

# Are Quantifier Phrases Always Quantificational? The Case of 'Every F'<sup>\*</sup>

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**ABSTRACT:** This paper argues that English quantifier phrases of the form 'every F' admit of a literal referential interpretation, contrary to the standard semantic account of this expression, according to which it denotes a set and a second-order relation. Various arguments are offered in favor of the referential interpretation, and two likely objections to it are forestalled.

**KEYWORDS:** Determiners – Generalized Quantifier Theory – Gricean pragmatics – quantifiers – reference.

## 1. Introduction

English noun phrases of the type 'every F', such as 'every bottle', 'every book', or 'every student attending the class' are taken to be paradigmatic examples of quantificational noun phrases, or quantifier phrases (QPs) for short.<sup>1</sup> 'Every F' is said to be quantificational in the sense that it does not

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<sup>1</sup> Throughout this paper, single quotes will be used for mentioning linguistic expressions and for short direct quotations within the body of the text; double quotes will be used as scare quotes.

refer to specific objects (it is not a referential expression like the proper name ‘New York’ is supposed to be, for instance), but instead has a set (denoted by the nominal element ‘F’) and a second-order relation or set (denoted by the determiner ‘every’) as its complex semantic value. The determiner ‘every’ is represented in logic as  $\forall x$ , the universal quantifier; and indeed, ‘every’, along with ‘all’, ‘each’, and ‘any’, are considered to be the standard English counterparts of the universal quantifier. The mainstream and nearly universal<sup>2</sup> view is that if any natural language expressions have a quantificational semantics, then QPs constructed out of these determiners that correspond to  $\forall x$  surely do.

In this paper I challenge the mainstream view, arguing that ‘every F’ may be literally interpreted referentially. I will show that this QP can have multiple objects as its semantic value, instead of the quantificational (set + second-order relation) normally ascribed to it. The same considerations apply to ‘all Fs’, ‘any F’, and ‘each F’, but here we will concentrate on just ‘every F’ for the sake of clarity. The main conclusion to be drawn is that the standard semantic account of QPs fails to countenance a semantically significant referential interpretation of an important class of English QPs, epitomized by ‘every F’.

The discussion is organized as follows. §2 briefly reviews the standard semantic account of ‘every F’. §3 gives reasons for concluding that ‘every F’ may have objects as semantic values. §4 further articulates this claim in terms of the well-known and philosophically important referential/attributional distinction. §§5–6 defend this conclusion against two possible objections. §7 offers some concluding remarks.

## 2. The standard semantics of ‘every F’

Over the last thirty years, quantification in natural language has been extensively investigated and one theory has emerged as the standard theory of QPs, namely, Generalized Quantifier Theory (GQT). The origins of GQT are in Mostowski (1957) and Lindström (1966). The theory was developed in important ways by Montague (1974), Barwise – Cooper (1981), Higginbotham – May (1981), Westerståhl (1985), and Keenan – Stavi

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<sup>2</sup> The sole exception in recent philosophy seems to be Strawson (1950, 1952); more on Strawson’s position in §3 below.

(1986). A very helpful recent reference is Peters – Westerståhl (2006). This section discusses in an informal manner the main ideas of GQT, with the aim of providing a background for the discussions of subsequent sections. It is beyond the scope of this paper to offer a detailed presentation of the theory. There are a number of good expositions of GQT; see, for example, Westerståhl (1989), Keenan – Westerståhl (1997), Glanzberg (2006), and Peters – Westerståhl (2006). See also Szabolcsi (2010) for a more polemical discussion of the theory.

The core claim of GQT is that the semantic (= truth-conditional) value of a determiner such as ‘every’ is a set of sets (or, alternatively, a property of properties).<sup>3</sup> More precisely, the determiner is said to denote<sup>4</sup> a *relation* between sets. The relation expressed by the determiner is said to hold between the set denoted by the nominal element with which it is associated in the subject of a sentence (‘F’) and the set denoted by the verb phrase (VP) of the sentence. For example, consider (1).

- (1) Every bottle is empty.

GQT offers the following analysis of (1). The VP ‘is empty’ denotes the set of empty things. The subject QP ‘every bottle’ is broken down into its component parts, the determiner ‘every’ and the common noun ‘bottle’. ‘Bottle’ denotes the set of bottles. ‘Every’ then relates the two sets in a certain way. Specifically, ‘every’ is taken to denote the subset relation. Thus, the sentence ‘Every bottle is empty’ is taken to express that the set of bottles is a subset of the set of empty things.

The very same analysis applies to the closely related determiners ‘all’, ‘any’, and ‘each’ as well. For instance, the sentence ‘All renates are cordates’ is interpreted as expressing that the set of renates is a subset of the set of cordates. ‘Any Woody Allen movie is worth watching’ means that the set of Woody Allen movies is a subset of the things that are worth watching. And ‘Each student presents a paper’ is taken as expressing that the set of students is a subset of the set of entities presenting a paper. Other determiners are treated in a similar fashion. In the case of ‘some’, for example, the determiner is taken to express the non-disjointness relation. Thus, the sen-

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<sup>3</sup> For ease of exposition, the following discussion is in terms of sets rather than properties.

<sup>4</sup> By “denote” I mean “to have as truth-conditional value”.

tence ‘Some flowers are green’ is taken to express that the set of flowers overlaps the set of green things.

The relational view of determiners may be traced back to Frege (1884/1980, §47). The essence of the view is clearly stated by Frege in (1892/1997):

[T]he words ‘all’, ‘every’, ‘no’, ‘some’ are prefixed to concept words [predicates]. In universal and particular affirmative and negative utterances we express relations between concepts and indicate the specific nature of these relations by means of these words. (Frege 1892/1997, 187)

One of the advantages of such a relational analysis of determiners is that these natural language expressions may be given explicit definitions in terms of well-understood mathematical notions. For instance, ‘every’ (‘all’, ‘any’, ‘each’) and ‘some’ would be defined as follows:<sup>5</sup>

Every<sub>U</sub> (X, Y) iff  $X \subseteq Y$ .

[Sets X and Y, which belong to a universe U, satisfy the binary relation ‘Every’ if and only if set X is a subset of set Y.]

Some<sub>U</sub> (X, Y) iff  $|X \cap Y| \geq 1$ .

[Sets X and Y, which belong to a universe U, satisfy the binary relation ‘Some’ if and only if the intersection of X and Y has a cardinality equal to or greater than 1.]

Definitions in terms of sets and relations can be given for a variety of other natural language determiners. (For details, see any of the references mentioned above.)

A consequence of the relational and second-order “meaning” of such determiners is that both the determiners and the QPs they form are barred from having objects as their semantic value. Determiners such as ‘every’ cannot denote objects, since according to GQT their semantic value is a relation between sets. QPs such as ‘every bottle’ cannot denote objects either, since the components of a QP do not denote objects. In the case of ‘every bottle’, for example, the phrase is composed of two elements, a determiner

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<sup>5</sup> Since ‘every’ is the English counterpart of  $\forall x$ ,  $\forall x$  is then to be understood as a second-order predicate taking the first-order schema within its scope as its argument. This is of course just the standard Fregean construal of the quantifier.

and a noun. Neither expression has objects as its semantic value: nouns denote sets and determiners express relations between sets.

