Genericity and Quantification

Matt Teichman

Abstract

Generic sentences are commonsense statements of the form ‘Fs are G;’ like ‘Bears have fur’ or ‘Rattlesnakes are poisonous.’ A central question for philosophers who have tried to give a semantic theory of generic sentences is whether or not they involve implicit quantification. This paper presents new evidence in favor of a more traditional approach to generic sentences, which holds that rather than being generalizations about individual objects, generic statements in fact make particular claims about kinds. In particular, generic statements display none of the telltale signs of natural language quantification, such as contextual domain restriction. This, I argue, gives us reason to revisit the traditional approach.

What Are Generic Sentences About?

Generic statements are some of the most intriguing statements we make. They are so central to our commonsense reasoning that every attested human language can express them (Dahl, 1995; Cohen, 2013), and they are the discursive tool through which we impart mastery of our most basic concepts to children. Yet despite their centrality in our lives, they have been challenging for philosophers to analyze. On the one hand, modeling their truth conditions requires nontrivial logical machinery. On the other, generic sentences with the same surface form exhibit a surprising amount of variation in their exact meaning, making it difficult to provide a fully compositional semantic theory that captures these variations across different contexts.¹

¹ By ‘fully compositional’ I mean a theory that maps the syntactic structure of a given sentence to its truth conditions, via nothing more than definitions of each individual word in the sentence, and a small number of very general composition rules that specify how the denotation of any syntactic constituent is to be derived from the denotations of its subconstituents. Paradigmatic formulations of this kind of theory can be found in Montague (1973), Gamut (1991), and Heim & Kratzer (1998).
In English, generics have the surface form ‘Fs are G.’ At the intuitive, pre-theoretical level, they make a kind of loose general statement. They are especially at home in the realm of biology, artifacts, cultural conventions, or cultural stereotypes, but are used in connection with a wide variety of other topics as well:

(1) a. Chicago winters are cold. \textit{the weather}  
b. Polar bears are vicious. \textit{the wild}  
c. Engines have many parts. \textit{engineering}  
d. Dutch people love bikes. \textit{culture}  
e. Policemen have uniforms. \textit{cultural conventions}  
f. Philosophy classes are difficult. \textit{activities}  
g. Abortions are wrong. \textit{ethics}  
h. Visual experiences are veridical. \textit{epistemology}  

Generics raise all sorts of philosophical questions. How can they be generalizations, but retain their truth in the face of counterexamples? Are they objectively true or false? Do they have truth conditions, or are they simply expressions of one’s endorsement of some pattern of inference—the way some have argued is the case for natural language counterfactuals? Philosophers and semanticists would love to have a satisfying answer to such questions as these.

In this paper, however, I want to focus on a more basic question, which I believe we need to answer first in order to arrive at a satisfying account of their truth conditions. What are generic sentences about? I will keep the notion of what a sentence is about intuitive for now, rather than trying to define it precisely. When I say that bears have fur, what am I talking about? Am I talking about Angela the bear, and Bart the bear, and Cindy the bear...etc. or am I talking about something

\footnote{They can also take the form ‘The F is G,’ ‘An F is G,’ or even ‘Your F is G.’ Sentences with these surface forms are very close in meaning to sentences of the form under discussion, but they differ in a number of subtle ways which place them beyond the scope of this paper. My focus, therefore, will be on sentences of the form ‘Fs are G.’ Here I take my cue from (Carlson, 1977a,b) which focuses on the bare plural generic as the paradigmatic case, in part because that is the only surface form in English that gives rise to a generic interpretation unambiguously. (‘The dog has four legs,’ for instance, also has an interpretation on which it’s about a specific dog that is under discussion.)}
else, distinct from any particular bear? If the former is the case, then generic statements are what I would call true generalizations. When I make a true generalization, what I am really talking about are particular things, albeit collectively or jointly.

An old-fashioned, once influential theory of generic statements held that contrary to appearance, they are not generalizations in this sense. If I claim that bears have fur, I am not making a statement, jointly, about some individual bears. And it is obviously not about any one particular bear. So the only remaining alternative is to hold that it is about something distinct from any particular bear: namely, bear-kind. One might wonder what exactly bear-kind is. And there are many ways we might answer that question: perhaps bear-kind is a universal, perhaps it is the mereological sum of all bears, or perhaps it is the set of our expectations about bears. Whatever we end up deciding that kinds are, the question remains: are they what generic sentences are about, or are individual objects what generic sentences are about?

The dominant theory of generic sentences, which I will call the quantificational theory, is a way of precisely cashing out the intuition that at bottom, they are generalizations. The quantificational analysis maintains that generics share the logical structure of any other general statement; the only two differences are a) that the quantifier they contain is implicit and unpronounced and b) that this quantifier has an intensional meaning very roughly on the order of ‘all normal.’ Since this quantifier is synonymous with no overtly pronounced word, it is called Gen. The kind theory views generic sentences as monadic predications, wherein a property is ascribed to a kind. The noun phrase in subject position of a generic sentence is a name (or perhaps a definite description) referring to a kind, and a predicate applies to it just as it would apply to any other singular term.

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3 The more detailed formulation of this theory can be found in Carlson (1977a), chap. 5.
4 A quantificational analysis of indefinite generics was first suggested in Heim (1982), and first proposed as a general theory for generics as such in Farkas & Sugioka (1983), since which time it has more or less held sway in the literature: semantic theories that have become the industry standard such as those of Krifka et al. (1995) and Asher & Pelletier (1997) all argue generic sentences to have quantificational purport.
5 Many variants on the quantificational theory of generics also view Gen as an adverbial (rather than determiner) quantifier, which means that it generalizes over events, cases, moments, temporal parts of an object, or situations. See, for instance, Carlson (1979); Farkas & Sugioka (1983); Krifka et al. (1995); Kratzer (1995); Leslie (2008); Nickel (2010b).
Very roughly, according to a quantificational theory, bears are furry just in case for every bear, it is normal for that bear to be furry. And according to a kind theory, bears are furry just in case bear-kind is characterized by furminess.\(^6\)

Determining what generic sentences are about is important because it is a necessary first step to determining their exact truth conditions, but not only because of that. Generic sentences are important to us, and we may care about them for all sorts of reasons. But regardless of the specific reason we care about them, assuming that we do, it plainly behooves us to know whether they are statements about individual entities or something else. For one thing, a great many of the generic statements we employ are about places some of us are from, or groups of people with whom we may be acquainted. Suppose someone utters a generic that I find morally problematic, and I wish to refute that person. Or suppose I learn that some generic is true when I would rather it weren’t. In that case, I need to know to what entities the generic pertains if I wish to know why the generic is true, whether the situation could change, how it could change, or whether I could have a role in changing it.

**Kind Theories and Quantificational Theories**

The next step is to mould the question of what generics are about into something more precise. In the realm of natural language semantics, the question ‘What is sentence \(X\) about?’ becomes ‘What is the logical form of sentence \(X\)?’ Now, many philosophers have meant many different things by *logical form*. In this paper I will adopt the modern notion of logical form employed by natural language semantics, first proposed in May (1977) and assumed in standard textbooks such as Heim & Kratzer (1998). This is the modern iteration of the distinction between deep structure and surface structure in Chomskian phrase structure grammar (Chomsky, 1957), and is a way of capturing what are called multiple levels of representation, or certain regular patterns of

\(^6\) I will use this ‘characterized by’ expression as a loose, intuitive catch-all term for the idea that certain kinds have inherent, characteristic features which may defeasibly fail to obtain in isolated cases.
divergence between the order in which parts of a sentence are interpreted and the order in which they are pronounced. The model works as follows: a complete syntactic structure is constructed, at which point the construction process has the ability to fork. The structure can undergo some changes that are interpreted but not pronounced, and other changes that are pronounced but not interpreted. The one prong of the fork is referred to as logical form (LF), and the other is referred to as phonetic form (PF).

