

Sharvy's Theory of Definite Descriptions Revisited

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It is well known that Russell's theory of descriptions is unable to account for definite mass and plural descriptions.¹ 'The wine in this glass', for example, cannot be analyzed as 'there is a unique quantity of wine in this glass', for the wine in this glass has proper parts that are themselves quantities of wine. Similarly, 'the people in Auckland' cannot be analyzed as 'there is a unique sum of people in Auckland', because many sums of people are sums of people in Auckland. Unlike definite singular count descriptions, definite mass and plural descriptions do not in general imply the existence of a unique sum or quantity. However, definite singular and plural count descriptions and definite mass descriptions do have something in common. They carry an implication of maximality.² Thus, 'the people in Auckland like the outdoor' implies that all the people in Auckland like the outdoor.

Richard Sharvy (1980) sought to remedy the defects of Russell's theory. On Sharvy's view, sentences of the form 'G($\iota x: Fx$)' are to be assigned truth-conditions in accordance with the following rule:

$$(SAD) \quad G[\iota x: Fx] =_{\text{def}} \exists x(Fx \ \& \ \forall y(Fy \rightarrow y \leq x) \ \& \ Gx)$$

'F' can be a mass noun, or singular or plural count noun, and ' \leq ' means 'is a (proper or improper) part of'. Where 'F' is a singular count noun, the definiens of (SAD) reads 'an F that every F is part of satisfies "G" '. Where 'F' is a plural count noun or a mass noun, the definiens reads

‘some F that all F is/are part of satisfies “G” ’.³ Singular count nouns apply only to maximal parts of whatever they apply to. For example, ‘cat’ applies only to cats, not to cat tails. Moreover, singular count nouns are not cumulative. ‘Cat’ does not apply to the sum of two cats. So, where ‘F’ is a singular count noun, ‘G[ιx : Fx]’ comes out true if and only if there is a unique F. The uniqueness implied by singular definite descriptions is thus a by-product of combining ‘the’ with a singular count noun.

Unlike Russell’s theory, (SAD) tells us how to analyze sentences containing definite mass and plural descriptions. ‘The wine in my glass is red’ is to be analyzed as ‘some wine in my glass that all wine in my glass is part of is red’. ‘The people in Auckland like the outdoors’ is to be analyzed as ‘some people in Auckland that all people in Auckland are part of like the outdoors’. Because most plural count nouns and mass nouns apply to at least some proper parts and fusions of whatever they apply to, definite plural descriptions and definite mass descriptions do not in general imply the existence of a unique sum or quantity.⁴ They imply only the existence of a unique maximal sum or quantity.

Sharvy’s analysis can do all Russell’s can do, and more besides. But it has some striking implications. Sharvy’s quantifiers range over ordinary objects, quantities, and sums or totalities of ordinary objects. In Sharvy’s own words,

The definite plural description ‘the people in Auckland’ designates the *sum* or *totality* of all the people in Auckland. This is the sum of all that to which the predicate ‘are people in Auckland’ applies: the sum of all the items such as the women in Auckland, the children in Auckland, etc. that satisfy the plural predicate ‘are people in Auckland’ (1980, p. 616).

However, the sums designated by definite plural descriptions are exotic birds. They are capable of satisfying plural predicates like ‘are proud of their cuisine’, ‘like the outdoors’, and ‘are friendly to visitors’.⁵ Since ‘the people in Auckland are friendly to visitors’ thus implies ‘something *are* friendly to visitors’, Sharvy’s analysis requires a thorough revision of the English

grammar. But grammatical revision does not accord well with Sharvy's project, which is that of providing truth-conditions for the sentences of ordinary discourse. A better strategy would be to insist that the truth-conditions for sentences with plural predicates are more complex than they first appear. However, as we will see, this species of revision runs into trouble as well.

Fortunately, these problems are easily avoided if Sharvy's analysis of definite plural descriptions is re-cast in terms of plural quantification. The theory that emerges can account for definite mass and definite plural descriptions, and it can be extrapolated to account for generic uses of definite descriptions, as in 'the dinosaur is extinct' or 'the crustaceans evolved simultaneously'.

The structure of the paper is as follows. The first section is a brief presentation and criticism of Sharvy's account of plural definite descriptions. An alternative account of plural definite descriptions, building on the ideas of plural quantification and non-distributive plural predication, is developed in section II. Finally, an application of the general account of plural definite descriptions in an account of generic uses of definite descriptions is provided in sections III-V.

I. Pluralities and Plural Predicates

Sharvy's analysis of definite descriptions has the merit of providing a single rule for how to assign truth-conditions to sentences containing definite singular and plural descriptions, but it faces problems. Take:

- (1) The apples in this bowl are apple-shaped.

(1) clearly cannot be represented as:

- (1a) $[\lambda x: \text{apples-in-this-bowl } x](\text{is-apple-shaped } x)$

(1a) is true if and only if a sum of apples in this bowl that every sum of apples in this bowl is part of is apple-shaped. But a sum of sufficiently many apples is not itself apple-shaped. So, unlike (1), (1a) is false if this bowl contains several apples. The mistake here is with ‘is-apple-shaped’. The predicate ‘is-apple-shaped’ is not cumulative, and so does not hold of a sum of several apples. Like mass predicates, plural predicates are often cumulative: sums of parts which are apples are apples (Sharvy, 1980, p. 617). So, (1) is better represented as:

(1b) $[\iota x: \text{apples-in-this-bowl } x](\text{are-apple-shaped } x)$

The truth-condition for (1b) can be paraphrased as: ‘Some apples in this bowl that all apples in this bowl are part of are apple-shaped’. This seems fine. However, the English paraphrase is misleading. Sharvy’s quantifiers are singular, not plural (Sharvy, 1980, p. 616). So, the individuals being quantified over are sums of apples, not apples. (1b) is true if and only if something to which_x the predicate ‘apples-in-this-bowl’ applies and which_x has everything to which_y the predicate ‘apples-in-this-bowl’ applies as part satisfies the predicate ‘are apple-shaped’. (1b) thus implies that something *are*-apple-shaped. This sounds like plain non-sense. It *is* non-sense—in English, that is. Of course, some people do allow singular terms to combine with plural predicates (e.g., ‘Manchester have taken the field’, ‘Parliament have acted’, etc.). Hence, it may be that we just need to allow that into our grammar in order to accommodate the general account of descriptions that Sharvy gives. But that would do no good. For (1b) is supposed to represent the syntactic structure of a sentence in English, not in a new language in which arguments to predicates are unmarked for number.⁶

Our initial reaction, however, may be premature. For we haven’t yet said under which conditions ‘are-apple-shaped’ is true of an object. The truth-conditions for sentences containing plural predicates may be more complex than they first appear. A sum or totality, Sharvy might

say, satisfies the predicate ‘are apple-shaped’ just in case its parts are apple-shaped. This might work. However, ‘parthood’ cannot simply be understood in classic mereological terms (Koslicki 1999b). For not all parts of the sum of the apples in this bowl is itself an apple. The cores of the apples, for example, are part of the sum of the apples in this bowl, but are not themselves apples. Nor can it be understood in terms of the notion of naturally demarcated part. For the entities designated by definite plural descriptions need not be naturally demarcated. The entities designated by ‘the school regulations’, ‘the sleeves of my shirt’, or ‘the Northern hemispheres of these globes’, for example, are not.

What seems to be required for something to be a part (in the relevant sense) of the sum of the apples in this bowl is that it be an apple (cf. Sharvy, 1980, p. 620). On this proposal, (1) is true if and only if something that_x satisfies ‘apples-in-this-bowl’ and that_x has everything that_y satisfies ‘apples-in-this-bowl’ as part is such that each of its_x apple-parts are apple-shaped. (1), then, doesn’t imply that something *are* apple-shaped, but only that something is such that each of its apple-parts are apple-shaped. This seems fine. Suppose there are only pears in this bowl. Then there isn’t something that satisfies ‘apples-in-this-bowl’. So, (1) is false, which is as it should be. Suppose that some of the apples in this bowl are pear-shaped. Then it is false that the sum of the apples is such that each of its apple-parts is apple-shaped. So, (1) is false. Again, this is as it should be.

But a further problem arises with non-distributive plural predicates like ‘take-up-a-lot-of-space’. It clearly won’t do to say that ‘take-up-a-lot-of-space’ is true of *x* just in case *x* takes up a lot of space, for ‘my armchair *take* up a lot of space’ should then be grammatical. Consequently, ‘the apples take up a lot of space’ implies that something *take* up a lot of space. And so, grammatical revision seems required after all.

Definite plural descriptions thus cannot be taken to denote single entities. Of course, it may be argued that if there are six apples in a bowl, then there is something the six apples

compose. But ‘the apples in this bowl’ does not denote that thing. In fact, Sharvy here seems to agree. Sharvy:

What sort of entity is denoted by the definite plural description ‘the men in Auckland’? This question contains the mistaken implication that this phrase denotes *a single* entity. But the phrase ‘the men in Auckland’ obviously denotes the men in Auckland. One might ask, “What sort of entities are *those*?” But the answer is easy: they are entities that eat, drink, sleep, and are numerous. The error to avoid is an insistence on the singular. ‘the men in Auckland’ is not a singular term—it is a plural term. This should hardly need not be said. But some writers have gone astray by failing to see that plural are plural, and so insisting that they must denote something singular (1980, p. 620).

Sharvy thus admits that definite plural descriptions do not denote something singular; they denote something plural. The problem is that Sharvy doesn’t abide by his own words. As his quantifiers are standard first-order quantifiers, the variables are singular, not plural.

II. Plural Quantification

Fortunately, it is not difficult to amend Sharvy’s analysis. As George Boolos (1984) has argued,⁷ to adequately represent the use of plural forms in English, we need a language with plural quantifiers. But we need not take second-order quantifiers to range over sets of the entities over which our first-order order quantifiers range. Instead, we can treat plural quantification as a special way of quantifying over multiple entities.

To adequately represent plural descriptions in distributive *and* non-distributive environments we add to the language of first-order logic plural variables X_i and the two-place predicate ‘is one of’. ‘Is one of’ has an argument-place that takes singular arguments and another that takes plural arguments. ‘ $\exists X$ ’ reads ‘there are some things such that $_x$ ’, plural predicates of the form ‘ FX ’ read ‘they $_x$ are F ’, and ‘ Xx ’ reads ‘it $_x$ is one of them $_x$ ’. Following Boolos, we suppose

that plural existential quantification does not incur a commitment to more than one entity of the kind in question (Boolos, 1984, p. 443). That is, ‘ $\exists X$ ’ is understood so as to allow for the possibility that there is just one X . We define ‘they_X are some of them_Y’ as follows:

$$X \subseteq Y =_{\text{def}} \forall x (Xx \rightarrow Yx)$$

They_X are some of them_Y if and only if everything that_x is one of them_X is one of them_Y. Sentences of the form ‘G[ιX : FX]’ can then be assigned truth-conditions in accordance with the following rule:

$$\text{(PAD)} \quad G[\iota X: FX] =_{\text{def}} \exists X (FX \ \& \ \forall Y (FY \rightarrow Y \subseteq X) \ \& \ GX)$$

