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Uniqueness in Definite Noun Phrases[1]

There is a long debate about the meaning of English definite descriptions, going back to the exchange between Russell and Strawson, and continuing through the rich linguistic and philosophical literature on the subject that has emerged in the last two decades. One can characterize the main positions in the debate in terms of whether the uniqueness effects often associated with the definite description are deemed to be semantic or pragmatic. Another interesting issue which has emerged in the more recent literature is that of the relationship of definite descriptions to pronouns and other definite noun phrases (NPs). And an alternative theory of definite NPs has been promoted wherein they are said to presuppose familiarity instead of uniqueness. The present paper differs from all of the earlier analyses in some respects. I argue that the uniqueness associated with these expressions is both conventional, in that it is a conventional presupposition, and pragmatic, in that the presupposition alludes not to uniqueness of the definite's denotation in the world, but to its unique status with respect to the overall information of the discourse participants. Further, it is argued that the uniqueness in question, along with a presupposition of familiarity, is part of the meaning of all English definites, including pronouns; however, there are additional factors in the interpretation of pronouns which mask this commonality in most contexts.

The main features of the theory I will propose are as follows:

- Use of a definite NP presupposes that there is a corresponding discourse referent already in the discourse context, and that this familiar discourse referent is unique *among the discourse referents in the context* in bearing the property in question. (The first conjunct of this hypothesis is, of course, Heim's (1982) familiarity theory of definiteness.)
- The notion of familiarity involved is not that more commonly assumed, which I will call *strong familiarity*, where this usually involves explicit previous mention of the entity in question. Rather, I define a new notion, that of *weak familiarity*,[2] wherein the existence of the entity in question need only be *entailed* by the (local) context of

interpretation, and use this to account for a number of *prima facie* counterexamples to the familiarity hypothesis.

- Gricean principles and the epistemic features of particular types of context are invoked to explain the uniqueness effects observed by Russell and others, wherein the use of a definite description appears to entail (or presuppose) the uniqueness *of the NP's denotation in the actual world* in bearing the property in question. This essentially pragmatic method of deriving uniqueness effects permits an explanation of a novel observation: that there is an inverse relationship between actual (as opposed to accommodated) familiarity of the NP's discourse referent and the likelihood of a semantic uniqueness effect.

- Pronouns, unlike definite descriptions, carry the additional presupposition that the discourse referent which satisfies their familiarity presupposition is maximally salient at that point in the discourse. This difference will be used to explain the fact that when uniqueness effects arise, they are generally triggered by definite descriptions, not pronouns.

In what follows, §1 is an exploration of some key empirical generalizations about the interpretation of definite descriptions, focusing on uniqueness and familiarity. In §2 I present the theory of informational uniqueness and argue that it accounts for all the kinds of phenomena discussed in the previous sections. §3 addresses the interpretation of pronouns, arguing that the theory proposed in §2 can be extended in a simple fashion to account for these as well. In §4 I compare the theory proposed with the other main proposals for the interpretation of definites. And in §5 I briefly consider some extensions and puzzles, and offer some conclusions.

1. Empirical generalizations about definite descriptions

1.1 Uniqueness effects

Definite descriptions often seem to display the uniqueness effect illustrated by the following story. (It was told to me as true, though I haven't tried to verify it.) When I took my present position, I thought it odd that the official name of the university is *The* Ohio State University, since most university names omit an article. Someone explained to me that in the nineteenth century the trustees of this state school were irate when a group in southern Ohio had the temerity to name their new private university *Ohio University*, since the name might be taken to suggest an official affiliation with the state. So, in 1878, when they changed this institution's name from the Ohio Agricultural and Mechanical College, they included the definite article in OSU's official name to counter the impression that there was any other state university in Ohio. As the story suggests, if we say that this is *THE Ohio State University*, with focus on the article, it does indeed seem to emphasize that this is the only university of its kind – one which is both in Ohio and an institution of the state. It is this impression, that the speaker is claiming that there is an entity in our world which uniquely satisfies the descriptive content of the definite NP, which I will call the **uniqueness effect** associated with the utterance of the definite. We need to be able to explain how this arises in such examples, as well as accounting for other evidence of the uniqueness of definite descriptions which we will consider below.

On the analysis of singular definite descriptions offered by Russell (1905), they differ from singular indefinites in entailing uniqueness: In order for the utterance containing a definite description to be true in a model under its Russellian logical form, there must be one and only one individual in the model which truthfully instantiates the existential statement. We see this in the Russellian logical form for *The Ohio State University is in Columbus*, given in (1), with the uniqueness clause underlined:

(1)   The Ohio State University is in Columbus.
(1')   ∃x [state-univ(x,Ohio) & ∀y (state-univ(y,Ohio) → y = x) & in-Cols(x)]

In an extension of this treatment of singulars, plural definites are also unique, in the sense that an instantiation must be the maximal set satisfying the description, or, in Link's (1983) terms, the supremum of the denotation of the possibly complex remainder of the NP, the CN (Common Noun phrase, including the head noun and any complements or modifiers). I will call the Russellian account for the uniqueness effects noted in such examples a theory of entailed **semantic uniqueness**.

The examples in (2) - (4) also appear to support Russell's analysis of the definite article:

(2)   The Queen of England had a bad year in 1993.
(3)   Teacher, giving directions: On the next page, you will find a puzzle. Find the clown in the puzzle.
(4)   I found a box in my attic the other day. I opened the lid and pushed the button I found inside. You won't believe what happened. (variant due to Irene Heim, p.c.)

(2) leads us to understand that there is a unique Queen of England in the world. Given the teacher's instructions in (3), native speakers all agree that a child would be justified in assuming that there is only a single clown in the puzzle in question (and also, only a single puzzle on the next page). Similarly, in (4), we may assume that the box the speaker found contained one and only one button.

(5) also displays a uniqueness effect in connection with the definite NP *the dashboard*, but here the uniqueness is generally taken to involve a relational reading of the definite NP:

(5)   This car has a statue on the dashboard.

The hearer will assume that there is a single dashboard in the car in question, but not only one dashboard in the entire world. Many NPs are susceptable to such interpretations, where the head is interpreted as a relation such as 'dashboard of', with an implicit argument contextually given, e.g. the denotation of the salient and relevant *this car*; this is the phenomenon that Clark (1975) calls *bridging*. Giving this implicit argument to the 'dashboard of'-denoting head yields an expression which denotes the set of things which are dashboards of the car in question, which is then the argument of the definite determiner. In examples such as (5) the relational interpretation of the definite is preferred on pragmatic grounds, since hearers generally know that a) there is more than one dashboard in the world, and b) there is generally only one per car, so that we take the 'dashboard of' relation to be not just a relation, but also a function. It is the assumption

that the head is not only relational but functional which constitutes the uniqueness effect in such examples.

(6) and (7) are examples of what Kadmon (1987) calls "uniqueness under quantification", again involving bridging:

(6)   Every car had a puncture in <u>the tire</u>.
(7)   Every unicycle had a spoke missing from <u>the wheel</u>.

The uniqueness effects which these examples display depend on relational interpretations, of *the tire* in (6) and *the wheel* in (7), but the implicit arguments of these relations are variables bound by the quantificational subjects *every car* and *every unicycle*, respectively. Hence, we take it that the truth of (6) involves cars having only a single tire, which results in infelicity, since we know that this is not the case.[3] The similar requirement in (7) that unicycles have a single wheel is more reasonable,[4] so the example is felicitous.

There are a number of types of examples involving definite descriptions where the uniqueness effect just noted doesn't seem to arise. Consider (8a), an example adapted from Evans (1977,1980):

(8)   a) There's a doctor in our little town. <u>The doctor</u> is Welsh.
        b) $\lambda x[doctor(x)]$
        c) $\lambda x[doctor(x) \ \& \ in\text{-}our\text{-}town(x)]$

Evans pointed out that if we take into account only the descriptive content of the definite *the doctor* in (8a), i.e. *doctor*, this would lead to a too-strong uniqueness claim, that the set denoted by (8b), the set of all doctors, contains only one individual. Instead, to obtain the intended interpretation we must also take into account information about the antecedent given via predication in the prior sentence, so that we consider the uniqueness of the set given in (8c), the set of doctors in our town.

Even when a definite description has no NP antecedent, the uniqueness which it presupposes often obtains partly by virtue of properties which are only given contextually, rather than being fully specified by the descriptive content of the definite (or accompanying deictic act). Consider (9):

(9)   Herbs and seasonings are in <u>the cabinet to the right of the stove</u>.

This example is perfectly felicitous in a context in which the definite description of interest, *the cabinet to the right of the stove*, does not by itself provide sufficient information to indicate the way in which the speaker's intended referent is to be

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[3]The point is not that we couldn't imagine a context in which (6) would be felicitous --- e.g. in a roadtest situation where one special tire was put on the left front wheel of every car, but that we'd have to work at it by constructing such a special context, whereas this is not necessary for the felicity of (7).

[4]Pauline Welby (p.c.) informs me that unicycles often DO have a small second wheel. I ignore this inconvenient and annoying fact.

understood as unique. In fact, (9) might reasonably be uttered in a kitchen where there is a whole row of cabinets to the right of the stove; it would probably be taken to mean that the seasonings are in the cabinet *immediately* to the right of the stove. The standard way of maintaining the Russellian analysis of definite descriptions in the face of such examples is to claim a contextually-given restriction of the set of entities over which the existential operator ranges. Kadmon (1990), following Evans, calls this the *liberalization* of the descriptive content (that given by the CN) of the definite, whether it pertains to information explicitly given about an antecedent, as in (8a), or to information retrieved in some other fashion, usually via pragmatically based inferences. I will use instead the term *pragmatic enrichment* of the descriptive content of the Np to describe this phenomenon, and assume that this is just an instance of the pervasive phenomenon of domain restriction in the interpretation of logical operators.[5]

It is now widely accepted that natural language operators – quantificational determiners, modals, tenses, quantificational adverbs, etc. – generally take two arguments; see the introduction and papers in Bach et al. (1995) for extensive contemporary discussion of this very old idea. The first argument is often called the *restrictive term*; it restricts which entities of the appropriate type the operator ranges over; its *quantificational domain*. The second argument, or *nuclear scope*, tells us what must be true of the appropriate proportion of these entities in order for the utterance to be true. It is also a fact that in most cases domain restriction is at most only partly given explicitly – by the CN of a quantificational determiner, an *if*-clause for a modal, a subordinate temporal clause for tense, etc. Generally, the Gricean assumption that the speaker is being cooperative, and hence truthful, together with falsity or irrelevance of the utterance if the quantificational domain is taken to be only as explicitly given, lead us to assume that she must intend some pragmatic enrichment of the operator's first argument, and hence a pragmatically restricted quantificational domain. In definite descriptions, under the assumption that they carry a uniqueness entailment, the descriptive content given by the CN must be pragmatically enriched in order to obtain a plausible and relevant intended interpretation in cases where uniqueness appears to fail.[6] For (9), we might invoke a quantity implicature: If there are several cabinets to the right of the stove and the speaker knows that and yet apparently feels she has given sufficient information to enable the hearer to find the seasonings, then there must be some sense in which the cabinet in question is exactly to the right of the stove, instead of, say, the third cabinet to the right.

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[5]See Roberts (1995), von Fintel (1994) for extensive discussion. Crucially, the term *domain restriction* and the more specific term *liberalization* applied to definite descriptions are to be understood not to mean that the domain of the model itself is (temporarily) shrunken in the course of interpretation. This would be incompatible with examples like the following due to Lewis (1979):

(i)   The cat is in the carton. The cat will never meet our other cat, because our other cat lives in New Zealand. Our New Zealand cat lives with the Cresswells. And there he'll stay, because Miriam would be sad if the cat went away.

Here, the last instance of *the cat* is crucially taken to mean 'the cat that's in New Zealand', with domain restriction suggested by the preceding discourse. But because in this discourse the speaker also refers to another cat, the domain restriction in question cannot involve shrinking the domain of the model. Instead, it involves implicit enrichment of the descriptive content of the NP itself.

[6] For extensive discussion of the critical notion of *relevance*, see Sperber & Wilson (1986). For a somewhat different definition of this notion within a formal pragmatic framework, see Roberts (1996b).

Although pragmatic enrichment of the descriptive content clearly plays an important role in the interpretation of definite NPs**,** as in quantificational NPs more generally, it doesn't suffice to explain a large class of *prima facie* counterexamples to Russellian uniqueness. (10) is a variant on an example due to Heim (1982):

(10)   A wine glass broke last night. The glass had been very expensive.

Suppose that two glasses were broken and that the only criterion for distinguishing the two wine glasses was that when the first one broke, the speaker of (10) was really shocked, but by the time the second broke, he was numb. Otherwise they were indistinguishable. (10) seems to be both felicitous and true in this kind of circumstance. Kadmon (1990:282) claims that uniqueness still obtains because the speaker's different reactions serve to distinguish the wine glasses after all, since the first was the only one that "affected [the speaker's] mood". And she claims that it isn't necessary that this criterion for distinguishing the wine glasses (or even the fact that the description given doesn't suffice to do so) be available to hearers: "I agree with Searle, Evans and Donnellan that in some felicitous uses of definites the uniquely identifying information is available only to the speaker."   But on a view which denies the necessity of hearer accessibility, I don't see how uniqueness has much content at all. For any object I could imagine and intend to refer to by uttering some definite description, there seems to be some (possibly complex) unmentioned property of it that I could have in mind which would make the NP semantically unique relative to my private information, but which, because it was not mentioned, would not be in the common ground of the interlocutors in the conversation. If this is adequate to satisfy the uniqueness condition, then the condition seems too easy to satisfy, leaving it unclear how any examples could be infelicitous because of a failure of uniqueness. And it would also be unclear how uniqueness conditions could serve any conversational purpose, if they may be "secret".

There is one more piece of evidence which strongly suggests that definite descriptions carry uniqueness presuppositions. This is that when the descriptive content of the NP (its CN) guarantees that its denotation is semantically unique, the definite article is required, the indefinite article leading to infelicity, as we see in (11) and (12):

(11)   Last weekend we climbed <u>the biggest mountain in West Virginia</u>.
(12)   #Last weekend we climbed <u>a biggest mountain in West Virginia</u>.

Hence, it seems that semantic uniqueness is sufficient to require the use of the definite article in English. What is in question is whether semantic uniqueness is a necessary concommitant of its use. Although there are cases where definite descriptions display clear uniqueness effects, and some examples which might be taken to fail to display these effects can be explained via domain restriction, examples like (10) make uniqueness seem less robust than one would like to see in a supposedly semantic, hence conventionally triggered, phenomenon.

1.2. Familiarity presuppositions

Heim (1982) rejects semantic uniqueness for definite noun phrases, a class which she takes to include pronouns as well as definite descriptions. In her theory, a technical realization of ideas found earlier in Christophersen (1939) and Hawkins (1978), the distinction between definites and indefinites is that definites have familiarity presuppositions, while indefinites do not. Familiarity is determined by whether there is already information about a corresponding discourse referent in the local context of interpretation, the context being a file of information held in common by the interlocutors in the discourse. To realize this contextual information which the interlocutors share, she adopts a modified version of Stalnaker's (1974:199-200, 1979:321) notion of the **common ground**. Crucial for our purposes, the expanded notion includes the **Domain** of the discourse, technically a set of indices, each of these considered to be a discourse referent known to the interlocutors.[7] Intuitively, a discourse referent is the address for a maximal cluster of information assumed by the interlocutors to bear on a single individual; Heim uses the metaphor of a file card. Note that the common ground, as defined by Stalnaker and Heim, includes not only information which is linguistically given, but also that which is presupposed on the basis of other types of input, perhaps common educational or cultural experience, or sensory input. This is an important feature of the common ground for the theory to be developed here.

