Generic, kind, and subkind interpretations: Reflections on Brugger (1993)*

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1 Introduction

Generic and kind interpretations of nominals are often discussed separately in the literature if they are distinguished at all. One early exception to this is the little cited Brugger (1993), which proposes that nominal generalities, that is nominals with general interpretations, appear to access two distinct strategies, either reference to kinds or generic quantification.

In this paper, I reflect back on Brugger (1993) and argue that, while I differ from his particular analysis, his explicit distinction and discussion of the relationship between kind reference and generic quantification offered an important starting point for a clearer understanding of the linguistic capacities that underwrite our ability to generalize beyond object reference.

In this paper, I first review some of the relevant distinctions made in Brugger (1993). Following an observation of Brugger's concerning subkind interpretations, I propose that a subkind analysis opens the way for a compositional approach to the plural in English bare plurals. I then extend the idea of a subkinds analysis to a wider variety of nominal generalities, using the quantificational machinery that is deployed in the object domain and focusing on both existential and generic quantification. This approach naturally captures the interpretative possibilities that are open to bare plurals and extends to other types of nominals like bare numerals and indefinites. A final summary of the interpretative strategies in the paper is given in the conclusion.

2 Notes on Brugger (1993) and two kinds of general interpretation

Brugger (1993) argues that English bare plurals are sometimes referential and sometimes quantificational, reflecting two fundamentally different strategies for general interpretation. His evidence in English for a distinction comes from Principle C effects. Assuming that kind-denoting nominals are R-expressions, they cannot be

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coindexed with a c-commanding nominal in their domain.[1]

Brugger begins by observing an interpretive ambiguity in (1a). The bare plural in (1a) can refer either generally to the kind DINOSAUR or existentially to "some dinosaurs". He then argues that the reading that "John studied the kind DINOSAUR which became extinct although the kind DINOSAUR was widespread", while possible in (1b), is excluded by Principle C of the binding theory in (1c) and thus not available.

(1) a. John studied dinosaurs.
b. John studied dinosaurs$_j$, which$_j$ became extinct although they$_j$ had been widespread.
c. #John studied dinosaurs$_j$, which$_j$ became extinct although dinosaurs$_j$ had been widespread.

Similar evidence is also shown in (2). (2a) shows that English bare plurals can sit comfortably in these kind-level predicates suggesting that they can be kind-denoting. (2b) shows that a bare plural subject can be kind-denoting when co-indexed with a reflexive argument of a kind-level predicate. Since the reflexive must be kind-denoting given the kind-level predicate *exterminate*, and the bare plural is co-indexed with it, then the bare plural too must be kind-denoting, giving the reading that the kind panther exterminated itself. However, Brugger notes that (2c) lacks the reading found in (2b), an effect he attributes to Principle C.[2,3]

(2) a. The poachers$_i$ exterminated panthers$_j$.
b. Panthers$_j$ exterminated themselves$_j$.
c. #Panthers$_j$ exterminated panthers$_j$.

Finally, Brugger notes that individual-level predicates allow both bare plurals to carry a general interpretation. However, given Principle C, the interpretation of these

1 Brugger (1993) used evidence from non-restrictive relative clauses to argue that kind-denoting nominals are R-expressions, since quantificational nominals are incompatible with non-restrictive modifiers.

2 Brugger notes that (2c) has an acceptable interpretation if the two bare plurals refer to distinct subkinds of the kind they name (what he calls an "existential" interpretation), a point I will return to in section 3.

3 Importantly, non-c-commanding bare plurals can be co-indexed with one another. Thanks to Sherry Chen (pc) for noting this.

(i) Panther's$_j$ various nemeses$_i$ exterminated panthers$_j$.

two bare plurals must be distinct. His analysis of these is that the first bare plural is assigned a generic interpretation while the second is assigned a kind interpretation.

(3) a. Highlanders^{gen} adore highlanders^{kind}.
b. Women^{gen} do not know that women^{kind} are disadvantaged.

Given this evidence, Brugger argued that there are two different strategies for assigning a general interpretation. The first one takes nominals to refer to kinds. The DP in (4a) carries a referential index which is assigned to the kind DINOSAUR. The second strategy in (4b) is quantificational. Following Heim (1982), among others, indefinite expressions denote free variables that are bound by adverbial quantifiers, including *always*, *often*, *never*, etc. A generic interpretation is assigned by the covert adverbial quantifier GEN.

(4) a. Kind Reference: $[_{DP}$ dinosaurs $]_i$
b. Generic Quantification: $GEN_x \ldots [_{DP}$ dinosaurs $]_x \ldots$

Taking a closer look, these two strategies in (4) account for the Principle C restrictions in kind-level predicates in (5).[4] Both bare plurals cannot denote kinds as this would violate Principle C. Additionally, since the kind-level predicate restricts the interpretation of the second bare plural to be a kind, Brugger's quantificational strategy is not available for the second bare plural. Therefore, only an analysis in which the first bare plural is assigned a generic (quantificational) interpretation and the second is assigned a kind (referential) interpretation both avoids a Principle C violation and satisfies the kind-level predicate's restrictions.