According to GQT, therefore, QPs do not belong to the semantic category of expressions that have objects as their semantic value (a category that is usually held to include proper names, pronouns, and demonstratives). The “semantic category” of an expression may be defined by the kind of semantic value it has; and as we have just seen, according to GQT, QPs denote relational rather than objectual semantic values.

What evidence supports this standard semantic account of quantifiers? A common argument involves a comparison with names. The argument goes as follows.<sup>6</sup> We are asked to consider a pair of sentences, one of which contains a name and the other a QP of extreme generality, such as ‘everything’. For instance:

- (2) Sam weighs 300 lbs.
- (3) Everything weighs 300 lbs.

It is noted that on the surface the two sentences appear similar, in that they both seem to predicate the property of weighing 300 lbs. to whatever the subject noun phrase expresses. It is assumed that ‘Sam’ has an object as semantic value, Sam, and it is asked whether ‘everything’ could similarly have an object as semantic value. Then it is wondered what sort of object everything could be. On (reasonable) metaphysical grounds it is rejected that everything could be an object; for if it were, it would be at the same time a particular object and all objects, i.e. everything there is. It is concluded that in general, unlike names, QPs do not denote particular objects. Then a second hypothesis is put forward: perhaps ‘everything’, like a predicate, denotes a *set* of objects. So (3) would now be interpreted as saying that the set of all objects is identical or coextensive with the set of objects that weigh 300 lbs. Plausibly enough, the hypothesis predicts that (3) is false (not everything in the world weighs 300 lbs.). However, it is observed that the same analysis returns the wrong results for (4):

- (4) Nothing weighs 300 lbs.

‘Nothing’ (on the foregoing reasoning) would denote the empty set. But then, every member of the empty set also belongs to the set of things that

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<sup>6</sup> My summary of this standard argument is based on Glanzberg (2006).

weigh 300 lbs.: trivially so. Hence (4), contrary to what we would expect, is true. On the basis of this absurd result, the hypothesis that a QP might denote a set of objects is rejected. Therefore, it is concluded that QPs denote neither objects nor sets of objects; they must stand for something else. Taking a cue from Frege's interpretation of certain determiners as second-order "concepts", it is alleged that for many natural language determiners, including 'every', to construe them as second-order relations explains much of the behavior we intuitively attribute to them, while at the same time avoiding wrong results. So it is concluded that determiners express relations between sets, viz. the set denoted by the nominal element in the subject and the set denoted by the sentence's VP. From this conclusion, plus the assumptions that nouns refer to sets and that the semantic value of a complex expression is built out of the semantic values of its parts, it is further concluded that QPs such as 'every F' do not denote objects, but a set and a second-order relation.<sup>7</sup>

### 3. Evidence conflicting with the standard account of 'every F'

It cannot be denied that GQT is a rich and well-developed theory that succeeds in explaining a great deal of the behavior of natural language QPs. But one might wonder whether the disanalogy with names constitutes an adequate evidential basis for the theory. No matter how mathematically elegant and productive a semantic theory for a natural language expression may be, it still has to square with the facts of usage. The GQT claim that determiners express second-order relations between sets is at bottom an empirical claim.<sup>8</sup> The Fregean-derived relational view of determiners, with its consequence that QPs cannot denote objects, has not always enjoyed its

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<sup>7</sup> Another argument is the following. For logical reasons, the sentence 'Sam weighs 300 lbs. or Sam doesn't weigh 300 lbs.' can't be false, and the sentence 'Sam weighs 300 lbs. and Sam doesn't weigh 300 lbs.' can't be true. But 'Every student weighs 300 lbs. or every student doesn't weigh 300 lbs.' may be false and 'Some student weighs 300 lbs. and some student doesn't weigh 300 lbs.' may be true. Hence the QPs 'every student' and 'some student' must differ logically from the proper name 'Sam'.

<sup>8</sup> As is generally recognized by the originators and expositors of GQT; see, e.g., Peters – Westerståhl (2006, 18).

present hegemonic status. In (1952), Strawson argued that QPs could be used to refer:<sup>9</sup>

The curious assumption implicit in regarding the quantificational logic as adequate for the analysis of ordinary categorical utterances [utterances beginning with a quantifier such as ‘all’, ‘some’, ‘no’, etc.] in general is, roughly speaking, the assumption that the only subject-predicate utterances [utterances ‘in which we use one part of our sentence to play the referring role and the remainder to play the ascriptive or classificatory role’] are utterances in the singular; that all other categorical utterances are positively or negatively existential. But of course we can *refer to*, and *talk about*, the members of a group collectively in just the same way that we can refer to and talk about an individual member of a group. Compare an utterance made in the words ‘Miss Robinson has gone home’ with an utterance made in the words ‘All the members of the Robinson family have gone home’. The grammatical subject of each sentence is used to refer; in the one case, to an individual, in the other, to the members of a group. (Strawson 1952, 182, emphasis in the original)

Strawson’s view that QPs may be used to refer to multiple individuals seems to have been mostly overlooked in recent philosophical discussions on the semantics of QPs.<sup>10</sup> To my knowledge, only Neale (1990) and Bach (1994, Ch. 12) have admitted that QPs may be used to refer. Neale’s views

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<sup>9</sup> Also, in (1950, 344) Strawson says: ‘[T]hese expressions [expressions beginning with ‘all’ and ‘some’] are most commonly used in the referring way’. For Strawson, of course, “[m]entioning”, or “referring”, is not something an expression does; it is something that someone can use an expression to do’. (Strawson 1950, 326)

<sup>10</sup> Linguists have paid attention to Strawson’s examples, but they have focused on the question of presupposition (i.e. on the fact that the examples seem to show that certain English QPs carry a presupposition of existence of objects) and not on the issue of reference proper. See, e.g., de Jong – Verkuyl (1985), Partee (1987), Diesing (1992), and Heim – Kratzer (1998, 153-163), who also quote the above passage from Strawson. Strawson’s examples of the referential use—‘All John’s children are asleep’ (p. 176) and ‘All the members of the Robinson family have gone home’ (quoted above)—could be reasonably cited as cases where QPs seem to presuppose the existence of objects, viz. John’s children in the first case and the members of the Robinson family in the second. But this is relatively uncontroversial, since these QPs contain an expression widely admitted to carry existential presuppositions, namely ‘the’. (‘All John’s children’ is usually viewed as a surface form of ‘all of the children of John’.)

will be addressed in more detail in §6. At present, a few more examples should be provided to cement the notion that a QP may be used to refer. Consider the following, which is modeled on an example of Bach's (1994, 244).