In related work, Prince offers empirical support (analysis of texts) for the hypothesis that definiteness is a grammaticization of Hearer-Old status. Though Prince does not make it entirely clear what she means by *Hearer-Old*, it seems to be related to Heim's familiarity. Prince also argues that definites do not presuppose that their antecedent discourse referents are Discourse-Old, which seems to echo Heim's claims that the discourse referents which satisfy the familiarity presuppositions of definites needn't be introduced by prior mention.

There seems to be a lack of clarity in the literature about what it means to be familiar, leading to some confusion about what constitutes a significant challenge to theories based on that notion.[8] In this section, I will begin by clarifying what Heim (1982) seems to have meant by the term *familiar* and why she proposed that familiarity holds of definites. Then I will argue that this notion should cover a class of cases that Heim would probably not have included; including this class will lead to a notion I call *weak familiarity*. I conclude that the challenges to the familiarity theory that I know of are all based on a narrower view of familiarity than the one proposed here, or even (in most cases) than Heim's original notion.

Heim (1982) characterized NP familiarity as having a corresponding (co-indexed) discourse referent in the Domain of the common ground for the discourse. In her theory, definites presuppose that there is such a discourse referent in the Domain (familiarity),

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[7]The discourse Domain is not the same as the domain of a model of interpretation. The former is a set of abstract informational entities, the discourse referents, whereas the latter is a set of actual entities, many of them flesh-and-blood. And neither should be confused with the notion of the domain of quantification which is relevant for domain restriction; see above.

[8] Abbott (1999) notes this, as well.

while indefinites presuppose that there is not (novelty). Here is her Extended Novelty-Familiarity Condition (p. 369):[9]

(13)   The Extended Novelty-Familiarity Condition:
        For [a Logical Form] ϕ to be felicitous w.r.t. a context C it is required for every
        NP_i in ϕ that:
        (i)   if NP_i is [-definite], then $i \notin Dom(C)$;
        (ii)   if NP_i is [+ definite], then
                 (a) $i \in Dom(C)$, and
                 (b)   if NP_i is a formula, C entails NP_i.

In (13), *Dom* is a function from discourse contexts to sets of indices (elements of the set of natural numbers), each such set being the discourse referents which constitute the Domain of the context in question. Clause (13i) characterizes novelty, while (13iia) tells us what it means to be familiar. Clause (13iib) – the descriptive content condition – tells us that the descriptive content of a definite description (represented by a formula) is presupposed to hold of the discourse referent which satisfies the definite's familiarity presupposition; hence this must be entailed by the context.

Heim offers a number of types of examples to argue that definite NPs carry familiarity presuppositions. We have cited one above, (10), repeated here:

(10)   A wine glass broke last night. <u>The glass</u> had been very expensive.

Although, as discussed, *the glass* arguably doesn't display a uniqueness effect, it does satisfy the presuppositions in (13ii). And insofar as the speaker wants to refer in the second sentence to the wine glass that was broken, it is infelicitous to use the indefinite article instead, as predicted by (13i):

(14)   #<u>A wine glass</u> broke last night. <u>A glass</u> had been very expensive.

Heim's formal, recursive definitions of the Context (or "File") Change Potential for a given formula specify how discourse referents are introduced into the Domain of a context in the course of interpreting indefinite NPs. However, she makes it clear that there is another way that a discourse referent can be introduced into the Domain (p.309):

> Does the [context] also reflect what is familiar by contextual salience? . .
> .[contexts] must be able to change, and in particular, must be able to have new
> discourse referents added, without anything being uttered. For instance, if
> halfway through a conversation between A and B a dog comes running up to them
> and draws their attention, then that event presumably makes the [context] increase
> by a new discourse referent.

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[9]In this and the other quotations from Heim (1982) in this section, I have substituted *context* for her *file* and *discourse referent* for her *(file)card* throughout. I feel confident that this preserves her intentions.

Assume that the new discourse referent is *7*. *A* and *B* would also add to the context the information that this discourse referent is a dog that has come running up to them. Then in the resulting context, *A* might felicitously say: "It$_7$ is going to bite," interpreted as 'the dog that's just come running up is going to bite'. Heim concludes:

> Novelty w.r.t. logical form is a necessary, but not a sufficient condition for novelty w.r.t. the [context].

Heim does not discuss further what it means to be contextually salient, and hence able to non-linguistically trigger the introduction of a discourse referent into the discourse context. The example makes it clear that she would include deixis as a means of making salient. But what about cases in which the context of utterance merely entails the existence of some entity? Could such contextual existence entailments, by themselves, ever trigger the introduction of a discourse referent? Heim's discussion suggests that she would not generally assume that they do. For example, in discussing the role of accommodation in ameliorating *prima facie* counterexamples to familiarity (1982:390-91), Heim cites the example in (15):

(15)   Every motel room has a copy of the Bible in it. In this room, <u>it</u> was hidden under a pile of TV Guides. (Heim 1982)

Her discussion makes it clear that she assumes that the felicity of *it* in (15) involves *accommodation* of a familiar discourse referent for a Bible, i.e. that there is not a prior familiar discourse referent.[10] However, such examples suggest an alternative hypothesis which Heim does not entertain. The first sentence in (15) entails that in the room indicated in the second sentence there is a Bible. We might assume that examples with existence entailments are like Heim's dog example or deixis in directly licensing the introduction of a familiar discourse referent, which then serves to satisfy the familiarity presupposition of the definite NP without accommodation. In fact, one could argue that Heim's dog example is subsumed under the class of examples where definites' familiarity presuppositions are satisfied by contextual entailment: A and B see the approaching dog, see that they each see it, etc., and introduce the corresponding proposition 'there is a dog approaching' into their common ground. The direct existential entailment of this proposition then licenses the introduction of a discourse referent for the approaching dog.

For convenience, let us say that a discourse referent which is introduced in the course of interpreting a noun phrase is **strongly familiar** in the discourse in question. A pronoun with a strongly familiar discourse referent at the time of utterance is basically anaphoric, as many people understand the latter term; a definite NP whose discourse referent antecedent is strongly familiar is Discourse Old, in Prince's (1992) terms. Let us say that a discourse referent is **weakly familiar** if the existence of the entity in question is entailed in the context. Hence, weak familiarity subsumes strong familiarity, but is more inclusive, including discourse referents introduced non-linguistically, on the basis of contextual entailments (including perceptually accessed information) alone.

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[10]The notion of *accommodation* was first defined by Lewis (1979:): "If at time *t* something is said that requires presupposition *P* to be acceptable, and if *P* is not presupposed just before *t*, then -- *ceteris paribus* and within certain limits -- presupposition *P* comes into existence at *t*."

A definite NP whose discourse referent antecedent is only weakly familiar, as in Heim's dog example, is arguably Hearer Old, in Prince's terms, though it isn't Discourse Old. However, in some cases merely entailed information of this sort may not have come to a hearer's attention. When this is the case, we would not be inclined to say that the weakly familiar discourse referent was salient. Hence, in general the set of weakly familiar discourse referents in a discourse would be a proper superset of the set of contextually salient discourse referents, as discussed in the Heim quote above. But of course, there may be strongly familiar discourse referents which aren't salient at some point in the discourse long after the utterance of the NP which licensed their introduction; and, following Heim, not all contextually salient discourse referents are strongly familiar. Hence, the weak/strong familiarity distinction is distinct from that between salient and non-salient discourse referents. The question then is which notion of familiarity is relevant for the Extended Novelty-Familiarity Condition.

I would argue that the proper notion is weak familiarity, an assumption which is crucial for the theory of definites I will propose in this paper. For one thing, in contrast with the view that discourse referents must be introduced by explicit mention or immediate salience, the view that contextual entailment alone can license familiarity is more compatible with the general view of the common ground developed by Stalnaker, in which propositions in the common ground need not be explicitly introduced, but may be merely commonly known or entailed by other explicitly introduced propositions in the common ground. We see this reflected regularly in presupposition satisfaction, as in the following:

(16)   Context: A woman is standing at a street corner on a rainy day when a car turns the corner, running through a big puddle of water and splashing her. She turns to a nearby on-looker and says:
        What a day! [A bus]$_F$ splashed me, too, earlier this morning.

(17)   Context: One stranger at a newsstand turns to another and says:
        Isn't it shocking that a president has been impeached for lying about consensual sex?

In (16), use of *too*, with the prosodic focus marked in brackets, presupposes that something other than a bus splashed the speaker. This presupposition is satisfied by the contextually salient information in the common ground that a car has just splashed the speaker. In (17), the factive *be shocking that* presupposes the truth of the proposition denoted by its complement; in the U.S. in 1999, the truth of this proposition would be entailed by the common knowledge of those who followed the news. Just so, we can readily find felicitous examples where a definite NP's familiarity presupposition is satisfied by contextual knowledge alone, so that in Prince's (1981,1992) terms, the discourse referent is only weakly familiar:

(18)   Context: as in (17).
        Isn't it shocking that he's been impeached for lying about concensual sex?

A number of authors, including Fraurud (1990), Birner & Ward (1994), and Poesio & Vieira (1996) argue that there are empirical grounds for scepticism about both familiarity theories of definite NPs and (Russellian) uniqueness theories. On the basis of an analysis of naturally occurring examples involving definite descriptions which are *prima facie* counterexamples to either semantic uniqueness or familiarity theories, Birner & Ward conclude that neither uniqueness nor familiarity is either necessary or sufficient to license felicitous use of definite descriptions. Fraurud (1990) and Poesio & Vieira (1996) examine the discourse status of definite descriptions in naturally occurring corpora. Fraurud classifies definite NPs (as well as other types of NPs) in a large corpus of professional, non-fiction Swedish prose, as either *first mention* (roughly, without NP antecedent) or *subsequent mention* (with NP antecedent) and finds that out of 745 definite NPs, around 61% were first mention. Poesio & Vieira presented 33 English newspaper articles to naive native speakers and asked them to use a pre-determined classification schema to annotate the 464 definite descriptions used therein.[11] The schema included four classes of definite descriptions (plus a category for unclear cases, which was little-used by the annotators). Class I, the "Co-referential" NPs (the strongly familiar definites) constituted 43-45% of the those considered; 6-11% were in Class II "Bridging"; 20-25% of the NPs were classified in Class III, "Larger situation", where speaker and hearer were taken to know about the existence of the referent though it hadn't been mentioned previously; and 18-26% were Class IV "Unfamiliar". Poesio & Vieira took classes II-IV to be those involving "First Mention" of the definites, i.e. cases where familiarity fails. So, like Ward & Birner, they conclude that "each of the competing theories of definite descriptions, the uniqueness and the familiarity theory, can account satisfactorily for about half of the data," and, more to the point here, that familiarity is not a presupposition of all definite descriptions.

However, the last conclusion does not follow if we base a theory of familiarity on weak familiarity instead of strong. A significant percentage of the cases of First Mention uses of definite descriptions in classes II - IV are only "new" in the sense that they are not strongly familiar, while they are arguably "old" by virtue of being weakly familiar. Consider first bridging examples in class II. As we saw in examples (5) and (7) above, bridging generally involves interlocutors' common knowledge of the sorts of entities involved. Cars have dashboards, unicycles have wheels, and the corresponding discourse referents are hence weakly familiar, facilitating the bridging interpretation. Even when this knowledge is not absolutely entailed, as in (19), there seem to be default assumptions at work:

(19)   John was murdered yesterday. <u>The knife</u> lay nearby.

We don't seem to have any default assumptions about how people are murdered; there are instead a range of possibilities: poisoning, shooting, strangling, stabbing, etc. In order to make the last sentence in (19) relevant to what comes before, we need to accommodate that John was killed by stabbing. Once we do this, however, the common ground will

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[11]Actually, two different classification schemas were used in separate experiments; I focus on the second, which led to higher inter-annotator agreement with this schema. Space precludes a more detailed discussion here of their interesting findings.

entail the existence of a knife as the murder weapon, licensing a weakly familiar discourse referent to satisfy the familiarity of *the knife*.

By definition, the Larger Situation class (III) of definite descriptions are weakly familiar in the common ground. And we can argue that this is the case with many of the examples of the Unfamiliar class (IV), as well. Consider the following:

(20)   I remember the beginning of the war very well. (Poesio & Vieiria)
(21)   I don't like the colour red. (Poesio & Vieiria)

I assume in (20) that one takes the war in question to be strongly familiar in the context (otherwise, this example would be infelicitous for me). Wars, like other protracted events, are known have a beginning, making *the beginning of the war* weakly familiar via entailment based on knowledge in the Common Ground. Example (21) strikes me as involving a weakly familiar discourse referent for the appositive NP *the color red*; surely almost everyone (even the color-blind, who may not be directly acquainted with it) is aware of the existence of the color which we call *red*. Many other examples in the literature are of this type, where there is arguably a weakly familiar discourse referent satisfying the familiarity presupposition of the definite in question. To illustrate two more types of examples, consider the following from Birner & Ward (1994):

Type 1: Typical situations
(22)   Johnny, go stand in <u>the corner</u>.

Type 2: Path examples, in the context of directions
(23)   [Hotel concierge to guest, in a lobby with four elevators:] You're in Room 611.
             Take <u>the elevator</u> to the sixth floor and turn left.
(24)   To get to Dr. Smith's office, I suggest taking <u>the stairs</u>/<u>the bus</u>/<u>the train</u>.

In (22), a particular type of typical situation is evoked in which there would be a weakly familiar entity of the relevant sort; we readily imagine a situation in which a parent or teacher is chiding little Johnny, and *the corner* is to be interpreted as 'the usual corner'/'the corner kids stand in when they're bad'. In (23) and (24), the intended referents of the definites (i) are paths, not individual elevators or buses or trains, etc., and (ii) they will only become (weakly) familiar as one follows the directions. This interpretation of examples like (24) is supported by the unacceptability of very similar examples like (25), pointed out to Birner & Ward by William Ladusaw (p.c.):

(25)   #To get to Dr. Smith's office, I suggest taking <u>the car</u>/<u>the bike</u>/<u>the taxi</u>.

We generally take *the stairs* or *the bus* or *the train* in (24) to refer to a unique line of transportation, a path, e.g. the #4 or the BMT line. But we don't usually have lines or unique paths associated with cars, bikes or taxis, which are relatively anarchic in their movements; hence the unacceptability of (25).

So if we take the notion of familiarity in Heim's Extended Novelty-Familiarity Condition to be weak familiarity, and not strong, many purported counterexamples evaporate. However, it would be misleading to suggest that all *prima facie* counterexamples to the

familiarity theory of definite NPs can be explained away if we adopt weak, instead of strong, familiarity. There do seem to be cases where arguing that the antecedent is weakly familiar would be so forced as to call into question the contentfulness of the notion of familiarity. Consider examples like:

(26)   (The department chair, speaking at a faculty meeting:)
        At a college meeting yesterday, the Dean informed us of <u>the possibility that the budget will be expanded still further for the next academic year</u>.

In such a situation, it seems clear that the Chair assumes she is conveying new information to the faculty, so that the possibility in question is not one that had been entertained in the group's common ground. One might argue that all logical possibilities are, in some sense, entailed as such by the common ground (and further that the possibility denoted is uniquely identified by the propositional content of the NP's complement). But someone else might counter that this type of example seems felicitous even when the group had previously assumed (quite plausibly, given contemporary academic financial realities) that the further expansion of the budget was *not* a possibility. Similarly, in (27), the hearers needn't previously know that Bill had a date the night before, and hence must accommodate that he did:

 (27)   What's wrong with Bill? Oh, the woman he went out with last night was nasty to him. (Poesio & Vieiria)

So in certain cases, familiarity can only be satisfied by accommodation. Of course, given the overall importance of accommodation in the theory of presupposition, this should not be surprising. It is widely recognized that other sorts of presuppositions are routinely satisfied by accommodation, and Roberts (1996b) even argues that accommodation is part of a standard use of presuppositions in the language game, allowing a speaker to background newly introduced information. So long as the following conditions are satisfied, interlocutors have no problem with presupposition accommodation in general (see Heim (1983), Thomason (1990), Beaver (1997), Roberts (forthcoming) for extensive discussion):[12]

(28)   Necessary Conditions on Presupposition Accommodation:
        (a) Retrievability: what the hearer is to accommodate is easily inferrable, by
             virtue of its salience and Relevance to the immediate context, and
        (b) Plausibility: the accommodated material is unobjectionable.

