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The sentence

(1) Every man loves some woman.

is well-known to be ambiguous. The ambiguity is traditionally analyzed as being a scope ambiguity, based on the order of the existential and universal quantifiers in the first-order predicate calculus representation of the sentence:

(2a) (∀: man x)(∃: woman y)(love x y)
(2b) (∃: woman y)(∀: man x)(love x y)

Equally well-known is that there is a preference for the reading in which the order of the surface quantifiers is the same as the order of the underlying ones; the preferred reading of (1) is (2a), while the preferred reading of (3) is (2b):

(3) Some woman is loved by every man.

While there is no doubt that the representations in logical form in (2) correctly describe the facts about the ambiguity of (1), it is in fact rather amazing from the linguistic point of view, since the ambiguity appears to be solely a property of the logical form, not the linguistic form. The treatment of quantifiers as operators of some sort over an entire sentence is not reflected in the surface syntax of English or any other natural language to my knowledge. Instead, quantifiers are attached to NP's, and in a few special instances to verbs. The scope ambiguity of (2) is a feature of the syntax of the logical form that sentences like (1) are usually translated into, not the syntax of the natural language form: no surface syntactic scope ambiguity is involved. Nevertheless, the ambiguity of (1) is quite clear. In this sense, the representation of logical form fails to capture why the surface form is ambiguous. In the surface-oriented analyses that are current, various ad hoc devices such as Cooper storage must be used in order to retain the logical-syntax scope ambiguity explanation.

If we disregard the representation of the ambiguity in logical form for the time being and consider the usual linguistic solutions for ambiguity, we have two options: ambiguity in surface structure and polysemy in particular lexical items in the sentence. The former is clearly not the case in ambiguities of quantifier scope. However, the latter possibility offers an explanation for the ambiguities of quantifier scope, the preference of one reading over the other, and also certain other aspects of the behavior of

English quantifiers. Specifically, there is an ambiguity in the existential quantifiers some and a between a 'specific' and a 'nonspecific' reading which interacts with a distributive reading of the universal quantifier to yield the usual interpretations of sentences supposedly containing quantifier scope ambiguities.

The "wide existential scope" reading of (1), that is, (2b), is usually paraphrased as: "There is a woman such that every man loves her". In other words, the object denoted by the existentially quantified NP is definite, although not determinately identified in the discourse (its identity may be known to the speaker). This is the less preferred reading for (1), supposedly because of the surface quantifier order. The other reading is the so-called "narrow existential scope" reading, which is usually paraphrased as follows: "For every man there is some woman such that that man loves her". In other words, although the NP is singular for every man, there is not necessarily a single woman which satisfies the condition 'every man loves x'. However, the preference for one reading over the other, or even the requirement of one reading instead of the other, can be manipulated, and the ability to manipulate the preferences can be explained only by the fact that certain environments are more suitable for a specific or a nonspecific reading of the existential quantifier.

One can make the "wide scope" reading more and more preferred by modifying the existential NP with more and more definite descriptions[1]:

(4a) Every man in this room loves a woman in my phonology class.
(4b) Every man in this room loves a woman I met last night.
(4c) Every man in this room loves a woman I met at the Opera last night during intermission.

In (4), both readings are possible, as their representation in logical form would indicate; but (4b) and expecially (4c) are heavily weighted toward the wide scope reading. This fact cannot be predicted by the scope ambiguity analysis. However, if one treats a as ambiguous between a specific and a nonspecific reading, it is clear that the specific reading will be preferred by more definite NP's following the quantifier.

Another example of the preference for a specific reading is when the order of the quantifiers is reversed. This could be expected: normally, old information precedes new information in an utterance, and old information tends to be more definite by virtue of its being old information. In particular, subjects tend to be topics of the sentence and hence usually more definite:

(5) Some woman drank every bottle of liquor in the house last night.

This is true even when the subject is semantically a patient, as in passive sentences such as (3). It is in fact extremely difficult to get any reading other than the specific one in (3) and (5) (see

footnote 3).

The possibility of a 'nonspecific' (i.e. "narrow scope") reading of (1) depends on the ability to interpret the subject as being applied distributively to the predicate, as well as on the ability to interpret the existentially quantified NP indefinitely. The English universal quantifier all, unlike every and each, can also be interpreted as a collective application of the subject to the predicate. Thus, its use tends to bias preferential readings to the specific ("wide scope") reading, while every and particularly each bias preferential readings to the nonspecific ("narrow scope") reading[2,3]:

(6a) All the men in this room love a woman in Linguistics 101.
(6b) Every man in this room loves a woman in Linguistics 101.
(6c) Each man in this room loves a woman in Linguistics 101.