Determining the logical form of some English sentences, in this sense of the term *logical form*, is not simply a matter of telling a story about what their truth conditions are. It also involves telling a plausible story about how those truth conditions are derived. What are the logical building blocks out of which these sentences are built? What about those building blocks and the way they are combined *leads to* the truth conditions they have? Adding these additional constraints on what counts as a satisfactory analysis is important because it gives a definite, falsifiable meaning to claims about whether a given kind of sentence contains or does not contain a given logical operator. It grants us room to hypothesize that there can be more to an English sentence that what appears on the surface, while at the same time setting concrete constraints on how far what is ‘really present’ in that sentence can diverge from its surface appearance.

In this setting, the question ‘Are generic statements about individual objects or kinds thereof?’ becomes the question ‘Do generic sentences implicitly contain a quantifier?’ If a sentence contains a quantifier, then it is a general statement about some individual objects. If it contains a singular term that can’t plausibly be understood to denote an individual object, then it is a particular statement about a kind.

Here is what these two options would look like in a bit more detail:

(2) a. **Quantificational Theory**

\[ F's \text{ are } G : \text{true iff } \text{Gen } x (F(x))(G(x)) \]

7 If you aren’t familiar with generalized quantifier notation (Barwise & Cooper, 1981), a formula in generalized quantifier logic can be read in the following way: for any quantifier \( Q \), read ‘\( Qx(F(x))(G(x)) \)’ as ‘\( Q \)-many \( F \)s are \( G \).’ So ‘\( \text{Every } x (F(x))(G(x)) \)’ can be interpreted as ‘Every \( F \) is \( G \);’ ‘\( \text{Most } x (F(x))(G(x)) \)’ can be interpreted
b. **Kind Theory (Sophisticated Version)**

\[ Fs \text{ are } G : \text{true iff } (PM(G))(F\text{-kind}) \]

According to the quantificational theory, ‘bears are furry’ contains an unpronounced quantifier which we will write as *Gen*, and states that *Gen*-many bears are furry. According to the kind theory, the sentence states that bear-kind is furry’, where *furry* is a predicate applicable to individual objects, such as bears, *furry’* is a predicate applicable to kinds, such as bear-kind. *PM* is a predicate modifying operation that shifts object predicates to kind predicates; it takes the object predicate *furry* as an argument and yields something which can take the kind-referring expression *bears* as an argument.\(^8\)

It is reasonable to wonder why we need such a predicate modifying operation. Why not think the that the noun phrase in subject position of a generic sentence is just the name of an ordinary particular object, rather than the name of some new variety of object we decide to call a kind? Such an analysis would look like this:

(3) **Simple Kind Theory**

\[ Fs \text{ are } G : \text{true iff } G(F\text{-kind}) \]

*Example*: Bears are furry just in case *furry*(bear-kind)

Certain authors, notably Liebesman (2011), advocate a simple kind theory. However, I prefer the former variety (henceforth, the *sophisticated* kind theory), principally for two reasons. The first is a basic philosophical worry: it is intuitive what it means for a creature like a bear to be furry. But whatever metaphysical theory of kinds we end up choosing, it is far from clear what it would mean as ‘Most *Fs* are *G;*’ and so forth. Different quantifiers are defined in different ways, but all of these definitions understand them as relations between sets. So the statement ‘Every *x (F(x))(G(x))’ is true just in case the set of *Fs* is a subset of the set of *Gs*, and the statement ‘Most *x (F(x))(G(x))’ is true just in case the intersection of the set of *Fs* and the set of *Gs* is greater in cardinality than the intersection of the set of *Fs* and the set of non-*Gs*.

\(^8\) This operator is typically referred to in the literature as *Gn*. So as to avoid confusion with *Gen*, I follow the terminology of Fara (2001) and call it the predicate modifier (*PM* for short).
for a *kind* to be furry. Although we have not yet offered a definition of this predicate modifier, by including it as part of our semantic analysis, we at least acknowledge that if kinds can be furry, it is only in a very different sense of the term! The second reason I reject the simple kind theory is Carlson’s original reason for rejecting it,\(^9\) which is that one needs some sort of logical operator to account for generic sentences with bound variable interpretations:

\[ (4) \text{ Ants know how to get back to their nests.} \]

Sentences such as (4) reveal something important about generic sentences: any property that applies to individual objects can characterize a kind. But without an additional operation that maps properties of individual objects to properties of kinds, there is no way to ensure that sentence (4) receives the interpretation on which each ant is paired with *its own* nest, rather than some other nest. Think of it this way: suppose we turn the sentence ‘Andy knows how to get back to his nest’ into the property of knowing how to get back to one’s own nest. The standard way to represent the property of knowing the way back to one’s own nest is as that sentence, except with the same variable in place of the noun and pronoun: ‘\(x\) knows how to get back to \(x\)’s nest.’ If we then apply that property to ant-kind, we get the statement that ant-kind knows the way back to its own nest. But the truth conditions of sentence (4) are *not* that ant-kind know the way back to its own nest! It isn’t as though *ant-kind* even has a nest; different ants have different nests. To rephrase the argument in terms of lambda abstraction, the modern formal device for turning a sentence into a property, there is no other way for this analysis to go:

\[ (5) \lambda x. \text{knowsLocationOf}(x, \text{hiveOf}(x))(\text{ant-kind}) \]

\[ = \text{knowsLocationOf}(\text{ant-kind}, \text{hiveOf}(\text{ant-kind})) \quad \text{by } \beta\text{-conversion} \]

\[ = \text{true iff ant-kind knows the location of its own hive.} \]

Thus, a simple kind theory is forced to make undesirable predictions about what sentences like (4) mean. To get the meaning right, we need an additional operator that can map the property of knowing how to get back to one’s nest to another property which is a) applicable to kinds, and b)

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\(^9\) See Carlson (1977a), chap. 5.
capable of pairing individual ants with their nests.\textsuperscript{10} Thus, there are philosophical and semantic reasons to think that a sophisticated kind theory is the only viable option.\textsuperscript{11}

In what follows, I will argue that generic sentences are about kinds, rather than individual objects. I will begin by showing how a kind theorist can respond to the standard objections raised by quantificational theorists, and then present new linguistic evidence that poses problems for quantificational theories but is nearly accounted for within a kind-theoretic framework.

**Criticisms of the Kind Theory**

The kind theory rose to prominence in the late 70s, but now faces some standard objections after having been displaced. Before I move on to my positive proposal, here is some indication as to why, in my view, these criticisms leave the prospects for a kind theory of generics untouched.

**Comparatives**

One criticism of the kind theory relates to its predictions vis-à-vis comparatives and equatives:\textsuperscript{12}

(6) a. Horses are taller than cows. \hspace{5.5cm} \textit{comparative}
    b. Cows are taller than horses. \hspace{5.5cm} \textit{comparative}
    c. Cows are (exactly) as tall as horses. \hspace{5.5cm} \textit{equative}

Cows and horses are about 5 feet, on average. Horses vary more, however: the shortest horses are shorter than any cow and the tallest horses are taller than any cow. Thus, Bernhard Nickel claims that (6-a) and (6-b) are both false. But interestingly, he would also like to say that (6-c) is false. Horses and cows may have the same \textit{average} height, but their heights have different statistical distributions: the histograms tabulating the respective heights of the two populations would not

\textsuperscript{10} In my Teichman (ms), I give a semantics for \textit{PM} that has these two desirable features, among others.
\textsuperscript{11} Leslie (2013) provides a battery of further semantic arguments against a simple kind theory.
\textsuperscript{12} See Nickel (2010a).
line up. Perhaps, in that case, (6-c) is false.\textsuperscript{13} But as Nickel observes, this assignment of truth values is logically ruled out in ordinary comparatives:

\begin{enumerate}
  \item Evelyn is taller than Vivian.
  \item Vivian is taller than Evelyn.
  \item Evelyn is (exactly) as tall as Vivian.
\end{enumerate}

Unlike sentences (6-a)-(6-c), if (7-a) and (7-b) are both false, then (7-c) must be true, given that \textit{taller than} is a linear order.