(PAD) is just the plural counterpart of Sharvy’s analysis. The definiens reads: there are some things_{S_X} such that they_X are F, and any things_{S_Y} that are F are such that they_Y are some of them_X, and they_X are G. If ‘F’ is a distributive predicate such as ‘are-apples-in-this-bowl’, then (PAD) may be replaced by the equivalent analysis,

$$\text{(PAD*)} \quad G[\iota X: FX] =_{\text{def}} \exists X (\forall x (Xx \leftrightarrow Hx) \ \& \ Gx)$$

where ‘H’ is a (monadic) first-order predicate that does not contain the definiendum as a constituent, for example, ‘is-an-apple-in-this-bowl’ (Cartwright 1996).⁸ If ‘F’ or ‘G’ is a non-distributive predicate such as ‘six-apples-in-this-bowl’ or ‘students-who-are-surrounding-the-White-House’, (PAD) may not be replaced by (PAD*). We could, of course, assign to ‘the students who are surrounding the White House are furious’ the following truth-conditions: ‘ $\exists X (\forall x (Xx \leftrightarrow \text{one-of-the-students-who-are-surrounding-the-White-House } x) \ \& \ \text{furious } x)$ ’.

However, because the predicate ‘one-of-the-students-who-are-surrounding-the-White-House’ contains the definiendum ‘the students who are surrounding the White House’ as a constituent, this analysis presupposes an account of the expression being analyzed.

The use of (PAD) in representing sentences containing plural definite descriptions is straightforward. Consider, for instance:

- (1) The apples in this bowl are apple-shaped

If ‘the apples in this bowl’ is treated as a plural quantifier, (1) can be formalized as:

- (1a) $[\exists X: \text{apples-in-this-bowl } X](\text{are-apple-shaped } X)$

(1a) reads: the Xs, such that they_X are apples in this bowl, are apple-shaped. Since the quantifiers range over pluralities, the present analysis avoids the above problems with that of Sharvy’s. On the present analysis, (1) entails ‘some things are apples in this bowl’ and ‘some things are apple-shaped’, which is as it should be.

However, matters are more complicated than they first appear. Description sentences with predicates that admit of both a distributive and a collective reading are ambiguous. Consider, for instance:

- (2) The apples in this bowl weigh 2 pounds

‘Weigh 2 pounds’ has a lexical ‘double nature’ that must be resolved if ambiguity is to be avoided (Koslicki 1999b). On a collective reading of the predicate, (2) says that the fusion of the apples in this bowl weighs 2 pounds. On a distributive reading, (2) says that each of the apples in

this bowl weighs 2 pounds. Let $[\sigma x(Xx)]$ mean ‘the fusion of the Xs’. We can then distinguish the following two senses of the predicate ‘weigh-2-pounds’:

(3) Weigh-2-pounds₁ X iff $[\forall x: Xx](\text{weighs-2-pounds } x)$

Weigh-2-pounds₂ X iff $[\iota x: x = \sigma y(Xy)](\text{weighs-2-pounds } x)$

‘Weigh-2-pounds₁’ is true of them_X if and only if each of them_X weighs 2 pounds. ‘Weigh-2-pounds₂’ is true of them_X if and only if the fusion of them_X weighs 2 pounds.

Since predicates occurring in the scope of the quantifier $[\forall x: Xx]$ are distributive, whereas predicates that occur in the scope of the quantifier $[\iota x: x = \sigma y(Xy)]$ are non-distributive, (3) suggests a general strategy for defining distributive and non-distributive predicates. This raises the question whether the implicit structure of plural predicates should be taken to go into the logical form of the sentence. There is reason to think that it should not. Compare ‘the first battalion was wiped out’ with ‘the first battalion handles ammunition’. Intuitively, the former would be true if and only if every member of the battalion was wiped out. By contrast, the latter could be true even if a minority of the members of the battalion handle ammunition. But how did we reach this conclusion? Well, not by examining the syntax of the sentences in question. For the only relevant difference between the two sentences is that the former, but not the latter, is in the present tense. Rather, as Greg Carlson has famously argued⁹, it seems that we made the inference on the basis of knowledge of the ‘lexical nature’ of the predicates. As Carlson puts it,

We cannot simply look at the sentence before us and note (for instance) that it is in the simple present tense, and on that basis assign some quantifier which will determine the truth-value of the whole sentence. Since the lexical nature of the predicate is so crucial in determining the quantification it appears to rob the

quantifier itself of any GENERAL role that it might play in the semantics of sentences with similar syntactic structure (1977a, p. 64).

Carlson concludes that we must deny that there is, at the level of logical form, either a quantifier associated with the determiner phrase or with the predicate of the sentence.

Carlson's point generalizes to the present case. We cannot determine whether a predicate is distributive or non-distributive by investigating the sentence in question. To paraphrase Carlson, it seems that we must know the lexical nature of the plural predicate in order to determine what it takes to satisfy it (Brogaard forthcoming b). The syntax of (2) will determine that (2) is true iff 'apples in this bowl' has a non-empty extension that is included in the extension of 'weigh-2-pounds'. But it does not determine whether 'weigh-2-pounds' is distributive or non-distributive. This is determined only at a subsequent level of analysis.

A consequence of taking the implicit structure of plural predicates to emerge only at subsequent levels of analysis is that many ordinary inferences do not come out as formally valid. Consider, for instance:

(4)

The people in Auckland like the outdoors

Amy is a person in Auckland

Therefore, Amy likes the outdoors

This argument is not formally valid. According to Sharvy, this is exactly as it should be (Sharvy, 1980, p. 621).¹⁰ He assimilates inferences like (4) to the following. 'Ben weighs less than 60 kg. Ben's nose is part of Ben. Therefore, Ben's nose weighs less than 60 kg'. Though the implication seems to hold, the implication is not formal—it is not due to the logical form of these sentences, as can be seen by replacing 'weighs less than 60 kg' with 'weighs more than 60 kg'. The fact that it holds with 'weighs less than 60 kg' is that 'weighs less than 60 kg' is disjunctive.

