all pronunced ϕ, so we let the one posited represent possibly a whole class of determiner elements).[13] This hypothesis carries with it the claim that ϕNP is systematically ambiguous. However, in most cases this is not borne out by the facts (as has been noted previously, for example in Dahl (1975)). Consider the following sentences:

(65) Smokers are rude.
(66) Dogs bark.
(67) Elephants are easily trained.

[13] I know of no languages that have an *exclusively* generic quantifier or article, though I don't know whether this is universally so. Smith (1964) notes that generic NP's of English are generated syntactically just like non-generic NP's, requiring no special rules at all. I suspect that all languages pattern likewise.

These sentences exhibit the generic, or 'universal' reading.[14] But what is missing is the indefinite plural, or 'existential' reading. Why don't (65–67) mean (65′–67′) as well, if ϕ is really systematically ambiguous?

(65′) Some smokers are rude.
(66′) Some dogs bark.
(67′) Some elephants are easily trained.

These readings are clearly plausible pragmatically, but they are ruled out for some reason. Again, why don't we judge the italicized ϕNP's of the following sentences to be ambiguous? Either reading should be possible, but only the 'universal' emerges.

(68) Mark really loves *puppies*.
(69) Kris hates *small ugly creatures*.
(70) The man over there believes *Texans* to be friendly.

And the following appear to be unambiguously existential, even though a universal, or near-universal, would be reasonable.

(71) Sir Snooter slew *dragons* for the Baron. (as an 'event').
(72) *Plumbers* stormed into the convention demanding longer lunch breaks.
(73) Alice personally knows *actresses*.

These facts require further explanation under an analysis which treats ϕ as an ambiguous determiner.

In a number of contexts, an ambiguity does appear. Consider the following ambiguous sentence.

(74) Dinosaurs ate kelp.

One reading posits kelp-eating as a characteristic of most, or all, dinosaurs. Another reading of the sentence, one which reports a kelp-eating event of long ago (more readily seen if the sentence is continued '... while Grog

[14] I assume some notion of 'normal intonation', and I am not responsible for what happens when additional stress is added to some constituent. For example, 'smokers ARE rude' can apparently mean that some smokers are rude. I doubt that it can be maintained that such sentences involve a simple existential claim however, for the following seem extremely strange to me, even if existentially true.

(i) (??) Smokers ARE Chinese.
(ii) (??) Trees ARE 350 feet tall.
(iii) (??) Babies ARE six-toed.

It seems the stress has to do with disposition or some similar notion in this case, having some sorts of behavioral implications.

watched'), refers only to some dinosaurs. So here we have an ambiguity of the type predicted by the hypothesis under consideration. However, these sentences are ambiguous even when the subject of the sentence is not a ϕNP, but an NP that is not normally regarded as being ambiguous in any relevant way. Witness (75):

(75) { Maxwell / Lots of conductors / The old fireman / A few scientists } ate kelp.

(75) can still be interpreted either as reporting a past kelp-eating event, or as reporting a past characteristic of the subject of the sentence. These two readings have quite distinct truth-conditions, and thus the distinction drawn constitutes a genuine ambiguity. Virtually any NP in subject position in such a sentence will produce a similar ambiguity, and it is plain that the ambiguity has little to do with the nature of the subject itself.

Given that '____ ate kelp' is already two-ways ambiguous[15] regardless of the nature of the subject, and assuming that ϕ is itself at least two-ways ambiguous, then (74) ought to be at least four-ways ambiguous. But it is not. The existential reading alone appears with the 'event' reading, and the universal alone appears with the 'characteristic' reading of the predicate. There are no 'mixtures' (e.g. it being a past characteristic of some dinosaurs that they are kelp regularly). Here we see that the context itself selects certain readings of ϕ and disallows others.

This is different from the situation with regard to the generic and specific uses of the definite article. An NP such as 'the horse' may refer to the species of horses, or to a particular horse (say, Holding Pattern). Sentences such as (76) are ambiguous with *the*, but no so with ϕ, which allows only the 'generic' reading.

(76) { The horse works / Horses work } quite hard.

The generalization that falls out of this line of inquiry is that the generic and indefinite plural uses of ϕ are in complementary distribution. In fact, I wish to make the stronger claim that these readings of ϕNP are not only in complementary distribution, but that their distributions are wholly predictable from context. ϕ itself, then, is never ambiguous in a given context. If there is an apparent ambiguity, it can be traced to the environment.

[15] The presence of the mass noun 'kelp' cannot be held responsible, for 'chirped', 'walked without stumbing' and other VP's having no direct object exhibit the same ambiguity.

A reasonable counterargument might be that ϕ is in fact ambiguous but that the semantic properties of the distinct readings of ϕ are such that they may only rarely, if ever, appear in the same environment. A rather weak analogy might be used to illustrate the hypothesis. The NP 'a crow' is at least two ways ambiguous, one reading denoting a large black bird, and the other denoting the characteristic sound of a rooster at daybreak. Yet the instances of the NP 'a crow' in the following sentences are virtually unambiguous.

(77) *A crow* perched on my doorstep.
(78) The rooster rared back and let go with *a (loud) crow.*

Yet I would not wish to claim that the NP 'a crow' is unambiguous. Therefore, complementary distribution of readings for ϕNP cannot be used to show conclusively that ϕNP is unambiguous. However, nonambiguity, though not sufficient argument for a unified analysis, is clearly a necessary one. I now turn to other arguments.

2.2 *More Anaphora*

One of the major differences between the putative ambiguities of ϕNP and the example mentioned above is that different interpretations of ϕ may stand in an anaphoric relationship, but not those of 'a crow'. The following sentence cannot be interpreted readily as referring to a large blackbird in the first clause, and to the characteristic noise of a rooster in the second.

(79) My rooster lets go with *a crow* when he sees *it* near the house.

If NP's exhibiting a null determiner were similarly ambiguous, we would not expect a generic instance of ϕNP to serve as antecedent for an indefinite plural use, or vice-versa. The use of ϕNP exemplified in (80) should not be able to stand in an anaphoric relationship with the use exemplified in (81); the result should be something like that of (79).

(80) *Lemmings* are protected by law.
(81) Mick traps *lemmings.*

However, this state of affairs can hold, as we see in (82).

(82) a. Mick traps *lemmings* even though he knows full well that *they* are protected by law.
b. *Lemmings* are protected by law, but Mick goes ahead and traps *them* anyway.

In (82a), we find an indefinite plural serving as antecedent for a generic use; in (82b) we see that a generic may serve felicitously as antecedent for an

existential. A great number of other such examples can be constructed, and a few are listed here.

