Context Dependent Quantifiers and Donkey Anaphora

It is generally agreed that some anaphoric pronouns with (what appear to be) quantifier antecedents occur outside of the syntactic scope (i.e. the c-command domain) of their antecedents. First, there is "donkey anaphora", of both the conditional and relative clause varieties:

1. If Sarah owns a donkey, she beats it.[1]

2. Every woman who owns a donkey beats it.

Without going through the details, let me just assert that there is good reason to think that the pronouns in 1 and 2 do not occur in the syntactic scope of the quantifier 'a donkey'.[2]

A second sort of case in which a pronoun with a quantified antecedent occurs outside the syntactic scope of its quantifier antecedent is one in which the pronoun and its antecedent occur in different sentences. Examples of such "discourse anaphora", from the very simple to the slightly complex, include:

3. A man is following Sarah. He is from the IRS.

4. A man is following Sarah. Melanie believes he is from the IRS.

5. It is possible that several students flunked at most five exams. Melanie believes they didn't study for them.

6. Suzi ought to apologize to most of Ann's dinner guests. It is certain that she insulted them. But it is unclear whether they noticed.

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[1] I intend these sentences on readings on which 'it' in each sentence is anaphoric on 'a donkey', and on which 'she' in 1 is anaphoric on 'Sarah'. Throughout, I generally avoid co indexing to indicate intended anaphoric relations because it reduces clutter and it is obvious which anaphoric relations are intended.

[2] A sketch of the details: all independent evidence available suggests that a quantifier can't take wide scope over a conditional and bind variables in its consequent (*'If John owns every donkey$_i$, he beats it$_i$'). Further, even if 'a donkey' could magically do this in 1, assuming it is an existential quantifier, we still wouldn't get the intuitive truth conditions of 1, which require that Sarah beats every donkey she owns. Similarly, the independent evidence available suggests that quantifiers can't scope out of relative clauses (*'A man who owns every donkey$_i$ beats it$_i$'), and so again the pronoun in 2 is not within the scope of its quantifier antecedent. I should add that according to DRT theorists such as Kamp [1981] and Heim [1982], indefinites like 'a donkey' are not quantifiers. However, I will be assuming they are.

Because in these two sorts of cases pronouns occur outside the syntactic scopes of their antecedents, given standard assumptions, they cannot be viewed semantically as variables bound by their quantifier antecedents. Let us call such pronouns instances of unbound anaphora. In the last twenty years, a number of semantic theories of unbound anaphora have arisen. These include E type/D type analyses (Evans 1977, Heim 1990, Neale 1990), Discourse Representation Theory (Kamp 1981, Heim 1982), Dynamic Logic accounts (Stokhof & Groenendijk 1991, Chierchia 1995), and the Context Dependent Quantifier account (Wilson 1984, King 1987, 1993, 1994). I hasten to add that on some of these accounts, instances of unbound anaphora are semantically bound by their antecedents or by "higher" quantifiers. So perhaps the term 'unbound anaphora' is unfortunate here and perhaps something like the melodic non-c-command anaphora would be better. Nonetheless, since on my view the pronouns in question are syntactically and semantically unbound, I shall stick with the term 'unbound anaphora'.

The account I favor of unbound anaphora, the Context Dependent Quantifier, or CDQ account, to this point has been presented only as an account of discourse anaphora. The question arises as to how it would treat donkey anaphora. As we shall see, there initially appear to be difficulties with applying the CDQ account to donkey anaphora. The present work has two goals. First, I shall argue that the difficulties in applying CDQ to donkey anaphora are merely apparent and that by adapting techniques employed by Heim [1990] and others CDQ can give an account of donkey anaphora. Second, along the way I shall gesture at certain methodological advantages that CDQ enjoys over various competitors.

I shall begin by giving an informal overview of the CDQ theory, and the data to which it has been applied.

The CDQ account of discourse anaphora was originally motivated by a felt analogy between the semantics of discourse anaphora and the semantics of “instantial terms” that figure in quantificational reasoning in natural languages and in derivations of systems of natural deduction for first order predicate logic. An example of an instantial term in natural language would be occurrences of ‘n’ when one supposes that n is an arbitrary prime number and on the basis of subsequently establishing the claim that n is F, one concludes that all prime numbers are F. Or given that some prime number is F, one might let n be "a prime that is F" and go on to establish certain other claims "about" n. In systems of natural deduction, instantial terms are the singular terms that are introduced in applications of existential instantiation and eliminated in applications of universal generalization. CDQ has been applied to the instantial terms of a certain range of systems of natural deduction. In these applications, occurrences of formulas containing instantial terms in derivations are assigned truth conditions. The truth conditions assigned depend on the structure of the derivation containing the occurrence of the formula. Thus given an occurrence of a formula A in derivation D, one defines the truth conditions of A in context c, where c encodes the structural features of derivation D that are relevant to the truth conditions of the occurrence of A in D. The assignment of truth conditions to occurrences of formulas in derivations delivered by CDQ allows one to prove a theorem to the effect that if in derivation D formula A was inferred from $B_1,\ldots,B_n$, then for any model M, if the relevant occurrences in D of $B_1,..,B_n$ are true in their contexts under M, then the relevant occurrence in D of A is true in its context under

M. Call this theorem line soundness.[3] Classical soundness is a trivial consequence of this theorem.

To those not familiar with the application of CDQ to instantial terms in natural deduction, line soundness may be mildly surprising. For it entails that if in a derivation D there is an application of existential instantiation as follows:[4]

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        .
        .
        .
  (∃x)P(x)
     a |
       | P(a)
        .
        .
        .
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then if this occurrence of '(∃x)P(x)' is true in its context under model M, this occurrence of 'P(a)' is true in its context under M. Obviously, if that is true, and if the existential quantifier is given its standard semantics, the instantial term 'a' in 'P(a)' must itself be in some way expressing generality as quantifiers do. And indeed, CDQ treats it in just this way. But of course, exactly what sort of generality (universal vs. existential, etc) a given instantial term in an occurrence of formula expresses will depend on features of the derivation containing the occurrence of the formula. That is, what sort of generality an instantial term expresses is determined by the derivational context in which the occurrence of the formula occurs. For example, 'a' in the above "derivation" has the force of an existential quantifier. However, in another derivation we might have an occurrence of 'a' in an application of universal generalization as follows:

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[3] See King [1991] for a proof of this result.
[4] I am assuming here the the rule of existential instantiation is formulated in such a way that 'P(a)' is inferred from '(∃x)P(x)'.

.
a| P(a)
 |
(x)P(x)

Here in order that the truth of 'P(a)' in its context forces the truth of '(x)P(x)' in its context 'a' must have the force of a universal quantifier. So again, what sort of quantificational force an occurrence of an instantial term has is determined by the derivational context in which it occurs. It is for this reason that I called these expressions context dependent quantifiers.