(5) a. *[BP$^{kind}{}_j$ ... [$_{k\text{-level}}$ BP$^{kind}{}_j$]]
b. GEN_x [BP$^{indiv}{}_x$ ... [$_{k\text{-level}}$ BP^{kind}]]
c. *GEN_x [BP^{kind} ... [$_{k\text{-level}}$ BP$^{indiv}{}_x$]]
d. *GEN_x [BP$^{indiv}{}_x$ ... [$_{k\text{-level}}$ BP$^{indiv}{}_x$]]

Individual-level predicates place fewer restrictions on general interpretation. Thus, again, while Principle C bars both bare plurals from receiving a kind interpretation, either of them can be assigned a generic interpretation while the other is

4 The label *indiv* and *kind* in (5) and (6) is used here to restrict nominal interpretation to individuals or kinds, respectively. For the purpose of this paper, I assume the Noun Ambiguity Hypothesis in which a noun ambiguously denotes either individuals or kinds (Dayal 2004; Mari, Beyssade & Del Prete 2012), though see Husband (2019) for an alternative analysis. I will also return to address whether GEN (and $\exists$) can operate over kinds in section 4.

interpreted as a kind, or they can both be interpreted as generics, assuming that GEN can bind multiple variables as an unselective binder.[5]

(6)
a. *[$BP^{kind}{}_{j}$ ... [$_{i\text{-level}}$ $BP^{kind}{}_{j}$]]
b. GEN_x [$BP^{indiv}{}_{x}$ ... [$_{i\text{-level}}$ BP^{kind}]]
c. GEN_x [BP^{kind} ... [$_{i\text{-level}}$ $BP^{indiv}{}_{x}$]]
d. GEN_x [$BP^{indiv}{}_{x}$ ... [$_{i\text{-level}}$ $BP^{indiv}{}_{x}$]]

Thus the evidence from Brugger supports the idea that bare plurals in English have two different strategies for general interpretation.[6]

3 The availability of subkinds

Returning to (2) and extending the evidence with (7)-(11), as noted by Brugger, the (c) examples are also acceptable with a subkind interpretation. The relevant reading in (2c) is that some subkinds of panther, say the Black Panther, exterminated some other distinct subkinds of panther, say the White Panther. Similarly in the (c) examples of (7)-(11), there is a clear reading which requires reference to two different subkinds of the kind named by the bare plural as indicated by the acceptability of distinct indices.

(7)
a. The medical community$_{i}$ has eradicated viruses$_{j}$.
b. Viruses$_{j}$ have eradicated themselves$_{j}$.
c. Viruses$_{i/*j}$ have eradicated viruses$_{j}$.

(8)
a. Plate tectonics$_{i}$ influenced the evolution of birds$_{j}$.
b. Birds$_{j}$ influenced the evolution of themselves$_{j}$.
c. Birds$_{i/*j}$ influenced the evolution of birds$_{j}$.

(9)
a. The company$_{i}$ patented androids$_{j}$.
b. Androids$_{j}$ patented themselves$_{j}$.
c. Androids$_{i/*j}$ patented androids$_{j}$.

5 A similar case to (15) with a rich literature behind them are Gricean tautologies like *Boys will be boys* and *War is war*. To my knowledge, Principle C has not been discussed with respect to these cases.

6 Brugger (1993) also examines evidence from the distribution of determiners in German, noting that a determiner is required for a kind-denoting plural.

(i)
a. daß (die) Elephanten wertvolle Z$'$ahane haben
that (the) elephants precious teeth have
b. daß *(die) Dinosaurier dabei sind auszusterben
that (the) dinosaurs are becoming extinct

(10) a. A nuclear holocaust$_i$ caused humans$_j$ to go extinct.
b. Humans$_j$ caused themselves$_j$ to go extinct.
c. Humans$_{i/*j}$ caused humans$_j$ to go extinct.
(11) a. World War II$_i$ invented Americans$_j$ as we currently know them.
b. Americans$_j$ invented themselves$_j$ as we currently know them.
c. Americans$_{i/*j}$ invented Americans$_j$ as we currently know them.

Thus in addition to the two strategies noted by Brugger, we may also add a third strategy, reference to subkinds. This strategy is similar to kind reference, but differs in that there can be multiple subkinds of a kind, whereas a kind is unique to itself.

(12) a. Kind Reference: $[_{DP}$ dinosaurs^{kind} $]_i$
b. Subkind Reference: $[_{DP}$ dinosaurs^{subkind} $]_i$
c. Generic Quantification: $GEN_x \ldots [_{DP}$ dinosaurs^{indiv} $]_x \ldots$

In English, a subkind interpretation is also readily available for numeral, indefinite, and quantified nominals, shown in (13). Indeed, such nominals cannot receive a kind interpretation, unlike the definite singulars in (14). Thus *two tigers* in (13a) refers to two subkinds of tiger, say the Bengal tiger and the Siberian tiger, whereas *the tiger* in (14a) refers to the kind TIGER, covering all subkinds which include but are not limited to the Bengal and Siberian tiger.[7]

(13) a. Two tigers are threatened with extinction.
b. Ed Roberts invented a computer.
c. Most mammals evolved to live on land.
(14) a. The tiger is threatened with extinction.
b. Ed Roberts invented the computer.
c. The mammal evolved to live on land.

Krifka, Pelletier, Carlson, ter Meulen, Chierchia & Link (1995) noted that in addition to the cases in (13), bare plurals can also be assigned a subkind interpretation. Here, *tigers* in (15a) refers to some group of subkinds of tiger. Interestingly, given that the precise number of subkinds is not asserted, it seems possible for *tigers* in (15a) to refer to a maximal group of subkinds of tiger which appears to be truth-conditionally equivalent to *the tiger* in (14a). However, *tigers* need not

7 Interestingly, *the computer* in (14b), while referring to the definite kind COMPUTER does not require Ed Roberts to have invented all subtypes of computer, but rather just the first type of computer. Assuming this has something to do with the natural language metaphysics of kinds, I will set aside the question of why *invent*-predicates behave this way with respect to kind interpretation for the remainder of this paper.

refer maximally, and any sufficient group of subkinds of tiger would satisfy the truth-conditions of (15a), thus distinguishing the subkind reading from the kind reading available in (14a).[8]

(15) a. Tigers are threatened with extinction.
b. Ed Roberts invented computers.
c. Mammals evolved to live on land.

Adding subkind reference to the analysis of (2) (and thus also to (7)-(11)), a number of additional options appear to be available. In (17), first, as with (16), if both bare plurals refer to subkinds, those subkinds must be distinct. Second, it may be possible for one bare plural to refer to subkinds and the other to refer to the kind itself. In (18), the bare plural in the k-level predicate may refer to a subkind as well as a kind.