(83) a. My mother hates *raccoons* because *they* stole her sweet corn last summer.
b. *Raccoons* have stolen my mother's sweet corn every year, so she really hates *them* a lot.

(84) a. My brother thinks *snakes* are nasty creatures, but that hasn't stopped me from having *them* as pets my whole life.
b. I've had *snakes* as pets my whole life, but my brother still thinks *they*'re nasty creatures.

(85) a. Martha told me that *beans* don't grow as well in this climate, but *they* grew well for me last year.
b. *Beans* grew quite well for me last season in spite of Martha's warning that *they* can't grow in this climate.

(86) a. I didn't believe that *goats* liked *tin cans* until I actually saw *them* eating *them* last week.
b. Before I actually saw *goats* eating *tin cans* last week, I didn't believe *they* liked *them*.

In all these cases, we see a generic (or a universal) serving as antecedent for an indefinite plural (or an existential), and vice-versa. It is not at all clear how this would be possible if ϕ were at least two-ways ambiguous.

There is a complicating factor here (among a number of others), which I think in the end also argues for a unified analysis. The reference of the prononomial form in (87) is ambiguous.

(87) Mark knows ten linguists, and Freddie knows six of *them*.

Ignoring the readings where the pronoun refers to some extra-sentential objects, (87) might have either of the following meanings.

(87′) a. . . . and Freddie knows six of *the ten linguists that Mark knows*.
b. . . . and Freddie knows six (of) *linguists*.

It appears that the pronoun in (87) may have as its antecedent a subpart of the whole NP *ten linguists* of the form *linguists*, or something of the form ϕNP. Now this particular antecedent-pronoun relationship can be used to account for cases of the following sort.

(88) Spaceman wants to see some *gnus* before *they* are extinct.

Since *they* stands in a position in this sentence characteristic of generic NP's, its antecedent must be a generic. However, examples like (88) can also be

constructed in which the pronoun is more like an indefinite plural; e.g., (89).

(89) Max killed very few *rabbits*, but Hiram killed *them* in great abundance.

(89) does not require that we imagine some resurrected rabbits.

Let us assume that the ϕ determiner is ambiguous, that the NP underlying the pronoun in (88) (or the pronoun's antecedent, as I wish to remain neutral on the deep structure status of pronouns) is something of the form $\forall Nom$, and that in (89) it is something of the form $ENom$ (where $\forall$ and E are the generic and indefinite plural markers respectively, and *Nom* stands for 'nominal'). The antecedent in (89) then must 'contain' an indefinite plural, and the antecedent NP in (88) must 'contain' a generic. This would mean that an NP of the form 'three cats' would be at least two-ways ambiguous, depending on whether or not it contained $ENom$ or $\forall Nom$. It is not at all clear that such an ambiguity can be explicated in any reasonable way. But our assumptions would have the further undesirable consequence of allowing a generic to contain an indefinite plural (be of the form $\forall ENom$) and an indefinite plural to contain a generic ($E\forall Nom$) in order to account for (83–86). Not only is it hard to make sense of the prolific ambiguities predicted by such an analysis, but the syntactic slipperiness of the invisible elements $\forall$ and E (pronounced ϕ and ϕ, respectively) is discomforting as well. I know of no other determiners or quantifiers that could appear in all the positions allowed for these. However, ϕ is a very difficult item to find in a sentence, and without specific claims about its syntactic and semantic properties, it is virtually impossible to show that ϕ isn't really there.

I do not wish to overstate the case that can be made from pronominalization, for the processes involved remain very poorly understood, and only in the framework of some definitive analysis can these arguments be evaluated adequately. But insofar as current theories account for these phenomena, an analysis claiming ϕNP to be unambiguous would not suffer from the difficulties of the ambiguity analysis. In all of the cases above the antecedent of the pronoun is simply of the form ϕNP, and its particular interpretation is predictable from context. In any event, an ambiguity analysis of ϕ has to face most of the same problems of context as a unified analysis does, so the reference to context I make here is not something that can be avoided even with an ambiguous ϕ.

2.3 *NP's Denoting Kinds of Things*

I believe that the strongest argument for a unified analysis of ϕNP comes from the fact that contextual factors that give rise to the generic and

indefinite plural interpretations are independently motivated and are needed elsewhere in the grammar to account for interpretations of certain constructions that are wholly distinct syntactically from ϕNP. This class of constructions—NP's that refer overtly to kinds of things—points the path towards a correct analysis of the bare plural construction.

We might offhand think of kinds of things (I will henceforth simply use the locution 'kinds') as being really quite abstract, as opposed to say, particular individuals. But NP's denoting kinds may appear as the subject of sentences that predicate very concrete things of the subject. They can *be tall*, *have wings*, or even *be sitting next to me in the theater.*[16]

(90) a. This kind of animal is tall.
b. A certain kind of lizard has wings.
c. Some kind of duck was sitting next to me in the theater.

If we compare the behavior of these NP's denoting kinds to other NP's that are characterized as being abstract (like *democracy*, or *the speed of light*), we find that, grammatically, the NP's making reference to abstract kinds appear quite concrete.

NP's denoting kinds, such as those in (90), have a number of properties in common with the indefinite plural ϕNP. Let us fix the reference of 'this kind of animal' as your favorite kind of animal, and examine a sentence like (91).

(91) Max believes *this kind of animal* to have eaten his pet sponge.

There is no reading of this sentence in which Max believes of any particular individual that it ate his pet sponge. If Rover ate the sponge, for example, it does not follow that Max believes that Rover ate his pet sponge, on any reading of the sentence. Compare this with (91′), where there is a reading having this entailment.

(91′) Max believes *an animal of this kind* to have eaten his pet sponge.

[16] This is similar to referring to, say, all the members of a team by calling them 'the team'. In (a)–(c), the predicate is true of each team member individually.

(a) The team is wearing red shirts.
(b) The team died in the plane crash.
(c) The team is quite tall.

However, 'the team' can be used to refer to something more than the sum of its parts:

(d) The team has won 22 pennants over the last 40 years.
(e) The team has been in continuous existence for 100 years.

I do not wish to push the analogy too far, but kinds are a bit like teams in this respect. I thank Barbara Partee for this observation.

If we were to entertain the hypothesis that 'this kind of animal' refers to certain individual animals, we might be led then to think of (91) as exhibiting only an opaque reading. The same follows for the sentences of (92) if we think of this NP as referring to a group of animals. On this false hypothesis, we would then think of (92) as exhibiting only opaque readings.