A more extreme case are the small number of predicates which have only a collective reading, and consequently require the use of all and a specific reading of the existential quantifier (cf. Vendler 1967):

(7a) All/*every one/*each of the blocks are similar in some way.
(7b) All/*every one/*each of the corks in the bottle add up to some number.

In (7a) and (7b), the semantics of the predicate require a specific reading, even though the order of quantifiers would suggest the opposite.

In addition to the semantics of predicates and NP's, the pragmatics of a given sentence can make an NP more definite or less definite and thus create a bias towards the specific or nonspecific reading of the existential quantifier respectively. Consider:

(8a) Gary put every apple in a cup.
(8b) Gary put every apple in a barrel.

In (8a) the specific reading is extremely unlikely because most cups will fit at most one apple. In (8b), the specific reading is preferred because it is more likely pragmatically that every apple was put into one barrel than each being put into its own barrel. In (9), the nonspecific reading is preferred even though the existentially quantified NP in question is the subject and precedes the universally quantified NP:

(9) A bottle of perfume was given by every man to some woman.

The nonspecific reading is preferred because it is extremely unlikely that every man gave the same specific bottle of perfume to some woman, even if some woman is interpreted as a specific woman. In this case the ambiguous quantifier approach successfully predicts a nonspecific reading, since the pragmatics of the

sentence strongly imply that the NP bottle of perfume must be indefinite.

It should be expected that the specific, nonspecific, or both meanings of some and a should appear in contexts other than the multiple-quantifier context discussed above. Indeed, all the major uses of the existential quantifiers in other contexts are sensitive to the distinction, either displaying an ambiguity or requiring just one reading.

The other major context allowing a specific/nonspecific ambiguity is in wish or want contexts, such as the complements of want, or after possibility modals (including the future will).[4] Thus, sentence (10) is ambiguous:

(10) Freida wants to buy a Persian rug.

Sentence (10) can refer either to a specific rug which Freida is interested in buying, or it can express Freida's desire to buy some nonspecific Persian rug. As in the multiple-quantifier examples, the preferred reading can be changed by substituting a more definite description than the NP Persian rug:

(11) Freida wants to buy a Persian rug she saw in a shop in San Francisco last Friday.

Sentence (11) is much more likely to be interpreted as referring to a specific rug rather than referring to any one of the many Persian rugs Freida presumably saw in the shop in San Francisco last Friday.

A related context, imperatives, requires a nonspecific reading:

(12) Go buy me a Persian rug for the bathroom.

This sentence can only be interpreted as not referring to a specific Persian rug. This is to be expected, because it would be extremely infelicitous to command someone to perform some action on a specific item which you are nevertheless treating as indefinite, as the strangeness of (13) indicates:

(13) Go buy me a Persian rug I saw in a shop in San Francisco last Friday.

In (13), it appears that the speaker is holding back information that is required for the hearer to successfully carry out the command, since the definiteness of the NP virtually requires a specific reading of a.

The above contexts, which allow or require a nonspecific reading of the existential quantifiers, are all modus irrealis contexts, which can again be expected since a nonspecific reading requires a domain of possibilities for it to range over. It should also be expected that modus realis contexts such as the past, the nongeneric present, or the present progressive will require a

specific reading since that reading requires a real, although not fully specified, object as a referent. This is indeed the case in the context of reporting an event in which a participant is specific but not known to the speaker:

(14a) John is in the corner talking to a/some woman from IBM.
(14b) John was in the hallway talking to a/some woman from IBM.

The specific reading is also required in the so-called 'presentational' use, where a introduces an entity known to the speaker but not necessarily to the hearer:

(15) I met a woman I knew from my University of Chicago days.

It is a convention in English to introduce a new topic or referent into the discourse with a, but that convention fits the specific reading of a since the new referent is specific but not yet further identified in the discourse context.

The final use of some and a which must be covered is in the antecedents of conditionals. There a nonspecific reading is required, as one might guess from the modus irrealis context:

(16) If someone knocks on the door, ask him the password.
(17) If a Republican knocks on the door, don't let him in.

What is interesting and problematic about the conditional contexts is that someone in the antecedent of (16) can be replaced by anyone, and the a in (17) is likely to be read as "generic" a, which could be replaced by any; in neither case is the meaning appreciably altered:

(18) If anyone knocks on the door, ask him the password.
(19) If any Republican knocks on the door, don't let him in.

In fact, I perceive a slight difference between (17) and (19), where (17), although nonspecific, seems to refer to a "particular" possible event of some Republican knocking on the door, while (19) refers to any arbitrary possible event of a Republican knocking on the door. However, since in both cases only one "thing" is being talked about, whether that thing is arbitrary or just indefinite does not seem to matter.