(16)			*[$\text{BP}^{\text{kind}}{}_{j}$ ...	[$_{\text{k-level}}$ $\text{BP}^{\text{kind}}{}_{j}$]]
(17)	a.		*[$\text{BP}^{\text{subkind}}{}_{j}$ ...	[$_{\text{k-level}}$ $\text{BP}^{\text{subkind}}{}_{j}$]]
	b.		[$\text{BP}^{\text{subkind}}{}_{i}$ ...	[$_{\text{k-level}}$ $\text{BP}^{\text{subkind}}{}_{j}$]]
	c.		[$\text{BP}^{\text{subkind}}$ ...	[$_{\text{k-level}}$ BP^{kind}]]
	d.		[BP^{kind} ...	[$_{\text{k-level}}$ $\text{BP}^{\text{subkind}}$]]
(18)	a.	GEN_{X}	[$\text{BP}^{\text{indiv}}{}_{x}$ ...	[$_{\text{k-level}}$ BP^{kind}]]
	b.	GEN_{X}	[$\text{BP}^{\text{indiv}}{}_{x}$ ...	[$_{\text{k-level}}$ $\text{BP}^{\text{subkind}}$]]
	c.	*GEN_{X}	[BP^{kind} ...	[$_{\text{k-level}}$ $\text{BP}^{\text{indiv}}{}_{x}$]]
	d.	*GEN_{X}	[$\text{BP}^{\text{subkind}}$ ...	[$_{\text{k-level}}$ $\text{BP}^{\text{indiv}}{}_{x}$]]
	e.	*GEN_{X}	[$\text{BP}^{\text{indiv}}{}_{x}$ ...	[$_{\text{k-level}}$ $\text{BP}^{\text{indiv}}{}_{x}$]]

Concerning reference to kinds and subkinds, we now see that the interpretation of bare plurals may be much wider than previously thought. This raises the question of whether bare plurals actually have access to each of these strategies. One possibility is that bare plurals, like numeral, indefinite, and quantified nominals, refer not to the kind itself, but instead always to subkinds when kind-denoting. Let's explore this possibility in more detail.

8 This may be related to the more general idea of generics being tolerant to exceptions, but see section 4.2 for a deeper discussion. As noted in fn. 7, what counts as a sufficient group of subkinds may vary depending on the predicate. Thus, as with the difference between (14a) and (14b), a similar difference exists for (15a) and (15b), where *extinct*-predicates seem to require a majority of subkinds while *invent*-predicates need only be true of the first subkind.

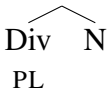
3.1 The plural operator in general interpretations

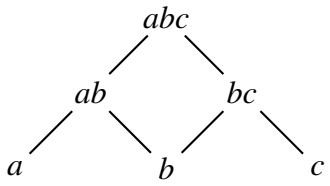
A curiosity in the literature on generics and bare plurals is the non-compositional treatment the plural affix for kind interpretations of bare plurals. The idea that bare plurals can refer to subkinds may help resolve this puzzle while also reducing the number of analyses available to them.

Consider for a moment how the plural operates over the domain of individuals. Since Link (1983), the classical analysis of the plural is that it returns a semi-lattice of sum-individuals, possibly containing at its base singular atoms and peaking with the maximal sum-individual that contains all individuals. From this semi-lattice representation, it is up to higher functional structure to identify the range of reference to these sum-individuals. Thus a numeral or quantifier picks out all of the sum-individuals whose members have the appropriate quantity.

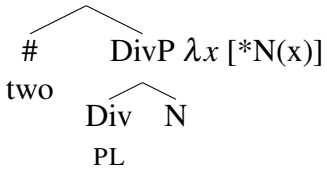
For example, in (19), given a universe with three N-type individuals a, b, and c, the star operator returns a semilattice with six elements, $\{a,b,c,ab,bc,abc\}$. The numeral *two* in (20) constrains the representation from (19) and reduces the semilattice to just two elements, $\{ab,bc\}$.

(19) DivP λx [*N(x)]





(20) #P λx [*N(x) & 2(x)]



ab *bc*

A similar analysis seems easily extendable for straightforward subkind interpretations in (13). In these cases, the plural noun denotes a set of subkinds of the kind named by the noun, and then the numeral/quantifier selects the right number of subkinds.[9]

Consider, then, the possibility that bare plurals denote subkinds only, not kinds.[10]

9 I am setting aside questions of whether this set of subkinds is formed via the join-operation or some other plural operation. It may be that the type of plural operation depends on the structure of the domain, and the domain of subkinds may not support certain types of plural operation (see Borik & Espinal (2015) who note that kinds can be strightforwardly conjoined and occur with the definite articles, but cannot be pluralized or occur with quantifiers without receiving a subkind interpretation at best, suggesting that kinds are not part of the same quantificational domain as objects.

10 Importantly, the maximal set of subkinds of a kind may not truth-conditionally differ from reference

Note that adopting this subkind-only hypothesis allows us to reduce the number of analyses given in (16)-(18) to just those in (21) and (22).

(21) a. *[$BP^{subkind}_{j}$ ... [$_{k\text{-level}}$ $BP^{subkind}_{j}$]]
b. [$BP^{subkind}_{i}$ ... [$_{k\text{-level}}$ $BP^{subkind}_{j}$]]

(22) a. GEN_x [BP^{indiv}_{x} ... [$_{k\text{-level}}$ $BP^{subkind}$]]
b. *GEN_x [$BP^{subkind}$ ... [$_{k\text{-level}}$ BP^{indiv}_{x}]]
c. *GEN_x [BP^{indiv}_{x} ... [$_{k\text{-level}}$ BP^{indiv}_{x}]]

3.2 Principle C and partial overlap of (sub)kinds

The distinct indices in (21) are meant to say that the subkinds referred to by the first and second bare plural are distinct, but when it comes to plural groups, there are many formal ways to be distinct. Distinct may mean completely disjoint or may merely mean not completely overlapping. Thus the analysis in (21) raises questions about whether overlapping of group membership matters for Principle C.