(92) a. Max is seeking this kind of animal.
b. Minnie wishes to talk with this kind of animal.
c. This kind of animal is likely to win the race.

However, since these NP's do not refer to individuals, but to the kinds themselves, the question of opacity vs. transparency with respect to particular individuals simply does not arise. When such a distinction does arise with NP's denoting kinds, it is a question of transparency vs. opacity with respect to kinds themselves, and not with respect to individuals. In (93), there is one reading on which there is a particular kind, e.g. 'the kind of animal George has', which is believed by Max to have eaten his pet sponge, and there is another reading on which Max's belief is not about any particular kind.

(93) Max believes *some kind of animal* to have eaten his pet sponge.

If we continue to suppose for the moment that NP's denoting kinds refer to individuals, we find that the NP 'this kind of animal' exhibits only narrow scope. Consider the case of (94), recalling that we agreed to fix the reference of the subject NP as your favorite kind of animal.

(94) This kind of animal is in this room.
This kind of animal is in the next room.

Therefore: This kind of animal is in this room, and this kind of animal is not in this room.

The premises of (94) could very well be true, but the conclusion has only a contradictory reading. This is so in spite of the fact that the particular individuals in the two rooms are in all likelihood quite distinct. So if we were thinking of 'this kind of animal' as referring to individuals, it would appear to have only narrow scope.

We also find that the sentences of (95) exhibit only narrow scope readings.

(95) a. Everyone saw this kind of animal.
b. This kind of animal has attacked the ship on twelve occasions.
c. John saw this kind of animal in every scene of the movie.

In (95a), for instance there is no reading on which everyone saw the same

particular animals. So we see here 'narrow scope only' alongside 'opacity only'.

Continuing our false notion that NP's denoting kinds refer to particular individuals, we find that they can exhibit differentiated scope as well. Recall that in the context of (96) the appearance of any quantified NP yields a bizarre reading, whereas ϕNP yields a more natural interpretation.

(96) ____ be everywhere.

However, NP's referring overtly to kinds likewise yield quite natural readings.

(97) This kind of animal was everywhere.

In each place there need be only some animal of this kind; the same particular individuals need not appear in more than one place. If we put NP's denoting kinds into the contexts that were defined in 1.4 as differentiated scope (or perhaps 'to narrow scope'), we find that in all cases a natural interpretation appears. I list a few more examples.

(98) a. Max discovered this kind of animal in his yard for two hours.
b. This kind of animal ruled Serenia for 500 years.
c. It was this kind of animal that everyone ate.

Thus we see that these NP's may be thought of as exhibiting differentiated scope.

Given that only an opaque reading seems to occur with NP's denoting kinds, we see that in (99) definite pronominalization is allowed, but it does not yield a reading on which Kelly and Horace are seeking the same particular individual animals.

(99) Kelly is seeking this kind of animal, and Horace is seeking it/them as well.[17]

If we thought of (99) as making reference to particular animals, this would be a semantic curiosity indeed.

NP's denoting kinds also pattern like indefinite plural ϕNP with respect to the other anaphora phenomena. In (100) and (101) identity of particular individuals is not preserved.

(100) Harriet caught this kind of animal yesterday, and Max caught it/them earlier today.

[17] I am not sure why this variation of pronomial form is tolerated, but sometimes one, and then the other, seems preferable.

(101) This kind of structure will burn down in Berlin tomorrow, and ____ will collapse in Boston the day after.

The same particular animals need not be caught, nor must the same particular structures burn and collapse.

Reference to the complement is also forbidden with kinds. (102) is strange if one is speaking of the animals that weren't trapped.

(102) Marv trapped this kind of animal last night and fed (some) others/some more.

((102) is of course fine if this is reference to other *kinds*. But then so are (61) and (62)).

So we see that with respect to anaphora, NP's denoting kinds pattern like the indefinite plural ϕNP.

NP's denoting kinds also appear to have 'generic' and 'indefinite plural' interpretations. In (103), for instance, we appear to be speaking of *all* animals of that kind.

(103) This kind of animal is a vertebrate.

In (104), however, it appears to follow that there are some animals of that kind which Max shot; clearly there is no reference to all animals of that kind.

(104) Last night, Max shot this kind of animal.

Thus, that NP's denoting kinds also have an 'indefinite plural' reading. It would be questionable indeed to account for the existential reading of 'this kind of animal' in (104) postulating an ambiguous invisible determiner. This becomes even less likely when we note that NP's denoting kinds come in a wide variety of syntactic shapes.[18] Every one of the sentences in (105) has a perfectly natural reading, provided we interpret the subject NP as referring to a kind or kinds.

(105) a. *This cigarette* (yes, the one I am tapping on the table, putting in my mouth, and now lighting) is made in nine different countries.
b. *Every featherless bird* is now extinct.
c. *No reptiles* are indigenous to the Philippines.
d. *Many mechanical devices* were invented by mistake.

[18] In fact, 'sm' alone appears to disallow any reference to kinds, while all the rest allow it.

(a) *Sm birds are widespread.

These, too, may have existential or 'indefinite plural' interpretations.

(106) a. Carter sells *this animal* in his pet shop (meaning 'this *kind* of animal')
b. This zoo has *every pachyderm* in it.
c. *Several birds* were discovered in Spitsbergen by the Larsen expedition.
d. *My dog* has been known to attack leopards.

The sentences of (106) are ambiguous as to whether the italicized NP's denote individuals or kinds. On the 'kind' reading, the sentence speaks of *some* of that kind, rather than all or most. This is the 'indefinite plural'. Thus the hypothesis of an ambiguous ϕ determiner to account for generic vs. indefinite plural interpretations of ϕNP would be difficult to extend to this wide variety of NP's denoting kinds. And positing an ambiguous ϕ determiner for ϕNP but some other mechanism for the same variation with the other NP's would be to miss an obvious generalization. This all suggests strongly that ϕ is not to be represented semantically as an ambiguous determiner.

3. A BRIEF EXCURSUS ON THE DIVERSITY OF GENERIC ϕNP

As mentioned above, a number of 'generic' uses of ϕ might be distinguished. But here, too, positing an ambiguous determiner or quantifier for ϕ suffers from the same objections that have been raised against the generic/indefinite plural distinction.

Let us suppose for the moment that there are at least three ϕ determiners. The first would be a strict universal, as in (107).

(107) Dogs are mammals.

The second would be much like a universal but would allow exceptions.

(108) Dogs are good pets.

The third as in (109), does not lend itself to interpretation as a quantifier at all.

(109) Plants are widespread/extinct/numerous.