Now the idea underlying the application of CDQ to discourse anaphora is that these expressions too look like expressions of generality, where the precise nature of the generality they express is determined by features of the linguistic context in which they occur. Thus, on the CDQ account, instantial terms and anaphoric pronouns with quantifier antecedents in discourse anaphora are contextually sensitive devices of quantification. That is, these instantial terms and anaphoric pronouns express quantifications; and which quantifications they express is partly a function of the linguistic environments in which they are embedded.

Before spelling this out a bit more, let me informally motivate the idea that the pronouns in discourse anaphora are devices of quantification that are sensitive to linguistic context. Consider the following discourses:

7. A man from Sweden climbed Mt. Everest alone. He used no oxygen.

8. Every player is dealt five cards. He passes one card to the player on his left.

9. Most students passed the exam. They didn't get scores below 70%.

Imagine that I were to utter 7. Suppose now that in fact at least one Swede has soloed Mt. Everest without oxygen. Then it would seem that in uttering 7 I have spoken truly. If

this is correct, then it appears that the second sentence of 7 expresses a (existentially) general claim. If the pronoun 'He' in the second sentence is itself a quantifier, we would have an easy explanation as to why the second sentence expresses a general claim: the generality is a result of the presence of this quantifier in the sentence. Similar remarks apply to 8 and 9. Further, consider the following discourse:

10. A man killed Alan last night. Michelle believes he used a knife to kill him.

It seems to me that the second sentence has two different readings. On one reading, it asserts that concerning the man who killed Alan last night, Michelle believes of that very man that he used a knife. This would be the case if, for example, Michelle knew the man who killed Alan, believed that he killed Alan and based on his well-known fondness of knives, believed he used this sort of weapon. But the second sentence has another reading on which it ascribes to Michelle the general belief to the effect that a man killed Alan with a knife last night. On this reading the sentence would be true if e.g. on the basis of conversations with personnel at the hospital and having no particular person in mind, Michelle believed that a man fatally stabbed Alan last night.

Again, these facts would be easily explained if we held that the pronoun in the second sentence is a quantifier. For we might then expect that, like other quantifiers, it could take wide or narrow scope relative to 'Michelle believes'. On the wide scope reading of the pronoun/quantifier, the second sentence attributes to Michelle a belief regarding a particular person. On the narrow scope reading, it attributes to Michelle a general belief.

To summarize, then, sentences containing pronouns with quantifier antecedents in other sentences appear to make general claims (7,8, 9) and appear to admit of scope

ambiguities (10). These facts would be most straightforwardly explained on the hypothesis that the anaphoric pronouns in question are quantificational.

Occurrences of "ordinary quantifiers", such as 'every man' have what we might call a force, in this case universal; what we might call a restriction, in this case the set of men; and scope relative to other occurrences of quantifiers, verbs of propositional attitude, and so on. CDQ claims that the anaphoric pronouns in question also have forces (universal, existential, etc.), restrictions ("domains over which they quantify") and scopes relative to each other, verbs of propositional attitude, etc. However, unlike "ordinary" quantifiers, these anaphoric pronouns qua quantifiers have their forces, restrictions and relative scopes determined by features of their linguistic environments. So again, it should be clear why I call them context dependent quantifiers (henceforth, cdqs).

I have already indicated that the CDQ account has been applied to instantial terms in reasoning in natural language and in systems of natural deduction. I have also indicated that the account has been applied to discourse anaphora. Before turning to other matters, I wish to note an advantage CDQ has over dynamic or DRT approaches in application to some discourse anaphora. As the discussion of sentence (10) above may have suggested, CDQ has been applied to discourses in which anaphoric pronouns combine with verb of propositional attitude and modal, epistemic, and deontic operators ('it is certain that'; 'it ought to be the case that').[5] Examples of such data, including some moderately complicated cases, are as follows:

11. Sarah believes several students flunked the exam. They are in my office.

12. Sarah knows that several students flunked the exam. They are in my office.

13. A man killed Alan last night. Michelle believes he used a knife to kill him.

[5] See King [1993] and [1994] for such applications.

14. At most four students passed the exam. Elizabeth believes they are smart.

15. Glenn hopes some woman will go out with him. Brad regrets she is from Kansas.

16. Hob believes a witch has blighted Bob's mare. Nob believes she killed Cob's cow.

17. Winston believes every successful movie stars a famous female actress. Emmet believes that she is responsible for its success.

As 16 makes clear, the data to which CDQ has been applied here includes Geach "intentional identity" examples, as well as more complex examples of the sort illustrated by 17, which I call Generalized Geach sentences. Now as I've already indicated, CDQ predicts that some of the sentences in these discourses have more than one reading, (e.g. the second sentences of 13 and 14). This is due to the fact that the CDQ account predicts that cdqs, since they are quantifiers, can sometimes take wide or narrow scope with respect to verbs of propositional attitude (and other operators). So, for example, as mentioned earlier, the second sentence of 13 can either attribute a general belief to Michelle, or a belief about a specific man.

This highlights what I take to be the methodological advantage that CDQ enjoys over DRT and dynamic approaches to data in which anaphoric pronouns mix with attitude verbs and operators of various sorts. Namely, since CDQ holds that the anaphoric expressions are quantificational, it predicts that they will take varying scope with respect to verbs of attitude and other operators, yielding multiple readings in some cases. This prediction is clearly correct. By contrast, since DRT approaches and dynamic approaches take anaphoric pronouns of the sort under consideration to be (semantically) bound variables, they only predict readings on which there is binding into the verb of attitude or operator. That is, they only predict readings corresponding to our

wide scope readings. Thus, to account for what we call the narrow scope readings, which are clearly present in certain cases (e.g. 13 above on the reading on which a general belief is attributed to Michelle), DRT and dynamic approaches must invoke some completely different semantic mechanism. It seems to me a methodological advantage of CDQ that it holds that a single semantic mechanism generates the multiple readings present in examples of the sort we have been considering. Since we are about to turn to donkey anaphora, let me point out that even here there are readings of donkey sentences that DRT and dynamic approaches cannot explain. Consider the following sentences:

(18) Every women who has a secret admirer thinks he is stalking her.

(19) If a woman has a secret admirer, usually she thinks he is stalking her

These sentences certainly appear to have readings on which they attribute de dicto beliefs to the women in question. That is, they have readings on which they attribute to the women in question general beliefs to the effect that they are being stalked by secret admirers. This is why these sentences can be true even though the women in question don't know who their secret admirers are, and so have no beliefs about particular persons stalking them. Hence these readings can't result from the pronouns being bound from outside the verb of attitude 'thinks'. Hence here again, DRT and dynamic approaches must posit some other mechanism to capture these readings.

In any case, I hope this overview of the CDQ account makes clear both roughly what the account is and the rather wide range of data to which it has been applied.