How is this a problem for the kind theory? As far as I know, no kind theorist has proposed a fully compositional semantics for comparatives.\textsuperscript{14} However, Nickel conjectures that a kind theory of comparatives would have to go like this. Since bare plural noun phrases are proper names of kinds, the logical form of a generic comparative should be akin to that of an ordinary comparative:

\begin{enumerate}
  \item $a$ is $G$ : true iff $G(a)$
  \item $F$s are $G$ : true iff $G(F$-kind$)$
  \item $a$ is bigger than $b$ : true iff $size(a) > size(b)$
  \item $F$s are bigger than $G$s : true iff $size(F$-kind$) > size(G$-kind$)$
\end{enumerate}

For Nickel, the trouble with giving generic comparatives that kind of treatment is that it predicts (6-c) to be necessarily true if (6-a) and (6-b) are both false. But if Nickel’s intuitions are correct, this inference pattern doesn’t hold for generics, because two kinds can ‘differ’ in height without ‘tying’ in height.

I make no definitive judgment about the robustness of these new data, which have yet to be fully tested. However, I will note that even if they turn out to be as robust as Nickel suspects, they

\textsuperscript{13} It is not easy to have clear intuitions about these cases, which probably means that more experiments need to be done on these data. I didn’t begin to share Nickel’s intuitions about them until I thought my way into the scenario for a while.

\textsuperscript{14} Nickel attributes the account I am about to describe to Krifka \textit{et al.} (1995), but that article only discusses generic statements like (8-a), not generic comparatives like (8-b):

\begin{enumerate}
  \item $F$s get bigger as you head north.
  \item $F$s are bigger than $G$s.
\end{enumerate}
can only pose a problem for the simple kind theory—not for the sophisticated kind theory. And we have ample independent reason to reject a simple kind theory anyway.

The basic reason Nickel’s observations are unproblematic for the sophisticated kind theory is that given its additional logical structure, it has no commitments one way or the other regarding the entailment from the falsity of (6-a) and (6-b) to the truth of (6-c). If we decide that that is a correct entailment, we can model it by making one set of assumptions about the predicate modifier, and if we decide that it isn’t a correct entailment, we can model it by making a different set of assumptions about the predicate modifier.

Existing sophisticated kind theories posit a predicate modifier for monadic predicates. To accommodate constructions featuring bare plural noun phrases in object position, we either need a new predicate modifier that shifts dyadic object relations to dyadic kind relations, or a type shifting rule for the original predicate modifier. There are many ways this could go in detail, and it is beyond the scope of this response to give a fully compositional analysis of generic comparisons. Since our only purpose right now is to show why even the most obvious extension of the sophisticated kind theory to transitive predicates is not committed to the truth conditions in (9), I assume the latter approach for ease of exposition.

One straightforward form that type shifting rule could take would be the following:

\[ PM(f_{(e,(e,t))})(p)(q) \rightsquigarrow PM(\lambda y. PM(\lambda x. f(y)(x))(p))(q) \]

Assuming such a rule, the truth conditions for a sentence like (6-b) would be as in (11-b), rather than (11-a):

\[ PM(f_{(e,(e,t))})(p)(q) \rightsquigarrow PM(\lambda y. PM(\lambda x. f(y)(x))(p))(q) \]

15 This bit of notation, derived from the framework laid forth in Church (1940), is the standard means in natural language semantics for indicating different logical types. Read \( e \) as a logical type set aside for particular objects, \( t \) as a logical type set aside for truth values, and any expression \( \langle \alpha, \beta \rangle \) in angle brackets as a logical type set aside for functions from entities of type \( \alpha \) to entities of type \( \beta \). To give some examples, a function of type \( \langle e, t \rangle \) is a one-place predicate, a function of type \( \langle e, \langle e, t \rangle \rangle \) is a two-place predicate, a function of type \( \langle t, \langle t, t \rangle \rangle \) is a two-place boolean operator, a function of type \( \langle \langle e, t \rangle, e \rangle \) is an expression like the definite article, and a function of type \( \langle \langle e, t \rangle, \langle \langle e, t \rangle, t \rangle \rangle \) is a generalized quantifier. And for any condition \( \phi \), read \( \lambda x_\alpha . \phi(x) \) as the function that maps any object of type \( \alpha \) to the true just in case condition \( \phi \) holds of it, and to the false otherwise.
(11)  a. \( \text{size(F-kind)} > \text{size(G-kind)} \)
    b. \( \text{PM}(\lambda y . \text{PM}(\lambda x . x > y))(\text{cow-kind})(\text{horse-kind}) \)

Very roughly, the formula in (6-b) is true just in case horse-kind is characterized by the property of being shorter than the characteristic height of cows. And sentence (6-a) will be true just in case cow-kind is characterized by the property of being shorter than the characteristic height of horses. Here are the logical forms of sentences (6-b) through (6-c), respectively:

(12)  a. \( \text{PM}(\lambda y . \text{PM}(\lambda x . x > y))(\text{cow-kind})(\text{horse-kind}) \)
    b. \( \text{PM}(\lambda y . \text{PM}(\lambda x . x > y))(\text{horse-kind})(\text{cow-kind}) \)
    c. \( \text{PM}(\lambda y . \text{PM}(\lambda x . x \sim y))(\text{cow-kind})(\text{horse-kind}) \)

In order for (12-c) to be entailed by the falsity of (12-a) and (12-b), \( \text{PM} \) would have to have no scope effects with linear relations. We have said nothing about the semantics of \( \text{PM} \) here,\(^{16}\) but consensus in the literature holds that it must at a very minimum be intensional. And it would be quite typical for an intensional operator to have scope effects with linear relations. So a kind theory can accurately predict a failure of entailment in these cases, should that be required.

What this example teaches us is that the sophisticated kind theory is no less expressively flexible than a quantificational theory. I take the upshot of the argument from generic comparatives to be that generic sentences have more logical structure to them than the simple kind theory posits, rather than an argument against kind-theoretic approaches as such. We can add such arguments to the continually growing body of evidence against the simple kind theory.

In fact, most criticisms of the kind theory are really just criticisms of the simple kind theory. Here are three more quick examples.

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\(^{16}\) As mentioned previously, I provide a semantics for the predicate modifier in my Teichman (ms), chap. 3.
Scope Ambiguity

The presence of scope ambiguity in generics containing an indefinite noun phrase in object position is standardly assumed to pose a problem for the kind theory. If generic sentences are nothing more than monadic predications, the indefinite noun phrase should have nothing to interact with scopally. The standard example is the following:

(13) Swans have a favorite nesting spot.

There are two readings of this sentence. On one, there is a single nesting area that swans prefer. On the other, swans tend to have a preferred nesting area, but different swans prefer different nesting areas. Now, if generic sentences were to contain an unpronounced quantifier at logical form, this scope ambiguity could be explained in the usual way. An analysis according to which they are simple monadic predications lacks the resources to predict this ambiguity.

But of course, that only applies to the simple kind theory. As with the comparative case, the simple kind theory need only assume that PM is the sort of operator that exhibits scope effects with indefinites. And once again, even though we have said nothing about the semantics for the predicate modifier here beyond supposing that it is intensional, it would be odd for it to be an intensional operator that failed to exhibit de re/de dicto ambiguities. Since PM is a logical operator like any other, a sophisticated kind theory can easily account for the ambiguity in sentence (13) using a standard theory of quantifier scope ambiguity, such as flexible types. The flexible types approach to quantifiers is a method for dealing with two problems in one fell swoop: a) that natural language quantifiers give rise to scope ambiguity, and b) that they are uninterpretable in object position. Consider the following example:

(14) Every magician owns a rabbit.