In the domain of objects, Campbell (1998) demonstrated that Principle C only excludes full overlap, allowing partial overlap with a member of a group or a subset of a group. In (23a) and (23b) the nominal in the embedded clause refers to an element or subset of the set denoted by *they* given the context; in (23c) the nominal *the students* corefers with *they* and is ruled out by Principle C.[11]

to the kind itself. The point here, however, is that this would still be a subkind interpretation in a technical sense in that the maximal set of subkinds of a kind is formally distinct from the kind itself, and language may encode this formal distinction even though it at times will have no semantic impact (and see Acquaviva (2008) and Beyssade (2005), cited in Borik & Espinal (2012), for a discussion of maximal sum of individuals vs. kind, contra Ojeda (1993)).

11 Campbell (1998) also argues that common noun phrases must be disjoint from one another within their local domain if c-commanded by a partially/fully overlapping antecedent, as demonstrated by (ia,b) vs. (ic,d), and attributes this to Principle B.

(i) Context: I went to talk to [the students in Jones's class]$_{i+j}$ yesterday to show a film.
a. *They$_{i+j}$ saw [one student]$_{j}$ in the film.
b. *They$_{i+j}$ saw [the smart students]$_{j}$ in the film.
c. Their$_{i+j}$ teacher saw [one student]$_{j}$ in the film.
d. Their$_{i+j}$ teacher saw [the smart students]$_{j}$ in the film.

It may be that within a local domain, subkind-denoting nominals must also be disjoint, a possibility that I will set aside for the time being.

(23) Context: I went to talk to [the students in Jones's class]$_{i+j}$ yesterday.
a. They$_{i+j}$ told me that [one student]$_j$ had aced the exam.
b. They$_{i+j}$ told me that only [the smart students]$_j$ had aced the exam.
c. *They$_{i+j}$ told me that [the students]$_{i+j}$ had aced the exam.

While these cases involved a plural pronoun c-commanding a common noun phrase, a plural noun phrase denoting a group can c-command a plural noun phrase denoting a subgroup of itself without violating Principle C.

(24) a. The committee members$_{i+j}$ decided that the subcommittee members$_j$ should review the report.
b. The committee members$_{i+j}$ voted for the subcommittee members$_j$.
(25) a. The subcommittee members$_j$ decided that the committee members$_{i+j}$ should review the report.
b. The subcommittee members$_j$ reviewed the committee members$_{i+j}$.

From this view then, consider the following. First, subkinds denoted by numeral nominals can partially overlap with a set of subkinds in (26) or with the kind itself in (27). Thus *two birds* can partially overlap with the set of subkinds denoted by *birds* in (26a) or with the kind itself denoted by *the bird* in (27a).

(26) a. Two birds$_j$ influenced the evolution of birds$_{i+j}$.
b. Panthers$_{i+j}$ eradicated two panthers$_i$ as competition for resources tightened.
(27) a. Two birds$_j$ influenced the evolution of the bird$_{i+j}$.
b. The panther$_{i+j}$ eradicated two panthers$_{i+j}$ as competition for resources tightened.

Bare plurals follow a similar distribution, allowing partial overlap with a set of subkinds in (28) or with the kind itself in (29).[12]

(28) a. Birds$_j$ influenced the evolution of birds$_{i+j}$.
b. Panthers$_{i+j}$ eradicated two panthers$_i$ as competition for resources tightened.
(29) a. Birds$_j$ influenced the evolution of the bird$_{i+j}$.
b. The panther$_{i+j}$ eradicated two panthers$_i$ as competition for resources tightened.

12 If subkind and kind denoting nominals are within the same domain, then ideas of disjointness might be used to argue that kinds are not merely the maximal set of subkinds but are instead formally separate, perhaps even conceptually atomic, contra Dayal (2004) among others. I will set this possibility aside here for future consideration.

Thus subkind denoting nominals may partially overlap with other subkind/kind denoting nominals and avoid violating Principle C.

4 Subkinds and general interpretive strategies

The proposal that bare plurals only refer to subkinds, not kinds, has left open several questions concerning their interpretative strategies. One question concerns whether bare plurals make use of both the referential and quantificational strategies.

To address this question, consider first the following paradigm involving indefinite and bare numeral nominals. The salient readings for the objects in (30) are existential objects, but closer inspection reveals that there is also the possibility that these are interpreted as subkinds. Thus NHTSA engineers could crash multiple cars of the same make and model and still have been said to have crashed a car, namely whatever make and model those cars fall under. Similarly, the Wildlife Federation rangers could be monitoring many lynxes from three different species and still be said to have been monitoring three lynxes, namely whatever three species those lynxes are part of.[13]

(30) a. The NHTSA engineers crashed a car in their safety test. (a^{indiv}/a^{sk})
b. The Wildlife Federation rangers monitored three lynxes in Yellowstone National Park. ($3^{indiv}/3^{sk}$)

The question then is how these subkind interpretations come about. On the one hand, they could result from direct reference, but it seems that they could also arise from quantification. Such a position would put subkind interpretations formally on par with object interpretations of indefinites. Indeed, subkind indefinites share the same scope ambiguity as object denoting indefinites. Thus on the wide scope reading of (31a), there is a model of car such that every engineer crashed that model. Note that there could be many individual crash tests involving many different individual cars of that model. On the narrow scope reading of (31a), every engineer could have been assigned to a different model of car and then again preformed crash tests on multiple individual cars from that model.[14]

13 I use *sk* from here on to indicate a subkind.

14 The definite kind, being referential, does not interact with the scope of the quantifier.

(i) a. Every NHTSA engineer crashed the car_i in their safety test before it_i was mass produced in the United States. (the^{kind} > every)
b. Every Wildlife Federation ranger monitored the $lynx_i$ in Yellowstone National Park before it_i became extinct. (the^{kind} > every)

(31) a. Every NHTSA engineer crashed a car in their safety test before it_i was mass produced in the United States. ($a^{sk/indiv} > \forall / \forall > a^{sk/indiv}$)

b. Every Wildlife Federation ranger monitored three lynxes in Yellowstone National Park before $they_i$ became extinct. ($3^{sk/indiv} > \forall / \forall > 3^{sk/indiv}$)

So subkind interpretations behave very much like object interpretations, suggesting that whatever the source of subkind interpretation is, it is independent of structural factors affecting scope.