Similarly, the fact that the implication in (4) holds is that ‘like the outdoors’, unlike ‘received 2 million dollars from an anonymous donor’ or ‘voted “no” on proposition 22’, is distributive.

III. Generic Uses of Definite Descriptions

The present Sharvy-style analysis can account for the paradigmatic uses of definite singular and plural descriptions. But it is not a fully general theory of definite descriptions, unless it can be extrapolated to account for definite generic descriptions, as in:¹¹

(5) The dinosaur is extinct.

Since ‘the dinosaur’ is in the singular, the logical form of (5) can be represented as follows:

(5a) $[\exists x: \text{dinosaur } x](\text{is-extinct } x)$

(SAD) predicts that (5a) is true just in case some dinosaur that every dinosaur is part of is extinct. Whether or not this analysis is adequate, however, depends on what the common noun ‘dinosaur’ applies to. On the assumption that it applies only to individual animals, (5a) can only be interpreted as meaning that a unique (contextually salient) individual animal is extinct, which is not the reading we want. However, as Delia Graff Fara and others have argued,¹² it is quite plausible that common nouns like ‘dinosaur’ or ‘bear’ sometimes serve as predicates true of individual animals and sometimes as predicates true of subspecies or larger taxa, as in ‘there are two bears in Alaska: the black bear and the grizzly’ or ‘the crustaceans evolved simultaneously’. The difference between the taxonomic and non-taxonomic occurrences of common nouns like ‘bear’ or ‘dinosaur’ is not quite like the difference between the distinct senses of words that exhibit a lexical ambiguity. Rather, the idea is, it seems, that the taxonomic and non-taxonomic occurrences of common nouns like ‘bear’ or ‘dinosaur’ are distinct occurrences of one and the

same noun (perhaps somewhat like the mass and count occurrences of common nouns like ‘fish’ or ‘cake’¹³). Thus, while the lexicon contains a single entry under a noun like ‘bear’ or ‘dinosaur’, the noun can appear in linguistic contexts in two different ways, a taxonomic and a non-taxonomic way. Let’s suppose this is right. Then ‘dinosaur’ can presumably be true not only of individual dinosaurs, but also of species and subspecies of dinosaurs, and the totality of the world’s dinosaurs. So, (5a) can be interpreted as meaning that a dinosaur₁ that every dinosaur₂ is part of is extinct.¹⁴ ‘The dinosaur’, in one of its senses, thus denotes a totality or fusion of dinosaurs. Of course, counterfactual uses of ‘the dinosaur’ seem to threaten this account (e.g., ‘the dinosaur would still be roaming the Earth today if an asteroid had not brought on a mass extinction’). However, in such counterfactual cases, ‘the dinosaur’ may be assumed to take wide scope with respect to the modal operator.

Let me briefly sketch some alternatives to this account. One alternative is to treat definite singular generic descriptions as proper names designating sums of individuals. Many philosophers of biology believe the binomial species names (e.g. ‘*Panthera tigris*’) are proper names designating sums of individuals.¹⁵ ‘*Panthera tigris*’, for example, designates a sum of individual tigers that stand to each other in historical relations rather than a class defined by means of the co-variation of the traits which its members possess. Definite singular generic descriptions might be construed along the same lines. For example, ‘the tiger’ might be construed as a translation of ‘*Panthera tigris*’. ‘The tiger’ would then be semantically on a par with “descriptive” proper names like ‘the White House’ or ‘the Morning Star’. Another possibility is to treat definite singular generic descriptions as proper names of kinds. This is standard practice in current linguistic theory.¹⁶

The main reason to prefer a Sharvy-style analysis of definite singular generic descriptions to a proper name interpretation is that the latter cannot be extended to account for definite plural generics. Consider:

(6) The dinosaurs became extinct at various points in time

The definite plural generic ‘the dinosaurs’ clearly doesn’t function as a proper name. The view that definite singular generics (e.g. ‘the dinosaur’) are proper names thus requires us to treat definite singular generics and definite plural generics as semantically unrelated. Of course, ordinary proper names do combine with determiners, as in ‘a Richard Sharvy is on the phone’ or ‘there are seven David Smiths in the APA’.¹⁷ They can be modified, as in ‘the former President Bill Clinton’ or ‘my friend Jim Stone’, and they can be pluralized, as in ‘the Bohmans’. But the fact that ordinary proper names are so used does not lend support to the view that definite generics are proper names. Rather, it indicates that ordinary proper names ought to be treated as predicates with a free variable.¹⁸ In fact, if definite generics are proper names, they are quite unlike most other proper names. For they resist modification (‘my favorite the dinosaur’ is ungrammatical), and they do not combine with determiners (‘a the dinosaur’ is ungrammatical).¹⁹

On a Sharvy-style analysis, there is a straightforward connection between definite singular and definite plural generics.²⁰ Definite plural generics are naturally treated as definite plural descriptions. Thus, (6) is of the form:

(6a) [tX: dinosaurs X](became-extinct-at-various-points-in-time X)

On the assumption that ‘dinosaur’ may be true not only of individual animals, but also of species of dinosaurs, (7a) can be read as saying that the dinosaur species became extinct at various points in time, which is the reading we want.

IV. Quantification over Parts

The present Sharvy-style analysis thus seems able to account for paradigmatic and generic uses of definite descriptions. However, we are far from done. For consider the following sentences.

- (7) The tiger is striped
- (8) The Chrysler is sold on the West Coast.