The distinction between nonspecific some and any is much clearer in the following sentences (brought to my attention by Bob Moore):

(20) John wants to marry a Norwegian.
(21) John wants to marry any Norwegian.

Sentence (20) is ambiguous between a specific reading of a, where there is a person I know or can identify as a Norwegian who John wants to marry, and a nonspecific or nonreferential reading of a,

where there is no specific Norwegian in mind. However, the nonspecific reading of (20) does allow John to meet a number of Norwegian women and not want to marry every one of them; in other words, an arbitrary pairing of Johnwith a Norwegian woman will not imply that John wants to marry that woman. This is not the case in (21), where John is sufficiently enamored of Norwegian women that for an arbitrary individual extracted from the domain of Norwegian women, John wants to marry that individual.

A similar case can be made for commands. If I say to you

(22) Go out and buy me a newspaper from the newsstand.

it is possible for you to return with USA Today and for me to say something like "not that stupid rag; I want a real newspaper!", and reject it. However, if I had said

(23) Go out and buy me any newspaper from the newsstand.

it would be extremely infelicitous for me to reject whatever you brought me, since in the latter case I have indicated that an arbitrary item from the newsstand would satisfy my request as long as it was a newspaper.

Still another example of what appears to be a three-way distinction is the original sentence (1), with a replacing some:

(24) Every man loves a woman.

Besides having the specific and nonspecific senses, (25) also has the so-called "generic" sense, where a woman means any woman. (Note that some cannot have this generic meaning.)

The above interpretations of some and any imply that perhaps the correct analysis of any is as the ultimate indefinite existential quantifier: although the above sentences appear to be referring to a single unspecified entity, that entity is an arbitrary choice from the domain of the NP. A full argument for this analysis of any cannot be presented in this paper; however, an analysis of any as a special kind of existential quantifier has been made by Alice Davison (Davison 1980), where she argues that the defective distribution and lack of existential presupposition of the "universal" any (not shared by the true universal quantifiers but, suspiciously, shared by the nonspecific some and a), can be explained by treating any as an existential quantifier without the implicature of "not all" (whereas I would argue for a higher degree of indefiniteness). In the remainder of this paper I will assume this controversial interpretation of any in order to present additional parallels, with the hope that a fuller justification of this position can be presented in the near future.

If I am correct in arguing that the ambiguity of sentences like (1) should be attributed to polysemy in the English forms of the existential quantifier, namely, some and a, then it should be expected that other languages would have two explicit surface

forms corresponding to the two distinct meanings of the English existential quantifiers. Russian provides an interesting example. Russian has a rich set of indefinite quantifiers whose intricacies in use go considerably beyond the scope of this paper; however, there do exist a number of morphologically distinct indefinite pronouns which can serve to make the same distinction as the specific vs. nonspecific some and a.[5]

The nonspecific reading of (1) only is allowed with an indefinite formed by suffixing the clitic-like -nibud':

(25) Každyj čelovek l'ubit kakuju-nibud' ženščinu.
Each man loves some-NONSPEC woman
'Every man loves some woman [nonspecific].'

Because of the distributive každyj 'each, every' the phrase odnu i tu že 'one and the same' must be used in place of kakuju-nibud' in order to obtain the specific reading. In general, though, the characterization of the specific indefinite is a more complex matter, because Russian makes additional distinctions which English does not. In particular, there is a distinction between the presentational use and the specific (but not known to speaker) use. In ordinary contexts, the presentational indefinite is represented by odin 'one', or (less frequently) by the bare NP. The non-presentational specific indefinite is represented by suffixing -to instead of -nibud'. The suffix -to emphasizes that the speaker does not know the identity of the entity denoted by the NP, but again the bare NP may be used if the entity is not very relevant to the conversation:

(26a) Ivan govoril s kakim-to antropologom.
John talk-PAST with some-SPEC anthropologist
'John was talking to some anthropologist.'
(26b) Ivan govoril s antropologom.
John talk-PAST with anthropologist
'John was talking to an anthropologist.'

The distinction between (26a) and (26b) in Russian is roughly equivalent to the subtle distinction of emphasis on the anthropologist between the English glosses with some and a.

In the other direction, the affix -nibud' can also have the arbitrary choice meaning of l'uboj 'any'. However, l'uboj cannot have the nonspecific-but-particular meaning; it is prohibited in the antecedent of a conditional. Likewise, -nibud' cannot be used in generic any contexts (in this respect, it functions like English nonspecific some).