- (5) A few examples will show how QPs may be used to refer.

In (5) the QP 'a few examples' is being used to refer to the examples to follow. As Bach points out, such a referential use could be made explicit by adding a clause that specifies the examples in question, as in (6):

- (6) A few examples, namely the ones presented here, will show how QPs may be used to refer.

For Bach, if a 'namely...' clause may be inserted to make explicit the reference, then one may be reasonably sure that the QP is being used to refer to multiple individuals. Consider another example:

- (7) Some chapters are about proper names.

As a response to a question about the contents of Bach's book, (Bach 1994), 'some chapters' in (7) may be used to refer to Chapters 7 and 8, which concern proper names. This reference can be made explicit using Bach's 'namely...' formula:

- (8) Some chapters, namely Chapters 7 and 8, are about proper names.

It would seem that the referential *use* of QPs can hardly be debated. The question, then, is whether such a use is of semantic significance. That is to say, the issue worth investigating would seem to be whether utterances containing QPs may have different truth conditions, and diverging truth-values, depending on whether the QP is interpreted referentially (as having multiple objects as semantic value) or according to its standard GQT semantics.

In what follows it will be argued that the referential use of 'every F' is indeed semantically significant. Specifically, it will be argued that if 'every F' is interpreted referentially, the utterance containing it will have truth conditions involving particular objects, and not the set of objects that are F plus the subset relation, as ordained by GQT. Put another way, if 'every F'



is interpreted referentially, the utterance will express an “object-dependent proposition” and not an “object-independent proposition”.<sup>11</sup>

Bach denies that the referential use of a QP is semantically significant in this sense. He holds that from a strictly semantic point of view, QPs are non-referring expressions:

Semantically, quantifier phrases do not denote and are not referring expressions (strictly literal uses of quantifier sentences express general propositions), but our examples have shown that they also have referring uses. (Bach 1994, 248)

As we shall see in §6, Neale also rejects that the referential interpretation of a QP is semantically significant. For both Bach and Neale, sentences containing QPs semantically express object-independent propositions; in no case do their truth conditions include particular objects. What is Strawson’s position? Strawson, after all, appears not only to be the first<sup>12</sup> to rec-

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<sup>11</sup> Following Neale (1990, 49-50, fn. 1), by an object-dependent proposition I mean a proposition (thought, truth-conditional content) whose existence (whether conceived of abstractly or as a mental entity, no position on this will be taken here) essentially depends upon the existence of a particular object. Put in terms of utterances and truth conditions, an utterance has object-dependent truth conditions if they include a particular object. For example, a condition for the truth of ‘François is French’, uttered with the intent to talk about a known individual named ‘François’, is that there be a known object named ‘François’. (François’ being a member of the set of French things is another condition for the truth of the utterance.) In propositional parlance, ‘François is French’ expresses an object-dependent proposition whose existence depends on the object François. By an object-independent or general proposition we then understand a purely qualitative or descriptive proposition, a proposition whose existence is not dependent on the existence of any particular object; and correspondingly, an utterance has object-independent truth conditions if no known or specific individual is included among these truth conditions.

<sup>12</sup> Well, Strawson was perhaps the first contemporary philosopher of language to recognize the referential use of a QP, but possibly the first recorded referential use is one that appears in Homer’s *Odyssey*. The Cyclops has been told by Odysseus that Odysseus’s name is ‘Nobody’ (or ‘No man’). Battling Odysseus, he desperately cries out to his friends, ‘Nobody is killing me!’, but he fails to get them to come to his aid. Here the Cyclops is interpreting ‘nobody’ referentially, with unpleasant consequences for him partly as a result, while his friends, understanding the phrase in a non-referential manner, figure he’s doing just fine. Lewis Carroll’s *Alice in Wonderland* and *Through the*

ognize the referential use of a QP, but also the tension between the “official”, logical construal of these expressions and their everyday referential uses. To extract Strawson’s view on the semantic significance of the referential use of a QP is a tricky matter, however, since he is writing at a time prior to the development of GQT, Chomskyan linguistics, Tarski-Davidson truth-theoretic semantics, and the current debate on semantics-pragmatics distinction. Here we will not venture a guess as to what Strawson’s view on all the relevant issues would have been.

Let us now turn to the following example, which serves to demonstrate the semantic significance of the referential reading of ‘every F’. Consider (1) again.

- (1) Every bottle is empty.

Suppose two people, A and B, are talking about four bottles sitting on a counter in front of them. A utters (1), intending to refer to the bottles by using ‘every bottle’. B, correctly recognizing this intention, interprets A as using the subject QP of (1) as a whole to refer to the four bottles on the counter. That is, B understands A to be asserting something about these four bottles and not about bottles in general or the set comprised of these four bottles: viz. that the bottles are empty.

Our claim, then, is that the truth of what is expressed by (1) in this situation depends on the four bottles’ being empty. It is only if *these* particular bottles are empty that what A said, the proposition expressed by his utterance of (1) in this context, is true.

Once again, the question is not whether ‘every bottle’ can be used to refer to particular bottles; Strawson, Bach, and Neale have already argued that many QPs may be used to refer. The issue rather is whether the referential use results in truth conditions different from those predicted by the GQT analysis. We have seen in the previous section what the GQT analysis for (1) is. According to this analysis (1) expresses the general proposition that the set of bottles is a subset of the set of empty things; (1) is true just in case the set of bottles *is* a subset of the set of empty things. So if this analysis is correct, the interlocutors’ interpretation of ‘every bottle’ as referring to the four bottles on the counter will likely have to be explained extra-

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*Looking Glass* also contain various examples of referential uses of QPs. Thanks to Stephen Neale (conversation) for the *Odyssey* example.

semantically; a hearer's referential interpretation does not endow the phrase with an objectual semantic value in this context.

The following reasons support the opposing view that in this context, 'every bottle' literally (i.e. semantically) denotes the four bottles and (1) expresses an object-dependent proposition.

First, in this case 'every bottle' seems replaceable without a marked loss of semantic content by four names for the four bottles or a plural demonstrative phrase containing a QP of greater specificity. Names and demonstratives are considered paradigmatic referring expressions.<sup>13</sup> For instance, 'every bottle' could be replaced as follows:

- (9) Bottle 1, Bottle 2, Bottle 3, and Bottle 4 are empty.
- (10) These/those four bottles are empty.

In (9) the conjunction of names specifies (in an artificial way, of course) the four bottles the speaker is referring to and in (10) the demonstrative phrase 'these/those four bottles' does the same. Intuitively, (1) (as uttered in the context described above), (9) and (10) appear to express the same proposition and to have the same truth conditions. In each of the three cases the utterance is true if and only if the particular bottles are empty.