Adopting a structural approach to this ambiguity (Borer 2005; Fodor & Sag 1982), an analysis of these two interpretations relies on the structures in (32) or (33). Here, low scope "weak" readings come about through binding of D by existential closure which furthermore forces the scope of the nominal to remain within that of existential closure. On the other hand, strong readings come about through binding of D by some element within the nominal which blocks existential closure. Typical binders for D are proper names, definite articles, and quantifiers, however, Borer (2005) argues that the English indefinite and numerals can also optionally bind D.[15]

(32) a. $\exists_x$ $[_{DP}\ D_x$ $[_{\#P}$ a $[_{NP}$ car]]] (weak)

b. $\exists_x$ $[_{DP}\ D_x$ $[_{\#P}$ three $[_{NP}$ lynxes]]] (weak)

(33) a. $[_{DP}$ a $[_{\#P}$ ~~a~~ $[_{NP}$ car]]] (strong)

b. $[_{DP}$ three $[_{\#P}$ ~~three~~ $[_{NP}$ lynxes]]] (strong)

Thus there is a relationship between strong readings and referential interpretations on the one hand compared to weak readings and quantificational interpretations on the other. Strong readings, being referential, do not interact with scope, and therefore appear to take widest scope. Weak readings, however, rely on existential closure and therefore must remain within the domain of existential closure, thus scoping below other quantifiers.

Following the discussion above and returning to the interpretative strategies for different types of generalities, it appears that we have, in addition to subkind reference and generic quantification, a strategy of existential quantification which may quantify over objects or subkinds.

15 More precisely, Borer (2005) proposes that indefinites and numerals are functional elements that may act as range assigners for an open value of the functional head D. I will occasionally gloss this as binding, but do not intend this to be a separate mechanism.

(34) a. Subkind Reference: $[_{DP}$ a $[_{\#P}$ ~~a~~ $[_{NP}$ car^{sk}]]]
b. Generic Quantification: GEN_x $[_{DP}$ D_x $[_{NP}$ cars^{sk}]]]
c. Existential Quantification: $\exists_x$ $[_{DP}$ D_x $[_{\#P}$ a $[_{NP}$ car^{sk}]]]

4.1 Existential bare plural subkinds?

Given this analysis, what are we to make of bare plurals? One possibility is that a bare plural can introduce a variable and be bound by existential closure, thus occurring as weak and scoping below other quantifiers. Alternatively, it seems possible that a bare plural might optionally license D. One clear option is that bare plural might employ N to D raising, following the analysis of proper names in Longobardi (1994). Consider briefly the analysis of proper names, which otherwise look like bare nominals. As is well known, proper names in English can be interpreted not only as proper names, but also appear in contexts where they behave more like common nouns.

(35) a. John (proper name)
b. tall John (proper name)
(36) a. the (tall) John (that I know) (common name)
b. two (tall) Johns (common name)
c. every (tall) John (common name)

The idea is that proper names raise to D covertly in English, licensing proper name reference. The presence of a determiner, numeral, or quantifier, however, blocks this raising, forcing the noun to stay low and thus receive a common noun interpretation, with reference determined by the determiner, numeral, or quantifier.

(37) a. $[_{DP}$ John $[_{NP}$ ~~John~~]] (proper name)
b. $[_{DP}$ the $[_{NP}$ John]] (common noun)

This would predict that bare plurals may optionally take on a weak or strong reading depending on whether they raise to D.

(38) a. $\exists_x$ $[_{DP}$ D_x $[_{NP}$ cars/lynxes$_{sk}$]]] (weak)
b. $[_{DP}$ cars/lynxes$_{sk}$ $[_{NP}$ ~~cars/lynxes$_{sk}$~~]]] (strong)

Empirically, however, bare plurals have been known for stubbornly taking narrow scope since Carlson (1977) and thus appear to lack a strong reading. The cases corresponding to (31a) and (31b) is given in (39).

(39) a. Every NHTSA engineer crashed cars_i in their safety test (before they_i were mass produced in the United States). (*BP_{sk} > every)

b. Every Wildlife Federation ranger monitored lynxes_i in Yellowstone National Park (before they_i became extinct). (*BP_{sk} > every)

If narrow scope results from existential closure, then perhaps bare plurals, even with a subkind interpretation, can only access a quantificational strategy. The argument, thus, is that bare plurals cannot raise to D to license a referential strategy.[16] Instead, they seem to only have access to a quantification strategy, which here requires that they remain within the domain of existential closure.

First, definite kinds are always referential. Second indefinite subkinds may be either referential or quantificational. Finally bare plurals are always quantificational.

16 It seems possible that the plural affix of bare plurals blocks N to D raising. Adopting Borer's (2005) nominal structure where the plural is taken to be a functional element of DivP, N must raise to adjoin to the plural via head movement.

(i) a. $[_{DP}$ D $[_{\#P}$ # $[_{DivP}$ car/lynx_{sk}-s $[_{NP}$ ~~car/lynx_{sk}~~]]]] (bare plural)

b. $[_{DP}$ John $[_{\#P}$ ~~John~~ $[_{DivP}$ ~~John~~ $[_{NP}$ ~~John~~]]]] (proper name)

It could be that plural nouns can never raise higher than DivP (indeed, for Borer (2005) elements that can raise from Div to # lead to singular readings, such as the indefinite *a* and proper names), requiring # and D to be licensed by other methods (if at all).

One avenue for further investigation concerns the various general interpretations afforded to bare mass nouns which lack DivP in Borer's (2005) analysis. Interesting, unlike bare plurals in (39), bare mass nouns permit a (wide scope) kind interpretation, perhaps on par and with a similar structure to proper names. The question, then, is whether there is also a weak reading. With an object mass interpretation, clearly different samples of penicillin could be tested by each researcher (possibly from either the same or different strains). However, a subkind interpretation seems to be missing.