Let us now turn to donkey anaphora. Before getting to that, one aspect of the CDQ account must be further articulated. First, let's recall what a symmetric monotone increasing quantifier is. Let D be a determiner, and let A and B be predicates. Very

informally, we can say that a determiner D is symmetric monotone increasing iff for predicates A,B, and C:

a. D(A) is B iff D(B) is A (e.g. some man is happy iff some happy thing is a man.)

and

b. The following inference is valid:

D(A) is B (e.g. some man is under six feet tall)

Every B is C (every man who is under six feet tall is under seven feet tall.)

D[A] is C (some man is under seven feet tall)

Thus, e.g. 'a(n)', 'some' and 'several' are symmetric monotone increasing determiners. A quantifier (e.g. 'some man') is symmetric monotone increasing iff its determiner is.

Now on the CDQ account, a cdq with a symmetric monotone increasing antecedent has the same quantificational force as its antecedent. Further, the restriction on such a cdq is determined by the predicative material in the sentence in which its antecedent occurs as follows. Consider a discourse of the following form

An F is G. He/she/it is H.

The cdq 'he/she/it' here has the force of the quantifier 'An F that is G'. So the cdq here has existential force, and its restriction is F's that are G's.[6]

With this in mind, we turn to donkey sentences. Because the treatment of conditional donkey sentences is somewhat more involved, let us consider relative clause donkey sentences first. Thus consider again:

2. Every woman who owns a donkey beats it.

[6] In more complex, multi-sentence discourses, the restriction of a cdq with a symmetric monotone increasing antecedent is determined in a more complex manner. See e.g. King [1994] p. 224 for details. This additional complexity is not relevant for present purposes, so I suppress it.

Let's assume that the syntactic structure of 2 is very roughly something like:

2b. [Every x: [x is a woman & [[a y: y is a donkey & x owns y]]] [x beats y]

Now let's suppose that the "pronoun" y following 'beats' in 2b (i.e. the pronoun 'it' in 2) is a cdq, since given standard assumptions it is anaphoric on but not bound by its quantifier antecedent. The CDQ theory then predicts that the pronoun is an existential quantifier whose restriction is the set of donkeys owned by x. That is, 'y' ('it') expresses the quantification that could be expressed by the quantifier phrase 'a donkey x/she owns'. If we add to the CDQ theory the claim that when a cdq occurs in the syntactic scope of a quantifier that takes wide scope over the cdq's antecedent, the cdq is interpreted semantically as taking narrow scope with respect to the quantifier in question, we have the result that the cdq 'y'/'it' in 2b/2 expresses an existential quantification over donkeys x/she owns that takes narrow scope with respect to 'Every woman who owns a donkey'. Thus the account predicts that the sentence is true iff every donkey owning woman beats at least one donkey she owns.

Now there is a debate in the literature as to what are the proper truth conditions of 2 and similar sentences such as:

2'. Most women who own a donkey beat it.

2''. No woman who owns a donkey beats it.

2'''. Some woman who owns a donkey beats it.

Some think that the truth of 2 and 2' require every donkey-owning woman to beat every donkey she owns and most donkey owning women to beat every donkey they own, respectively. Let us call these the (alleged) universal readings of 2 and 2'. Others think that 2 and 2' require for their truth merely that every donkey owning woman beats some

donkey she owns and that most donkey owning women beat some donkey that they own, respectively. Let us call these the (alleged) existential readings of 2 and 2', (these, of course, are the readings CDQ assigns to these sentences). Still others think that 2 and 2' are ambiguous and have both readings.

The view that 2 and 2' only have universal readings seems very doubtful. First, an observation due to Rooth [1987] and noted by Heim [1990] casts doubt on the claim that 2 has (only) a universal reading. Consider the following sentences:

2. Every woman who owns a donkey beats it.

2a. Every donkey that is owned by a woman is beaten by her.

When informants (who aren't linguists and philosophers of language working on donkey anaphora) are presented with these sentences and asked whether they would be true if one woman owns ten donkeys and beats nine of them, whereas every other woman beats every donkey she owns, many hesitate to judge 2 false, but do not hesitate to judge 2a false. If both sentences had only the universal reading, this would be hard to explain. For if that were so, the sentences would be truth conditionally equivalent. Second, it seems clear that some sentences relevantly like 2 and 2' have existential readings:

Every person who had a credit card paid his bill with it.

Most women who have a dime will put it in the meter.

It seems pretty clear that the truth of these sentences require only that every person who has a credit card paid his bill with some credit card he has and that most women who have a dime put some dime she has in the meter, respectively.

As indicated above, CDQ as formulated to this point assigns only existential readings to all of 2-2'''. In the case of 2''', this is all to the good since sentences of this

sort always seem to have only existential readings (on which the truth of 2''' requires that some woman who owns a donkey beats some donkey she owns). Further, as already indicated for 2 and 2', the following examples show that sentences relevantly like 2-2'' possess the existential reading:

20. Existential Readings:
a. Every person who had a credit card paid his bill with it.
b. Most women who have a dime will put it in the meter.
c. No man with a teenage son lets him drive the car on the weekend.

(The truth of 20 c requires that no man with a teenage son lets some teenage son of his drive the car on the weekend.) Because of these facts, I am tempted to think that all relative clause donkey sentences possess only the existential readings assigned to them by CDQ, and to give a Gricean explanation of the appearance of universal readings in some cases. But I have to confess that in certain cases, the universal reading is so robust that it is hard to believe that it results from Gricean mechanisms. The following example from Kanazawa [1994] illustrates this: 'Every student who borrowed a book from Peter eventually returned it'.

What, then, about the view that relative clause donkey sentences have both universal and existential readings? First, as already mentioned, sentences such as 2''' never seem to have universal readings. So some explanation needs to be given of this fact. However, in the other cases (where the wide scope quantifiers are formed from the determiners 'every', 'most' and 'no') it does seem as though on can find examples in which the universal reading is favored and examples in which the existential reading is favored (I repeat 20 above):

20. Existential Readings:
a. Every person who had a credit card paid his bill with it.

b. Most women who have a dime will put it in the meter.
c. No man with a teenage son lets him drive the car on the weekend.

21. Universal Readings
a. Every student who borrowed a book from Peter eventually returned it.
b. Most parents who have a teenage son allow him to go out on the weekend.
c. No man with an umbrella leaves it home on a day like this.

These examples and others suggest that whether a given relative clause donkey sentence appears to favor the universal reading or the existential reading seems to be influenced by a variety of factors, including the monotonicity properties of the determiner on the wide scope quantifier, the lexical semantics of the predicates occurring in the sentence, and general background assumptions concerning the situations in which we are to consider the truth or falsity of the sentences. It is very hard to find significant generalizations regarding under what conditions a given reading is favored.[7] Further, it is very hard to find sentences that clearly allow both a universal and an existential reading. This makes the view that the sentences actually possess both readings as a matter of their semantics at least somewhat suspect. If they really do possess both readings, why is it so hard to find sentences that clearly allow both readings?