Just to clarify, it is not being claimed here that in *all* cases 'every F' may be replaced without remainder by a conjunction of names or a plural demonstrative phrase. In other cases, including perhaps also referential uses in contexts different from the one described above, the QP imparts the additional information that the bottles in question are all the bottles which possess the property of being empty; i.e. that those are all the empty bottles there are. But in many other, perfectly quotidian cases, such substitutions seem acceptable.<sup>14</sup>

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<sup>13</sup> This is not to deny that demonstratives and demonstrative phrases have non-referential uses. For an extensive discussion of non-referential uses of demonstrative phrases, see King (2001). (King's discussion, though extensive, may still be viewed as incomplete—cf. Neale 2007.)

<sup>14</sup> Also, to avoid any misunderstanding, the claim is that (1), (9), and (10) have the same *truth conditions* (or propositional content), not the same *meaning*, if by "meaning" we mean literal, descriptive, "dictionary" meaning. Clearly, the three sentences have different meanings in this sense since they contain different expressions. In general, the correspondence between sentence meanings and truth conditions/propositional contents is many-to-many. For instance, the sentence 'I am thirsty' uttered by A and the sentence 'I am thirsty' uttered by B have one and the same meaning, but have different

Second, the objectual semantic value of ‘every bottle’ and the object-dependence of (1) in this context would seem to be confirmed by a report of what A said that contained a plural pronoun referring to the bottles.<sup>15</sup> Like names and demonstratives, pronouns are also considered prototypical referring expressions.<sup>16</sup> For example, it seems that (11) is true:

(11) A said that they [the four bottles] are empty.

But if (11) is true (and it intuitively seems to be), then this can only be because the embedded sentence expresses the same proposition as (1). In other words, the truth of (11) piggybacks on the truth of (1), where ‘every bottle’ is interpreted to express objects.<sup>17</sup>

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truth conditions/propositional contents, which involve A and B respectively. Conversely, the sentences ‘I am thirsty’ and ‘The winner of the marathon is thirsty’ have different meanings, but the same truth conditions/propositional content if the denotations of ‘I’ and ‘The winner of the marathon’ are the same.

<sup>15</sup> It might be objected that to appeal to reports of what is said in a given context demonstrates very little about the semantics of an expression, since, as Bach (2002) and others have argued, such “seemingly semantic intuitions” are problematic for a variety of reasons. In general I sympathize with this concern, but in this case it seems to me that the situation is very simple and sufficiently defined to justify employing this kind of argument, which, in any case, is pervasive in philosophy. At any rate, it is easy enough to imagine an empirical test of speakers’ intuitions regarding the truth conditions of the above sentences: Just ask subjects whether the sentences are true or false relative to certain situations (including the one described above). The situations need not be explained in words; following a suggestion by Récanati (2004, 15) on the issue of intuitions of sentences’ truth conditions, an even better method would be to present the situations as pictures or animations. This is just one possibility; an in-depth exploration of this topic is beyond the scope of this paper.

<sup>16</sup> This is also not to deny that pronouns have non-referential uses. Bezuidenhout (1997), citing an example in Schiffer (1995), argues that pronouns may be used attributively.

<sup>17</sup> It might be argued that this is an example of unbound cross-sentential anaphora, and that there are analyses that would treat ‘they’ in (11), not as a referring expression, but as having the quantificational semantic value expressed by its antecedent in (1), ‘every bottle’. One such analysis would be Neale’s (1990, Ch. 5). Neale’s analysis may be better illustrated by altering the example. Suppose A utters (1\*):

(1\*) Every bottle is empty. I’ll put them in the recycling bin.

The pronoun ‘them’ in the second sentence is anaphoric on the QP ‘every bottle’ in the first; by ‘anaphoric’ is meant that the pronoun is supposed to have the same semantic

Third, expressions for ‘every’ in other languages encode natural gender. An expression that possesses natural gender (as opposed to “grammatical” gender<sup>18</sup>) encodes the information that the things to which the expression applies are sexed. Interestingly, the majority of referring expressions in English and other languages encodes natural gender. To be used correctly, the referring expression’s gender must correspond to the referent’s sex. One example of a language in which the word for ‘every’ encodes natural gender is German. To be used properly to refer, the German counterpart of ‘every

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value as the previously mentioned phrase, which serves as its ‘antecedent’. Neale’s claim is then that ‘them’ in the second sentence does not refer to particular objects, the individual bottles, but has a quantificational semantic value similar to the one standardly ascribed to ‘every bottle’. How does the pronoun carry the quantificational semantic value of its antecedent (or a semantic value that is very similar)? According to Neale, unbound, cross-sententially anaphoric pronouns such as ‘them’ in (1\*) have the semantics of definite descriptions. For example, ‘them’ in (1\*) would have the same semantics as the plural definite description ‘the bottles’. For Neale, definite descriptions have a quantificational (relational) semantics, just as QPs of the form ‘every F’ do. So in (1\*), the pronoun (qua definite description) and the antecedent QP both expresses a set and what he calls a ‘maximal’ relation—a relation ‘exhausting the range of the predicate’ with which it combines (1990, 180). In (1990) Neale supports this analysis by showing how, for a variety of sentence sequences containing different types of QP, treating the anaphoric pronoun in the sequence as a definite description yields the truth conditions that we would intuitively ascribe to them. (In essence, according to Neale’s analysis, the anaphoric pronoun is an “E-type” pronoun.)

While Neale’s analysis seemingly applies to (1\*), and hence appears to undermine the “pronoun co-reference” argument in favor of the referential reading of ‘every F’ that is being made above, it is unclear that it applies to (11). For (11) can be discursively disconnected from (1) and still be true. For one thing, in our example it is not the speaker of (1), A, but a different person (say, B) who utters (11). For another thing, B can utter (11) hours, days, weeks, etc., after A’s utterance of (1), and what she expresses still appears true. Suppose B utters (11) several days after A uttered (1), and that she points to the bottles as she makes her utterance. In this case B’s use of ‘they’ is unequivocally referential. ‘They’ denotes the bottles B is pointing to. The problem is that though the pronoun is referential in this case, what is expressed by (11) still appears true. In sum, Neale’s analysis does not seem adequate when further contextual details are filled in.

<sup>18</sup> Grammatical gender is a morphological feature of words of certain languages. A word’s having grammatical gender is unrelated to the question whether the word applies to sexed things. It should be emphasized that the argument above concerns natural gender, and not any morphological or syntactic features (such as agreement) of the expressions in question.

F' (*jede/r/s* F)<sup>19</sup> must correspond to the sex of the things referred to, if they are sexed.<sup>20</sup>

Now, from the fact that *jede/r/s* possesses natural gender it doesn't follow that it is a referring expression. (Though the fact that the majority of referring expressions in English, German, and other languages possesses natural gender is certainly very suggestive.) What does follow is that the QP encodes descriptive information. That is to say, the expression *describes* the entity to which it applies; it specifies one of its attributes. In the case of *jede/r/s*, the QP specifically encodes the information that the entity is gendered.<sup>21</sup> Why is this relevant to the semantics of 'every F'? Because this information seems incompatible with the semantic value ascribed to 'every F' (or rather, *jede/r/s* F) by GQT. For it would be absurd to suggest, for instance, that the subset relation supposedly expressed 'every' is a sexed entity. In contrast, the gender information is entirely compatible with the claim that 'every F' may have objects as semantic values, since objects may be gendered.<sup>22</sup>

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<sup>19</sup> *Jede* is the nominative feminine form, e.g. *jede Frau* ('every woman'); *jeder* is the nominative masculine form, e.g. *jeder Mann* ('every man'); *jedes* is the nominative neuter form, e.g. *jedes Auto* ('every car').