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18 This example originates from Schubert & Pelletier (1987), pg. 407. Interestingly, they don’t seem to think it poses a problem for the kind theory.
19 That is, either by type-raising (Hendriks, 1988) or quantifier raising (May, 1977).
20 This approach derives from Hendriks (1988).
Much like in the generic example, sentence (14) has two available interpretations: one in which the existential quantifier phrase *a rabbit* scopes over the universal quantifier phrase *every magician*, and another in which the universal takes wide scope. Note that *a rabbit* is uninterpretable in object position because dyadic predicates such as *own* are meant to take objects as arguments, not second-level functions. To deal with both of these problems, the flexible types approach allows quantifiers to shift their denotation in one of the two following ways when in object position:

(15) a. **Ordinary quantifier phrase**: $\langle\langle e, t \rangle, t \rangle$
    
    $[a \text{ rabbit}] = \lambda f_{\langle e, t \rangle}. \exists x (\text{rabbit}(x) \land f(x))$

b. **Wide scope quantifier phrase**: $\langle\langle e, t \rangle, t \rangle \rightsquigarrow \langle\langle e, \langle e, t \rangle \rangle, \langle\langle e, t \rangle, t \rangle \rangle$

    $[a \text{ rabbit}] \rightsquigarrow \lambda f_{\langle e, \langle e, t \rangle \rangle} \cdot \lambda Q_{\langle e, t \rangle, t}. \exists x (\text{rabbit}(x) \land Q(f(x)))$

c. **Narrow scope quantifier phrase**: $\langle\langle e, t \rangle, t \rangle \rightsquigarrow \langle\langle e, \langle\langle e, t \rangle \rangle, \langle\langle k, t \rangle \rangle \rangle$

    $[a \text{ rabbit}] \rightsquigarrow \lambda f_{\langle e, \langle e, t \rangle \rangle} \cdot \lambda Q_{\langle e, t \rangle, t} \cdot Q(\lambda x. \exists y (\text{rabbit}(y) \land f(x, y)))$

The expressive power of the lambda calculus makes it possible to systematically vary the definition of a single expression like *every* or *a* so that it can ‘pass arguments’ up the syntactic tree if need be. But if the lambda calculus gives us the power to deal with scope ambiguity between quantifiers, negation, attitude verbs, and modals, why not employ the very same strategy to deal with scope ambiguity between quantifiers and the predicate modifier? To simplify exposition, we may assume an atomic type for kinds, which we will represent using the letter $k$, and that $PM$ is a function from object predicates to kind predicates, i.e. a function of type $\langle\langle e, t \rangle, \langle k, t \rangle \rangle$. The denotation of *a favorite resting spot* in sentence (13) could then shift in either of the following two ways:

(16) a. **Wide scope quantifier phrase**: $\langle\langle e, t \rangle, t \rangle \rightsquigarrow \langle\langle e, \langle e, t \rangle \rangle, \langle e, t \rangle \rangle$

    $[a \text{ f.r.s.}] \rightsquigarrow \lambda f_{\langle e, \langle e, t \rangle \rangle} \cdot \lambda x. \exists y (\text{restSpot}(y) \land f(x, y))$

b. **Narrow scope quantifier phrase**: $\langle\langle e, t \rangle, t \rangle \rightsquigarrow \langle\langle e, \langle e, t \rangle \rangle, \langle\langle e, \langle k, t \rangle \rangle, \langle k, t \rangle \rangle \rangle$

    $[a \text{ f.r.s.}] \rightsquigarrow \lambda f_{\langle e, \langle e, t \rangle \rangle} \cdot \lambda h_{\langle e, \langle k, t \rangle \rangle} \cdot \lambda K_k \cdot h(\lambda x. \exists y (\text{restSpot}(y) \land f(x, y)))(K)$

Further details depend on how exactly we decide to define $PM$, and there are many options there as well. But this should suffice to illustrate the most straightforward way a kind theory of generics
can predict the presence of scope ambiguity in sentences like (13).

**Context-Sensitivity**

Sterken (2014a,b) argues that a kind-theoretic analysis of generics offers no obvious source for their context-sensitivity. Of course, the principal claim of this paper is that a kind-theoretic approach does the best job of accounting for the particular brand of context-sensitivity we see in generic sentences. So what is to explain this disagreement—are Sterken and I simply seeing things differently?

Thankfully, it seems we are not. I think we are more or less in agreement about the possible analyses that Sterken considers; it’s just that I would like to consider a slightly broader range of analyses. Indeed, it is difficult to see what source for context-sensitivity there could be in a simple kind theory along the following lines:

\[(17) \quad F's \text{ are } G : true \text{ iff } G(f) \]

(where \(f\) is an individual constant denoting F-kind)

But what about the following variation on the simple kind theory?

\[(18) \quad F's \text{ are } G : true \text{ iff } G(\iota k: \forall y(F(y) \rightarrow x \in k)) \]

That is, rather than taking the bare plural \(F's\) to be the proper name of a kind, why not take it to be a definite description referring to a kind? A kind theory will likely have to go this route anyway, for compositionality reasons.\(^{21}\) In the above formulation, the bare plural \(F's\) would refer to that kind of which everything in the extension of the predicate \(F\) is a member. Depending on how exactly we define our iota operator, it may very well have some context sensitivity—for instance, it could have a similar semantics to the definite article, according to which it picks out the unique contextually salient object that fits the description in its scope.

\(^{21}\) E.g. If you understand the sentence ‘Squirrels are black’ and the words from and Poland, then you should have everything you need to understand the sentence ‘Squirrels from Poland are black.’
Furthermore, once we move to a sophisticated kind theory, we may very well have an additional source for context sensitivity in our predicate modifying operation. If $PM$ is intensional, then it could turn out to be a modal of some kind, and it is a well-known feature of modal operators that they are context-dependent.\textsuperscript{22} So immediately, the kind theory furnishes us with two potential sources of context sensitivity in generics.

**Free Choice Effects**

Another objection to the kind theory has to do with its predictions vis-à-vis free choice effects. The data are murky, insofar as it is less clear that ‘Elephants live in Africa or Asia’ implicates ‘Elephants live in Africa’ than it is that ‘You may have an apple or a pear’ implicates ‘You may have an apple.’\textsuperscript{23} Nonetheless, generic disjunctions do give rise to the following bizarre implication, which closely resembles a free choice effect:

\[
(19) \quad \text{Elephants live in Africa or Asia. } \leftrightarrow \text{Elephants live in Africa and they live in Asia.} \]

\[
Fs \text{ are } G \text{ or } H. \leftrightarrow Fs \text{ are } G \text{ and } Fs \text{ are } H.
\]

Nickel (2010b) raises the worry that the kind theory lacks the logical resources to explain this implication, because it understands generic sentences as simple monadic predications. Now, free choice is a complicated phenomenon, and a host of formal theories that attempt to explain it are presently on offer.\textsuperscript{24} I won’t try to give an analysis of generic free choice here. For our purposes it suffices to note, once again, that this phenomenon only raises a problem for the simple kind theory. The sophisticated kind theory allows for a disjunction to be in the scope of the predicate modifier, if we decide that that’s the best option. Since the predicate modifier is intensional, it should come as no surprise that it gives rise to free choice effects—disjunctions are known to have free-choice

\textsuperscript{22} For example, their meaning is computed with respect to a contextually supplied modal base and ordering source (Kratzer, 1981), and they seem to be able to undergo modal subordination (Roberts, 1989).

\textsuperscript{23} A fertile area for an experimental pragmatics study, perhaps?

\textsuperscript{24} Including but not limited to Asher & Bonevac (2005); Alonso-Ovalle (2006); Fox (2007); Barker (2010)
readings, for instance, when they are in the scope of a modal.²⁵

My hope is that these three examples will illustrate a pattern in the literature on generics: what are standardly put forth as arguments for a quantificational theory of generics over a kind theory really are, upon further inspection, arguments for an analysis with a bit more logical structure than the simple kind theory. But there, either a quantificational theory or a sophisticated kind theory will fit the bill.

Three Contrasts

Having put the sophisticated kind theory back on the scene as a viable candidate, I now turn to considering positive reasons in favor of adopting it. I propose the following strategy for determining whether generic sentences are general statements about individuals or particular statements about kinds. If generics are true generalizations, we should expect them to exhibit the linguistic behavior of statements with quantifiers in them (hereafter, quantified statements). If they do not behave in this way, that already is a clear indication that they do not implicitly contain a quantifier.

In what follows, I present three hitherto unobserved contrasts between generic sentences and quantified sentences. First, generic sentences do not contextually domain restrict. That is the most important contrast: contextual domain restriction is the hallmark of natural language quantification, from determiner quantifiers to adverbial quantifiers and even modal auxiliary verbs. If generic sentences don’t domain restrict, that should give the quantificational analysis serious pause. But there are two other contrasts as well, which I would argue are related. One is that generic sentences are more selective than quantified sentences about what kind of predicate can go in subject position. Quantifiers will accept more or less any predicate with a denotation, but generic sentences seem to require something more, which I will give the nickname cohesion. The other

²⁵ In fact, although I haven’t gone into my preferred semantics for the predicate modifier, I’ll mention that it has an existential in it, which fits with the fact that it is typically modals with existential force which give rise to free choice effects.
contrast is that generic sentences exhibit a variety of context sensitivity that quantified sentences do not—they can vary as to whether they are interpreted artifactually or non-artifactually.