[7] Kanazawa [1994] discusses how the montonicity properties of the determiner on the wide scope quantifier in a relative clause donkey sentence ('Every', 'Most' and 'No' in 20 a-c respectively) affect whether a universal or existential reading for the sentence is favored. Though Kanazawa admits that other factors also contribute to making one or the other reading favored in particular cases (see p. 124), he claims that certain monotonicty properties of the determiners on the wide scope quantifier result in only one reading being possible. Thus he claims that when the wide scope quantifier has a determiner that is upward monotone on both arguments (e.g. 'some'), only the existential reading (which Kanazawa calls the "weak reading") is possible (p. 120, 124). As I've indicated in discussing 2''', I agree with this (see also my (26) below and surrounding discussion). However, Kanazawa also claims that when the wide scope quantifier has a determiner that is monotone down on both arguments (e.g. 'no') only the existential (weak) reading is possible (p. 120, 124). Though such sentences favor existential readings, sentences like 21 c cast doubt on the claim that they only allow existential readings. In any case, the important point is that though Kanazawa is concerned with how monotonicity properties of the determiners on the wide scope quantifiers in relative clause donkey sentences affect which readings are favored or available, he agrees that in the general case factors other than such monotonicity properties affect which readings are favored. See also Guerts [2002] for interesting data on factors affecting which readings are favored for donkey sentences.

In any case, the main point here is that an extremely straightforward and natural extension of the CDQ theory yields the existential readings for 2, 2', 2'' and 2'''. I find these readings the most natural readings of 2' and especially 2'' and 2'''; and I think a plausible case can be made that 2 possesses the existential reading as well. However, as I have indicated in discussing 21 a-c, sentences relevantly like 2-2'' seem to possess quite robust universal readings. Thus, I simply note that there is a controversy concerning what the truth conditions of relative clause donkey sentences are, and that CDQ straightforwardly delivers one set of truth conditions for these sentences, which some claim are the only truth conditions they possess. It is important to note that most approaches to donkey anaphora (e.g. the DRT approaches of Kamp [1981] and Heim [1982], the E type approach of Neale [1990], the dynamic approach of Groenendijk and Stockhof [1991]) yield only the universal readings of donkey sentences.[8] So in not delivering both readings as currently formulated, CDQ is no worse off than these accounts. Further, the only theories known to me that deliver <u>both</u> the existential and universal readings do so by positing some sort of ambiguity.[9] CDQ could capture both

[8] Actually Neale's [1990] account also assigns readings to donkey sentences on which the truth of e.g. 2 and 2' require that every man owns exactly one donkey and most men own exactly one donkey, respectively (see p. 237-241). However, this is not the existential reading, and I find it very implausible that the sentences have these readings. So here Neale's account os worse off than CDQ.

[9] Kanazawa [1994] captures the universal and existential readings by defining a strong and a weak dynamic generalized quantifier for each determiner (see p. 138). This appears to amount to claiming that determiners are ambiguous. However, Kanazawa appears to take himself to be simply "modeling" the readings of donkey sentences and not actually proposing a semantics. Thus, in introducing his dynamic predicate logic with generalized quantifiers, he consistently talks of using the framework to "model" or "represent readings of" donkey sentences (see p. 132, 137, 138, 139); and after discussing the framework, he writes: "So far, we have not proposed any concrete model of the mechanism that assigns interpretations to donkey sentences. Although it would not be difficult to extract a compositional semantics from my treatment of donkey sentences in dynamic predicate logic with generalized quantifiers, our interest in this paper is not in finding the right set of compositional semantic rules that give donkey sentences the interpretation that they actually have (in the default case)." (p. 150). But the point is that if one were to turn Kanazawa's approach into a semantics, it seems that it would posit an ambiguity in determiners. Kanazawa himself seems to recognize this when, in discussing Chiercia's approach and contrasting it with his own, he writes "So he [Chiercia] shifts the locus of ambiguity from the determiner to the pronoun" (p. 155). On the other hand, as Kanazawa's remarks just suggested, Chiercia [1995] attempts to capture the

readings by positing some sort of ambiguity, but I am suspicious of this move and so I shall not follow that strategy here. I believe more thought needs to be given to the alleged universal and existential readings of relative clause donkey sentences, and the relations between the alleged readings.

Let us now turn to conditional donkey sentences such as 1 repeated here:

1. If Sarah owns a donkey, she beats it.

In contrast to the relative clause donkey sentences we've considered, 1's truth conditions seem quite clear: 1's truth (on at least one of its readings) requires Sarah to beat every donkey she owns.[10] Let's call the fact that 1's truth requires that Sarah beat every donkey she owns the universality requirement. I begin with a pedestrian observation. In

1a. Sarah owns a donkey. She beats it.

the second sentence has no reading on which it requires that Sarah beats every donkey she owns. The universality requirement is absent here. But as we have seen, as soon as we form a conditional from our two sentences the universality requirement appears. This

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universal and existential readings by positing an ambiguity in the pronouns in donkey sentences. Chiercia holds that such pronouns are interpreted either as dynamically bound variables or E type pronouns (see p. 110-122). Chiercia denies that the (alleged) fact that donkey pronouns can be interpreted in these two ways amounts to postulating an ambiguity in these pronouns (see p. 117). However, I don't find what he says on this matter persuasive.

[10] Most discussions of conditional donkey sentences such as 1 assume that they have only what we might call universal readings (on analogy with universal readings of relative clause donkey sentences) according to which e.g. 1 requires that Sarah beats every donkey she owns. However, particularly if one uses 'will', one can formulate conditional donkey sentences that appear not to have universal readings: 'If Leroy has a quarter, he will put it in the meter.' The truth of this sentence does not seem to require that Leroy puts every quarter he has in the meter. It is perhaps harder to find present tense conditional donkey sentences that lack the universal reading (or favor a reading that is not the universal reading). The results of trying to construct examples mimicking present tense relative clause donkey sentences that favor readings other than the universal reading are unclear: 'If a man has a nice hat, he wears it to church'; 'If a man has a credit card, he pays his bill with it.' I am inclined to think that the former does require every man who has a nice hat to wear each of his nice hats to church. My intuitions about the latter are unclear. I am not sure why it appears easier to formulate conditional donkey sentences lacking the universal reading (or favoring a reading other than it) with 'will', and what role the semantics of 'will' plays here. The data here seems quite complex, and I shall in the present work simply follow the majority in assuming that conditional donkey sentences have only universal readings. However, I believe much more work is required on these issues.

strongly suggests to me that in donkey conditionals some other factor (e.g. the semantics of conditionals) is interacting with the semantics of unbound anaphora to produce the universality requirement. And of course, some approaches to conditional donkey sentences do hold that the universality requirement in donkey conditionals results from the interaction of the semantics of anaphora and the semantics of conditionals (e.g. DRT approaches). But some approaches try to squeeze the universality requirement in donkey conditionals out of the semantics of unbound anaphora alone. I believe such approaches are wrong headed. Before explaining how CDQ handles donkey conditionals, let me illustrate why I think such approaches are wrong headed.