(28) is satisfied in all the cases considered here where accommodation is involved.

But note that for these examples, not only are the conditions in (28) met, but a stronger condition is met, as well: The entity in question is semantically unique in satisfying the definite's descriptive content. In fact, all of the examples I have discussed which involve

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[12] Condition (28a) is closely related to Barker's (1991) conditions on the felicity of bridging. He requires that the head noun of the bridging NP, e.g. *dashboard* in (5), does have as one of its lexical entries a relational meaning, and that this relational meaning must be salient in the context of utterance. Without these two conditions being met, (28a) would fail.

merely weak, as opposed to strong familiarity display semantic uniqueness effects. I noted in §1.1 that bridging, as in examples (5) and (7), involves a functional, and not merely relational, interpretation of the NP's head, and we see this in example (19), as well – it is clearly implicated that there was no more than one knife involved in the crime. If we assume, which I take to be reasonable, that a (suitably temporally anchored) proposition uniquely identifies a fact, notion, hypothesis, possibility, etc., then the definite description in (26) displays Russellian semantic uniqueness. And we can assume that Bill went out with no more than one woman in the situation described in (27). Consider the infelicity of (27) without the relative clause: Since most men have various kinds of relationships with numerous women, the lack of a relative clause would not give a hearer adequate information to accommodate a discourse referent which would be informationally unique. When a speaker does not give adequate information to accommodate a *unique* discourse referent, the example itself is infelicitous.

Why would semantic uniqueness play a role in examples involving accommodation? Note that semantic uniqueness does not entail familiarity: Even though there is a unique theory underlying my discussion in this paper, it cannot be said to be familiar yet to the reader who hasn't read ahead. If we accommodate discourse referents for the definite NPs in the examples under discussion, then this alone would satisfy weak familiarity, without requiring semantic uniqueness as well. The uniform semantic uniqueness in such examples, then, suggests that something besides familiarity is going on.

Of course, as this discussion suggests, whether or not a given NP is weakly familiar on the basis of background knowledge (Poesio & Viera's Larger Situation cases and many of the Bridging and Unfamiliar cases) or requires the hearer to accommodate previously unknown information (certain Bridging and Unfamiliar cases) depends crucially on the state of the interlocutors' Common Ground. But this is just as we might expect, and might also play a role in some of the annotator disagreements in the Poesio & Vieira study. Typically, people will tend to imagine a variety of types of contexts when they hear an utterance out of the blue, some of us working harder than others to try to imagine how the utterance might be felicitiously used.

Summarizing, the preceding discussion yields the following taxonomy of familiarity:

(29)   Taxonomy of familiarity:
   a)   strong familiarity: the NP has as antecedent a discourse referent introduced via the utterance of a (usually) preceding NP[13] (Poesio & Vieira's Coreferential class)
   b)   weak familiarity:[14]
      i.   the entity referred to is perceptually accessible to the interlocutors

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[13]I want to leave open the possibility of treating cataphora, generally involving a pronoun in a preposed subordinate clause in the same sentence as the antecedent NP, as yielding strong familiarity. But I won't have anything to say about those cases here.

[14]We could subsume each of the subclasses of b) under those below it. For example, (biii) is subsumed under (biv) if we assume that sometimes the function's argument is an event or situation (e.g., a function from situations to the authors of books in the situation, the argument being the situation under discussion, the context of utterance). Cf. Löbner (1987), Heim (1990) for related discussion.

ii. the entity referred to is globally familiar in the general culture or at least among the participants in the discourse, although not mentioned in the immediate discourse (examples like (21), (22))

iii. introduction of the NP's discourse referent is licensed soley by contextual existence entailments (examples like (20))

iv. weak familiarity is guaranteed by giving a functional interpretation to the definite description (which function may have to be accommodated, as in (19), (27)), with the intended argument(s) both familiar and highly salient (Bridging))

Lyons (1999, Chapter 4) provides evidence that different languages put different requirements on the type of familiarity required for use of their respective counterparts of the English definite article (though he doesn't couch his observation in these terms). For example, Hidatsa and Ewe are said to use the definite article only "anaphorically", i.e. when strong familiarity is satisfied. "This means that a noun phrase may be definite in French [which, like English, permits merely weak familiarity] and its translation equivalent indefinite in Ewe, though the two are referentially identical" (p.159). Similarly, Manfred Krifka (p.c.) tells me that "many German dialects have two types of definite articles, one for entities that are globally familiar or are related to existing entities by bridging, the other to strongly familiar NPs, NPs given in the situation, and also, I think, NPs given by contextual entailments." This suggests that speakers readily recognize the different classes in this taxonomy, and that at least in some languages definiteness is taken to cover the range of cases in it. It would be interesting to look carefully at how definiteness is expressed cross-linguistically, to determine to what extent and how these distinctions are realized in human language.

One probable reason why weak familiarity has not heretofore been seriously taken into account is the difficulty of specifying just when a discourse referent which is merely weakly familiar is introduced into the common ground. If, e.g., a discourse referent i is licensed by an existence entailment alone, when is this licensure "calculated" and i introduced into the domain of the common ground, Dom(C)? I grant that this is a difficult problem from a computational or processing point of view, a sub-case of the problem discussed at length by Sperber & Wilson (1986): When does a potential entailment get drawn in discourse – as soon as the discourse context is sufficiently rich to entail it, or only if and when it becomes evident that it is relevant? In all such cases, as they illustrate in great detail, the amount of inference required to keep up with the possible entailments would be computationally intractable. Walker (1993) suggests that often redundancy is acceptable in discourse precisely because it helps to remind the hearer of already familiar information (i.e., propositions in the common ground) just when that information permits one to draw inferences relevant for the current discussion. This, in turn, suggests that we don't just continually whirr through all the information in our common ground looking for inferences which can be drawn; it is likely that these are actually drawn only when their relevance is brought to our attention. In the case of weak familiarity, in the actual record that a hearer keeps of the common ground, this would mean that there is no pre-existing discourse referent, but that one is inserted just when it is clear that it is both licensed by entailment and required to satisfy the familiarity presupposition of a definite. We generally don't even notice the necessity of this licensure in cases like (61) above. So, as in presupposition satisfaction generally, we wouldn't

want to say that it involved accommodation, where the latter is characterized by Lewis (1979) as a *violation repaired* after the fact. When a familiarity presupposition is satisfied by a merely weak discourse referent, this is just a sub-case of the straightforward and common phenomenon discussed by Karttunen (1973), of presupposition satisfaction by entailed information. I conclude that the problem of when to introduced entailed information, including merely weak discourse referents, is a processing matter, a reflection of the limitations of the human beings who process language, and not a theoretical problem.

Summarizing, I have argued for the following hypotheses about familiarity, at least as it pertains to English:

(i)   Definite NPs do display familiarity presuppositions. Another way of putting this is to say that all definite NPs must have antecedents. However, the required antecedents are not NPs but discourse referents in the (common ground) context of the discourse.

(ii)   The relevant notion of familiarity is that of weak familiarity, which only requires that the existence of the relevant entity be entailed by the interlocutors' common ground. Such existence entailments by themselves are sufficient to license introduction of a discourse referent into the discourse context.

(iii) Accommodation does sometimes play a role in satisfying familiarity, as in other types of presuppositions, but its role is far smaller and more restricted than is often assumed in discussions of whether definite NPs carry familiarity presuppositions.

This is not to conclude that the familiarity theory of Heim (1982), as amended here, provides a fully adequate analysis of English definite NPs. For familiarity does not by itself provide insight into the uniqueness effects noted in §1.1. However, the fact that weak familiarity seems so robust argues that we should preserve it in whatever theory of definite descriptions we devise.

2. Informational uniqueness

The analysis of definite descriptions that I will offer here follows Russell in assuming that definites involve both existence and uniqueness, but differs from his account in two important ways. First, I take it that we have adequate evidence to conclude that the uniqueness in question is presupposed, and not entailed, as reviewed in Kadmon (1990). In this respect, Strawson (1950) was right, and definites don't simply assert existence. Second, the existence and uniqueness in question are not about referents in the actual world, as Russell had it, but about discourse referents in the common ground of the interlocutors. On this view, existence amounts to Heim's (1982) familiarity presupposition, (13) above, with *familiarity* understood as *weak familiarity*. And the uniqueness presupposition of definite descriptions is the requirement that sufficient information has been given to uniquely indicate the intended antecedent, a discourse referent, among all those in the common ground of the participants. Hence, this is a presupposition of **informational uniqueness**. The term is intended to emphasize that the domain of uniqueness is not just the set of discourse referents introduced in the

conversation in question, Prince's (1992) Discourse-Old discourse referents, but the set of weakly familiar discourse referents (cf Prince's Hearer-Old class), those which are familiar to all the interlocutors whether or not they have been mentioned in the discourse in question.

But if definite descriptions have neither Russellian uniqueness as part of their truth conditions nor presuppositions of semantic uniqueness, but only a presupposition of informational uniqueness of their discourse referent antecedents in the common ground, what of the uniqueness effects discussed in §1? I will show that for certain types of examples involving definite descriptions, in certain types of contexts, the context plus the presupposition of informational uniqueness will entail either an epistemic version of Russellian uniqueness or a conversational implicature that it obtains, explaining the uniqueness effects.

In §2.1, I will present the theory in more formal detail and discuss its general consequences for the data and problems presented in the preceding sections. In §2.2 I will reconsider the uniqueness effects displayed by definite descriptions, showing how these are accounted for within the present theory. I will postpone the discussion of pronouns to §3.

2.1 <u>The presuppositions of definite descriptions</u>

(30) is an informal statement of the informational uniqueness presupposition of a definite NP. This definition presupposes that interlocutors in a discourse keep track of the entities under discussion, the discourse referents.

(30)   **Informational Existence and Uniqueness of Definite NPs** (informal):
        Given a context C, use of a definite description NP_i presupposes that there is a discourse referent in the Domain of C which is the unique familiar discourse referent contextually entailed to satisfy the descriptive content of NP_i.

There are two aspects of (30), an existence claim and a uniqueness claim, mirroring in the Domain of contextual information the two aspects of Russellian uniqueness. We can see this Russellian logical form of the presupposition even more readily when we develop a formal statement of informational uniqueness. First, some preliminary matters.

For the purposes of this paper, it doesn't matter whether we adopt Heim's (1982) treatment of definites and indefinites as free variables, or else adopt the standard assumption in formal semantics that indefinite and definite NPs, like other kinds of NPs, are (dynamic) generalized quantifiers. Indefinites and definites (definite descriptions, pronouns, and demonstrative NPs) are paired: An indefinite proffers existence, and via weak familiarity this leads to the introduction of a discourse referent of which the indefinite's descriptive content is predicated; it is presupposed that this discourse referent is novel. A definite presupposes the existence of an antecedent discourse referent of which its descriptive content is predicated, as well as presupposing the informational uniqueness of the antecedent discourse referent under that descriptive content. One way

of capturing this difference would be to say that only indefinites carry non-trivial existential quantificational force; since definites presuppose existence, an existential operator in their logical forms would be redundant, though non-pernicious. And all definite NPs contain free variables, which must be coindexed with a familiar discourse referent antecedent. Considering only static interpretations, for simplicity:

> Static generalized quantifier logical form for an indefinite NP of the form *a CN*:
> $\lambda P \exists x [CN(x) \& P(x)]$

> Static generalized quantifier logical forms for a definite NP of the form *the CN*:
> $\lambda P [CN(x) \& P(x)]$ or $\lambda P \exists y [CN(y) \& P(y) \& y=x]$

We keep track of information in discourse (and account for the role of presupposed content) by using something like the Stalnaker/Heim mechanism of context change semantics. Again, it doesn't matter for present purposes whether we adopt the theory of Heim (1983), Groenendijk & Stokhof (1990), Kamp & Reyle (1993), or Chierchia (1995), or any of a number of variants on one of those; here, I will adopt a variant on Heim's framework for concreteness. Note that I do not assume the unselective binding of the variables introduced by definites (or indefinites) which was central to Heim (1982), and which Heim herself argued against in subsequent work (Heim 1990); see the general discussion in Chierchia (1995). What I do assume is Heim's general picture of context change, or information update, and of the role of presupposition in that process, enriched with the notion of discourse referent. Meanings are functions from contexts to contexts, with contexts treated as the ordered pair of a Domain and a **Satisfaction Set**, the latter being the set of ordered pairs of an assignment function and a world such that the assignment function in question respects all the information in the common ground about the discourse referents in the Domain in assigning values in the world to those discourse referents. As argued above, discourse referents in the Domain may be introduced linguistically, as by the use of an indefinite NP, or non-linguistically, as by direct acquaintance or a contextual existence entailment.

(31) **Context** (after Heim 1982):
       Given:
       - a model M = <W,A,Int>, W a set of worlds, A a set of individuals, Int a function from basic expressions to functions from worlds to extensions
       - the set of natural numbers N, and
       - G, a set of assignment functions from N into A,
       C is a **Context** (relative to M) iff C = <Dom,Sat>, where:
       - Dom ⊆ N is the **Domain**, the set of familiar Discourse Referents, and
       - Sat ⊆ WxG, the **Satisfaction set** for C, = {<w,g>: for all i∈Dom, g(i) is an individual which verifies in w all the information the interlocutors share about i}.

E.g., if in context C = <Dom,Sat> i∈ Dom and the interlocutors know that *i* is a cat, then every <w,g> in Sat will be such that g(i) ∈ Int(*cat*)(w), in the model in question.[15]

Now we can consider a more formal characterization of the existence and uniqueness presuppositions associated with a definite NP:[16]

(32)   **Familiarity and Uniqueness Presuppositions of Definite NPs** (formal):
        For context C = <Dom,Sat>, if a definite NP with descriptive content Desc is felicitous in C then
        $$\exists i \in \text{Dom}[\forall <w,g> \in \text{Sat}[\text{Desc}(w)(g(i))] \quad \& \tag{i}$$
        $$\forall k \in \text{Dom}[\ \forall <w,g> \in \text{Sat}[\text{Desc}(w)(g(k))] \rightarrow k = i\ ]], \tag{ii}$$
        where Desc(w)(g(i)) is true iff the individual assigned to i by g has the property denoted by Desc in world w.

Note that (32) is only a necessary condition on the felicity of definite NPs, leaving open the possibility that weak familiarity and informational uniqueness are not sufficient for felicity. Definite desciptions may carry other presuppositions, triggered by either the head (as with the factive noun *fact*) or some other lexical or constructional trigger in a complement or modifier. Hence, this condition does not suffice to define felicity for all definite descriptions, although I do intend for it to exhaust the presuppositions triggered by the definite article itself.

The first part of the formula in the consequent of this condition, (32i), entails both the familarity presupposition and the descriptive content presupposition of Heim.[17] But overall, (32) has the general form of the Russellian treatment of definite descriptions, with an existence clause (i) and a uniqueness clause (ii). (Note that the existential in (i) has scope over (ii).) We can see this when the Russellian interpretation of (1) in (1') is compared to the treatment which (32) gives rise to in (1"):

(1)   The Ohio State University is in Columbus.