<sup>20</sup> A couple of notorious exceptions are *Weib* ('woman') and *Mädchen* ('girl'), which have feminine natural gender, but neuter grammatical gender. When combined with these words, *jede/r/s* must take neuter gender.

<sup>21</sup> It would be reasonable to assume that a QP may encode further information besides natural gender. However, it is unnecessary to guess as to the nature of this further information, if any. For our purposes, the important thing is that QPs sometimes *do* encode descriptive information.

<sup>22</sup> It might be objected that the German *keine* ('no', as in 'no bottle') also encodes natural gender, but that in this case a referential interpretation is impossible, since there can be no plausible objectual referent for a negative QP. The GQT analysis of a sentence containing a negative QP, like 'No bottle is empty', is the following:  $|B \cap E| = \emptyset$ , where B = the set of bottles and E = the set of empty (unfilled) things. The GQT interpretation is then that the cardinality of the intersection of the two sets is identical to the empty set. So the challenge, in other words, is to produce an example of a negative QP used to talk about gendered things for which the referential interpretation gives the right truth conditions of the sentence and GQT the wrong ones. This challenge can be met. Consider the following situation. Speaker and hearer are talking about two women known to them, Andrea and Brianna, who have both won a writing contest. The speaker says, '*Keine Gewinnerin lebt in London*'. ('No (fem.) winner (fem.) lives in London'.) Here the speaker intends to talk about these two specific women, Andrea and Brianna.

In conclusion, the reasons to think that ‘every F’ admits of a semantically significant referential interpretation are the following:

1. In many cases (though not all), it seems that ‘every F’ can be replaced by a conjunction of names of objects without loss of semantic content. (I.e. the QP may be replaced by a conjunction of names and the resulting sentence will have the same truth conditions as the original.)
2. In many cases (though not all), it seems that ‘every F’ can be replaced by a plural demonstrative phrase, e.g. ‘these/those Fs’, without loss of semantic content. (I.e. the QP may be replaced by a plural demonstrative phrase and the resulting sentence will have the same truth conditions as the original.)
3. The truth of a report of what was said by the utterance of a sentence containing ‘every F’ will piggyback on the truth of a sentence in which the QP is interpreted referentially. The report will contain a plural referring term that is co-referential with the quantifier in the original sentence.
4. In other languages, QPs possess natural gender, a fact seemingly incompatible with their GQT semantics but compatible with a referential interpretation positing an objectual semantic value.

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He would say (and his interlocutor would agree) that his utterance is true if and only if Andrea and Brianna do not live in London; only in this circumstance would the utterance be true. (In set-theoretic terms, the utterance is true iff the two women are members of the set of things that do not live in London.) This is the referential interpretation. On the GQT analysis, on the other hand, the utterance is true just in case the cardinality of the intersection of the set of female winners (which may be contextually restricted—see §5 below) and the set of people who live in London is identical to the empty set. Something as general as this was not what the speaker intended or what the hearer understood in the situation. So, far from being an objection to the “gender argument” given above, the fact that negative QPs may have gender actually *supports* it, since it would be absurd to think that the intersection relation, or even the entire set-theoretic statement involving the empty set, is a gendered entity. It is only if one assumes that the GQT analysis is always the correct one that this fact about negative QPs would seem compelling; but of course, to make this assumption is to beg the question against the account developed here.

#### 4. 'Every F' and the referential/attributional distinction

One way of characterizing the two interpretations of 'every F', the quantificational/relational GQT interpretation and the referential one presented in the previous section, is to say that 'every F' admits of the referential/attributional distinction. The referential/attributional distinction is usually associated with Donnellan (1966), though Dominic (1984, 124-126) traces it all the way back to the theological writings of Antoine Arnauld. (See also Neale (1990, xii-xiii) for the distinction's twentieth century lineage.)

In (1966) Donnellan argued that the referential /attributional distinction applies to definite descriptions. The distinction has since been claimed to hold for other types of expression as well: Chastain (1972) proposes that it holds in the case of indefinite descriptions; Bezuidenhout (1997) in the case of pronouns;<sup>23</sup> and Martinich (1977) and Bezuidenhout (1997) in the case of proper names. In suggesting that 'every F' also admits of the referential/attributional distinction, we draw on an interpretation of the distinction that has its origins in Hornsby (1977) and Kaplan (1978) and has been elucidated further in Neale (1990, Ch. 2) and Récanati (1993, 278-279).

According to this interpretation, the referential/attributional distinction is a distinction between two types of proposition (seemingly) literally expressed by a sentence containing an expression to which the distinction is said to apply. For instance, the referential /attributional distinction for definite descriptions is a distinction between two types of proposition (seemingly) literally expressed by a sentence containing a definite description in subject position, i.e. a sentence of the form 'The F is G'. When used referentially, the sentence expresses an object-dependent proposition. The sentence expresses a truth if and only if the intended referent in the situation is G. When used attributionally, on the other hand, the sentence expresses an object-independent proposition. The sentence expresses a truth if and only if there exists an object and that object (and no other) is both F and G.

When used attributionally, in other words, the sentence will have the kind of truth conditions specified by Russell in (1905). According to Russell's classic analysis, sentences of the grammatical form 'The F is G' have the underlying "logical form"  $\exists x[Fx \wedge \forall y(Fy \rightarrow y = x) \wedge Gx]$ , which, informally put, says that there is one unique thing that is both F and G. Here

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<sup>23</sup> As mentioned in footnote 17, Neale (1990) also argues that not all uses of pronouns are referential.



the logical notation allows us to see clearly how the attributive use of the (singular) definite description would result in the expression of a general proposition. We see that the quantificational (relational) meaning imputed to 'the' relates two sets, F and G. Specifically, it ascribes to F the higher-order properties of being uniquely instantiated and being non-disjoint from G. Although on Russell's account 'The F is G' is true if and only if there is an object that uniquely instantiates F, the logical notation makes it clear that no particular object has been singled out; the existential quantifier ranges over arbitrary objects represented by variables. It doesn't pick out any particular member of the set F, but generalizes over the whole set. In short, the sentence expresses general information; it expresses a relation between two properties.

It is worthwhile to review briefly the first of the examples in Donnellan (1966) in order to better bring out the contrast between the referential and attributive uses and their semantic consequences. Donnellan asks us to consider (12):

- (12) Smith's murderer (i.e., the murderer of Smith) is insane.