The main account of donkey anaphora that tries to get the universality requirement in donkey conditionals only from the semantics of unbound anaphora is that of Stephen Neale [1990a,b]. So let me briefly explain Neale's account of donkey sentences and why I think it is wrong headed.

Neale's view is that in a discourse such as:

(22) John bought a donkey. Harry vaccinated it.

the pronoun `it' "goes proxy for" the definite description `the donkey John bought.' Hence the second sentence of such a discourse is equivalent to the sentence `Harry vaccinated the donkey John bought' with the description understood in standard Russellian fashion. Within a generalized quantifier type framework, where `the' is treated as a determiner that, like other determiners, combines with a set term to form a quantified NP, the evaluation clause a for sentences containing a singular description (with wide scope) can be given as follows

(23) 'the (F)^x[Y]' is true iff |F|=1 and |F|-|^x[Y]|=0

(where ‘F’ is a term denoting a set, ‘Y’ is an open formula with free occurrences of ‘x’, ‘^x[Y]’ is a lambda expression denoting the set of things that satisfy ‘Y’ when assigned to ‘x’, |F| is the cardinality of the set denoted by ‘F’ and |^x[Y]| is cardinality of the set denoted by ‘^x[Y]’—I suppress reference to models, etc.). So the second sentence of (22) is true iff Harry vaccinated the unique donkey John bought. Thus far, then, the view is that pronouns anaphoric on singular indefinites are interpreted as Russellian definite descriptions.

There is, however, a further complication in Neale's theory. For a variety of reasons, Neale introduces what he calls a "numberless description": a description that, unlike semantically singular descriptions, puts no cardinality constraint on the denotation of the set term that combines with the determiner to form the quantified NP (other than that it must be nonempty -- note above how in the singular case |F| is constrained to equal one.) Following Neale, let `whe’ be the determiner (corresponding to `the') used to form "numberless descriptions." Then the evaluation clause for sentences containing numberless descriptions, analogous to (23) above, would be

(24) 'whe(F)^x[Y]' is true iff |F|≥1 and |F|-|^x[Y]|=0

Thus numberless descriptions are in effect universal quantifiers.

In addition to going proxy for Russellian singular descriptions in the way we have seen, Neale claims that anaphoric pronouns sometimes go proxy for numberless descriptions. In particular, Neale holds that pronouns anaphoric on singular existential quantifiers (but outside of their scope) can be interpreted either as standard Russellian descriptions or as numberless descriptions. Now if the pronoun in 1 is interpreted as a numberless description, 1 asserts that if Sarah owns a donkey, she beats all the donkeys

she owns. So treating the pronoun as a proxy for a numberless description yields the correct result that at least on one of its readings 1 entails that Sarah beats every donkey she owns. Note that the semantics of the alleged numberless description in 1 by itself yields the universality requirement in 1.

The obvious question concerning an account like this that allows pronouns anaphoric on singular existential quantifiers to go proxy for both Russellian and numberless descriptions is: what determines whether such a pronoun is going proxy for a Russellian, as opposed to a numberless, description? This question is pressing, since there will be a substantial difference in the truth conditions of a pronoun-containing sentence depending on whether the pronoun receives a numberless or Russellian interpretation. In his most explicit statement about the matter (p. 237) Neale makes clear that it is primarily whether the utterer had a particular individual in mind in uttering the indefinite description that determines whether a pronoun anaphoric on it receives a Russellian or a numberless interpretation.[11]

If this is correct, then discourses of the form

(25) A(n) F is G. He/she/it is H.

generally ought to display both readings (in the suitable contexts), depending on whether the utterer of the discourse had a particular individual in mind in uttering 'A(n) F'. So

[11] Actually, Neale mentions another factor as well. Concerning the sentence 'Every man who has a daughter thinks she is the most beautiful girl in the world' Neale writes: "..it is arguable that a singular [Russellian] interpretation of the pronoun is preferred. A reasonable explanation is that immediate linguistic context, and lexical and background knowledge, conspire to defeat the numberless interpretation. (In the normal run of things, there cannot be *two* most beautiful girls in the world." (p. 238) It is odd to me that Neale here talks of factors conspiring to "defeat" the numberless interpretation, since in the very next paragraph he suggests that the Russellian ("singular") interpretation is the default interpretation. If that were so, then one would think that a numberless interpretation would not have to be defeated to be absent. In any case, I suppress this factor affecting which reading an anaphoric pronoun has. For in the examples I consider in which an anaphoric pronoun lacks a numberless reading there are no factors such as the impossibility of there being two most beautiful girls in the world that would "defeat" the numberless reading.

the second sentences of discourses of the form of (25) ought to have readings on which they mean the unique F that is G is H (Russellian) and on which they mean every F that is G is H (numberless). But this simply does not seem to be the case. In particular, such discourses do not have readings corresponding to the numberless interpretation of the pronoun. Recall my pedestrian observation concerning 1a:

(1a) Sarah owns a donkey. She beats it.

It seems clear to me that this discourse has no reading on which the second sentence means that Sarah beats every donkey she owns, even if we imagine that the utterer of the discourse had no particular donkey in mind when she uttered the first sentence. Suppose, for example, that the Homeland Security and Donkey Care Bureau comes to town and wants information about local donkey ownership and beating. I tell them that I really don't know how many donkeys anybody owns, and I have never seen or had any other contact with particular local donkeys. But I tell them that I have received some information from reliable sources and it has been "deemed credible". I then say:

For example, Sarah owns a donkey and she beats it.

Even though I have no particular donkey in mind in uttering these sentences, we simply don't get a numberless reading here. If Sarah beats some donkey she owns, I have spoken truly even if she owns others she fails to beat. Or again, suppose we are debating whether anybody has an eight track tape player anymore, and I say "I'll bet the following is true: some guy with a '68 Camaro owns an eight track player and he still uses it." Again, there is no numberless reading for the pronoun in the second sentence, even though I clearly have no particular eight-track player in mind. If some '68 Camaro

driving guy owns and uses an eight-track player, I have spoken truly even if he owns other eight track players that aren't used.[12]

So Neale has no explanation of why the pronouns in discourses like (1a) never have numberless readings.[13] I should add that Neale has similar problems with sentences like:

(26) Some woman who owns a donkey beats it.

Here again, Neale's theory predicts that this sentence has a reading on which its truth requires that some woman beats every donkey she owns. And again, even if we imagine the sentence being uttered without any particular woman or donkey in mind, we don't get this reading of the sentence predicted by Neale's theory, (say we are discussing women's tendencies towards animals they own, and I utter 26 simply thinking it is statistically likely to be true). So Neale has no explanation as to why the second sentence of discourse (1a) and sentence (26) lack the relevant readings assigned to those sentences by his theory.