(1')   Russellian interpretation of *the Ohio State University*:
        (1) asserts:
        $\exists x_i$ [state-univ(x_i,Ohio) & in-Cols(x_i) & $\forall x_k$ (state-univ(x_k,Ohio) $\rightarrow x_k = x_i$)]

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[15]See Heim (1982) Chapter three for rules which yield a recursive, extensional definition of satisfaction for formulae of increasing complexity; Chapter three for discussion of how this model may be made intensional.

[16]In Heim (1982), the presupposed familiar discourse referent for a definite NP was assumed to be the same as the referential index on the NP. One could easily add that assumption to the following, but I've ignored it here to highlight the existential character of familiarity.

[17]For independent arguments in favor of the Descriptive Content presupposition of English definites, see Zucchi (1995). I would not agree with Condoravdi (1992) that familiarity and descriptive content should be treated as independent parameters.

(1")   Informational interpretation of *the Ohio State University*:
        (1) presupposes:
        $\exists i \in Dom[\forall <w,g> \in Sat[\ |\lambda x.\text{state-univ}(x,\text{Ohio})|(w)(g(i))\ \&$
                $\forall k \in Dom[\forall <w,g> \in Sat[\ |\lambda x.\text{state-univ}(x,\text{Ohio})|(w)(g(k)) \rightarrow k = i)]]$
        (1) asserts: in-Cols(i)

(32) isn't a straightforward Russellian claim of existence or uniqueness, but in a simple assertion like (1), it does parallel the Russellian interpretation, entailing existence and the informational version of uniqueness. Consider first existence: Whenever (1) is felicitous in a context, so that the context satisfies the presupposed condition in (1"), the updated context which results after addition of the asserted condition in (1") entails that there is a state university in Ohio, which is located in Columbus. But unlike Russell's treatment, (32) predicts that in contexts which are holes to presupposition, this presupposition projects, i.e. that the context of utterance must entail existence of such an individual. This will be the case when a definite description occurs in the antecedent of a conditional, as in Kadmon's (1990) (33):

(33)   A strange man lives here (and another one lives down the block). If the strange
        man who lives here sees a cat, he screams.

Since *the strange man* in (33) presupposes existence of a corresponding discourse referent in the common ground prior to utterance of the conditional, any context in which the conditional is felicitous will entail the existence of such a man, which is not the case with the purely entailment-based Russellian approach. But, in (34) below, where a definite occurs in the consequent of a conditional, with its indefinite antecedent in the *if*-clause, we predict correctly that the existence presupposition generated by (32) is locally satisfied, and hence neither the context of interpretation nor the update of that context with (34) entails the existence of a strange man:

(34)   If a strange man and a curious woman live here, the strange man will scare my cat
        (while the woman will make friends with it).

Note that in (34), Relevance (of the conditional consequent to its antecedent) leads the hearer to restrict the domain of the existential instantiating (32i), pragmatically enriching the definite's explicit descriptive content *strange man* to include the information that the man lives at the location of utterance. This would be crucial in a context in which, for example, the speakers are talking about a number of different strange men. With the Relevant domain restriction, the informational uniqueness of the definite would still be satisfied in such a context. The pervasiveness of non-explicit domain restriction across different types of operators (as discussed in §1.1) and the assumption that it is both guided and tightly constrained by Relevance (Roberts 1995, 1996, 1996b) yields a non-ad hoc account of the Evans/Kadmon observations about the effects of pragmatic enrichment ("liberalization") on uniqueness. One reviewer argued that the possibility of pragmatically enriching the descriptive content of definites undercuts the predictive power of the present theory by suggesting that a speaker could always have in mind some enrichment of a definite's descriptive content which would make the discourse referent in question informationally unique. But this is not the case if we follow Roberts (1995) in assuming that in domain restriction in general the speaker presupposes the intended

pragmatic enrichment. In case the intended domain restriction is not fully explicit, as in (34), it must be (partly) accommodated by the hearer. But this makes the pragmatic enrichment in question subject to the conditions on accommodation in (28) above. These conditions, especially the retrievability requirement in (28a), mean that the present theory does predict that many types of examples will be infelicitous through failure of this presupposition. Consider (35):

(35) A strange man lives here, and another one lives down the block.
       This situation makes me very nervous.
       #If the strange man sees a cat, he screams. The other one never says anything at
          all.

Here, there are discourse referents for two strange men introduced by the immediately preceding discussion. Since the descriptive content of the underlined definite description fails to distinguish between them, the definite description fails informational uniqueness. And since the speaker gives no clues which would make one of the strange men more salient or Relevant than the other in this context, so that no intended pragmatic enrichment would be retrievable in the common ground, accommodation is not available, explaining the infelicity of the utterance.

Note that familiarity alone could not explain the infelicity of (35). Of course, a presuppositional version of Russellian semantic uniqueness, with the assumption of pragmatic enrichment of descriptive content, could also predict the infelicity of this utterance. But the present theory can account for examples in which, as we saw earlier, Russellian semantic uniqueness is too strong. This is because (32) does not in general entail Russellian uniqueness. Because informational uniqueness is about the interlocutors' common ground, instead of the world (in a model), the uniqueness clause (32ii) only requires that the discourse referent corresponding to the definite description be unique among the set of familiar entities in the context, Dom, in satisfying the definite's descriptive content. If there is some individual that the interlocutors are not mutually aware of who also fits the description, this doesn't falsify the informational uniqueness clause. One of the consequences of this different view of uniqueness in definites is immediately apparent: Examples which a semantic uniqueness account would incorrectly predict to be contradictory are instead predicted to be felicitous and non-contradictory on the informational uniqueness account. Recall Heim's (10), which semantic uniqueness predicts will be false (or infelicitous, on the presuppositional version) if uttered in a circumstances in which, in fact several wine glasses were broken, though the others haven't been discussed:

(10) A wine glass broke last night. The glass had been very expensive.

All that's required to satisfy (32) is that when *the glass* is uttered there are no other discourse referents in the discourse Domain which bear the pragmatically enriched descriptive content of the definite description ('the wine glass which broke last night', derived from the assumption of the Relevance of the second sentence to the first). But there is no requirement that the denotation of the definite be semantically unique. To obtain this result, we do not need to claim, as Kadmon did, that speakers can have private

pragmatic enrichments of descriptive content, inaccessible to their hearers, which yield uniqueness.

2.2. Explaining uniqueness effects

How do uniqueness effects arise? One of my basic assumptions is this: The conventional meaning of an expression cannot be cancelled, but remains in effect regardless of context. I assume that the utterance presuppositions associated with an expression are part of its conventional meaning, and hence that such presuppositions cannot be cancelled. An account which assumes that semantic uniqueness is part of the conventional meaning of the definite article makes predictions which are too strong in many kinds of examples involving definite descriptions, e.g. in (10) (just discussed), as well as in others we will consider below. Hence, we must conclude that none of the uniqueness effects observed in §1.1 can be explained by such conventional semantic uniqueness. The distribution of these uniqueness effects suggests that although semantic uniqueness is frequently part of what is meant by a speaker in using a definite description, in Grice's (1957) sense of a *speaker's meaning*, this meaning arises through conversational means, so that context figures into the entailment of uniqueness.

The examples in which robust uniqueness effects arise are of two main types. The first type one might call epistemic. They involve definite descriptions whose informational uniqueness must be guaranteed in contexts where the interlocutors may have knowledge of the entire extension of the relevant CN. The second type involve definite descriptions which fail strong familiarity; in these cases the semantic uniqueness is a conversational implicature arising from the need to satisfy informational uniqueness. I will discuss each of these types in more detail below.

Turning to the first type of example where uniqueness effects arise, consider first cases involving titles, as in (1) and (2), repeated here:

(1)   The Ohio State University is in Columbus.
(2)   The Queen of England had a bad year in 1993.

A title is created, whether consciously or through continued usage, with a view to use by the public, including people with all levels of information about the kinds of entities in question. On any occasion of use, the definite description will presuppose uniqueness in the common ground of the interlocutors, whoever they may be, and no more. But it might reasonably be assumed that some interlocutors among all who use the title will know enough to be familiar with all of the entities in the world which satisfy the definite's descriptive content, so that all of those entities will be in their common ground. E.g., suppose that (1) is used by some member of a group of experts on higher education in 20th century America, a group whose members would be expected to know all about the educational institutions in this country in that era and know that they all know this. The expression presupposes uniqueness in the common ground (via (32ii)), and the common ground is known by the interlocutors to include all the entities in the world bearing the relevant description. Given the possibility of such a rich common ground, in order to assure that a title in the form of a definite description will always be felicitous, its

designers must believe that its denotation will be semantically unique at any given time, just in case the interlocutors are as well-informed as these experts. Hearers know this about titles, and this leads to an epistemic version of semantic uniqueness. I.e., the hearer knows (at least tacitly) the felicity conditions for definite descriptions given in (32), knows what a title is, and assumes that the title in question, in the form of a definite description, was appropriately designed to assure its felicity in any context of use. Having such knowledge leads to the assumption that the title's denotation at any given time is believed to be unique in the world in bearing the descriptive content of the definite. A uniqueness effect arises, then, even in contexts in which the common ground in which the definite description title is used is not sufficiently rich to directly give rise to it via (32) alone.

Example (3), involving the giving of directions, can be accounted for in a similar fashion:

(3)   Teacher, giving directions: On the next page, you will find a puzzle. Find <u>the</u>
        <u>clown</u> in the puzzle.

Prima facie, the definite description *the clown* in this example seems to require accommodation in order to satisfy the existence/familiarity presupposition in (32i). But neither familiarity nor familiarity plus the informational uniqueness in (32ii) can explain the uniqueness effect that arises, the expectation that there will be exactly one clown in the puzzle on the next page. But notice that these directions are given for use by the students in a context which has not yet arisen, the context in which they have turned to the next page and are examining it, so that they will have access to full information about the page and its contents. In such a context of use (which is *after* the context of utterance), not only will the weak familiarity presuppositions of the definite presumably be satisfied by the sight of the clown already familiar to the teacher, but moreover, these instructions will only satisfy (32ii) in that context if there is a unique clown in the (unique) puzzle on that page. Otherwise, if there were multiple clowns, since the students would have direct perceptual access to information about the number of clowns in the puzzle, the presupposition in (32ii) might reasonably be expected to fail, at least for the more perceptive among them, and the directions would be infelicitous in their intended context of use. Again, we have an epistemically triggered uniqueness effect, based on the intended function of the utterance in giving directions: The hearer will assume that the felicity conditions in (32) will all be satisfied in the situation where s/he is intended to use the directions. Given this and the assumption that s/he will likely have direct perceptual access to full information about the relevant situation, s/he can assume that the speaker believes that there is in fact exactly one clown in that situation. The hearer then accommodates the corresponding discourse referent, and assumes that the descriptive content holds of it and that informational uniqueness is satisfied, on the reasonable assumption that these are intended by the speaker as part of her directions and will in fact be satisfied in the context of use.

All this is to say that in order to assure felicity in the context of use for which they are designed, definite descriptions which are part of directions, like those which act as titles, must be semantically unique. Hearers know this and accommodate accordingly. A similar type of story can be told for examples like the kitchen cabinet example in (9), enriched in that case with a conversational implicature, as suggested in §1.

The second type of example where uniqueness effects consistently arise involves uses of definite descriptions which fail strong familiarity, whether they merely satisfy weak familiarity or require accommodation. As a preliminary to the explanation of such examples, note that some definite descriptions' denotations are guaranteed to be unique in the world (at any given time) by virtue of our knowledge about the world, and in particular about what it is to be such an entity. Superlatives are all of this nature, of course, as we saw in (11), but this is also guaranteed for some definite descriptions by the interpretation of the CN, as in (20), repeated below. The fact that such semantically unique NP denotations exist is not, of course, an argument in favor of a semantic account of definite NPs; uniqueness in these cases can be argued to derive from the meaning of the superlative *most* (or *-est*, as the case may be) or of the head noun, etc., not from the definite article itself.

(20)   I remember the beginning of the war very well.

Whenever a definite description has a semantically unique denotation, we can say that its CN is interpreted as an n-place function (Löbner 1987). Sometimes these are zero-place functions, as with non-relational definite descriptions like *the sun*. In other examples, $n \geq 1$, as in (20), with a complement or modifier (here, the prepositional phrase) giving the function's explicit argument. But many definite descriptions – perhaps most – are ambiguous between a relational and a non-relational interpretation. What is interesting, and requires explanation, is that when such definite descriptions fail strong familiarity, the functional interpretation, and hence a uniqueness effect, consistently arises.

Consider again (5) - (7), repeated from above:

(5)   This car has a statue on the dashboard.
(6)   Every car had a puncture in the tire.
(7)   Every unicycle had a spoke missing from the wheel.

Each of these involves a relational interpretation of the definite, with an implicit argument of *dashboard/tire/wheel* bound by the subject NP. In the felicitous examples, (5) and (7), this relation is also, clearly, a function. If the interpretation of the definite involves implicit bridging to the subject, then the weakly familiar discourse referent for that dashboard can serve as antecedent for the definite *the dashboard*. This not only (weakly) satisfies the familiarity presupposition in (32), but because the interlocutors know that the dashboard is unique in the world, there cannot be more than one discourse referent which bears the property of being the dashboard of this car, on pain of contradiction, so that informational uniqueness is satisfied as well. Note that on this account, no accommodation is involved in the satisfaction of these presuppositions for (5). The infelicity of (6) follows from the fact that a functional interpretation of *tire* is incompatible with our knowledge of cars, which entails that they have four (non-spare) tires; hence we cannot give it this interpretation and still maintain a consistent common ground. Even on the merely relational interpretation, familiarity is still satisfied, because for any given car with which we instantiate the subject there are four weakly familiar tire discourse referents; but informational uniqueness fails, since there is no way to choose one from among those four to be the antecedent for the definite. The same kind of

account given for (5) explains the satisfaction of familiarity and informational uniqueness in (7), as well, since wheels are unique per unicycle. No special story need be told about uniqueness under quantification – we just assume that informational uniqueness must hold for the definite at the point it is interpreted, i.e. relative to any given instantiation of the subject.[18] [19]

As these examples illustrate, semantic uniqueness plus (weak) familiarity together entail informational uniqueness, though neither does so alone. If a discourse referent is familiar in a given common ground and by virtue of the properties predicated of it could at most correlate with one individual in the world, then (assuming that the interlocutors understand those properties) the common ground could not consistently contain another discourse referent with those same properties: Informational uniqueness is entailed. Since the functional interpretation of a definite description guarantees semantic uniqueness, the functional interpretation plus bridging to a familiar argument of the appropriate sort entails weak familiarity and informational uniqueness. Familiarity alone, which is compatible with a merely relational interpretation, would not guarantee informational uniqueness, as in (6). In fact, if weak familiarity is licensed by contextual information and the information in question entails there is no semantically unique entity satisfying the definite's CN, then informational uniqueness fails, as well. This is why definites licensed by merely weak familiarity require semantic uniqueness (so far as the interlocutors know), as well. And of course, semantic uniqueness alone does not entail familiarity. There may be one and only one grey whale in Spencer, West Virginia, but unless the existence of this entity is entailed by our Common Ground, I cannot refer to it in our conversation as *the grey whale in Spencer* without requiring (conscious) accommodation by my interlocutors.

Consider a slightly different type of example, where even weak familiarity fails, so that felicity requires accommodation:

(4)   I found a box in my attic the other day. I opened the lid and pushed <u>the button I found inside</u>. You won't believe what happened.

The speaker is telling a story in such a way as to draw the hearer into the actual experience; accommodation is often used to such effect. Note that the felicity of the example crucially depends on the relative clause, along with implicit bridging to the box. Compare:

(36)   I found a box in my attic the other day. #I opened the lid and pushed the button.