(i) Every CDC researcher tested penicillin in the laboratory. (kind > every; *every > sk; every > obj)

This suggests that subkinds are never mass. It may be that mass representations do not have the right structure for subkinds. If this is correct, then all kind/subkind interpretations are count, a fact that I have not accounted for in this paper.

(40) *Definite kinds*

a.		[$_{DP}$ the	[$_{NP}$ car$_{kind}$]]	(referential kind)
b.	*$\exists_x$	[$_{DP}$ the	[$_{NP}$ car$_{kind}$]]	(*existential kind)

(41) *Indefinite subkinds*

a.		[$_{DP}$ a	[$_{\#P}$ ~~a~~	[$_{NP}$ car$_{sk}$]]]	(referential subkind)
b.		[$_{DP}$ three	[$_{\#P}$ ~~three~~	[$_{NP}$ cars$_{sk}$]]]	(referential subkind)
c.	$\exists_x$	[$_{DP}$ D$_x$	[$_{\#P}$ a	[$_{NP}$ car$_{sk}$]]]	(existential subkind)
d.	$\exists_x$	[$_{DP}$ D$_x$	[$_{\#P}$ ten	[$_{NP}$ cars$_{sk}$]]]	(existential subkind)

(42) *Bare plural subkinds*

a.		*[$_{DP}$ cars$_{sk}$	[$_{NP}$ ~~cars$_{sk}$~~]]]	(*referential subkind)
b.	$\exists_x$	[$_{DP}$ D$_x$	[$_{NP}$ cars$_{sk}$]]]	(existential subkind)

Given this argument, what are we to make of the original arguments in Brugger (1993) which were designed to provide bare plurals with two formally distinct interpretations? Thus far, we've examined bare plurals within the domain of existential closure, but what of those that surface outside the domain of existential closure?

4.2 Generic quantification over subkinds

The idea that bare plurals only access a quantificational strategy for general interpretation returns us to Brugger's (1993) original question concerning the interpretation of two bare plurals given Principle C. His intuition was that one bare plural was interpreted via reference while the other was interpreted via quantification. Within his framework, reference was taken to be reference to a kind while quantification was taken to be quantification over objects.

Updating this view, we now have that reference is either reference to objects, kinds, or subkinds, and that quantification is quantification over objects or subkinds, with quantification being supplied by existential closure. From this point of view, consider again the case of *Panthers exterminated panthers* from (2).

First, *exterminate* constrains the object *panthers* to denote/refer to (sub)kinds. Given the arguments in the previous section that bare plurals only have access to a quantificational strategy, the object *panthers* must therefore be quantification over subkinds, presumably via existential closure. What of the subject *panthers*? Again, adopting the idea that bare plurals only have access to a quantification strategy, it emerges that the subject *panthers* must also be quantificational. One reading that Brugger (1993) observed is that the subject *panthers* makes reference to generic individual objects, suggesting that the generic quantifier GEN binds the object-denoting variable of *panthers* as shown in (43a). Note, however, that if bare plurals are ambiguous between individual and subkind interpretations, a second reading

is also predicted to be available, in which the subject *panthers* makes reference to generic subkinds as shown in (43b). Here, the generic quantifier binds the subkind-denoting variable of *panthers*.

(43) a. GEN_y panthers$^{\text{indiv}}$(y) [$\exists_x$ [exterminated panthers$^{\text{sk}}$(x)]].
b. GEN_y panthers$^{\text{sk}}$(y) [$\exists_x$ [exterminated panthers$^{\text{sk}}$(x)]].

A question at this point is what distinguishes between generic individuals and generic subkinds. To investigate this issue more closely, we turn to cases where existential closure are off the table.

The object position of subject-experiencer psych-verbs are known to only allow a generic reading of a bare plural (Cohen & Erteschik-Shir 2002; Fábregas & Marín 2015; Glasbey 2006; Laca 1990).[17]

(44) a. I hate cars. (generic/*existential)
b. John adores cats. (generic/*existential)
c. The rangers love bears. (generic/*existential)

The question, however, is whether this generic reading is only of generic objects or may also be of generic subkinds. Consider the examples in (45) where the additional relative clause helps to bring out a kind interpretation. In both cases, a subkind reading is available, and it appears to be generic. Indeed, both cases may have a continuation in which the opposite feelings to the subkinds are attributed to generic individuals of that kind. Thus the rangers in (45b) can love generic subkinds of lynxes but detest generic individual lynxes. Since subkinds and objects are distinct representations, they can trigger different emotional states without contradiction.

17 Citing examples like (i), Seres & Espinal (2018) argues that subject-experiencer psych-verbs cannot take definite kind arguments as objects while bare plural generics are fine, suggesting that subject-experiencer psych-verbs block kind interpretations.

(i) a. I hate the golden retriever. (definite specific/#kind)
b. I hate golden retrievers. (generic)

However, the cases in (ii) seem to allow kind-level readings, suggesting that kind-denoting nominals are, in fact, permitted as objects of subject-experiencer psych-verbs.

(ii) a. I love the lynx in all its forms. (kind)
b. I hate that kind of car. (subkind)

(45) a. The NHTSA engineers hate cars that are mass produced (but they enjoy driving any particular car). (generic subkind)
b. The Wildlife Federation rangers love lynxes that are becoming extinct (but they detest coming across any individual lynx). (generic subkind)

Under the hypothesis that bare plurals cannot access the direct subkind reference strategy, *cars* and *lynxes* in (45) must go via a quantificational route. Given that generic quantification is the only quantification available, it appears that subkinds can be interpreted generically as well as existentially, as shown in (46).