The problem with this sort of approach to conditional donkey sentences should be clear. If you claim that pronouns anaphoric on singular existential quantifiers can go proxy for standard Russellian descriptions or numberless descriptions in order to get the right truth conditions for donkey sentences, then you are committed to the claim that the pronouns in discourses like (1a) have readings resulting from their going proxy for numberless descriptions. Since the pronouns do not have such readings, one has to come

[12] Note that nothing like the impossibility of there being two most beautiful girls in the world is present in this case to defeat the numberless reading. Sarah could beat more than one donkey and the Camaro driver could use more than one eight track player. See previous note.

[13] Since Chiercia [1995] thinks that pronouns on singular indefinites can be interpreted in an E type way, and that when they are they can be interpreted as "number neutral" (i.e. the pronoun in 1a can be interpreted as having "the maximal set of donkeys" owned by Sarah as its value), this criticism applies to Chiercia too.

up with some pragmatic mechanism that stifles these readings when the pronouns occur in a discourse like 1a but not when they occur in a conditional like 1. But as the flaws with Neale's attempted explanation shows, it is not easy to think of a mechanism that always stifles the relevant readings in discourses like (1a) and always allows the reading to come through in conditionals like 1. Further, the claim that there is a pragmatic mechanism that always stifles the relevant reading in one construction and always allows it to come through in another seems very ad hoc. And this is why I think trying to get the universality requirement present in donkey conditionals out of the semantics of unbound anaphora alone is wrong headed. Inevitably, such a theory will generate readings for the sentences in discourses like (1a) that they simply don't have, and so force one to posit a mechanism that always stifles the readings in these constructions.

A more promising strategy for explaining all these facts is to suppose that the anaphoric pronouns in (1a) and (1) have the same, single semantics, and that in 1, this semantics interacts with the semantics of the conditional to produce the implication that Sarah beats all the donkeys she owns. Thus, the universality requirement is present in donkey conditionals, but not in simple "donkey discourses" such as (1a). Let us see how we might pursue this strategy, assuming that CDQ is the correct theory of the semantics of the pronouns in (1a) and (1).

Unadorned, CDQ predicts that 'she' in the consequent of 1 expresses an existential quantification over donkeys Sarah owns, so that 1 apparently ought to be equivalent to

1b. If Sarah owns a donkey, she beats a donkey she owns.

Obviously, this isn't right.

But suppose we adopt the idea, found in many writers, that a conditional is true iff any way of making the antecedent true can be extended to a way of making the consequent true, (relatives of this idea, apparently inspired by Lewis [1975], are in Kamp [1981], Heim [1982, 1990] and Berman [1987] among many other places). Further, suppose we implement this more precisely as follows. First, we need the notion of a situation. A situation just is objects possessing properties and standing in relations to one another. Situations can be of various sizes, but the "smallest" situation consists of a single object possessing a single property. We can use sets of n-tuples to represent situations. Consider the situation consisting of a single object a possessing the property P. We shall represent this situation by the set {<P,a>}. A situation consisting of n objects $a_1,\ldots,a_n$ standing in the n-place relation R shall be represented by the set $\{<R,a_1,\ldots,a_n>\}$. Bigger situations will be represented by sets with more members. In general, any set each of whose members is an n+1 tuple whose first element is an n-place relation and whose next n elements are objects represents a situation.[14]

Now consider the following way of implementing the idea that a conditional is true just in case any way of making the antecedent true can be extended to a way of making the consequent true, which is due to Berman [1987]:

(C) 'If A then B' is true iff for any minimal situation s_1 in which 'A' is true, there is a situation s_2 such that s_1 is a part of s_2 and 'B' is true in s_2.

A minimal situation in which 'A' is true is a situation in which 'A' is true but which has no situation that is a proper part of it (i.e. subset of it) in which 'A' is true. So it is a

[14] For present purposes, we aren't considering e.g. situations in which an individual stands in a relation to a property. Thus our sets that represent situations don't have as members e.g. n-tuples whose first member is a relation and whose next two members are an object and a property.

"smallest" true-making situation for 'A'. I should mention that if we were talking about conditionals other than donkey conditionals, I would have to give a more complicated characterization of a minimal situation. But since we are talking about donkey conditionals, I'll go with this simple formulation.[15]

Note that (C) makes it part of the semantics of conditionals that they quantify over situations.[16] The usual way of thinking of this is that bare conditionals of the sort governed by (C) contain an "invisible" quantifier over situations; and sometimes conditionals have explicit quantifiers over situations in them, such as:

If A, then always/usually/often/etc. B.

As (C) makes clear, the invisible quantifier over situations in bare conditionals has universal force. When conditionals contain overt quantifiers over situations such as 'usually', etc, these determine the force of the quantification over situations for the conditional.

In any case, if we apply (C) to 1, we get the result that it is true iff every situation consisting of Sarah owning a single donkey (the smallest situation that makes 'Sarah owns a donkey' true) is part of a larger situation in which Sarah beats a donkey she owns. This still isn't right for 1. For it would make 1 true if e.g. Sarah owns ten donkeys and beats one of them. In this case there are ten minimal situations consisting of Sarah owning a single donkey, and each is part of a larger situation in which Sarah beats a donkey she owns.

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[15] I am worried about sentences like 'If Steve loses most sets, Jill will be happy'. We don't want minimal situations here to be the smallest situations in which Steve loses most sets, since presumably these would be situations in which Steve plays and loses a single set. I ignore such worries here.

[16] It is important to see that the idea that conditionals quantify over situations is motivated independently of donkey conditionals. First, conditionals such as "If John sneezes, he laughs" seem to (universally? generically?) quantify over situations in which John sneezes. Second, adverbs of quantification seem to quantify over something like situations in both non-conditionals and non-donkey conditionals ("A good ski run is usually very steep."; "If John wins every set, he usually gloats").

Of course, these truth conditions are right for 1b. The problem is that they aren't right for 1, and CDQ seems to make 1 and 1b equivalent. So is there a way for CDQ to assign different truth conditions to 1 and 1b?

At first this seems impossible, since CDQ holds that 'she' in the consequent of 1 expresses the same quantifier as does 'a donkey she owns' in the consequent of 1b. But there is a difference between 1 and 1b. In particular, 'it' in the consequent of 1 is a definite NP and is anaphoric on 'a donkey' in the antecedent; whereas 'a donkey she owns' in the consequent of 1b is indefinite and not anaphoric on anything. Admittedly, we classify NP's as definite or indefinite on the basis of their semantics, but presumably this is based on their "typical" or "usual" or "basic" semantic function (e.g. indefinite NP's occur in generic statements—'A whale is a mammal'—but are they semantically indefinite here?).