Since boxes don't generally have buttons, (36) leaves us puzzled about what button was pushed, where it was, and what it has to do with the box under discussion (which it must, presumably, to satisfy the condition on accommodation in (28a)). The story line breaks

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[18] I do not have space here to spell out the full dynamic semantics for utterances with wide-scope universally quantified NPs. See Heim (1982), Chapter 3, Chierchia (1995) for details. The central point is that the antecedent in these examples, e.g. *every unicycle*, has triggered introduction of a corresponding discourse referent in the local context in which the NP *the wheel* is interpreted via bridging.

[19] In particular, there is no correlate of the non-trivial problem Kadmon (1990) encounters in specifying uniqueness relative to values for all accessible discourse referents. See her (31), p.293.

down. (4) paints a much clearer picture of what the speaker discovered, and hence expects the hearer to imagine herself discovering as well, satisfying the requirement that what's to be accommodated can be easily retrieved by the hearer.

But accommodation by itself does not preclude giving the definite's CN in (4) a merely relational interpretation, leaving open the possibility that there was another button in the box besides the one the speaker pushed. Why do we interpret *button* as a function, instead of a mere relation? And for that matter, why does the speaker require the hearer to accommodate here, presumably knowing that the button is unfamiliar? As Grice noticed long ago, speakers often flout the conventions of language, using them to convey information other than, or in addition to, that which is conventionally entailed by an utterance. We flout the Gricean conversational maxims, leading to conversational implicatures. We flout presupposition satisfaction, often requiring our hearers to accommodate, so long as the presupposition to be accommodated is readily retrievable and relatively uncontroversial. Just so, since the presupposition of informational uniqueness in definite NPs can be satisfied by semantic uniqueness plus weak familiarity, speakers actually use this fact and the expectation that a hearer will cooperatively accommodate (when retrievable and plausible) to convey the information that a definite NP's intended denotation is semantically unique.

The conveyance of semantic uniqueness in cases involving accommodation to satisfy familiarity involves a conversational implicature, with the hearer (implicitly) reasoning as follows for (4): The speaker could have used an indefinite, *a button I found inside*, but despite the lack of even weak familiarity used a definite instead. The speaker realizes that I realize that the context fails to satisfy (32) for *the button I found inside*, but assumed I would be cooperative and accommodate the failed weak familiarity and informational uniqueness. Accommodating informational uniqueness alone is uninformative: Why pretend that anaphora resolution is straightforward when it's not? But accommodating semantic existence and uniqueness entails both clauses of (32) and is informative. Therefore, the speaker must have meant$_{nn}$ (in Grice's sense of *non-natural meaning*) that there was a semantically unique button inside the box in question, and assumed that I would accommodate this information, as if I had seen for myself.[20] In order to account for the robustness of the uniqueness effects involved, this analysis assumes that conversational implicatures in general are very robust, not so readily cancellable as had been assumed by Grice and most authors since. For arguments to this effect (which make no appeal to uniqueness phenomena), see Welker (1994), who characterizes conversational implicatures as contextual entailments. So-called implicature cancellation is really a revision of the hearer's assumptions about the context, after the fact, to accord with additional information offered by the speaker. When we control for context, as I have tried to do consistently in the examples discussed, there is no implicature cancellation, so that we can predict the robust effects reported.

As we might expect from the robustness of this conversational implicature of semantic uniqueness, appeal to Grice can also account for the related infelicity of the indefinite

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[20] Just as in actual directions, where the use of a definite signals that we can expect semantic uniqueness of the relevant entity in the world, here we have directions for imagining the scene in front of us, complete with a button which is informationally unique, and hence semantically unique in that imagined scene.

article when used with a CN whose denotation is a singleton set, so that the intended referent would be semantically unique. In such a case, using the indefinite would implicate that so far as the speaker knows there might be more than one entity in the domain of the existential quantifier corresponding to the indefinite. This implicature clashes with the semantic uniqueness of the CN to yield infelicity in (12):

(12)   #Last weekend we climbed a biggest mountain in West Virginia.

Since a competent speaker may be presumed to know that semantic uniqueness is guaranteed for superlatives, then even when the hearer isn't previously aware of the existence of an entity satisfying the definite's descriptive content, so that the corresponding discourse referents are novel, use of the indefinite article would lead to the contradictory implication that so far as the speaker knows there might be another biggest mountain.

Summarizing, uniqueness effects only arise in the two types of cases discussed in this section, involving special epistemic circumstances or definite descriptions which fail strong familiarity. Hence, it looks like semantic uniqueness is too strong. And we can account for these effects in the theory proposed in §2.1. In §3 and §4.1 I will offer additional evidence that the present account of uniqueness effects is superior to those based on semantic uniqueness. And in §4.2, I will argue that it is superior to accounts based on purely pragmatic, non-conventional means.

3. Pronouns

A number of authors over the past twenty years have argued that pronouns are a species of definite NP. Heim (1982) treats pronouns as like definite descriptions in having familiarity presuppositions, without semantic uniqueness. Kadmon (1987,1990) argues that all types of definite NPs, including both descriptions and pronouns, have semantic uniqueness presuppositions, as well as presupposing familiarity. Heim (1990) explores anew the uniqueness question for pronouns; she gives them a functional interpretation, much like Löbner's (1987) treatment of definite descriptions, hence predicting entailed semantic uniqueness for pronouns. Drawing on Kadmon's work, she argues that Heim (1982) may have been hasty in rejecting semantic uniqueness, though she acknowledges remaining problems for this hypothesis. However, she doesn't address the broader class of definites which includes definite descriptions.

In §3.1, I will point out a difference in the distribution of definite descriptions and pronouns which has not been addressed in the work just cited. As a consequence of this difference, pronouns do not generally display uniqueness effects. However, I will argue that pronouns are, indeed, definites, and hence should be subject to informational uniqueness. The difference between the two classes of definites will be accounted for in §3.2 by assuming that pronoun use has an additional requirement: a pronoun's antecedent, a familiar discourse referent, must be maximally salient in the context of utterance.

In the course of this exploration, I will offer additional evidence of the variability of uniqueness effects in definite descriptions, and it will be demonstrated that this variability

is partly a function of how their distribution contrasts with that of pronouns. Again, informational uniqueness, now in combination with the observed salience requirements on pronominal use, can explain this variability, while semantic uniqueness cannot, so far as I can see.

3.1. A Contrast between Definite Descriptions and Pronouns

A number of types of examples have been noted in the literature in which pronouns have no apparent uniqueness effects. For example Heim (1990) notes the following problem for her account of pronouns as denoting the result of applying a function to its (sometimes contextually given) arguments, and hence as semantically unique: Why do people seem to take the owners of multiple donkeys into account in assessing the truth or falsity of examples like (37) (even if those same speakers are not always clear what the exact truth conditions should be)?[21]

(37)   Every man that owns a donkey beats it.

The semantic approach to uniqueness applied to pronouns would predict that we just somehow restrict the domain of quantification pragmatically to ignore the owners of multiple donkeys, since the pronoun *it* would mean basically 'the unique donkey that the man in question owns'. But this doesn't generally seem to be the case. For many speakers, the existence of a man who owns several donkeys, one of which he doesn't beat, at least calls into question the truth of (37).

Even more problematic, we have the sageplant example due to Heim (1982):

(38)   Everybody who bought a sage plant here bought eight others along with it.

Under even a presuppositional approach to semantic uniqueness, (38) must be infelicitous if true, while if felicitous, it must be false. But our intuitions tell us that (38) can be both felicitous and true. Kadmon (1987:317) argues that "speakers accept this example because it can't make any difference to truth conditions which sage plant the pronoun *it* stands for, out of all the sage plants that a buyer *x* bought (for each buyer *x*)." But, as Heim (1990) points out, Kadmon's sage-plant explanation won't work for examples like Rooth's (1987) (39), another example where Kadmon predicts uniqueness under quantification:

(39)   No parent with a son still in high school has ever lent him the car on a weeknight.

Here it does potentially make a difference which function from parents to a unique son of theirs we pick, because some parents with multiple sons in high school might sometimes lend their car to one of their sons (say, the trusted son) on a weeknight, though never to another, and any such parents should clearly falsify (39).

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[21] See Chierchia (1995), Krifka (1998) for extensive discussion of this general problem in donkey anaphora, and proposals about how it might be resolved.

A large number of empirical studies, both corpus-based and experimental psycholinguistic, support the existence of a contrast between pronouns and definite descriptions, a contrast which is ignored in the tendancy in recent semantic literature to treat all definites, including pronouns as well as definite descriptions, alike with respect to uniqueness and/or familiarity. As Hudson-D'Zmura (1988) puts it, (p.3) "pronouns and definite noun phrases, while both anaphors, have different discourse functions. . .Pronouns maintain the focus of a discourse. Noun phrases change the focus of a discourse." Another way of putting this might be to say that pronouns require an antecedent which is highly salient in the context of utterance, while definite descriptions do not. This assumption is in keeping with the computational linguistic work on pronoun resolution by Grosz and her colleagues (Grosz (1977), Grosz & Sidner (1986), Grosz, Joshi & Weinstein (1995)). The latter proposed the theory of Centering, in which pronoun resolution in a given discourse context at least partly hinges on recognition of the center of attention at any given time. One can understand this theory as exploring those factors in the structure of discourse which determine the relative salience across time of the familiar discourse referents; see Roberts (1998) and other papers in Walker, Joshi & Prince (1998) for extensive discussion.[22]

Hudson-D'Zmura (1988) and Hudson-D'Zmura & Tanenhaus (1998) adopt the perspective of Grosz *et al.*, designing experiments to test their predictions. Hudson-D'Zmura & Tanenhaus conclude:

> The experiments reported here examined two predictions made by the centering theory developed by Grosz *et al.* (1983). The first prediction was that an ambiguous pronoun would be interpreted as referring to the discourse entity that corresponds to the center of attention. The second prediction was that sentences that referred to the center of the preceding sentence with a pronoun would be more felicitous tha[n] sentences that referred to the center with a noun. Both of these predictions were clearly confirmed. . .
>   These results, in conjunction with the important complementary work by Brennan (1995) and Gordon and Grosz (Gordon *et al.* 1993; Gordon 1992), provide strong support for two of the important insights that underlie the centering hypothesis. The first is that different types of anaphoric expressions help direct the attention of the reader or listener. The second is that the local structure of discourse places strong constraints on the likely antecedents for pronouns so that initial assignment can take place rapidly and without extensive inferencing or support from real-world knowledge.

Among corpus-based studies, Ariel (1988) examined naturally occurring texts with a view to the relative position in the texts of strongly familiar definite noun phrases (pronouns, demonstratives, and definite descriptions) and their explicit antecedents. She found that pronouns most often (over 80%) occurred in the same sentence or the sentence immediately following their antecedents, while over 80% of the definite descriptions occurred either later in the same paragraph (not in the sentence immediately following) or in a different paragraph from their antecedents. Similarly, when an antecedent was within

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[22]Heim (1982:385-6) also observes that a pronoun's antecedent appears to have to be prominent. However, she does not discuss what constitutes prominence, nor how this might bear on uniqueness effects.

the same sentence, 93% of the definites were pronouns and only 3% were definite descriptions; 82% of the cases in adjacent sentences were pronouns while only 5% were definite descriptions; but across paragraphs only 27% were pronouns, while 59% were definite descriptions.

This and other empirical work cited by these authors converges on the general hypothesis that the interpretation of pronouns is directly sensitive to the salience of potential antecedents. Anaphora resolution for pronouns effectively screens out non-salient portions of the discourse and the discourse referents therein, so that only salient discourse referents are accessible to serve as antecedents. The empirical work reviewed also suggests that definite desciptions not only do not require maximal salience of their antecedents, but that, unless use of a pronoun would lead to ambiguity, use of a definite description tends to be dispreferred when referring to a salient discourse referent. Hence, we can use definite descriptions felicitously to refer to non-salient but familiar entities, as with *the sun*, even at the outset of conversation with a stranger. And when a non-deictic definite fails to have an NP antecedent, its use is in most cases only felicitous if it is a definite description, not a pronoun. To illustrate this last claim, replacing the underlined definite description in examples (3), (4) or (5) above (where there is no antecedent) with the pronoun *it* results in infelicity.

One might follow Heim (1982) in claiming that the reason for this restriction is that the pronoun simply doesn't have enough descriptive content to let the hearer know what sort of entity she should accommodate. This seems correct and obvious, but (i) it could also be taken as a partial explanation for a more general requirement that the antecedent of a pronoun be salient, from which the restriction on accommodation would follow, and (ii) the poverty of descriptive content of pronouns would not by itself explain the contrast between examples like (40) and (41):

(40)   A woman entered from stage left.
        Another woman entered from stage right.
        #The woman/√The FIRST woman/√The SECOND woman was carrying a basket
            of flowers.

(41)   A woman entered from stage left.
        Another woman entered from stage right.
        She was carrying a basket of flowers, while #the woman/√the FIRST woman/#the
            SECOND woman led a goat.

In (40) and (41), the first two sentences set a scene in which there are apparently two women, distinguished only by which side of the stage they have entered from. We see in (40) that we cannot felicitously use the definite description *the woman*, apparently because it refers non-uniquely in the scene in question. The more specific NPs are felicitous; *first* and *second* may either be taken to allude to the order of a woman's entrance on the stage or the order of our mention of her and her entrance, with the same results. (41) shows that the pronoun *she*, while even less contentful than *the woman*, may be felicitously used, but it can apparently only refer to the second woman, as shown by the possible references to the other woman in the adjunct clause. Note that we cannot argue that the first woman is simply not salient by the time we interpret the pronoun; in

the same relative linear position in discourse, *she* in (42) can take the first NP as its antecedent:

(42)   A woman entered from stage left.
        There was a basket of flowers in the middle of the stage.
        She picked it up.

The difference in (41) seems to be that a pronoun takes as its antecedent the *most* salient entity in the context at the time of its utterance which is of a sort compatible with the pronoun's features. But a definite description doesn't take relative salience of potential antecedents into account.

This does not mean that we don't take contextually salient information into account in interpreting definite descriptions. We do in the following way: Pragmatic enrichment of the descriptive content of definite NPs is suggested by the immediate discourse context in which the NP in question is uttered, as discussed in the previous section. We can see the effects of this pragmatic enrichment in (40) and (41), though one generally wouldn't notice it. What did you take *the first woman* to refer to in each of these examples? Most of us would take it to refer not to the mother of us all – say, Eve – but to the first woman mentioned in the relevant discourse context, 'the first woman of those just mentioned', or something like that. This interpretation crucially involves restricting the domain of the definite article to consider not all women, but only those women in the situation under discussion. Such domain restriction is only felicitous when the intended domain is recoverable from the immediately preceding context and bears on the question under discussion in that context (see again (28a)). But the influence of immediate context on the interpretation of definite descriptions is indirect, via pragmatic constraints on domain restriction, whereas the requirement on pronoun resolution is of a different sort, as argued by the contrast in potential reference between the definite descriptions in (40) and the pronoun in (41). This contrast demonstrates that the sensitivity of pronominal reference to relative salience puts more stringent restrictions on how one can resolve the intended reference of pronouns and, I argue, is more direct, in fact a part of the conventional meaning of pronouns.

Note that it is not that definite descriptions can never refer to salient entities, as illustrated by (43):

(43)   A woman entered from stage left.
        Later in the act, a woman entered from stage right.
        √?The woman/√She was carrying a basket of flowers.