(46) a. GEN_x [hate cars^{sk}(x)]
b. GEN_x [love lynxes^{sk}(x)]

Before concluding, consider how indefinite and bare numeral nominals behave in these same environments. Unlike the bare plurals, these cases retain scope ambiguity. Focusing on the narrow scope reading, surprisingly both can access an existential interpretation, such that each engineer can hate a different set of ten kinds of car but these are not generic for each engineer, and similarly, each ranger can love a different kind of lynx. However, (47b) also has a generic interpretation available to it, such that every ranger in general loves any subkind of lynx. This is not the case for (47a) which does not mean that every engineer in general hates any ten kinds of car.

(47) a. Every NHTSA engineer hates ten cars that are mass produced. ($\exists$ subkind/*GEN subkind)
b. Every Wildlife Federation ranger loves a lynx that is becoming extinct. ($\exists$ subkind/GEN subkind)

The presence of this weak existential subkind reading of bare numerals and indefinite singulars is unexpected on the structural ambiguity account of Fodor & Sag (1982) since weak readings are derived by existential quantification in this framework but subject experiencer psych-verbs do not license existential closure. However, for our purposes, a more interesting question concerns the asymmetry between existential and generic quantification. It seems that the presence of a numeral blocks generic quantification.

What about cases like (48) where indefinites and bare numerals are more clearly outside the scope of existential closure? As subjects of kind-level predicates, these nominals are restricted to a subkind interpretation. By hypothesis, they cannot

receive an existential quantification interpretation; therefore, they could only be compatible with a referential or generically quantified subkind interpretation. As above, however, the bare numeral does not seem to have access to a generically quantified subkind interpretation; that is, it does not mean that three subkinds of lynx are generally threatened with extinction. Instead, it only receives a referential subkind interpretation determined by the strong reading of the numeral. The indefinite, on the other hand, appears to permit a generically quantified subkind interpretation, meaning that a subkind of lynx is generally threatened with extinction.[18] Thus, while (48a) seems to only mean that there are three lynx kinds that are threatened with extinction, (48b) can mean either that there is a lynx kind that is threatened with extinction or that a lynx kind is generally threatened with extinction.

(48) a. Three lynxes are threatened with extinction. (subkind reference/*GEN subkind)
b. A lynx is threatened with extinction. (subkind reference/GEN subkind)

The pattern seen in (47) and (48) persists with bare numerals and indefinite singulars as subjects of individual-level predicates. Again, a generically quantified subkind interpretation emerges for indefinite singulars, such that (50a) can be paraphrased to say that in general among the subkinds of lynx they have spotted fur, even

18 Unlike (47b) where both interpretations seem equally accessible, my intuition for the two interpretations of (48b) is that the referential subkind interpretation of the indefinite is strongly preferred, while the generically quantified subkind interpretation, while possible, is not preferred. Other speakers, however, find this interpretation to be more easily available. The cause of this preference asymmetry is not clear to me at present. Interestingly, a generically quantified subkind interpretation is much clearer with the addition of an adverbial quantifier.

(i) A lynx is always/usually/generally/sometimes threatened with extinction.

It is also the case that a generically quantified subkind interpretation is more easily available with other kind-level predicates, like *evolve*, especially with superordinate nominals in (iia). However, even in this case, the tense of the predicate appears to matter, as the past tense (and to some extent, the future) again cause the generically quantified subkind interpretation to be less accessible.

(ii) a. A mammal evolves via genetic mutations.
b. A mammal evolved via genetic mutations.
c. A mammal will evolve via genetic mutations.

I suspect that a deeper investigation of adverbial quantification in line with fn. 20 and the interactions with tense would shed important light on this open issue and the structure of GEN more specifically.

if the majority of individual lynxes in general have a solid coat because they happen to come from the one subspecies that has evenly colored fur. The bare numeral, however, lacks this reading, receiving only a referential subkind interpretation, e.g. that there are three species of lynx that have spotted fur. Additionally, a generically quantified object interpretation is also possible for indefinite singulars, but not for bare numerals. This is not all that surprising given that the main difference between kind-level and individual-level predicates is that individual-level predicates allow object reference, but suggests that the reason that bare numerals block generically quantified readings is unrelated to the object/kind distinction.

(49) a. Three lynxes have spotted fur. (subkind reference/*GEN subkind)
b. Three cars have doors that lift up. (subkind reference/*GEN subkind)

(50) a. A lynx has spotted fur (though most lynxes you encounter are Canadian lynxes which have a solid coat). (subkind reference/GEN subkind)
b. A car has four wheels. (subkind reference/GEN subkind)

Taken together, this evidence suggests that there is an asymmetry between existential and generic quantification that is visible between indefinites and bare numerals, with indefinites having a wider range of interpretative possibilities compared to bare numerals.[19]

Returning to the idea that bare plurals could also be assigned a subkind interpretation (Krifka et al. 1995), we are now in a position to answer what the representation of these subkind interpretations are. As shown above, bare plurals seem to be unable to access the direct subkind reference strategy, and therefore must adopt at least one of the two quantificational subkind strategies. This is an existential subkind

19 In discussing the parallelism between adverbs of quantification and GEN, Borer (2005) proposes that generic quantification assigns range to both D and # while existential quantification only assigns range to D given that weak quantifiers permit existential interpretations but block quantification by adverbs and generic interpretations.