Now definite NP's are often thought to involve some sort of "familiarity" condition (they must be used to "talk about" something already introduced); and indefinites are thought to involve a "novelty" condition (they must be used to "introduce" something new). Suppose that we thought that the definiteness and anaphoricness of the NP in the consequent of 1 and the indefiniteness and non-anaphoricness of the NP in the consequent of 1b make a difference to truth conditions, even though both NPs express the same quantification. Here's the idea. In the case of 1b, (C) applies and works in the way indicated. In particular, any (minimal) s_1 in which the antecedent is true must be part of an s_2 in which the consequent is true. Since the non-anaphoric indefinite in the consequent induces some sort of novelty condition, there is no requirement that the donkey owned in the "smaller" s_1 be the donkey beaten in the "bigger" s_2.

By contrast, the "familiarity" condition induced by the definite, anaphoric 'it' in 1 changes things slightly. In particular, for any (minimal) s_1 in which the antecedent is true, there must be an s_2 that s_1 is part of in which the consequent (understood as expressing the claim that Sarah beats a donkey she owns) is true. But in addition, because of the "familiarity" condition induced by the anaphoric definite, there must be a donkey in s_2 that is also in s_1 and that makes the consequent true. In other words, familiarity requires that a donkey that makes the cdq-containing consequent true in s_2 also be present in s_1. To see what this means, consider a situation s_1 that is a minimal situation in which the antecedent is true. s_1 consists of Sarah owning a single donkey. If e.g. Sarah owns ten donkeys, there are ten such minimal situations. For 1 to be true, each such s_1 must be part of a situation s_2 such that s_2 is a situation in which Sarah beats a donkey that she owns and that is in s_1. Now the only way that every minimal s_1 in which Sarah owns a donkey can be part of an s_2 in which Sarah beats a donkey she owns in s_1 is if Sarah beats every donkey she owns. To repeat, in the case of 1, intuitively "familiarity" requires that for each s_1 in which the antecedent is true, we find an s_2 that s_1 is a part of in which the consequent is true and in which a donkey that makes the consequent true in s_2 is in s_1. So intuitively, "familiarity", triggered by the definite anaphoric cdq 'it' in 1, amounts to not allowing "new" owned donkeys to be brought in to s_2 to make the consequent of 1 true there; whereas, "novelty", triggered by the non-anaphoric indefinite, in 1b allows this. Thus familiarity in effect constrains the s_2's quantified over in (C) ("there is an s_2 such that…") in the case of 1, but not 1b.[17]

[17] A different way of getting the same result here would be to say that the familiarity and anaphoricness of the cdq in 1 results in that cdq having its domain of quantification restricted to $\underline{s_1}$, whereas the indefinite in 1b quantifies over things in $\underline{s_2}$. Thus 1 is true iff for every minimal situation s_1 of Sarah owning a single donkey, there is an s_2 such that s_1 is part of s_2 and a donkey owned by Sarah in $\underline{s_1}$ is beaten by Sarah in s_2.

(Actually, things may have to be a bit more complicated than this to handle more complex examples.)

This gives 1 the proper truth conditions and they are different from 1b's. Now suppose we wanted to generalize this treatment to conditionals containing explicit adverbs of quantification, such as:

(27) Usually, if a woman owns a donkey, she beats it.

Further, suppose we assume, as discussed above, that such conditionals differ from bare conditionals such as 1 only in that bare conditionals involve universal quantification over situations, whereas in (27) the explicit adverb expresses the force of the quantification over situations. Given this, the most straightforward extension to (27) of the approach I have outlined here would run into what is called in the literature "the proportion problem". Here is the problem. I have treated 'usually' as a quantifier over situations in sentences like (27). Now consider a minimal situation s_1 in which the antecedent is true. It will contain a single woman owning a single donkey. Now for (27) to be true, most such s_1's must be parts of an s_2 in which a woman who was in s_1 beats a donkey she owned in s_1, (again, the familiarity and anaphoricness of 'she' and 'it' in the consequent of (27) trigger this additional restriction on the s_2's). But this predicts that in a world in which one woman owns 100 donkeys and beats them, and eighty women own a donkey each and fail to beat them, the sentence is true. This does not seem correct to most people. Intuitively, (27) makes a claim about most donkey owning women (i.e. most situations consisting of a women and all the donkeys she owns), not a claim about most

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And 1b is true iff for every minimal situation s_1 of Sarah owning a single donkey, there is an s_2 such that s_1 is part of s_2 and a donkey owned by Sarah in $\underline{s_2}$ is beaten by Sarah in s_2. I am unsure as to the relative merits of this way of assigning the proper truth conditions to 1 and 1b and the way discussed in the body of the paper.

pairs of a woman and a donkey she owns (i.e. most situations consisting of a woman and a single donkey she owns).

Now it looks like it is the fact that 'a woman' is in subject position in the antecedent of (27) that makes the quantification in (27) on its most natural reading over situations consisting of a woman and all the donkeys she owns, and not over situations consisting of a woman and a single donkey she owns. For consider the following:

(28) Usually, if a donkey is owned by a woman, it is beaten by her.

In contrast to (27), most people find the most natural reading of (28) to be the one on which in a world in which one woman owns 100 donkeys and beats them, and eighty women own a donkey each and fail to beat them, the sentence is true. So here it looks like we are quantifying over donkeys owned by women, and not pairs of a woman and a donkey she owns.

If things were this simple, it would be easy to fix our account to avoid the proportion problem. We would just have to complicate our account of a minimal situation so that what constitutes a minimal situation in which a sentence like 'A woman owns a donkey' is true is determined in part by the expression in subject position. So, the minimal situations in which 'A woman owns a donkey' is true are the situations consisting of a woman and all the donkeys she owns. Whereas, the minimal situations in which 'A donkey is owned by a woman' is true consist of a donkey and (all?) the women who own it.

However, many think that the situation is more complex than this. They think that a variety of factors, including which indefinite is in subject position in the antecedent, which indefinites in the antecedent are picked up by anaphoric elements in

the consequent, topic, focus, and so on affect the truth conditions of donkey conditionals. Consider this example from Chierchia [1995]:

(29) Dolphins are truly remarkable. Usually, if a trainer trains a dolphin, she makes it do incredible things.