On the above Sharvy-style analysis, these sentences have the following logical forms:

- (7a) $[\lambda x: \text{tiger } x](\text{is-striped } x)$
- (8a) $[\lambda x: \text{Chrysler } x](\text{is-sold-on-the-West-Coast } x)$

This does not seem quite right. (7) doesn't make a claim about the entire tiger species. Rather, it makes a claim about individual tigers. Likewise, (8) doesn't say that the totality of the world's Chryslers is sold on the West Coast. On one reading, (8) says that Chryslers, in general, are sold on the West Coast. On another, which is actually preferred, it says that some Chryslers are sold on the West Coast. However, it is relatively easy to accommodate these data. The lexical meaning of the predicates in (7) and (8) presumably involves quantification over parts. Just as the syntax won't tell us whether a predicate is distributive or non-distributive, so it won't tell us whether a given predicate will trigger existential or generic quantification (see Brogaard forthcoming b).²¹ Consequently, the quantifiers do not appear in the logical form of the sentence; they are inferred on the basis of knowledge of the lexical nature of the predicate. From (7) we can infer generic quantification over individual tigers. From (8) we can infer either generic or existential quantification over individual Chryslers. Hence, (7), upon analysis, cashes out to 'the tiger is such that its tiger parts, in general, are striped'. (8), upon analysis, cashes out to 'the Chrysler is such that its Chrysler parts, in general, are sold on the West Coast' or 'the Chrysler is such that some of its Chrysler parts are sold on the West Coast'.

An alternative to this proposal is to say that the definite article is ambiguous. On this suggestion, ‘the tiger’ in (7) expresses generic quantification, and ‘the Chrysler’ expresses either generic or existential quantification. The strongest argument against positing an ambiguity in the definite article turns on the fact that existential definite generics lack ordinary scope-taking properties.²² Existentially quantified noun phrases may familiarly take either wide or narrow scope with respect to other operators, such as negation, quantifiers or attitude verbs. But existential definite generics have a clear preference for narrow scope. Consider:

- (9) Every student managed to photograph some black bears
- (10) Every student managed to photograph the black bear

While the quantifier ‘some black bears’ in (9) can take either wide scope or narrow scope, the definite description in (10) can only take narrow scope.²³ Prima facie, this is odd if it functions semantically as an existential quantifier. On the other hand, if quantification over parts is simply a matter of interpreting the predicate, then the logical form of a sentence like (10) is roughly that of a simple subject-predicate sentence: ‘every-student managed to photograph (the black bear)’. Consequently, only a narrow scope reading can result.²⁴

V. D-Type Generics

So far I have argued that a Sharvy-style analysis can account for definite generic descriptions. However, there are some obvious problems with the above account. Many sentences containing definite generics do not seem to be about groups or totalities at all. Consider:²⁵

- (11) The president makes good decisions when he is from Ohio.
- (12) The president has eaten at the Statler Hilton on Saturday nights every week for the past 25 years.

- (13) The president inhabited the White House continuously for 136 years until Truman moved into Blair house.
- (14) Five times since the turn of the century, the president has been assassinated by a disgruntled job-seeker.

The analysis offered above predicts that the above sentences make claims about the fusion of the American presidents. (13), for example, is supposedly asserting that a four-dimensional space-time worm to which the predicate ‘president’ applies lived in the White House for 136 years until one of its temporal parts moved into Blair house, and (14) is supposedly asserting that a four-dimensional space-time worm to which the predicate ‘president’ applies has been killed five times. Just as ‘dinosaur’ applies to the fusion of all dinosaurs, ‘president’ applies to the fusion of the American presidents. So, this fusion is itself a president. This is strange. Of course, metaphysically speaking, the totality of the world’s presidents is not very different from the totality of the world’s dinosaurs. But natural language treats them differently. There are predicates that apply directly to the fusion of dinosaurs, as compared to parts of the fusion. The predicate ‘is-extinct’, for example, expresses a property of the fusion of dinosaurs directly. This property does not distribute over individual dinosaurs: it is the totality of the world’s dinosaurs that is extinct, not the individual animals. But there are no predicates that apply directly to the fusion of the American presidents (e.g. ‘the president came into existence on April 30, 1789’ and ‘the president is in danger of extinction’ are odd). If predicates are indeed attributed to the fusion of the American presidents, they are attributed only in virtue of being predicated of individual American presidents. This difference seems to tell against a uniform interpretation of definite generics.

Let’s consider some alternatives to the taxonomic interpretation. One suggestion, due to Delia Graff Fara (2001), is to treat definite generics as “definite” predicates with a free variable

that gets bound by an overt or covert adverb of quantification. Consider the following example, taken from Graff Fara (2001, p. 23):

(15) The owner of a Porsche is always smug.

On Graff Fara's proposal, the definite description 'the owner of a Porsche' is of the form 'the owner of a Porsche (x)', and the predicate 'the owner of a Porsche' is to be interpreted as true of x just in case it is true of x and nothing else (2001, p. 10). Unfortunately, Graff Fara's analysis runs into trouble (see Brogaard forthcoming a). Graff Fara suggests that on the relevant interpretation, (15) is of the form:

(15a) [Always x : x is the owner of a Porsche](x is smug)

(15a) can be roughly paraphrased as 'for all x , if x is the only owner of a Porsche, then x is smug'. However, this is not a possible interpretation of (15) at all. If most Porsche-owners are humble co-owners, (15a) might be true. But intuitively, (15) is false. Graff Fara could now treat definite descriptions as semantically indefinite. For example, 'the owner of a Porsche' might be taken to be of the form 'owner of a Porsche(x)'. However, unless it could be argued that all definite descriptions are semantically indefinite,²⁶ this approach requires us to posit an unwelcome ambiguity in the article of definite descriptions.