**No Domain Restriction**

It is a well-known fact that natural language quantifiers like *every, no, some, all*, and *most* pick up important additional information about their restrictor predicate from conversational context.\(^{26}\) To illustrate, suppose I walk into the class I’m teaching and say:

(20)  Is every student here?

In that context, I am not asking whether every student in the entire universe is there; I want to know whether everyone enrolled in the course is present. But I never said, ‘who is enrolled in the course.’ That part was left implicit. Philosophers and semanticists call this phenomenon *quantifier domain restriction*, because of the intuition that in sentences like (20), rather than generalizing over the extension of the restrictor predicate—*student*, in this case—we generalize over a subset of that extension. Thus, the domain of quantification—the set of all students—is *restricted* to one of its subsets—the set of all students in the class. Quantifiers are rarely, if ever, used unrestrictedly.

A natural question to ask when considering whether generic sentences contain a quantifier, then, is whether they also contextually domain restrict. Strikingly, they do not. To get a feel for the contrast, consider the following situation. Imagine you are a reporter for an animal rights magazine, and you hear that Wayne Newton annexed a new ranch specifically for jaguars onto his property. Your magazine flies you over to the ranch to investigate. After several days of touring the ranch, you discover that Mr. Newton’s jaguars have been given identificatory tattoos on the insides of their ears. From your point of view, of course, this is needlessly painful and thus morally abhorrent. Your editor travels to the ranch in order to witness what is happening first-hand. You pick her up at the airport and drive straight to the ranch, arriving at a location where all the jaguars

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\(^{26}\) For some classic discussion of contextual domain restriction, see Stalnaker (1970), pg. 276 and Lewis (1979), Example 3. More modern treatments can be found in von Fintel (1994) and Stanley & Szabó (2000).
have congregated, and their tattoos are clearly visible. Then, while opening the door to the back of your car, you proclaim:

(21) \textit{(opening the door)}

Unbelievable. Every jaguar has a tattoo.

This discourse is perfectly felicitous (and true). Why? Because although it is false that every jaguar in the world has a tattoo, it is true that every contextually salient jaguar—every jaguar on the ranch—has a tattoo. But now compare the following alternative discourse, with the corresponding generic in place of the quantified sentence.

(22) \textit{(opening the door)}

Unbelievable. ??Jaguars have tattoos.$^{27}$

In this context, the corresponding generic is at least false, and probably also infelicitous. Why? No interpretation on which it concerns only jaguars on the ranch is available. Saying that jaguars have tattoos in this context sounds like a non-sequitur, because its only possible interpretation is one on which it concerns jaguars in general.

Or imagine you are Willem de Vlamingh’s first mate, stumbling across the Swan River in Australia for the first time in 1697. In that context, a generic statement about ‘swans’ would not be appropriate for expressing your astonishment at a flock of black swans. But a quantified statement would:

(23) a. I can’t believe my eyes! Every swan is black.

b. I can’t believe my eyes! ??Swans are black.

These examples illustrate an important distinction between generic sentences and quantified sentences.$^{28}$ Quantifiers, in their standard usage, generalize over a subset of the predicate explicitly uttered. Generics, by contrast, are interpreted in the broadest sense possible. A quantified state-

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$^{27}$ I will adopt the convention of using the symbol # to mark a sentence off as a contradictory, infelicitous, or otherwise semantically ill-formed. The symbols ? and ?? indicate lesser degrees of semantic anomaly.

$^{28}$ For a related example, see Asher & Pelletier (1997), pp. 1165-66.
ment is almost always going to be about some particular jaguars who are relevant to our discussion. A generic, on the other hand, resists that kind of interpretation—it is used to characterize jaguars as such.

Nonetheless, we might wonder whether there is anything special about the cases just discussed. Perhaps there are other special circumstances in which generic sentences do contextually domain restrict. It isn’t unreasonable to think, on first glance, that examples in the vein of Condoravdi (1992, 1997) are indeed cases in which generic sentences contextually domain restrict. What I will argue is that if indeed anything is happening in these cases, they can’t be cases of genuine contextual domain restriction. Whatever phenomenon they are examples of, it is a phenomenon that is much more limited in scope. Thus, it seems safe to assume that the jaguar examples are indeed indicative of a deep distinction between quantification and genericity.

Let us examine one of these potential counterexamples more closely. In most contexts, the following sentence is false:

(25) Squirrels are friendly to people.

But if we first mention a location at which squirrels behave unusually, it is possible to give the above sentence a narrower interpretation:

(26) Washington Square Park is quite a place. Squirrels are friendly to people.

Why is it true to say that squirrels are friendly to people in this new context? Presumably it has to do with the fact that these are subject to an unusual amount of tourist traffic, which has led them to evolve a distinctive set of behavioral habits over time. Marking the park off as something noteworthy has made available a reading on which we’re talking about squirrels in the park, rather than squirrels in general.

Condoravdi’s original example was the following:

(24) A ghost has been haunting campus. Students are afraid.

That particular example won’t do as a counterexample, because afraid is a stage-level predicate, and so it’s difficult to hear the second sentence of (24) as a generic. But closely-related examples such as the one I present suggest themselves.
The first thing to say about these Condoravdi-style examples is that judgments about them are shaky. A weak majority of native speakers I consulted about them find them well-formed, but a significant minority of them find them ill-formed, strongly preferring variations that begin with ‘squirrels there’ or ‘in Washington Square Park, squirrels...’ So their ultimate status as counterexamples to the claim that generic sentences don’t domain restrict is probably just as shaky.

But of course, to stop there would be to proceed in bad faith. Suppose we play along and grant that sentences like (26) are admissible as data, for the sake of argument. Even then, it seems unlikely to me that these examples involve anything like *domain restriction*. One reason is that as we observed, a key feature of quantifier domain restriction is that it happens by default. The above phenomenon, whatever it may be, only happens in particular circumstances. Essentially, it only happens when the speaker marks a location off as remarkable earlier on in the discourse.

A natural thought for the quantificational theorist to have at this point would be that it is a bit too simple to say that quantifiers domain restrict by default. 30 There is evidence to suggest that some quantifiers can domain restrict only anaphorically, and others can domain restrict both anaphorically and deictically. Perhaps the contrast just described is an example of that distinction. Perhaps the generic quantifier is incapable of domain restricting *deictically*; it can only domain restrict *anaphorically*. The examples involving jaguars and swans were all deictic, in the sense that the information about how the predicate explicitly mentioned is to be restricted comes from information perceptually available to the speaker and listener. So example (26) might be thought of as a case of anaphoric domain restriction, in the sense that the information about what to restrict the predicate *squirrel* to—Washington Square Park squirrels—comes from a location mentioned earlier in the discourse—Washington Square Park. On such a view, there is a generic quantifier, but the reason it can’t contextually domain restrict in the examples we originally looked at is that there is nothing earlier in the discourse on which the contextual restriction can base itself.

30 Though I don’t know of any cases in which this has been observed in determiner or adverbial quantifiers, there is some evidence of a deictic/anaphoric-deictic only contrast in modal auxiliary verbs. For instance, Klecha (2011) argues that *gonna* can domain restrict either deictically or anaphorically, whereas *will* can only domain restrict anaphorically.
The problem with taking this route is that if there were a generic quantifier that was anaphoric-only (as it were), then the mere mention of a location in advance would suffice to license the Condoravdi phenomenon. But it does not:

(27)  
   a. Yesterday I spent the day photographing animals in Washington Square Park.  
       #Squirrels are friendly to people.  
   b. Yesterday I spent the day photographing animals in Washington Square Park.  
       Every squirrel is friendly to people.

Further variations prove comparably awkward, and the quantifier is always a more natural fit:

(28)  
   a. Have you been to Never Never Land? ??People/Everyone can fly.  
   b. In Washington Square Park, squirrels are given euphoria-inducing drugs.  
      ??Squirrels are/Every squirrel is friendly to people.  
   c. In Washington Square Park, tourists have been feeding animals for years.  
      ??Squirrels are/Every squirrel is friendly to people.