Suppose A encounters the body of Smith, which shows signs of having been murdered in a gruesome way. In uttering (12) in these circumstances, A may be understood as using the description 'Smith's murderer' attributively. That is, A is saying that there is some unique individual who is the murderer of Smith and whoever this individual is, he or she is insane. The claim is a general one: someone or other murdered Smith and this person is insane.

Let us now suppose that A has not seen the body, has no direct knowledge of the circumstances of Smith's murder, and is sitting at the trial of Jones, who has been arrested and charged with the murder. Jones is behaving in a very strange way. Suppose further that A is convinced of the prosecution's case against Jones. In uttering (12) in this second situation, A may be understood as using 'Smith's murderer' referentially, to point to the individual before her, at whom she is looking. The proposition expressed by (12) in this situation is a proposition about Jones; and it is true if and only if Jones is insane. Donnellan stresses that A succeeds in referring to Jones by means of the description 'Smith's murderer' even if in fact it was not Jones who murdered Smith, but someone else, say Robinson. The description may be interpreted as referring to Jones even if Robinson murdered Smith, or even if Smith wasn't murdered at all.

This example, like the others that Donnellan discusses in (1966), exploits the possibility of a misdescription, of a situation in which the satisfier of the description and the object referred to in the situation are not identical. Presumably, the reason he lays so much emphasis on the possibility of misdescription is to highlight the contrast between the two kinds of use in a vivid way. Because of Donnellan's focus on the misdescription cases, one might be led to think that such misdescription cases effectively furnish the contrast between the two uses, or that misdescription cases demonstrate the semantic significance or even the downright semantic ambiguity presented by the referential use of definite descriptions. However, as Récanati (1993, 281-282) points out, this would be a mistake. The semantic ambiguity theorist must rest his case not on the misdescription examples, but on the cases in which the description's satisfier and the intended referent in the situation are identical.

Be that as it may (we do not have the space to get into the debate on the semantics of descriptions here), if the referential/attributive distinction is understood in the manner described above, it would seem to apply to 'every F'. As we said above, the usual interpretation cashes out the distinction in terms of the types of proposition expressed by a sentence containing an expression admitting of the distinction. The referential interpretation yields an object-dependent proposition and the attributive interpretation an object-independent proposition. Now, it is in these precise terms that the referential and quantificational/relational GQT interpretations of 'every F' were explained in the previous section. We said that when (1) is interpreted quantificationally according to the GQT analysis, the sentence expresses an object-independent proposition. The sentence expresses a truth just in case the set of bottles is a subset of the set of empty things. In this case 'every', like 'the' on the Russellian construal, denotes a second-order relation between sets of arbitrary objects. Thus, we may say that the quantificational interpretation of 'every F' corresponds to the attributive reading. On the other hand, when (1) is interpreted referentially as in the example presented in §3, the sentence may be taken to put across an object-dependent proposition; (1), as uttered in the context described above, would be true just in case certain individual bottles are empty. Thus, like definite descriptions, 'every F' also admits of a referential reading.

As in the case of definite descriptions, the referential and "attributive" interpretations of 'every F' are semantically significant, in the sense that an utterance containing the expression will have different sets of truth condi-

tions (will express different types of proposition), depending on whether it is interpreted attributively or referentially.

Now, not all philosophers believe that the referential/attributional distinction is of theoretical importance. No opinion on this matter is proffered here. The point of this section was merely to show that our claim that sentences containing ‘every F’ may have two different sorts of truth conditions, object-dependent and object-independent, could be expressed in terms of this distinction.

### 5. The Narrowing Objection

The next two sections consider and respond to two objections that might be made against the idea that ‘every F’ may be interpreted as having objects as semantic values. First, it might be objected that this idea confuses reference with the restriction (or “narrowing”) of the quantifier to a specific set by the context. To make the objection concrete, let us focus once again on (1).

- (1) Every bottle is empty.

The objection then is that in the situation presented above, where, we argued, ‘every bottle’ semantically denotes the four bottles on the counter, there is narrowing but no referring.<sup>24</sup>

The objection observes that, in general, QPs used in real-life conversations are contextually restricted.<sup>25</sup> They do not have universal values. In the situation presented above, ‘bottle’ should not be construed as denoting the set of all bottles, but rather the contextually and implicitly restricted set of the four bottles on the counter. Accordingly, ‘every’ should not be interpreted as ranging over the set of all bottles either, but over the set comprised by the four bottles on the counter.

The problem, the objection continues, is that the restricted reading of the QP and the alleged referential interpretation are indistinguishable, in

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<sup>24</sup> This objection was made to me by Robert Fiengo via electronic correspondence.

<sup>25</sup> We set aside the issue of how exactly such contextual restriction is supposed to work. A prominent proposal in philosophy on quantifier domain restriction is Stanley’s (Stanley 2000; Stanley – Szabó 2000; and Stanley 2002). This proposal, however, has many difficulties. We cannot go into these here. For criticisms of Stanley’s strategy, see Bezuidenhout (2002), Récanati (2002), Rett (2005), Collins (2007), and Neale (2008).

the sense that (1) will have the same truth value, regardless of whether ‘every bottle’ is interpreted referentially or according to a restricted quantificational reading. The worry is that if the referential interpretation cannot be distinguished from the restricted quantificational reading, the referential interpretation might be illusory. The objector, in other words, challenges us to produce an instance in which (1), where ‘every bottle’ is interpreted referentially, yields a different truth-value from (1), where ‘every bottle’ is interpreted as contextually restricted.

This objection fails for the following reasons. First of all, it is plausible to suppose that the essential differences that exist between particular objects, on the one hand, and sets of objects, on the other, would be at least tacitly clear to the interlocutors in the example concerning (1). Certain things may be truly predicated of the set of the four bottles on the counter that may not be truly predicated of the four individual bottles, and vice-versa. For example, (13) is true but (14) seems false:

- (13) The set of these four bottles on the counter is such that it has a lower cardinality than the set of natural numbers.
- (14) These four individual bottles on the counter (or: Bottle 1, Bottle 2, Bottle 3, and Bottle 4) are such that they (each individual one) have a lower cardinality than the set of natural numbers.

(13) is true but (14) seems false, since the property of having a certain cardinality is a property that can only be properly ascribed to a set of things. Here we are talking about the individual bottles themselves, and not the unit set made up of each bottle.

Likewise, (15) seems true but (16) false:

- (15) These four individual bottles on the counter (or: Bottle 1, Bottle 2, Bottle 3, and Bottle 4) are made of very thin and breakable glass.
- (16) The set of these four bottles on the counter is such that it is made of very thin and breakable glass.