The full range of the Russian indefinites described above[6] can be exhibited in (27):

(27a) Ivan xočet ženit's'a na odnoj ukrainke.
(27b) kakoj-to
(27c) kakoj-nibud'

(27d) Ivan xočet ženit's'a na l'uboj ukrainke.
(27e) Ø

(27a) is a presentational sentence, announcing that John wants to marry a Ukrainian; the conversation will presumably proceed with a discussion of the Ukrainian. (27b) reports John's desire, and indicates that John has a specific Ukrainian in mind, but that the speaker does not know who she is. (27c) expresses John's desire to marry someone Ukrainian; it is also ambiguous with the meaning of (27d), which emphasizes that John will marry any Ukrainian he finds. Finally, (27e) can have any of the above meanings in the appropriate context (as well as a definite meaning if the Ukrainian is already part of the discourse context), although it is a more neutral way of expressing each meaning than its nonzero counterparts.

One can see that the different kinds of indefinite (and definite) quantifiers distinguished in Russian and English can be organized into a set of right-branching distinctions, which are displayed in the figure below (I have included demonstratives at the top, although they really differ from definite articles only in that they "point" in different "directions"):

	English	Russian
I. Deictic	this, that	to, eto
II. Non-deictic		
A. Definite	the	Ø, eto
B. Indefinite		
1. Known to speaker	a, some	odin, Ø
2. Not known to speaker		
a. Specific	some, a	-to, Ø
b. Nonspecific		
(1) Particular	a, some	-nibud', Ø
(2) Arbitrary	a, any	l'uboj, -nibud', Ø

The polysemous quantifier analysis of sentences containing both existential and universal quantifiers has considerable advantages over the traditional scope ambiguity analysis. It does not depend on a structural phenomenon not related to the surface structure of English (or virtually any other natural language). It reveals the ambiguity of the English sentences in an expected place, viz. the polysemy of a lexical item. It corresponds to the surface behavior of quantifiers, namely that they attach to NP's, not S's. It makes predictions about preferred readings of various sentences based on the semantically and pragmatically defined definiteness of the existentially quantified NP, whereas the scope ambiguity analysis can only make the weak statement that the preferred reading is usually the one where the order of the underlying quantifiers is the same as the order of the surface quantifiers. It also makes predictions about possible morphological distinctions in other languages which are borne out in at least one case, and is able to accommodate additional distinctions in meaning which the scope

ambiguity analysis cannot.

Needless to say, the polysemous quantifier analysis implies a completely different view of quantification that that offered by the first-order predicate calculus approach. The analysis proposed in this paper is actually the first and most interesting one so far derived from the hypothesis that quantifiers are a type of indexical or referring expression which picks out entities in a domain according to certain principles of selection, and then applies the selected entities to a predicate in accordance with certain principles of application. The principles of selection which are used in English are those of quantity and definiteness, and the principles of application are those of distributiveness and perhaps sequentialness (in order to account for the every/each distinction). Traditional quantification and certain extensions of it to numerals and words like several and many (e.g., McCawley 1981) have concerned themselves chiefly with the principle of quantity. Little work has been done to my knowledge on the operation of the principles of distributiveness or definiteness; this paper is an attempt to cast light into the latter. As with demonstratives, the definite article and personal pronouns, the actual entities selected and the manner in which they are applied to the predicate are partly a function of the pragmatics of indexical expressions; I have nothing say about how the entities are actually selected, only what the appropriate quantifier tells us to begin with. Thus, when I say that the specific a is used to select an entity which is unknown to the speaker but which is definite, as in the situation when a loud crash is heard in the hallway and someone utters (28):

(28) Something just fell in the hallway.

I am not saying how the speaker (and hearer) understand that something refers to whatever made the crash, any more than saying the definite article the in (28) is used when the object is known to both speaker and hearer indicates how both speaker and hearer know that the hallway is that hallway where the crash occurred and not some other hallway; the meanings of something and the describe the way each NP "points" to an entity or group of entities, not how the hearer gets from the end of the metaphorical finger to the thing itself.

The reason for this brief recapitulation of the nature of indexicals is that the distinction betweenmeaning and use is crucial for indefinite quantifiers, since unlike demonstratives and definite articles their meaning does not immediately establish an identifiable real world referent. Nevertheless, they do indeed point: the indefiniteness is in getting to the real world entities, not in the assertion itself. In fact, when indefinite quantifiers (singular or of higher number) are used, they establish discourse referents which can then be referred back to using personal pronouns or definite NP's, and it is understood that those pronouns and definite NP's are referring to the same entity or class of

entities as the original expression does, even though the original expression points to that entity or class of entities in an indefinite manner. (The traditional scope approach to quantifiers fails in this regard, since the coreferential expressions can occur later in the discourse in positions which have to be outside the scope of the original quantifier. Hence the paradoxes of the donkey sentences and coreference in world-creating predicates; I am indebted to James McCawley's solution to the latter problem (McCawley 1978, 1979) which inspired the approach to quantifiers embodied in this paper.)