Thus, I believe we have independent reason to think that something other than domain restriction is happening in the Condoravdi cases. If they truly were instances of contextual domain restriction, they would have to occur in a much wider range of environments.

**The Cohesiveness Presupposition**

The second distinguishing feature of generic sentences is that they will not accept just any predicate in subject position. They are most naturally made about groups of things that intuitively all belong to the same kind—whose behavior is easily thought of, in context, as governed by a unified set of (defeasible) principles. Since interlocutors’ explanatory purposes vary from conversation to conversation, the same group of things may be easier or more difficult to think of as governed by similar behavior, depending on the conversational context. But this contextual variation notwithstanding, we can still observe that in any context where a generic sentence rules some predicate out, the corresponding quantified sentence accommodates that predicate.
In general, the more heavily modified a predicate is, the more specific the context required to
make it intelligible as having an extension whose members have something meaningful in common.
And accordingly, the more heavily modified a predicate is, the more specific the context required to
felicitously utter a generic using it in subject position. Now, this isn’t to say that generic sentences
are resistant to all heavily modified predicates. The following, for instance, all sound just fine:

(29)  
   a. Rabbits are skittish.  
   b. Rabbits from Mexico are skittish.  
   c. Rabbits with fluffy fur are skittish.

These sentences are all equally felicitous. However, Carlson (1982) observed that the moment one
modifies the noun phrase in subject position of a generic with an indexical expression, the generic
becomes awkward:

(30)  
   a. #Toppings on this pizza are vegetarian.  
   b. #Chairs in that house are made of oak.  
   c. #Desks that I am looking at right now have metal tops.

Quantified sentences are comparatively indifferent to what sort of predicate appears in their restrictor position:

(31)  
   a. Every/some/most topping(s) on this pizza is/are vegetarian.  
   b. Every/some/most chair(s) in that house is/are made of oak.  
   c. Every/some/most desk(s) that I am looking at right now has/have a metal top.

The sentences in (30) are at least false and probably also infelicitous, even in the circumstances in
which the sentences in (31) are true.

Why might that be? Ultimately, this distinction should not be surprising. Many authors
have had the intuition that generic sentences have a lawlike character to them—that they describe
defeasible principles which hold of certain kinds of things (Milsark, 1974; Dahl, 1975; Carlson,

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1977a; Asher & Pelletier, 1997; Cohen, 2001). But in order to make a statement with a lawlike character to it, one must first be talking about a class of objects to which some set of laws applies. An arbitrary group of objects isn’t the sort of thing we think of as governed by substantive, non-trivial laws. If generic statements have this lawlike character, they are ideally made about groups of things that are all governed by a unified set of laws. So in a way, it makes perfect sense that an indexical predicate—under whose extension an object falls only due to coincidental factors like when and where it is uttered—would sound odd in subject position of a generic. Why should we think that there are any special principles governing the behavior of the toppings on a specific pizza?

I take the contrast between (30) and (31) to indicate that generic sentences are not engaged in true generalizing, where generalizing is the kind of purport we associate with a quantifier. Quantificational generalizing is maximally general, in the sense that any set of objects is fair game for a quantificational generalization. If you are a group of more than one object, you can be generalized over. But generic sentences can’t be made about any old set of objects. The set of objects have to have something further in common.32

To mark this (still rather murky) distinction, I will call predicates with this feature, whatever it is, cohesive and any predicates that are not cohesive haphazard. And I will say generic sentences come with a presupposition that the predicate in subject position is cohesive. Take the above three indexically-tinged predicates as paradigm cases of haphazard predicates. There is a great deal to be said about what exactly the objects falling under the extension of the predicate in subject position of a generic sentence need to have in common, in order for the generic sentence to be felicitous, and going into it in detail here would take us far afield. However, in this context of this discussion, two observations will suffice. First, the class of predicates that quantified sentences will accept as restrictions is quite inclusive, as compared to the class of predicates that a generic will admit

32 In principle, indexical predicates shouldn’t be the only kind that sound awkward in subject position of a generic sentence. But the way they pin their extensions to the particular circumstances in which they are uttered makes them especially useful as illustrative examples.
in subject position. Second, the class of predicates that a generic sentence will admit in subject position lines up rather closely with what philosophers have called sortal predicates.

The sortal/non-sortal distinction comes out of Strawson (1959), Geach (1980), and Wiggins (2002), who trace it back to Gottlob Frege, Thomas Aquinas, and Aristotle. It very roughly lines up with the distinction between nominal predicates, on the one hand, and verbal and adjectival predicates, on the other. Here is what Peter Geach has to say about sortal predicates (which he calls substantival):

This brings us, not yet to the notion of a substantial term, but at least to that of a substantival term. Aquinas calls out attention to a feature of Latin grammar—that substantives are singular or plural on their own account, whereas adjectives ‘agree in number’ with substantives. This suggests to him a logical distinction between two sorts of terms: substantival terms, to which the question ‘how many?’ applies directly, and adjectival terms, to which this question applies only insofar as they are used to add a qualification to substantival terms. One may ask how many cats there are in a room; but not, how many black things there are in a room; only how many black cats (say) there are in the room. The basis of this distinction is that the sense of ‘cat’ determines a sense for ‘one and the same cat,’ whereas the sense of ‘black thing’ does not in the least determine what shall count as one and the same black thing.

Now, Geach is slightly overstating his case. Asking how many black things there are in a room isn’t starkly ungrammatical or anomalous in English. Geach’s real point is that the question sounds odd unless we imagine it uttered in a specific kind of context, and we will examine what such contexts look like in a moment. I would break the thoughts expressed in this passage down into two components. First, the philosophical intuitions behind sortal predicates have to do with what is required to be competent at deploying them. In order to be competent in the use of a non-sortal predicate $F$, one needs to know how to determine what falls under $F$’s extension. But in order to be competent in the use of a sortal predicate $K$, one (at least) also needs to be able to:

\[(32) \quad \text{a. Determine, for any two objects, whether they are the same } K.\]

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33 For a good contemporary overview, see Lowe (2009).
34 Geach (1961), pg. 86.
The second component of Geach’s ideas lies in their linguistic ramifications. The aforementioned authors (including Aristotle!) provocatively suggested that this set of philosophical intuitions also manifests itself as a set of grammatical tests:

(33) Ashley: What is that on the horizon? Whitney: It’s a whale.

(34) Ashley: What is that on the horizon? Whitney: ??It’s a green thing.

(35) a. This and the animal you saw last night are in fact the same whale.

b. ??This and the tennis ball you saw yesterday are in fact the same green thing.

Geach (1980), Gupta (1980)

These data are subtle, and should be heard as contrasts. But it is clear that for appearing in the same $K$ as constructions and What is it? questions, sortal predicates are the optimal choice.

What does it take for a predicate to be cohesive—to qualify as the subject of a generic sentence? That is a big question. But at this point, we can at least say that the class of cohesive predicates, the category selected for by the indexical-generic diagnostic given earlier, lines up closely with the class of sortal predicates, the category selected for by the above three diagnostics. Cohesive predicates must at least be sortals.

To see this, we may run some of our indexical predicates through some of the tests for sortals. For the first example, imagine that two people are looking at a blow-up of a photograph taken from a bird’s eye view at a great height, with a barely discernible pizza off in the corner.

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35 Certain accounts of sortal predicates collapse these two conditions, but I will follow Geach (1980) in assuming that competence in (32-a) is a necessary but not sufficient condition for competence in (32-b).

36 A few further conditions must be met in order for this test to tell us anything. Most importantly, ‘What is that?’ must be uttered with what I take it be its most basic, literal meaning, in which the person asking the question lacks any means of substantively identifying the object. Sometimes, we also ask ‘What is that?’ in contexts where we have already identified the object, but we want to know further facts about it that would explain its significance. In those contexts, the question means something more like: ‘Why are you treating this object in that way?’ And there
(37) Ashley: (Pointing to a speck in the photograph.) What is that speck?

Whitney: It’s a pizza topping on this pizza.

For the second example, imagine that two people are standing in front of a window that faces a house. They are looking at a live video feed from a camera placed inside the house, but the image is out of focus.