An alternative to Graff Fara's proposal is to take definite descriptions to be associated with a domain variable. Jason Stanley and Zoltan Szabo have argued that domain-variables occur with nominals rather than determiners.²⁷ Take 'in most of his classes, John fails exactly three Frenchmen'. The intuitive interpretation of this sentence is 'in most of his classes x , John fails exactly three Frenchmen in x '. On Stanley and Szabo's proposal, 'exactly three Frenchmen' is of the form 'exactly three <Frenchmen, $f(i)$ >. The domain variable ' i ' is bound by the higher

quantifier ‘most classes’, and the value of ‘ f ’ is a function supplied by context. Relative to the envisaged context, the value of ‘ f ’ is a function that takes a class and yields the set of students in that class. This set, when intersected with the set of Frenchmen, yields the first argument of ‘exactly three’.

The nominal restriction approach can be extrapolated to account for sentences containing overt or covert adverbs of quantification. However, some modifications are needed. Adverbs of quantification, familiarly, do not require the appearance of a conditional restrictor. On one natural reading of ‘Joe always drives a black car’, for example, Joe is not said to be constantly driving a black car. For Joe doesn’t always drive. The adverb of quantification ‘always’ here seems to have a hidden domain argument. In this respect adverbs of quantification are just like other contextually restricted quantifiers. For example, ‘every bottle is empty’ may be used to convey the proposition that every bottle in the house is empty. On Stanley and Szabo’s account, ‘every bottle’ is of the form ‘every \langle bottle, i \rangle ’, where the value of ‘ i ’ is supplied by context. However, since adverbs of quantification do not require a conditional restrictor, it is reasonable to think the domain variable occurs with the quantificational adverb rather than with a nominal. What’s more, unlike ordinary quantifiers, adverbs of quantification do not quantify over single individuals. Rather, they quantify over cases that may or may not be identical to single individuals. Following David Lewis (1975)²⁸, let’s assume that a case is a ‘suitably restricted n -tuple of its participants’ and possibly a time or event coordinate.

With these modifications in place, let’s return to (15). (15), it seems, is of the form ‘the \langle owner of a Porsche, $f(i)$ \rangle is \langle always, j \rangle smug’. The quantifier ‘always’ raises and binds the variable ‘ i ’, and ‘a Porsche’ is a regular existential quantifier. Relative to context, ‘ j ’ is assigned a set of cases, and ‘ f ’ is assigned a function from cases to sets. Suppose context supplies ‘ j ’ with the set of cases of just one Porsche-owner and ‘ f ’ with a function that takes a case and yields a singleton set containing a Porsche-owner. The first argument of the determiner ‘the’ is then the intersection of this set with the extension of ‘Porsche-owner’. Relative to this context, (15) is true

if and only if every case of a Porsche-owner is such that the Porsche-owner in the case in question is smug.

With sentences like ‘the president has eaten at the Statler Hilton on Saturday nights every week for the past 25 years’ and ‘the president inhabited the White House continuously for 136 years until Truman moved into Blair house’ matters are only a bit more complicated. The first sentence, it seems, is of the form ‘the \langle president, $f(i)$ \rangle has been eating at the Statler Hilton on Saturday nights every week for the past 25 years’. The restricted quantifier ‘every week for the past 25 years’ raises and binds ‘ i ’, and context supplies ‘ f ’ with a function from, say, weeks to sets of presidents. The second sentence, it seems, is of the form ‘the \langle president, $f(i)$ \rangle inhabited the White House continuously for 136 years until Truman moved into Blair house’. The adverbial phrase ‘continuously for 136 years until Truman moved into Blair house’ raises and binds ‘ i ’ and context supplies ‘ f ’ with a function from, say, years within that period to sets of presidents.

The latter approach is able to account for sentences like (15) which contain an overt or covert adverb of quantification. However, it cannot replace the taxonomic interpretation of definite generic descriptions. For definite generics combine with predicates like ‘is-extinct’ and ‘is-rare’, which apply to fusions of individual objects, as compared to the individual objects themselves. The fact that the adverbial account has limited applicability might lead one to think that the uniform taxonomic interpretation is right after all. The trouble with the uniform analysis is that it is unable to account for the obvious parallel between sentences containing definite generics and sentences containing definite descriptions that occur with a domain variable that is bound by a higher operator. Consider (from Heim):

- (16) Most classes were so bad that the teacher had to fail every student

If definite generic descriptions such as ‘the owner of a Porsche’ and ‘the president’ are to be given a taxonomic interpretation, then arguably ‘the teacher’ in (16) should be given a taxonomic interpretation as well. But the definite description ‘the teacher’ in (16) does not designate the fusion of all teachers. Rather, it appears to be of the form $\langle \text{teacher}, f(i) \rangle$ where ‘ i ’ is bound by the higher quantifier ‘every class’.

It seems, then, that two distinct analyses of definite generics are needed. This raises the question as to what triggers the different interpretations. We could try to blame the different interpretations on the predicate. Following Carlson (1997a, pp. 153ff), let’s distinguish two sorts of predicates that combine with generic descriptions: characterizing and kind-level predicates. Characterizing predicates are predicates true of individual instances of species, subspecies etc. They include predicates like ‘bark-at-the-moon’ and ‘have-four-legs’. Kind-level predicates are predicate true of the species and subspecies themselves. They include taxonomic predicates like ‘comes-in-three-sizes’ and ‘is-extinct’, and quantificational predicates like ‘is-widespread’ and ‘is-rare’. It might be thought, perhaps, that kind-level predicates trigger a taxonomic interpretation, whereas characterizing predicates trigger a non-taxonomic interpretation.²⁹

However, this proposal fails to deal convincingly with sentences that contain different predicates, triggering different kinds of readings.³⁰ Take, for instance:

- (17) The California Sea Lion, which belongs to the family Otariidae, has a profile that resembles that of a dog.

The non-restrictive relative clause in (17) contains a kind-level predicate, while the main clause contains a characterizing predicate. If different kinds of predicates trigger different readings, then (17) must be treated as a conjunction. However, this treatment fails to accommodate the intuition that the definite description ‘the California Sea Lion’ makes a single semantic contribution to the whole sentence.