What (15) says might be true of the bottles, but clearly (16) is false, since sets, as abstract entities, are not made of very thin and breakable glass.<sup>26</sup>

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<sup>26</sup> As pointed out by an anonymous reviewer of this journal, sentences (14) and (16) might be viewed as meaningless rather than false, since they (or the propositions ex-

But even if the differences between a set and a particular object are not implicitly assumed or understood by the interlocutors, it *is* possible to produce an example showing that (1) may have diverging truth-values, depending on whether ‘every bottle’ is interpreted referentially or quantificationally. This possibility would decisively refute the objection being entertained. That (1) may yield diverging truth-values, depending on whether it is interpreted referentially or quantificationally, can be demonstrated by formulating a mistake case analogous to the misdescription scenarios Donnellan (1966) devised to illustrate the referential/attributive distinction.

For instance, suppose the speaker isn’t wearing his glasses and is looking at the counter from some distance away. What he mistakes for bottles are really four bottle-shaped vases. The vases are empty; they have no liquid in them. By uttering (1), has he said something true or false? On the GQT interpretation of ‘every bottle’ in uttering (1) he certainly hasn’t uttered a truth, since (1) in this case is analyzed as saying that the set of four bottles on the counter is a subset of the set of empty things. The sentence is true just in case the set of four bottles on the counter *is* a subset of the set empty things. But there is no set of four bottles on the counter, so the sentence cannot be true.<sup>27</sup> However, there does seem to be a sense in which what the speaker said is true. The speaker is thinking of those four objects at which he is looking. He is claiming that these objects are devoid of contents and he is right about this. His charitable audience, who recognizes his intention and knows which objects he is referring to, would judge that his utterance of (1) is true (or true enough). It is true *of* those objects, that they are empty. Therefore, to say that ‘every bottle’ has the four bottles on the counter as its semantic value is not the same thing as saying that this QP is contextually restricted to the set of four bottles on the counter.

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pressed by them) mix up entities of different semantic types. This is of no real consequence to the main point being made above; it can be reformulated in terms of meaninglessness instead of falsehood. However, in order to avoid making unnecessary assumptions or prejudging any semantic (or pragmatic) issues, I prefer to speak simply of truth and falsehood. I’m grateful to this reviewer, whose comments aided in several improvements to the paper.

<sup>27</sup> As von Stechow (1994, 7) notes, while the first-order schema  $\forall x(Fx \rightarrow Gx)$  is true even if  $Fx$  is true of nothing (in virtue of the definition of the material conditional), natural language QPs such as ‘every F’ do not seem to allow for vacuous truth.

## 6. The Gricean Objection

The second objection accepts that a QP may on occasion be interpreted as referring to particular objects, but denies that such an interpretation is semantically significant (in the sense of “semantically significant” explained above in §3). The second objection thus appraises the consequences of the referential interpretation of ‘every F’ differently than we do, and proposes an alternative explanation of it.

The second objection would explain the referential interpretation of ‘every F’ by means of Grice’s pragmatics (see Grice 1967a/1989), as follows. In a given context, someone may use a sentence containing a QP to implicate a proposition concerning certain contextually salient objects. However, the fact that a speaker may so use a sentence containing a QP implies nothing about the semantics of the expression. The quantifier’s semantics are still given by GQT. The sentence containing it should not be taken to express an object-dependent proposition as a result of the referential use. The sentence literally expresses a relation between sets. The object-dependent proposition understood in the context is an implicature; it is not *what is said* (in Grice’s technical sense of “say”) by the utterance of the sentence.<sup>28</sup>

This Gricean line is explicitly taken by Neale (1990) in the course of his well-known rebuttal of the incompleteness objection to Russell’s Theory of Descriptions.<sup>29</sup> The objection, originally raised by Strawson (1950, 332–333), notes that a great many definite descriptions used in ordinary speech are “incomplete”, in the sense that they do not explicitly provide conditions that are specific enough to pick out a unique object satisfying them. Yet in uttering sentences containing incomplete definite descriptions, communi-

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<sup>28</sup> What is said by a speaker, according to Grice, is ‘closely related to the conventional meaning of the words (the sentence) he has uttered’ (p. 25), plus the disambiguation of any ambiguous expressions in the sentence and the assignment of referents to any indexical or context-dependent expressions it might contain. As currently used, the term ‘what is said’ refers to the proposition, thought, or truth-conditional content expressed by a sentence uttered in a conversation.

<sup>29</sup> Neale’s stance on the semantic significance of referential uses of QPs and definite descriptions has since changed. Neale (2004a) represents his current thinking on this issue in connection to definite descriptions. Neale (2004b) and (2009) present his overall view on referring. Here we will nevertheless continue to use Neale (1990), since the position expressed in that work may be seen as the best available statement of the Gricean Objection.

cators nevertheless often succeed in expressing true propositions. Since, to take Strawson's example, the sentence 'The table is covered with books' may be used to make a true utterance despite the existence of many tables, Russell's analysis, according to which the proposition expressed by the sentence is true just in case there is one table in the universe, cannot be correct.

Neale counters that definite descriptions, like other QPs,<sup>30</sup> can be similarly incomplete, but we wouldn't want to say that these other quantifiers should be interpreted referentially. As an illustration of Neale's point, consider (17).

(17) All renates are cordates.

The QP in (17) is incomplete: 'all renates' doesn't explicitly delimit the domain over which it ranges. The speaker could be saying that everything in the universe that has a kidney is also something that has a heart, or that everything currently alive on planet Earth that has a kidney has a heart. Or suppose the speaker is a biologist studying newly discovered life forms on Mars. After much fieldwork and analysis, she reports to her colleagues back on Earth, 'All renates are cordates'. In uttering (17), she is saying that all renates *on Mars* are also cordates. In this case, the domain of quantification is implicitly and contextually restricted to the class of renates on Mars.

Hence the question of whether the domain of quantification is implicit or not, and if it is, how to identify it, is independent of the question of whether the QP may be taken to have objects as semantic values. Neale's argument is that just because a QP is often incomplete doesn't mean that it needs to be ascribed a referential interpretation; by analogy, the incompleteness of many definite descriptions (such as 'the table') doesn't justify ascribing a second, referential semantics to definite descriptions.

Neale is correct that incompleteness doesn't entail reference, but his assumption that QPs do not admit of a truth-conditionally significant referential interpretation is contestable. Neale allows that depending on the context, certain utterances could give the impression that a QP may have objects as values. However, he unequivocally rejects the possibility that this may be more than mere appearance. He presents the following example, concerning 'everyone':

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<sup>30</sup> As mentioned above, Neale believes, like Russell, that 'the' is a determiner with a quantificational semantics like 'every', 'all', and 'some'.