The first problem is that these NP's simply do not appear to be ambiguous. (108), for example, does not seem to be true on one reading, false on another, and true or false on yet another. It's simply true. I dispense with further examples as the generic sentences presented herein speak for themselves in this respect.

We find that these various 'interpretations' of ϕNP can be mixed in antecedent-pronoun relationships (and all of these may, in turn, be associated with the indefinite plural). Consider the following.

(110) a. *Dinosaurs* are extinct because *they* ate kelp.
b. *Trucks hauling dynamite* are illegal in Nevada because *they* are difficult to manuever in heavy traffic.
c. *Wolves* eat only kosher deer, so *they* are less numerous than they would be if *they* weren's so choosy.
d. *Elephants* are not widespread in spite of the fact that *they* are quite large and strong.

So pronominalization facts do not effect a separation among different generic uses.

Finally, NP's overtly referring to kinds or types would have to be distinguished in the same variety of ways. They, too, appear to have the same 'readings'.

(111) a. $\left\{\begin{matrix}\text{This kind of animal} \\ \text{This animal}\end{matrix}\right\}$ is a mammal.
b. $\left\{\begin{matrix}\text{This kind of animal} \\ \text{This animal}\end{matrix}\right\}$ is a good pet/barks.
c. $\left\{\begin{matrix}\text{This kind of animal} \\ \text{This animal}\end{matrix}\right\}$ is widespread/extinct/numerous.

So the ambiguities posited for ϕNP would have to be allowed in these cases as well, if generality is to be preserved at all.

There is one further danger inherent in positing an ambiguous ϕ determiner to account for the varying truth-conditions associated with the bare plural, namely that one would end up positing a large number of ϕ's to cover all the desired cases. We have already seen three, but there would have to be a ϕ_{female} to account for '*mammals* give milk to their young', a ϕ_{male} to account for '*lions* have manes', a ϕ_{mature} for '*birds* reproduce annually' a ϕ_{queen} for 'bees reproduce by laying eggs', and so forth. I do not believe that positing distinct ϕ's in each of these cases would serve any useful purpose, as it seems clear that they would not be modeling anything that intuitively we would call an ambiguity. These quantifiers would reflect more *how* we find out the truth or falsity of generic statements; this is tantamount to building a theory of epistemology into the semantics, something not at all easily done.

Therefore, it appears that the various uses of the generic ϕ are likewise context-determined, and that a unified analysis is therefore desirable. I now turn to a brief description of a program for accomplishing this unified

analysis. A great deal of what follows must be termed speculative, but the general line of inquiry appears to be capable of solving a number of difficulties raised so far.

4. TOWARDS A SOLUTION

4.1 *Generic Statements about Indivduals*

Let us begin by presenting a means of interpreting the generic uses of ϕNP, which incorporates a unified analysis but which nevertheless allows for a wide range of different uses. This task is best begun by drawing some analogies.

Generic statements can also be made of individuals. These statements, too, have notoriously erratic truth-conditions. Consider (112).

(112) Jake mows his neighbor's lawn.

This clearly does not mean that Jake's days and nights are spent mowing. We might hypothesize that (112) is true just in case it is Jake, most of the time, who mows the lawn. The lawn must furthermore be mowed regularly (one mowing every five years would not do). Jake is allowed to be sick occasionally, or to be on vacation, etc. Compare this line of thought with the one that emerges from an examination of (113).

(113) Kenney beats small children.

A great deal of regularity is not required for (113) to count as true; nor must Kenney be the one who beats children largely to the exclusion of other maniacs. He need not beat children at every opportunity, nor every time a child needs a beating. A very few child-beating instances would suffice for (113) to be true.

The reader may take issue with certain aspects of these remarks, but this is not entirely germane to the point at hand. These generic statements about individuals clearly vary greatly in truth-conditions. Consider the following, asking for each how many times Jake must do what if the sentence is to be true.

(114) a. Jake wears contact lenses.
b. Jake runs to school.
c. Jake runs the mile in 3:58.2.
d. Jake is a drunk.
e. Jake is a failure.
f. Jake writes $\left\{\begin{matrix}\text{novels}\\ \text{short stories}\\ \text{poems}\end{matrix}\right\}$

Careful examination will reveal a maze of factors to be taken into account in cases such as these.

There is a means at our disposal of allowing for all this variation while retaining a coherent semantics. If we follow a semantic theory of the sort proposed in Montague (1972), the truth or falsity of a sentence is determined by finding out whether or not the property attributed to the subject of the sentence is in the set of properties that the subject of the sentence has. (We might also talk equivalently in terms of the predicate naming a set, and finding out if the subject of the sentence is in that set.) So, for example, (114a) is true just in case the property of wearing contact lenses is in the set of properties associated with Jake, and (114d) is true if being a drunk is in that property set. How do we know whether or not these set membership relations hold? In a model-theoretic semantics, the model will tell you, so the determination of truth or falsity is simply a matter of consulting the model. If we think of the real world as being the model we consult, matters become a good deal more complicated. We no longer just need to be able to read off some information that is given to us; we need also to be able to perceive, to compute, remember, make inductions and deductions of startling complexity, and go through a host of other cognitive processes to tell if someone is a drunk, or wears contact lenses. What is suggested, then, is that the apparent variation in the truth-conditions of (114) can be attributed to our strategies of investigation and not to any inherent semantic marker in the sentence (in particular, a quantifier).

Let us return now to the question of the proper interpretation of the bare plural. We have already noted the semantic relationship that holds between ϕNP and kinds. The suggestion here is that we treat the bare plural in all cases as denoting a kind of thing. In particular, we suppose that the bare plural acts as the proper name of a kind, and that kinds are to be construed as individuals. Of course, these individuals are a little different from more normal individuals in that kinds can be here and there, whereas normal individuals are generally confined to one location (though it might be a big location) at a given time. That is, while Mark Spitz at a given time is spatially quite confined (he can only be in one place, roughly), bees can be in many locations (wherever there are one or more bees). (Zemach (1975) makes a similar point.)

Postal (1969) notes a striking similarity between bare plurals and proper names with respect to the 'so-called' construction. Consider (115).

(115) a. *Slim* is so-called because of his slender build.
b. *Cardinals* are so-called because of their color.

c. { *Those cardinals / *All cardinals / *Most cardinals / *No cardinals / *The cardinals / etc. } are so-called because of their color.

Quantified or determined NP's are excluded, leaving ϕNP, proper names (and the generic definite 'the cardinal').