(38) Ashley: What is that blurry blob?

Whitney: It’s a chair in that house.

For the final example, imagine that you and I are walking home after having helped a friend move a new piece of furniture into their new house.

(39) a. Can you believe that the piece of furniture we just assembled and the heavy object in that box are actually the same chair?

b. #Can you believe that the piece of furniture we just assembled and the heavy object in that box are actually the same chair in that house?

Given the way those examples go, we might expect non-sortal predicates to be more awkward in subject position of a generic sentence than they are in restrictor position of a quantified sentence. And that is just what we find:

(40) a. Plants are inanimate.

b. Green things are inanimate.

c. Most green things are inanimate.

In ordinary contexts, adjectival predicates make for odd generic sentences. One reason for this is it can make perfect sense to use an indexically modified predicate. For example:

(36) (Ashley is looking longingly at a comb.)

Whitney: What is that thing?

Ashley: It’s a comb that used to belong to my mother.

In this case, the very context that a nonstandard construal of ‘What is that?’ available is the context that makes comb that belonged to my mother into a sortal predicate. In a moment, we will look at similar examples of context sensitivity sortals.
that to even form a generic sentence with an adjectival predicate in subject position, we need to cram it into the mold of a noun phrase by combining it with a vacuous nominal predicate like thing, object, or stuff, which makes such generic sentences sound stilted. But more to the point, in most contexts there is something woefully underspecified about the predicate green thing. Green what, one wants to ask. Defenders of the notion of sortals have sought to capture this underspecification by saying that green things have no identity criteria: no principle in virtue of which any particular green thing is the same as or different from any other.

It is important to recognize that this not the case in all contexts. Given the appropriate situation, a predicate like green thing can take on the kind of explanatory significance necessary for it to perform in a generic sentence. Suppose, for example, that you and I are in the path of a charging bull. In that situation, I might say:

(41) Quick! Hand me something red! Anything red! Red things are useful for fending off charging bulls.

The same goes for our original cases. In a situation where the pizza before me is of special significance, a generic sentence about toppings on it sounds remarkably improved. Suppose the world’s greatest pizza chef has prepared some dough with a little oil, cheese, oregano, and tomato sauce, and has left it up to me to decide how to top it. In that situation, it would be reasonable for me to say something like:

(42) Toppings on this pizza are strictly optional. It’ll be great no matter what.

Whether a predicate is cohesive, then, is context-dependent; it varies with the explanatory purposes of the conversational participants. This is a nontrivial wrinkle in the data regarding cohesion.

If the cohesion of a predicate is context-dependent in this way, and the diagnostics for cohesive predicates agree in output with the diagnostics for sortal predicates, then this observation

37 Surely that must be what Aquinas had in mind when he wrote that nominal (or substantival) predicates ‘carry their subject with them,’ whereas adjectival predicates ‘add the thing signified to the substantive.’ See Aquinas I: Q. 39, Art. 5.
brings with it a fairly significant consequence: namely, that the sortal/non-sortal distinction is context dependent in just the same way. And indeed, it seems to me that this prediction is borne out. Imagine that Evelyn and Vivian are observing someone at whom a bull is charging, and Jean is color-blind. We might then imagine either of the following two conversations taking place:

(43) Evelyn: What is he pulling out of his pocket?
Vivian: It’s a red thing. He’s going to distract the bull and made a break for it!

(44) Evelyn: He’s using the same red thing he used last week to distract another bull.

If this is right, then the distinction between sortal and non-sortal predicates is just as context-relative as the distinction between cohesive and haphazard predicates. It isn’t quite as clear-cut as saying that such-and-such are the sortals, and so-and-so are the non-sortals, point finale. Rather, convincingly demonstrating a given predicate to be sortal or non-sortal in a given hypothetical context will require us to make sure we don’t accidentally underspecify that context.

Though they have had a presence in the philosophical literature for some time, the tests discussed in this section have not been thoroughly explored by natural language semanticists, and clearly there is more work to be done before we can be confident of their viability as true grammatical diagnostics. The only point we need to make for the purposes of this section is that when, in a particular context, a given generic is resistant to a predicate in subject position, the corresponding quantified sentence exhibits no such resistance. I take that to be a second point both in favor of a kind theory and against the idea that generic sentences are really engaged in generalizing.

**Artifactual Interpretations**

The third contrast involves a kind of context-sensitivity that is present only in generic sentences. Unlike quantified sentences, generic sentences are often susceptible to both artifactual and non-artifactual interpretations. This is brought out by cases where the same kind is ascribed different properties depending on whether it is being regarded *qua* artifactual kind or *qua* non-artifactual kind (Nickel, 2008):
Presumably, the first sentence would be true in e.g. a context where evolutionary biologists were comparing Doberman Pinschers with German Shepherds, whose ears naturally grow to be pointy. Dobermans are born with floppy ears that are traditionally cropped to come out pointy. So the first sentence, when true, would capture that fact about their phenotypic characteristics. It would be true on the non-artifactual interpretation. The second sentence would be true in a context where the conversational participants were comparing the features of different breeds in view of their cultural role. This is the more familiar context, given that it is relatively uncommon to see a Doberman with natural ears. The second sentence, when true, would be used to capture the fact that in order to fulfill the cultural roles we have prescribed for them (being recognizable as dobermans, being threatening, having an enhanced ability to hear intruders), Doberman Pinschers are typically given pointy ears. So here we would have the artifactual interpretation, in the sense that the property is being applied to dobermans qua cultural artifact.

These readings are not easy to achieve with quantifiers. The corresponding quantified sentences give rise to neither the artifactual nor the biological interpretation; they can be understood neither as describing the ontogenetic tendencies of dobermans nor as describing the cultural practice of raising dobermans. Rather, they simply generalize over actual dobermans.  

\[(46)\]  
\[
\begin{align*}
\text{a. Few dobermans have pointy ears.} & \quad \text{false} \\
\text{b. Few dobermans have floppy ears.} & \quad \text{true} \\
\text{c. Most dobermans have pointy ears.} & \quad \text{true} \\
\text{d. Most dobermans have floppy ears.} & \quad \text{false} \\
\text{e. Every doberman has pointy ears.} & \quad \text{false} \\
\text{f. Every doberman has floppy ears.} & \quad \text{false}
\end{align*}
\]

Note that I am leaving to one side contexts in which the salient domain restriction is to e.g. dobermans in a particular room, all of whom have natural ears. The point is that the assignment of truth values in (46) arises in contexts where the corresponding generic would go the other way.

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As we saw, generic sentences like (45-a) and (45-b) require rather little contextual nudging to flip from being construed artifactually to being construed non-artifactually (and vice versa). The sentences in (46), on the other hand, do not have multiple interpretations; sentences (46-d) and (46-f) can’t be uttered in a conversation among evolutionary biologists to convey the thought that dobermans are born with floppy ears. One could perhaps force such an interpretation by adding an illocutionary modifier like \textit{really}:

\begin{align}
(47) \quad \text{Really, every doberman has floppy ears.}
\end{align}

But that only highlights the contrast with the generic, which can naturally receive an artifactual interpretation without the use of such illocutionary operators.

\textbf{A Kind-Theoretic Analysis}

In view of the above considerations, then, the prospects for a quantificational analysis look somewhat dim. Why? The main reason is that generic sentences do not contextually domain restrict. But in addition, they are susceptible to artifactual interpretations and they require cohesive predicates in subject position. A quantificational analysis would wrongly predict generic statements to pattern with quantified sentences on these fronts. A kind-theoretic analysis not only makes the correct predictions about these three data points, but offers a unified explanation for them. Here is a broad outline of how such an explanation would look in its most minimal form.

First, generic sentences do not contextually domain restrict because they contain no quantifier, and therefore have no domain to be restricted. In spite of its plural appearance, the noun phrase \textit{frogs} isn’t a restrictor predicate with a quantifier operating on it or a plural noun phrase referring to a collection of objects\textsuperscript{39} but a term that refers to a frog-kind.