Having distinguished the use of indefinites in discourse as establishers of discourse referents from the use of indefinites as indexicals pointing at real world entities, it remains to define the distinctions in meaning between the different indefinite quantifiers in English and Russian more precisely. In order to do so, I will introduce two notions from the current debate on naming and reference in the philosophy of language: numerical identity and specific identity. Numerical identity is the identity of a thing with itself; in English this usually referred to by the locution same x, as in (29):

(29) This is the same pie you tried to make me eat last night.

In (29) the same pie means that tonight's pie is the same real world entity as last night's pie; i.e. they are numerically identical. Specific identity, on the other hand, is the identity of two or more entities as belonging to the same class or species; it is usually represented by the locution same or same kind:

(30) This pie is the same/same kind as you gave me last night.

In (30), it is not being asserted that tonight's pie is numerically identical to last night's pie, only that it is another, numerically distinct object of the same class, namely, pie. Thus specific identity defines the class membership of a thing, while numerical identity defines the unique thisness of the thing itself.

The various degrees of definiteness of quantifiers can be defined in terms of the status of the numerical identity of the thing (or things) referred to in the minds of the speaker and the hearer. Beginning with the most definite, i.e. the definite article (the demonstratives differ from the definite article only in that they point in different "directions"), we have:

a. Definite. The numerical as well as specific identity of the thing referred to is known to the speaker and the hearer.

b. Presentational indefinite. The numerical identity is known to the speaker but not necessarily to the hearer.

c. Specific indefinite. The numerical identity of the thing is known to the speaker, but cannot be more specifically described

except by some vaguer specific identity, viz. the following NP.

d. Nonspecific indefinite. The numerical identity of the entity referred to is not known and thus is not necessarily fully determinate (or even existent); only its specific identity is known. Use of the nonspecific indefinite can only be made in contexts where there is a range of possibilities with respect to the real world; e.g. in the normal use of commands, non-referential readings of wish predicates or modals, the antecedents of conditionals, or distributive readings of predicates.

e. Arbitrary indefinite. The numerical identity of the entity to which the predicate is applied is arbitrary, as long as it is a member of the class described by the NP. That is, an arbitrary entity from the domain will satisfy the predicate. Again, a domain of possibilities over which the quantifier can range is required, i.e. modus irrealis, object of negation, etc.

These definitions may require modification, particularly when other languages are brought into the analysis. Here I have only attempted to show that a different approach to quantifiers can prevent us from having to attribute a linguistic ambiguity to a structural distinction not present in surface structure. It is hoped that a similar analysis will dispose of the other major scope ambiguity not exhibited in surface structure, namely negation.

Footnotes

1. I have also made the universally quantified NP more specific in order to make interpretations of the sentences in (5) more plausible. It must be noted that this also biases the sentences more towards a "wide scope" reading by making the whole situation of the sentences more definite and less vague.

2. All in its generic use--that is, without a following the--does not carry this collective bias; compare (i) to (ii), and also compare the poorness of (iii), where the generic all conflicts with the relatively specific context:

(i) All the men love some woman.
(ii) All men love some woman.
(iii) All men in this room love a woman in my phonology class.

3. A description of the distributive/collective distinction of the different universal quantifiers as a principle of application to the predicate also accounts for the use of all and each as adverbs, with the corresponding preferences in readings (for some reason, every cannot be so used):

(i) The men all loved a woman in my phonology class.

(ii) The men each loved a woman in my phonology class.

Note also that in general the distributive reading can be obtained only when every or each modify the subject NP or the passive agentive by-phrase; thus (5) cannot be interpreted distributively.

4. Belief contexts appear not to affect the variability in acceptability of specific and nonspecific readings except when the belief concerns a nonexistent entity. McCawley (1978) notes this and also presents other distinctions between belief and wish contexts.

5. The details on Russian quantifiers presented here were provided by Boris Gasparov (Dept. of Slavic Languages and Literatures, Stanford University).

6. I have left out of this account certain other Russian indefinites which are not used as frequently and which appear to differ from the more common ones by nuances of meaning not having to do with degree of indefiniteness. For example, the prefix koe- functions in a presentational context like odin, but in addition conveys the special importance of the information to the hearer, and thereby control of the situation by the speaker over the hearer.

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