(i) a. Existential quantification: $\exists_x$ $[_{DP}\ D_x$ $[_{\#P}\ \#$ $[\ldots]\ ]\ ]$
b. Generic quantification: GEN_x $[_{DP}\ D_x$ $[_{\#P}\ \#_x$ $[\ldots]\ ]\ ]$

Adopting the argumentation in Borer (2005), the wider interpretative possibilities for indefinites compared to bare numerals suggests that indefinites are permitted to surface in a wider range of structural positions than numerals. One possibility, assuming that the indefinite in English must be a head, is that there is a functional projection below #P for indefinites. Given that numerals and indefinites are in complementary distribution, it appears that both must assign range to FP. However, numerals must also merge with #P to assign range to it, thus blocking adverbal quantification in (iiic). Indefinites, however, are allowed to remain low in the presence of adverbal quantification, including GEN in (iic).

quantification when within the domain of existential closure, but when existential closure is unavailable, then generic subkind quantification is the only available strategy. Therefore, *tigers* in (51a) comes to mean general tiger subkinds through generic subkind quantification. It has the quasi-universal force normally expected with generic interpretation; whereas, the truth-conditions for existential force would be too weak, allowing (51a) to be true if only one subkind were threatened with extinction. Note that as with generic object interpretations, this quasi-universal force allows for exceptions, such that it need not be the case that all tiger subkinds are threatened with extinction, only that tiger subkinds are threatened with extinction in general.[20] The structure for generically quantified bare plurals is given in (52) where *tigers* denotes in the domain of subkinds and GEN binds both D and #, similar to a quantificational adverb like *mostly*, *normally*, or *usually*.

(ii)	Indefinites					
	a. Reference:		$[_{DP}$ a	$[_{\#P}$ ~~a~~	$[_{FP}$ ~~a~~	$[_{NP}$ car]]]
	b. Existential Quantification:	$\exists_x$	$[_{DP}$ D_x	$[_{\#P}$ a	$[_{FP}$ ~~a~~	$[_{NP}$ car]]]
	c. Generic Quantification:	GEN_x	$[_{DP}$ D_x	$[_{\#P}$ $\#_x$	$[_{FP}$ a	$[_{NP}$ car]]]
(iii)	Bare numerals					
	a. Reference:		$[_{DP}$ two	$[_{\#P}$ ~~two~~	$[_{FP}$ ~~two~~	$[_{NP}$ cars]]]
	b. Existential Quantification:	$\exists_x$	$[_{DP}$ D_x	$[_{\#P}$ two	$[_{FP}$ ~~two~~	$[_{NP}$ cars]]]
	c. Generic Quantification:	$*GEN_x$	$[_{DP}$ D_x	$[_{\#P}$ $\#_x$	$[_{FP}$ two	$[_{NP}$ cars]]]

One tempting possibility is that FP is identical with Borer's (2005) Classifier Phrase, ClP (DivP in other work); however, one key function of ClP is to host plural morphology (with the plural as a type of classifier) which, while in complementary distribution with the indefinite, is allowed to co-occur with bare numerals. This suggests that FP, whatever it is, projects between #P and ClP, with numerals beginning their lives in FP, while the indefinite first merges in ClP before raising to FP. Such an analysis has interesting predictions concerning the indefinite and its role in establishing singular interpretations, but investigation of this would take us far beyond the current proposal.

20 See fn. 8 for some initial discussion concerning the role of the predicate in establishing the universality of the generalization.

An alternative account for the quasi-universal force of bare plurals in (51) may come from situation semantics, a la von Fintel (1994, 1996, 2004), a.o. While this approach goes beyond the scope of this paper, the basic idea is that adverbial quantification including GEN operates over situations, not individuals. Bare plurals (and other indefinites) denote existential quantifiers but are themselves bound up in the situation, and thus are indirectly related to whatever type of quantificational force is given over situations. Thus the sense of quasi-universal force for bare plurals in generic sentences arises from the semantics of the situations they find themselves in. Much of course would need to be said, so I leave this tempting possibility here for future consideration.

(51) a. Tigers are threatened with extinction.
b. Ed Roberts invented computers.
c. Mammals evolved to live on land.

(52) GEN_x [$_{DP}$ D_x [$_{\#P}$ $\#_x$ [$_{NP}$ tigers^{sk}]]]

5 Conclusion

To summarize, the final set of analyzes we have is given in (53) and (54). For object-denoting nominals, both a referential and two quantificational strategies are licensed. For kind-denoting nominals, the same referential and quantificational strategies are available. The referential strategy is divided below into kind and subkind, but these two are highly related in that kind reference which emerges with the definite article and no other functional structure and subkind reference which emerges in the presence of quantity or dividers within the nominal. The two quantificational strategies mirror those in object domain. Thus, in addition to existential object and generic object interpretations which range over individuals, existential subkind and generic subkind interpretations have been uncovered in the course of this investigation.

(53) Object-denoting

a. Reference:		[$_{DP}$ the	[$_{\#P}$ ~~the~~	[$_{NP}$ car^{obj}]]]
b. Generic Quantification:	GEN_x	[$_{DP}$ D_x	[$_{\#P}$ $\#_x$	[$_{NP}$ cars^{obj}]]]
c. Existential Quantification	$\exists_x$	[$_{DP}$ D_x	[$_{\#P}$ a	[$_{NP}$ car^{obj}]]]
	$\exists_x$	[$_{DP}$ D_x		[$_{NP}$ cars^{obj}]]

(54) Kind-denoting

a. Kind Reference:		[$_{DP}$ the	[$_{\#P}$ ~~the~~	[$_{NP}$ car^{kind}]]]
b. Subkind Reference:		[$_{DP}$ a	[$_{\#P}$ ~~a~~	[$_{NP}$ car^{sk}]]]
c. Generic Quantification:	GEN_x	[$_{DP}$ D_x	[$_{\#P}$ $\#_x$	[$_{NP}$ cars^{sk}]]]
d. Existential Quantification	$\exists_x$	[$_{DP}$ D_x	[$_{\#P}$ a	[$_{NP}$ car^{sk}]]]
	$\exists_x$	[$_{DP}$ D_x		[$_{NP}$ cars^{sk}]]

Importantly, the choice of interpretative strategy is constrained by the grammar. Thus kind reference is not found in the presence of grammatical number nor with quantity determining functional elements other than the definite. The plural, indefinite singular, numeral, or other quantifiers trigger subkind interpretation. Existential and generic quantification are also grammatically constrained, with existential interpretation emerging in the domain of existential closure and generic quantification

blocked by numerals and other weak quantifiers. Clearly, questions remain open about certain particular cases, but overall a rich set of interpretations have been shown to emerge in the domain of nominal generalities which follow from the usual compositional resources that are available in the object domain.

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