(43) differs from (40) and (41) in specifying that the woman who entered from stage right did so later in the act. It seems that the default interpretation of a discourse is as a narrative, and that unless otherwise specified, a sequence of sentences in a narrative is taken to denote a temporally adjacent sequence of events or overlap of events with states – describing the evolution of a single scenario. This is probably why we take the sentences in (40) and (41) to be about a single contiguous sequence of events within the same situation. In (43), the adverbial in the second sentence overrides the assumption that the events reported in the first and second sentence are contiguous, but by the default

we take the second and third sentences to constitute a non-interrupted sequence of events. Since the situation they describe differs from that described by the first sentence, the scene has shifted sufficiently to make the second woman the uniquely familiar woman in the situation in question. This markedly improves the felicity of the definite description *the woman*; if it is less than perfect, that is probably due to the lack of motivation for using the description instead of the briefer pronoun. We can improve this if we replace the second instance of *a woman* by *a woman and a little girl*.

The distinction between pronouns and definite descriptions is also reflected in examples involving uniqueness under quantification, such as the series in (44) and (45) (the latter a variation on an example due to Pelletier & Schubert (1989)).[23] In each triplet, (x) involves a pronoun object, (x') is the same sentence but with an epithet substituted for the pronoun, and in (x") a redundant definite description has been substituted for the pronoun:

(44)   Every man that owns a donkey beats it.
(44')   Every man that owns a donkey beats the poor beast.
(44")   Every man that owns a donkey beats the donkey (he owns).

(45)   Every man who had two quarters put them in the meter.
(45')   Every man who had two quarters put the damn things in the meter.
(45")   Every man who had two quarters put the (two) quarters (he had) in the meter.

The versions in (44') and (45') with epithets are fine, and the meanings do not differ from the originals. But the versions with redundant definite descriptions in (44") and (45") introduce a uniqueness effect. (44") now seems to presuppose that the men in question have just one donkey; the more redundant the definite description (e.g., including the relative clause *he owns*), the stronger the uniqueness effect. (45") presupposes that each man had exactly two quarters, and again the more redundant information there is in the definite description, the stronger that effect. The examples illustrate how uniqueness effects, which seemed to have vanished for the most part under quantification or in bound variable pronouns, suddenly and systematically re-appear when redundant definite descriptions are substituted for the pronouns. Epithets, however, though also definite descriptions, do not give rise to uniqueness effects in these contexts. And even redundant definite descriptions don't give rise to uniqueness effects under quantification when they are used to avoid ambiguity regarding the intended antecedent of a pronoun:

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[23]The data pertaining to the use of definite descriptions as bound variables are much more complex, depending crucially on pragmatic factors I cannot explore here for reasons of space. However, note that definite descriptions in general, including both redundant definites and epithets, can serve as bound variables (contra claims of L. Kalnan (p.c. to Szabolsci (1989)), even when the definite is c-commanded by its antecedent (contra Lasnik & Stowell (1991)):
(i)   In the Ohio Statehouse, at least one lobbiest for every city hates it/the place/?*the city.
(ii)   Every lawyer and his client wanted to get the client's property tax reduced.
(iii)   Every safe-cracker whose parole officer said that the crook was unrepentent had to go back to jail.
(iv)   Every girl took home a letter from her teacher to her mother which said that she/the little angel/the girl was behaving.
(v)   A cat whose owners were so fed up with its/the rascal's/?the cat's dirty pawprints on the walls that they made it wear socks has sued for better treatment.

(46)   Everyone who bought a sage plant or a rosemary planted the sage plant with extra bone-meal or the rosemary in a well-limed soil, (and if it was a sage plant, bought eight others along with it).

(46) doesn't seem to presuppose uniqueness of the sage plant or rosemary relative to a given buyer, as shown by the felicity of the material in parentheses, which would contradict such a presupposition.

One reviewer raises the question of whether *the rosemary* satisfies informational uniqueness in (46). Since the others purchased with it are not mentioned until later in the utterance, I believe it does. Contrast this with the infelicity of the closely-related (47), where the other sage plants are mentioned before the use of the definite description:

(47)   #Everyone who bought a sage plant or a rosemary got eight other sage plants along with the sage plant or a free packet of lemon balm seed with the rosemary.

More interesting is the following example, a variant on another suggested by the reviewer:

(48)   Remember that chess set that came with an extra pawn?
       The friend I gave it to could have used an extra king, but he never needed the extra pawn.

The problem here is that we know that a chess set always comes with several pawns; their existence is weakly familiar. Suppose that in the set in question seventeen pawns, one more than needed for standard play, were packaged together and were otherwise indistinguishable as well. In what sense can we say that informational uniqueness is satisfied for the definite description *the extra pawn*?

The problem is strongly reminiscent of the one posed for Kadmon by Heim's original sage plant example. However, there is a crucial difference between Kadmon's theory and the one proposed here. In order for Kadmon's semantic uniqueness to be satisfied in (48), it would be necessary for there to be a pawn in the model which was unique in being the extra pawn. This would fail in the context suggested, where the pawns are indistinguishable. But in the present theory, we are talking about the uniqueness relative to a description of a *discourse referent*, not an entity in the model. The interlocutors in (48) have (weakly familiar) discourse referents for seventeen pawns, only one of which (after uttering the first sentence in (48)) is labelled as *extra*. Since there are no other extras, this discourse referent is unique in that respect. The theory doesn't require specificity of reference: it isn't necessary that there be a pawn *in the model* which is identifiable as *the extra pawn*.

The lack of uniqueness effects with epithets and disambiguating definite descriptions shows that we cannot account for the re-appearance of uniqueness effects with redundant definite descriptions by claiming that definite descriptions, but not pronouns, have a conventional presupposition of semantic uniqueness; if that were the case, then the epithets and disambiguating definites should also give rise to uniqueness. This pattern provides another argument against semantic theories of uniqueness, even if we restrict

these theories to consideration of definite descriptions. The fact that the observed variability in the correlation between definiteness and uniqueness effects appears to be systematically correlated with the context in which a definite description is found suggests that the factor accounting for the variability is pragmatic, contextual, as predicted by the theory presented here, built on informational uniqueness and Gricean implicature.

The empirical work on definites supports the contention that the salience requirement on pronoun resolution is not a mere Gricean strategy for maintaining uniqueness. Instead, it looks like something built into how we find the antecedent of a pronoun, but not that of a definite description. In the following section I will propose how we might capture this difference between pronouns and definite descriptions, on the assumption that both are definite NPs and hence both display informational uniqueness.

3.2 The Presuppositions of Pronouns

I will assume that the descriptive content of an English pronoun is at least suggested by its gender and number.[24] Hence, we might adopt a logical form for pronouns parallel to that of the definite description:

> Static generalized quantifier logical forms for a pronoun with gender *g* and number *n*:
> $$\lambda P[g(x) \ \& \ n(x) \ \& \ P(x)] \quad \text{or} \quad \lambda P\exists y[g(y) \ \& \ n(y) \ \& \ P(y) \ \& \ y=x]$$

As we just saw, the distribution of felicitous uses of pronouns and that of definite descriptions differ. On the one hand, the distribution of pronouns is more restricted, since merely weak familiarity does not generally license the use of a pronoun, in contexts where a definite description with the same intended denotation would be acceptable. On the other, there are cases where we may use a pronoun when a co-referential definite description would be unacceptable, or only marginally so. And uniqueness effects rarely, if ever, arise in the use of pronouns, while they quite commonly do in the use of definite descriptions. If the theory presented in §2.1 is to be extended to cover pronouns, as well as definite descriptions, then something must be said about their differences, as well.

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[24]See Dowty & Jacobson (1988) for arguments that the gender and number of a pronoun have semantic content, as opposed to being mere grammatical markers. As Manfred Krifka (p.c.) points out, there are a number of types of examples in which this correlation appears to be too strong, for example, the 'singular' use of the plural pronoun *they/them* in English, or the "semantically inert" gender we find in languages like German and French. However, Dowty & Jacobson do not claim that the semantics of gender is direct; their theory is compatible with the existence of phenomena like grammatical gender. And Roberts (1987) argues at length that the 'singular' use of plural pronouns in English is semantically consistent because the denotation of plurals subsumes those of the corresponding singulars. In any case, even if one concludes that pronominal gender and number do *not* directly constitute part of the semantic descriptive content of these NPs, one can claim that in general they trigger implications which do, via pragmatic enrichment of that (very poor) descriptive content.

In order to capture these distinctions, I propose that in addition to satisfying the presuppositions for definite descriptions in (32), pronouns must satisfy an additional presupposition of maximal salience. That is, informally, pronouns must satisfy (49):

(49) **Presuppositions of Pronouns**:
      Given a context C, use of a pronoun Pro$_i$ presupposes that there is a discourse referent *i* familiar and salient in C which satisfies the descriptive content suggested by the person, number and gender of Pro$_i$, and is the most salient such discourse referent which is a pragmatically plausible antecedent for Pro$_i$ in C.

Informational uniqueness of the presupposed discourse referent antecedent is entailed in (49) by the superlative *most*. So if we take the person, number and gender of a pronoun, suitably pragmatically enriched, to constitute its descriptive content, then (49) amounts to (32) plus the presupposition of maximal salience of the antecedent discourse referent. The latter is encoded in the formal characterization of these presuppositions in (50) as a restriction on the comparison class for the determination of informational uniqueness (clause (ii)) to the set of discourse referents which are at least as salient as that corresponding to the antecedent:

(50) **Familiarity and Uniqueness Presuppositions of Pronouns** (formal):
      For context C = <Sat,Dom>, with the salient discourse referents Sal $\subseteq$ Dom, if a Pro$_i$ with descriptive content Desc (given by its person, number and gender) is felicitous in C then

$$\exists i \in Sal[\forall <w,g> \in Sat[Desc(w)(g(i))] \quad \& \tag{i}$$
$$\forall k \geq_{Salient} i \ [\forall <w,g> \in Sat[Desc(w)(g(k)) \ \& \ PlausibleAnt(k,Pro_i)] \rightarrow$$
$$k = i \ ]], \tag{ii}$$

where Desc(w)(g(i)) is true iff the individual assigned to *i* by *g* has the property denoted by *Desc* in *w*, $\geq_{Salient}$ is a partial order over *Sal* x *Sal* s.t. x $\geq_{Salient}$ y iff *x* is at least as salient as *y*, and PlausibleAnt(k,Pro$_i$) is true iff discourse referent *k* is a plausible antecedent for Pro$_i$, given the information about *k* in *C* and what is predicated of Pro$_i$.

I take it that what it is for a discourse referent to be a plausible antecedent for a pronoun is fairly obvious intuitively in particular examples, if painful to specify precisely without going into considerable detail about how various bits of information are, or are not, taken to be consistently about a single individual. The question then, is how to characterize what it is to be salient, and moreover, how discourse referents are to be ranked for their relative salience. I will not attempt to answer these questions fully here, but I will briefly sketch what direction I think their answers should take, adopting the general perspective on the accessibility of antecedents in anaphora resolution outlined in Roberts (1998).

It seems fairly obvious to say that what is salient at a given point in a discourse is that set of discourse entities which is currently under scrutiny by the interlocutors, whether that be by virtue of being explicitly discussed or in some other way directly attended to. I follow Grosz & Sidner (1986) in assuming that anaphoric accessibility is constrained by the way that utterances pertain to the goals and intentions of the interlocutors in a

discourse; it is their intentions which establish what they are attending to. Discourse goals are modelled formally in Roberts (1996b) as the (semantic) questions under discussion in the discourse, partially ordered to reflect the way in which some goals/questions subserve others.[25] This order, in turn, sets up a partition on the utterances in discourse, depending on which question an utterance is intended to most directly address. As long as a question is under discussion, the familiar discourse referents which pertain to that question (typically, those mentioned in discussing it) are salient. Discourse referents pertaining to the immediate question under discussion are more salient than those which pertain only to a question which the immediate question is subordinate to in the order. When a question is resolved, it is removed from the set of questions under discussion, and at that point the discourse referents which pertain to that question are no longer salient, unless they also pertain to some other, higher question in the order which has still not been completely resolved.

The questions under discussion themselves are generally subservient to the interlocutors' more general goals and intentions, sometimes called their domain goals. Although discourse referents which are strongly familiar are generally more salient than those which are merely weakly familiar, entities which pertain to the interlocutors' general goals and which are especially prominent in some way (e.g., perceptually) are also salient in the discourse. This is intended to account for examples like (51), where use of *her* seems felicitous because the mutual domain goal of the interlocutors on such an occasion is to honor the deceased:

(51)   [out of the blue, in a funeral parlor:] I was terribly upset to hear the news; I only saw her last week.

Although the notion of salience just sketched presupposes reasonable recency (via the usual immediacy of questions under discussion), it is not reduceable to the latter notion. Grosz & Sidner (1986) talk about the attentional state of the discourse, which is much like the salience order on familiar discourse referents just sketched. They illustrate how the attentional accessibility definable in terms of such a state differs from recency with the following discourse from Grosz (1974):

(52)   A: One bolt is stuck. I'm trying to use both the pliers and the wrench to get it
               unstuck, but I haven't had much luck.
        E: Don't use pliers. Show me what you are doing.
        A: I'm pointing at the bolts.
        E: Show me the 1/2" combination wrench, please.
        A: OK.
        E: Good, now show me the 1/2" box wrench.
        A: I already got it loosened.

A's first and last utterances are taken by Grosz & Sidner to be in the same "segment", i.e., in a portion of the discourse which corresponds to a single intention (say, that of helping A to disassemble something), while the intervening utterances are a sub-structure,

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[25]For independent arguments that the common ground contains information about the intentional structure of the discourse, see Thomason (1990), Welker (1994).

intended to realize the sub-plan of finding something to loosen the bolt. Once the bolt is loosened, that sub-plan is no longer operative, the sub-segment is closed, or "popped", and the attentional state returns to the higher level, containing only the first utterance. It is only after the sub-structure has been popped that the stuck bolt becomes the preferred antecedent for *it*, even though it is less recent in the discourse than, e.g., the discourse referent for the 1/2" combination wrench or that for the box wrench.

Further, recency doesn't seem to play a role at all in examples where two potential antecedent NPs occur in an immediately preceding clause. These are the types of examples most often considered in the literature on Centering. Consider van Eijk's (53) and Kamp's (54) (both cited in Heim 1990), illustrating what Heim (1990) calls the "problem of indistinguishable participants":

(53)   If a man lives with another man, he shares the housework with him.
(54)   If a cardinal meets another cardinal, he blesses him.

As Heim discusses, these examples are problems for a theory such as hers which makes pronouns be interpreted as *n*-ary functions, predicting semantic uniqueness. In (53), each of the indefinites in the conditional antecedent might be described as 'a man who lives with another man', and in (54) the predicate *meet* is symmetrical, so that if Cardinal *a* meets Cardinal *b*, then *b* meets *a*, as well. One is hard-pressed to find any way of distinguishing the two potential antecedents semantically so as to satisfy semantic uniqueness, and, by the same token, neither seems more pragmatically plausible than the other. But if we assume that NPs within a preceding sentence are differentially salient to a pronoun at a given location in the text, there is no difficulty in accounting for these types of examples with the theory in (50). In discovering the intended antecedent for *he* in the consequent of one of these conditionals, theories of Centering would make a subject in the antecedent clause of a conditional more salient (highly ranked in the set of forward-looking Centers) than an object. Once this is assumed, the discourse referent for the subject is the only maximally salient potential antecedent which satisfies the pronoun's descriptive content. Use of *him* instead of a reflexive pronoun for the direct object rules out taking the antecedent clause subject as antecedent for *him* as well (presumably as a conversational implicature, via syntactic binding theory), amounting to additional implicated domain restriction in the instantiation of clause (ii) of (50). This leads to the interpretation of *him* in the consequent as anteceded by the only other salient discourse referent, that for the object of the antecedent clause.