Let us agree then to treat ϕNP as a proper name of a kind, and let us think of kinds as being abstract individuals. In this treatment, ϕNP's are treated semantically as if they were unanalyzable wholes. This assumption is clearly incorrect in many cases, but this fact does not affect the point of the analysis sketched here.

Generic statements for bare plurals are then handled exactly as they are for regular proper names. (116a) is true just in case the individual Bossie has in her property set the property 'eats hay', and (116b) is true just in case 'eats hay' is in the property set of the individual Cows.

(116) a. Bossie eats hay.
b. Cows eat hay.

How we go about deciding whether a given property is in a property set is not a semantic issue.[19] In this way we avoid dealing with the extremely recalcitrant problem of the widely-varying truth conditions of sentences like (116b) in the same way that we do in the case of generic statements about particular individuals. This, then, is how we go about accounting for the various uses of the generic ϕNP. It is not ambiguous, but it may take on the appearance of ambiguity when we assign different properties to the individual in question. If we assign the predicate 'lives in caves' to the individual 'bats', our strategies for determining whether or not that property is in their property

[19] I do not mean to discount as a possible line of liguistic inquiry an investigation of the relationship between kinds and individuals of that kind. For example it seems to me that the fact that (a) below can mean that linguists, collectively, have 30,000 books in print but that (b) cannot mean that linguists, collectively, have 62,344 legs (even though (b), on a collective basis, might be true) is a fact that needs to be accounted for within a semantic analysis.

(a) Linguists have over 30,000 books in print.
(b) Linguists have 62,344 legs.

I do mean to exclude from a semantic analysis however, the question of whether 200 out of 600 birds born without wings would falsify 'birds have wings'. This is a different question from the above, though I grant that the dividing line is not always clear in any given case. I wish to separate linguistic knowledge from the act of recognizing facts about the world.

This sort of analysis might also be used to investigate abstract individuals such as 'honesty', 'democracy', and the like. These are essentially mass nouns, like 'water' and 'fire'.

set lets us tolerate the exceptions. If we assign 'reproduces by giving live birth' to 'rabbits', our strategies determine that we need not take into account the male rabbits. These strategies are not so different from those we need for determining the truth-value of generic statements about individuals, as in (114) above. Those for kinds may be a bit more complex, but it is clear that the processes involved are closely related to one another.

The relationship between particular individuals and these "kind-level" individuals is, I believe, a tighter one than might be imagined. For example, I know of no predicates that can be assigned to particular individuals that cannot also be assigned to kinds. And the predicates that cannot be assigned to particular individuals (or groups of particular individuals) but which may be assigned to kinds are not numerous.

(117) $\left\{\begin{array}{l}\text{*Fred}\\ \text{*All goats}\\ \text{Goats}\\ \text{This kind of animal}\end{array}\right\}$ $\left\{\begin{array}{l}\text{are}\\ \text{is}\end{array}\right\}$ *widespread/numerous/extinct*
rare/common/indigenous to . . .

The predicates of (117) represent a sample of what appears to me to be a rather exclusive class.

I now leave the problem of the generic use of ϕNP and turn my attention to its indefinite plural use.

4.2 *The Indefinite Plural*

We still must account for the indefinite plural interpretation of ϕNP. In light of previous discussion, one may wonder why we single out this particular interpretation for analysis. Why shouldn't it be treated in the same simplistic fashion as the generic interpretations? That is, could (118) be construed as being true just in case 'be sitting on my lawn' is one of the properties of the individual 'dogs'?

(118) Dogs are sitting on my lawn.

It would then follow that the 'indefinite plural' interpretation would be, in a certain sense, illusory, and not really an existential statement at all.

I do not believe, however, that such an approach is entirely justified. For one thing, there seems intuitively to be a rather clear distinction between the generic and indefinite plural uses of ϕNP. The generic seems to speak of tendencies, dispositions, characteristics, and the like; the indefinite plural does not have this flavor at all.

There is a more important reason for wishing to split off the indefinite plural sense from the other senses of ϕNP and treat it as a semantically

distinct phenomenon. One of the chief aims of semantic theory is to represent correctly the entailment relations that hold between sentences. As matters turn out sentences with the indefinite plural and sentences with the generic sense of ϕNP have quite distinct entailments.[20] Consider the argument presented in (119).

(119) Dogs are sitting on my lawn.
All dogs are mammals.

Therefore: Mammals are sitting on my lawn.

The inference of (119) appears to be valid, and could easily be shown to be correct if the indefinite plural were represented by an existential quantifier. Contrast this with (120), where the bare plural has the generic sense.

(120) Dogs are good pets.
All dogs are mammals

Therefore: Mammals are good pets.

This invalid argument is a case of overgeneralization, as would be clearly demonstrable were the generic to be construed here as a universal quantifier. Clearly the indefinite plural and generic senses of ϕNP give rise to different entailments and are therefore distinct.

But here I seem to be arguing the contrary of what I have argued for at length a bit earlier—that the generic and the indefinite plural are *not* to be differentiated syntactically or semantically. I seem to be sitting atop a paradox. I am not really; the remainder of this work is devoted to the resolution of this contradictory state of affairs. In the following discussion I will consider only ϕNP in subject position, as matters are clearest there.

No doubt the reader has noted that there is another difference between (119) and (120), namely in the tense, or aspect of the sentence. This difference could be the ultimate source of the difference in entailment relations between (119) and (120). I wish in the end to claim that essentially this is so. Let us begin by asking ourselves about the relationship between the two sentences of (121).

121) a. Max is being clever.
b. Max is clever.

Both appear to be predications concerning the same individual. (121a) says something about Max's current actions, whereas (121b) says very little about his current actions (he may in fact be making an utter fool of himself when

[20] Noted in Lawler (1972).

this is uttered) but speaks more of a disposition or characteristic. The generic is, in a sense, timeless, while the present progressive refers to a particular period of time.

We have seen that the simple past tense may yield either of these interpretations. A sentence such as (122) is ambiguous, one reading being akin to that of (121a), and the other being like that of (121b).

(122) Jake ate kelp.

There is one reading that refers to a particular stretch of time, and another which attributes more or less timeless characteristics to Jake. The same holds for the 'future' tense.

(123) Jake will eat kelp.[21]

In all these cases, the reading that is 'timeless' and speaks of characteristics and the like is the one that unambiguously selects the 'universal' reading of ϕNP. And that reading of (119)–(123) which has reference to a particular stretch of time, and intuitively seems to be reporting events, unambiguously selects the 'existential' reading of the bare plural. For instance, (124a) selects the existential and (124b) selects the universal or generic.

(124) a. Dogs are running around in circles.
b. Dogs run around in circles.