Suppose it is common knowledge that Smith is the only person taking Jones' seminar. One evening, Jones throws a party and Smith is the only person who turns up. A despondent Jones, when asked the next morning whether his party was well attended, says,

[18] Well, everyone taking my seminar turned up fully intending to inform me that only Smith attended. The possibility of such a scenario, would not lead us to complicate the semantics of 'every' with an ambiguity; i.e., *it would not lead us to posit semantically distinct quantificational and referential interpretations* of 'everyone taking my seminar'. (Neale 1990, 87-88, emphasis added)

This passage makes it plain that Neale rejects a semantically significant referential interpretation for QPs. It also makes it plain that his argument against the semantic ambiguity thesis for definite descriptions crucially turns on the assumption that QPs are quantificational/relational and do not admit of a referential interpretation. Here, though, the issue is not incompleteness so much as the appearance of reference. But the structure of the argument is the same: the appearance of reference created by certain uses of QPs does not sanction a semantic ambiguity for these expressions; by analogy, the appearance of reference created by certain uses of definite descriptions should not lead us to posit a semantic ambiguity in their case, either. According to Neale, the referential use of 'everyone taking my seminar' to say something about Smith is to be explained by recourse to Gricean pragmatics: the proposition about Smith seemingly expressed by the sentence is not literally expressed, but only implicated in the context. And this is also his overall strategy against the challenge posed by referential uses of definite descriptions to Russell's Theory of Descriptions. For him, the semantics of definite descriptions is given by Russell's theory. In a given context, however, communicators may derive through Gricean procedures an object-dependent proposition from the utterance of a sentence containing a definite description.

While Neale is perhaps right to maintain that Gricean procedures adequately explain the understanding of a proposition about Smith from an utterance of (18) in the context he describes, there are reasons to doubt that such a Gricean explanation (i.e. one that involves deriving an implicature from the utterance of a sentence literally expressing a different proposition) will work for all cases. In particular, one may doubt whether such a Gricean explanation works for (1) in the context we described above. We



argued above that in this case it is (1) itself, as uttered by A in the context we described, which expresses an object-dependent proposition about the four bottles on the counter.

One way to show that the objectual semantic value of ‘every bottle’ is part of what is said by A’s utterance of (1), and not part of something she implicates, is by demonstrating that the objectual semantic value figures in the truth conditions of a larger sentence in which (1) is embedded. If the four particular bottles that are the values of ‘every bottle’ in this case are included in the truth conditions of a utterance that contains (1)—i.e. if these four objects are part of what is said by this larger utterance—then they can’t be part of an implicature generated by an utterance of (1). For Grice, information is either part of what is said or part of what is implicated (Grice 1967b/1989, 41).

Take once again the situation described in §3. Suppose B replies to A:

- (19) If every bottle is empty, then you can put them in the recycling bin.

Or, suppose that B walks over to the bottles and, looking at them more closely, corrects A by saying:

- (20) Not [it is not the case that] every bottle is empty; look, this one is half full.

The truth of (19) would seem to depend on whether the particular bottles are empty, and not on whether the set of bottles-on-the-counter is a subset of the set of empty things. For the consequent contains a pronoun (‘them’) that is co-referential with ‘every bottle’. And in (20), the sentence following the semi-colon, which contains the demonstrative phrase ‘this one’, can only be properly interpreted if the QP in the first sentence is also interpreted referentially.<sup>31,32</sup> As (20) itself implies by the inclusion of ‘look’,

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<sup>31</sup> Once again, it may be objected that both the anaphoric pronoun ‘them’ and the anaphoric demonstrative phrase ‘this one’ may be ascribed quantificational semantic values, and hence that the presence of these expressions in (19) and (20) does not by itself show that the antecedent QP has an objectual semantic value. A proper reply to this objection would require going into the semantics of pronouns, definite descriptions and demonstrative phrases in considerable detail. This we cannot do here. The remarks made above must thus stay at an intuitive level. But though intuitive, they are nevertheless plausible. Footnote 17 sketches a possible reply to this objection: to interpret the

the situation is one in which the communicators have the bottles in front of them, so that B may rely on perceptual evidence in order to determine A's informative intention to refer to those specific bottles.

Let us recapitulate the conclusions of the last two sections. We entertained two possible objections to the referential interpretation of 'every F'. The first, which might be called the Narrowing Objection, claimed that the referential interpretation of 'every F' and the narrowing of the QP are being run together in the example presented in §3, which purported to illustrate the existence of such an interpretation. Why are the referential interpretation and the restricted quantificational interpretation not the same thing?

1. It is plausible to suppose that people at least tacitly know the differences between objects and sets. (The differences can of course be pointed out to them explicitly, if need be.)
2. It is possible to concoct "mistake cases" analogous to misdescription examples, which reveal the difference.

The second, Gricean Objection, acknowledges the possibility that QPs may be interpreted referentially, but denies that this interpretation is semantically significant. Instead, the object-dependent proposition seemingly expressed when a quantifier is interpreted referentially is merely pragmatically conveyed, as an implicature, in the context. Against this objection it was argued:

The object-dependent proposition can be shown to be what is said by embedding the sentence containing the QP in a larger sentence. The larger sentence will also have truth conditions involving particular objects, and not sets and relations.

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expression in question according to one of the proposed quantificational analyses might turn out not to be convincing, once the context is described in greater detail.

<sup>32</sup> As noted by an anonymous reviewer, the two cases are unlike in that in (19) 'them' is anaphoric whereas in (20) 'this one' is deictic. However, the fact that 'this one' is deictic in (20) corroborates rather than undermines the referentiality of 'every bottle', since 1) a quantificational interpretation of deictically used NP is absurd and 2) this fact is easily compatible with a referential interpretation of the QP; indeed, otherwise we're left without a plausible explanation for the co-reference of the two NPs.

## 7. Conclusion

I have argued that QPs of the form ‘every F’ admit of a literal referential interpretation. This means that they may have multiple objects as their semantic or truth-conditional value, instead of the complex quantificational denotation standardly ascribed to them. A sentence containing ‘every F’ could thus literally express an object-dependent proposition and have truth conditions involving specific objects known to speaker and hearer.

The tradition of interpreting the determiner ‘every’ as the universal quantifier  $\forall x$  is certainly well-grounded philosophically and mathematically; but, as I hope to have shown, it does not always agree with the facts of natural language. I also hope to have defused two possible objections to the referential interpretation developed here.

The referential interpretation of ‘every F’ constitutes a counterexample to the widely held view, neatly expressed by Borg, that ‘all noun phrases are either quantifier expressions or referring terms’<sup>33</sup> (2000, 230). Instead, it lends credence to a very different view, which contends that these expressions are intrinsically neither quantificational nor referential, but may be literally interpreted either way depending on the context and intentions of the speaker. They are “semantically underdetermined”, and the task of determining their truth-conditional values is really a pragmatic and not a semantic one; hence the label “truth-conditional pragmatics” given to this view by some of its main proponents (e.g. Récanati 2011). The arguments presented in this paper are of course not sufficient to establish this broader thesis, and this was not our aim. However, they do support the notion that the semantics of quantifiers is not as tidy as current semantic theory would have it.

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<sup>33</sup> This is also the view, expressed in virtually the same terms, that Neale held early on in (1990) and (1993). See, e.g., (1990, 6).

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