(55) summarizes what I have said about salience of discourse referents:

(55)   **Salient discourse referents**:
- must be (weakly) familiar.
- pertain to a current goal in the hierarchical structure of discourse goals (questions under discussion) and domain goals of the interlocutors.
- are partially ordered for relative salience. In certain cases, we can determine that two salient discourse referents i and j are asymmetrically ordered, $i >_{Salient} j$, if one or more of the follow holds:

- *i* is strongly familiar and *j* is only weakly familiar, unless *j* is brought to the attention of the interlocutors in some other way
- *i* pertains to goal g_i, *j* pertains to goal g_j, and g_i is a more immediate goal (or question under discussion) than g_j
- *i* and *j* correspond to NPs which occur in the same sentence, pertaining to the immediate question under discussion, and *i* is more highly ranked than *j* using Centering principles (e.g., taking into account grammatical relations, topic/focushood, relative surface order, etc.)

Of course, (55) does not predict that in all cases there will be one maximally salient potential antecedent for a given pronoun. In such cases, either plausibility will help determine the intended antecedent, or else the example will be infelicitous.

As (53), (54), and the examples considered in §1.2 illustrate, we do not expect uniqueness effects with pronouns. The requirement of salience precludes uniqueness effects in two ways: First, we do not get epistemic uniqueness effects, such as those for definite descriptions used as proper names or in directions, since those only develop when (a) the discourse referent antecedent is informationally unique in the entire common ground and (b) the common ground is presumed to include information about all entities of the relevant sort. No reasonable common ground would be small enough so that all entities which, e.g., satisfy the descriptive content of *he*, would be salient, and hence the conditions for epistemic uniqueness effects do not generally arise in the felicitous use of pronouns. Second, the uniqueness effect triggered by accommodation will not in general arise with pronouns because salience presupposes at least weak familiarity, so that cases where accommodation is required will not license use of a pronoun. Crucially, on the view of familiarity developed in §1.2, cases like (51) do not involve accommodation; the felicity of *her* depends on the existence of a weakly familiar discourse referent for the deceased.

The theory developed here offers a new explanation of the distinction between (56) and (57), due to Barbara Partee (p.c.) as cited in Heim (1982):

(56)   I dropped ten marbles and found all of them, except for one.
        It is probably under the sofa.
(57)   I dropped ten marbles and found only nine of them.
        ?It is probably under the sofa.

The first sentences of these two examples are logically equivalent, both entailing that there's exactly one missing marble, so that the corresponding discourse referent is weakly familiar. Yet, at least when the examples are uttered more or less out of the blue, pronominal anaphora to the missing marble seems less fully felicitous in (57), where the missing marble wasn't directly mentioned, than in (56), where it was. It has often been remarked that (57) improves if the speaker changes, or if all the interlocutors appear to be looking for the entailed missing marble. I would contend that the problem in (57) is the lack of salience of the missing marble, a contention supported by the fact that (58), with a definite description instead of a pronoun, is impeccable when uttered out of the blue:

(58)   I dropped ten marbles and found only nine of them.
        The missing marble is probably under the sofa.

And consider (59):

(59)   I dropped ten marbles and found only nine of them.
        A missing marble is probably under the sofa.

With the indefinite NP *a missing marble*, in place of the definite in (57)/(58), the second
sentence cannot be felicitously understood to mean that the entity referred to is the
missing one out of the ten marbles the speaker dropped. Again, this is just what we
would expect if the first sentence makes the missing dropped marble weakly familiar, and
weak familiarity is the relevant notion for Heim's Extended Novelty-Familiarity
Condition. (57) and (58) only present a problem for Heim's theory, on this construal of
familiarity, because she makes no distinction between definite descriptions and pronouns.

(55) and (50) also provide a solution to another problem noted by Heim (1990), who asks
how we can explain the contrast in acceptability between examples like (60) and (61)
without a formal link between pronoun and antecedent:

(60)   Every man who has a wife sits next to her.
(61)   *Every married man sits next to her.

Just as salience plays a crucial role in the explanation of the *marbles* examples in (56) and
(57) or Postal's (1969) anaphoric islands, these examples illustrate how mere weak
familiarity, as guaranteed for the wife in (61), is not by itself sufficient to license use of a
pronoun. Of course, in such cases we could felicitously substitute a definite description,
his wife, illustrating again how the use of definite descriptions is not directly constrained
by salience.

Finally, recall the contrast in minimal pairs of discourses differing only in whether they
involved a pronoun or a definite description:

(45)   Every man who had two quarters put them in the meter.
(45')   Every man who had two quarters put the damn things in the meter.
(45")   Every man who had two quarters put the (two) quarters (he had) in the meter.

The use of a definite description in (45") for many speakers results in the much higher
likelihood of a uniqueness effect than we find in (45), with a pronoun, while with the use
of an epithet in (45') the uniqueness effect is somehow undercut. Use of the pronoun is
felicitous as defined by (50), and given the relativization of pronominal uniqueness to the
attentionally accessible discourse referents, we expect no uniqueness effect in this
example. I.e., the antecedent *two quarters* has triggered introduction of a corresponding
discourse referent in the local context in which the pronoun *them* is interpreted.
Informational uniqueness then requires only that this discourse referent be the unique
most salient (plausible) potential antecedent in that context, and tells us nothing about
whether these are the only quarters that a given man has. If a given man in the relevant set
has four quarters, but puts only two of them in meter, this needn't falsify (45) under the

present account; nor would it make (45) infelicitous, so long as the other quarters weren't weakly familiar.[26] But the use of a definite description where one could felicitously use a pronoun, given that the pronoun is briefer without leading to potential ambiguity and that the antecedent search space is smaller for pronouns, leads to the (Manner) implicature that the speaker intended to convey additional information through use of the less efficient definite description. When the definite description is an epithet, as in (45'), the over-riding reason for the substitution is that the epithet can introduce additional descriptive content.[27] But when the definite description does not add new descriptive content, the only remaining distinction between pronouns and definite descriptions which might explain the use of the latter is that the definite *description* was used to enforce a stronger version of uniqueness, the semantic uniqueness often associated with definite descriptions but never with pronouns. The plausibility of this account is re-enforced by the fact that the more redundant descriptive material is included in the definite description, the stronger the uniqueness effect; this seems like a hallmark of a Manner implicature. All this is to be expected if semantic uniqueness effects arise through pragmatic means, and pronominal use is not felicitous in contexts which give rise to those effects.

Thus, the theory here is able to account for the lack of uniqueness effects in pronouns while treating them as a species of definite. It does so by placing a fairly strong condition on the use of pronouns, the requirement that they have maximally salient (and hence familiar) antecedents. Although a great deal of work needs to be done to capture precisely what it means to be salient, we are now able to come a good deal closer to specifying what that is, and can even give some indication of how discourse referents may be ranked for relative salience. Restricting the set of potential antecedents for a pronoun in this way permits an account of the differences between pronouns and definite descriptions, and moreover permits an explanation of why pronouns generally fail to display uniqueness effects.

4. <u>Comparisons with other theories of definites</u>

The theory developed in sections 2 and 3 is summarized in the hypotheses in (30) and (49):

(30)   **Informational Existence and Uniqueness of Definite NPs**:
         Given a context C, use of a definite description NP_i presupposes that there is a discourse referent in the Domain of C which is the unique familiar discourse referent contextually entailed to satisfy the descriptive content of NP_i.

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[26]I assume here that the so-called asymmetric interpretation of quantificational NPs, without unselective binding of indefinites by *every*, is the only one made available by the semantics, as argued by Kadmon (1990) and subsequently assumed by related accounts in Barker (1993), Chierchia (1995), and Krifka (1998).

[27]Though the descriptive contents of epithets are themselves presupposed, they are nonetheless used to enrich the information we convey about the antecedent, while backgrounding that additional information through the presupposition.

(49)   **Presuppositions of Pronouns**:
Given a context C, use of a pronoun Pro_i presupposes that there is a discourse referent *i* familiar and salient in C which is the most salient discourse referent satisfying the descriptive content suggested by the person, number and gender of Pro_i which is a pragmatically plausible antecedent for Pro_i in C.

Moreover, I have argued that semantic uniqueness effects arise only in definite descriptions which fail strong familiarity, and do so either on the basis of special epistemic circumstances or due to a Quantity-based conversational implicature. Now I will briefly compare this approach to the interpretation of definite NPs to the main two types of theories in the literature.

4.1 Theories of semantic uniqueness

There are a number of accounts which follow Russell (1905) in taking the uniqueness effects displayed in §1 above to argue that the interpretation of the definite article involves semantic uniqueness, i.e. the requirement that the entity corresponding to the definite NP in a given world (or the instantiation of the implicit variable argument, in examples under quantification) must be unique in satisfying the NP's descriptive content. These include both theories in which this uniqueness is entailed, such as the theories of Cooper (1979), Evans (1979, 1980), Löbner (1987), Neale (1990), Heim (1990), and Abbott (1999), and those which instead assume that the definite article presupposes uniqueness, such as the theory of Kadmon (1987,1990). I have presented several types of evidence against theories of semantic uniqueness, whether merely entailed or presupposed, to wit:

(62)   Evidence against semantic uniqueness:
- Strongly familiar definite descriptions don't display uniqueness effects, as we saw in the following types of examples:
   - (10), where the definite description *the wine glass* has an explicit NP antecedent
   - (44')/(45'), involving the epithets *the poor beast* and *the damn things*, with explicit NP antecedents
   - (46), involving the non-redundant definite description *the sage plant* with an explicit antecedent under quantification
- Pronouns don't display uniqueness effects, in effect because their domain is too restricted (due to the salience requirement)

The present theory embodies several successful features of these earlier theories of uniqueness, while escaping the problems have outlined above, and offering an explanation of how and when uniqueness effects arise. Like Kadmon's (1990) theory, it avoids one problem for semantic uniqueness by assuming that uniqueness is presuppositional, not part of the proffered content of definites. And it provides a coherent, explanatory way of talking about pragmatic, i.e. context-driven, enrichment of the descriptive content of definite NPs. But it differs from all the theories noted in not requiring semantic uniqueness for definites. Hence, it does not predict uniqueness effects

where they do not arise, and moreover, it enables us to explain the crucial role of context in triggering uniqueness effects, as illustrated in §3.1. Semantic uniqueness, when it does arise, is explained as a function of specific contextual factors, factors which one might expect on the assumption that the uniqueness presupposed by definite NPs is uniqueness in the interlocutors' Common Ground, rather than in the world or model. I take it as one of the main advantages of the present theory that it can do all of this in a simple, non-*ad hoc* manner.

In avoiding semantic uniqueness, the present theory has several additional advantages over Kadmon's theory, the most carefully considered of the presuppositional theories. Like Heim (1990), Kadmon has difficulties in general with pronouns under quantification, where her theory would predict a strong uniqueness effect that doesn't actually arise. Kadmon also has a general problem with multi-case conditionals, which requires her to allude to possible higher situation arguments. Such examples lead Heim (1990) to require that adverbs of quantification range over minimal situations, a notion which has proved difficult to define. No such appeal is necessary here, since the examples in question involve pronouns, where no uniqueness effect is predicted.

It is instructive to briefly compare the present theory to theories which posit so-called E-type pronouns, such as those of Evans (1979, 1980) and Neale (1990), and by extension those of Cooper (1979), Lappin (1989), Heim (1990) and Chierchia (1995). In these theories, certain pronouns are interpreted as if they were disguised definite descriptions, with their descriptive content retrieved through a combination of the material predicated of their antecedents and other contextually given pragmatic enrichments. Given that the present theory, like Evans', makes extensive appeal to the role of context and pragmatically-driven inferences in making available the intended descriptive content of the logical forms of pronouns (and other definites), one might take the present theory to be a variant of the E-type account. Though there are similarities in this respect, I believe that the differences outweigh those similarities. Here I'll mention a few problems with E-type accounts which have not, to my knowledge, been noted before, problems which do not arise for the account in §3.

First, E-type accounts fail to capture the central respects in which pronouns, under any interpretation, differ from definite descriptions: their requirement of maximal salience and the consequent lack of uniqueness effects. Secondly, unlike the present theory in which pronouns are taken to be unambiguous, with a single interpretation in all contexts, E-type accounts typically assume that pronouns are ambiguous, sometimes acting as mere bound variables, at other times as disguised Russellian descriptions. Chierchia (1995) tries to make a virtue of this ambiguity by using it to differentiate two types of readings for donkey pronouns, the universal vs. the existential. But the lack of attested ambiguity in particular examples involving donkey pronouns, where either the bound variable or the E-type reading is plausible, but not both, suggests that the ambiguity approach is misguided. (45), repeated here, has only Chierchia's non-E-type reading (the "existential interpretation"), not requiring of the men in question that they empty their pockets of quarters; while we seem to prefer his E-type reading (the "universal interpretation") of

(63), where we might expect for any given dog-owner that all his dogs will be vaccinated:[28]

(45)   Every man who had two quarters put them in the meter.
(63)   Every Lancaster resident who has a dog had it vaccinated for rabies last year.

Further, I cannot see how the E-type theories cited can capture the fact that E-type readings only seem to arise when existential entailments license weak familiarity (in the local context of interpretation) of the corresponding discourse referent. For example, Evans only alludes to the salience of the description which is borrowed from previous context for the interpretation of the pronoun, providing the descriptive content of the hidden description. But this would appear to be too weak a restriction, making the wrong predictions for examples like the following:

(64)   Most days, John ate a bagel for breakfast. But one day Mary ate it.
(65)   Some farmers without a tractor own a donkey.
       Farmer John uses it to plow his field.

In (64), we can only interpret *it* as meaning 'the bagel that John usually ate for breakfast', or something like that, which requires a pragmatically odd wide scope interpretation for *a bagel* in the preceding sentence. In (65), the second sentence is infelicitous for most English speakers, because of the failed familiarity presupposition of the pronoun. In this discourse, there is no entailment or even implication that Farmer John owns a donkey (or a tractor). But we can see from the possibility of modal subordination (Roberts 1989) in (66) or of *one*-anaphora in (67) that the bagel and the tractor in these discourses is salient:

(66)   Most days, John brings a bagel for breakfast.
       Sometimes, Mary steals it from him.
                       it: 'the bagel John has brought for breakfast that day'
(67)   Some farmers without a tractor own a donkey.
       Farmer John uses one to plow his field.   *one*: 'a donkey'

Given this salience, it seems to me that the E-type approach which only required salience of the borrowed description would incorrectly predict that *it* in (64) could mean something like 'the bagel John ate', and that *it* in (65) could mean 'the donkey Farmer John owns'. But the account in §3 requires that weak familiarity, as well, and hence makes the correct predictions.

Of course, one might enrich an E-type account with the requirement that there be a local entailment of the sort required, e.g. that the use of the NP from which the descriptive content of the pronoun is borrowed contextually entails the existence of the relevant discourse referent. But then it seems to me that the resulting theory is very close to what

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[28] Krifka (1998) offers quite a different account of the basic difference between universal and existential interpretations of donkey sentences, based on an observed difference between upward- and downward-entailing quantificational operators which he calls Rooth's generalization (after Rooth 1987). See also Barker (1993) for discussion of the preferred existential interpretation of (45). Neither of these authors appeals to pronoun ambiguity.

I have proposed here, except that some of these theories (i.e., all but Cooper's) would predict undesirable Russellian uniqueness entailments or presuppositions, most would predict an unattested ambiguity, and none would capture the differences between pronouns and definite descriptions. If, instead, pronouns and definite descriptions are assumed to have informational uniqueness presuppositions, with the additional requirement of maximal salience for pronouns, then we are able to avoid those undesirable consequences, while predicting uniqueness effects where they do arise as a function of context. Since we can do this without assuming ambiguity in pronouns, the theory appears superior to the E-type accounts with respect to the problems outlined here.