A related problem is that pronominalization can occur between the alleged different uses of definite generics:

- (18) The California Sea Lion is found off the west coast of North America *and* in the Central Pacific Ocean. It has a streamlined body, and a thick layer of blubber.

Since the ‘it’ in the second sentence in (18) refers back to the occurrence of ‘the California Sea Lion’ in the first sentence, we should expect them to receive similar interpretations. However, since the individual sea lions can be found either off the west coast of North America or in the Central Pacific Ocean, but not in both places, the predicate in the first sentence must be a kind-level predicate. The predicate in the second sentence, on the other hand, is a characterizing predicate. Hence, if the predicates trigger distinct interpretations, ‘the California Sea Lion’ and ‘it’ receive entirely distinct interpretations, contrary to initial appearances.

This gives us some reason to deny that it is the predicate that triggers the distinct interpretations. Perhaps, then, the descriptions themselves are the culprits. Let’s distinguish two sorts of definite generic descriptions: K-type generics and C-type generics. K-type generics are generics that are able to combine with kind-level predicates. C-type generics are generics that are unable to combine with kind-level predicates. We might stipulate that sentences containing K-type generics require a taxonomic interpretation regardless of the nature of the predicate, whereas sentences containing C-type generics require an adverbial interpretation.

This suggestion is not entirely happy. For the distinction between K-type and C-type generics doesn’t correspond to any natural distinction. K-type generics, for example, include far more than natural-kind terms, witness ‘the whiskey bottle comes in three different sizes’. Nonetheless, I think a non-uniform account along these lines fares better than the taxonomic account. Unlike the taxonomic account, the non-uniform account is able to account for the parallel between sentences containing definite generics and sentences containing definite

descriptions which occur with a domain variable that is bound by a higher operator. Moreover, since existential quantification over instances requires a taxonomic interpretation, the uniform account explains why definite generics like ‘the Chrysler’ and ‘the black bear’ have “pure” existential uses, while ‘the owner of a Porsche’ and ‘the president’ do not.

VI. Conclusion

Russell’s theory of definite descriptions is, familiarly, unable to account for definite mass and plural descriptions. Richard Sharvy sought to remedy the defects of Russell’s theory. Unfortunately, his proposal fails to account for definite plural descriptions. On Sharvy’s proposal, definite plural descriptions designate the maximal sum that satisfies the plural predicate. I have argued that this proposal has the unwelcome consequence that a sentence like ‘the apples take up a lot of space’ implies that something *take* up a lot of space. Of course, one might try to reduce plural predicates to singular. For example, one might stipulate that ‘take-up-a-lot-of-space’ is true of x just in case x takes up a lot of space. But the weakness of this approach is clear. It implies that ‘my armchair *take* up a lot of space’ should be acceptable. However, these problems can be avoided if Sharvy’s theory of plural descriptions is re-cast in terms of plural quantification. The theory that emerges can account for definite count descriptions and definite mass descriptions, and it can be extrapolated to account for definite generic descriptions. Because it provides distinct rules for assigning truth-conditions to sentences with singular descriptions and sentences with plural descriptions, it is less elegant than Sharvy’s analysis. But unlike Sharvy’s analysis, it avoids the problems that arise when one fails to take seriously the plural as a plural.³¹

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¹ There is also the familiar problem of how to analyze incomplete descriptions like 'the cat' or 'the table'. For simplicity's sake, I shall assume that some version of quantifier domain restriction is correct. For a defense of the restriction strategy, see e.g. Stanley and Szabo (2000) and Stanley (2002). For an elaborate defense of Russell's theory against objections based on the incompleteness of a description, see Neale (1990).

² The claim that definite descriptions have a maximality implication has recently been disputed. See e.g. Szabo (2000) and Ludlow and Segal (2004). For a defense of the maximality thesis, see Bach (2004, pp. 202f, 2002) and Brogaard (forthcoming b).

³ The syntax of a definite description, of course, does not reveal whether the contained noun-phrase is mass or count (witness, 'the cake on the table'). The definite description 'the cake on the table' thus has a count interpretation as well as a mass interpretation. See Sharvy (1980, p. 611) and Koslicki (1999b). See also Laycock (2006), in particular Chap. 3.

⁴ As a rule, mass predicates and plural predicates are not disjunctive. 'Gold', for example, does not apply to all proper parts of whatever it applies to. Mass and plural predicates need not be cumulative either. An example of a non-cumulative mass predicate is: 'gold that weighs less than 100 grams'. An example of a non-cumulative (and non-distributive) plural predicate is: 'six apples in this bowl'. 'The six apples in this bowl are green' differs in interesting ways from 'the

apples in this bowl are green'. On Russell's analysis, the former is true if and only if 'something x satisfies "six apples in this bowl" and everything y that satisfies "six apples in this bowl" is identical to x , and x satisfies "are green" '. Suppose there are six apples in this bowl. Then there is a unique sum that satisfies 'six apples in this bowl'. So, the sentence comes out true. Suppose there are ten apples in this bowl. Then several sums of apples satisfy 'six apples in this bowl'. So, the sentence comes out false. 'The six apples in this bowl are green' thus implies the existence of a unique entity that satisfies 'six apples in this bowl'.

⁵ This worry is, by now, a relatively familiar complaint in the literature on plural predication and has been rehearsed by e.g. McKay (forthcoming), Yi (2002), Rayo (2002), and Brogaard (forthcoming b).

⁶ For a related point concerning strong composition as identity, see Sider (forthcoming).

⁷ Similar approaches have developed by e.g. Higginbotham and Schein, (1989), Schein (1993), Cartwright (1996), McKay (forthcoming), Yi (2002), Rayo (2002), and Brogaard (forthcoming b).

⁸ For discussion of non-distributive predicates and predicates with an overt or covert partitive structure, see Abbott (1996), Brogaard (forthcoming b) and Szabo (2006).