Most people think that in a circumstance in which most trained dolphins do incredible things, (29) is true, even if most trainers don't get dolphins to do incredible things (there are three out of seven trainers who get dolphins to do incredible things, and they've trained more dolphins) and most dolphin-trainer pairs aren't such that the trainer gets the dolphin to do incredible things (there are a couple "bad seed" dolphins who were trained over and over by different trainers and did nothing incredible). So the quantification here is over minimal situations consisting of a single trained dolphin (and all of its trainers). But what we said before about expressions in subject position in the antecedent would predict that for (29), minimal situations would consist of a single trainer and all the dolphins she trained, so that (29) would be true iff most trainers who train dolphins make dolphins they train do incredible things. Thus if most people's judgments about (29) are right, it isn't just what expression is in subject position that determines what the minimal situation are and so what the truth conditions of the sentence are. That the first sentence of (29) makes dolphins the <u>topic</u> of the discourse is relevant to determining what counts as a minimal situation. Similarly, the contrast between the following sentences suggests that focus also determines what counts as a minimal situation (capitals indicate focal stress):[18]

[18] Of course this may be because, as suggested by Chiercia [1995] (p. 69), focus (sometimes) indicates what the topic is (in 30 and 31, what is <u>not</u> focused—apartment complexes and skiers, respectively). If that is right, then all of (29), (30) and (31) show that what the topic is helps determine what counts as a minimal situation.

(30) Usually, if A SKIER (as opposed to a surfer) lives in an apartment complex, it is near a ski hill.

(31) Usually, if a skier lives in AN APARTMENT COMPLEX (as opposed to a house), it is near a ski hill.

Again, many people think that intuitively in (30) we are quantifying over apartment complexes inhabited by skiers, so that a minimal situation is one apartment complex inhabited by at least one skier. Thus, it is true iff most apartment complexes where at least one skier lives are near a ski hill. By contrast, in (31) intuitively we seem to be quantifying over skiers who live in apartment complexes, so that a minimal situation is one skier who inhabits an apartment complex. Thus it is true iff most skiers who inhabit an apartment complex inhabit one near a ski hill. Thus, in a situation in which there are three apartment complexes, two of which have exactly one skier tenant and are near a ski hill and the third of which has ten skier tenants and is far from a ski hill, intuitively (30) is true and (31) is false.

These judgments about (29), (30) and (31) are subtle and I am not sure that they are correct (though I am inclined to think they are). But even if they are, and the readings of donkey sentences are affected by a variety of factors, our account can handle this. We have seen how to handle the idea that which expression is in subject position in the antecedent can affect the truth conditions of a donkey conditional. It just determines what counts as a minimal situation. And then our account applies as before. Similarly, if a complex variety of factors affect the truth conditions of donkey sentences in the same way, we simply need to hold that this complex of factors together determine what counts as a minimal situation. And once this is determined, we apply our account as before.

This, again, really just is an employment of devices found in Heim [1990].[19] So I don't think that the proportion problem, and the varying readings of donkey conditionals are a problem for us.[20]

This brings me to a final point. We have just seen that to deal with the proportion problem and related issues within a framework of the sort I am employing, we must hold that various factors put constraints on the nature of the situations quantified over by conditionals. In effect, various factors, including which indefinites in the antecedent are picked up by anaphoric elements in the consequent, topic, focus, and so on, affect what counts as a minimal situation in a given context, and then a given donkey conditional quantifies over those minimal situations. I wish to emphasize that this way of dealing with the proportion problem and related issues was already embraced by those employing

[19] Heim [1990] discusses avoiding the proportion problem by holding that what counts as a minimal situation depends on various features of the context of utterance (p. 150-151). She attributes the idea to Berman [1987]. Of course Heim is here assuming that donkey pronouns are E type.

[20] There is an interesting point about the readings of conditionals containing only a single indefinite, such as 'If a donkey is owned by Sarah, she beats it.' Here, the only things that can be minimal situations are situations consisting of Sarah owning a single donkey. If e.g. Sarah and all the donkeys she owned could be a minimal situation, then given the other things I have said, CDQ would predict that the sentence has a reading equivalent to 1b. It seems reasonable that the situation constituted by Sarah owning all her donkeys can't be minimal here, because there is only one such situation and so universally quantifying over all such "situations" would be quantification over the one situation. So perhaps a strong preference to have the universal quantification be over more than one situation (when possible—Sarah may only own one donkey!) prevents the situation of Sarah owning all her donkeys from being minimal. Interestingly, however, when we consider examples in which the predicate in the antecedent is less stative and more episodic, we at least seem to get different things counting as minimal situations. Consider "Usually, if a man walks through that door, he turns on the light." I think I can hear two readings of this sentence. On one, we are quantifying over instances of a man walking through the door, and so a minimal situation is an episode of a man walking through the door. On this reading, the sentence would be true if e.g. one man walked through the door ten times and turned on the light each time, and nine other (distinct) men walked through the door once each and didn't turn the light on. On another reading, we are quantifying over men who walked through the door. A minimal situation here would be something like a man and all of his entries through the door. On this reading, the sentence would be false if e.g. one man walked through the door ten times and turned on the light each time, and nine other (distinct) men walked through the door once each and didn't turn the light on (on this reading, it is unclear what happens if trouble makers sometimes turned on the light and sometimes didn't). Very cryptic notes I took at the time suggest that perhaps Peter Ludlow raised something like this point in the question session when I gave an earlier version of this paper at a conference at the University of Cincinnati in 2001. At any rate, my notes consisted of the sentence "Usually, if a man walks through that door, he turns on the light." with "proportion problem" and "Ludlow" written next to it. Over a year later, finding this "note" and puzzling over what it could possibly mean I was led to these thoughts.

the type of account of the semantics of conditionals I am appealing to here. Thus the idea that the nature of the situations quantified over by conditionals can be affected by various factors is already embraced by some within the framework I am employing. But consider my explanation as to why on the CDQ account 1 can have the correct reading, and a different reading from 1b. It is that a cdq, being a definite and anaphoric, triggers a familiarity condition that constrains the nature of the situations in which the consequent of 1 must be true for the conditional to be true. But then this is just another case of some factor constraining the nature of the situations quantified over by conditionals (in particular, those quantified over by the phrase "..there is a situation s_2…" in (C) above).[21] Thus, my explanation of the truth conditions of 1 invokes a mechanism that is already employed in frameworks of the sort I am employing. But then I don't believe my explanation here can be viewed as some ad hoc trick, appealing as it does only to mechanisms already employed by the framework to which I appeal.

In conclusion, I have tried to give you an overview of the wide range of "non-donkey" data covered by the CDQ theory. I have also tried to gesture at certain methodological advantages the theory has over certain competitors. Finally, I have explained how the theory can handle donkey anaphora, by appealing to independently motivated accounts of the semantics of conditionals and adverbs of quantification. As a

[21] The only difference in the two cases is that when factors affect what counts as a minimal situation, they constrain the nature of the situations quantified over by the phrase "…for any minimal situation s_1 in which…" in (C); whereas the familiarity and anaphoricness of a cdq in the consequent of a donkey conditional constrain the nature of the situations quantified over by the phrase "…there is a situation s_2 such that…" in (C). This difference hardly seems significant enough to warrant embracing the former mechanism and rejecting the latter.

result of this, I hope to have convinced you that the CDQ account of anaphora and instantial terms is a promising one.[22]

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