I conclude that the theory offered here is empirically superior to theories based on semantic uniqueness.

4.2 Theories of Conversational uniqueness

Heim (1982) has her own implicature-based account of our intuitions about uniqueness, based on familiarity. Familiarity realizes the idea that definite NPs are essentially anaphoric – they presuppose an "antecedent", though technically that antecedent is a discourse referent instead of an NP, and hence it may be introduced deictically or via accommodation. But given Grice's (1967) principles of conversation, and in particular his maxim of Manner ("Be perspicuous. . .Avoid ambiguity. . ."), an effective speaker using an anaphoric element is expected to make it clear which of the discourse referents in the File is its intended antecedent; otherwise, the hearer is faced with an unresolvable ambiguity. Definites are felt to be unique because their felicitous use, with respect to Manner, requires that there be exactly one discourse referent in the File that is the most likely candidate for their antecedent. Heim points out that this doesn't mean that there are no other individuals in the world (model) which have the properties predicated of that discourse referent – there might be others that the interlocutors are simply not familiar with. But it is very close in effect to theories of uniqueness which assume contextual domain restriction, and so Heim's predictions are very similar to Russell's for many cases. Kadmon (1990) points out that this account of the uniqueness effects, which I'll call **conversational uniqueness**, is closely related to the views on uniqueness of Cresswell (1973), Lewis (1979), and Hintikka & Kulas (1985). It also appears to be closely related to the notion of uniqueness assumed by Jackendoff (1972:277); Hawkins (1991; and see references therein) and Gundel, Hedberg & Zacharski (1993).

Notice first that Heim's (1982) conversational uniqueness implicature is not the same as the implicature of semantic uniqueness based on informational uniqueness which I described above for cases involving accommodation. Conversational uniqueness arises via the Maxim of Manner and only implicates informational uniqueness; it is intended to apply quite generally, e.g. to cases involving strong familiarity. But the implicature argued for in §2.2 is a Quantity implicature, based on use of the definite instead of an indefinite; it is only triggered when strong familiarity fails, and what is implicated is semantic uniqueness (as well as, hence, informational uniqueness). So though both accounts use conversational implicature to yield uniqueness effects, these implicatures are both triggered and calculated differently. This difference leads to a difference in predictive power.

So, for example, conversational uniqueness fails to account for the uniqueness effects which arise when definite descriptions are redundant, and hence could have been replaced by pronouns, as in (44") and (45"), repeated here:

(44")   Every man that owns a donkey beats the donkey he owns.
(45")   Every man who had two quarters put the two quarters he had in the meter.

As discussed in §3.2, in such cases informational uniqueness, in concert with the additional presupposition of salience for pronouns, conversationally implicates semantic uniqueness. Conversational uniqueness does not.

By the same token, conversational uniqueness does not offer an explanation of the robust uniqueness effects observed in out-of-the-blue uses of definite descriptions, as in (3) and (4):

(3)   Teacher, giving directions: On the next page, you will find a puzzle. Find the clown in the puzzle.
(4)   I found a box in my attic the other day. I opened the lid and pushed the button I found inside. You won't believe what happened. (variant due to Irene Heim, p.c.)

When we have to accommodate a discourse referent, we presumably accommodate only one, so that there is just a single potential antecedent in these cases. Under the conversational uniqueness approach, the accommodation of this single discourse referent says nothing about whether there are other entities in the world with the relevant properties, and hence does not predict semantic uniqueness effects. But the intuitions of native speakers, as discussed earlier, are that such utterances do carry an implication of semantic uniqueness.

Heim does have something to say about examples which fail strong familiarity. Recall that in her terms these examples require accommodation of a familiar discourse referent (see §1.2). She offers (68) as a constraint on such accommodation; her *cross-referencing* appears to be the same notion as the *bridging* of Clark (1975):

(68)   Cross-Referencing Requirement on Accommodation (Heim 1982):
       When a new discourse referent is introduced under accommodation, it has to be linked by crossreferences to some already-present discourse referent(s).

The cross-referencing requirement seems to be fairly robust. The only counterexamples I'm familiar with are those which involve definites whose heads independently guarantee uniqueness, such as superlatives. And in some respects cross-referencing and semantic uniqueness have very similar results when it comes to definite descriptions, but only under the assumption that the head of the cross-referenced NP must itself denote a function, and not just a relation, i.e. that the linkage Heim talks about is that of function-argument application, as noted in §1 in connection with the differential acceptability of examples (6) and (7):

(6)   Every car had a puncture in the tire.

(7)   Every unicycle had a spoke missing from <u>the wheel</u>.

Further, Heim noted that she could find no explanation for her cross-referencing requirement. But if we assume that definites have uniqueness presuppositions, then treating the head as functional and giving it a (sometimes implicit but always familiar) argument, gives the hearer a formula for identifying the referent in question via its unique property of being the value obtained when that function is applied to the already-familiar argument. If the argument itself is inexplicit and unfamiliar, then the hearer would still not have sufficient information to uniquely identify the NP's intended referent (unless the meaning of the head itself guaranteed uniqueness), and infelicity would result. This would explain the cross-referencing requirement as that of providing a familiar argument to the function which satisfies uniqueness. The theoretical question, then, is whether to prefer an analysis in which cross-referencing is an unexplained, primitive requirement on accommodation for a subclass of definites, or one in which uniqueness is a general requirement on definite NPs, and cross-referencing is just a strategy for assuring it in the relevant subclass.

Löbner (1987) opts for the latter strategy, claiming that the heads of definite descriptions must be given a functional interpretation, even when the CN in question isn't inherently functional (i.e., by virtue of its lexical meaning). But, of course, I have argued that the blanket assumption of semantic uniqueness is too strong. Instead, I assume a presupposition of informational uniqueness and derive semantic uniqueness as a conversational implicature in cases where informational uniqueness fails. In examples like (3) and (4), (6) and (7), this translates into the requirement that the head of the definite be given a functional interpretation, accounting for the attested uniqueness effects.

While the Russellian semantic theory of uniqueness seems to predict semantic uniqueness where it does not appear, conversational uniqueness is too weak, failing to explain when and why semantic uniqueness effects will occur. But the informational uniqueness presupposition thus provides an explanation of Heim's cross-referencing requirement and Löbner's (1987) observations, to the extent to which those generalizations were correct. I conclude that the theory proposed here offers us a superior account of uniqueness effects, including predictions about when they arise and when they do not.

Szabo (2000) offers a pragmatic explanation of uniqueness effects in definite descriptions (he does not discuss pronouns), based on different principles from those underlying conversational uniqueness. As I understand his proposal, it is closely related to the present one, with the exception that something like informational uniqueness is derived pragmatically instead of being seen as a presupposition conventionally associated with the definite article. Why not, then, view informational uniqueness as merely conversational, always arising in the use of definite descriptions by virtue of the Quantity Maxim, or along the lines that Szabo suggests? One might well argue that informational uniqueness is functionally motivated by conversational principles; for example, one could take Szabo's arguments to offer an epistemic motivation for the presupposition of informational uniqueness conventionally associated with definites. But that would not mean that informational uniqueness is necessarily non-conventional.

We have no direct access to intuitions about the conventional status of interpretive principles, informational uniqueness included. When we hear an expression used, all we really have as raw data is our direct intuition of the speaker's meaning (Grice 1957) on that occasion. Any impression that this meaning is or is not conventional, is or is not a function of context, must be based on theoretical assumptions and analysis. The assumption which has guided me here is that a meaning is conventional, and hence part of the utterance meaning for a given expression, iff it always arises in connection with use of that expression, regardless of context of use. We generally relegate to the status of mere conversational implicatures those facets of the meaning of an expression which arise in some contexts but not in others.[29] I cannot find an instance in which a definite description is not associated with informational uniqueness. Even when the accommodation of familiarity is involved, informational uniqueness has an effect, as we have seen. And so I assume that it is a conventional implicature, a presupposition, rather than merely a conversational one. But semantic uniqueness only occurs in certain types of context, leading to the assumption that it must arise by pragmatic means.

At what point does a meaning associated with an entire class of expressions in a certain kind of commonly occurring context cease to be merely an implicature and become a part of the conventional meaning of these expressions? This is not intuitively clear. What is clear is that in titles, directions, and out-of-the-blue uses requiring accommodation, definite descriptions regularly carry the speaker's meaning that they are semantically unique. This effect is so common that we have come to associate semantic uniqueness with definite descriptions. The present theory permits us to understand when and how this association comes about, while maintaining a uniform, unambiguous basic interpretation for the definite article.

5. Extensions, Puzzles and Conclusions

To what extent can the theory outlined here serve as a general theory of definiteness in English? To answer this question, we must address two others. First, have we offered here a satisfactory account of the full range of uses of English definite descriptions with *the* and of personal pronouns? And second, what other types of NPs give rise to the types of effects discussed above, and is the behavior of these adequately characterized by (some extension of) this theory?

With respect to the first of these questions, consider the generic use of definite descriptions, the so-called referential use of definite descriptions, and what Poesio (1994) calls the *weak definites*. The semantics of generic definites, as developed in Carlson (1977) and much later work, appears to be straightforwardly compatible with the present approach, under the assumption that each natural (or other) kind denotation of a CN is semantically unique in and of itself. The referential use was first considered by Donnellan (1966), who argued that definite descriptions are ambiguous between that

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[29]Grice (1975) argued for what he called *generalized conversational implicatures*, implicatures which always arise in conjunction with the use of certain expressions. Elsewhere, Roberts (1990), I develop an argument that the examples he gave are in fact particularized, and hence only arise in certain types of context. Hence I dispute the existence of generalized conversational implicatures.

interpretation and the more standard (Russellian) attributive interpretation. However, I follow Kripke (1977) and Neale (1990, Chapter 3), who argue that we need not assume that the referential has a distinct semantic interpretation, but should instead view it as a Gricean speaker's meaning.[30] As Poesio points out, the weak definites have a great deal in common with posessive NPs, so I will discuss these two classes together, below.

With respect to the second of the two questions, besides definite descriptions with *the* and personal pronouns, I can think of two other types of English NPs which are candidates for inclusion in the class of definites, demonstrative NPs and possessive NPs (those with a possessive NP as specifier). Roberts (to appear) argues that the present theory is straightforwardly extendable to the analysis of demonstrative NPs, with *this*, *that*, *these*, and *those*, either used pronominally or with a CN. It seems that both the definite article and personal pronouns are etymologically derived from the ancestor of the unmarked demonstrative *that* (see Christopherson (1939) and the useful discussion in Lyons (1977)). Hence, providing a close semantic link between these types of NP is diachronically plausible and desirable, another advantage of the present approach. And extending the proposal in §2.1 in this way permits an account of the demonstratives in which we do not need to posit a distinct mode of reference in their use, what Kaplan (1977) called *direct reference*. Hence, it results in an overall simpler semantic theory.

Possessive NPs, and the closely related weak NPs of Poesio (1994), present a challenge for the present theory. Such NPs are generally taken to be definite, and this is confirmed by their unacceptability in the *there*-insertion context (Milsark 1977):[31]

(69)   !There's <u>John's daughter</u> waiting to see me in the lobby.
(70)   !There's <u>the son of Queen Juliana of The Netherlands</u> waiting in the lobby.

But the same possessive in (71) and weak definite in (72) seem to require neither familiarity nor semantic uniqueness in order to be felicitous:

(71)   <u>John's daughter</u> is going to college this year.
(72)   Yesterday, I met <u>the son of Queen Juliana of The Netherlands</u>.

Since these NPs may be used in contexts in which they are novel, so that the hearer needn't know John has a daughter or the Queen a son, they would hence fail to satisfy informational uniqueness as well. The discussion above would then suggest that they should display semantic uniqueness as a conversational implicature derived from the presupposition failure. Yet many speakers report that such examples may be true and felicitous, yet fail to implicate uniqueness, i.e. to implicate that John has no more than one daughter or that the Queen has no more than one son.

There are a couple of interesting things to note about such NPs. The first (Barker 2000, Poesio 1994), is that in possessive NPs and NPs of the form *the N of NP*, whether the entire NP is definite or not is a function of the definiteness of the possessor or the explicit

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[30]See also Dekker (1997) for a useful discussion of how this general approach can be realized naturally and fruitfully within a dynamic system of interpretation, with extensions to the notion of *specificity*, as well.
[31]The exclamation diacritic in (69) and (70) is intended to mark semantic anomoly.

argument (the NP complement of *of*), respectively. So, the underlined NPs in (73) and (74), in contrast to those in (71) and (72), are not definite, as confirmed by the *there-*insertion test:

(73)   <u>A friend's daughter</u> is going to college this year.
(74)   Yesterday, I met <u>the son of a powerful woman</u>.

(75)   There's <u>a friend's daughter</u> waiting to see me in the lobby.
(76)   There's <u>the son of a powerful woman</u> waiting in the lobby.

Barker (2000) notes that these facts about possessives can be seen as just an extension of a generalization in Barker (1991): In general, the possessor controls the whole possessive. In particular, we observe the phenomena in (77):

(77)   Dependence of possessives on the possessor: (after Barker 2000)
   a) ability to bind pronouns: *Every woman$_i$'s father believes she$_i$ is intelligent.*
   b) ability to license negative polarity items: *No/*any man's dog has ever let him down*.
   c) definiteness: as above.

Weak definites demonstrate the same binding behavior (*The son of every powerful woman admires her*), though the ability to license negative polarity items seems awkward to me, at best (*The son of no powerful woman has ever failed to be polite*).

The second point to note about these types of examples is that the observed loosening of the predicted semantic uniqueness depends on the NP having a particular type of relational head, expressing what is often called in the literature an *inalienable relation*. One's parts and offspring seem to be inalienable in this respect, whereas various belongings and accessories do not. So, although we can say (78) without implicating that the speaker has only one tooth, (79a) is distinctly worse than (79b), because cars have more than one tire. Presumably tires are not inalienables.

(78)   My tooth aches.
(79)   a) The car's tire is flat.
      b) The car's left front tire is flat.

I don't know why, when the head is inalienable and the possessor/argument is definite, these NPs don't implicate uniqueness. It could just be an idiosyncracy of the use of the definite article, but the regularity across the two constructions leads me to doubt it. In any case, the class in question is quite well-defined and regular in its behavior, and I venture that this exception to the rules laid out here constitutes a sub-regularity which will eventually be explained without giving up the main generalizations.

There are, of course, apparently idiosyncratic uses of definites. For example, one referee points out the possibility of saying *That's the wrong answer* with respect to a multiple choice question with several wrong answers. I'm sure there are others lurking out there. But I hope that the above account is sufficiently general and empirically strong that we

can ignore these, unless more general features emerge which reveal additional insight into the nature of definiteness in English.

I have proposed the all definites have presuppositions of existence (weak familiarity) of a discourse referent entailed to satisfy their descriptive content, as well as of (informational) uniqueness relative to that descriptive content. While the resulting theory differs from any other theory of the semantics of English definite NPs with which I am familiar, it is satisfying to note that, as in the Hindu tale of the wise (wo)men and the elephant, the theory suggests that each of my predecessors was right in a way: Russell was right in arguing that definite NPs are not referential, and that their logical form involves both existence and uniqueness. Strawson and Kadmon were right in arguing that the uniqueness in question is in some way presuppositional. Kripke and Lewis were right in arguing that the interpretation of unbound pronouns is licensed by a salient individual in the context of utterance, and Heim was right in arguing that the use of a definite presupposes familiarity. If each of these scholars missed the mark by just a bit, that's because we hadn't yet made enough collective progress to see the whole elephant. If what I have argued about the interpretation of definites is a bit closer to the whole truth, it's because we, collectively, have made such progress, and I have been privileged to inherit the results.

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