⁹ Carlson (1977a, pp. 664ff). The idea of a two-level semantics goes back to Davidson (1967), and has more recently been defended by Koslicki (1999a, p. 461) and Brogaard (forthcoming b).

¹⁰ Sharvy's example is: 'The world's lions are mammals. Aslan is a lion. Therefore, Aslan is a mammal'.

¹¹ 'Definite generic description' abbreviates 'generically used definite description'.

¹² Graff Fara (2001, p. 30). This idea can also be found in e.g. Krifka (1995), Krifka et al. (1995), Dayal (2004), Graff Fara (2006) and Brogaard (forthcoming a). There is some reason to think that common nouns, like 'computer' or 'American flag' may also denote abstract objects. See Sharvy (1980, note 9). 'Babbage invented the computer', for example, does not seem to be

making a claim about the sum of the world's computers. Rather, it seems to be making a claim about the concept *computer* (see Koslicki 1999a). Alternatively, since 'to invent' roughly means 'to create something new which has never been conceived or envisioned', the definite generic may be assimilated to existential definite generics (as in 'the mouse came to Australia with the first ships' or 'the Chrysler is sold on the West Coast'), which have readings involving existential quantification. See below.

¹³ See Koslicki (1999b, p. 52).

¹⁴ Another possibility is to say that 'the dinosaur' denotes the least upper bound of the world's dinosaurs relative to the parthood relation: $\iota x[(Fy \rightarrow y \leq x) \ \& \ \forall z((Fz \rightarrow y \leq z) \rightarrow x \leq z)]$. The unique x which includes everything that is a dinosaur, and which is included in anything z that also includes everything that is a dinosaur. The main problem with this definition is that it does not extend to non-generic uses of definite singular descriptions. Take 'the dinosaur in this room'. If there is more than one dinosaur in this room, then this account predicts that 'the dinosaur in this room' will denote the sum of the two dinosaurs.

¹⁵ For discussion see e.g. Ghiselin (1974), Hull (1978) and Crane (2004).

¹⁶ This view goes back to Carlson (1977a) and Carlson (1997b), and is still the dominant view in linguistics.

¹⁷ See Burge (1973, p. 429), Bach, (2002, p. 75), and Bach (manuscript, pp. 24-25). The examples are from Bach (2002) (with minor modifications).

¹⁸ See Burge, "Reference and Proper Names", Hornsby "Proper Names: A Defense of Burge", *Philosophical Studies* 30 (227-34), and Eluguardo, "The Predicate View of Proper Names", in G. Preyer and G. Peter (eds.), *Logical Form and Language* (Oxford: Oxford University Press, 2002), 13-53. On Tyler Burge's view, a proper name is true of an object if and only if the object is given that name in an appropriate way. Burge assimilates "bare" proper names in argument position to

complex demonstratives. ‘John is human’ is true iff the demonstrated individual was given the name ‘John’ in an appropriate way, and is a member of the set of humans.

¹⁹ A similar point can be made with respect to proper names like ‘the Mississippi’ or ‘the White House’. Even if several more or less famous houses were called ‘the White House’, we wouldn’t say things like ‘I mean the the White House’ or ‘There is a the White House in D.C.’. We would be more inclined to say ‘I mean *the* White House’ or ‘There is a White House in D.C.’. This suggests that ‘White House’ is a predicate and not an unanalyzable part of a directly referring expression.

²⁰ On Graff Fara’s (2001, 2006) proposal, descriptions are predicates with free variables. Thus, ‘the dinosaur is extinct’ is to be analyzed as ‘ $[\exists x: x \text{ is the dinosaur}](x \text{ is extinct})$ ’. If descriptions could be treated uniformly as predicates, Graff Fara’s proposal would have the same advantage. However, as we will see, Graff Fara’s particular version of the predicative analysis runs into trouble. For discussion, see also Brogaard (forthcoming a).

²¹ This raises the question as to whether ‘is-usually-striped’, which contains an overt adverb of quantification, should be treated differently from ‘is-striped’ and ‘is-sold-on-the-West-Coast’. Carlson does not address this issue. However, it is reasonable to assume that overt quantifiers do get represented in the logical form of the sentence.

²² For a related argument against the view that bare plurals are ambiguous, see Carlson (1977a, p. 83).

²³ (10), of course, can also be interpreted as meaning that every student managed to photograph a unique black bear. I am not interested in that reading here.

²⁴ Carlson (1977a, p. 83) makes a similar point with respect to bare plurals. Carlson: ‘the intuitive account of this phenomenon ... is that the existential quantifier apparently associated with the bare plural actually arises as being a part of the translation of the predicate itself. Since all the other arguments of the predicate are combined with the predicate in the syntax, these

arguments will in all cases hold scope over the quantifiers that may be “within” the predicate. As it is this existential quantifier that gives us the existential reading of the bare plural, any other quantified NP in the sentence will appear in all cases to hold scope over the bare plural’ (p. 83).

²⁵ These examples are from Carlson (1977a, pp. 289-90).

²⁶ For suggestions along these lines, see e.g. Szabo (2000), Szabo (2003), Ludlow and Segal (2004), and Szabo (2005). For replies see Abbott (2003), Abbott (forthcoming), Horn (forthcoming) and Brogaard (forthcoming b).

²⁷ Stanley and Szabo (2000) and Stanley (2002). For a similar proposal, see von Stechow (1994) and von Stechow (2004).

²⁸ I shall here set aside the proportion problem. For discussion see Kadmon (1987).

²⁹ Molly Diesing and others have defended this view with respect to bare noun phrases. See e.g. Diesing (1992), Kratzer (1995), and Krifka et al. (1995).

³⁰ This argument can be found in e.g. (Koslicki 1999a).

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