A similar sort of phenomenon can be observed in the case of English adjectives. Some adjectives select the indefinite plural existential reading, and others select only the generic. In Milsark (1974) and in Siegel (1976), two classes of adjectives are isolated, the chief diagnostic being whether or not a given adjective will fit into the types of context cited in (125).

(125) a. Jules caught the girls _____.
b. There were five dalmatians _____.

Into these contexts may go only those predicates that Milsark calls 'states' (which may be *roughly* characterized as being fairly temporary), as opposed to those predicates he calls 'properties' (which are roughly more permanent sorts of things). Among the states are adjectives such as 'hungry', 'sleeping', 'awake', 'drunk', 'available' and the like. Among the properties we find adjectives such as 'fat', 'tall', 'clever', 'obnoxious', etc. As Milsark noted, when the subject is a ϕNP the 'properties' select the generic or universal

[21] *Will* also give rise to a very natural third reading, indicating present disposition, as in:

(a) Water *will* boil at 100°C.

reading, while the 'states' unambiguously select the indefinite plural reading. Compare the 'states' of (126) to the 'properties' of (127).[22]

(126) a. Soldiers were available.
b. Dentists were drunk.
c. Frogs are awake.
(127) a. Soldiers are brave.
b. Dentists were tall.
c. Frogs are clever.

In (126), the only possible interpretation of the subject is the indefinite plural, whereas in (127) only the generic reading is possible.

We find one particularly interesting contrast in the case of the adjective 'sick'. This has two senses; the first, a state, is physical illness, and the second, a 'property', indicates mental instability. Note that in the context of (125), only the physically ill reading is to be found.

(125′) a. Jules caught the girls sick.
b. There were five dalmatians sick.

In (128), however, this predicate is ambiguous, but here the physically ill reading selects the indefinite plural reading of ϕNP, while the mentally ill reading selects only the generic.

(128) Girls are sick.

Among the other predicates, we find that predicate nominals unambiguously refer to 'properties', while most prepositional phrases (especially those of location) refer to the 'states'.[23] And we find, as expected, that predicate

[22] Milsark also notes that his 'states' are predictable of NP's determined by the unstressed 'sm' and by the non-generic 'a', but that the 'properties' only select the generic 'a' (assuming there to be a distinction, which there may or may not be, between generic and extential 'a') and are not acceptable when predicated of an NP determined by 'sm'.

(a) A soldier was available
Sm soldiers were available (a 'state')
(b) A soldier was tall, (generic only)
*Sm soldiers were tall, (a 'property')

Though I have no account of these distributional facts at this time, they may be used (at least in subject position) to test whether the predicate is a 'state' or a 'property'.

[23] I exclude those cases where it is the *be* of identity that precedes the predicate nominal. These are quite different, for they allow an indefinite plural reading:

(a) Children were *the victims of the assault.*
(b) Horses were *the pawns in his game.*

nominals select the generic reading while prepositional phrases select the indefinite plural.

(129) a. Dogs are sweet animals.
b. Dentists are book collectors.
(130) a. Dogs are in the next room.
b. Children were without parents.

(129) is generic, while (130) is existential.

In all of these cases, one might hypothesize roughly that the predicates selecting the 'indefinite plural' are predicating something of an individual for a short period of time, while the predicates selecting the generic leave the implication that what is predicated of the individual is of a more permanent nature. Though this is most assuredly on the right path, time as the crucial factor does not satisfactorily distinguish 'states' from 'properties'. For example, one can be physically ill for several years, and mentally ill for only a few weeks. Or one can be 'in the next room' for a lot longer than one is 'a butcher'.

I wish to look at things in a slightly different way. Suppose that the 'states' and 'properties' are being predicated of *different sorts of things*. Suppose we take an individual, Jake, and look at him as being composed of a set of Jake-stages, or temporally-bounded portions of Jake's existence. There is more to Jake, however, than a set of stages. There is whatever it is that ties all these stages together to make them stages of the same thing. Let us call this whatever-it-is the individual Jake. Those predicates we have been calling 'states' then are not predicated of individuals, but of stages of individuals; and those we have been calling 'properties' (in the sense of Milsark) are predicated of the individual, or the thing that ties all the stages together. Now these 'stages' can be short or long in duration, but they are nonetheless perceived as parts of a whole. Thus the apparently temporary nature of such predication. It is not at all clear that anything of a temporal nature falls out of the characterization proposed for the 'properties', but since they are predicated of the individual, no doubt the permanence of the 'properties' arise from this notion.

Perhaps a cautionary note on the intuitive idea of "stages" is in order here. I do not see them simply as clips of film of an individual's lifetime that are taken out and examined, with the sum of the clips of film being the individual. The individual is more than the sum of the parts, and the stages are not static sorts of things. The stages aren't simply things that *are*; they are more akin to things that *happen*. That is, stages are conceived of as being much more closely related to events than to objects. I think this characterization can be taken quite seriously, but rather than try to meet possible

objections the reader may have at this point, I will leave matters quite open regarding the ontological aspects of this proposal and move on to the formalism.

Let us take the individual as basic, and define 'stages' in terms of an individual. An individual's set of stages is denoted by the following formula (exemplified here for Jake):

$$\lambda x R(x, j)$$

This may be read as 'the set of all things, x, such that x bears the relation R to Jake. (I henceforth assume the reader to be familiar with the notation used in such places as Montague (1972)). The predicate R may be thought of, roughly, as 'realizes'. The stages then may be called 'realizations' of an individual. When one predicates a 'state' of an individual, intuitively I wish to say that one claims that that state is in the property set (in the sense of Montague (1972)) of a realization, or stage, of that individual, rather than in the individual's property set directly. The 'properties' (in Milsark's sense) are asserted to be in the property set of an individual, rather than in the property set of one of that individual's realizations. Let us exemplify this with some formulae. First I will present "Jake is intelligent", ignoring tense. I will treat *be* as semantically null; it won't show up directly in any of the translations.

'Jake' translates as: $\lambda P P\{j\}$
'be intelligent': $\mathbf{I}'$
'Jake is intelligent' is: $\lambda P P\{j\}(\hat{}\,\mathbf{I}')$
This formula reduces to the following: $\mathbf{I}(j)$

Here, we find that **I** ('intelligent') is predicated of the individual Jake (j). Let us compare this with the translation of the sentence 'Jake is sick' in the physically ill sense, which is a 'state'.