\textsuperscript{39}It is worth saying that this analysis could be combined with the approach of Chierchia (1998), according to which the noun phrase in subject position of a generic \textit{does} refer to a plural lattice. For simplicity of exposition I avoid introducing that complication here, since the phenomena we could explain by introducing it are not under discussion at present.
Second, all generic sentences come with a presupposition that the noun phrase in subject position refers to a kind, not unlike the existence presupposition that comes with a singular term. At this stage of the game, we need not commit ourselves to any particular metaphysical theory of what a kind is. For the purposes of this semantics, we need only assume that for every cohesive predicate \( S \), there exists a principle that determines whether anything in its extension is the same \( S \) as anything else. Call this principle \( S \)-kind, and call the function that maps predicates to their kinds \( f \). For other predicates—the haphazard ones—there exists no such principle, and therefore \( f \) will not be defined on them. Giving a predicate the plural suffix but no article when it is in subject position will map that predicate to the kind associated with it; and where there is no such kind, the semantic derivation will crash. For example, sentence (29-b), repeated below, presupposes that the predicate \( \text{rabbit from Mexico} \) has a kind associated with it; that the noun phrase \( \text{rabbits from Mexico} \) refers to a kind. And indeed there is such a kind, so it is felicitous:

\[
(48) \text{Rabbits from Mexico are skittish.}
\]

true if \( f([\text{rabbit from Mexico}]) \) satisfies the predicate \( \text{skittish'} \)
false if \( f([\text{rabbit from Mexico}]) \) doesn’t satisfy the predicate \( \text{skittish'} \)
anomalous if \( f([\text{rabbit from Mexico}]) \) is undefined\(^{40}\)

Sentence (30-a), repeated here, presupposes that the predicate \( \text{topping on this pizza} \) refers to a kind. Given that there is no such kind, in ordinary contexts, it is infelicitous:

\[
(49) \#\text{Toppings on this pizza are vegetarian.}
\]

true if \( f([\text{topping on this pizza}]) \) satisfies the predicate \( \text{vegetarian'} \)
false if \( f([\text{topping on this pizza}]) \) doesn’t satisfy the predicate \( \text{vegetarian'} \)
anomalous if \( f([\text{topping on this pizza}]) \) is undefined

That is how the sophisticated kind theory proposes to account for the cohesiveness presupposition. But to account for the remaining data point, we need only make a few small changes to \( f \). First, we

\(^{40}\) Read \([\cdot]\) as the denotation function. So for any English phrase ‘A B C,’ \([A B C]\) refers to the denotation of the phrase ‘A B C.’
need to define a subkind relation. Then, instead of defining \( f \) as the function that maps a predicate to the kind to which everything in its extension belongs, define \( f \) as the function that maps a predicate to the contextually salient subkind of the kind to which everything in the extension of that predicate belongs. Intuitively, a kind \( K \) stands in the subkind relation to another kind \( K' \) just in case being a member of \( K \) also means being a member of \( K' \). For instance, whale-kind is a subkind of mammal-kind. Why? Whatever is a whale is thereby also a mammal. Our definition of subkinds will reflect this basic intuition.

Let us begin easing our way into the proposal by returning to examples (45-a) and (45-b) (repeated here):

(50)  
\begin{align*}
\text{a. Dobermans have floppy ears.} & \quad \text{true when uttered by biologists} \\
\text{b. Dobermans have pointy ears.} & \quad \text{true when uttered by dog breeders}
\end{align*}

Earlier, we hypothesized that sentence (50-a) is true because the property of having floppy ears characterizes biological dobermans, and (50-b) is true because the property of having pointy ears characterizes artifactual dobermans. It seems to me that a natural way to account for this phenomenon is to suppose that artifactual dobermans form a subkind of biological dobermans. Why? Just as we saw with whales and mammals, anything that is an artifactual doberman is thereby also a biological doberman.

We can define the subkind relation more specifically as follows: \( K_{sub} \) is a subkind of \( K \) just in case:

(51)  
\begin{align*}
\text{a. For some predicate } S_{sub}, K_{sub} \text{ is a principle determining whether anything in the extension of } S_{sub} \text{ is the same } S_{sub} \text{ as anything else.} \\
\text{b. Every member of } K_{sub} \text{ is also a member of } K.^{41}
\end{align*}

We will assume that in sentences (50-a) and (50-b) everyone is aware that dobermans do not nat-

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41 Note that this definition presupposes a Geachian conception of sortals, which allows for relative identity. This definition isn’t possible under Wiggins’ conception, because Wiggins is committed to saying that the principle which makes e.g. this giraffe the same giraffe as the other giraffe has to be the very same principle that makes it the same mammal as the other giraffe.
urally have floppy ears. ‘Dobermans have floppy ears’ will be true just in case the (contextually salient) subkind of the sortal principle that gives every member in the extension of the predicate *doberman* its identity conditions is characterized by floppy eared-ness. In both sentences, the sortal principle that gives every member of the extension of the predicate *doberman* its identity conditions is biological doberman-kind. But they vary in which subkind of biological doberman-kind is contextually salient. In sentence (50-a), the contextually salient subkind of biological doberman-kind is also biological doberman-kind.\(^{42}\) It comes out true because biological doberman-kind is indeed characterized by floppy eared-ness. In sentence (50-b), the contextually salient subkind of biological doberman-kind is artifactual doberman-kind. In that context, sentence (50-b) comes out true because artifactual doberman-kind is characterized by pointy eared-ness.

Now what about Condoravdi cases like (26)? Suppose, once again for the sake of argument, that we decide to accept them as linguistic data. As I argued above, this phenomenon occurs in a far narrower range of cases than we should expect it to occur, were it to be a true case of quantifier domain restriction. It seems to me that what, if anything, is really happening in these examples is that a new kind is being *introduced into discourse*. So squirrels aren’t friendly to people, because biological squirrel-kind isn’t characterized by friendliness. But if I say ‘Washington Square Park’ is quite a place, I set that location up as one that flaunts expectations; and one way for a location to flaunt expectations is for it to contain a kind that wasn’t previously in the common ground of our conversation. If sentences like (26) are indeed semantically well-formed, then perhaps what is happening instead is that a process of accommodation is introducing a new kind into discourse, to cash out on the promise made earlier in the discourse that there will be something remarkable about Washington Square Park. Once this new subkind of the kind explicitly mentioned (Washington Square Park squirrels) is contextually salient, the generic is interpreted to be about it, rather than the kind explicitly mentioned (squirrels as such). The details of this story remain to be spelled out, of course;\(^{43}\) but even at our present level of generality, it should be clear that only an account

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\(^{42}\) This is made possible by the fact that the subkind relation isn’t irreflexive.

\(^{43}\) For the details, see my Teichman (ms), chap. 4.
of this sort can correctly reflect the fact that the Condoravdi phenomenon manifests itself in such limited circumstances.

**Take-Home Morals**

We began by asking what generic sentences were about. When I state that bears are furry, am I making a generalization that goes through the bear population, one by one, and ascribes to each individual bear the property of being furry? Or am I making a particular statement about bear-kind—the claim that it is characterized by furriness?

In this paper, we examined some evidence that strongly favors the latter hypothesis. Generic statements are particular claims about kinds, not general statements about their members. The main reason we should think they aren’t general statements is that unlike true general statements—statements that involve quantification—generic statements do not pick up information from conversational context about how to restrict their domains. The hypothesis that they do not involve quantification and therefore have no domain neatly explains this fact. Furthermore, the kind theory (in its sophisticated guise) provides a single, unified explanation for why generic statements are different from quantified sentences in two other respects: they presuppose that everything in the extension of the predicate in subject position belongs to the same kind, and they exhibit a unique variety of context sensitivity that allows for artifactual interpretations. These differences are readily explained in terms of a definite operator with a familiarity condition on it, which checks the conversational background for a kind whose members belong to the extension of the predicate in subject position.

The sophisticated kind theory is as old as the simple kind theory, but for some reason it seems to have been left behind by the literature on generics. Recent discussions of this issue consider only the choice between a simple kind theory and a quantificational theory. But it is this

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44 A notable exception in this regard is Leslie (2013).
author’s opinion that the sophisticated kind theory offers the best of both worlds: it accords generic sentences the additional additional logical structure they indeed seem to have, and correctly gets at important differences in how they and quantified sentences behave. Perhaps it ought to be given a second look.

References


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