'be sick' translates as: $\lambda x \exists y[R(y, x)\ \&\ \mathbf{sick}'(y)]$
"Jake is sick" would then have the following semantic representation: $\lambda P P\{j\}(\hat{}\,\lambda x \exists y[R(y, x)\ \&\ \mathbf{sick}'(y)]$
This formula reduces to: $\exists y[R(y, j)\ \&\ \mathbf{sick}'(y)]$

This illustrates formally what was said in words above. Being 'intelligent' is a property of Jake, but being 'sick' (physically) is a property not of Jake but of one of his realizations.

This invites a characterization of the function of the English progressive marker. No doubt a far more sophisticated treatment is ultimately

required,[24] but among other things the progressive seems to have the function of predicating a verb of a stage, but not of an individual. Let us give the following translation of the progressive marker, which is of the category IV/IV, or something that takes IV-phrases (or Verb Phrases) and turns them into other IV's. The progressive, then, turns a 'property' into a 'state'.

$$\lambda P \lambda x \exists y[R(x, y) \;\&\; P\{y\}]$$

I then compare 'Jake runs' with 'Jake is running'.

'Jake runs': $\lambda P P\{j\}(\hat{}\lambda x\ \mathbf{run}'(x))$
Which is equivalent to: $\mathbf{run}'(j)$
'Jake is running': $\lambda P P\{j\}$
$\cdot\ (\hat{}\lambda P' \lambda x \exists y[R(yx) \;\&\; P'\{y\}](\hat{}\lambda z\ \mathbf{run}'\ (z)))$
This reduces to: $\exists y[R(y, j) \;\&\; \mathbf{run}'\ (y)]$

In the case where 'runs' is predicated directly of Jake, it may be interpreted variably as a habit, or a disposition, or an occupation of Jake's. These various characterizations are not distinguished under this analysis, though closer examination may reveal that certain distinctions will have to be made.

Another problem raised here is that individuals and stages appear to be of the same type, as **run**′ may be predicated of either. These should be distinguished at some level, and can be, but to do so would require a certain amount of additional notation (introduced by Terry Parsons in class lectures, spring 1976), so I leave the matter unresolved here. Intuitively, if **run**′ is predicated of something that realizes an individual, it means something like: 'running is a characteristic of this event-like thing, a realization of an individual'.

I now turn to the matter of ϕNP and the indefinite plural interpretation. Formally it is a rather simple matter to incorporate ϕNP into this framework if we treat it as a proper name of abstract individuals. The translation of 'dogs' would be very much like that of 'Jake'. (We ignore the obvious internal structure which the NP *dogs* exhibits.)

'Dogs' translates as: $\lambda P P\{d\}$.

If we construct the proposed translations of the following sentences, we can

[24] For example, we would want it to entail that John hadn't finished crossing the street in (a):

(a) John was crossing the street (when he was flattened by a truck).

See Bennett and Partee (1972) for some problems and suggested solutions.

see how the 'indefinite plural' reading arises. The translations are given in their reduced forms.

"Dogs are intelligent": $\mathbf{I}(d)$
"Dogs are sick (physically): $\exists x[R(x, d)$ & $\mathbf{sick}'(x)]$
"Dogs run": $\mathbf{run}'(d)$
"Dogs are running": $\exists x[R(x, d)$ & $\mathbf{run}'(x)]$

The indefinite plural reading arises whenever it is a dog-stage that something is predicated of. A dog-stage, or a realization of the kind *dogs*, then, is whatever realizes the kind *dogs at a time and a place*. That is, it is a temporally and spatially bounded appearance of a kind.[25] Particular individuals are by definition spatially bounded (i.e. can only be in one place at a time) but not temporally bounded (can exist at different times), so the main difference between kinds and individuals is that kinds are not spatially bounded, but individuals are. A realization of a kind, appearing at a time and place, would be simply one or more of that kind. As an individual may be thought of as whatever it is that ties a bunch of stages of an individual together, so might a kind be thought of as whatever it is that ties a bunch of things of that kind together, making them realizations of the same thing.[26] The notion that a realization of a kind should be a subset of the set of individuals of that kind might run counter to the feeling of some that a realization of a kind should instead be all of the individuals of that kind. But we simply do not speak that way. If we say 'Marvin owns that kind of dog' we clearly do not mean that he has a monopoly on the ownership of that kind of dog, but only that he owns at least some of that kind. Or, if we say 'that kind of animal is found in India and is also found in Pakistan', we do not mean that all of that kind of animal are found in each place, only that *some* are found in one place, and *some* in the other. If there are some of a kind present, then this counts as the presence of that kind.

With this in mind, we see that the indefinite plural does indeed have an existential quantifier associated with it, but that the source of the existential quantifier is not the determiner of the ϕNP, but rather what is being predicated of it at the time. Thus, the existential quantifier itself will have constant scope, and in fact will have 'narrowest' scope. This clearly accounts for the lack of interaction between the existential quantifier and other predicates in the sentence.

[25] This sort of notion may be what Quine (1960) had in mind in his discussion of translation procedures, but whether or not this is true, it served as the source of the line of thought pursued herein.

[26] We might try, then, to define a 'generic sentence' as any sentence that attributes a property to the individual that serves as the subject of the sentence, and not to one of that individual's realizations.

We will conclude by showing how this way of looking at things can account for the opacity, narrow scope, and differentiated scope phenomena discussed earlier.

Let us first look at what is proposed to be the difference between the sentences in (131) and (132).

(131) Max believes some dogs are here.
(132) Max believes dogs are here.

The question we are concerned with is why (131) exhibits a transparent reading, but (132) does not. The transparent reading of (131) would be derived by introducing the NP 'some dogs' outside the scope of 'believes'. This structure would be represented as follows.

'be here' translates as: $\lambda x \exists y[R(y, x)$ & **Here**$'(y)]$
'believes' is: **Bel**$'$
'Max' is: $\lambda P P\{m\}$
'Some dogs' is: $\lambda P \exists x[$**Dog**$'(x)$ & $\check{}P(x)]$ (I ignore plurality)
'Max believes some dogs are here' translates as:
(131′) $\exists x[$**Dog**$'(x)$ & [**Bel**$'(\hat{}\exists y[R(y, x)$ & **Here**$'(y)])(m)]]$

Substituting the NP 'dogs' for 'some dogs' in this structure and translating 'dogs' as $\lambda P P\{d\}$, we arrive at the following representation:

(132′) $\lambda x[$**Bel**$'(\hat{}\exists y[R(y, x)$ & **Here**$'(y)])(m)](d)$

What this says is that the individual denoted by d is believed by Max to have a stage that is here. Since d is a kind of thing, there is no reference whatsoever in this formula to any particular dogs. Hence, Max's belief has nothing at all to do with particular canines. Our impression that sentence (132) has only the narrow scope reading derives from the fact (which in a full formalism would be explicitly stated) that any stage of d (the kind) also has to be a stage of some particular individual of that kind. In making this inference, though, we find that the expression denotes the stages in question appears in an intensional context, being part of the predicate itself, and not part of the NP. As no particular stages are referred to here due to the intensional context, these stages need not be associated with any particular dogs. In extensional contexts, as for example in "Dogs are here" the specific stages may be associated with specific dogs. In this way the notion arises that (132) and the like exhibit only opaque readings.

It should also be noted that if we consider d to be a rigid designator (as Montague considered proper names to be) the formula in (132′) would be equivalent to the following.

Bel$'(\hat{}\exists y[R(y, d)$ & **Here**$'(y)])(m)$

So the logic makes the claim that sentence like (132') are not ambiguous with respect to scope possibilities. As is well-known, this might not be exactly correct. In any case, the claim made here is that whatever ambiguity proper names may exhibit in intensional contexts, bare plurals will exhibit the same sort of ambiguity. I think a little reflection will show that this is reasonable. Compare (133a) and (133b).

(133) a. Max believes that *Bossie* has horns.
b. Max believes that *cows* have horns.

It seems whatever ambiguity can be attributed to (133a) may also be attributed to (133b), though the judgments here are notoriously subtle.

The treatment of bare plurals as proper names also leads us to an account of the narrow scope phenomena. Recall that a sentence like (134) has only a contradictory reading.

(134) Cats are here and cats are not here,

If we look at the second conjunct alone and introduce the NP 'cats' outside the scope of the negative, we come to the following representation:

$$\lambda x \neg[\exists y[R(y, x) \ \& \ \mathbf{Here}'(y)]](c)$$

But because c is treated as being a proper name, this formula is equivalent to the following.

$$\neg\exists y[R(y, c) \ \& \ \mathbf{Here}'(y)]$$

Thus, the representation of sentence (134) will always be equivalent to something of the form A & −A, or a contradiction. The same equivalence will account for all the other cases of narrow scope. The other quantifiers in the sentence will always, in the cases exemplified, have wider scope than the existential quantifier that is a part of the predicate itself, and the relationship between the other quantifiers and the bare plural is irrelevant since proper names do not show scope behavior. The sentence (134) is a contradiction for the same reason that a sentence like 'Fred is here and Fred is not here' is a contradicton. And a sentence like 'everyone saw movies' fails to exhibit relative scope ambiguity for the same reason that 'everyone saw Fred' fails to exhibit that sort of ambiguity.

We will conclude this section by presenting a brief analysis of differentiated scope, which once again exploits the analysis of bare plural NP's as proper names.

An examination of the sentences of (135) reveals that (a) and (b) cannot receive normal literal interpretations (though a hyperbolic usage of (135a) is heard on occasion, a matter I disregard for the time being). The proposed

translations of these sentences reveal why it is that the first two are strange in a way that (135c) is not.

(135) a. Jake is everywhere.
b. Some dog is everywhere.
c. Dogs are everywhere.

'Jake' translates as: $\lambda P P\{j\}$
'Some dog' translates as: $\lambda P \exists x[\mathbf{Dog}'(x) \,\&\, P\{x\}]$
'Dogs' translates as: $\lambda P P\{d\}$
'be everywhere' translates as:

$$\lambda x \forall y[\mathbf{Place}'(y) \rightarrow \exists z[R(z, x) \,\&\, \mathbf{At}(z, y)]]$$

"Jake is everywhere":

$$\forall y\ [\mathbf{Place}'(y) \rightarrow \exists z[R(z, j) \,\&\, \mathbf{At}(z, y)]]$$

"Some dog is everywhere":

$$\exists x[\mathbf{Dog}'(x) \,\&\, \forall y[\mathbf{Place}'(y) \rightarrow \exists z[R(z, x) \,\&\, \mathbf{At}(z, y)]]]$$

"Dogs are everywhere"

$$\forall y\ [\mathbf{Place}'(y) \rightarrow \exists z[R(x, d) \,\&\, \mathbf{At}(z, y)]]$$

In these cases, we see that a felicitous translation results with ϕNP in spite of the fact that the universal in the predicate is always restricted to being within the scope of any quantifiers present in the subject NP. In the case of (135a), the assertion is that in every relevant place there is a Jake-stage. Since Jake is an individual of the type that can be in only one place at a time, this sentence, taken literally, speaks of a world we simply don't live in (but if 'Jake' were the name of a god, for example, the sentence would make a bit more sense). Likewise, with 'some dog' in (135b), it is realizations of the same animal that must appear everywhere if the sentence is to be true (supposing that the phrase means some particular individual dogs, and ignoring the well-formed 'kind' reading for now). This sentence encounters the same problems as 'Jake is everywhere'. Note that I am not claiming that these sentences are either syntactically or semantically ill-formed, only that they are strange in our world. In the case of (135c) we exploit the notion that realizations of a kind consist of *some* of that kind, appearing at a time and a place. It *is* asserted that the same individual is everywhere, just as with Jake, but this individual is not of the type that can be in only one place at a time. Whatever it is that ties all individual dogs together as a kind – the abstract individual 'dogs' – has the property of having some realization in every relevant place. This, then, is a means of accounting for differentiated scope.

Due to the programmatic nature of this formalization, I leave undiscussed a number of other difficulties with ϕNP that have been raised here. The analysis proposed can handle some of these quite readily; others at this time remain unresolved. A number of other issues raised by the proposed analysis have not been noted here, and I do not wish to pretend that it is without its difficulties.

5. CONCLUSION

I began by noting that the analysis of the semantics of the English bare plural was full of difficulties because of its apparently diverse uses. However, there was reason to believe that the divisions noted were not so clearly distinct after all, and that a unified analysis was found to be desirable, if not necessary. A unified analysis was then proposed which allows a constant translation of ϕNP in all cases, existential and generic, and which seems to be able to account for some of the surprising semantic characteristics of the 'indefinite plural' use of this construction.

Any number of directly related matters have been left untouched, but for which this analysis of the bare plural, if adequate, would have direct consequences. For example, a striking similarity was noted between bare plurals and mass nouns that have no determiner assocated with them (see Cartwright (1975) for similar observations). In addition, the singular generics with *a* and *the* were left untouched, though the relationship between *a*, *the*, and ϕ is a most interesting (and difficult) one. I hope that this analysis of the bare plural will be able to shed some more light on such matters.

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